

A FOMO-based Capital Asset Pricing Model

Mohammed Kaddouhah^{*1}, Simon Rudkin^{†2}, and Wanling Rudkin^{‡3}

¹School of Social Sciences, Swansea University, United Kingdom

²School of Social Sciences, University of Manchester, United Kingdom

³University of Exeter Business School, University of Exeter, United Kingdom

Abstract

Investors experience a Fear of Missing Out (FOMO) when observing peers' investment choices outperforming their own. Agents require compensation for holding stocks that deliver lower expected returns than the equities held by their peers. This paper provides a theoretical and empirical introduction to the FOMO Capital Asset Pricing Model (FOMO-CAPM). Analysis of US equities between 1980 and 2024 shows FOMO is a significant determinant of asset prices. An annualized FOMO risk premium of 21.4% is demonstrated. The explanatory power of FOMO for stock returns is robust to a battery of alternative peer group portfolios, risk exposure controls and sub-period analyses.

JEL Codes: G11, G12, G41, D91

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^{*}**Corresponding Author.** Full Address: Economics Department, Singleton Campus, Swansea, SA1 1EN, United Kingdom. Email: 2030299@swansea.ac.uk

[†]Email: simon.rudkin@manchester.ac.uk

[‡]Email: w.rudkin@exeter.ac.uk

1 Introduction

The Fear of Missing Out (FOMO) refers to a pervasive apprehension that others may be having rewarding experiences from which one is absent (Przybylski, Murayama, DeHaan, and Gladwell, 2013). FOMO is widely studied in the context of social psychology and digital communication (Milyavskaya, Saffran, Hope, and Koestner, 2018; Zhang, Jiménez, and Cicala, 2020). Given the associated financial rewards, it is rational to assume that investors will feel FOMO about the potential returns obtained by others. Bonaparte and Fabozzi (2025) evidence the aggregate presence of FOMO in financial markets through a FOMO index, yet there is a lack of work on FOMO at the individual asset level. At the heart of the FOMO definition is the comparison of an investors' current position and a counterfactual portfolio that the investor would miss out on if they continue to hold their current position. Individual investors are choosing between the asset they selected based upon their own valuation model, and an alternative asset selected by others in their peer group. That social dynamics and emotional pressures, such as those engendered by FOMO, shape investor decision-making across individual assets is established (Hirshleifer, 2001, 2015, amongst others). However, standard asset pricing models, such as the Capital Asset Pricing Model (CAPM), focus on the investors own returns, neglecting that the performance of others matters¹. FOMO offers an asset level explanation for the divergence between observed trading patterns and the expected return maximization strategies of traditional asset pricing models.

This paper provides a theoretical framework which integrates FOMO with the CAPM, producing the FOMO-CAPM. Our theoretical framework hinges on the comparison between the returns on an investor's holding and the returns achieved by the investor's peer group. FOMO only occurs when then the investors' peer group portfolio offers higher returns than the investors' own portfolio. The case in which the investor outperforms their peers engenders a separate feeling of success. FOMO induces a natural asymmetry which renders the FOMO beta discontinuous at the point at which FOMO activates. It is natural to think of the FOMO-CAPM beta as an upside FOMO beta and a downside FOMO beta. Following Ang, Chen, and Xing (2006a), Bollerslev, Patton, and Quaedvlieg (2022) and others, we compute the FOMO betas based on realized returns and the comparative return rankings of the stock and its peer group benchmark. An important

¹A parallel is drawn between FOMO and the “keeping up with the Joneses” (KUJ) literature. KUJ preferences incorporate the consumption of the peer group in an individual's decision-making. In asset selection, KUJ preferences lead to the selection of stocks whose returns correlate with the returns of peers (Levy and Levy, 2015). It is well understood that KUJ preferences lead to behavior which is inconsistent with rational behavior (Agarwal, Mikhed, and Scholnick, 2020; Gómez, Priestley, and Zapatero, 2009). Within FOMO, an investor will feel emotion based upon the relative performance of the investments rather than the wealth. The emphasis of FOMO is the investor thinking how much better they could do if investing their own wealth in the investment selections of their peers.

distinction between Ang et al. (2006a), Bollerslev et al. (2022), and this paper comes from the binning of observations here not being based on the sign of any returns. Where Ang et al. (2006a) compares the market return with 0, and Bollerslev et al. (2022) adds the sign of the return on each asset to create four potential rankings, this paper compares each asset with the return on the reference portfolio irrespective of signs. An upside FOMO beta captures the success feeling, whilst the downside FOMO beta appears in cases where there is FOMO present. Unlike regret models which assume an equal response to outperforming and underperforming peers, FOMO recognizes underperforming peers unlocks a stronger disutility than outperforming peers generates utility.

The definition of the peer group, and the estimation of the expected returns on the peer group’s performing asset, are required for FOMO. Many options exist for the selection of peer group. It is important that investors can identify peer stocks and conduct research about those peers. Grouping on industry or headquarters location makes researching peers easier. Grouping on style factors, such as size or book-to-market ratios, means that peers both change regularly and may be otherwise very diverse firms. Full coverage data on investors peers is impossible to source, prompting considerations of representative peer groups from available data². Peer groups in this paper are defined as investors in the same Fama-French 38 Industry portfolio as the individual investors’ current holding³. The existence of a FOMO premium, and the significance of the asymmetry between the up and down FOMO betas identified in this paper, are robust when using alternative industry definitions, style groupings and headquarter locations as reference portfolios⁴. The performance of the value-weighted industry portfolio obtained from the

²Whilst Cookson, Lu, Mullins, and Niessner (2024), Han, Hirshleifer, and Walden (2022) and others are constructing influences based on social media, e.g. StockTwits, we require a definition of peer that can be applied beyond the subset of social media users.

³Choice of 38 industries reflects the cost of investors obtaining information about the larger volume of stocks that would be present in each portfolio at a higher aggregation level.

⁴Through a battery of alternative peer group portfolios, we show that the use of the Fama-French 38 Industries is not pivotal to the conclusions on the significance of the FOMO betas. We evidence robustness when the reference portfolio is the Fama-French 38 Industry value weighted return plus 1 percentage point, the Fama-French 12 Industry value weighted portfolio return, the NASDAQ index return, firms in the same Fama-French decile size portfolio, firms in the same Fama-French book-to-market decile portfolios, and firms with headquarter locations in the same state. For the realized down FOMO betas, the High-minus-Low strategies annualized returns are 17.38% ($t = 8.45$), 14.83% ($t = 6.78$), 14.69% ($t = 5.15$), 6.70% ($t = 1.54$), 22.10% ($t = 9.39$), and 17.79% ($t = 8.18$), against the Fama-French 38 Industry portfolio plus 1 percentage point, the Fama-French 12 Industry portfolio, the NASDAQ index, size deciles, book-to-market deciles, and headquarter location benchmarks respectively. For the realized up FOMO betas, the corresponding figures are 10.53% ($t = 8.15$) for the Fama-French 38 Industry plus 1 percentage point, 11.32% ($t = 6.92$) for the Fama-French 12 Industry portfolio, 11.4% ($t = 5.58$) for the NASDAQ index, 12.77% ($t = 2.82$) for size deciles, 10.11% ($t = 7.25$) for the book-to-market deciles, and 10.57% ($t = 7.68$) for firms headquartered in the same states, respectively. Our results demonstrate that FOMO betas have explanatory power for stock returns across many alternative reference portfolios.

website of Ken French provides the counterfactual return within the main paper⁵. Industries are an established reference point for investors (Moskowitz and Grinblatt, 1999; Ivković, Sialm, and Weisbenner, 2008). Industry matters for stock returns through competition (e.g. Hou and Robinson, 2006), heterogeneities in the correlation of returns to the overall market (Hong, Torous, and Valkanov, 2007, for example), industry-specific news items (Hao, Jin, and Zhang, 2011; Jennings, Seo, and Soliman, 2020; Jeon, McCurdy, and Zhao, 2022, amongst others), and intra-industry information transfers (Piotroski and Roulstone, 2004, for example). Heterogeneity at the industry level is also seen in the contemporary literature linking Environmental, Social and Governance (ESG) performance and stock returns (Pástor, Stambaugh, and Taylor, 2022; Zhang, 2025, amongst many others). Heterogeneities in the firm valuation models across industries underlie the mixed performance of the book-to-market premium (Golubov and Konstantinidi, 2019). Approaching FOMO through an industry lens ensures all investors in the industry peer group are working with similar valuation models. Further, given Golubov and Konstantinidi (2019) arguments, the investor can obtain a valuation of the choices made by the peer group that is consistent with the valuation made by each peer group member.

Using Fama-French 38 industries to provide peer groups, our primary empirical analysis demonstrates that FOMO betas are mispriced in the cross-section of stock returns. Portfolios formed on the down FOMO beta generate a High-minus-Low abnormal return of 21.44% per annum ($t = 11.01$), whilst the High-minus-Low abnormal return sorting on the up FOMO beta is 9.90% ($t = 6.89$). Significance of the FOMO betas is also shown to be robust in Fama-MacBeth regressions. The downside and upside FOMO betas are significantly different, confirming the need for a model beyond the symmetry of the Regret-CAPM of Qin (2020). Further empirical tests show the FOMO premium robust in double sorts on firm characteristics, to exist throughout the study period, to be strongest in high volatility stocks, and to hold in reduced investment universes.

FOMO speaks to the previously studied phenomenon of investment-specific bench-

Robustness results are provided in the Internet Appendix.

⁵Use of value-weighting recognizes that the stock with the highest value must dominate peers' holdings. Equal weightings might highlight stocks that few, if any, peers hold. The value-weighted industry portfolio return assumes that the expected return on peer stocks is the industry mean. Use of the most recent average incorporates industry-specific variation in returns. Under the efficient market hypothesis, expected returns would be 0, but in the FOMO-CAPM there are differences between industries that reduce the probability that the average in any smaller portfolio being 0. Instead of using the average across the industry peers, it could be argued that the relevant benchmark for an investor should be the maximum of the peer group return and the risk-free rate, i.e., $\max(h_j, r_f)$. Use of the maximum of the peer group return and the risk-free rate would imply that an investor feels no FOMO if their portfolio outperforms a declining peer group but could still feel regret for not having switched to the risk-free asset. While this is an interesting theoretical extension, our model focuses on the primary social comparison to the peer group itself, which we believe is the dominant driver of the FOMO sentiment. We leave the exploration of this state-switching benchmark for future research.

marking, regret, herding and disappointment. In each case, key differentials render FOMO a separate behavioral concept. Where funds are benchmarked to industry returns, the benchmark is chosen by the fund, not the investor. The investor may, or may not, have invested in the proposed benchmark. By contrast, all decisions on the peer group reference portfolios in FOMO are made by the investor. Further, FOMO contrasts with traditional regret theory (Bell, 1982; Loomes and Sugden, 1982), which evaluates outcomes relative to all unchosen alternatives. FOMO also has crucial differences with anticipated regret (Zeelenberg, 1999). Anticipated regret highlights future-oriented emotional consequences of individual decisions, but does not have the social comparison investors make when experiencing FOMO. Under FOMO, utility depends not only on one's own payoff but also on whether that payoff falls short of what peers gain. Asymmetry in the strength of influence of underperforming (outperforming) the peer group further distances the FOMO-CAPM from the Regret-CAPM of Qin (2020). The potential for feeling FOMO can lead to investors mimicking peer behavior, even at the expense of expected returns (Kaddouhah, 2024). FOMO thus offers a rationale for herd behavior, but the existence of FOMO is not sufficient for herd behavior. Disappointment aversion (Gul, 1991; Bell, 1985; Loomes and Sugden, 1986) takes performance relative to an endogenous benchmark, with investors disappointment based on their own forecasts and experiences. FOMO also uses expectations of future performance, but is peer relative and requires forecasts on the assets held by others. The FOMO-CAPM developed in this paper formally integrates FOMO into the asset pricing framework.

To illustrate how FOMO operates in practice, consider a scenario with two investors, A and B. Both A and B belong to the same peer group. Investor A holds stocks in an established industry leader. Investor A observes investor B achieving significant financial gains by investing in a smaller innovative firm from the same industry as investor A's holding. Investor B's firm has just successfully implemented an AI tool and has a lot of positive news surrounding it. The stock selected by investor B has a high volatility. Investor A faces a new decision: whether to continue to invest in the industry leader, in alignment with A's original risk tolerance and financial goals, or whether to invest funds in the smaller, innovative firm, that carries higher risk. Witnessing B's contemporaneous success influences A's perception of potential outcomes, creating FOMO of similarly strong future gains. Consequently, investor A's decision-making process is influenced not only by their individual goals, but also by anticipated regret and social comparisons with B's past choices and historical performance.

Ex ante, investor A's decision is strongly shaped by the psychological anticipation of regret. A imagines two future scenarios. In the first scenario, investor A imagines they invest in the established firm, maintaining alignment with their original financial goals. In the second scenario, investor A imagines investing in the innovative stock. The

imagined rationales for investor A in the second scenario is the hope to match investor B's previous success and the desire to avoid falling behind in terms of wealth and social standing. The observed success of B increases A's FOMO, especially if the innovative firm achieves higher returns compared to A's choice. In the second scenario, anticipated regret of being worse off than the peer group, coupled with the social pressure to keep up with the group, causes A to deviate from their initial preference for the established firm and allocate funds to the riskier innovative stock instead. FOMO thus influences investor A to prioritize peer-relative performance over their personal financial strategy. By focusing on the potential regret of underperforming relative to the peer group, rather than the intrinsic alignment of the mutual fund with their financial goals, investor A's decision in the second scenario reflects the distortion of expected utility maximization caused by FOMO.

This paper makes three key contributions to the literature on investor behavior and asset pricing. Firstly, this paper introduces the FOMO-CAPM, a behavioral asset pricing model that explicitly integrates FOMO into the standard CAPM framework. FOMO modifies investors' portfolio allocation by embedding an additional emotional cost into their portfolio decisions, leading them to adjust their asset choices toward alignment with their peers to avoid this peer-relative underperformance. The traditional CAPM is a limiting case of the FOMO-CAPM in which investors place zero weighting on peer performance. The second contribution of this paper is the provision of a structured approach to analyze phenomena like herd behavior, speculative bubbles and deviations from expected utility maximization. The paper achieves the second contribution by showing how FOMO induces these phenomena. The FOMO framework thus bridges the gap between traditional and behavioral asset pricing. The results in this paper provide theoretical and empirical insights, offering practical applications for market participants by highlighting the conditions under which social pressures drive investment behavior. The third contribution is the empirical demonstration of FOMO in the US equity markets. Portfolios sorted on the up, and down, FOMO betas generate economically significant high-minus-low returns. Further, both the up and down FOMO betas have explanatory power for future stock returns in Fama-MacBeth regressions. Resisting the critique of Levi and Welch (2020), we show that the up and down FOMO betas are persistent over time and are suitable for portfolio formation. Our work provides a demonstration of the empirical validity of FOMO-CAPM. Collectively, the three contributions of this paper highlight the significance of integrating behavioral dynamics into asset pricing to address the complexities of contemporary financial markets.

The remainder of the paper is organised as follows. Section 2 formally presents the FOMO-CAPM. Section 3 provides a theoretical comparison between the FOMO-CAPM and the traditional CAPM. Section 4 conducts an empirical examination of the FOMO-

CAPM within US equity markets. Section 5 concludes.

2 A FOMO-CAPM

Consider a financial market in which I investors trade one risk-free asset offering a certain return r_f and N risky assets. Individual investors are indexed by $i, i = 1, 2, \dots, I$. Assets are indexed by $j, j = 1, 2, \dots, N$. The number of outstanding shares for each risky asset is normalized to one. The net supply of the risk-free asset is zero. The price of a risky asset j at time $t = 0$ is denoted by $P_{j,0}$, while its price at $t = 1$ is given by $P_{j,1}$. The rate of return on asset j is represented as $r_j \equiv \frac{P_{j,1}}{P_{j,0}} - 1$. The vector of asset prices, $\{P_{j,1}\}$, is multivariate normal distributed.⁶

At time 0, $t = 0$, each individual investor, i , allocates their initial wealth $W_{i,0}$ among the N assets. The payoff received by investor i at time $t = 1$, $W_{i,1}$, is given by:

$$W_{i,1} = W_{i,0}(1 + r_{ip}) \quad (1)$$

where an individual's portfolio return, r_{ip} , is given by:

$$r_{ip} \equiv r_f + \sum_{j=1}^N w_{ij}(r_j - r_f) \quad (2)$$

Here, w_{ij} represents the proportion of wealth invested by investor i in asset j . The weight on the risk-free asset is implicitly defined as $1 - \sum_{j=1}^N w_{ij}$. The model admits the case where $\sum_{j=1}^N w_{ij} > 1$.

An individual's utility consists of two components. The first component is the utility derived from the monetary return, denoted as $u_i(W_{i,1})$. The monetary return is the wealth accumulated from investing in the chosen assets. Individuals are risk neutral such that $u_i(W_{i,1}) = W_{i,1}$ ⁷. The second component of an individual's utility, denoted as $f_i(W_{i,1} - g_i(H_i))$, captures the utility impact stemming from the comparison between the investor's own wealth and the peer group portfolio. The adjustments to the utility function provided by $f_i(\cdot)$ and $g(H_i)$ are consistent with the core tenets of prospect theory (Kahneman, Tversky et al., 1979). In the FOMO-CAPM an individual compares their payoff from the chosen portfolio $W_{i,1}$ to the counterfactual payoff of an unchosen portfolio H_i ⁸. To meet the conditions for FOMO, the unchosen portfolio must consist of a pool

⁶We assume there is no redundant asset, meaning no asset's payoff can be perfectly replicated by a portfolio of the other available assets.

⁷Assuming risk neutrality for the monetary utility component u_i simplifies the analysis. Risk neutrality allows us to isolate the specific impact of the FOMO component f_i on portfolio choice, separate from the standard effects of risk aversion.

⁸Our concept assumes that H_i is stochastic rather than a deterministic reference point and that individuals are heterogeneous rather than homogeneous. The function $f_i(\cdot)$ and portfolio H_i differ

of assets drawn from an individual's reference portfolio⁹. If $W_{i,1} < H_i$ an individual experiences FOMO.

Investor i , maximizes expected utility $EU_i(V_i(W_{i,1}))$. Investor i 's modified utility function incorporating FOMO, $V_i(W_{i,1})$, is defined as follows:

$$V_i(W_{i,1}) = W_{i,1} + f_i(W_{i,1} - g_i(H_i)) \quad (3)$$

where

$$g_i(H_i) = \begin{cases} H_i & \text{if } W_{i,1} \geq H_i \\ H_i + k_i(H_i) & \text{if } W_{i,1} < H_i \end{cases} \quad (4)$$

between individuals. Models based on prospect theory assume convex utility in the loss domain and/or probability weighting. Our concept assumes a concave regret function $f_i(\cdot)$, similar to the Regret-CAPM of Qin (2020). To simplify the notation, we omit the 1 from the subscript. The comparator in FOMO is always the future wealth of period 1.

⁹Our framework's use of a reference portfolio is conceptually distinct from the benchmark used in 'habit formation' models (e.g., Abel 1990; Campbell and Cochrane 1999). In habit models, the benchmark is internal and based on the agent's own past consumption, driven by a motive of consumption smoothing. In contrast, our reference portfolio is external and cross-sectional, based on the contemporaneous performance of a peer group. The motive is not consumption smoothing, but social comparison, with the model's unique function explicitly capturing the asymmetric disutility from underperforming these peers.

¹⁰At $W_{i,1} = H_i$, the investor neither outperforms nor underperforms the reference portfolio. By convention, no FOMO-driven disutility is applied, ensuring continuity in the rejoice region of the utility function $k_i(H_i) = 0$.

The FOMO-CAPM Utility Adjustment Function

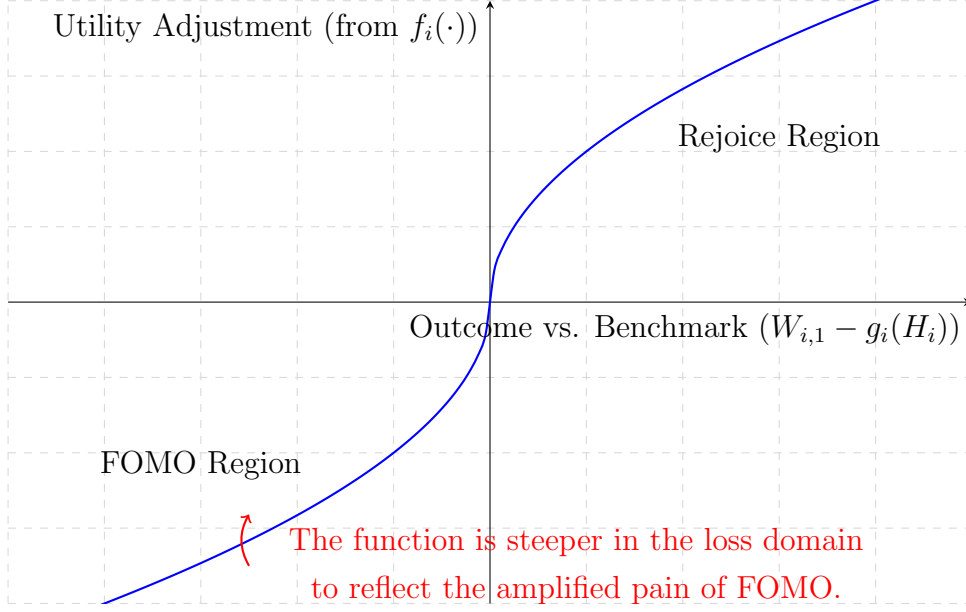


Figure 1: The Concave Utility Adjustment Function $f(\cdot)$

This figure illustrates the globally concave utility function, $f_i(\cdot)$, which captures the emotional adjustments from performance relative to a peer benchmark. The function is concave for both gains (rejoice) and losses (FOMO). Concavity is consistent with standard assumptions of risk aversion and diminishing marginal sensitivity. The key asymmetry, central to our theory, is captured in two ways. First, the $f_i(\cdot)$ function is drawn to be steeper in the loss domain, reflecting that underperformance is felt more intensely than outperformance is enjoyed. Second, the additional emotional disutility from FOMO is formally modeled by the $k_i(H_i)$ term, which effectively increases the magnitude of the loss on the x-axis, leading to a greater overall utility reduction.

Figure 1 provides a visual illustration of the utility function's key components. Function $g_i(H_i)$ reflects how past information shapes investor expectations. $g_i(H_i)$ comprises the reference portfolio H_i and the FOMO sensitivity applied through $k_i(H_i)$. The specifications of the utility functions are dynamic and forward-looking. Moreover, $g_i(H_i)$ provides mathematical flexibility, enabling robustness to the incorporation of various factors and indicators, which may influence investor utility.

We allow individuals to experience both FOMO as well as regret. The introduction of the functions $g(\cdot)$ and $k(\cdot)$ ¹¹ enables the specific identification of FOMO. While $g_i(H_i)$ accounts for both FOMO and regret, $k_i(H_i)$ is introduced to create an asymmetry in $f(\cdot)$ that specifically captures the effect of FOMO alone. The additional disutility of FOMO thus appears in $k_i(H_i)$. As defined in Equation (4), $k_i(\cdot)$ is activated only when $W_{i,1} < H_i$. $k_i(H_i)$ creates an asymmetric disutility that amplifies the emotional cost associated with underperforming the reference portfolio. Investor responses to peer comparisons are

¹¹Since H_i is stochastic, we define $k_i(H_i) = \eta_i(H_i - W_{i,1})^\alpha$ for $W_{i,1} < H_i, 0 < \alpha \leq 1, \eta_i > 0$. This ensures that disutility is convex and increases with underperformance relative to the reference portfolio.

influenced by FOMO, distinguishing our specification from general regret¹².

The term $f_i(W_{i,1} - g_i(H_i))$ captures the emotional responses to differences between the investors' own portfolio and the peer reference portfolio. $f_i(W_{i,1} - g_i(H_i))$ encompasses the effects of regret, rejoice and FOMO. Functions $g(\cdot)$ and $k(\cdot)$ capture the adverse impact on utility when the payoff of the reference portfolio H_i is greater than $W_{i,1}$. To accurately model this negative impact, both functions exhibit convexity¹³, indicating diminishing negative impact as the counterfactual return increases. Furthermore, we assume that the disutility effect of FOMO on an individual's utility is additive to regret. The emotional response to missing out on a superior alternative that has been selected by peers is greater than the regret of simply making a poor choice.

Core to the definition of FOMO is the reference portfolio of each individual investor. The value of the counterfactual H_i to investor i is expressed as:

$$H_i = W_{i,0}(1 + h_i) \quad (5)$$

where h_i represents the rate of return on an individual's counterfactual portfolio. It is the return achieved by peers that drives the comparison, not the wealth achieved by peers. Hence H_i is the value of investing the initial wealth $W_{i,0}$ into the counterfactual portfolio. Our framework does not require any single universal reference point. Instead, both H_i ¹⁴ and the FOMO function $f(\cdot)$ vary across assets.

Using the return on the chosen portfolio, r_{ip} , and the counterfactual return, h_i , the modified utility function defined in Equation (3) can be expressed as:

$$V_i(W_{i,1}) = W_{i,0}(1 + r_{ip}) + f_i(W_{i,0}(1 + r_{ip}) - g_i(W_{i,0}(1 + h_i))) \quad (6)$$

An individual's utility maximizing problem is $\max_{\{w_{i,j}\}} E[V_i(W_{i,1})]$. Because $V_i(\cdot)$ is strictly concave, the first-order condition is necessary and sufficient for a solution:

$$E[(r_j - r_f)(1 + f'_i(W_{i,1} - g_i(H_i)))] = 0 \quad (7)$$

¹²The Regret-CAPM of Qin (2020) appears when $k_i(H_i) = 0$.

¹³ $f(\cdot)$ is a concave function, where $f_i(0) = 0$, $f'_i > 0$ and $f''_i < 0$, while $g(\cdot)$ and $k(\cdot)$ are convex functions, where $g_i(0) = 0$, $g'_i > 0$ and $g''_i > 0$, as well as $k_i(0) = 0$, $k'_i > 0$ and $k''_i > 0$. These properties ensure FOMO-driven disutility increases and accelerates with the reference portfolio's performance.

¹⁴An investor may also consider multiple counterfactuals simultaneously if their information set includes several attractive opportunities. For instance, if investor i observes peers investing in both stocks and real estate, the counterfactual H_i could be constructed as a weighted portfolio of these two asset classes. Our model accommodates such cases by allowing H_i to reflect any combination of benchmarks that an investor perceives as missed opportunities. Furthermore, the model is not restricted to small deviations in portfolio returns. If a particular market or asset experiences extraordinary gains, FOMO may still be triggered by substantial return differentials relative to the investor's own portfolio, reflecting the broad scope of scenarios that can generate regret or fear of missing out. Restriction to equities in our empirical analysis relates only to the holdings of investors, reference portfolios need not contain equities.

We apply Stein's lemma to the first-order condition, similar to the derivation of the CAPM¹⁵. Under the assumption that the requirement of Stein's lemma¹⁶ $E[|f_i''(W_{i,1} - g_i(H_i))|] < 0$, is satisfied, then from Equation (7) and Stein's lemma:

$$-\frac{1 + E\left[f_i'(W_{i,0}(r_{ip} - \frac{g_i(H_i)}{W_{i,0}} - \frac{k_i(H_i)}{W_{i,0}}))\right]}{E\left[f_i''(W_{i,0}(r_{ip} - \frac{g_i(H_i)}{W_{i,0}} - \frac{k_i(H_i)}{W_{i,0}}))\right]}E[r_j - r_f] = W_{i,0}\text{Cov}\left(r_j, r_{ip} - \frac{g_i(H_i)}{W_{i,0}} - \frac{k_i(H_i)}{W_{i,0}}\right) \quad (8)$$

Since each risky asset j has one outstanding share and all shares must be held in equilibrium, the following market-clearing conditions must hold:

$$\sum_{i=1}^I \frac{w_{i,j}W_{i,0}}{P_{j,0}} = 1, j = 1, 2, \dots, N. \quad (9)$$

$$\sum_{i=1}^I W_{i,0}\left(1 - \sum_{j=1}^N w_{ij}\right) = 0 \quad (10)$$

Both the first-order conditions and the market-clearing conditions are satisfied in equilibrium. Summing the first-order condition over i :

$$E[r_j] - r_f = -M_0\left(\sum_{i=1}^I \frac{1 + E\left[f_i'(W_{i,0}(r_{ip} - \frac{g_i(H_i)}{W_{i,0}} - \frac{k_i(H_i)}{W_{i,0}}))\right]}{E\left[f_i''(W_{i,0}(r_{ip} - \frac{g_i(H_i)}{W_{i,0}} - \frac{k_i(H_i)}{W_{i,0}}))\right]}\right)^{-1}\text{cov}(r_j, r_m - h_m) \quad (11)$$

where $M_0 \equiv \sum_{i=1}^I W_{i,0}$ denotes the total initial wealth at date $t = 0$, and

$$h_m = \sum_{i=1}^I \frac{W_{i,0}}{M_0} g_i(H_i) \quad (12)$$

$$r_m = \sum_{i=1}^I \frac{W_{i,0}}{M_0} r_{ip} \quad (13)$$

Here r_m denotes the average investment return of individual investors. Given that market-clearing conditions hold in equilibrium, r_m also represents the return on the market portfolio of risky assets. Similarly, let h_m denote the market-wide average counterfactual returns. The returns on the average counterfactual can be decomposed into two parts:

$$h_m = h_m^{(h)} + h_m^{(k)}, \text{ where} \quad (14)$$

¹⁵The application of Stein's Lemma here relies on the standard assumption of jointly normally distributed asset returns, which is a common theoretical assumption for deriving CAPM-like asset pricing models. While financial returns in practice can exhibit deviations from normality, such as fat tails, this assumption allows for a tractable derivation of a covariance-based pricing kernel, following the convention in the asset pricing literature (for example see Cochrane, 2009)

¹⁶For Stein's lemma and its application to asset pricing, see Cochrane (2009) and/or Munk (2013)

$$h_m^{(h)} = \sum_{i=1}^I \frac{W_{i,0}}{M_0} H_i \text{ and } h_m^{(k)} = \sum_{i:W_{i,1} < H_i}^I \frac{W_{i,0}}{M_0} k_i(H_i) \quad (15)$$

Equations (14) and (15) clarify that the market-wide average counterfactual h_m is composed of the baseline counterfactual H_i through $h_m^{(h)}$ and the extra disutility adjustment $k_i(H_i)$ through $h_m^{(k)}$.

The difference $r_m - h_m \equiv r_m - [h_m^{(h)} + h_m^{(k)}]$ captures the aggregate-level disparity between actual and counterfactual returns. Equation (11) establishes that an asset's excess return $E[r_j] - r_f$ is determined by covariance $\text{cov}(r_j, r_m - h_m)$. Consequently, a single-beta pricing formula can be derived.

Proposition 1 *If $\text{var}(r_m - h_m) > 0$, then*

$$E[r_j] - r_f = \beta_j^{FOMO} (E[r_m] - E[h_m]) \quad (16)$$

holds for all j , where

$$\beta_j^{FOMO} \equiv \frac{\text{cov}(r_j - r_f, r_m - [h_m^{(h)} + h_m^{(k)}])}{\text{var}(r_m - [h_m^{(h)} + h_m^{(k)}])} \equiv \frac{\text{cov}(r_j - r_f, r_m - h_m)}{\text{var}(r_m - h_m)} \quad (17)$$

Moreover,

$$E[r_m] - E[h_m] > 0. \quad (18)$$

A proof of Proposition 1 is provided in the Internet Appendix.

β_j^{FOMO} is defined with respect to the gap between the market average return and the market-wide average counterfactual. When $r_m - h_m < 0$, investors feel FOMO, whereas when $r_m - h_m > 0$, investors experience rejoice. Since β_j^{FOMO} captures the sensitivity of asset j to market-wide emotional fluctuations, we refer to it as "FOMO beta". To ensure that β_j^{FOMO} is well defined, the condition $\text{var}(r_m - h_m) > 0$ must hold.

Equation (16) establishes that the excess return of a risky asset, $E[r_j] - r_f$, is proportional to its FOMO beta, β_j^{FOMO} . Additionally, Equation (18) demonstrates that the market as a whole provides a positive "FOMO premium" to investors. This result is intuitive because, for FOMO-averse investors to be willing to hold all outstanding shares of risky assets, the market must compensate them with a positive FOMO premium. Given that the pricing formula incorporates FOMO, but otherwise mirrors the structure of the CAPM, we refer to our framework as the FOMO-CAPM.

The defining characteristic of the FOMO-CAPM is that investors' counterfactuals H_i , representing unchosen investment opportunities, influence asset prices in equilibrium. The influence of H_i is modelled by incorporating the $g_i(H_i)$ function into the utility function V_i . Inclusion of H_i affects the market-wide average counterfactual h_m and the equilibrium pricing relationship. Unlike the standard CAPM, which accounts only for financial returns, the FOMO-CAPM incorporates the emotional disutility arising from

FOMO. The presence of FOMO implies that investors require a higher expected return to compensate for the emotional costs associated with FOMO. The FOMO-specific beta β_j^{FOMO} , captures how sensitive an asset's return is to fluctuations in the investor's FOMO-adjusted portfolio return, $r_m - h_m$.

Corollary 1 *Assume investor i 's benchmark return, h_i , is given by a convex combination of the riskless asset, the market portfolio and an alternative asset with return $\hat{h}$:*

$$h_i = (1 - \phi_{im} - \phi_{ih})r_f + \phi_{im}r_m + \phi_{ih}\hat{h}, \quad (19)$$

ϕ_{im} and ϕ_{ih} are non-negative weights with $\phi_{im} + \phi_{ih} \leq 1$. Further, $\text{cov}(\hat{h}, r_m) = 0$, $\text{var}\hat{h} > 0$, and $i = 1, 2, \dots, I$. The following results hold:

- (i) *If the aggregate weight on the alternative benchmark is zero, that is $\sum_{i=1}^I \frac{W_{i,0}}{M_0} \phi_{ih} = 0$, and the entire weight on the benchmark is given by the market return, so that $\sum_{i=1}^I \frac{W_{i,0}}{M_0} \phi_{im} = 1$, then at the aggregate level, the counterfactual equals the market return. Investors' FOMO effects cancel out. Equilibrium requires:*

$$E[r_j] = r_f \text{ for all assets } i. \quad (20)$$

- (ii) *If $\sum_{i=1}^I \frac{W_{i,0}}{M_0} \phi_{ih} = 0$, and the aggregate weight on the market component satisfies $\sum_{i=1}^I \frac{W_{i,0}}{M_0} \phi_{im} \neq 1$, then the counterfactual differs from the market return. In this situation, the FOMO-pricing formula reduces to*

$$E[r_j] - r_f = \beta_{jm}^{FOMO}(E[r_m] - r_f), \quad (21)$$

where $\beta_{jm}^{FOMO} = \frac{\text{cov}(r_j, r_m)}{\text{var}(r_m)}$. Asset prices are determined solely by their covariance with the market return as in CAPM.

- (iii) *If $\sum_{i=1}^I \frac{W_{i,0}}{M_0} \phi_{ih} > 0$, so that the counterfactual includes a non-zero component $\hat{h}$, then the general FOMO-CAPM pricing formula applies:*

$$E[r_j] - r_f = \beta_j^{FOMO}(E[r_m] - E[h_m]). \quad (22)$$

Moreover, under this specification, assets with greater exposure to the alternative asset, measured by a positive covariance with $\hat{h}$, tend to exhibit lower expected excess returns. If an asset's return is more strongly correlated with $\hat{h}$, it is less likely to induce FOMO. Further, the associated emotional disutility induced from holding an asset is reduced for assets which have returns correlated with $\hat{h}$. As a result, the asset's price increases, leading to a lower expected excess return.

Statement (i) considers a theoretical corner case where the aggregate counterfactual portfolio of all investors is the market portfolio itself ($h_m = r_m$). In this scenario, the

source of priced risk in the FOMO-CAPM, which is the relative performance of the market against the benchmark $r_m - h_m$, becomes zero by definition. Because the variance of this pricing factor is zero, there is no FOMO-related risk premium. The model, therefore, implies a trivial equilibrium where the expected excess return on all risky assets must be zero, meaning $E[r_j] = r_f$. The corner case in statement (i) highlights that the FOMO-driven comparison to a benchmark is the essential source of the FOMO risk premium.

Statement (ii) examines a case where, despite the formal resemblance of the pricing formula to the standard CAPM, the behavioral interpretation differs. When there is no alternative counterfactual, $\phi_{ih} = 0$, FOMO effects are driven solely by market performance.

Statement (iii) underscores the key innovation of the FOMO-CAPM. By incorporating a nonzero $\hat{h}$ component, the model allows for additional behavioral adjustments. The term $E[r_m] - E[h_m]$ represents a "FOMO risk premium", capturing the aggregate gap between actual and counterfactual returns. Moreover, if an asset exhibits a high covariance with $\hat{h}$, investors experience less FOMO when holding that asset, thereby reducing its expected excess return.

The formulations in Corollary 1 are intended to capture the intuitive notion that investor emotions, specifically, FOMO driven by superior peer performance, can be integrated into the asset pricing framework. Notably, because $\hat{h}$ is independent of the market return, the influence of $\hat{h}$ on asset pricing is not accounted for in the standard CAPM. In this sense, statement (iii) highlights a fundamental distinction between the CAPM and the FOMO-CAPM.

Building on the implications of Corollary 1, Proposition 2 illustrates the role of anticipated FOMO when the expected FOMO risk premium is negative. Proposition 2 highlights how emotional considerations influence investment decisions, even when aligning with the peer benchmark results in a lower expected financial payoff.

Proposition 2 *If $E[r_m] - E[h_m] < 0$, then in equilibrium*

- (i) *Despite a negative ex-post FOMO risk premium, an investor influenced by FOMO will allocate resources to a portfolio that aligns with the anticipated outcomes of their peer group. The ex-ante decision is driven by a preemptive hedge against potential emotional regret.*
- (ii) *The negative FOMO risk premium reflects the equilibrium price of emotional alignment cost associated with mimicking the peer group's expected performance. This reflects a prioritization of emotional considerations over maximization of the expected financial payoff. The relationship is captured by $E[r_j] - r_f = \beta_j^{FOMO}(E[r_m] - E[h_m])$, where $\beta_j^{FOMO} > 0$ indicates that assets with stronger peer alignment yield lower expected excess returns.*

- (iii) *Ex-post underperformance, where $r_m < h_m$, amplifies future FOMO, thereby reinforcing a feedback loop that biases subsequent investment decisions toward alignment with the peer group.*

A proof of Proposition 2 is provided in the Internet Appendix. Proposition 2 follows from the assumption that FOMO operates as an anticipatory bias affecting investors' decisions ex-ante, rather than being solely driven by ex-post payoff comparisons. An investor's utility incorporates an emotional component that accounts for potential future regret arising from underperforming relative to their peer group, represented by the FOMO-specific term $f(\cdot)$ in Equation (3). Therefore, a negative value of $E[r_m] - E[h_m]$ does not invalidate the investor's initial choice, as the decision reflects a preemptive emotional hedge against the regret of underperforming compared to their peers.

3 Properties of the FOMO-CAPM

The FOMO-CAPM integrates investors' emotional responses to underperformance relative to a peer benchmark. An extension of the original CAPM of Sharpe (1964), Lintner (1965), Mossin (1966), and Treynor (1961) is provided. The CAPM provides a foundational framework for understanding the relationship between systematic risk and expected returns. For all investors, the reference point in the CAPM is the return on the market. The CAPM is built on the assumption that all investors have homogeneous expectations. Homogenous expectations lead to identical probability distributions for future returns and universal agreement on the distribution of asset returns between t_0 and t_1 . However, it does not follow that all investors appraise assets against the same market benchmark. The FOMO-CAPM allows individual investors to have different peer benchmarks. Consequently, expectations about the distribution of asset returns are not homogeneous.

The CAPM is expressed as:

$$E[r_i] = r_f + \beta_i^{market}[E[r_m] - r_f], \text{ where } \beta_i^{market} = \frac{\text{cov}(r_i, r_m)}{\text{var}(r_m)} \quad (23)$$

$E[r_i]$ represents the expected return on asset i and β_i^{market} is the market beta of asset i . β_i^{market} measures the sensitivity of the asset's return to variations in market returns

Remark 1 *The FOMO-CAPM generalizes traditional asset pricing by integrating behavioral dynamics, with the standard CAPM emerging as a special case. Specifically, when the influence of behavioral parameters such as FOMO sensitivity diminishes and is assumed to be absent, the FOMO-CAPM framework converges to the traditional CAPM.*

The explanation for convergence between β_j^{FOMO} and β_j^{CAPM} begins with the definition of the FOMO-beta itself: $\beta_j^{FOMO} = \frac{\text{cov}(r_j - r_f, r_m - h_m)}{\text{var}(r_m - h_m)}$, where $h_m = h_m^{(h)} + h_m^{(k)}$. The

FOMO beta captures the sensitivity of an asset's excess return to the market's performance relative to a counterfactual benchmark, h_m . The benchmark is composed of both a baseline peer portfolio, $h_m^{(h)}$, and a conditional, behavioral component, $h_m^{(k)}$. A key feature of the FOMO-CAPM is that this extra disutility adjustment, $h_m^{(k)}$, is only triggered when investors underperform their benchmark. As the importance of behavioral component diminishes $h_m^{(k)} \rightarrow 0$, the baseline peer portfolio dominates, $h_m \rightarrow h_m^h$. Further, the aggregate benchmark approaches the risk-free rate, $E[h_m] \rightarrow r_f$. As the extent of FOMO falls, the FOMO-beta and FOMO premium necessarily converge to their standard CAPM counterparts.¹⁷ The limiting case is formalized as follows:

$$\lim_{\beta_j^{FOMO} \rightarrow \beta_i^{CAPM}, \lambda_i^{FOMO} \rightarrow \lambda_m} E[r_j - r_f] = \beta_j^{CAPM} \lambda_m \quad (24)$$

Equation (24) demonstrates that the FOMO-CAPM framework collapses to the standard CAPM when its specific behavioral components are no longer present.

Remark 2 *The β -parameters of the CAPM and FOMO-CAPM are fundamentally different in their construction and interpretation. While the standard CAPM-beta measures an asset's sensitivity to the overall market return, the FOMO-beta measures sensitivity relative to a personalized, peer-driven benchmark. The FOMO-beta explicitly captures the influence of social and emotional factors on risk perception.*

The CAPM-beta β_i^{market} , measures an asset's sensitivity to market returns under the core assumptions of homogeneous investor expectations. In contrast, the FOMO-beta, β_j^{FOMO} , captures heterogeneity across investors by measuring an asset's sensitivity to the gap between market returns and a peer-driven counterfactual portfolio, $r_m - h_m$. Because the FOMO-beta incorporates an asset's exposure to this distinct emotional risk, the expected return predicted by the FOMO-CAPM can be higher, or lower, than that predicted by the standard CAPM.

The difference between β_i^{market} and β_i^{FOMO} depends on the interplay between two components: the asset's specific FOMO beta β_j^{FOMO} and the aggregate FOMO risk premium $\lambda^{FOMO} = E[r_m] - E[h_m]$. An asset with a high β_j^{FOMO} is highly sensitive to peer-benchmark deviations. If the FOMO risk premium is large and positive, the FOMO-CAPM predicts a substantially higher required return for this asset compared to the CAPM. Conversely, an asset that hedges against FOMO risk (i.e., has a low or negative β_j^{FOMO}) would command a lower required return under our model, irrespective of its traditional market beta.

¹⁷Convergence relies on two related assumptions. First, as the behavioral component vanishes, the FOMO premium, $\lambda_i^{FOMO} = E[r_m] - E[h_m]$, naturally converges to the market risk premium, $\lambda_m = E[r_m] - r_f$. Second, the FOMO-adjusted return, $r_m - h_m$, becomes perfectly correlated with the market excess return, $r_m - r_f$, as investors' specific benchmarks align with the general market's risk-free rate.

Remark 3 *The risk-return relationship in the FOMO-CAPM includes behavioral adjustments that are absent from the traditional CAPM. These behavioral adjustments lead to a less steep slope of the risk-return trade-off, which has direct implications for the required premium on an asset for a given level of beta.*

The FOMO-CAPM generalizes the traditional CAPM by altering the definition of the market risk premium. In the standard CAPM, the premium is the expected return of the market over the risk-free rate, $E[r_m] - r_f$. The FOMO-CAPM introduces a peer-comparison benchmark, which results in the relevant market risk premium becoming the expected return of the market over the expected return of the aggregate counterfactual portfolio, $E[r_m] - E[h_m]$. The FOMO premium is the compensation investors demand in equilibrium for bearing the risk of underperforming their benchmark. The specific, asymmetric disutility associated with underperformance is captured by the $k_i(H_i)$ component of the utility function. This is the behavioral mechanism that drives the wedge between the risk-free rate and the aggregate benchmark in the pricing formula.

A comparison of the Security Market Line (SML) slopes provides the formal proof for Remark 3. The slope of the SML is the market risk premium. As established, the FOMO risk premium is $\lambda_i^{FOMO} = E[r_m] - E[h_m]$ while the standard CAPM risk premium is $\lambda_m = E[r_m] - r_f$. Assuming the aggregate counterfactual portfolio, h_m , is composed of risky assets, its expected return should be greater than the risk-free rate, $E[h_m] > r_f$. Hence:

$$E[r_m] - E[h_m] < E[r_m] - r_f \quad (25)$$

which simplifies to:

$$\lambda_i^{FOMO} < \lambda_m \quad (26)$$

Equation (26) provides the proof that the FOMO-SML has a less steep slope than the traditional CAPM's SML. The intuition is that a portion of the market's total excess return is now required to compensate for the risk of underperforming the peer benchmark, h_m , leaving a smaller premium for systematic market risk alone.

Theoretical Security Market Lines (SML)

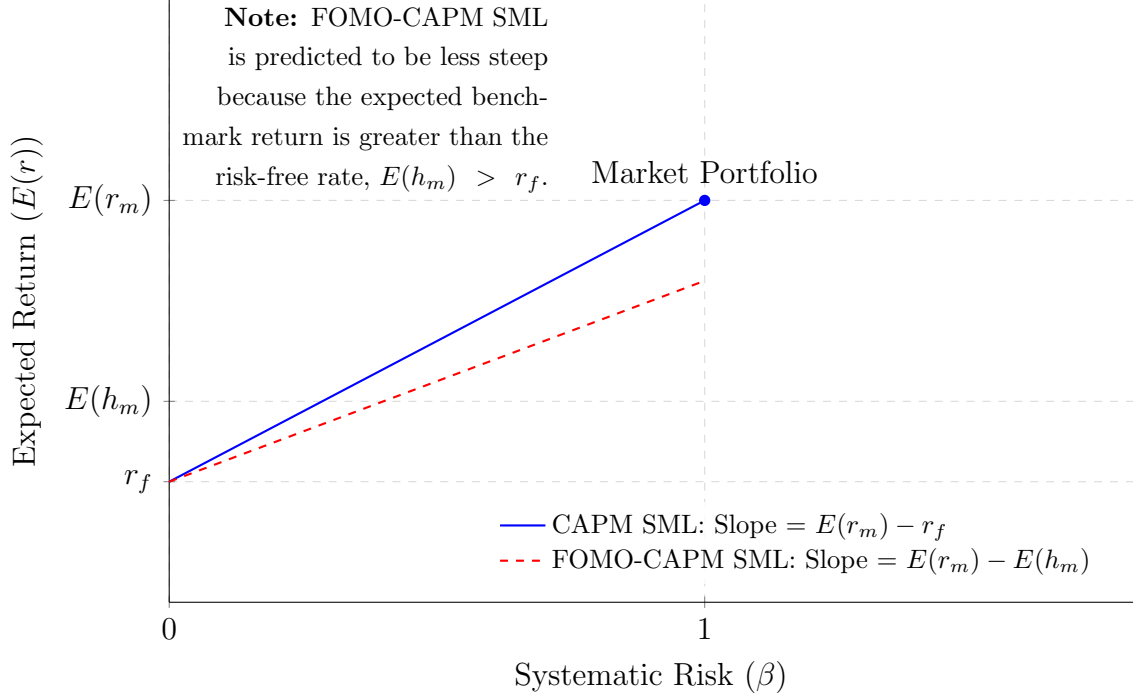


Figure 2: Theoretical Prediction for the FOMO-CAPM Security Market Line

This figure illustrates the theoretical relationship between the standard CAPM and the FOMO-CAPM as derived in Section 3. Both models predict a positive risk-return trade-off originating at the risk-free rate (r_f). However, because the FOMO-CAPM's pricing kernel includes the peer-group benchmark return (h_m), which is assumed to have a higher expected return than r_f , the resulting slope of its SML is flatter. This implies a smaller risk premium for systematic market risk, as a portion of the return is now required to compensate for the distinct behavioral risk of underperforming the peer benchmark.

Remarks 1–3 collectively demonstrate how the FOMO-CAPM generalizes the CAPM by explicitly incorporating behavioral dynamics. Specifically, investors' emotional sensitivity to peer-relative performance differentiates the FOMO-CAPM from the CAPM. While Remark 1 shows that the CAPM emerges naturally as a special limiting case when FOMO effects diminish, Remarks 2 and 3 emphasize the fundamental differences arising from the counterfactual benchmark and emotional risk premium inherent in FOMO-beta. Thus, the FOMO-CAPM captures variations in investor preferences and peer-driven emotional factors, yet aligns precisely with CAPM when investors do not place weight on the performance of peers.

4 Empirical Analysis

To provide empirical support for the FOMO-CAPM developed within this paper, we undertake an evaluation of asymmetric reactions to reference portfolios in US equity

markets. Our empirical analysis uses daily stock return data from the CRSP database for the period January 1, 1980, to December 31, 2024. Firm-specific characteristics are obtained from Compustat, while risk-free rate and market excess returns are drawn from the website of Ken French¹⁸.

We consider the existence of FOMO relative to industry-specific reference portfolios¹⁹. For an investor holding stocks in firm j , the contemporaneous excess return h_j on the Fama–French 38 industry portfolio containing firm j serves as an empirically tractable proxy for the return on its unchosen reference portfolio H_i . We demonstrate the robustness of our findings using the NASDAQ Composite Index, and an aggregation at the 12 Fama-French industry level, firms in the same size decile, firms in the same book-to-market decile, and finally firms with headquarters in the same state as alternative benchmarks²⁰.

To operationalize the model, and test the core implication that sensitivity to FOMO-inducing states commands a risk premium. We estimate three flavors of beta. First, as a baseline, we calculate the standard CAPM beta β^{CAPM} . Second, we estimate an unconditional sensitivity of a stock’s excess return r_j to $r_j - h_j$. We term this the regret beta, β^R as it reflects the Regret CAPM of Qin (2020)²¹. The regret beta captures the

¹⁸Data can be downloaded from the website of Ken French at https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

¹⁹Whilst the prevalence of social network data may ease the identification of reference portfolios, such data would be restricted to the subset of investors who use such platforms. Likewise, a survey approach would enable to identification of relevant reference portfolios for respondents. Similar challenges of representation of the full investment universe would be faced. Finally, there are questions on the extent to which individual investors behave differently to retail investors when constructing peer groups. Choosing industry reflects the likelihood that the research function of the retail investor, or the awareness of the individual investors, becomes specialized around stocks similar to their holdings. News on industries affects both the stock held and the industry peers. Industry peers are market competitors with the firms held. The choice of 38 industries reflects challenges of keeping on top of updates on the large number of firms that would be present in broader industry classifications.

²⁰The NASDAQ Composite Index lists technology stocks and is used to capture the dynamics of FOMO when the peers are high-growth ‘story’ stocks. Results using the NASDAQ Composite Index are highly consistent with our primary findings and confirm that the FOMO premium is a pervasive market feature. NASDAQ returns are obtained from the CRSP database. Headquarters locations are taken from Compustat. All other reference portfolios are from the website of Ken French

²¹Our empirical regret beta, β^R , is estimated using the firm-specific performance gap, $r_j - h_j$, and captures the unconditional sensitivity of a stock’s excess return to this gap. While β^R reflects the general disutility from benchmark underperformance, conceptually linking β^R to regret aversion as discussed in models like Qin (2020), it is important to note a distinction. Qin (2020) theoretical Regret-CAPM derives a ‘regret beta’, β_{jg} based on an asset’s sensitivity to an aggregate market-wide performance gap, $r_m - r_m$, where h_m represents the market-wide average of investors’ unobservable counterfactuals. Due to the empirical infeasibility of measuring this aggregate h_m , our β^R uses a firm-specific approach. Our model is firm-specific in that all investors in firm j compare themselves to the same benchmark h_j . β^R thus represents regret in the case where the reference portfolio for regret is the industry portfolio.

average sensitivity to the performance gap, without pre-conditioning on the direction of this gap. FOMO assumes that investors feel additional disutility when the reference portfolio outperforms their own portfolio. To directly test the asymmetric nature of FOMO, the amplified emotional disutility specifically from underperforming peers, we decompose β^R into conditional FOMO betas. The decomposition applied is analogous to that applied in Ang et al. (2006a) for β^{CAPM} . The final two betas which are computed are, β^{FOMO-} for periods of underperformance, when $r_j < h_j$ and β^{FOMO+} for periods of outperformance, when $r_j \geq h_j$ holds. Adopting a multi-beta approach allows us to first examine the pricing of general benchmark-relative performance via β^R , as well as isolating whether the asymmetric downside sensitivity β^{FOMO-} commands an additional, distinct risk premium. The risk premium for β^{FOMO-} is attributable to the unique psychological impact of FOMO.

The rationale for adopting a firm-level approach is that an individual investor's actual experience and psychological response of FOMO concerning a specific stock j is most directly triggered by that stock's performance r_j relative to stock j 's own most salient benchmark h_j . All investors in stock j have the same h_j . We use the contemporaneous return of the stock's Fama-French 38 industry portfolio as a proxy for h_j , reflecting a common peer group comparison. Thus, the condition $r_j - h_j < 0$, where stock j underperforms its industry, serves as our empirical indicator for a state where an investor holding stock j is likely to experience FOMO. When $r_j < h_j$, we have the activation of the additional disutility component $k_i(\cdot)$. Conversely, when $r_j \geq h_j$, the specific FOMO state is inactive for stock j . The firm-level state activation allows us to capture the heterogeneous impact of FOMO across different assets. Further, the firm-specific approach to defining FOMO-activation means that we can still empirically test for the presence and pricing of $k_i(\cdot)$ effects by segmenting betas based on these conditions. FOMO is identifiable if $k_i(\cdot)$ itself is not directly estimated. By estimating firm-level conditional betas, we can then investigate whether sensitivity during these empirically defined FOMO states is priced in the cross-section of stock returns. Our empirical analysis provides a test of the broader FOMO-CAPM theory.

We define two conditional betas based on the firm-specific performance gap $r_j - h_j$. The positive FOMO beta β^{FOMO+} measures the sensitivity of a stock's excess return $r_j - r_f$ to its gap, conditional on the stock outperforming its benchmark $r_j > h_j$. β^{FOMO+} is defined as:

$$\beta_j^{FOMO+} = \frac{\text{cov}(r_j - r_f, r_j - h_j \mid r_j - h_j > 0)}{\text{var}(r_j - h_j \mid r_j - h_j > 0)}. \quad (27)$$

Conversely, the negative FOMO beta, β^{FOMO-} is defined as:

$$\beta_j^{FOMO-} = \frac{\text{cov}(r_j - r_f, r_j - h_j \mid r_j - h_j < 0)}{\text{var}(r_j - h_j \mid r_j - h_j < 0)}. \quad (28)$$

β^{FOMO-} measures the sensitivity of the stock's excess return to the performance gap,

conditional on the stock underperforming its benchmark $r_j < h_j$.

Based on the decomposition of β_j^R into β_j^{FOMO+} and β_j^{FOMO-} , we hypothesize that the negative FOMO betas, estimated during periods when portfolio returns underperform the counterfactual benchmark, will command a higher risk premium compared to the positive FOMO betas. $\beta_j^{FOMO-} > \beta_j^{FOMO+}$ empirically tests investor sensitivity to relative underperformance. Although our empirical approach resembles that of Ang et al. (2006a), the interpretation differs significantly²². The FOMO model explicitly incorporates investor-specific social comparisons, defining an exogenous threshold H_i based on peer or market performance. When investors underperform relative to their counterfactuals, the latent behavioral penalty $k_i(\cdot)$ activates. Thus, our findings emphasize that investors' sensitivity to underperforming relative to their peers produces heightened downside sensitivity. Our specification has a behavioral interpretation which distinguishes FOMO from the rational disappointment aversion utility framework used by Ang et al. (2006a).

Our empirical implementation follows the spirit of Ang et al. (2006a), sorting stocks based on their realized betas, including β^R , β^{FOMO-} and β^{FOMO+} . Realized betas are computed within a defined period of 12 months. We then analyze the average returns of the resulting portfolios over that same period. The realized beta approach is also followed by Bollerslev et al. (2022). Levi and Welch (2020) argue that the ex ante beta is a better proxy for investor beliefs at the point of portfolio formation. To allay concerns about the realized betas, Ang et al. (2006a) test the ability of past downside betas to predict future values. We demonstrate that the FOMO realized betas, β^{FOMO-} and β^{FOMO+} , are both highly persistent. An annual horizon is chosen for two main reasons. First, the annual horizon provides sufficient daily observations within the evaluation window to reliably estimate our conditional betas. A shorter window, such as a single month, might yield too few such observations with either $r_j < h_j$ or $r_j \geq h_j$. Use of a 12-month horizon further helps mitigate noise associated with estimation error in pre-formation betas. The conditional FOMO betas, β^{FOMO-} and β^{FOMO+} are estimated as defined in Equations (27) and (28), using daily asset returns and daily returns on the reference portfolio. The regret beta β^R , and CAPM beta, β^{CAPM} , are similarly estimated by regressing the stock's excess return on $r_j - h_j$ using all available daily observations within the estimation window. Our approach ensures that each beta estimate reflects the stock's sensitivity over the precise 12-month horizon for which returns are contemporaneously evaluated. The 12-month realized beta estimates are then used directly in our subsequent portfolio sorts and Fama-MacBeth regressions.

²²Ang et al. (2006a) apply Gul (1991) rational disappointment aversion framework. Gul's (1991) disappointment aversion utility is defined as $U(\mu_W) = \frac{1}{K} \left(\int_{-\infty}^{\mu_W} U(W) dF(W) + A \int_{\mu_W}^{\infty} U(W) dF(W) \right)$, where $K = \Pr(W \leq \mu_W) + A \Pr(W > \mu_W)$ and $0 < A \leq 1$. The threshold μ_W is the certainty equivalent, dividing outcomes into disappointing ($W \leq \mu_W$) and elating ($W > \mu_W$) states, with A discounting utility from elating states, thus making investors more sensitive to losses relative to gains.

4.1 Univariate Portfolio Sorts

Our analysis uses equal-weighted portfolios and regressions. Equal weighting is deliberately chosen as prior research suggests that many behavioral effects, asymmetries, and non-linearities are most pronounced across the broad cross-section of stocks, rather than being concentrated in the largest firms (e.g. Fama and French 1992; Harvey and Siddique 2000; Hirshleifer 2001). By giving equal importance to every firm, equal-weighted portfolios are better suited for detecting a new behavioral phenomenon like the FOMO risk premium. Further, equal-weighting prevents the results from being dominated by a few mega-cap stocks, where such behavioral effects may be less pronounced²³. A similar rationale is given by Ang et al. (2006a) for their use of equal weighting.

Table 1 presents the time-series average results for univariate portfolio sorts formed by sorting stocks into five quintiles based on their realized values of β^{CAPM} , β^R , β^{FOMO-} , β^{FOMO+} , or relative β^{FOMO-} (specifically, $\beta^{FOMO-} - \beta^{CAPM}$), calculated over the same 12-month period. Table 1 reports the average realized 12-month excess return for each equal-weighted quintile portfolio, alongside the average post-ranking realized β^{CAPM} , β^R , β^{FOMO-} and β^{FOMO+} for stocks within each quintile. Our design allows for a direct examination of the contemporaneous relationship between risk loadings and returns. To control for the serial correlation created by the rolling regression estimation of the FOMO betas, t -statistics for the High-Low return spreads are computed using Newey and West (1987) standard errors with 12 lags.

As a baseline, Panel A of Table 1 presents results for portfolios sorted by the standard realized CAPM beta β^{CAPM} . Consistent with foundational asset pricing tests (e.g., Black, Jensen, and Scholes 1972), we observe a clear positive and monotonic relationship between realized β^{CAPM} and contemporaneous average excess returns. Specifically, stocks in Quintile 5 (high β^{CAPM}) exhibit an average excess return of 10.72%, while stocks in Quintile 1 (low β^{CAPM}) show an average excess return of 2.56%. The resulting High-Low spread is 8.16% and is statistically significant ($t = 2.48$). Panel A establishes the conventional market risk-return trade-off within our sample and serves as a benchmark. The characteristics columns further show that, as anticipated, higher β^{CAPM} quintiles are also associated with higher average realised regret beta β^R , negative FOMO beta

²³In the robustness checks, we show that when portfolios are value-weighted, the premium for β^{FOMO-} attenuates considerably and becomes statistically insignificant. Rather than a weakness, this result strongly supports our rationale for using an equal-weighted approach. Additionally, the loss of statistical significance for the β^{FOMO-} premium provides clear evidence that the FOMO risk premium is a genuine cross-sectional phenomenon that is most pronounced among the smaller and mid-cap stocks that are de-emphasized in value-weighted schemes. Loss of significance in the value-weighted setting is a common feature of many behaviorally-driven factors and reinforces the choice of equal-weighting as the appropriate primary lens for our analysis (For example, see Fama and French, 1992; Hirshleifer, 2001; Barber and Odean, 2008).

Table 1: Returns of Portfolios Sorted by Realized Factor Loadings

Panel A: Sort on β^{CAPM}						Panel B: Sort on β^R (Regret Beta)					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	2.56%	0.21	0.80	0.83	0.82	1 (Low)	-3.71%	0.54	0.63	0.69	0.62
2	7.22%	0.67	0.89	0.90	0.91	2	4.55%	0.62	0.87	0.87	0.90
3	8.07%	0.89	0.93	0.94	0.95	3	8.81%	0.76	0.96	0.96	0.99
4	9.07%	1.13	0.97	0.97	0.98	4	12.63%	1.04	1.02	1.03	1.04
5 (High)	10.72%	1.65	0.99	0.99	0.99	5 (High)	16.29%	1.37	1.13	1.14	1.14
High-Low	8.16%					High-Low	20.00%				
t -stat	[2.48]					t -stat	[8.77]				
Panel C: Sort on $\beta^{\text{FOMO}-}$						Panel D: Sort on $\beta^{\text{FOMO}+}$					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	-3.07%	0.63	0.68	0.59	0.68	1 (Low)	-3.10%	0.61	0.69	0.77	0.59
2	2.08%	0.65	0.86	0.86	0.89	2	9.69%	0.67	0.89	0.90	0.92
3	6.47%	0.72	0.93	0.96	0.94	3	11.85%	0.78	0.95	0.94	1.00
4	10.83%	0.92	0.99	1.04	0.99	4	9.68%	0.97	1.00	0.98	1.06
5 (High)	18.38%	1.18	1.08	1.17	1.07	5 (High)	6.80%	1.13	1.08	1.06	1.18
High-Low	21.44%					High-Low	9.90%				
t -stat	[11.01]					t -stat	[6.89]				
Panel E: Sort on Rel. $\beta^{\text{FOMO}-}$ vs β^{CAPM}											
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$						
1 (Low)	7.86%	1.59	0.91	0.85	0.89						
2	8.67%	1.09	0.92	0.90	0.93						
3	8.38%	0.88	0.91	0.92	0.93						
4	7.83%	0.67	0.89	0.92	0.91						
5 (High)	4.09%	0.28	0.88	0.94	0.90						
High-Low	-3.77%										
t -stat	[-1.20]										

This table presents average 12-month realized excess returns and post-ranking realized betas for equal-weighted quintile portfolios. For each 12-month period from t to $t + 12$ (evaluated monthly using overlapping windows), stocks are sorted into five quintiles based on one of five realized beta measures calculated over that same period using daily data: standard CAPM Beta (β^{CAPM}), Regret Beta (β^R), negative FOMO Beta ($\beta^{\text{FOMO}-}$), positive FOMO Beta ($\beta^{\text{FOMO}+}$), or relative negative FOMO Beta ($\beta^{\text{FOMO}-} - \beta^{\text{CAPM}}$). β^{CAPM} is estimated using the stock's excess return and the market excess return $r_m - r_f$. β^R is estimated by regressing the stock's excess return $r_j - r_f$ on its performance gap relative to its industry benchmark $r_j - h_j$ unconditionally. $\beta^{\text{FOMO}-}$ and $\beta^{\text{FOMO}+}$ capture the sensitivity of the stock's excess return $r_j - r_f$ to this same performance gap $r_j - h_j$, where $\beta^{\text{FOMO}-}$ is estimated during periods when the stock underperforms its industry benchmark ($r_j - h_j < 0$) and $\beta^{\text{FOMO}+}$ during periods where it outperforms ($r_j - h_j > 0$). The industry benchmark h_j is the excess return of the corresponding Fama-French 38 industry portfolio. The column labelled "Return" reports the average realised 12-month excess return for each quintile portfolio. The columns labelled " β^{CAPM} ", " β^R ", " $\beta^{\text{FOMO}-}$ " and " $\beta^{\text{FOMO}+}$ " report the time-series average of the equal-weighted post-ranking realized betas for stocks within each quintile, computed contemporaneously over the same 12-month period. Breakpoints for quintile formation are based on NYSE stocks. The row labelled "High-Low" reports the difference in average returns between Portfolio 5 and Portfolio 1. t -statistics for the High-Low difference are computed using Newey and West (1987) heteroskedasticity and autocorrelation consistent standard errors with 12 lags. The sample period for analysis is January 1980 to December 2024.

β^{FOMO-} and positive FOMO beta β^{FOMO+} , indicating a natural co-movement between these various risk exposures.

Panel B of Table 1 examines portfolios sorted by our unconditional regret beta β^R . β^R measures a stock's average sensitivity to its excess return to its performance gap relative to its industry benchmark $r_j - h_j$. β^R does not condition on the sign of $r_j - h_j$. A strong positive monotonic relationship between β^R and contemporaneous excess returns is revealed. Stocks in Quintile 5 (highest β^R) earn an average annual excess return of 16.29%, substantially outperforming Quintile 1 (lowest β^R), which earns an average excess return of -3.71%. This results in an economically large and statistically significant high-low spread of 20.00% per annum ($t = 8.77$). The significant high-low spread provides initial evidence that a significant premium is associated with unconditional sensitivity to the peer-performance gap. Similar to Panel A, the characteristics columns indicate that higher β^R quintiles are also associated with higher average β^{CAPM} , β^{FOMO-} and β^{FOMO+} .

Panel C of Table 1 presents a central test for our FOMO-CAPM by sorting on the realized negative FOMO beta, β^{FOMO-} . Our theory posits that investors, due to an asymmetric aversion to missing out, demand a premium for holding assets highly sensitive to underperforming their peer benchmark. Investors demand a premium whenever $r_j < h_j$. Table 1 provides strong support, stocks in Quintile 5 (highest β^{FOMO-}) earn an average annual excess return of 18.38%, while Quintile 1 stocks (lowest β^{FOMO-}) earn an average excess return of -3.07%. A substantial High-Low spread of 21.44% per annum ($t = 11.01$) results. A positive High-Low spread is consistent with the core mechanism of the FOMO-CAPM, where stocks with high sensitivity to the FOMO state carry a significant risk premium. The standard β^{CAPM} increases from 0.63 to 1.18 across these quintiles and β^R increases from 0.68 to 1.08, indicating that while β^{FOMO-} captures a strong effect, it is also correlated with β^{CAPM} and β^R .

Panel D of Table 1 sorts on β^{FOMO+} ; the sensitivity to the stock's performance gap during periods when it outperforms its industry benchmark, $r_j > h_j$. While our theory is less prescriptive about the pricing of β^{FOMO+} , the results show that portfolios with higher β^{FOMO+} generally earn higher average excess returns. Stocks in Quintile 5 (highest β^{FOMO+}) earn an average excess return of 6.80%, compared to an average excess return of -3.10% for Quintile 1, leading to a High-Low spread of 9.90% ($t = 6.89$). Similar to previous panels, sorting on β^{FOMO+} induces considerable variation in β^{CAPM} (from 0.69 to 1.13), β^R (from 0.69 to 1.08), and β^{FOMO-} (from 0.77 to 1.06).

To begin disentangling the effects of β^{FOMO-} from standard market risk, Panel E of Table 1 reports results for portfolios sorted by the realized relative negative FOMO beta, β^{FOMO-} vs β^{CAPM} . If the premium for β^{FOMO-} is distinct from that of β^{CAPM} , we might still observe a positive spread. However, the results show a High-Low spread

of -3.77% ($t = -1.26$). This counterintuitive result arises because the sort on relative β^{FOMO-} induces a strong inverse relationship with the level of β^{CAPM} . β^{CAPM} decreases monotonically from 1.50 in Quintile 1 (lowest relative β^{FOMO-}) to 0.19 in Quintile 5 (highest relative β^{FOMO-}). Although Quintile 5 has a higher β^{FOMO-} , 0.91, compared to Quintile 1, 0.83, Quintile 5's substantially lower exposure to market risk likely drives its lower average raw return.

In summary, the portfolio sorts presented in Table 1 provide initial evidence on the pricing of FOMO-related risk. Direct sorts on the unconditional regret beta, β^R (Panel B), and the conditional negative FOMO beta β^{FOMO-} (Panel C), reveal strong positive relationships with returns. Specifically, sorting on β^R yields a High-Low spread of 20.00% ($t = 8.27$), and sorting on β^{FOMO-} yields a High-Low spread of 21.44% ($t = 11.01$). Our findings suggest that sensitivity to the peer-performance gap, and particularly to underperforming this benchmark (the FOMO state), is positively rewarded in the cross-section of stock returns. Sorting on the conditional Positive FOMO Beta, β^{FOMO+} (Panel D), also yields a positive return spread of 9.40% ($t = 6.89$).

Figure 3 provides a visual representation of the empirical Security Market Lines (SMLs) implied by these portfolio sorts. The plot clearly shows the steep positive relationship between realised FOMO betas and returns. Figure 3 gives graphic confirmation to the key finding from Table 1. The empirical risk premium for sensitivity to downside FOMO risk, β^{FOMO-} , is 37.07. The slope is substantially larger than the premium for standard market risk β^{CAPM} , which is 5.57.

It is crucial to interpret Figure 3 correctly in the context of our theoretical framework. Figure 3 does not depict the theoretical FOMO-SML from Section 3, which would be plotted against a FOMO-specific beta. Instead, by plotting the returns of β^{FOMO-} sorted portfolios against their standard β^{CAPM} . The empirical SML in Figure 3 illustrates the economic magnitude of the return premium associated with FOMO. The FOMO premium exists above and beyond the premium provided by the market beta. The substantially steeper slope for the β^{FOMO-} sort is not a contradiction of the theory, but rather a confirmation that β^{FOMO-} is a distinct and highly rewarded risk factor.

4.2 Fama-MacBeth Regressions

To determine if the FOMO beta premium, particularly the β^{FOMO-} premium, is distinct from established risk premia, firm-level cross-sectional Fama-MacBeth regressions are estimated. Control is made within our Fama-MacBeth regressions for the impact of firm size (Banz, 1981), book-to-market ratio (Basu, 1983; Fama and French, 1992), momentum (Jegadeesh and Titman, 1993), volatility (Ang, Hodrick, Xing, and Zhang, 2006b), coskewness (Harvey and Siddique, 2000), cokurtosis (Scott and Horvath, 1980; Dittmar, 2002), and liquidity risk (Pástor and Stambaugh, 2003). The Fama-MacBeth regressions

Empirical Security Market Lines for Different Sorting Criteria

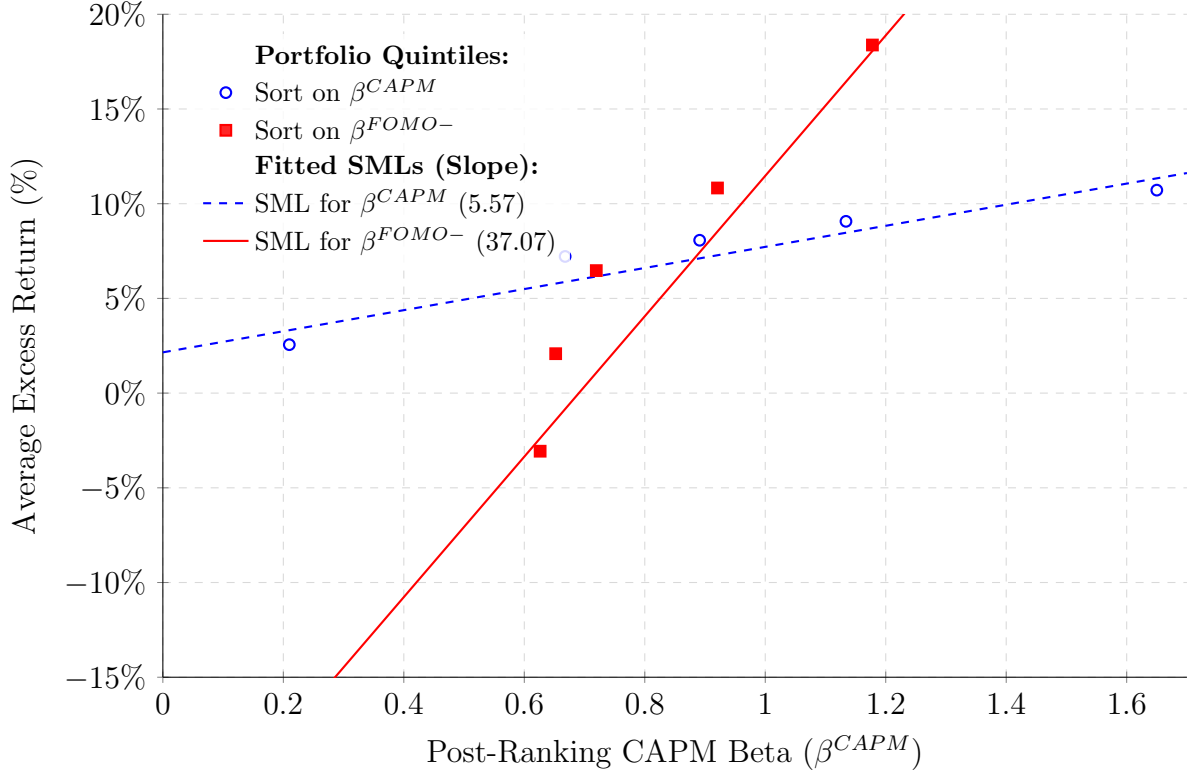


Figure 3: Empirical Security Market Lines (SMLs) for Various Sorting Criteria

This figure plots the average excess returns against the average post-ranking CAPM betas for portfolios sorted on different risk measures. The quintile portfolios are taken from the univariate sorts in Table 1 (Panels A and C). Each line represents the fitted Security Market Line (SML) for the corresponding set of five quintile portfolios. The plot visually demonstrates that the empirical risk premium, represented by the slope of the SML, is substantially steeper when sorting on our behavioral β^{FOMO-} compared to the standard β^{CAPM} , providing empirical support for the importance of the FOMO-based risk channel.

also allow the consideration of the FOMO betas against other conceptualizations of downside risk (Ang et al., 2006a). A further specification includes the downside and upside market betas as proposed by Ang et al. (2006a), β^{Ang-} and β^{Ang+} respectively. Through the Fama-MacBeth regressions, the independence of both β^{FOMO-} and β^{FOMO+} , as a source of priced risk is demonstrated.

Consistent with our portfolio sorts, we run the Fama-MacBeth regressions using a 12-month horizon. For each overlapping 12-month evaluation period p (from month t to $t + 12$) in our sample, we estimate the following cross-sectional regression:

$$R_{i,p} = \gamma_{0,p} + \sum_{k=1}^K \gamma_{k,p} X_{i,k,p} + \sum_{m=1}^M \delta_{m,p} C_{i,m,p-1} + \epsilon_{i,p} \quad (29)$$

where $R_{i,p}$ is the realized 12-month excess return for stock i in evaluation period p . The term $X_{i,k,p}$ represents the k^{th} realized risk exposure for stock i calculated over the same period p . Risk exposures in $X_{i,k,p}$ include our proposed $\beta_{i,p}^{FOMO-}$ and $\beta_{i,p}^{FOMO+}$, the standard $\beta_{i,p}^{CAPM}$, the regret beta $\beta_{i,p}^R$, as well as $\beta_{i,p}^{Ang-}$ and $\beta_{i,p}^{Ang+}$. $X_{i,k,p}$ also includes the standard deviation of the stock's daily excess return (Std Dev), coskewness between the stock's daily excess return and the market's daily excess return (Coskewness) and cokurtosis²⁴ (Cokurt). The term $C_{i,m,p-1}$ represents the m^{th} firm-specific control variable for stock i , measured at the beginning of period p (time t). These characteristics include the logarithm of market capitalization (lnSize), book-to-market ratio (BM), momentum (Mom), defined as the cumulative excess return over the prior 11 month, lagged one month (Past Ret_{t-12} to $t-2$) and a measure of historical liquidity beta (Liq β) estimated following Pástor and Stambaugh (2003) using data prior to time t . All independent variables are winsorized at the 1% and 99% levels within each monthly cross-section before running the Fama-MacBeth regressions.

The Fama and MacBeth (1973) procedure involves estimating the coefficients $\gamma_{0,p}$ (intercept), $\gamma_{k,p}$ (risk premia for realized betas) and $\delta_{m,p}$ (rewards for characteristics) from Equation (29) for each period p . The final reported coefficients in Table 2 are the time-series averages of these period-by-period estimates, and their t -statistics are adjusted for autocorrelation using Newey and West (1987) standard errors with 12 lags. Different regression specifications (Models I–VIII) presented in Table 2 utilize different subsets of these explanatory variables. The final column of Table 2 reports the time-series averages of the cross-sectional means and standard deviations for each independent variable to aid in interpreting economic significance.

Model I examines the pricing of the unconditional regret beta β^R alongside a comprehensive set of control variables. Table 2 reports the coefficient for β^R is 0.290 ($t = 8.23$).

²⁴Cokurtosis measures the co-movement between a stock's return and the cubed market return, capturing sensitivity related to market skewness. The measure used here follows empirical convention (e.g., Ang et al. (2006a); Dittmar (2002)) and is defined as $cokurt = \frac{E[(r_i - \mu_i)(r_m - \mu_m)^3]}{\sqrt{var(r_i)var(r_m)^{3/2}}}$

Table 2: Fama-MacBeth Regression Results

Variable	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	Mean (Std Dev)
Intercept	0.242 [4.52]***	-0.396 [-8.64]***	-0.390 [-8.62]***	-0.036 [-0.83]	-0.034 [-0.80]	0.350 [8.19]***	0.361 [8.52]***	0.322 [6.80]***	
β^R	0.290 [8.23]***								0.896 (0.178)
β^{CAPM}			0.038 [1.48]	0.040 [1.25]	0.034 [1.04]	0.123 [4.20]***	0.113 [3.66]***		0.786 (0.556)
$\beta^{\text{FOMO-}}$		0.260 [5.94]***	0.228 [6.69]***	0.098 [5.13]***	0.093 [4.96]***	0.105 [5.86]***	0.095 [5.36]***	0.106 [5.57]***	0.911 (0.194)
$\beta^{\text{FOMO+}}$		0.235 [8.43]***	0.237 [7.32]***	0.243 [9.72]***	0.243 [10.07]***	0.116 [5.16]***	0.094 [4.38]***	0.106 [4.73]***	0.918 (0.213)
$\beta^{\text{Ang-}}$								0.051 [3.66]***	0.862 (0.715)
$\beta^{\text{Ang+}}$								0.021 [2.54]**	0.681 (0.786)
lnSize	-0.041 [-6.65]***			-0.015 [-2.57]**	-0.017 [-2.95]***	-0.044 [-7.28]***	-0.042 [-7.00]***	-0.039 [-6.59]***	5.187 (2.009)
B/M	-0.208 [-16.48]***			-0.206 [-17.00]***	-0.205 [-17.02]***	-0.202 [-16.70]***	-0.203 [-17.02]***	-0.205 [-16.60]***	0.789 (0.707)
Momentum	-0.050 [-2.83]***			-0.037 [-1.95]*	-0.037 [-1.98]**	-0.053 [-3.09]***	-0.053 [-2.94]***	-0.052 [-2.90]***	0.084 (0.506)
Volatility	-0.255 [-3.84]***					-0.413 [-8.49]***	-0.359 [-7.00]***	-0.328 [-5.55]***	0.535 (0.263)
Coskewness	-0.113 [-3.43]***				-0.130 [-4.86]***	-0.129 [-4.32]***	-0.120 [-3.94]***	-0.068 [-2.05]**	-0.119 (0.165)
Cokurtosis	0.058 [4.41]***					0.000 [0.03]	0.000 [-0.02]	0.019 [1.48]	1.662 (1.181)
Liq β	0.010 [1.39]						0.009 [1.26]	0.009 [1.24]	-0.004 (0.426)
Avg. Adj. R² (%)	15.90	2.84	5.51	13.01	13.42	16.79	16.58	16.43	

This table presents coefficients from firm-level Fama-MacBeth (1973) cross-sectional regressions of 12-month realized excess returns on realized betas and firm characteristics. The sample period is January 1980 to December 2024, with regressions run monthly using overlapping 12-month evaluation periods, resulting in 529 monthly cross-sectional regressions. The analysis includes stocks listed on the NYSE, AMEX and NASDAQ. The average number of firms in each monthly cross-sectional regression is 4166. Coefficients are time-series averages of the estimates from these monthly regressions. t -statistics, reported in brackets, are computed using Newey and West (1987) heteroskedasticity and autocorrelation consistent standard errors with 12 lags. The dependent variable is the 12-month realized stock excess return. Independent variables include realized betas: β^R representing the Regret Beta, β^{CAPM} representing the standard market beta, $\beta^{\text{FOMO-}}$ and $\beta^{\text{FOMO+}}$ representing the negative and positive FOMO betas, as well as $\beta^{\text{Ang-}}$ and $\beta^{\text{Ang+}}$ representing the downside and upside market betas. Realized betas, realized 12-month return volatility (Vol), realized 12-month coskewness (Coskew) and realized 12-month cokurtosis (Cokurt) are calculated over the same 12-month period as the dependent variable using daily data. Firm characteristics are measured at the beginning of each 12-month evaluation period and include: natural logarithm of market capitalization (lnSize), book-to-market ratio (B/M) and prior 11-month cumulative excess return lagged one month (Mom). Lagged liquidity beta (Liq β) is estimated following Pástor and Stambaugh (2003). All independent variables included in the regressions are Winsorized at the 1% and 99% levels within each monthly cross-section. The final column reports the time-series average of the cross-sectional mean and standard deviation for each independent variable. The final row, *Avg. Adj. R²*, reports the time-series average of the adjusted R-squared values from the monthly cross-sectional regressions, expressed as a percentage. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

A strongly significant β^R confirms that, even after accounting for firm characteristics and other risk dimensions, exposure to general regret is substantially rewarded.

To directly examine the pricing of our conditional FOMO betas in a multivariate setting, Model II of Table 2 includes only β^{FOMO-} and β^{FOMO+} as regressors, excluding β^{CAPM} and other controls. Consistent with our central hypothesis, and the univariate sort results (Panel C of Table 1), the coefficient for β^{FOMO-} is 0.260 ($t = 5.94$). Significance of β^{FOMO-} provides initial Fama-MacBeth evidence for a positive risk premium associated with sensitivity to underperforming the peer benchmark. β^{FOMO+} also commands a strong positive premium in this specification, with a coefficient of 0.235 ($t = 8.43$). While our theory is less prescriptive regarding the pricing of sensitivity during outperformance periods, the univariate relative sorts hinted at a possible discount after controlling for β^{FOMO+} . The Fama-MacBeth coefficient indicates a positive association when the FOMO betas are considered without other factors.

Model III of Table 2 incorporates the standard market beta, β^{CAPM} , into the specification alongside our conditional FOMO betas, β^{FOMO-} and β^{FOMO+} . Incorporation of β^{CAPM} allows us to assess whether the premia associated with the FOMO betas persist once general market exposure is accounted for. The coefficient on β^{CAPM} is 0.038, positive but not statistically significant ($t = 1.48$) in the presence of the FOMO betas. The premium for sensitivity to underperformance, β^{FOMO-} , remains strong and significant, with a coefficient of 0.228 ($t = 6.69$). Comparison with Model II shows that β^{CAPM} accounts for a small portion of the risk captured by β^{FOMO-} . Similarly, the coefficient for β^{FOMO+} remains highly significant at 0.237 ($t = 7.32$), indicating that sensitivity to outperforming the peer benchmark continues to be positively priced even when controlling for market beta. Our conditional FOMO betas capture risk dimensions beyond that explained by the standard CAPM beta alone.

Model IV of Table 2 extends the previous specification by incorporating standard firm characteristics: Log-Size (lnSize), book-to-market ratio (B/M), and 12-month momentum (Mom12m). The coefficient on β^{FOMO-} remains positive and highly statistically significant at 0.098 ($t = 5.13$), though its magnitude is reduced compared to Model III. This indicates that while size, value, and momentum characteristics explain some of the return variation previously attributed to β^{FOMO-} , a distinct and significant premium for FOMO-related downside sensitivity persists. Similarly, the premium for β^{FOMO+} remains strong and significant at 0.243 ($t = 9.72$). In this model, β^{CAPM} has a coefficient of 0.040 ($t = 1.25$), still not reaching conventional significance levels. The continued significance of β^{FOMO-} in the presence of these standard characteristics provides further evidence for the unique role of β^{FOMO-} in asset pricing.

Model V adds realized Coskewness (Coskew12m) to the set of regressors from Model IV. Both β^{FOMO-} and a preference against negative skewness (i.e., for positive coskew-

ness) relate to adverse market outcomes. The coefficient on β^{FOMO-} is 0.093 ($t = 4.96$), only marginally lower than its coefficient in Model IV (which excluded coskewness). The premium for β^{FOMO-} is largely robust to, and distinct from, the known coskewness effect. β^{FOMO+} continues to command a significant positive premium of 0.243 ($t = 10.07$), while β^{CAPM} remains insignificant at 0.034, ($t = 1.04$).

Model VI further incorporates realised stock Volatility (Vol12m) and Cokurtosis (Cokurt12m) into the specification from Model V. Given the documented negative premium for volatility (e.g., Ang et al. 2006b). Model VI serves as an important robustness check. The coefficient on β^{FOMO-} remains positive and highly statistically significant at 0.105 ($t = 5.86$). The premium for FOMO-related downside risk is robust to the inclusion of these standard volatility and cokurtosis measures. The coefficient for β^{FOMO+} in Model VI is 0.116 ($t = 5.16$), also remaining positive and significant. Where Models IV and V showed large differences in the coefficients on β^{FOMO-} and β^{FOMO+} , the extension of the control set in Model VI brings the coefficients on the FOMO betas much closer together.

Our most comprehensive specification with standard controls, presented as Model VII, includes β^{FOMO-} , β^{FOMO+} and β^{CAPM} along with the complete set of control variables: Log-Size, B/M, Momentum, Volatility, Coskewness, Cokurtosis, and Liquidity Beta (Liq β). The results continue to show β^{FOMO-} to have a positive risk premium. In Model VII the risk premium on β^{FOMO-} is 0.095 ($t = 5.36$). The premium for β^{FOMO+} is 0.094 ($t = 4.38$), and for β^{CAPM} is 0.113 ($t = 3.66$), both maintaining positive significance.

To directly assess the unique explanatory power of our conditional FOMO betas, Model VIII of Table 2 presents a comparison of our FOMO beta against the downside risk measure of Ang et al. (2006a) in a direct "horse race". Ang et al. (2006a) remains the primary reference point for conditional betas. Model VIII includes our β^{FOMO-} and β^{FOMO+} alongside β^{Ang-} and β^{Ang+} , and all standard controls. β^{Ang-} is positively priced with a coefficient of 0.051 ($t = 3.66$). β^{FOMO-} remains highly significant and has a larger economic magnitude, with a coefficient of 0.106 ($t = 5.57$). Model VIII emphasizes that our FOMO-based measure captures a dimension of downside risk relevant to investors that is distinct from or incremental to the market-conditional downside beta of Ang et al. (2006a). For the upside betas, our β^{FOMO+} has a coefficient of 0.106 ($t = 4.93$), while β^{Ang+} has a coefficient of 0.021 ($t = 2.54$).

Completing the comparison across the set of constructed betas, the unconditional regret beta, β^R , commands a robust positive premium (0.290, $t = 8.23$) in Model I of Table 2. In the Internet Appendix, we show that β^R has a premium of 0.196 ($t = 7.30$) when included alongside β^{CAPM} and all controls. Further, the β^R premium persists even when directly compared against Ang et al. (2006a) downside market betas. β^R allows an empirical investigation of the Regret-CAPM (Qin, 2020). However, the incremental R^2 analysis reinforces the additional contribution of FOMO over β^R . Adding both β^{FOMO-}

and β^{FOMO+} to a full model of standard controls increases the average adjusted R-squared from 10.97% to 11.92%.

The Fama-MacBeth regressions presented in Table 2 provide compelling and consistent evidence for the pricing of risks related to peer-performance comparisons²⁵. The conditional negative FOMO beta, β^{FOMO-} , consistently demonstrates a positive and statistically significant risk premium across a wide range of specifications. The risk premium on β^{FOMO-} remains robust after controlling for β^{CAPM} , standard firm characteristics (Log-Size, B/M, Momentum), Volatility, Coskewness, Cokurtosis, and Liq β . β^{FOMO-} also carries a larger risk premium than β^{Ang-} . Our measure of sensitivity to firm-specific peer underperformance captures a priced risk dimension distinct from general market downside risk. The pricing of sensitivity to peer group performance during outperformance states, β^{FOMO+} , is also positive and statistically significant across many specifications (e.g., 0.106, $t = 4.73$ in Model VIII of Table 2). While our theory in the FOMO-CAPM is less prescriptive about β^{FOMO+} , the consistent significance of β^{FOMO+} suggests that sensitivity to outperforming the benchmark also carries a premium.

The economic magnitude of the FOMO risk premium is understood by considering the average values in the final column of Table 2. β^{FOMO-} has a standard deviation of 0.194. The coefficient in Model II gives an effect of a 2 standard deviation change in β^{FOMO-} of $2 \times 0.260 \times 0.194 = 10.09\%$. The regret beta, β^R , carries a premium of 2.90% with the standard deviation of β^R being 0.178. The 2 standard deviation change in β^R corresponds to a change in expected returns of $2 \times 0.178 \times 0.294 = 8.54\%$. Finally, β^{FOMO+} has an expected returns change of $2 \times 0.235 \times 0.213 = 10.01\%$. As more controls are added to the regression, the premium on β^{FOMO-} falls, being around 10% in the later models. The coefficients on β^{FOMO+} show that performance above the reference portfolio carries a premium of 5%. The β^{FOMO+} premium is half that of β^{FOMO-} . In the Internet Appendix, we confirm that our β^R coefficients carry a risk premium of 20%. As evidenced in our theoretical framework, FOMO acts to require stronger compensation for risk on stocks which underperform their peer benchmark.

Overall, the robust positive premia associated with both the unconditional β^R , and the conditional β^{FOMO-} , provide strong empirical support for the central mechanisms of our FOMO-CAPM. The empirical results evidence that investors demand compensation for exposure to both general regret from benchmark deviation and the specific asymmetric disutility of FOMO.

²⁵Further Fama-MacBeth regressions provided in the Internet Appendix underscore the evidence on the pricing of risks relating to peer-performance comparisons.

4.3 Distinguishing FOMO from Symmetric Regret

Our results demonstrate that the asymmetric pricing we attribute to FOMO is empirically distinct from a simpler, symmetric model of regret. Analysis of the time series correlations between β^{FOMO-} , β^{FOMO+} and β^R shows average correlations of approximately 0.4²⁶. To provide a more formal test of the asymmetry of the response to the relative performance of the peer group portfolio, we include both the unconditional regret beta (β^R) and our asymmetric FOMO components in a single panel regression. We use a reparameterized model (see Wooldridge, 2010) where the key variables are β^R , to capture the symmetric effect, and β^{FOMO-} , to capture the additional asymmetric effect of underperformance. The results of our parameter equality test are presented in Table 3.

In Table 3 shows the coefficient on the symmetric regret beta, β^R , is 0.266 and highly significant ($t = 7.21$). This indicates that a general regret effect is indeed priced in the cross-section of returns. Critically, even after controlling for this symmetric effect, the coefficient on the asymmetric component, β^{FOMO-} , remains positive at 0.054 and statistically significant ($t = 3.21$). Our results provide powerful evidence that our FOMO model identifies a priced factor beyond simple regret. While investors are compensated for bearing general peer-relative risk, they demand an additional, economically and statistically significant premium for the specific risk of underperforming their peers. Results in Table 3 confirm the importance of the asymmetric component, driven by the $k_i(H_i)$ function in our utility model, which is the core of our FOMO-based theory.

4.4 Negative FOMO Beta Risk and Coskewness Risk

Both β^{FOMO-} and negative coskewness are associated with adverse market states and asymmetric risk profiles. To evaluate whether β^{FOMO-} , and negative coskewness, capture distinct sources of priced risk, we investigate whether the premium associated with β^{FOMO-} persists after explicitly controlling for the effect of coskewness and vice versa. We construct 5×5 portfolios based on sequential sorts using realized β^{FOMO-} and realized coskewness, both computed over the same 12-month evaluation period (t to $t + 12$) during which we measure realized excess returns.

First, to isolate the β^{FOMO-} premium while controlling for coskewness, we sort all stocks into quintiles based on their realized coskewness. Then, within each coskewness quintile, we further sort stocks into quintiles based on their realized β^{FOMO-} . We obtain returns for β^{FOMO-} portfolios that have, by construction, varying levels of β^{FOMO-} but similar levels of average coskewness exposure. This allows us to examine the return spread associated with β^{FOMO-} after effectively neutralizing the influence of coskewness.

²⁶The full set of correlations, including with β^{CAPM} , β_{Ang}^+ , and β_{Ang}^- , is provided in the Internet Appendix.

Table 3: Disentangling Asymmetric FOMO from Symmetric Regret

Variable	Coefficient	<i>t</i> -statistic
Panel A: Key Behavioral Betas		
β^{FOMO-} (Asymmetry: $\gamma^{F-} - \gamma^{F+}$)	0.0540**	[3.21]
$\beta^{FOMO-sum}$ (Level: γ^{F+})	-0.1140***	[-6.24]
β^R (Symmetric Regret)	0.2670***	[7.21]
Panel B: Standard Control Variables		
β^{CAPM}	0.1110***	[12.28]
Log(Size)	-0.2220***	[-34.62]
Book-to-Market (BM)	-0.2830***	[-23.36]
Momentum (mom12m)	-0.0800***	[-14.90]
Volatility (vol12m)	-0.1510***	[-5.66]
Coskewness	-0.1420***	[-8.72]
Cokurtosis	-0.0090***	[-5.35]
Liquidity Beta (β^l)	0.0170**	[3.12]
Model Diagnostics		
Observations	1,678,225	
Firm Fixed Effects	Yes	
Time Fixed Effects	Yes	
Adj. R^2	0.3138	

This table presents results from a reparameterized pooled panel regression designed to test whether the asymmetric FOMO risk premium is distinct from a general, symmetric regret premium. The dependent variable is the 12-month realized stock excess return. The regression includes firm and time fixed effects. To correct for residual correlation both across firms and over time, *t*-statistics reported in parentheses are based on standard errors two-way clustered by firm and time, following the methodology of Petersen (2009). The coefficient on β^{FOMO-} directly estimates the difference in the premia for under- and outperformance ($\gamma^{F-} - \gamma^{F+}$). The coefficient on β^R captures the premium for symmetric regret after controlling for the FOMO components. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 4: Returns of Stocks Sorted by Realized β^{FOMO-} and Coskewness

Panel A: Coskewness sorts controlling for β^{FOMO-}							
Coskewness	β^{FOMO-} Quintile					High-Low	t -stat
Quintile	Q1 (Low)	Q2	Q3	Q4	Q5 (High)	(β^{FOMO-})	(β^{FOMO-})
1 (Lowest)	2.65	5.94	9.99	14.98	22.58	19.94	[9.26]***
2	-0.71	4.28	8.44	12.48	21.61	22.31	[9.48]***
3	-3.09	2.08	6.37	11.06	18.89	21.98	[10.03]***
4	-5.89	0.11	4.88	8.83	16.35	22.24	[10.89]***
5 (Highest)	-8.31	-1.97	2.69	6.75	12.45	20.76	[9.52]***
Average	-3.07	2.09	6.47	10.83	18.38	21.45	[11.01]***

Panel B: β^{FOMO-} sorts controlling for Coskewness							
β^{FOMO-}	Coskewness Quintile					High-Low	t -stat
Quintile	Q1 (Lowest)	Q2	Q3	Q4	Q5 (Highest)	(Coskewness)	(Coskewness)
1 (Low)	3.41	1.58	-0.62	-2.74	-7.38	-10.78	[-6.25]***
2	6.61	5.92	4.47	2.43	-1.12	-7.73	[-5.14]***
3	10.41	9.89	7.07	6.17	2.74	-7.67	[-5.46]***
4	14.87	12.85	11.12	8.66	5.50	-9.37	[-5.77]***
5 (High)	23.41	20.60	17.65	14.55	9.32	-14.09	[-6.43]***
Average	11.74	10.17	7.94	5.81	1.81	-9.93	[-10.97]***

This table presents average 12-month realized excess returns for 5×5 portfolios sorted independently on realized coskewness and realized β^{FOMO-} . Both sorting variables are computed over the same 12-month evaluation period (t to $t + 12$) during which returns are measured. Panel A sorts first by coskewness, then by β^{FOMO-} . Panel B sorts first by β^{FOMO-} , then by coskewness. t -statistics for the "Average" High-Low differences use Newey and West (1987) standard errors with 12 lags. Data are from CRSP/Compustat for the period January 1980 to December 2024. Quintile breakpoints for the primary sort are based on NYSE stocks; all common stocks on NYSE/AMEX/NASDAQ are then allocated to these quintiles. Portfolios are equal-weighted. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A in Table 4 presents the average excess returns for these 25 portfolios, along with the average returns for the coskewness-controlled β^{FOMO-} quintiles. The row labelled "High-Low (β^{FOMO-})" reports the difference in average returns between the highest (Quintile 5) and lowest (Quintile 1), β^{FOMO-} portfolios within each initial coskewness quintile, as well as for the overall coskewness-controlled β^{FOMO-} portfolios. The results in Panel A of Table 4 strongly support the hypothesis that β^{FOMO-} risk is distinct from the coskewness premium. At all coskewness levels, the high minus low β^{FOMO-} return is positive and significant. The average high-minus-low spread is 21.45 ($t = 11.01$). The substantial premium associated with β^{FOMO-} is not an artefact of coskewness. Stocks with higher sensitivity to FOMO states command significantly higher returns even when compared against other stocks with similar coskewness. Similarly, reversing the sorting procedure, we construct Panel B in Table 4. After controlling for β^{FOMO-} , there is a significant negative relationship between our coskewness quintiles (Q5-Q1) and returns. The average High-Low spread is -9.95% ($t = -10.97$), reinforcing the observation that coskewness and FOMO are different sources of priced risk. Our double-sorts provide robust evidence that the FOMO risk captured by β^{FOMO-} is a distinct phenomenon from the risk associated with coskewness. Both β^{FOMO-} and coskewness contribute to explaining the cross-section of stock returns.

4.5 Determinants of FOMO Betas

To understand what types of firms are most sensitive to peer-group underperformance, we investigate the firm-level characteristics that determine the realized FOMO betas. We conduct a series of Fama-MacBeth regressions where the dependent variables are the realized β^{FOMO-} and β^{FOMO+} , respectively, and the independent variables are a standard set of firm characteristics. The complete results from these univariate and multivariate regressions are detailed in Table 5. Results for β^{FOMO+} and β^R are included in the appendix.

We find a significant negative relationship between β^{FOMO-} and both firm size ($\ln_{size}$) and the book-to-market ratio (bm). Smaller firms and those with lower book-to-market ratios—typically classified as "growth" stocks—tend to exhibit higher sensitivity to the FOMO state. Furthermore, β^{FOMO-} is significantly and positively related to past-year returns (mom12m) and to cokurtosis. Collectively, these results suggest that the firms carrying the highest FOMO risk are often smaller growth stocks that have experienced strong recent performance. Divergence in the significant determinants of the upside and downside FOMO betas provides further evidence that β^{FOMO-} and β^{FOMO+} capture empirically distinct dimensions of risk.

Levi and Welch (2020) critique the use of realized downside betas in Ang et al. (2006a) on the basis that the downside betas are not persistent. Addressing a similar potential

Table 5: Determinants of Realized FOMO Down Betas, β^{FOMO-}

Characteristic	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Intercept	0.8519 [25.60]***	0.9327 [49.95]***	0.9129 [86.09]***	0.9281 [11.27]***	0.8880 [58.20]***	0.8234 [11.26]***	0.9194 [75.75]***	0.8892 [12.40]***
Log(Size)	0.0119 [2.88]***							-0.0177 [-3.01]***
BM		-0.0092 [-1.43]						0.0031 [0.54]
Momentum			0.0309 [4.74]***					0.0168 [4.36]***
Volatility				-0.0498 [-0.64]				0.0181 [0.31]
Coskewness					-0.0545 [-1.45]			0.0184 [0.99]
Cokurtosis						0.0615 [4.56]***		0.0796 [6.09]***
Liquidity β							-0.0012 [-0.21]	-0.0023 [-0.75]

This table presents time-series averages of coefficients from monthly cross-sectional regressions explaining realized FOMO betas. For each month, the realized β^{FOMO-} is regressed on lagged firm characteristics. Models (I) through (VII) are univariate regressions, while Model (VIII) is a multivariate regression including all characteristics simultaneously. All characteristics are measured at the beginning of the 12-month beta estimation period. t -statistics, reported in brackets, are computed using Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

critique of the FOMO betas we regress β^{FOMO-} and β^{FOMO+} on their past values and a set of firm controls. Coefficients of 0.450 ($t = 32.57$) and 0.408 ($t = 20.08$) respectively confirm the FOMO betas to be stable characteristics. The use of realized betas is robust to the Levi and Welch (2020) critique²⁷

4.6 Time Variation of Portfolio Sort Premia

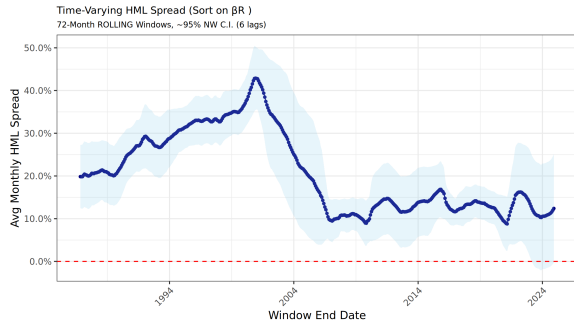
To assess the dynamic nature of the β^R , β^{FOMO-} and β^{FOMO+} premiums, we employ a 60-month rolling window methodology. For each month t , we use data from month $t - 59$ to t to perform portfolio sorts identical to those described for Table 1. We calculate equal weighted returns for the β^R , β^{FOMO-} and β^{FOMO+} sorts, as well as the High-minus-Low spreads for each sorting variable. In all cases Newey and West (1987) standard errors are computed using 6 lags. The resulting average High-minus-Low spread and its 95% confidence interval are plotted against the end date of each 60-month rolling window in Figure 4²⁸.

The premium for β^R in Panel A is positive and statistically significant for a substantial portion of our sample period. A reduced premium is observed from 2004 onwards, including periods where the premium for β^R is not statistically significant. Panel B shows the rolling High-minus-Low spread for portfolios sorted on our primary measure of FOMO risk, β^{FOMO-} , has a similar pattern of reduced magnitude post 2004. However, several distinct differences are apparent. Notably, the β^{FOMO-} premium stays closer to 20% after 2004, where the β^R premium drops further. This pattern suggests that the asymmetric, downside sensitivity captured by β^{FOMO-} can become especially pronounced in recent times. Conversely, in the years following 2002, the β^R premium is lower and less statistically robust. Only towards the end of the sample does the β^{FOMO-} premium show any signs of insignificance. Such differences imply that the FOMO-based asymmetry does not simply mirror the unconditional regret sensitivity, but captures distinct behavioral pricing effects. While also time-varying, the premium for β^{CAPM} is less consistently significant than the β^R or β^{FOMO-} spreads. β^{FOMO+} also echoes the increasing premiums through the 1990s, but the peak is a little over 10%. Between 2004 and 2009, the β^{FOMO+} premium is insignificant, before returning to 10%. The overall similarity of the premiums to β^R , β^{FOMO-} and β^{FOMO+} suggested in Table 1 masks significant heterogeneity in the time variations. The contrast between the panels of Figure 4 further reinforces the empirical value added by incorporating regret- and FOMO-based risk factors.

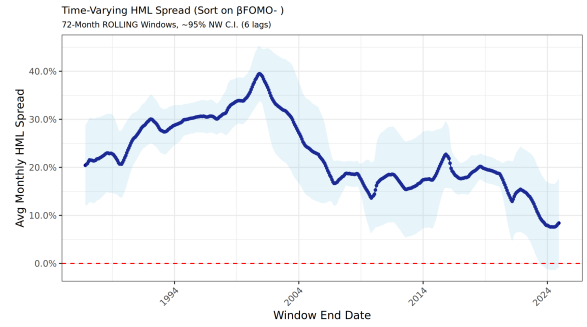
²⁷Results are available in the appendix.

²⁸Additional analysis of the time variation through non-overlapping periods is provided in the appendix.

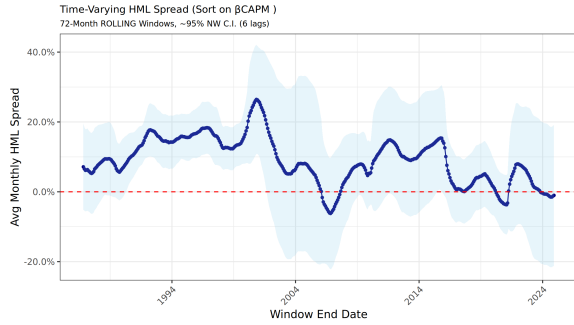
Figure 4: Time Variation of HML Spreads for Key Beta Sorts



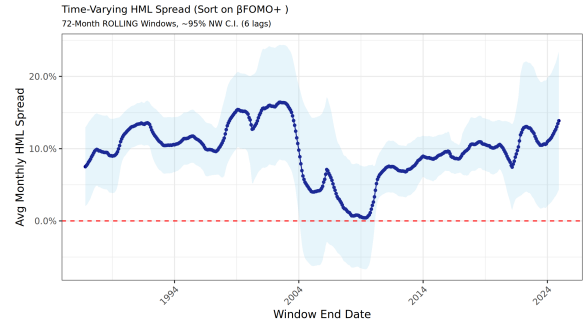
(a) Sort on β^R



(b) Sort on β^{FOMO-}



(c) Sort on β^{CAPM}



(d) β^{FOMO+}

Notes: These figures plot the 60-month rolling window average High-minus-Low excess return spreads. Shaded areas are 95% Newey-West CIs (6 lags). Plot date is window end. Sample: Jan 1980 - Dec 2024.

4.7 Robustness Checks

We conduct a battery of robustness tests, incorporating variations in our empirical design, variable definitions and measurement choices. Focus is on the positive premium associated with the negative FOMO beta β^{FOMO-} , the primary result of the paper. Results for β^{FOMO+} and β^R are equally robust, as demonstrated in the Internet Appendix.

4.7.1 Alternative Investment Universe

First, we examine the robustness of our portfolio sort results to variations in the universe of stocks. Table 6 presents these checks for portfolios sorted on realized β^{FOMO-} . The alternative investment universes include excluding small stocks, using all stocks from NYSE/AMEX/NASDAQ with NYSE breakpoints, and using value-weighted returns for NYSE stocks.

Table 6: Alternative Investment Universe

Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (%)
1 (Low)	2.45	−3.07	9.84
2	10.03	2.08	7.64
3	13.95	6.47	6.78
4	17.12	10.83	7.68
5 (High)	22.30	18.39	11.85
High-Low	19.85	21.45	2.01
<i>t</i> -statistic	[8.68]***	[11.01]***	[1.29]

This table presents robustness checks for portfolio sort results using realized β^{FOMO-} . For each robustness scenario, stocks are ranked into five quintiles based on the beta measure calculated using daily continuously compounded returns over a 12-month evaluation period. The table reports average 12-month realized excess returns (in percent) for these equal-weighted or value-weighted quintile portfolios. The robustness scenarios are: (1) Exclude small: Equal-weighted portfolios are formed among NYSE, AMEX and NASDAQ stocks after excluding stocks that fall into the lowest NYSE market capitalization quintile. Breakpoints are based on this reduced sample. (2) All stocks: Equal-weighted portfolios formed using all common stocks on NYSE, AMEX, and NASDAQ. Breakpoints are based on NYSE stocks. (3) Value-weighted: Value-weighted portfolios formed using only stocks listed on the NYSE. Returns are weighted by market capitalization at the beginning of each 12-month evaluation period. Breakpoints are based on NYSE stocks. The row labelled "High-Low" reports the difference between the average returns of Portfolio 5 and Portfolio 1. *t*-statistics (in brackets) use Newey and West (1987) standard errors with 12 lags. Sample period: January 1980 - December 2024. The number of firms per quintile typically ranges from approximately 986 to 1864 for "Exclude small" and "All stocks" scenarios, and 354 to 579 for the "Value-weighted" scenario. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 6 demonstrates that the significant positive High-Low spread for portfolios sorted on β^{FOMO-} persists when small stocks are excluded. The strategy offers an excess return of 19.85% per annum ($t = 8.68$). When all stocks are considered, but NYSE breakpoints are used, the premium rises to 21.45% ($t = 11.01$). For value-weighted NYSE portfolios, the spread remains positive at 2.01% but is not statistically significant ($t = 1.29$). The β^{FOMO-} premium is more pronounced among equal-weighted portfolios. Our findings align with Ang et al. (2006a) and others who study asymmetry-related premia.

4.7.2 Firm Characteristics and FOMO

To ensure the premium documented in our primary univariate sorts is not merely a proxy for other known firm characteristics, we perform an additional series of controlled portfolio sorts. Following Daniel and Titman (1997), we first sort stocks into quintiles based on a control characteristic. The control characteristics are size, book-to-market ratio, momentum, and coskewness. Characteristic-adjusted returns within each quintile are then calculated. Sorting the characteristic adjusted return series based on their realized β^{FOMO-} , we can isolate the return spread attributable to FOMO risk after neutralizing the effect of the control characteristic. Table A10 confirms that the β^{FOMO-} premium remains economically large and highly statistically significant across all control schemes. After controlling for firm size, the High-Low portfolio spread for β^{FOMO-} is 19.74% ($t = 4.53$). The β^{FOMO-} premium is similarly robust after controlling for book-to-market (16.05%, $t = 5.72$), momentum (18.42%, $t = 5.79$), and coskewness (19.28%, $t = 5.45$). Table A10 provides strong evidence that the FOMO premium is an incremental effect and not simply a different manifestation of these other well-documented factors.

4.7.3 Volatility and FOMO

Next we demonstrate that the β^{FOMO-} premium is distinct from the well-documented low-volatility anomaly. To disentangle FOMO and volatility we perform independent 5x5 portfolio sorts on realized 12-month volatility and realized β^{FOMO-} . Stocks are first sorted into quintiles based on their volatility. Within each volatility quintile, stocks are then sorted into five further quintiles based on their realized β^{FOMO-} . The double sort results in Table A11, reveal a powerful interaction between FOMO risk and stock volatility. In the lowest volatility quintiles, the premium for β^{FOMO-} is muted and statistically insignificant. However, the premium for β^{FOMO-} becomes exceptionally strong and highly significant among high-volatility stocks. In the highest volatility quintile 5 (High Vol), the High-Low portfolio sorted on β^{FOMO-} earns a remarkable 39.66% per annum ($t = 10.65$). The FOMO effect is not only robust but is most pronounced precisely within the set of stocks that are already considered the most volatile. FOMO effects are strongest in a

Table 7: High-Low Spreads on β^{FOMO-} after Controlling for Firm Characteristics

Control Variable	Quintile Portfolios on β^{FOMO-}					Spread	
	1 (Low)	2	3	4	5 (High)	High-Low	t-statistic
Log(Size)	−9.07	−4.18	0.19	4.18	10.67	19.74	[4.53]***
BM	−6.80	−3.57	−0.37	2.88	9.26	16.05	[5.72]***
Momentum	−8.70	−3.90	−0.03	3.95	10.23	18.92	[5.74]***
Coskewness	−9.14	−4.07	0.32	4.22	10.13	19.28	[5.45]***

This table presents average 12-month characteristic-adjusted excess returns for portfolios sorted on realized β^{FOMO-} . Each month, we first sort stocks into quintiles based on a control characteristic, size, book-to-market ratio, momentum and coskewness. Within each quintile, we then subtract the quintile's equal-weighted average return from each stock's return to get an adjusted return. All stocks are then pooled and sorted into quintiles based on their realized β^{FOMO-} . The table reports the time-series average of the monthly characteristic-adjusted returns for each quintile. The High-Low column is the spread between Quintile 5 and Quintile 1, with Newey-West (1987) t -statistics adjusted for 12 lags. *** denotes significance at the 1% level.

segment of the market where standard asset pricing models often struggle.

Table 8: Portfolio Returns from 5x5 Sorts on Volatility and β^{FOMO-}

Volatility	Quintiles formed on β^{FOMO-}					Spread	
	1 (Low)	2	3	4	5 (High)	High-Low	t-statistic
1 (Low Vol)	11.09	10.77	9.75	9.30	9.99	−1.10	[−0.81]
2	14.14	10.98	10.44	10.40	12.63	−1.51	[−1.10]
3	13.12	10.65	10.68	11.13	15.10	1.99	[1.36]
4	8.96	10.11	10.32	12.27	18.60	9.64	[4.12]***
5 (High Vol)	−20.84	−7.95	1.25	6.85	18.82	39.66	[10.65]***

This table presents average 12-month excess returns for 25 portfolios formed from sequential 5x5 sorts on volatility and β^{FOMO-} . Each month, stocks are first sorted into quintiles based on their realized volatility over the prior 12 months. Then, within each volatility quintile, stocks are further sorted into five quintiles based on their realized β^{FOMO-} . The High-Low column reports the return spread between Quintile 5 and Quintile 1 of the β^{FOMO-} sort within each volatility quintile. t -statistics are based on Newey and West (1987) standard errors with 12 lags. *** and ** denote significance at the 1% and 5% levels, respectively.

4.7.4 Firm Size and the FOMO Premium

Next we address whether the β^{FOMO-} premium is simply a manifestation of the well-documented small-firm effect. Many behavioral anomalies are known to be stronger or exclusively present among small-cap stocks. We conduct a 2x5 portfolio sort. Each month, we first partition stocks into two groups, "Small" and "Big," based on the NYSE median market capitalization breakpoint. Within each size group, we sort stocks into five quintiles based on their realized β^{FOMO-} .

Results in Table 9 provide two key insights. First, the FOMO premium is not purely a small-firm phenomenon. Among large-cap stocks, the High-Low portfolio constructed on β^{FOMO-} still earns a statistically significant premium of 4.47% per annum ($t = 2.60$). The significant premium on β^{FOMO-} demonstrates that the pricing of FOMO risk is pervasive across the market. Second, the β^{FOMO-} premium is significantly amplified among small stocks, where the corresponding High-Low spread is 27.34% ($t = 13.25$). The difference in β^{FOMO-} premia is also highly significant. Table 9 confirms that while the β^{FOMO-} premium is ubiquitous, its magnitude is greatest in the small-cap segment, where behavioral biases are often expected to be most impactful.

Table 9: Portfolio Returns from 2x5 Sorts on Size and β^{FOMO-}

β^{FOMO-} Quintile	Size Group		
	Small	Big	Big - Small
1 (Low)	-6.35	9.51	15.87
2	0.91	8.14	7.23
3	6.69	7.32	0.63
4	11.82	8.06	-3.76
5 (High)	20.99	13.98	-7.00
High-Low Spread	27.34	4.47	-22.87
<i>t</i>-statistic	[13.25]***	[2.60]***	[-18.72]***

This table presents average 12-month excess returns for 10 portfolios formed from sequential 2x5 sorts on firm size and realized β^{FOMO-} . Each month, stocks are first assigned to two size groups ("Small" or "Big") based on the median NYSE market capitalization breakpoint. Then, within each size group, stocks are sorted into five quintiles based on their realized β^{FOMO-} . The "High-Low" row reports the return spread between Quintile 5 and Quintile 1 within each size group. The "Big - Small" column reports the difference in returns between the Big and Small portfolios for each quintile and for the High-Low spread. *t*-statistics, reported in brackets, are computed using Newey and West (1987) standard errors with 12 lags. *** denotes significance at the 1% level.

4.7.5 Fama-MacBeth Regression Robustness

Finally, we assess the robustness of the β^{FOMO-} premium found in the main Fama-MacBeth regressions shown in Table 2. Table 10 presents the coefficient and t -statistic for β^{FOMO-} from two key specifications, Model VII (full standard controls with β^{CAPM}) and Model VIII (the "horse race" model), across different sample periods and when excluding micro-cap stocks.

Table 10: Robustness of Fama-MacBeth β^{FOMO-} Coefficient

Scenario	Coefficient	t-statistic
A: β^{FOMO-} Model VII (Full Controls)		
Full Sample	0.095	[5.36]***
Sub-Period 1 (1980-2002)	0.135	[5.99]***
Sub-Period 2 (2003-2024)	0.059	[2.42]**
Exclude Micro-Caps	0.132	[7.32]***
B: β^{FOMO-} Horse Race Model VIII		
Full Sample	0.106	[5.57]***
Sub-Period 1 (1980-2002)	0.154	[6.13]***
Sub-Period 2 (2003-2024)	0.063	[2.55]**
Exclude Micro-Caps	0.140	[7.17]***

This table presents the Fama-MacBeth coefficient and t -statistic for β^{FOMO-} under different scenarios and from two key model specifications detailed in Table 2. Panel A shows β^{FOMO-} from Model VII (which includes β^{FOMO-} , β^{FOMO+} , β^{CAPM} , and all standard controls). Panel B shows β^{FOMO-} from Model VIII (the "horse race" which includes β^{FOMO-} , β^{FOMO+} , Ang et al. (2006a)'s downside and upside market betas, β^{Ang-} and β^{Ang+} and all standard controls, while excluding β^{CAPM}). "Full Sample" uses the entire period January 1980 - December 2024. "Sub-Period 1" covers 1980-2002 and "Sub-Period 2" covers 2003-2024. "Exclude Micro-Caps" runs regressions after removing stocks in the lowest NYSE market capitalization quintile. Coefficients are time-series averages from monthly Fama-MacBeth regressions. t -statistics use Newey and West (1987) standard errors with 12 lags. *** and ** denote significance at the 1% and 5% levels, respectively.

The positive premium associated with β^{FOMO-} demonstrates considerable robustness. For Model VII, the β^{FOMO-} coefficient remains positive and statistically significant in the first half of our sample (1980 – 2002) at 0.135 ($t = 5.99$) and in the second half (2003 – 2024) at 0.059 ($t = 2.42$). When micro-cap stocks are excluded, the coefficient is 0.132 ($t = 7.32$).

Similar robustness is observed for β^{FOMO-} in the more stringent Model VIII specification. The coefficient is 0.154 ($t = 6.13$) in the first sub-period and 0.063 ($t = 2.55$) in the second sub-period. When excluding micro-caps from this full specification, including Ang et al. (2006a)'s betas, the β^{FOMO-} coefficient is 0.140 ($t = 7.17$). These results collectively indicate that the significance and positive sign of the β^{FOMO-} premium are

not confined to a specific time frame or driven by the smallest, potentially less liquid, stocks.

4.8 Empirical Summary

Both portfolio sorts and Fama-MacBeth regressions evidence a significant risk premium associated with peer comparison. The premia for β^{FOMO-} , β^{FOMO+} and β^R are all highly significant. In contrast to the regret CAPM of Qin (2020), FOMO posits that there is a stronger impact from underperforming peers compared to outperforming. The negative FOMO beta (β^{FOMO-}), which measures a stock's historic sensitivity to underperforming its industry benchmark, commands a significant positive risk premium. The FOMO premium is economically meaningful. The high-minus-low spread amongst quintiles sorted on β^{FOMO-} is 17.4% ($t = 8.46$). Through coefficient tests a statistically significant difference is noted between the β^{FOMO-} and β^{FOMO+} effects. Downside FOMO betas, β^{FOMO-} are higher for smaller stocks which have lower book to market ratios, higher momentum and high cokurtosis. There remains a significant component of β^{FOMO-} that is not explained by firm characteristics.

Our robustness checks demonstrate that the β^{FOMO-} premium is robust to alternative investment universes, controlling for firm characteristics which are shown to be mispriced, high volatility, size and amongst the most volatile stocks. In the Internet appendix we demonstrate that the robustness observed for β^{FOMO-} extends to the results for β^{FOMO+} and β^R . Throughout our empirical analysis, focus is on the Fama French 38 industries as peers. The inference extends to peer groups defined on 12 industries, using the NASDAQ index to represent technology stocks, an optimistic benchmark of the industry portfolio plus 1%. In addition to industry based measures, FOMO results appear when peers are defined by size, book-to-market ratio and the location of headquarters. It is seen that FOMO represents a hitherto unpriced source of risk.

5 Conclusion

This paper introduces, and empirically validates, a Fear of Missing Out Capital Asset Pricing Model (FOMO-CAPM). Our work recognizes that FOMO, an investor's asymmetric aversion to their portfolio underperforming a specific peer group reference benchmark, represents a distinct behavioral phenomenon not fully captured by traditional regret or disappointment aversion. We develop a theoretical framework where the specific emotional disutility of underperformance relative to peers influences asset valuation. The FOMO-CAPM posits that investors consider not only absolute returns but also the potential negative emotional impact of lagging their peers. The specification of the FOMO-CAPM amplifies perceived losses from underperformance relative to peers.

Our empirical investigation, conducted on U.S. stock market data from 1980 to 2024, provides robust support for the central predictions of the FOMO-CAPM. The battery of robustness tests presented undergird the presence of a FOMO effect within the US equity markets. By splitting the peer comparison regret beta, β^R , into upside, β^{FOMO+} , and downside, β^{FOMO-} , components we demonstrate a statistically significant asymmetry between responses to outperforming, and underperforming, peers. The significance of β^{FOMO-} meets the stringent criteria of Harvey and Liu (2021) to be more than a “lucky” finding. Exposure to performing worse than peers, as captured by β^{FOMO-} is a priced source of risk. Our findings are also robust to various portfolio construction methodologies, sample sub-periods and the exclusion of micro-cap stocks. The FOMO-CAPM defines an important bridge between behavioral finance insights and traditional asset pricing models.

Our findings emphasize that understanding investor sensitivity to peer group underperformance is crucial for a more complete picture of risk and expected excess return in financial markets. Future research can further explore the dynamic nature of the FOMO premium and its interplay with various market conditions and investor behaviours. Understanding the variation in, and the specific drivers of, the magnitude of FOMO is particularly pertinent in today’s markets, where social sentiment and peer influence are often amplified by technology and digital media. Social sentiment increasingly shapes individual investment decisions and hence asset prices in ways traditional models may not fully capture. The FOMO-CAPM provides an important step in the rectification of the gap between theory and practice in investor decision making.

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A Proposition Proofs

This appendix collects the proofs of Proposition 1 and Proposition 2 from the main paper. Equation numbers refer to the equations within Sections 2 and 3 of the main paper.

Proof of Proposition 1.

Let $\tilde{h}_i = \frac{g_i(H_i)}{W_{i,0}} - \frac{k_i(H_i)}{W_{i,0}}$. $\tilde{h}_i$ represents the effective counterfactual return and is used to simplify the subsequent notation. Further, let $\xi = -M_0 \left(\sum_{i=1}^I \frac{1+E \left[\frac{f'_i(W_{i,0}(r_{ip}-\tilde{h}_i))}{E \left[f''_i(W_{i,0}(r_{ip}-\tilde{h}_i)) \right]} \right]}{E \left[f''_i(W_{i,0}(r_{ip}-\tilde{h}_i)) \right]} \right)^{-1}$. ξ represents the aggregate sensitivity of the investor's utility to deviations in returns, as captured by the expected derivatives of the utility adjustment function. Applying Equation (11) to $\tilde{h}_i$, we obtain:

$$E[\tilde{h}_i] - r_f = \xi \text{cov}(r_m - h_m, \tilde{h}_i). \quad (\text{A.1})$$

Summing this equation over i , we have

$$E[h_m] - r_f = \xi \text{cov}(h_m, r_m - h_m). \quad (\text{A.2})$$

Again, by applying Equation (11) to r_m , we obtain

$$E[r_m] - r_f = \xi \text{cov}(r_m, r_m - h_m). \quad (\text{A.3})$$

From (A.2) and (A.3), we have

$$E[r_m] - E[h_m] = \xi \text{var}(r_m - h_m). \quad (\text{A.4})$$

Because $\xi > 0$ and $\text{var}(r_m - h_m) > 0$, it holds that $E[r_m] - E[h_m] > 0$. Hence, combining Equation (11) with (A.4) yields the asset pricing formula in Equation (16), ensuring that β_i^{FOMO} in Equation (17) is well defined. ■

Proof of Proposition 2.

Let investor i maximize their modified utility function:

$$\max_{\{w_{ij}\}} E[V_i(W_{i,1})] = E[W_{i,1} + f_i(W_{i,1} - g_i(H_i))] \quad (\text{A.5})$$

$g_i(H_i)$ is defined piecewise as per equation (4). $k_i(H_i)$ is convex ($k''_i \geq 0$), such that disutility for investor i is amplified when underperforming peers if $W_{i,1} < H_i$. From the first-order condition, equation (7), when $E[r_m] - E[h_m] < 0$, the financial premium $E[r_j - r_f]$ is negative. Further, when $E[r_m] - E[h_m] < 0$ the emotional adjustment dominates such that

$$E[r_j - r_f] + E[(r_j - r_f)f'_i(W_{i,1} - g_i(H_i))] = 0 \quad (\text{A.6})$$

The term is strictly positive, $E[(r_j - r_f)f'_i(W_{i,1} - g_i(H_i))] > 0$ for two reasons. Firstly, there is asymmetric disutility amongst investors. When $W_{i,1} < H_i$, $f'_i(W_{i,1} - g_i(H_i)) < 0$

and $|f'_i(W_{i,1} - g_i(H_i))|$ increases due to $k_i(H_i)$. Secondly, for peer-correlated assets, $\text{cov}(r_j, f'_i(W_{i,1} - g_i(H_i))) > 0$. Hence, the covariance between assets ensures that (A.6) holds.

Investors hold peer-aligned portfolios $w_{ij} > 0$ for $\beta_j^{FOMO} > 0$ because

$$E[f_i(W_{i,1} - g_i(H_i))] > |E[r_j - r_f]|. \quad (\text{A.7})$$

The expected emotional benefit $E[f_i(W_{i,1} - g_i(H_i))]$ outweighs the magnitude of the negative financial premium $|E[r_j - r_f]|$. Hence the FOMO-CAPM pricing equation, (16), is satisfied even when $E[r_m] - E[h_m] < 0$.

Ex-post underperformance $r_m < h_m$ updates $H_i \rightarrow H_i + k_i(H_i)$, steepening $f_i(\cdot)$ via $k_i(H_i)$ and reinforcing future herding, as $|f'_i(\cdot)|$ increases for $W_{i,1} < H_i$.

Thus, investors prioritize emotional hedging over financial optimization, validating Proposition 2. ■

B Appendix: Additional Empirical Results

This appendix provides supplementary empirical results that support the main analyses in the paper. In all cases, the reference portfolio is constructed from the Fama-French 38 Industry portfolios with value weighting. Details of the set up are provided in the main paper.

B.1 Industry Returns and Market Returns

A foundational element of our empirical strategy is the use of industry portfolios as benchmarks for peer-group performance. Specifically, we define the peer group as all investors in the same Fama-French 38 Industry portfolio. To characterize these benchmarks and ensure they are not simply proxies for the aggregate market factor, we first examine their correlation with the market. Figure A1 plots the time-series correlation between the daily excess return of each of the 38 Fama-French industry portfolios and the daily market excess return over our 1980-2024 sample period. Table A1 reports these time-series correlation between the daily excess return of each of the 38 Fama-French industry portfolios and the daily market excess return over the full sample period.

The correlations in Figure A1, and Table A1 confirm that while most industries are positively correlated with the market, there is substantial heterogeneity. The correlation ranges from a low of 0.07 for the Steam Supply industry to a high of 0.88 for the Services industry. The mean correlation across all 38 industries is 0.67. The wide dispersion of correlations demonstrates that our industry benchmarks capture distinct sources of variation beyond the aggregate market. Therefore, underperforming an industry benchmark

Table A1: Correlation of 38 Industry Portfolios with the Market Factor

Industry	Correlation	Industry	Correlation	Industry	Correlation
Steam Supply	0.0682	Electric, Gas, and Water Supply	0.6920	Radio and Television Broadcasting	0.7712
Irrigation Systems	0.0937	Lumber and Wood Products	0.6996	Fabricated Metal Products	0.7861
Public Administration	0.2430	Miscellaneous Manufacturing Industries	0.7003	Chemicals and Allied Products	0.7970
Tobacco Products	0.4484	Apparel and Other Textile Products	0.7027	Transportation	0.8046
Mining	0.4917	Telephone and Telegraph Communication	0.7033	Transportation Equipment	0.8089
Agriculture, forestry, and fishing	0.5094	Furniture and Fixtures	0.7086	Wholesale	0.8228
Nonmetallic Minerals Except Fuels	0.5250	Stone, Clay and Glass Products	0.7206	Finance, Insurance, and Real Estate	0.8240
Sanitary Services	0.5588	Paper and Allied Products	0.7263	Retail Stores	0.8246
Oil and Gas Extraction	0.5851	Rubber and Miscellaneous Plastics Products	0.7285	Electrical and Electronic Equipment	0.8339
Leather and Leather Products	0.6240	Food and Kindred Products	0.7320	Instruments and Related Products	0.8411
Textile Mill Products	0.6321	Construction	0.7337	Machinery, Except Electrical	0.8556
Missing	0.6447	Printing and Publishing	0.7491	Services	0.8760
Petroleum and Coal Products	0.6560	Primary Metal Industries	0.7539		

This table reports the time-series correlation between the daily value-weighted returns of each of the 38 Fama-French industry portfolios and the daily market excess return. The sample period is January 1980 to December 2024. Industries are sorted from lowest to highest correlation to illustrate the wide variation in market exposure. The mean correlation across all industries is 0.6716. All data from the website of Ken French.

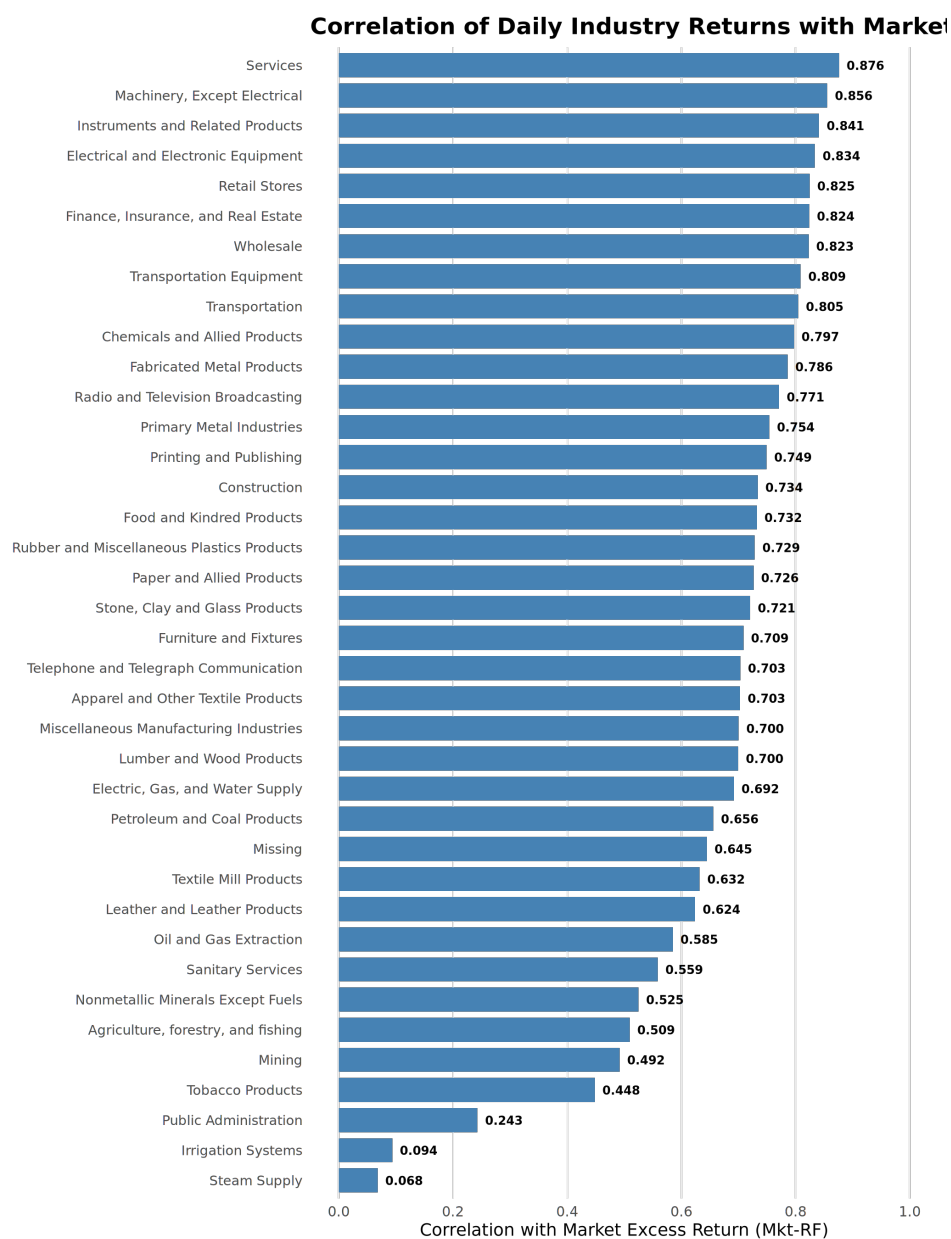


Figure A1: Correlation of 38 Industry Portfolios with the Market Factor

This figure plots the time-series correlation between the daily excess return of each of the 38 Fama-French industry portfolios and the daily market excess return. The sample period is January 1980 to December 2024. Industries are sorted in ascending order to illustrate the wide dispersion in market exposure.

is not synonymous with underperforming the market. Low correlations validate the use of a peer-group-specific benchmark to isolate the FOMO effect.

B.2 Correlations between Betas

First, to understand the relationships between our proposed FOMO betas and other relevant risk measures, Table A2 presents the time-series average of cross-sectional correlations between β^{CAPM} , β^R , β^{FOMO-} and β^{FOMO+} , as well as the downside (β^{Ang-}) and upside (β^{Ang+}) market betas. The relative betas, β^R are also included.

Table A2 reveals several important relationships. β^{FOMO-} , exhibits a correlation of 0.279 with β^{CAPM} , indicating that β^{FOMO-} captures aspects beyond standard market risk. The correlation of β^{FOMO-} with Ang’s (2006a) downside beta, β^{Ang-} , is 0.228. Again, the correlation is indicative of limited overlap between the betas in capturing downside phenomena. The correlation between our β^{FOMO-} and β^{FOMO+} is 0.511. Notably, the relative FOMO beta, $Rel\beta^{FOMO-}$, shows a strong negative correlation of -0.921 with β^{CAPM} , underscoring its construction to isolate non-market components. Similarly, $Rel\beta^{FOMO+}$ is highly negatively correlated with β^{CAPM} at -0.909 . These correlations provide initial context for the subsequent analyses.

B.3 Sorted Portfolios

Table A3 presents the results for univariate portfolio sorts on several relative and difference-based beta measures. These sorts supplement the primary findings in the main paper and highlight the complexity of interpreting relative beta sorts without multivariate controls.

Tables A4 and A5 provide a detailed analysis focusing on the unconditional Regret Beta β^R (which is equivalent to an unconditional β^{FOMO}). Table A4 presents the full Fama-MacBeth regression results. Table A5 examines the robustness of the β^R regression coefficient across different specifications and sample periods. These tables support the conclusion from the main text that the general peer-performance gap is a significantly priced factor. Here the peer performance gap, as captured through β^R , is treated symmetrically, rather than the asymmetric treatment that is applied through β^{FOMO-} and β^{FOMO+} in the main paper.

B.4 Determinants of β^{FOMO+}

For brevity in the main paper, we concentrate on the downside FOMO beta, β^{FOMO-} , excluding the determinants of the upside FOMO beta, β^{FOMO+} . In this appendix, we provide the determinants of β^{FOMO+} . While sharing some similarities with β^{FOMO-} , such as a negative relation with the book-to-market ratio and a positive relation with momentum and cokurtosis, there are notable differences. Unlike β^{FOMO-} , β^{FOMO+} does

Table A2: Time-Series Average of Cross-Sectional Beta Correlations

Variable	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	$\text{Rel}\beta_{\text{R}}^{\text{F}-}$	$\text{Rel}\beta_{\text{R}}^{\text{F}+}$	$\text{Rel}\beta_{\text{C}}^{\text{F}-}$	$\text{Rel}\beta_{\text{C}}^{\text{F}+}$	$\text{Diff}\beta^{\text{F}}$	$\beta^{\text{Ang}-}$	$\beta^{\text{Ang}+}$	$\text{Rel}\beta_{\text{C}}^{\text{A}-}$	$\text{Rel}\beta_{\text{C}}^{\text{A}+}$	$\text{Diff}\beta^{\text{A}}$
β^{CAPM}	1.000	0.388	0.279	0.265	-0.121	-0.113	-0.921	-0.909	0.011	0.759	0.733	-0.072	0.021	0.054
β^R		1.000	0.784	0.858	-0.207	0.069	-0.109	-0.050	0.164	0.295	0.307	-0.050	0.031	0.048
$\beta^{\text{FOMO}-}$			1.000	0.511	0.440	-0.260	0.083	-0.077	-0.406	0.228	0.222	-0.016	0.025	0.025
$\beta^{\text{FOMO}+}$				1.000	-0.433	0.566	-0.080	0.135	0.572	0.182	0.234	-0.072	0.057	0.079
$\text{Rel}\beta_{\text{R}}^{\text{F}-}$					1.000	-0.508	0.292	-0.051	-0.881	-0.067	-0.093	0.047	-0.002	-0.028
$\text{Rel}\beta_{\text{R}}^{\text{F}+}$						1.000	0.014	0.342	0.854	-0.124	-0.045	-0.053	0.061	0.071
$\text{Rel}\beta_{\text{C}}^{\text{F}-}$							1.000	0.916	-0.169	-0.694	-0.667	0.066	-0.011	-0.044
$\text{Rel}\beta_{\text{C}}^{\text{F}+}$								1.000	0.217	-0.698	-0.649	0.044	0.002	-0.023
$\text{Diff}\beta^{\text{F}}$									1.000	-0.027	0.032	-0.058	0.034	0.056
$\beta^{\text{Ang}-}$										1.000	0.431	0.571	-0.179	-0.450
$\beta^{\text{Ang}+}$											1.000	-0.266	0.677	0.594
$\text{Rel}\beta_{\text{C}}^{\text{A}-}$												1.000	-0.321	-0.785
$\text{Rel}\beta_{\text{C}}^{\text{A}+}$													1.000	0.833
$\text{Diff}\beta^{\text{A}}$														1.000

This table presents the time-series average of cross-sectional correlations between key realized beta measures. $\text{Rel}\beta_{\text{R}}^{\text{F}-}$ is $\beta^{\text{FOMO}-} - \beta^R$; $\text{Rel}\beta_{\text{R}}^{\text{F}+}$ is $\beta^{\text{FOMO}+} - \beta^R$; $\text{Rel}\beta_{\text{C}}^{\text{F}-}$ is $\beta^{\text{FOMO}-} - \beta^{\text{CAPM}}$; $\text{Rel}\beta_{\text{C}}^{\text{F}+}$ is $\beta^{\text{FOMO}+} - \beta^{\text{CAPM}}$; $\text{Diff}\beta^{\text{F}}$ is $\beta^{\text{FOMO}+} - \beta^{\text{FOMO}-}$. Similar definitions apply for Ang betas (A). For each 12-month overlapping evaluation period (from month t to $t+12$, evaluated monthly) within our sample, we compute the cross-sectional correlation matrix using all stocks listed on the NYSE/AMEX/NASDAQ with available data. The reported values are the averages of these periodic correlation matrices. All underlying realized betas are calculated using daily data over the respective 12-month evaluation periods. The sample period is January 1980 to December 2024, covering 529 monthly evaluation periods.

Table A3: Additional Univariate Portfolio Sort Results

Panel A: Sort on Rel. $\beta^{\text{FOMO}-}$ vs β^R						Panel B: Sort on Rel. $\beta^{\text{FOMO}+}$ vs β^R					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	3.78%	0.93	0.86	0.68	0.91	1 (Low)	0.58%	0.88	0.84	0.93	0.69
2	5.49%	0.85	0.93	0.88	0.97	2	12.66%	0.88	0.95	0.97	0.93
3	6.76%	0.78	0.94	0.94	0.96	3	9.45%	0.76	0.95	0.95	0.98
4	8.41%	0.73	0.93	0.98	0.94	4	6.53%	0.68	0.92	0.90	1.00
5 (High)	7.19%	0.73	0.83	1.00	0.78	5 (High)	3.25%	0.69	0.83	0.76	1.02
High-Low	3.41%					High-Low	2.67%				
t -stat	[2.98]***					t -stat	[1.19]				
Panel C: Sort on Rel. $\beta^{\text{FOMO}+}$ vs β^{CAPM}						Panel D: Sort on Diff. β^{FOMO} ($\beta^{\text{FOMO}+} - \beta^{\text{FOMO}-}$)					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	7.57%	1.55	0.90	0.93	0.81	1 (Low)	4.08%	0.81	0.83	0.97	0.69
2	8.02%	1.06	0.91	0.93	0.91	2	9.59%	0.80	0.94	0.98	0.94
3	7.82%	0.85	0.90	0.91	0.93	3	7.62%	0.75	0.94	0.95	0.98
4	7.20%	0.65	0.89	0.90	0.93	4	5.97%	0.76	0.92	0.88	1.00
5 (High)	4.92%	0.27	0.89	0.90	0.95	5 (High)	3.74%	0.83	0.84	0.70	1.01
High-Low	-2.65%					High-Low	-0.35%				
t -stat	[-0.82]					t -stat	[-0.23]				

This table presents additional results from univariate portfolio sorts. Stocks are sorted into five quintiles based on the specified realized beta measures. Panel A sorts on relative negative FOMO beta versus Regret Beta ($\beta^{\text{FOMO}-} - \beta^R$). Panel B sorts on relative positive FOMO beta versus Regret Beta ($\beta^{\text{FOMO}+} - \beta^R$). Panel C sorts on relative positive FOMO beta versus CAPM beta ($\beta^{\text{FOMO}+} - \beta^{\text{CAPM}}$). Panel D sorts on the difference FOMO beta ($\beta^{\text{FOMO}+} - \beta^{\text{FOMO}-}$). Each panel reports average 12-month realized excess returns and post-ranking realised β^{CAPM} , β^R , $\beta^{\text{FOMO}-}$, and $\beta^{\text{FOMO}+}$ for equal-weighted quintile portfolios. The sample period for analysis is January 1980 to December 2024.

Table A4: Fama-MacBeth Regression Results with β^R

Variable	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	Mean (Std Dev)
Intercept	0.559 [12.92]***	-0.343 [-8.03]***	-0.337 [-8.19]***	-0.038 [-0.97]	-0.038 [-0.96]	0.324 [7.92]***	0.334 [8.36]***	0.298 [6.45]***	
β^{CAPM}	0.133 [4.23]***		0.032 [1.27]	0.027 [0.87]	0.020 [0.63]	0.116 [4.01]***	0.107 [3.50]***		0.786 (0.556)
β^R		0.447 [8.91]***	0.423 [10.02]***	0.352 [10.18]***	0.349 [10.33]***	0.282 [8.67]***	0.245 [8.19]***	0.270 [8.01]***	0.896 (0.178)
$\beta^{\text{Ang-}}$								0.049 [3.56]***	0.862 (0.715)
$\beta^{\text{Ang+}}$								0.020 [2.33]**	0.681 (0.786)
Log-Size	-0.044 [-7.29]***			-0.013 [-2.22]**	-0.015 [-2.61]***	-0.046 [-7.39]***	-0.043 [-7.04]***	-0.040 [-6.66]***	5.187 (2.009)
B/M	-0.201 [-16.64]***			-0.205 [-16.94]***	-0.205 [-16.97]***	-0.202 [-16.70]***	-0.203 [-17.01]***	-0.205 [-16.61]***	0.789 (0.707)
Momentum	-0.051 [-2.82]***			-0.034 [-1.81]*	-0.035 [-1.84]*	-0.055 [-3.23]***	-0.055 [-3.06]***	-0.053 [-3.03]***	0.084 (0.506)
Volatility	-0.413 [-8.54]***					-0.438 [-9.32]***	-0.379 [-7.64]***	-0.355 [-6.23]***	0.535 (0.263)
Coskewness	-0.124 [-4.00]***				-0.128 [-4.67]***	-0.128 [-4.18]***	-0.119 [-3.84]***	-0.067 [-2.00]**	-0.119 (0.165)
Cokurtosis	0.000 [-0.03]					-0.001 [-0.07]	-0.001 [-0.09]	0.016 [1.27]	1.662 (1.181)
Liq β	0.008 [1.17]						0.009 [1.27]	0.009 [1.26]	-0.004 (0.426)
Avg. Adj. R² (%)	16.13	1.91	4.41	12.62	13.05	16.82	16.56	16.45	

This table presents coefficients from firm-level Fama-MacBeth (1973) cross-sectional regressions of 12-month realized excess returns on realized betas and firm characteristics. The sample period is January 1980 to December 2024, with regressions run monthly using overlapping 12-month evaluation periods, resulting in 529 monthly cross-sectional regressions. The analysis includes stocks listed on the NYSE, AMEX and NASDAQ. The average number of firms in each monthly cross-sectional regression is 4166. Coefficients are time-series averages of the estimates from these monthly regressions. t -statistics, reported in brackets, are computed using Newey and West (1987) heteroskedasticity and autocorrelation consistent standard errors with 12 lags. The dependent variable is the 12-month realized stock excess return. Independent variables include realized betas: β^R representing the Regret Beta, β^{CAPM} representing the standard market beta, with $\beta^{\text{Ang-}}$ and $\beta^{\text{Ang+}}$ representing the downside and upside market betas. Realized betas, realized 12-month return volatility (Vol), realized 12-month coskewness (Coskew) and realized 12-month cokurtosis (Cokurt) are calculated over the same 12-month period as the dependent variable using daily data. Firm characteristics are measured at the beginning of each 12-month evaluation period and include: natural logarithm of market capitalization (lnSize), book-to-market ratio (B/M) and prior 11-month cumulative excess return lagged one month (Mom). Lagged liquidity beta (Liq β) is estimated following Pástor and Stambaugh (2003). All independent variables included in the regressions are Winsorized at the 1% and 99% levels within each monthly cross-section. The final column reports the time-series average of the cross-sectional mean and standard deviation for each independent variable. The final row, *Avg. Adj. R²*, reports the time-series average of the adjusted R-squared values from the monthly cross-sectional regressions, expressed as a percentage. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A5: Robustness of Fama-MacBeth β^R Coefficient

Scenario	Coefficient	<i>t</i> -statistic
A: β^R from Appendix Model VII (Full Controls with β^{CAPM})		
Full Sample	0.245	[8.20]***
Sub-Period 1 (1980-2002)	0.354	[7.87]***
Sub-Period 2 (2003-2024)	0.147	[5.76]***
Exclude Micro-Caps	0.222	[6.57]***
B: β^R from Appendix Horse Race Model VIII (vs. Ang Betas)		
Full Sample	0.270	[8.02]***
Sub-Period 1 (1980-2002)	0.393	[7.78]***
Sub-Period 2 (2003-2024)	0.159	[5.57]***
Exclude Micro-Caps	0.244	[6.32]***

This table presents the Fama-MacBeth coefficient and *t*-statistic for the Regret Beta (β^R) under different scenarios and from two key model specifications detailed in Table A4. Panel A shows β^R from Appendix Model VII (which includes β^R , β^{CAPM} , and all standard controls). Panel B shows β^R from Appendix Model VIII (the "horse race" which includes β^R , Ang's (2006a) downside and upside market betas, and all standard controls, while excluding β^{CAPM}). "Full Sample" uses the entire period January 1980 - December 2024. "Sub-Period 1" covers 1980-2002 and "Sub-Period 2" covers 2003-2024. "Exclude Micro-Caps" runs regressions after removing stocks in the lowest NYSE market capitalization quintile. Coefficients are time-series averages from monthly Fama-MacBeth regressions. *t*-statistics use Newey and West (1987) standard errors with 12 lags. *** denotes significance at the 1% level.

not have a significant relationship with firm size in the multivariate model, but it does show a significant positive association with coskewness and a marginally significant negative association with volatility. The divergence in these determinants, particularly with respect to size and coskewness, provides further evidence that β^{FOMO-} and β^{FOMO+} capture empirically distinct dimensions of risk, reinforcing the asymmetric nature of the FOMO phenomenon.

B.5 Persistence of the FOMO Betas

In addition to understanding the characteristics associated with the level of FOMO betas, it is crucial to assess their stability over time. A persistent risk exposure is more likely to be a priced, systematic factor rather than a transient phenomenon. To test this, we follow Ang et al. (2006a) and conduct a multivariate persistence test using annual, non-overlapping data. We run annual Fama-MacBeth regressions where the dependent variable is a stock's realized FOMO beta in the next year (Year T+1), and the independent variables include its beta and other characteristics from the current year (Year T). A significant positive coefficient on the past beta in Table A7 confirms that the risk exposure for β^{FOMO-} and β^{FOMO+} are a stable characteristic of the firm.

B.6 Time Variation of Portfolio Sort Premia

To complement the rolling window analysis and mitigate concerns about overlapping data, we also examine the High-minus-Low spreads for key beta sorts over nine distinct, non-overlapping 5-year (60-month) sub-periods from January 1980 to December 2024 (the final period covering 49 months). For each sub-period, High-minus-Low portfolio returns are calculated based on monthly sorts using betas estimated over the prior 12 months (consistent with the main portfolio sort methodology but aggregated over the 60 months of the sub-period). Table A8 presents the average monthly High-minus-Low spreads and their Newey and West (1987) t -statistics for portfolios sorted on β^R and β^{FOMO-} .

Table A8 shows that for β^R sorts, the High-minus-Low premium is positive in all of the nine sub-periods and statistically significant at the 5% level, corresponding to a t -statistic of approximately 1.96 or higher in 7 of them, with the largest premium observed in the 199512 – 200011 period at 43.87% ($t = 9.82$), while the weakest significant premium of 7.55% occurs in the 200012 – 200511 period ($t = 3.44$). For β^{FOMO-} sorts, the High-minus-Low premium is also positive in all nine sub-periods and statistically significant in 8 of them, peaking at 41.02% in the 199512 – 200011 period ($t = 12.39$). The period 200512 – 201011, encompasses the Global Financial Crisis, shows weaker effects for both β^R (9.80% per annum with t -statistic of 1.69) and β^{FOMO-} carries a High-minus-Low premium 11.79% per annum ($t = 1.80$). The most recent period, 202012 – 202412, also

Table A6: Determinants of Realized FOMO Up Betas, β^{FOMO+}

Characteristic	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Intercept	0.7569 [16.95]***	0.9441 [39.84]***	0.9232 [71.43]***	1.0347 [27.35]***	0.8908 [72.67]***	0.8003 [11.36]***	0.9299 [87.52]***	0.9243 [15.54]***
Log(Size)	0.0315 [7.73]***							-0.0072 [-1.34]
BM		-0.0049 [-1.11]						0.0175 [2.59]**
Momentum			0.0760 [6.93]***					0.0307 [5.83]***
Volatility				-0.2433 [-3.44]***				-0.1383 [-2.60]**
Coskewness					-0.0362 [-0.79]			0.0271 [1.82]*
Cokurtosis						0.0875 [6.93]***		0.0690 [6.13]***
Liquidity β							0.0010 [0.15]	0.0010 [0.41]

This table presents time-series averages of coefficients from monthly cross-sectional regressions explaining the realized FOMO up-beta, β^{FOMO+} . For each month, the realized β^{FOMO+} is regressed on lagged firm characteristics. Models (I) through (VII) are univariate regressions, while Model (VIII) is a multivariate regression including all characteristics simultaneously. All characteristics are measured at the beginning of the 12-month beta estimation period. t -statistics, reported in brackets, are computed using Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A7: Annual Persistence of Realized FOMO Betas

Explanatory Variable (End of Year T)	$\beta^{\text{FOMO}-}$ (Year T+1)	$\beta^{\text{FOMO}+}$ (Year T+1)
Intercept	0.510*** [38.38]	0.570*** [23.94]
Past $\beta^{\text{FOMO}-}$ (Year T)	0.431*** [26.75]	
Past $\beta^{\text{FOMO}+}$ (Year T)		0.391*** [22.67]
Past Volatility (Year T)	-0.015 [-0.66]	-0.081*** [-4.45]
Log(Size) (Year T)	0.003 [1.59]	0.008*** [3.87]
Book-to-Market (Year T)	0.002 [0.59]	-0.014*** [-4.74]
Momentum (Year T)	0.003 [1.50]	0.010*** [5.15]

This table reports Fama-MacBeth coefficients from annual, non-overlapping regressions testing the persistence of FOMO betas. The dependent variable is the realized beta over Year T+1. Independent variables are the realized beta and other firm characteristics from the end of Year T. t-statistics, reported in parentheses, are computed using Newey-West (1987) standard errors with 5 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A8: High-minus-Low Spreads for Non-Overlapping 5-Year Sub-Periods

Window Period	Sort on β^R		Sort on β^{FOMO+}	
	HML (%)	t -statistic	HML (%)	t -statistic
198012-198511	16.26	[4.74]***	17.04	[3.89]***
198512-199011	25.67	[7.29]***	28.16	[10.18]***
199012-199511	33.03	[10.24]***	29.99	[15.85]***
199512-200011	43.87	[9.82]***	41.02	[12.39]***
200012-200511	7.55	[3.44]***	15.26	[6.09]***
200512-201011	13.31	[2.71]***	16.84	[2.86]***
201012-201511	12.79	[6.90]***	18.54	[9.01]***
201512-202011	9.53	[2.66]***	14.03	[3.42]***
202012-202412	17.51	[2.05]**	10.01	[1.86]*

This table presents average monthly High-minus-Low (HML) excess return spreads for portfolios sorted on realized β^R or β^{FOMO-} over nine non-overlapping 5-year (60-month) sub-periods. The last sub-period (202012-202412) covers 49 months. Betas are estimated over a 12-month rolling window using daily data. High-minus-Low spreads are in percent per month. t -statistics are derived from Newey-West (1987) adjusted standard errors (12 lags) for the High-minus-Low spread within each respective 5-year window. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

shows notably lower t -statistics for β^{FOMO-} ($t = 1.86$). These non-overlapping results broadly corroborate the findings from the rolling window analysis, indicating persistent, albeit time-varying, positive premia for β^R and β^{FOMO-} .

The combined evidence from rolling window and non-overlapping sub-period analyses suggests that while the risk premia associated with β^R and β^{FOMO-} are not constant, they represent significant and persistent features of the cross-section of stock returns over our sample period. The periods of heightened or diminished premiums warrant further investigation, linking β^R and β^{FOMO-} to broader market sentiment or economic conditions. Such exploration of the links between β^R , β^{FOMO-} and prevailing economic conditions is left for further analysis.

C Robustness Checks with β^{FOMO+} and β^R

In the main paper, robustness checks are focused on β^{FOMO-} . This appendix presents the results for each of the robustness checks when sorts are based on either the realized FOMO up beta, β^{FOMO+} , or the realized regret beta, β^R . Through this appendix, we demonstrate that there is a strong robustness in the results.

C.1 Alternative Investment Universes

In the first robustness check of the main paper we examine the robustness of our portfolio sort results to variations in the universe of stocks. Table A9 presents these checks for portfolios sorted on realized β^{FOMO-} (Panel A), the realized regret beta, β^R (Panel B) and the relative $\beta^{FOMO-} - \beta^R$ (Panel C). The scenarios include excluding small stocks, using all stocks from NYSE/AMEX/NASDAQ with NYSE breakpoints, and using value-weighted returns for NYSE stocks. Panel A also appears in the main paper.

Panel A of Table A9 demonstrates that the significant positive High-Low spread for portfolios sorted on β^{FOMO-} persists when small stocks are excluded. The strategy offers an excess return of 19.85% per annum ($t = 8.68$). When all stocks are considered, the premium rises to 21.45% with a t-statistic of 11.01. For value-weighted NYSE portfolios, the spread remains positive at 2.01% but is not statistically significant ($t = 1.29$). The β^{FOMO-} premium is more pronounced among equal-weighted portfolios. Our findings align with Ang et al. (2006a) and others who study asymmetry-related premia.

Panel B of Table A9 shows that the strong positive premium for sorting on the unconditional regret beta β^R is also robust. The High-Low spread remains substantial at 14.52% when excluding small stocks ($t = 7.03$) and rises to 19.99% when considering all stocks ($t = 8.77$). For value-weighted NYSE portfolios, the β^R spread is 1.78% ($t = 1.05$), positive but, similar to β^{FOMO-} , less statistically pronounced in a value-weighted context.

Panel C investigates the robustness of sorting on relative β^{FOMO-} versus β^R . The High-Low spread is positive at 6.16% and significant when excluding small stocks ($t = 4.54$) then reduces when considering all stocks to 3.41% ($t = 2.98$). For value-weighted NYSE stocks, the spread turns negative at -1.46% , ($t = -1.42$). The interpretation of these relative sorts remains complex due to potential confounding effects.

C.2 Firm Characteristics and the FOMO Premium

To examine whether the FOMO premium identified on both β^{FOMO-} and β^{FOMO+} is robust to controlling for alternative firm characteristics, we conduct a series of double sorts. We also provide results for β^R . The double sorts involve first sorting on the firm characteristic and then sorting stocks within each characteristic quintile on the FOMO beta. We perform the check for β^{FOMO-} , β^{FOMO+} and β^R separately as we know from earlier analysis that the determinants of each beta are different. Results are given in Table A10. The presented results for β^{FOMO-} replicate those in the main paper.

In all three cases it can be seen that the High-Low spread is statistically significant after controlling for each of the four characteristics. Consequently, the results demonstrate that the inference on β^{FOMO-} being a separate source of priced risk carries over to β^{FOMO+} and β^R .

Table A9: Robustness Checks of Portfolio Sorts on Key Beta Measures

Panel A: Sorts by realized $\beta^{\text{FOMO}-}$			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (%)
1 (Low)	2.45	-3.07	9.84
2	10.03	2.08	7.64
3	13.95	6.47	6.78
4	17.12	10.83	7.68
5 (High)	22.30	18.39	11.85
High-Low	19.85	21.45	2.01
<i>t</i> -statistic	[8.68]***	[11.01]***	[1.29]

Panel B: Sorts by realized β^R			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (%)
1 (Low)	2.02	-3.71	8.63
2	11.21	4.55	8.36
3	15.82	8.81	9.03
4	18.39	12.63	9.49
5 (High)	18.39	16.28	10.41
High-Low	16.37	19.99	1.78
<i>t</i> -statistic	[7.03]***	[8.77]***	[1.05]

Panel C: Sorts by realized Rel. $\beta^{\text{FOMO}-}$ vs β^R			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (%)
1 (Low)	9.76	3.78	10.75
2	11.37	5.49	8.46
3	13.13	6.76	7.93
4	15.66	8.41	8.97
5 (High)	15.92	7.19	9.29
High-Low	6.16	3.41	-1.46
<i>t</i> -statistic	[4.54]***	[2.98]***	[-1.42]

This table presents robustness checks for portfolio sort results. Panel A sorts on realized $\beta^{\text{FOMO}-}$, Panel B sorts on realized β^R , and Panel C sorts on realized relative $\beta^{\text{FOMO}-}$ versus β^R ($\beta^{\text{FOMO}-} - \beta^R$). For each sorting variable and robustness scenario, stocks are ranked into five quintiles based on the beta measure calculated using daily continuously compounded returns over a 12-month evaluation period. The table reports average 12-month realised excess returns (in percent) for these equal-weighted or value-weighted quintile portfolios. The robustness scenarios are: (1) Exclude small: Equal-weighted portfolios are formed among NYSE, AMEX and NASDAQ stocks after excluding stocks that fall into the lowest NYSE market capitalization quintile. Breakpoints are based on this reduced sample. (2) All stocks: Equal-weighted portfolios formed using all common stocks on NYSE, AMEX, and NASDAQ. Breakpoints are based on NYSE stocks. (3) Value-weighted: Value-weighted portfolios formed using only stocks listed on the NYSE. Returns are weighted by market capitalization at the beginning of each 12-month evaluation period. Breakpoints are based on NYSE stocks. The row labelled "High-Low" reports the difference between the average returns of Portfolio 5 and Portfolio 1. *t*-statistics (in brackets) use Newey and West (1987) standard errors with 12 lags. Sample period: January 1980 - December 2024. The number of firms per quintile typically ranges from approximately 986 to 1864 for "Exclude small" and "All stocks" scenarios, and 354 to 579 for the "Value-weighted" scenario. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A10: High-Low Spreads on FOMO Betas after Controlling for Firm Characteristics

Panel A: Sorts on β^{FOMO-}							
Control Variable	Quintile Portfolios on β^{FOMO-}					Spread	
	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
Log(Size)	−9.07	−4.18	0.19	4.18	10.67	19.74	[4.53]***
BM	−6.80	−3.57	−0.37	2.88	9.26	16.05	[5.72]***
Momentum	−8.70	−3.90	−0.03	3.95	10.23	18.92	[5.74]***
Coskewness	−9.14	−4.07	0.32	4.22	10.13	19.28	[5.45]***

Panel B: Sorts on β^{FOMO+}							
Control Variable	Quintile Portfolios on β^{FOMO+}					Spread	
	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
Log(Size)	−8.82	3.33	5.31	2.85	−0.83	7.99	[4.37]***
BM	−7.53	2.96	4.12	1.59	−0.46	7.07	[2.95]***
Momentum	−8.51	3.07	4.90	2.62	−0.87	7.65	[4.09]***
Coskewness	−8.90	3.32	5.18	2.79	−0.29	8.61	[3.73]***

Panel C: Sorts on Regret Beta (β^R)							
Control Variable	Quintile Portfolios on β^R					Spread	
	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
Log(Size)	−9.44	−1.66	2.51	5.55	8.04	17.48	[3.97]***
BM	−8.18	−1.40	1.79	4.44	6.96	15.15	[4.67]***
Momentum	−9.38	−1.72	2.21	5.44	7.82	17.20	[5.14]***
Coskewness	−9.58	−1.57	2.46	5.52	8.09	17.66	[5.01]***

This table presents average 12-month characteristic-adjusted excess returns for portfolios sorted on realized FOMO betas. Each month, we first sort stocks into quintiles based on a control characteristic (Log(Size), BM, etc.). Within each quintile, we then subtract the quintile's equal-weighted average return from each stock's return to get an adjusted return. All stocks are then pooled and sorted into quintiles based on their realized β^{FOMO-} (Panel A), β^{FOMO+} (Panel B), and β^R (Panel C). The table reports the time-series average of the monthly characteristic-adjusted returns for each quintile. The High-Low column is the spread between Quintile 5 and Quintile 1, with Newey-West (1987) *t*-statistics adjusted for 12 lags. *** denotes significance at the 1% level.

C.2.1 Volatility and the FOMO Premium

In the main paper, we demonstrate that the β^{FOMO-} premium is distinct from the well-documented low-volatility anomaly. In this appendix, we also include a similar analysis for β^{FOMO+} and β^R . To disentangle the volatility and FOMO effects, we perform independent 5x5 portfolio sorts on realised 12-month volatility and realized β^{FOMO-} , β^{FOMO+} and β^R . Stocks are first sorted into quintiles based on their realized volatilities. Within each volatility quintile, stocks are further sorted into five further quintiles based on their β^{FOMO-} , β^{FOMO+} , or β^R as appropriate.

The results, shown in Table A11, reveal a powerful interaction between FOMO risk and stock volatility. In the lowest volatility quintiles, the premium for β^{FOMO-} is muted and statistically insignificant. In the main paper, we show that the premium for β^{FOMO-} becomes exceptionally strong and highly significant among high-volatility stocks. In the highest volatility quintile 5 (High Vol), the High-Low portfolio sorted on β^{FOMO-} earns a remarkable 59.66% per annum ($t = 10.65$). The β^{FOMO+} premium is smaller, but still equates to 25.55% per annum ($t = 12.16$). We do note significance of the β^{FOMO+} premium in the lowest volatility quintile. For the regret beta, there are significant premia in the 1st, 4th and 5th quintiles. Amongst the low volatility stocks of quintile 1, the β^R premium is 4.90%. The 4th quintile also reveals a positive and significant premium of 7.05%. In the highest volatility stocks, the β^R premium is 38.49% ($t = 11.87$), close to that of β^{FOMO-} (8.80%, $t = 3.16$). The FOMO effect is not only robust but is most pronounced precisely within the set of stocks that are already considered the most volatile. FOMO effects are strongest in a segment of the market where standard asset pricing models often struggle.

C.3 Fama-MacBeth Regression Robustness

The results for β^{FOMO+} show that its positive premium is not as robust as that of β^{FOMO-} . While significant for the full sample, its statistical power weakens in the second sub-period (2003-2024). Most notably, the premium disappears and turns negative (though insignificant) when micro-cap stocks are excluded. This suggests that the pricing of upside sensitivity is largely driven by small, potentially illiquid stocks and has become less pronounced in the more recent half of the sample.

In stark contrast to β^{FOMO+} , the unconditional regret beta, β^R , demonstrates remarkable robustness. The coefficient is positive, economically large, and highly statistically significant across all scenarios, including both sub-periods. Only when excluding micro-caps do we see limited statistical significance for β^{FOMO+} . β^R shows strong statistical significance when excluding micro-caps. Even though the premium is smaller in the second sub-period, it remains highly significant. The fact that the β^R premium survives the horse race with Ang's (2006a) betas and remains strong after excluding the smallest

Table A11: Portfolio Returns from 5x5 Sorts on Volatility and FOMO Betas

Panel A: Secondary Sort on $\beta^{\text{FOMO}-}$							
Volatility	Quintiles formed on $\beta^{\text{FOMO}-}$					Spread	
Quintile	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
1 (Low Vol)	11.09	10.77	9.75	9.30	9.99	-1.10	[-0.81]
2	14.14	10.98	10.44	10.40	12.63	-1.51	[-1.10]
3	13.12	10.65	10.68	11.13	15.10	1.99	[1.36]
4	8.96	10.11	10.32	12.27	18.60	9.64	[4.12]***
5 (High Vol)	-20.84	-7.95	1.25	6.85	18.82	39.66	[10.65]***

Panel B: Secondary Sort on $\beta^{\text{FOMO}+}$							
Volatility	Quintiles formed on $\beta^{\text{FOMO}+}$					Spread	
Quintile	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
1 (Low Vol)	5.16	9.17	12.03	13.62	10.93	5.76	[3.91]***
2	8.20	12.05	14.05	13.80	10.52	2.31	[2.00]**
3	10.51	12.68	14.35	13.59	9.60	-0.91	[-0.69]
4	11.49	13.50	14.50	12.18	8.63	-2.86	[-2.01]**
5 (High Vol)	-21.81	0.32	7.64	8.26	3.74	25.55	[12.16]***

Panel C: Secondary Sort on Regret Beta (β^R)							
Volatility	Quintiles formed on β^R					Spread	
Quintile	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
1 (Low Vol)	6.95	9.45	10.86	12.53	11.12	4.17	[2.35]**
2	9.84	10.36	12.29	13.68	12.44	2.60	[1.37]
3	10.07	10.17	12.90	13.50	14.06	3.99	[1.88]*
4	7.42	9.96	12.19	14.49	16.22	8.80	[3.16]***
5 (High Vol)	-22.68	-5.55	2.68	7.89	15.81	38.49	[11.87]***

This table presents average 12-month excess returns for 25 portfolios formed from sequential 5x5 sorts on volatility on various behavioral betas. Each month, stocks are first sorted into quintiles based on their realized volatility over the prior 12 months. Then, within each volatility quintile, stocks are further sorted into five quintiles based on their realized $\beta^{\text{FOMO}-}$ (Panel A), $\beta^{\text{FOMO}+}$ (Panel B) and β^R (Panel C). The High-Low column reports the return spread between Quintile 5 and Quintile 1 of the FOMO beta sort within each volatility quintile. *t*-statistics are based on Newey and West (1987) standard errors with 12 lags. *** and ** denote significance at the 1% and 5% levels, respectively.

Table A12: Robustness of Fama-MacBeth β^{FOMO+} Coefficient

Scenario	Coefficient	t-statistic
A: β^{FOMO+} Model VII (Full Controls)		
Full Sample	0.094	[4.38]***
Sub-Period 1 (1980-2002)	0.110	[3.10]***
Sub-Period 2 (2003-2024)	0.079	[3.21]***
Exclude Micro-Caps	0.024	[1.36]
B: β^{FOMO+} Horse Race Model VIII		
Full Sample	0.106	[4.73]***
Sub-Period 1 (1980-2002)	0.129	[3.51]***
Sub-Period 2 (2003-2024)	0.086	[3.28]***
Exclude Micro-Caps	0.036	[1.83]*

This table presents the Fama-MacBeth coefficient and t -statistic for β^{FOMO+} under different scenarios. Panel A shows results from Model VII (which includes β^{FOMO-} , β^{FOMO+} , β^{CAPM} , and all controls). Panel B shows results from Model VIII (the "horse race" including Ang's (2006a) betas). "Full Sample" uses the entire period January 1980 - December 2024. "Sub-Period 1" covers 1980-2002 and "Sub-Period 2" covers 2003-2024. "Exclude Micro-Caps" removes stocks in the lowest NYSE market capitalization quintile. Coefficients are time-series averages from monthly Fama-MacBeth regressions. t -statistics use Newey and West (1987) standard errors with 12 lags. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table A13: Robustness of Fama-MacBeth β^R Coefficient

Scenario	Coefficient	t-statistic
A: β^R Appendix Model VII (Full Controls with β^{CAPM})		
Full Sample	0.245	[8.20]***
Sub-Period 1 (1980-2002)	0.354	[7.87]***
Sub-Period 2 (2003-2024)	0.147	[5.76]***
Exclude Micro-Caps	0.222	[6.57]***
B: β^R Horse Race Appendix Model VIII (vs. Ang Betas)		
Full Sample	0.270	[8.02]***
Sub-Period 1 (1980-2002)	0.393	[7.78]***
Sub-Period 2 (2003-2024)	0.159	[5.57]***
Exclude Micro-Caps	0.244	[6.32]***

This table presents the Fama-MacBeth coefficient and t -statistic for β^R under different scenarios. Panel A shows results from Model VII (which includes β^R , β^{CAPM} , and all controls). Panel B shows results from Model VIII (the "horse race" including Ang's (2006a) betas). "Full Sample" uses the entire period January 1980 - December 2024. "Sub-Period 1" covers 1980-2002 and "Sub-Period 2" covers 2003-2024. "Exclude Micro-Caps" removes stocks in the lowest NYSE market capitalization quintile. Coefficients are time-series averages from monthly Fama-MacBeth regressions. t -statistics use Newey and West (1987) standard errors with 12 lags. *** denotes significance at the 1% level.

stocks solidifies its position as a powerful and robust predictor of the cross-section of stock returns.

D FOMO Risk in Asset Pricing Tests

Stocks with high realized β^{FOMO-} earn contemporaneously higher average returns. Higher returns on stocks with higher β^{FOMO-} are shown to be robust in Fama-MacBeth regressions when controlling for firm characteristics and relevant risk factors. The robustness demonstrates the pricing of FOMO risk among individual stocks.

To demonstrate that a FOMO factor improves the ability of standard models to price well-diversified portfolios, we employ the Gibbons, Ross, and Shanken (1989) F-test to evaluate the performance of various factor models in explaining the time-series returns of two distinct sets of test assets: First, five quintile portfolios sorted on the realized β^{FOMO-} themselves and second, 25 Fama-French portfolios sorted on size and book-to-market, a commonly used set of diversified portfolios for model testing²⁹. The GRS test assesses the null hypothesis that the model’s pricing errors, or alphas, for a set of test assets are jointly zero. A statistically significant GRS statistic implies that the model is misspecified and fails to price the test assets. We are particularly interested in whether adding a FOMO factor (FMF), constructed from the β^{FOMO-} sorted portfolios, improves model performance, indicated by a reduction in the GRS statistic, an increase in its p-value and a decrease in the average absolute alpha (AvgAbsAlpha). The models tested include the CAPM, the Fama-French three-factor (FF3) model, the Carhart four-factor model (FF4, adding momentum) and extensions including our FMF factor and Ang et al. (2006a) downside risk factor (ADF). Table A14 presents the GRS test results.

Panel A of Table A14 shows that when testing on the five β^{FOMO-} -sorted portfolios, the CAPM, FF3 and FF4 models are all strongly rejected, with GRS p-values of < 0.000 in all three cases. The average absolute alphas are also notable, for instance, 0.072% per month for the FF3 model. When our FMF factor is added to the FF4 model, there is a marked improvement. The GRS statistics drops from 2.783 to 1.934 and the p-value increases substantially to 0.087, narrowly missing conventional significance levels. The average absolute alpha also reduces dramatically to 0.035% per month. This suggests that the FMF factor is crucial for explaining the returns of portfolios sorted on β^{FOMO-} , which is expected as the factor is derived from these sorts.

For comparison, adding the ADF to FF4 results in a GRS statistic of 2.134 (p-value=0.060) and an average absolute alpha of 0.077%. While this is an improvement over FF4, the FMF factor achieves a lower average absolute alpha and a slightly higher p-value. The

²⁹Because our FOMO model uses the Fama-French 38 Industry Portfolios as reference portfolios for investors peers, it is not possible to use the industry portfolios as test assets in the GRS tests.

Table A14: GRS Test Results for Factor Models on Different Sets of Test Assets

Panel A: Test Assets = 5 β^{FOMO-}-Sorted Portfolios					
Model Specification	Num. Factors	Num. Assets	AvgAbsAlpha (% p.m.)	GRS Statistic	p-value
1. CAPM	1	5	0.061	1.185	0.315
2. FF3 (Mkt, SMB, HML)	3	5	0.072	1.452	0.204
3. FF4 (Mkt, SMB, HML, Mom)	4	5	0.095	1.012	0.410
4. FF4 + ADF	5	5	0.096	1.928	0.088
5. FF4 + FMF	5	5	0.043	0.630	0.677
6. FF4 + FMF + ADF	6	5	0.120	1.864	0.099

Panel B: Test Assets = 25 Fama-French Size and B/M Portfolios					
Model Specification	Num. Factors	Num. Assets	AvgAbsAlpha (% p.m.)	GRS Statistic	p-value
1. CAPM	1	25	0.165	4.345	0.000
2. FF3 (Mkt, SMB, HML)	3	25	0.110	4.119	0.000
3. FF4 (Mkt, SMB, HML, Mom)	4	25	0.102	3.662	0.000
4. FF4 + ADF	5	25	0.098	3.454	0.000
5. FF4 + FMF	5	25	0.110	4.170	0.000
6. FF4 + FMF + ADF	6	25	0.099	3.479	0.000

This table reports results from the Gibbons et al. (1989) F-test for various factor models on two sets of test assets. Panel A uses five quintile portfolios formed by sorting stocks on realized β^{FOMO-} . Panel B uses the 25 Fama-French portfolios sorted on size and book-to-market. "AvgAbsAlpha (% p.m.)" is the average of the absolute values of the monthly time-series regression intercepts (alphas). "GRS Statistic" is the GRS F-statistic testing the null hypothesis that all alphas are jointly zero. FMF is our FOMO factor based on β^{FOMO-} sorts. ADF is Ang's (2006a) downside risk factor. Factors Mkt (Mkt-RF), SMB, HML, and Mom (Momentum) are from the Fama-French data library. The sample period for the time-series regressions is January 1980 to December 2024. The GRS test uses 540 time-series observations.

model including both FMF and ADF alongside FF4 does not show further improvement over Model 4 using only FMF, resulting in a GRS of 2.125 (p-value = 0.061). The associated average absolute alpha for the FMF, ADF and FF4 combination is = 0.080%. The GRS test results highlight that the FMF factor effectively captures the primary dimension of return variation across the β^{FOMO-} sorted portfolios.

To further validate the FMF factor, and ensure our results are not an artefact of the benchmark constructions, we conduct GRS tests on the 25 Fama-French portfolios sorted on size and book-to-market. As shown in Panel B, all tested models, including those augmented with our FMF factor, are strongly rejected. This is a common finding in the literature, as the returns of the 25 Fama-French portfolios are notoriously difficult to price and capture strong value and size dynamics not explicitly modeled by our factor. The results highlight that while the FMF factor is crucial for explaining the cross-section of FOMO-related risk, it is not a complete solution for all known market anomalies.

In contrast to the results for the FOMO-sorted portfolios, adding our FMF factor to the four-factor model does not improve its performance in pricing the 25 Fama-French portfolios on size and book-to-market. The GRS statistic of 4.176 for the FF4+FMF model is in fact higher than for the FF4 model alone (GRS 3.662). The higher GRS statistic indicates that while the FMF factor is pivotal for explaining the return variation across portfolios sorted on FOMO sensitivity, its pricing power does not extend to the well-documented size and value anomalies. Our GRS test results reinforce the interpretation of FMF as a distinct behavioral factor. The strong results from Panel A remain the key finding, affirming that the FMF factor captures a significant and priced source of FOMO-related risk.

E Appendix: Robustness to a Constant Shift in the Benchmark

To test the robustness of our findings to the specific level of the peer-group benchmark, we replicate our main analyses under an alternative specification. We term the reference portfolio in this section an "aspirational" benchmark. A potential concern is that our results could be sensitive to the absolute level of the benchmark returns rather than the co-movement between a stock and its benchmark. To address this, we add a constant of 100 basis points (1% per annum) to the daily industry benchmark return h_j in every period before calculating the conditional FOMO betas and running our tests. This modification uniformly increases the performance hurdle for every stock but does not alter the time-series variation of the benchmark.

Table A15 provides sorted portfolios, while Table A16 delivers the Fama-MacBeth regressions. The findings are remarkably strong: the portfolio sort spreads, regression

coefficients, and statistical significance levels for our key variables, particularly β^{FOMO-} , are virtually identical to those reported in the main body of the paper. The continued significance of the key variables demonstrates that our results are not an artefact of the specific level of the peer benchmark. The robustness tests confirms that the inference in the main paper is driven by the sensitivity of stocks to benchmark fluctuations. The core mechanism of the FOMO-CAPM is robust to a significant, constant upward shift in the performance benchmark.

F Appendix: Empirical Results for using the High-Tech (NASDAQ) Benchmark

It is often argued that investors give special attention to the growth of tech stocks. Tech stocks have the potential to revolutionize industries, but involve the issuing firms undertaking extensive R&D and risking the failure of their business. Because the business model of a technology firm hinges on future success, the potential upside for investors is large. However, the risk of failure is also higher. Investors may ordinarily not select such high risk stocks, but it is highly likely that members of their peer group would select high tech stocks. Hence an alternative benchmark for investors is the average performance of high technology stocks.

This appendix provides the comprehensive supplementary results for the empirical tests discussed in Section 4. All analyses presented here use the NASDAQ Composite Index as the proxy for the peer-group benchmark, representing a portfolio of high-tech and high-growth stocks. Data on NASDAQ returns is obtained from CRSP. The tables in this appendix provide detailed breakdowns, robustness checks, and additional evidence supporting the main findings presented in the text.

F.1 Univariate Portfolio Sorts

To supplement the primary univariate sort on β^{FOMO-} presented in the main text, Table A17 shows the results for portfolios sorted on various alternative beta definitions. In all cases the reference portfolio is the NASDAQ index.

As shown in Panels C and D, portfolios sorted on either downside sensitivity, β^{FOMO-} , or upside sensitivity, β^{FOMO+} , earn large and significant positive returns. However, these univariate sorts also reveal a natural co-movement between different risk exposures. For instance, in the β^{FOMO-} sort of Panel C, the standard market beta, β^{CAPM} increases from 0.40 in the lowest quintile to 1.16 in the highest quintile. This indicates that a portion of the observed premium could be compensation for standard market risk rather than purely for the risk captured by β^{FOMO-} . Therefore, while these results provide strong

Table A15: Portfolio Sorts with Aspirational Benchmark (+1% to Industry)

Panel A: Sort on β^{CAPM}						Panel B: Sort on β^R (Regret Beta)					
Portfolio	Return	β^{CAPM}	β^R	β^{FOMO-}	β^{FOMO+}	Portfolio	Return	β^{CAPM}	β^R	β^{FOMO-}	β^{FOMO+}
1 (Low)	2.56%	0.21	0.80	0.84	0.83	1 (Low)	-3.71%	0.54	0.63	0.69	0.65
2	7.22%	0.67	0.89	0.90	0.92	2	4.55%	0.62	0.87	0.87	0.90
3	8.07%	0.89	0.93	0.94	0.96	3	8.81%	0.76	0.96	0.96	0.99
4	9.07%	1.13	0.97	0.97	0.98	4	12.63%	1.04	1.02	1.03	1.04
5 (High)	10.72%	1.65	0.99	0.99	0.99	5 (High)	16.29%	1.37	1.13	1.14	1.14
High-Low	8.16%					High-Low	20.00%				
t -stat	[2.48]**					t -stat	[8.77]***				

Panel C: Sort on β^{FOMO-}						Panel D: Sort on β^{FOMO+}					
Portfolio	Return	β^{CAPM}	β^R	β^{FOMO-}	β^{FOMO+}	Portfolio	Return	β^{CAPM}	β^R	β^{FOMO-}	β^{FOMO+}
1 (Low)	-3.03%	0.63	0.67	0.60	0.74	1 (Low)	-3.10%	0.61	0.69	0.78	0.63
2	2.07%	0.65	0.86	0.86	0.89	2	9.70%	0.67	0.89	0.90	0.92
3	6.47%	0.72	0.93	0.96	0.94	3	11.86%	0.78	0.95	0.94	1.00
4	10.81%	0.92	0.99	1.04	0.99	4	9.68%	0.97	1.00	0.98	1.06
5 (High)	18.38%	1.18	1.08	1.17	1.07	5 (High)	6.80%	1.13	1.08	1.06	1.18
High-Low	21.42%					High-Low	9.91%				
t -stat	[10.98]***					t -stat	[6.88]***				

Panel E: Sort on Rel. β^{FOMO-} vs β^{CAPM}					
Portfolio	Return	β^{CAPM}	β^R	β^{FOMO-}	β^{FOMO+}
1 (Low)	7.87%	1.59	0.91	0.87	0.93
2	8.68%	1.09	0.92	0.90	0.94
3	8.38%	0.88	0.91	0.92	0.94
4	7.85%	0.67	0.89	0.92	0.92
5 (High)	4.08%	0.28	0.88	0.94	0.90
High-Low	-3.78%				
t -stat	[-1.21]				

This table presents average 12-month realized excess returns and post-ranking realized betas for equal-weighted quintile portfolios. For each 12-month period from t to $t + 12$ (evaluated monthly using overlapping windows), stocks are sorted into five quintiles based on one of five realized beta measures calculated over that same period using daily data: standard CAPM Beta (β^{CAPM}), Regret Beta (β^R), negative FOMO Beta (β^{FOMO-}), positive FOMO Beta (β^{FOMO+}), or relative negative FOMO Beta ($\beta^{FOMO-} - \beta^{CAPM}$). β^{CAPM} is estimated using the stock's excess return and the market excess return $r_m - r_f$. β^R is estimated by regressing the stock's excess return $r_j - r_f$ on its performance gap relative to its industry benchmark $r_j - h_j - 1$ unconditionally. β^{FOMO-} and β^{FOMO+} capture the sensitivity of the stock's excess return $r_j - r_f$ to this same performance gap $r_j - h_j$, where β^{FOMO-} is estimated during periods when the stock underperforms its industry benchmark by at least 1 percentage point ($r_j - h_j < 1$) and β^{FOMO+} during periods where it outperforms ($r_j - h_j > 1$). The industry benchmark h_j is the excess return of the corresponding Fama-French 38 industry portfolio. Investors use $h_j + 1$ as the reference point. The column labeled "Return" reports the average realized 12-month excess return for each quintile portfolio. The columns labeled " β^{CAPM} ", " β^R ", " β^{FOMO-} " and " β^{FOMO+} " report the time-series average of the equal-weighted post-ranking realized betas for stocks within each quintile, computed contemporaneously over the same 12-month period. Breakpoints for quintile formation are based on NYSE stocks. The row labeled "High-Low" reports the difference in average returns between Portfolio 5 and Portfolio 1. t -statistics for the High-Low difference are computed using Newey and West (1987) heteroskedasticity and autocorrelation consistent standard errors with 12 lags. The sample period for analysis is January 1980 to December 2024.

Table A16: Fama-MacBeth Regressions with Aspirational Benchmark (+1% to Industry)

Variable	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	Mean (Std Dev)
Intercept	0.242 [4.52]***	-0.396 [-8.64]***	-0.390 [-8.62]***	-0.036 [-0.82]	-0.034 [-0.79]	0.350 [8.19]***	0.362 [8.53]***	0.322 [6.80]***	
β^R	0.290 [8.23]***								0.896 (0.178)
β^{CAPM}			0.038 [1.48]	0.040 [1.25]	0.034 [1.05]	0.123 [4.20]***	0.113 [3.66]***		0.786 (0.556)
$\beta^{\text{FOMO}-}$		0.259 [5.92]***	0.227 [6.67]***	0.097 [5.09]***	0.092 [4.92]***	0.104 [5.85]***	0.095 [5.34]***	0.106 [5.55]***	0.911 (0.194)
$\beta^{\text{FOMO}+}$		0.235 [8.42]***	0.238 [7.33]***	0.243 [9.72]***	0.244 [10.07]***	0.116 [5.17]***	0.094 [4.38]***	0.107 [4.73]***	0.918 (0.213)
$\beta^{\text{Ang}-}$								0.051 [3.66]***	0.862 (0.715)
$\beta^{\text{Ang}+}$								0.021 [2.54]**	0.681 (0.786)
lnSize	-0.041 [-6.65]***			-0.015 [-2.58]**	-0.017 [-2.95]***	-0.044 [-7.28]***	-0.042 [-7.00]***	-0.039 [-6.59]***	5.187 (2.009)
BM	-0.208 [-16.48]***			-0.206 [-17.01]***	-0.205 [-17.03]***	-0.202 [-16.70]***	-0.203 [-17.02]***	-0.205 [-16.60]***	0.789 (0.707)
Mom	-0.050 [-2.83]***			-0.037 [-1.95]*	-0.037 [-1.98]**	-0.053 [-3.09]***	-0.053 [-2.94]***	-0.052 [-2.90]***	0.084 (0.506)
Volatility	-0.255 [-3.84]***					-0.413 [-8.49]***	-0.359 [-7.00]***	-0.328 [-5.55]***	0.535 (0.263)
Coskewness	-0.113 [-3.43]***				-0.130 [-4.86]***	-0.129 [-4.32]***	-0.120 [-3.94]***	-0.068 [-2.05]**	-0.119 (0.165)
Cokurtosis	0.058 [4.41]***					0.000 [0.02]	0.000 [-0.02]	0.019 [1.48]	1.662 (1.181)
Liq β	0.010 [1.39]						0.009 [1.26]	0.009 [1.24]	-0.004 (0.426)
Avg. Adj. R² (%)	15.90	2.84	5.50	13.01	13.42	16.79	16.57	16.43	

This table presents coefficients from firm-level Fama-MacBeth (1973) cross-sectional regressions of 12-month realized excess returns on realized betas and firm characteristics. The sample period is January 1980 to December 2024, with regressions run monthly using overlapping 12-month evaluation periods, resulting in 529 monthly cross-sectional regressions. The analysis includes stocks listed on the NYSE, AMEX and NASDAQ. The average number of firms in each monthly cross-sectional regression is 4166. Coefficients are time-series averages of the estimates from these monthly regressions. t -statistics, reported in brackets, are computed using Newey and West (1987) heteroskedasticity and autocorrelation consistent standard errors with 12 lags. The dependent variable is the 12-month realized stock excess return. Independent variables include realized betas: β^R representing the Regret Beta, β^{CAPM} representing the standard market beta, $\beta^{\text{FOMO}-}$ and $\beta^{\text{FOMO}+}$ representing the negative and positive FOMO betas, as well as β_{Ang}^- and β_{Ang}^+ representing the downside and upside market betas. Realized betas, realized 12-month return volatility (Vol), realized 12-month coskewness (Coskew) and realized 12-month cokurtosis (Cokurt) are calculated over the same 12-month period as the dependent variable using daily data. Firm characteristics are measured at the beginning of each 12-month evaluation period and include: natural logarithm of market capitalization (lnSize), book-to-market ratio (B/M) and prior 11-month cumulative excess return lagged one month (Mom). Lagged liquidity beta (Liq β) is estimated following Pástor and Stambaugh (2003). All independent variables included in the regressions are Winsorized at the 1% and 99% levels within each monthly cross-section. The final column reports the time-series average of the cross-sectional mean and standard deviation for each independent variable. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A17: Portfolio Sorts with the High-Tech (NASDAQ) Benchmark

Panel A: Sort on β^{CAPM}						Panel B: Sort on β^R (Regret Beta)					
Portfolio	Return	β^{CAPM}	β^R	β^{FOMO-}	β^{FOMO+}	Portfolio	Return	β^{CAPM}	β^R	β^{FOMO-}	β^{FOMO+}
1 (Low)	2.56	0.21	0.74	0.78	0.77	1 (Low)	-1.47	0.46	0.57	0.64	0.56
2	7.22	0.67	0.82	0.86	0.86	2	5.14	0.57	0.80	0.82	0.83
3	8.07	0.89	0.88	0.91	0.91	3	7.40	0.73	0.89	0.90	0.92
4	9.07	1.13	0.93	0.95	0.95	4	10.15	0.96	0.96	0.97	0.99
5 (High)	10.72	1.65	0.98	0.99	0.97	5 (High)	15.30	1.39	1.05	1.06	1.06
High-Low	8.16					High-Low	16.77				
t -stat	[2.48]**					t -stat	[5.63]***				

Panel C: Sort on β^{FOMO-}						Panel D: Sort on β^{FOMO+}					
Portfolio	Return	β^{CAPM}	β^R	β^{FOMO-}	β^{FOMO+}	Portfolio	Return	β^{CAPM}	β^R	β^{FOMO-}	β^{FOMO+}
1 (Low)	-0.88	0.54	0.61	0.57	0.67	1 (Low)	-2.96	0.54	0.61	0.71	0.54
2	3.95	0.61	0.80	0.81	0.83	2	7.89	0.63	0.82	0.85	0.83
3	6.13	0.72	0.87	0.90	0.90	3	10.27	0.74	0.89	0.90	0.93
4	9.04	0.91	0.93	0.98	0.94	4	10.06	0.92	0.95	0.95	1.01
5 (High)	17.07	1.21	1.00	1.10	0.99	5 (High)	8.38	1.21	1.01	0.99	1.10
High-Low	17.94					High-Low	11.34				
t -stat	[5.93]***					t -stat	[6.34]***				

Panel E: Sort on Rel. β^{FOMO-} vs β^{CAPM}					
Portfolio	Return	β^{CAPM}	β^R	β^{FOMO-}	β^{FOMO+}
1 (Low)	7.46	1.61	0.92	0.90	0.93
2	9.32	1.10	0.89	0.89	0.92
3	9.38	0.89	0.86	0.88	0.89
4	8.70	0.70	0.82	0.86	0.85
5 (High)	3.60	0.30	0.80	0.87	0.82
High-Low	-3.86				
t -stat	[-1.25]				

This table presents average 12-month realized excess returns and post-ranking realized betas for equal-weighted quintile portfolios. For each 12-month period from t to $t + 12$ (evaluated monthly using overlapping windows), stocks are sorted into five quintiles based on one of five realized beta measures calculated over that same period using daily data: standard CAPM Beta (β^{CAPM}), Regret Beta (β^R), negative FOMO Beta (β^{FOMO-}), positive FOMO Beta (β^{FOMO+}), or relative negative FOMO Beta ($\beta^{FOMO-} - \beta^{CAPM}$). β^{CAPM} is estimated using the stock's excess return and the market excess return $r_m - r_f$. β^R is estimated by regressing the stock's excess return $r_j - r_f$ on its performance gap relative to the NASDAQ benchmark $r_j - h_j$ unconditionally. β^{FOMO-} and β^{FOMO+} capture the sensitivity of the stock's excess return $r_j - r_f$ to this same performance gap $r_j - h_j$, where β^{FOMO-} is estimated during periods when the stock underperforms the NASDAQ benchmark ($r_j - h_j < 0$) and β^{FOMO+} during periods where it outperforms ($r_j - h_j > 0$). The column labeled "Return" reports the average realized 12-month excess return for each quintile portfolio. The columns labeled " β^{CAPM} ", " β^R ", " β^{FOMO-} " and " β^{FOMO+} " report the time-series average of the equal-weighted post-ranking realized betas for stocks within each quintile, computed contemporaneously over the same 12-month period. Breakpoints for quintile formation are based on NYSE stocks. The row labeled "High-Low" reports the difference in average returns between Portfolio 5 and Portfolio 1. t -statistics for the High-Low difference are computed using Newey and West (1987) heteroskedasticity and autocorrelation consistent standard errors with 12 lags. The sample period for analysis is January 1980 to December 2024.

initial support for our hypothesis, they underscore the necessity of the multivariate Fama-MacBeth framework to properly disentangle the unique risk premium associated with FOMO from other known factors.

To test the robustness of our main portfolio sort findings when using the NASDAQ index as the benchmark, we re-examine the premium for β^{FOMO-} under three scenarios: (1) after excluding small-cap stocks, (2) using all available stocks for portfolio formation, and (3) using value-weighted instead of equal-weighted portfolio returns. Table A18 presents these results.

The results in Table A18 confirm that when the benchmark is the NASDAQ index, the β^{FOMO-} premium is robust across different portfolio construction methods. As shown in Panel A, the premium remains large and statistically significant in equal-weighted portfolios, both when including all stocks (18.01%, $t = 5.95$) and when excluding small-caps (20.86%, $t = 5.59$). Consistent with many behavioral anomalies, the premium is considerably attenuated and statistically insignificant in value-weighted portfolios. This suggests that, as when we work with the industry benchmark, the FOMO effect is more pronounced among smaller firms and is not driven solely by mega-cap stocks, a finding we explore further in the interaction sorts.

F.2 Fama-MacBeth Regressions

Table A19 presents the full results for the firm-level Fama and MacBeth (1973) cross-sectional regressions. The specifications build from a simple model to the comprehensive "horse race" model (Model VIII) that includes all control variables and Ang's (2006a) downside risk measures.

The results in Table A19 demonstrate the robustness of the β^{FOMO-} risk premium when the NASDAQ index is used as the reference portfolio. The coefficient on β^{FOMO-} remains positive and statistically significant across all specifications, even after the inclusion of a comprehensive set of controls for firm characteristics and other known risk factors. In the most stringent "horse race" specification (Model VIII), the β^{FOMO-} premium (coefficient = 0.104, $t = 4.23$) remains larger and more significant than the premium for Ang's (2006a) market downside beta (coefficient = 0.048, $t = 3.56$), providing strong evidence that our measure captures a unique, priced dimension of risk.

It is insightful to observe the pattern of the β^{FOMO-} coefficient across the specifications. The statistical significance temporarily weakens in Models (IV) and (V). This is an expected result, as these models introduce firm characteristics (size, book-to-market, momentum) that are correlated with β^{FOMO-} , as shown in our analysis of its determinants (see Appendix Table A22). These characteristics absorb some of the explanatory power.

Crucially, the premium for β^{FOMO-} re-emerges with high statistical significance (t-

Table A18: Robustness Checks of Portfolio Sorts (NASDAQ Benchmark)

Panel A: Sorts by realized $\beta^{\text{FOMO-}}$			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (%)
1 (Low)	4.01	−0.88	10.10
2	9.51	3.95	8.64
3	11.79	6.13	6.58
4	15.66	9.04	7.28
5 (High)	24.87	17.13	12.80
High-Low	20.86	18.01	2.70
<i>t</i> -statistic	[5.59]***	[5.95]***	[1.12]

Panel B: Sorts by realized β^R			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (%)
1 (Low)	3.72	−1.47	9.29
2	10.00	5.14	8.86
3	12.97	7.40	7.93
4	16.89	10.15	8.38
5 (High)	22.25	15.36	12.25
High-Low	18.53	16.83	2.96
<i>t</i> -statistic	[4.50]***	[5.65]***	[1.11]

Panel C: Sorts by realized Rel. $\beta^{\text{FOMO-}}$ vs β^R			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (%)
1 (Low)	10.51	4.98	11.15
2	12.87	7.09	8.62
3	13.59	7.11	8.26
4	14.98	8.21	7.76
5 (High)	13.88	6.19	8.92
High-Low	3.36	1.21	-2.23
<i>t</i> -statistic	[2.33]**	[0.74]	[-2.04]**

This table presents robustness checks for the main portfolio sort results using the NASDAQ benchmark. The premium for $\beta^{\text{FOMO-}}$ in Panel A remains strong and significant in equal-weighted portfolios but attenuates when value-weighting is applied, a common feature of many behavioral factors. * denotes significance at the 1% level.

Table A19: Fama-MacBeth Regressions with the High-Tech (NASDAQ) Benchmark

Variable	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	Mean (Std Dev)
Intercept	0.292 [4.97]***	-0.360 [-8.63]***	-0.335 [-8.73]***	0.050 [0.95]	0.047 [0.92]	0.384 [7.34]***	0.393 [7.36]***	0.348 [6.63]***	
β^R	0.293 [8.27]***								0.850 (0.178)
β^{CAPM}			0.029 [1.22]	0.037 [1.20]	0.030 [0.96]	0.111 [3.74]***	0.101 [3.20]***		0.786 (0.556)
$\beta^{\text{FOMO}-}$		0.234 [3.75]***	0.199 [3.70]***	0.056 [1.42]*	0.061 [1.59]*	0.099 [3.96]***	0.081 [3.10]***	0.104 [4.23]***	0.877 (0.187)
$\beta^{\text{FOMO}+}$		0.228 [9.14]***	0.223 [8.57]***	0.188 [8.80]***	0.183 [8.88]***	0.101 [4.55]***	0.086 [3.80]***	0.101 [4.31]***	0.871 (0.212)
$\beta^{\text{Ang}-}$								0.048 [3.56]***	0.862 (0.715)
$\beta^{\text{Ang}+}$								0.014 [1.65]*	0.681 (0.786)
lnSize	-0.040 [-6.65]***			-0.014 [-2.37]**	-0.015 [-2.73]***	-0.043 [-6.90]***	-0.041 [-6.62]***	-0.038 [-6.32]***	5.187 (2.009)
BM	-0.205 [-16.21]***			-0.201 [-16.43]***	-0.200 [-16.47]***	-0.199 [-16.32]***	-0.201 [-16.63]***	-0.202 [-16.25]***	0.789 (0.707)
Mom	-0.052 [-2.89]***			-0.036 [-1.90]*	-0.036 [-1.92]*	-0.053 [-3.08]***	-0.053 [-2.93]***	-0.052 [-2.91]***	0.084 (0.506)
Volatility	-0.308 [-5.07]***					-0.418 [-8.85]***	-0.361 [-7.11]***	-0.342 [-6.00]***	0.535 (0.263)
Coskewness	-0.108 [-3.40]***				-0.120 [-4.45]***	-0.125 [-4.36]***	-0.115 [-3.91]***	-0.050 [-1.54]	-0.119 (0.165)
Cokurtosis	0.056 [4.07]***					0.003 [0.23]	0.002 [0.17]	0.021 [1.65]*	1.662 (1.181)
Liq β	0.008 [1.17]						0.008 [1.16]	0.008 [1.09]	-0.004 (0.426)
Avg. Adj. R² (%)	15.99	3.71	5.65	13.00	13.41	16.88	16.68	16.53	

This table presents coefficients from firm-level Fama-MacBeth (1973) cross-sectional regressions of 12-month realized excess returns on realized betas and firm characteristics. The sample period is January 1980 to December 2024, with regressions run monthly using overlapping 12-month evaluation periods, resulting in 529 monthly cross-sectional regressions. The analysis includes stocks listed on the NYSE, AMEX and NASDAQ. The average number of firms in each monthly cross-sectional regression is 4166. Coefficients are time-series averages of the estimates from these monthly regressions. t -statistics, reported in brackets, are computed using Newey and West (1987) heteroskedasticity and autocorrelation consistent standard errors with 12 lags. The dependent variable is the 12-month realized stock excess return. Independent variables include realized betas: β^R representing the Regret Beta, β^{CAPM} representing the standard market beta, $\beta^{\text{FOMO}-}$ and $\beta^{\text{FOMO}+}$ representing the negative and positive FOMO betas, as well as $\beta^{\text{Ang}-}$ and $\beta^{\text{Ang}+}$ representing the downside and upside market betas. Realized betas, realized 12-month return volatility (Vol), realized 12-month coskewness (Coskew) and realized 12-month cokurtosis (Cokurt) are calculated over the same 12-month period as the dependent variable using daily data. Firm characteristics are measured at the beginning of each 12-month evaluation period and include: natural logarithm of market capitalization (lnSize), book-to-market ratio (B/M) and prior 11-month cumulative excess return lagged one month (Mom). Lagged liquidity beta (Liq β) is estimated following Pástor and Stambaugh (2003). All independent variables included in the regressions are Winsorized at the 1% and 99% levels within each monthly cross-section. The final column reports the time-series average of the cross-sectional mean and standard deviation for each independent variable. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

statistic > 3 in Model VI) once we also control for stock volatility. Later, in Table A26, we show that the FOMO effect, while most pronounced among high-volatility stocks, is a distinct phenomenon. By controlling for these correlated characteristics and volatility, the final models (VI-VIII) successfully isolate a clean, robust, and economically meaningful FOMO risk premium.

To further test the robustness, Table A20 examines the stability of the β^{FOMO-} coefficient from our key specifications (Model VII and Model VIII) across different sample periods and after excluding micro-cap stocks.

Table A20: Robustness of Fama-MacBeth β^{FOMO-} Coefficient (NASDAQ Benchmark)

Scenario	Coefficient	t-statistic
A: β^{FOMO-} Model VII (Full Controls)		
Full Sample (1980-2024)	0.081	(3.10)***
Sub-Period 1 (1980-2002)	0.029	(0.68)
Sub-Period 2 (2003-2024)	0.127	(4.64)***
Exclude Micro-Caps	0.119	(5.19)***
B: β^{FOMO-} Horse Race Model VIII		
Full Sample (1980-2024)	0.104	(4.23)***
Sub-Period 1 (1980-2002)	0.074	(1.82)*
Sub-Period 2 (2003-2024)	0.132	(4.84)***
Exclude Micro-Caps	0.137	(6.04)***

This table presents the Fama-MacBeth coefficient and t -statistic for β^{FOMO-} under different scenarios. Panel A shows β^{FOMO-} from Model VII (which includes β^{FOMO-} , β^{FOMO+} , β^{CAPM} , and all standard controls). Panel B shows β^{FOMO-} from Main Paper Model VIII (the "horse race" which includes β^{FOMO-} , β^{FOMO+} , Ang et al. (2006a)'s downside and upside market betas, and all standard controls, while excluding β^{CAPM}). "Full Sample" uses the entire period January 1980 - December 2024. "Sub-Period 1" covers 1980-2002 and "Sub-Period 2" covers 2003-2024. "Exclude Micro-Caps" runs regressions after removing stocks in the lowest NYSE market capitalization quintile. Coefficients are time-series averages from monthly Fama-MacBeth regressions. t -statistics use Newey and West (1987) standard errors with 12 lags. *** and ** denote significance at the 1% and 5% levels, respectively.

Table A20 demonstrates the robustness of the multivariate β^{FOMO-} premium over time and across different firm size groups. In the stringent "horse race" model (Panel B), the premium is positive and marginally statistically significant in both the 1980-2002 period ($t = 1.82$) and the 2003-2024 period ($t = 4.84$). In the full-control model, presented in Panel A, the premium is notably stronger and more statistically significant in the second half of the sample. Crucially, across all models, the premium remains robust and highly significant for the full sample and after excluding micro-cap stocks, confirming the effect is not driven by the smallest firms or a specific era alone.

F.3 Direct Asymmetry Test

To formally test the central hypothesis that FOMO is an asymmetric phenomenon, we conduct a direct test of the difference between the premia for $\beta^{\text{FOMO}-}$ and $\beta^{\text{FOMO}+}$ using a reparameterized panel regression. Table A21 presents the results.

Table A21: Disentangling Asymmetric FOMO from Symmetric Regret (NASDAQ Benchmark)

Variable	Coefficient	<i>t</i> -statistic
Panel A: Key Behavioral Betas		
$\beta^{\text{FOMO}-}$ (Asymmetry: $\gamma^{F-} - \gamma^{F+}$)	0.008	[0.36]
$\beta_{\text{sum}}^{\text{FOMO}}$ (Level: γ^{F+})	-0.110	[-5.03]***
β^R (Symmetric Regret)	0.344	[7.44]***
Panel B: Standard Control Variables		
β^{CAPM}	0.105	[11.42]***
Log(Size)	-0.223	[-34.81]***
Book-to-Market (BM)	-0.284	[-23.35]***

This table presents results from a reparameterized pooled panel regression using the NASDAQ benchmark to directly test for asymmetry. The dependent variable is the 12-month realized stock excess return. The regression includes firm and time fixed effects and uses two-way clustered standard errors. The coefficient on $\beta^{\text{FOMO}-}$ directly estimates the difference in the premia for under- and outperformance ($\gamma^{F-} - \gamma^{F+}$). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A21 provides the results for the direct test of asymmetry. There is a positive coefficient on the Asymmetry term ($\beta^{\text{FOMO}-}$). However, for the NASDAQ benchmark the asymmetry is not statistically significant. Furthermore, the continued significance of the symmetric β^R term suggests that both general regret and asymmetric FOMO are independently priced risk dimensions.

F.4 Determinants and Persistence of $\beta^{\text{FOMO}-}$

To understand the economic nature of FOMO risk, we analyze the firm characteristics that determine the realized $\beta^{\text{FOMO}-}$. Table A22 presents the results from Fama-MacBeth regressions where realized $\beta^{\text{FOMO}-}$ is the dependent variable. Table A23 does likewise for $\beta^{\text{FOMO}+}$.

The analysis in Table A22 reveals a consistent economic profile. $\beta^{\text{FOMO}-}$ is significantly and negatively related to firm size and book-to-market ratio, and positively related to past-year momentum. This indicates that the firms carrying the highest FOMO risk are typically smaller, high-momentum growth stocks, aligning with the intuition that FOMO

Table A22: Determinants of Realized FOMO Betas with the High-Tech (NASDAQ) Benchmark

Characteristic	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Intercept	0.8331 (14.68)***	0.9061 (11.80)***	0.8740 (16.96)***	0.8340 (4.85)***	0.8554 (28.98)***	0.7880 (10.40)***	0.8769 (12.71)***	0.7536 (7.56)***
Log(Size)	0.0081 (1.08)							-0.0142 (-3.08)***
BM		-0.0231 (-4.60)***						-0.0137 (-4.51)***
Momentum			0.0270 (2.16)**					0.0152 (4.54)***
Volatility				0.0540 (0.48)				0.1767 (2.73)***
Coskewness					-0.0322 (-0.72)			0.0478 (2.87)***
Cokurtosis						0.0608 (3.85)		0.0787 (6.07)***
Liquidity β							0.0062 (0.90)	0.0029 (1.09)

This table presents time-series averages of coefficients from monthly cross-sectional regressions explaining realized FOMO betas using the NASDAQ benchmark. For each month, the realised $\beta^{\text{FOMO-}}$ (Panel A) or $\beta^{\text{FOMO+}}$ (Panel B) is regressed on lagged firm characteristics. Models (I) through (VII) are univariate regressions, while Model (VIII) is a multivariate regression including all characteristics simultaneously. t -statistics are in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A23: Determinants of Realized FOMO Betas with the High-Tech (NASDAQ) Benchmark

Characteristic	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Intercept	0.7578 (12.93)***	0.9043 (26.16)***	0.8700 (30.79)***	0.9089 (12.49)***	0.8444 (53.24)***	0.7654 (12.48)***	0.8738 (35.52)***	0.7986 (10.61)
Log(Size)	0.0218 (3.41)***							-0.0089 (-2.42)**
BM		-0.0200 (-9.84)***						-0.0054 (-1.52)
Momentum			0.0685 (5.99)***					0.0327 (8.14)***
Volatility				-0.0992 (-1.10)				0.0440 (0.74)
Coskewness					-0.0720 (-1.72)*			-0.0402 (-2.24)**
Cokurtosis						0.0783 (5.83)***		0.0665 (5.89)***
Liquidity β							0.0052 (0.87)	0.0028 (1.12)

This table presents time-series averages of coefficients from monthly cross-sectional regressions explaining realised FOMO betas using the NASDAQ benchmark. For each month, the realised $\beta^{\text{FOMO-}}$ (Panel A) or $\beta^{\text{FOMO+}}$ (Panel B) is regressed on lagged firm characteristics. Models (I) through (VII) are univariate regressions, while Model (VIII) is a multivariate regression including all characteristics simultaneously. t -statistics are in brackets. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

is most relevant for speculative, high-profile assets. Table A23 confirms consistency with the main paper for β^{FOMO+} .

A key requirement for a risk factor to be priced is that it must be a persistent characteristic. Table A24 shows the results of annual, non-overlapping regressions testing this persistence.

Table A24: Annual Persistence of Realized FOMO Betas with the High-Tech (NASDAQ) Benchmark

Explanatory Variable (End of Year T)	β^{FOMO-} (Year T+1)	$***\beta^{FOMO+}$ (Year T+1)
Intercept	0.471 (13.04)***	0.458 (17.65)***
Past β^{FOMO-} (Year T)	0.381 (14.30)***	
Past β^{FOMO+} (Year T)		0.442 (18.70)***
Past Volatility (Year T)	0.078 (3.78)***	0.015 (0.77)
Log(Size) (Year T)	0.006 (2.63)***	0.006 (2.62)***
Book-to-Market (Year T)	-0.008 (-3.41)***	-0.026 (-15.11)***
Momentum (Year T)	0.006 (2.42)**	0.011 (5.28)***

This table reports Fama-MacBeth coefficients from annual, non-overlapping regressions testing the persistence of FOMO betas, using the NASDAQ benchmark. The dependent variable is the realized beta over Year T+1. Independent variables are the realized beta and other firm characteristics from the end of Year T. t -statistics, reported in parentheses, are computed using Newey-West (1987) standard errors with 5 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A24 shows that β^{FOMO-} is highly persistent year-over-year. The coefficient on the prior year's β^{FOMO-} in predicting the current year's beta is 0.381 and is highly statistically significant ($t = 14.30$). The ability of the prior year's value to predict the subsequent year confirms that exposure to FOMO risk is a stable firm characteristic, justifying its role as a systematic risk factor. Stability is also seen for β^{FOMO+} with a coefficient of 0.442 ($t = 18.70$). The predictability of future β^{FOMO-} and β^{FOMO+} from past values helps allay the critique of Levi and Welch (2020). The results are again analogous with the industry portfolios presented in the main paper.

F.5 Robustness: Controlled and Interaction Portfolio Sorts

To ensure the β^{FOMO-} premium is not simply a proxy for other known factors, we conduct a series of controlled portfolio sorts. Table A25 reports the β^{FOMO-} High-Low spread after neutralizing returns for firm size, book-to-market, momentum, and coskewness.

Table A25: High-Low Spreads on FOMO Betas after Controlling for Firm Characteristics (NASDAQ Benchmark)

Panel A: Sorts on β^{FOMO-}							
Control Variable	Quintile Portfolios on β^{FOMO-}					Spread	
	1 (Low)	2	3	4	5 (High)	High-Low	t-statistic
Log(Size)	−6.92	−2.43	−0.34	2.30	9.48	16.40	(2.65)***
BM	−3.74	−1.60	−0.43	1.58	6.80	10.54	(2.38)**
Momentum	−6.93	−2.87	−0.67	2.32	9.51	16.44	(3.78)***
Coskewness	−6.89	−2.32	−0.17	2.39	9.21	16.10	(2.90)***

Panel B: Sorts on β^{FOMO+}							
Control Variable	Quintile Portfolios on β^{FOMO+}					Spread	
	1 (Low)	2	3	4	5 (High)	High-Low	t-statistic
Log(Size)	−8.78	1.42	3.70	3.22	1.09	9.87	(2.56)**
BM	−6.05	1.96	3.21	2.45	−1.34	4.71	(2.04)**
Momentum	−9.10	0.94	3.23	3.30	1.43	10.53	(4.37)***
Coskewness	−8.56	1.74	3.75	3.13	1.01	9.57	(3.26)***

This table presents average 12-month characteristic-adjusted excess returns for portfolios sorted on realized FOMO betas. Each month, we first sort stocks into quintiles based on a control characteristic, Log(Size), BM, etc. Within each quintile, we then subtract the quintile's equal-weighted average return from each stock's return to get an adjusted return. All stocks are then pooled and sorted into quintiles based on their realized β^{FOMO-} (Panel A) or β^{FOMO+} (Panel B). The table reports the time-series average of the monthly characteristic-adjusted returns for each quintile. The High-Low column is the spread between Quintile 5 and Quintile 1, with Newey-West (1987) t -statistics adjusted for 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A25 confirms that the β^{FOMO-} premium remains economically large and statistically significant after all controls. For example, after controlling for momentum, the premium is still 13.87% ($t = 3.52$). Table A24 provides strong evidence that the FOMO premium is an incremental effect, distinct from these other well-documented factors.

We further investigate the nature of the FOMO premium by examining its interaction with stock volatility and firm size. Table A26 presents results from independent 5x5 sorts on volatility and β^{FOMO-} .

The results in Table A26 reveal a powerful interaction. The β^{FOMO-} premium is

Table A26: Portfolio Returns from 5x5 Sorts on Volatility and FOMO Betas (NASDAQ Benchmark)

Panel A: Secondary Sort on $\beta^{\text{FOMO}-}$							
Volatility	Quintiles formed on $\beta^{\text{FOMO}-}$					Spread	
Quintile	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
1 (Low Vol)	12.03	11.61	10.24	8.69	8.33	-3.69	(-2.21)**
2	16.45	11.72	9.74	9.21	11.47	-4.99	(-2.87)***
3	15.36	11.58	9.84	9.62	14.29	-1.07	(-0.47)
4	9.49	10.53	10.28	11.15	18.82	9.33	(2.91)***
5 (High Vol)	-20.59	-7.37	1.03	5.54	19.51	40.10	(8.27)***

Panel B: Secondary Sort on $\beta^{\text{FOMO}+}$							
Volatility	Quintiles formed on $\beta^{\text{FOMO}+}$					Spread	
Quintile	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
1 (Low Vol)	5.17	7.73	10.17	12.58	15.25	10.08	(7.40)***
2	6.86	10.56	13.12	13.93	14.13	7.27	(5.11)***
3	9.23	11.32	13.46	13.92	12.77	3.54	(2.26)**
4	10.89	12.02	13.68	12.96	10.73	-0.17	(-0.08)
5 (High Vol)	-21.74	0.29	7.20	7.81	4.58	26.32	(10.65)***

This table presents average 12-month excess returns for 25 portfolios formed from sequential 5x5 sorts on volatility and a FOMO beta. Each month, stocks are first sorted into quintiles based on their realized volatility over the prior 12 months. Then, within each volatility quintile, stocks are further sorted into five quintiles based on their realized $\beta^{\text{FOMO}-}$ (Panel A) or $\beta^{\text{FOMO}+}$ (Panel B). The High-Low column reports the return spread between Quintile 5 and Quintile 1 of the FOMO beta sort within each volatility quintile. *t*-statistics are based on Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

weaker in low-volatility stocks but is exceptionally strong among high-volatility stocks, where the High-Low portfolio earns a remarkable 40.10% per annum ($t = 8.27$). This suggests the FOMO effect is most pronounced in the market's most speculative segments.

Table A27 presents results from 2x5 sorts on firm size and β^{FOMO-} , using a more robust Newey-West correction for the t -statistics.

Table A27: Portfolio Returns from 2x5 Sorts on Size and β^{FOMO-} (NASDAQ Benchmark)

β^{FOMO-} Quintile	Size Group		
	Small	Big	Big - Small
1 (Low)	-3.93	10.49	14.41
2	2.79	9.38	6.60
3	6.29	7.12	0.83
4	9.79	7.04	-2.75
5 (High)	19.00	14.88	-4.12
High-Low Spread	22.93	4.39	-18.53
t-statistic	(7.02)***	(1.49)	(-9.08)***

This table presents average 12-month excess returns for 10 portfolios formed from sequential 2x5 sorts on firm size and realized β^{FOMO-} , using the NASDAQ benchmark. Each month, stocks are first assigned to two size groups ("Small" or "Big") based on the median NYSE market capitalization breakpoint. Then, within each size group, stocks are sorted into five quintiles based on their realized β^{FOMO-} . The "High-Low" row reports the return spread between Quintile 5 and Quintile 1. t -statistics, reported in parentheses, are computed using Newey-West (1987) standard errors with 12 lags. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table A27 shows that the FOMO premium is present across both size groups but is significantly amplified among small stocks. The High-Low spread for small stocks is a highly significant 22.93% ($t = 7.02$), while for large stocks it is a positive but less significant 4.29% ($t = 1.49$). The difference in these premia is itself highly significant ($t = -9.08$), confirming that while FOMO risk is pervasive, its pricing is most impactful in the small-cap segment.

G Appendix: Robustness to 12 Fama-French Industry Portfolios Benchmark

To ensure our findings are not sensitive to the granularity of the industry classification, this appendix replicates our core analyses using the 12 Fama-French industry portfolios as the benchmark for the peer group. When industry portfolios are used as a control in many papers, including Ang et al. (2006a), the aggregation of the stocks is into 12

portfolios. There is some disagreement about the constituents of each of the broad portfolios, with those used in Ang et al. (2006a) differing from those provided in the Ken French Data Library. This appendix uses the Fama-French 12 Industry Portfolios. A potential issue with overly broad benchmarks is the dilution of the peer effect; when a benchmark portfolio contains a very large and diverse set of firms, its average return may become a less salient signal of specific peer success. While the more granular 38-industry classification used in our main analysis represents a more psychologically realistic proxy for an investor's reference group, the 12-industry classification is a common standard in the literature, and confirming our results are robust to this specification is an important test. Table A28 presents the main portfolio sort results.

Table A28: Portfolio Sorts with the 12 Industry Portfolios Benchmark

Panel A: Sort on β^{CAPM}						Panel B: Sort on β^R (Regret Beta)					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	2.56	0.21	0.77	0.80	0.80	1 (Low)	-1.92	0.50	0.63	0.68	0.65
2	7.22	0.67	0.86	0.88	0.89	2	5.36	0.62	0.86	0.87	0.90
3	8.07	0.89	0.91	0.92	0.94	3	8.86	0.81	0.95	0.95	0.98
4	9.07	1.13	0.96	0.96	0.98	4	11.76	1.09	1.01	1.02	1.04
5 (High)	10.72	1.65	0.99	0.99	0.99	5 (High)	16.59	1.45	1.12	1.13	1.13
High-Low	8.16					High-Low	18.51				
<i>t</i> -stat	[2.48]**					<i>t</i> -stat	[7.58]***				

Panel C: Sort on $\beta^{\text{FOMO}-}$						Panel D: Sort on $\beta^{\text{FOMO}+}$					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	-1.34	0.58	0.66	0.60	0.73	1 (Low)	-1.97	0.57	0.68	0.75	0.62
2	3.22	0.64	0.85	0.85	0.88	2	9.34	0.65	0.87	0.88	0.91
3	6.95	0.77	0.92	0.95	0.93	3	11.03	0.80	0.94	0.93	0.99
4	10.53	0.97	0.97	1.03	0.98	4	9.71	1.02	0.98	0.97	1.05
5 (High)	18.34	1.23	1.07	1.16	1.06	5 (High)	8.65	1.27	1.07	1.04	1.17
High-Low	19.68					High-Low	10.62				
<i>t</i> -stat	[9.92]***					<i>t</i> -stat	[7.59]***				

This table presents average 12-month realized excess returns and post-ranking realized betas for equal-weighted quintile portfolios, using the 12 Fama-French industry portfolios as the peer-group benchmark. Panel C confirms that stocks with the highest sensitivity to underperforming the benchmark ($\beta^{\text{FOMO}-}$) earn significantly higher returns, with a High-Low spread of 19.68% per annum ($t=9.92$).

The univariate sorts in Table A28 confirm that the premium for downside FOMO sensitivity remains large and highly significant, with a High-Low spread of 19.68% ($t = 9.92$) when using the 12-industry benchmark. To test this in a multivariate setting, Table

A29 presents the full Fama-MacBeth regression results.

Table A29: Fama-MacBeth Regressions with the 12 Industry Portfolios Benchmark

Variable	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	Mean (Std Dev)
Intercept	0.279 [5.59]***	-0.341 [-10.13]***	-0.321 [-10.34]***	0.037 [0.94]	0.035 [0.90]	0.375 [8.96]***	0.383 [8.85]***	0.347 [7.68]***	
β^R	0.314 [10.81]***								0.872 (0.179)
β^{CAPM}			0.032 [1.24]	0.040 [1.26]	0.032 [1.03]	0.121 [4.09]***	0.111 [3.55]***		0.786 (0.556)
$\beta^{\text{FOMO}-}$		0.194 [4.45]***	0.157 [4.49]***	0.045 [1.86]*	0.049 [2.01]**	0.095 [5.35]***	0.083 [4.56]***	0.093 [5.27]***	0.889 (0.193)
$\beta^{\text{FOMO}+}$		0.250 [9.14]***	0.249 [8.15]***	0.234 [10.00]***	0.229 [10.18]***	0.132 [6.26]***	0.113 [5.70]***	0.128 [5.92]***	0.897 (0.212)
$\beta^{\text{Ang}-}$								0.052 [3.70]***	0.862 (0.715)
$\beta^{\text{Ang}+}$								0.018 [2.07]**	0.681 (0.786)
lnSize	-0.045 [-7.50]***			-0.017 [-2.86]***	-0.019 [-3.26]***	-0.046 [-7.62]***	-0.044 [-7.33]***	-0.041 [-7.03]***	5.187 (2.009)
B/M	-0.209 [-16.18]***			-0.205 [-16.73]***	-0.204 [-16.75]***	-0.202 [-16.48]***	-0.203 [-16.80]***	-0.205 [-16.37]***	0.789 (0.707)
Momentum	-0.049 [-2.84]***			-0.034 [-1.79]*	-0.034 [-1.82]*	-0.052 [-3.08]***	-0.052 [-2.92]***	-0.051 [-2.89]***	0.084 (0.506)
Volatility	-0.296 [-4.53]***					-0.428 [-8.79]***	-0.372 [-7.13]***	-0.345 [-5.82]***	0.535 (0.263)
Coskewness	-0.115 [-3.58]***				-0.125 [-4.56]***	-0.131 [-4.45]***	-0.121 [-4.01]***	-0.059 [-1.78]*	-0.119 (0.165)
Cokurtosis	0.056 [4.15]***					-0.001 [-0.11]	-0.001 [-0.11]	0.018 [1.39]	1.662 (1.181)
Liq β	0.008 [1.11]						0.007 [1.05]	0.007 [1.01]	-0.004 (0.426)
Avg. Adj. R² (%)	16.02	2.87	5.39	12.85	13.28	16.88	16.65	16.50	

This table presents coefficients from firm-level Fama-MacBeth (1973) cross-sectional regressions of 12-month realized excess returns on realized betas and firm characteristics. The sample period is January 1980 to December 2024, with regressions run monthly using overlapping 12-month evaluation periods, resulting in 529 monthly cross-sectional regressions. The analysis includes stocks listed on the NYSE, AMEX and NASDAQ. The average number of firms in each monthly cross-sectional regression is 4166. Coefficients are time-series averages of the estimates from these monthly regressions. t -statistics, reported in brackets, are computed using Newey and West (1987) heteroskedasticity and autocorrelation consistent standard errors with 12 lags. The dependent variable is the 12-month realized stock excess return. Independent variables include realized betas: β^R representing the Regret Beta, β^{CAPM} representing the standard market beta, $\beta^{\text{FOMO}-}$ and $\beta^{\text{FOMO}+}$ representing the negative and positive FOMO betas, as well as $\beta^{\text{Ang}-}$ and $\beta^{\text{Ang}+}$ representing the downside and upside market betas. Realized betas, realized 12-month return volatility (Vol), realized 12-month coskewness (Coskew) and realized 12-month cokurtosis (Cokurt) are calculated over the same 12-month period as the dependent variable using daily data. Firm characteristics are measured at the beginning of each 12-month evaluation period and include: natural logarithm of market capitalization (lnSize), book-to-market ratio (B/M) and prior 11-month cumulative excess return lagged one month (Mom). Lagged liquidity beta (Liq β) is estimated following Pástor and Stambaugh (2003). All independent variables included in the regressions are Winsorized at the 1% and 99% levels within each monthly cross-section. The final column reports the time-series average of the cross-sectional mean and standard deviation for each independent variable.***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

To demonstrate the robustness of the multivariate $\beta^{\text{FOMO}-}$ premium, Table A30 examines the stability of its coefficient from our key Fama-MacBeth specifications across different sample periods and after excluding micro-cap stocks.

The Fama-MacBeth results in Table A30 demonstrate the robustness of the $\beta^{\text{FOMO}-}$

Table A30: Robustness of Fama-MacBeth $\beta^{\text{FOMO}-}$ Coefficient (12 Industry Benchmark)

Scenario	Coefficient	t-statistic
A: $\beta^{\text{FOMO}-}$ from Model VII (Full Controls)		
Full Sample (1980-2024)	0.083	(4.56)***
Sub-Period 1 (1980-2002)	0.042	(1.60)
Sub-Period 2 (2003-2024)	0.119	(5.38)***
Exclude Micro-Caps	0.127	(7.52)***
B: $\beta^{\text{FOMO}-}$ from Model VIII (Horse Race)		
Full Sample (1980-2024)	0.093	(5.27)***
Sub-Period 1 (1980-2002)	0.059	(2.29)**
Sub-Period 2 (2003-2024)	0.123	(5.55)***
Exclude Micro-Caps	0.132	(8.06)***

This table presents the Fama-MacBeth coefficient and t -statistic for $\beta^{\text{FOMO}-}$ under different scenarios using the 12 Fama-French industry portfolios as the benchmark. The premium is robust across the full sample and when excluding micro-cap stocks, and shows significant time-variation, being stronger in the second half of the sample. The two models correspond to the specifications in Table A29. *** denotes significance at the 1% level.

risk premium to this broader benchmark. Consistent with our main findings, the statistical significance of $\beta^{\text{FOMO}-}$ temporarily weakens in the intermediate models (IV-V) as standard firm characteristics that are correlated with the FOMO phenomenon are introduced. Crucially, however, the premium re-emerges with high statistical significance in the final specifications that control for volatility. In the most stringent "horse race" specification (Model VIII), the premium for $\beta^{\text{FOMO}-}$ remains economically large and highly significant (coefficient = 0.093, $t = 5.27$), confirming our central findings.

Given that the lack of granularity within the 12 industry portfolios makes it hard for investors to monitor the performance of their "peer group", we pause the analysis of the 12 industry case here. Full results are available on request from the authors.

H Size Benchmark

As well as considering investors who follow similar industries as peers, it is plausible to imagine the investors would treat others who adopt similar investment styles as peers. In this appendix we consider investors who invest in firms from the same size decile as the firm held. Here size deciles are based on the NYSE breakpoints from the website of Ken French. Because size deciles are only updated annually, we only update peer groups annually. The low frequency of updates means that investors would be able to keep on top of changes in the reference portfolio. It is noted that firms will change deciles each year and that therefore there will be more updating of peer groups than would be observed

in the industry case. Throughout, size is defined by the market capitalization of the firm on rebalancing date, 30th June.

The use of size presents a natural challenge to the notion of peer groups. Having peers in many industries means that some will be experiencing pro-cyclical gains whilst others are experiencing cyclical losses (and vice versa). The notion of the average size firm being representative is more stretched than for the industry case. In this appendix we show that there are differences between the results from a size-based benchmark and the industry benchmark. Through the robustness checks evidence is suggestive of the link between size and volatility as being an important determinant of the FOMO premia that emerge.

Our analysis begins with the sorted portfolios using the realized FOMO, regret and CAPM betas. Table A31 presents the sorted portfolio results.

Table A31 shows that the β^{FOMO-} premium is 6.70% ($t = 1.54$). The size benchmark is the first in which an insignificant premium for β^{FOMO-} has been observed. The β^{FOMO+} premium is 12.77% ($t = 2.82$), which is statistically significant and larger than the β^{FOMO-} premium. For the lowest quintile of β^{FOMO+} stocks, the return is just 9.75%, compared to 20.93% for the lowest β^{FOMO-} . The larger β^{FOMO+} premium is grown from the smaller difference between the lowest and highest quintiles in β^{FOMO-} , rather than the observation of larger returns for β^{FOMO+} portfolio. Returns on the highest β^{FOMO-} portfolio are higher than the returns on the highest β^{FOMO+} portfolio.

Table A32 provides further evidence of a difference between the coefficients on β^{FOMO-} and β^{FOMO+} when using size benchmarks. In all cases the coefficient on β^{FOMO-} is significant and negative. A higher β^{FOMO-} is associated with lower returns. In most of the regressions, the β^{FOMO+} coefficient is significant and positive. However, a comparison of the R -squared values shows that the model with only FOMO explains very little of the variation in stock returns. Industry based benchmarks have adjusted R -squared values around 5 times those reported in Table A32. The Fama-MacBeth regressions suggest a strong asymmetry between β^{FOMO-} and β^{FOMO+} , which Table A33 confirms.

Table A34, Panel A confirms a positive, unconditional relationship between β^{FOMO-} and returns. The "Average" High-Low spread is 6.76% ($t = 1.26$). Meanwhile, Panel B confirms a negative relationship between coskewness and returns on average. The "Average" High-Low spread for coskewness (Quintile 5 - Quintile 1) is a significant 9.69% per year ($t = 1.94$). The relationship between β^{FOMO-} and returns is highly dependent on coskewness. For firms with low-to-medium coskewness (Quintiles 1-4), the β^{FOMO-} premium is flat or even negative. However, for firms with the highest coskewness (Quintile 5), the β^{FOMO-} premium is an economically massive and statistically significant 22.69% ($t = 2.00$). This suggests the β^{FOMO-} premium is concentrated in high-coskewness stocks. Coskewness and FOMO are separately priced sources of risk.

Table A31: Returns of Portfolios Sorted by Realized Factor Loadings (Fama-French Size Benchmark)

Panel A: Sort on β^{CAPM}						Panel B: Sort on β^R (Regret Beta)					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	18.38	0.09	0.75	0.77	0.79	1 (Low)	11.15	0.37	0.37	0.35	0.39
2	19.25	0.51	0.80	0.81	0.85	2	14.36	0.54	0.68	0.67	0.74
3	25.36	0.76	0.85	0.85	0.90	3	20.64	0.61	0.85	0.84	0.91
4	40.02	1.03	0.92	0.92	0.96	4	23.82	0.68	0.95	0.96	1.00
5 (High)	80.50	1.57	1.01	1.01	1.03	5 (High)	24.18	1.08	1.03	1.05	1.05
High-Low	62.12					High-Low	13.03				
t -stat	[2.51]					t -stat	[2.41]				

Panel C: Sort on $\beta^{\text{FOMO}-}$						Panel D: Sort on $\beta^{\text{FOMO}+}$					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	20.93	0.44	0.42	0.31	0.47	1 (Low)	9.75	0.40	0.40	0.41	0.35
2	20.44	0.60	0.69	0.65	0.75	2	13.22	0.58	0.70	0.70	0.73
3	20.82	0.67	0.84	0.84	0.90	3	23.60	0.65	0.86	0.86	0.91
4	21.94	0.74	0.95	0.96	0.99	4	33.11	0.74	0.96	0.97	1.00
5 (High)	27.63	0.98	1.01	1.07	1.03	5 (High)	22.51	1.02	1.01	1.01	1.08
High-Low	6.70					High-Low	12.77				
t -stat	[1.54]					t -stat	[2.82]				

Panel E: Sort on Rel. $\beta^{\text{FOMO}-}$ vs β^{CAPM}					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	47.78	1.54	0.90	0.84	0.93
2	29.43	1.06	0.85	0.82	0.89
3	26.52	0.83	0.82	0.82	0.86
4	20.43	0.64	0.82	0.84	0.85
5 (High)	18.00	0.26	0.88	0.92	0.92
High-Low	-29.78				
t -stat	[-3.23]				

This table presents average 12-month realized excess returns and post-ranking realized betas for equal-weighted quintile portfolios. For each 12-month period, stocks are sorted into five quintiles based on one of five realized beta measures. The benchmark h_j used to calculate the performance gap for β^R , $\beta^{\text{FOMO}-}$, and $\beta^{\text{FOMO}+}$ is the leave-one-out, value-weighted return of the corresponding Fama-French market capitalization decile portfolio. Decile breakpoints are from Ken French's data library and are updated annually in June. The column labeled "Return" reports the average realised 12-month excess return for each quintile portfolio. The columns labeled with beta symbols report the time-series average of the equal-weighted post-ranking realized betas for stocks within each quintile. Breakpoints for quintile formation are based on NYSE stocks. The row labeled "High-Low" reports the difference in average returns between Portfolio 5 and Portfolio 1. t -statistics for the High-Low difference are computed using Newey and West (1987) standard errors with 12 lags. The sample period is January 1980 to December 2024.

Table A32: Fama-MacBeth Regression Results (Fama-French Size Benchmark)

Variable	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	Mean (Std Dev)
Intercept	0.355*** [4.00]	-0.065 [-1.32]	-0.073 [-1.43]	0.780*** [4.53]	0.781*** [4.52]	0.336*** [4.44]	0.291*** [4.49]	0.267*** [3.89]	
β^R	-0.664*** [-3.40]								
β^{CAPM}			0.162*** [2.66]	0.236*** [3.16]	0.239*** [3.18]	-0.093 [-0.90]	-0.003 [-0.06]		
$\beta^{\text{FOMO-}}$		-0.171*** [-2.83]	-0.206*** [-4.09]	-0.587*** [-5.05]	-0.578*** [-5.12]	-0.793*** [-4.27]	-0.640*** [-4.75]	-0.610*** [-4.47]	
$\beta^{\text{FOMO+}}$		0.491*** [5.98]	0.424*** [6.48]	0.079** [1.97]	0.079** [2.00]	-0.037 [-0.43]	0.058* [1.59]	0.049 [1.40]	
β_{Ang}^-								-0.091* [-1.68]	
β_{Ang}^+								0.089* [1.74]	
lnSize	-0.017** [-2.39]			-0.079*** [-3.12]	-0.079*** [-3.15]	-0.024** [-2.43]	-0.019*** [-2.69]	-0.020*** [-2.58]	
B/M	-0.004 [-0.56]			-0.002 [-0.18]	-0.003 [-0.28]	0.010 [0.63]	-0.003 [-0.38]	-0.004 [-0.49]	
Momentum	0.082* [1.72]			0.015 [0.61]	0.015 [0.63]	0.096* [1.78]	0.086* [1.69]	0.089* [1.70]	
Volatility	0.839** [2.47]					1.449** [2.38]	0.870** [2.37]	0.867** [2.46]	
Coskewness	-0.051 [-0.80]				-0.020 [-0.23]	-0.015 [-0.16]	-0.051 [-0.74]	-0.417** [-2.38]	
Cokurtosis	0.046*** [2.79]					0.070* [1.74]	0.029** [2.02]	0.019 [0.90]	
Liq β	0.017 [1.31]						0.015 [1.16]	0.016 [1.23]	
Avg. Adj. R² (%)	4.52	0.23	0.49	2.71	2.88	4.42	5.03	5.25	

This table presents coefficients from firm-level Fama-MacBeth (1973) cross-sectional regressions of 12-month realized excess returns on realized betas and firm characteristics. The benchmark h_j is the leave-one-out, value-weighted return of the corresponding Fama-French market capitalization decile portfolio. The final row, Avg. Adj. R^2 , reports the time-series average of the adjusted R-squared values from the monthly cross-sectional regressions, expressed as a percentage. All other details regarding data, methodology, variable definitions, and t -statistic calculations are identical to those described in Table A31. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A33: Disentangling Asymmetric FOMO from Symmetric Regret (Fama-French Size Benchmark)

Variable	Coefficient	<i>t</i> -statistic
Panel A: Key Behavioral Betas		
$\beta^{\text{FOMO}-}$ (Asymmetry: $\gamma^{F-} - \gamma^{F+}$)	-0.2520***	[-7.73]
$\beta_{\text{level}}^{\text{FOMO}+}$ (Level: γ^{F+})	0.0741	[1.60]
β^R (Symmetric Regret)	-0.7579***	[-4.74]
Panel B: Standard Control Variables		
β^{CAPM}	0.1100***	[3.99]
Log(Size)	-0.1197***	[-9.01]
Book-to-Market (BM)	-0.0247***	[-3.57]
Momentum (mom12m)	-0.0485***	[-4.98]
Volatility (vol12m)	1.2330***	[6.53]
Coskewness	-0.1291***	[-3.71]
Cokurtosis	-0.0004	[-0.11]
Liquidity Beta (β^l)	0.0123	[0.75]
Model Diagnostics		
Observations	1,999,751	
Firm Fixed Effects	Yes	
Time Fixed Effects	Yes	
Adj. R^2	0.1902	

This table presents results from a reparameterized pooled panel regression designed to test whether the asymmetric FOMO risk premium is distinct from a general, symmetric regret premium. The dependent variable is the 12-month realized stock excess return. The regression includes firm and time fixed effects. To correct for residual correlation both across firms and over time, *t*-statistics reported in parentheses are based on standard errors two-way clustered by firm and time, following the methodology of Petersen (2009). The coefficient on $\beta^{\text{FOMO}-}$ directly estimates the difference in the premia for under- and outperformance ($\gamma^{F-} - \gamma^{F+}$). The coefficient on β^R captures the premium for symmetric regret after controlling for the FOMO components. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A34: Portfolio Returns from 5x5 Sorts on Coskewness and $\beta^{\text{FOMO-}}$ (Fama-French Size Benchmark)

Panel A: Sorts on $\beta^{\text{FOMO-}}$ controlling for Coskewness							
$\beta^{\text{FOMO-}}$	Coskewness Quintile					High-Low	t -stat
Quintile	1 (Low)	2	3	4	5 (High)	(Coskewness)	(Coskewness)
1 (Low)	26.39	20.87	22.43	24.91	33.31	6.92	[1.41]
2	18.82	19.04	19.81	18.68	20.58	1.76	[0.49]
3	16.79	18.65	19.48	15.07	17.78	0.99	[0.29]
4	17.49	17.58	18.21	15.48	18.95	1.46	[0.34]
5 (High)	25.08	26.24	24.01	35.42	47.77	22.69	[2.00]**
Average	20.93	20.44	20.82	21.94	27.69	6.76	[1.26]

Panel B: Sorts on Coskewness controlling for $\beta^{\text{FOMO-}}$							
Coskewness	$\beta^{\text{FOMO-}}$ Quintile					High-Low	t -stat
Quintile	1 (Low)	2	3	4	5 (High)	($\beta^{\text{FOMO-}}$)	($\beta^{\text{FOMO-}}$)
1 (Lowest)	21.91	18.21	17.65	17.82	23.74	1.84	[0.52]
2	24.48	20.96	18.01	18.07	24.88	0.40	[0.11]
3	30.58	21.66	20.55	17.63	30.29	-0.29	[-0.05]
4	26.44	15.81	17.57	22.18	43.29	16.85	[1.34]
5 (Highest)	32.31	23.77	24.38	27.30	61.96	29.65	[1.29]
Average	27.14	20.08	19.63	20.60	36.83	9.69	[1.04]*

This table presents average 12-month realized excess returns for 5×5 portfolios formed from independent sorts on realized coskewness and realized $\beta^{\text{FOMO-}}$. The benchmark used for $\beta^{\text{FOMO-}}$ is based on Fama-French size deciles. Panel A shows returns for portfolios sorted on $\beta^{\text{FOMO-}}$ within each coskewness quintile. Panel B shows returns for portfolios sorted on coskewness within each $\beta^{\text{FOMO-}}$ quintile. The "High-Low" column reports the return spread between Quintile 5 and Quintile 1 of the secondary sort variable. The "Average" row/column shows the returns of the primary sort variable averaged across the secondary sort quintiles. t -statistics use Newey and West (1987) standard errors with 12 lags. Data are from CRSP/Compustat for the period January 1980 to December 2024. Quintile breakpoints are based on NYSE stocks. Portfolios are equal-weighted. ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A35: Determinants of Realized FOMO Down Betas, β^{FOMO-} (Fama-French Size Benchmark)

Characteristic	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Intercept	1.0253*** [10.56]	0.9055*** [94.91]	0.8518*** [47.37]	0.5876*** [4.58]	0.8799*** [63.90]	0.8968*** [28.60]	0.8549*** [54.86]	0.6961*** [4.65]
Log(Size)	-0.0348*** [-2.74]							-0.0221** [-1.97]
BM		-0.0031 [-0.86]						-0.0014*** [-2.88]
Momentum			-0.0464 [-1.52]					0.0208*** [4.40]
Volatility				0.6008*** [2.54]				0.5095*** [3.41]
Coskewness					0.0194 [0.44]			-0.0101 [-0.57]
Cokurtosis						-0.0305*** [-3.31]		0.0255*** [4.02]
Liquidity β							0.0056 [0.44]	0.0005 [0.17]

This table presents time-series averages of coefficients from monthly cross-sectional regressions explaining realized β^{FOMO-} , calculated using a value-weighted, leave-one-out Fama-French size benchmark. For each month, the realized β^{FOMO-} is regressed on lagged firm characteristics. Models (I) through (VII) are univariate regressions, while Model (VIII) is a multivariate regression including all characteristics simultaneously. All characteristics are measured at the beginning of the 12-month beta estimation period. t -statistics, reported in brackets, are computed using Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A36: Determinants of Realized FOMO Up Betas, $\beta^{\text{FOMO}+}$ (Fama-French Size Benchmark)

Characteristic	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Intercept	1.0115*** [14.59]	0.9396*** [90.20]	0.8875*** [49.46]	0.6462*** [8.56]	0.9133*** [66.07]	0.9236*** [43.75]	0.8904*** [45.25]	0.7459*** [7.70]
Log(Size)	-0.0238*** [-3.73]							-0.0174** [-2.46]
BM		-0.0026 [-1.36]						-0.0020* [-1.71]
Momentum			-0.0364 [-1.53]					0.0150*** [3.74]
Volatility				0.5518*** [3.07]				0.4476*** [3.96]
Coskewness					0.0416 [0.90]			-0.0111 [-0.68]
Cokurtosis						-0.0198*** [-2.76]		0.0273*** [5.65]
Liquidity β							0.0076 [0.73]	0.0024 [1.11]

This table presents time-series averages of coefficients from monthly cross-sectional regressions explaining realized $\beta^{\text{FOMO}+}$, calculated using a value-weighted, leave-one-out Fama-French size benchmark. For each month, the realized $\beta^{\text{FOMO}+}$ is regressed on lagged firm characteristics. Models (I) through (VII) are univariate regressions, while Model (VIII) is a multivariate regression including all characteristics simultaneously. All characteristics are measured at the beginning of the 12-month beta estimation period. t -statistics, reported in brackets, are computed using Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A35 and A35 provide the determinants for β^{FOMO-} and β^{FOMO+} respectively. The multivariate regression (Model VIII) shows that higher downside risk (β^{FOMO-}) is significantly associated with smaller firms (negative coefficient on Log(Size)), growth stocks (negative coefficient on BM), and past winners (positive coefficient on Momentum). Higher volatility and cokurtosis are also positively associated with higher downside FOMO beta. In contrast, the drivers of upside sensitivity are similar but with some different nuances. It is also associated with smaller, growth, past-winner, and high-volatility stocks. However, the magnitude of the momentum effect is smaller, while the effect of cokurtosis is larger and more significant. In both cases, the intercept remains highly significant, showing that there is still further variation in the FOMO betas that is not explained.

Table A37: Annual Persistence of Realised FOMO Betas (Fama-French Size Benchmark)

Explanatory Variable (End of Year T)	β^{FOMO-} (Year T+1)	β^{FOMO+} (Year T+1)
Intercept	0.424*** [18.97]	0.424*** [19.74]
Past β^{FOMO-} (Year T)	0.450*** [12.64]	
Past β^{FOMO+} (Year T)		0.495*** [18.43]
Past Volatility (Year T)	0.209*** [4.74]	0.157*** [4.60]
Log(Size) (Year T)	-0.008* [-1.72]	-0.006*** [-2.56]
Book-to-Market (Year T)	-0.001* [-1.65]	-0.001** [-2.15]
Momentum (Year T)	0.003 [0.83]	0.005*** [2.71]

This table reports Fama-MacBeth coefficients from annual, non-overlapping regressions testing the persistence of FOMO betas calculated with a Fama-French size benchmark. The dependent variable is the realised beta over Year T+1. Independent variables are the realised beta and other firm characteristics from the end of Year T. *t*-statistics, reported in brackets, are computed using Newey-West (1987) standard errors with 5 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

The key finding is the high persistence of the betas themselves. The coefficients of 0.450 on past β^{FOMO-} and 0.495 on past β^{FOMO+} are highly significant, showing that a stock's FOMO beta in one year is a very strong predictor of its FOMO beta in the next. This demonstrates that our betas are not just random noise; they capture a stable, persistent characteristic of a firm. As with our other benchmark portfolios, there is

sufficient evidence of persistence in the FOMO betas to allay the concern of Levi and Welch (2020).

Table A38: High-minus-Low Spreads for Non-Overlapping 5-Year Sub-Periods (Fama-French Size Benchmark)

Window Period	Sort on β^R		Sort on $\beta^{\text{FOMO}-}$	
	HML (%)	t -statistic	HML (%)	t -statistic
198012-198511	72.50	[3.52]***	46.37	[2.60]***
198512-199011	-0.90	[-0.28]	-12.38	[-3.03]***
199012-199511	31.16	[8.15]***	20.63	[4.60]***
199512-200011	20.71	[2.22]**	14.18	[1.78]*
200012-200511	12.57	[1.23]	9.96	[1.01]
200512-201011	2.14	[0.23]	-0.17	[-0.02]
201012-201511	3.43	[0.59]	0.41	[0.08]
201512-202011	-16.26	[-3.14]***	-9.68	[-2.08]**
202012-202412	-12.82	[-0.98]	-12.50	[-1.17]

This table presents average monthly High-minus-Low (HML) excess return spreads for portfolios sorted on realised β^R or $\beta^{\text{FOMO}-}$ over nine non-overlapping 5-year (60-month) sub-periods using a Fama-French size benchmark. The last sub-period covers 49 months. HML spreads are in percent per month. t -statistics are derived from Newey-West (1987) adjusted standard errors (12 lags). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A38 considers the time variation in the FOMO premia. Both the β^R and $\beta^{\text{FOMO}-}$ premiums were exceptionally large and significant in the 1980s and through the 1990s. Stronger results in the 1980s are consistent with the industry portfolio case. Likewise, the result that the premiums for both betas became much weaker and often statistically insignificant during the 2000s is also consistent with the results for industry peers. An interesting reversal pattern is observed in the post-2015 period, where the High-Low spreads for both betas become significantly negative, indicating that high-beta stocks underperformed low-beta stocks. These later results provide some empirical support to the lower FOMO premium identified for size benchmarks. Overall, the premiums are not consistent over time; they appear to be much stronger during market booms of the 20th century and have weakened or reversed in the 21st century.

Table A39 shows that the FOMO betas have weak correlation with any of the other betas. Low correlations are indicative of the low correlation between the peer portfolio and any of the portfolios used in the construction of alternative beta measures. There is a notably stronger correlation between $\beta^{\text{FOMO}-}$ and $\beta^{\text{FOMO}+}$ than is observed in the industry portfolios. The correlation is 0.777 here and just 0.511 in the main paper. Cor-

Table A39: Time-Series Average of Cross-Sectional Beta Correlations (Fama-French Size Benchmark)

Variable	β^{CAPM}	β^R	β^{FOMO-}	β^{FOMO+}	$Rel\beta_R^-$	$Rel\beta_R^+$	$Rel\beta_C^-$	$Rel\beta_C^+$	β^{Ang-}	β^{Ang+}	$Rel\beta_C^{A-}$	$Rel\beta_C^{A+}$	$Diff\beta^A$
β^{CAPM}	1.000	0.372	0.297	0.311	-0.083	-0.088	-0.889	-0.897	0.006	0.772	-0.058	0.010	0.038
β^R		1.000	0.914	0.921	0.138	-0.030	0.023	0.003	-0.105	0.354	0.048	-0.083	-0.082
β^{FOMO-}			1.000	0.777	0.518	-0.192	0.142	0.020	-0.436	0.300	0.059	-0.077	-0.084
β^{FOMO+}				1.000	-0.031	0.351	0.027	0.102	0.209	0.296	0.037	-0.065	-0.064
$Rel\beta_R^-$					1.000	-0.427	0.316	0.052	-0.871	-0.033	0.054	-0.010	-0.036
$Rel\beta_R^+$						1.000	0.014	0.265	0.815	-0.084	-0.019	0.033	0.033
$Rel\beta_C^-$							1.000	0.948	-0.194	-0.657	0.090	-0.048	-0.081
$Rel\beta_C^+$								1.000	0.110	-0.671	0.076	-0.042	-0.069
$Diff\beta^F$									1.000	-0.024	0.019	0.024	0.041
β^{Ang-}										1.000	0.450	-0.186	-0.450
β^{Ang+}											1.000	0.659	0.576
$Rel\beta_C^{A-}$											1.000	-0.324	-0.786
$Rel\beta_C^{A+}$												1.000	0.834
$Diff\beta^A$													1.000

This table presents the time-series average of cross-sectional correlations between key realized beta measures, where all betas are calculated using a Fama-French size benchmark. $Rel\beta_R^-$ is $\beta^{FOMO-} - \beta^R$, $Rel\beta_R^+$ is $\beta^{FOMO+} - \beta^R$, $Rel\beta_C^-$ is $\beta^{FOMO-} - \beta^{CAPM}$, $Rel\beta_C^+$ is $\beta^{FOMO+} - \beta^{CAPM}$, $Diff\beta^F$ is $\beta^{FOMO+} - \beta^{FOMO-}$. Similar definitions apply for Ang betas (A). The sample period is January 1980 to December 2024.

relations between the FOMO betas and β^R are also stronger for the size benchmark than those observed in the industry benchmark case. Low correlations are again confirmatory that FOMO is distinct from the Ang et al. (2006a) model and from the CAPM.

Table A40 provides further evidence on the FOMO premia in alternative investment universes. Firstly, it can be seen that the FOMO premium is not just a small-firm effect. In Panels A and B, the "Exclude small" columns show that after removing the smallest 20% of stocks, the High-Low spreads for both $\beta^{\text{FOMO}-}$ (24.53%) and β^R (24.58%) remain large and highly significant. As with many behavioral phenomena, the FOMO premium is weaker in Value-Weighted Portfolios. The spreads are much smaller and statistically insignificant in the "Value-weighted (NYSE)" scenario, a common finding for many asset pricing anomalies. This suggests the FOMO effect is pervasive across many stocks but not dominated by the largest mega-cap firms.

Table A41 considers the High-Low FOMO premium after controlling for common firm characteristics. The results show that after neutralizing the effects of size, book-to-market, momentum, and coskewness, the High-Low spread for $\beta^{\text{FOMO}-}$ becomes statistically insignificant. Similarly, the premium for $\beta^{\text{FOMO}+}$ does not survive these controls, with all t-statistics for the High-Low spreads being insignificant. The unconditional premia observed in single sorts may be attributable to these other well-known firm characteristics. Our results here contrast strongly with those observed in the main paper.

A concern with FOMO is that it is simply a consequence of volatility. Table A42 provides an exploration of the robustness of the FOMO premium to volatility. For the size reference portfolio, Panel A shows that within every volatility quintile, higher $\beta^{\text{FOMO}-}$ is associated with lower returns. The spread is most pronounced for the highest volatility stocks, with a High-Low difference of -42.00% ($t = -2.29$). Panel B shows that for low-to-medium volatility stocks (Quintiles 1-3), there is a positive and significant premium for $\beta^{\text{FOMO}+}$. However, this relationship inverts for high-volatility stocks, where the premium becomes strongly negative (-45.01%, $t = -2.44$). Again there is a contrast with the results in the main paper. Here much can be linked to the correlation between size and volatility, smaller stocks being more volatile. Hence there is a relationship between a stocks size, the reference portfolio being of similarly sized firms, and the volatility of both.

Table A43 explores the strength of the size-based FOMO premium across small and large stocks. The High-Low spread is positive and significant for Small stocks (10.80%, $t = 2.10$) but is insignificant for Big stocks (-1.12%, $t = -0.31$). This shows the effect is much more pronounced among small-cap stocks. The 'Big - Small' column for the High-Low quintiles shows a large and significant difference of -11.92% ($t = -2.50$), confirming that the premium for $\beta^{\text{FOMO}-}$ is substantially larger for smaller firms.

The results in Table A43 provide the strongest evidence on the reversals observed

Table A40: Robustness Checks of Portfolio Sorts on Key Beta Measures (Fama-French Size Benchmark)

Panel A: Sorts by realized $\beta^{\text{FOMO}-}$			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (NYSE) (%)
1 (Low)	19.57	20.93	12.81
2	21.77	20.44	11.33
3	24.61	20.82	8.40
4	31.05	21.94	5.36
5 (High)	44.10	27.69	8.85
High-Low	24.53	6.76	-3.96
<i>t</i> -statistic	[3.99]***	[1.54]	[-1.81]*

Panel B: Sorts by realized β^R			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (NYSE) (%)
1 (Low)	12.19	11.15	9.73
2	17.79	14.36	10.46
3	25.77	20.64	9.37
4	36.14	23.82	9.30
5 (High)	36.77	24.18	9.56
High-Low	24.58	13.03	-0.17
<i>t</i> -statistic	[4.05]***	[2.41]**	[-0.07]

Panel C: Sorts by realized Rel. $\beta^{\text{FOMO}-}$ vs β^R			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (NYSE) (%)
1 (Low)	28.76	32.91	14.42
2	21.80	19.51	8.59
3	23.14	17.29	6.12
4	31.18	23.71	6.37
5 (High)	23.78	21.78	7.56
High-Low	-4.98	-11.13	-6.86
<i>t</i> -statistic	[-2.31]**	[-4.88]***	[-7.44]***

This table presents robustness checks for portfolio sort results using a Fama-French size benchmark. Panel A sorts on $\beta^{\text{FOMO}-}$, Panel B on β^R , and Panel C on relative $\beta^{\text{FOMO}-}$ vs β^R . The scenarios are: (1) "Exclude small": Equal-weighted portfolios excluding the lowest NYSE market cap quintile. (2) "All stocks": Equal-weighted portfolios of all common stocks. (3) "Value-weighted": Value-weighted portfolios of only NYSE stocks. "High-Low" reports the spread between Quintile 5 and 1. *t*-statistics use Newey-West (1987) standard errors with 12 lags. ***, **, * denote significance at the 1%, 5%, and 10% levels.

Table A41: High-Low Spreads on FOMO Betas after Controlling for Firm Characteristics (Fama-French Size Benchmark)

Panel A: Sorts on $\beta^{\text{FOMO}-}$							
Control Variable	Quintile Portfolios on $\beta^{\text{FOMO}-}$					Spread	
	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
Log(Size)	2.55	2.96	2.08	-1.77	-1.69	-4.24	[-1.12]
BM	1.06	-2.08	-3.59	-3.33	2.26	1.19	[0.21]
Momentum	-0.32	-0.48	-0.88	-2.83	0.73	1.05	[0.27]
Coskewness	-4.84	-4.73	-4.37	-2.94	3.56	8.39	[0.84]

Panel B: Sorts on $\beta^{\text{FOMO}+}$							
Control Variable	Quintile Portfolios on $\beta^{\text{FOMO}+}$					Spread	
	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
Log(Size)	-8.07	-4.36	2.17	5.83	-4.50	3.57	[0.78]
BM	-8.18	-6.28	-0.90	6.36	-2.97	5.22	[0.94]
Momentum	-10.07	-7.10	-0.28	6.92	-2.85	7.22	[1.52]
Coskewness	-16.61	-12.15	-1.12	8.56	-1.61	15.01	[1.57]

This table presents average 12-month characteristic-adjusted excess returns for portfolios sorted on realized FOMO betas, calculated using a Fama-French size benchmark. Each month, stocks are first sorted into quintiles based on a control characteristic (Log(Size), BM, etc.). Within each quintile, we then subtract the quintile's equal-weighted average return from each stock's return to get an adjusted return. All stocks are then pooled and sorted into quintiles based on their realised $\beta^{\text{FOMO}-}$ (Panel A) or $\beta^{\text{FOMO}+}$ (Panel B). The High-Low column is the spread between Quintile 5 and Quintile 1, with Newey-West (1987) *t*-statistics adjusted for 12 lags. ***, **, * denote significance at the 1%, 5%, and 10% levels.

Table A42: Portfolio Returns from 5x5 Sorts on Volatility and FOMO Betas (Fama-French Size Benchmark)

Panel A: Secondary Sort on $\beta^{\text{FOMO}-}$							
Volatility	Quintiles formed on $\beta^{\text{FOMO}-}$					Spread	
Quintile	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
1 (Low Vol)	10.06	9.22	8.70	7.68	4.07	−5.99	[−2.65]***
2	16.25	13.36	11.55	9.31	6.50	−9.75	[−6.98]***
3	20.24	14.11	11.65	8.81	8.16	−12.08	[−11.74]***
4	23.86	14.28	10.76	7.98	11.98	−11.89	[−7.34]***
5 (High Vol)	79.02	39.03	29.07	25.18	37.02	−42.00	[−2.29]**

Panel B: Secondary Sort on $\beta^{\text{FOMO}+}$							
Volatility	Quintiles formed on $\beta^{\text{FOMO}+}$					Spread	
Quintile	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
1 (Low Vol)	6.19	7.13	7.97	8.58	9.84	3.65	[3.66]***
2	8.51	10.85	11.89	13.15	12.57	4.06	[5.68]***
3	9.02	12.34	14.43	15.22	11.97	2.94	[3.01]***
4	11.88	15.57	16.57	14.95	9.92	−1.96	[−1.26]
5 (High Vol)	68.67	45.55	38.10	32.85	23.66	−45.01	[−2.44]**

This table presents average 12-month excess returns for 25 portfolios formed from sequential 5x5 sorts on volatility and a FOMO beta, using a Fama-French size benchmark. Stocks are first sorted into quintiles based on realized volatility. Within each volatility quintile, stocks are then sorted into five quintiles based on their realized $\beta^{\text{FOMO}-}$ (Panel A) or $\beta^{\text{FOMO}+}$ (Panel B). The High-Low column reports the return spread of the FOMO beta sort within each volatility quintile. *t*-statistics are based on Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A43: Portfolio Returns from 2x5 Sorts on Size and $\beta^{\text{FOMO-}}$ (Size-Based Benchmark)

$\beta^{\text{FOMO-}}$ Quintile	Size Group		
	Small	Big	Big - Small
1 (Low)	-4.65	7.55	12.20
2	-0.40	7.67	8.06
3	5.24	6.44	1.20
4	9.05	7.11	-1.94
5 (High)	18.87	15.42	-3.44
High-Low Spread	23.51	7.87	-15.64
t-statistic	[8.25]***	[2.93]***	[-7.23]***

This table presents average 12-month excess returns for 10 portfolios formed from sequential 2x5 sorts on firm size and realized $\beta^{\text{FOMO-}}$, using a size-based benchmark. Each month, stocks are first assigned to two size groups (“Small” or “Big”) based on the median NYSE market capitalization breakpoint. Then, within each size group, stocks are sorted into five quintiles based on their realized $\beta^{\text{FOMO-}}$. The “High-Low” row reports the return spread between Quintile 5 and Quintile 1 within each size group. The “Big - Small” column reports the difference in returns between the Big and Small portfolios for each quintile and for the High-Low spread. *t*-statistics use Newey and West (1987) standard errors with 12 lags. *** denotes significance at the 1% level.

throughout this appendix. The strength of FOMO in small stocks is countered by the use of the small stock benchmark for small stocks. Hence, when looking only at the FOMO betas, we no longer see the significance that was observed for industry benchmarks.

The final robustness test for the size-based FOMO premium is provided in Table A44. By exploring the Fama-MacBeth coefficients in alternative time periods and amongst smaller stocks we see that there are strong consistencies. In all cases, the coefficients are negative, compared with all coefficients being positive in the main paper. The negative coefficient on $\beta^{\text{FOMO-}}$ is consistently large, negative, and highly statistically significant. The *t*-statistics are all very high (generally well below -4.0). The results are not sensitive to the sample period (significant in both halves) or the exclusion of small stocks, demonstrating the robustness of the negative premium. The coefficient remains strongly negative and significant in the horse race against Ang’s (2006a) betas (Panel B), showing it captures unique information not subsumed by market-based downside risk. Table A44 provides further evidence that the size-based FOMO premium acts in the opposite direction to the industry-based premium.

Finally, Table A45 shows that the GRS results provide strong statistical evidence for a FOMO factor with a size-based benchmark. Panel A shows that standard models like the CAPM and the Fama-French 4-factor model fail to explain the returns of portfolios sorted on $\beta^{\text{FOMO-}}$ (the *p*-values are all < 0.05 , so the models are rejected). However,

Table A44: Robustness of Fama-MacBeth $\beta^{\text{FOMO-}}$ Coefficient (Fama-French Size Benchmark)

Scenario	Coefficient	t-statistic
A: $\beta^{\text{FOMO-}}$ Model VII (Full Controls)		
Full Sample	-0.640	[-4.75]***
Sub-Period 1 (1980-2002)	-1.094	[-4.43]***
Sub-Period 2 (2003-2024)	-0.230	[-8.06]***
Exclude Micro-Caps	-0.531	[-5.20]***
B: $\beta^{\text{FOMO-}}$ Horse Race Model VIII		
Full Sample	-0.610	[-4.47]***
Sub-Period 1 (1980-2002)	-1.037	[-4.04]***
Sub-Period 2 (2003-2024)	-0.225	[-8.52]***
Exclude Micro-Caps	-0.529	[-4.86]***

This table presents the Fama-MacBeth coefficient and t -statistic for $\beta^{\text{FOMO-}}$ under different scenarios using a Fama-French size benchmark. Panel A shows results from Model VII (full controls). Panel B shows results from Model VIII (the "horse race" against Ang's (2006a) betas). "Full Sample" covers 1980-2024. "Sub-Period 1" covers 1980-2002 and "Sub-Period 2" covers 2003-2024. "Exclude Micro-Caps" removes stocks in the lowest NYSE market capitalisation quintile. t -statistics use Newey and West (1987) standard errors with 12 lags. *** denotes significance at the 1% level.

when adding either our FMF factor (Model 5) or Ang's ADF factor (Model 4) to the 4-factor model, the GRS statistic drops significantly and the models are no longer rejected (p-values of 0.166 and 0.129, respectively). This is a powerful demonstration that factors capturing asymmetric downside risk are essential for explaining the returns of these portfolios. Panel B shows that when testing on the 25 Fama-French portfolios, all models are strongly rejected, which is a common result. However, the model augmented with ADF (Model 4) produces the lowest GRS statistic and average alpha, indicating it does a slightly better job than our FMF factor on these specific portfolios. This clarifies that our FMF factor is specifically designed to explain the peer-based FOMO anomaly, while other factors may be better at explaining the value/size anomalies captured by the FF25 portfolios.

H.1 Summary of Size Results

The size based benchmark provides the strongest case against the results of the main paper. However, the robustness checks provide a clear motivation for the counter-intuitive FOMO results. A further note is made that the lower premium on $\beta^{\text{FOMO-}}$ compared to $\beta^{\text{FOMO+}}$ is not against the theoretical model. However, it would be expected that there would be a stronger feeling from underperformance relative to peers. Our results with the

Table A45: GRS Test Results for Factor Models on Different Sets of Test Assets (Fama-French Size Benchmark)

Panel A: Test Assets = 5 β^{FOMO-} -Sorted Portfolios					
Model Specification	Num. Factors	Num. Assets	AvgAbsAlpha (% p.m.)	GRS Statistic	p-value
1. CAPM	1	5	0.263	4.967	0.000
2. FF3 (Mkt, SMB, HML)	3	5	0.232	4.500	0.001
3. FF4 (Mkt, SMB, HML, Mom)	4	5	0.110	2.737	0.019
4. FF4 + ADF	5	5	0.057	1.716	0.129
5. FF4 + FMF	5	5	0.102	1.574	0.166
6. FF4 + FMF + ADF	6	5	0.062	1.580	0.164

Panel B: Test Assets = 25 Fama-French Size and B/M Portfolios					
Model Specification	Num. Factors	Num. Assets	AvgAbsAlpha (% p.m.)	GRS Statistic	p-value
1. CAPM	1	25	0.165	4.345	0.0001
2. FF3 (Mkt, SMB, HML)	3	25	0.111	4.119	0.0001
3. FF4 (Mkt, SMB, HML, Mom)	4	25	0.102	3.662	0.0001
4. FF4 + ADF	5	25	0.098	3.502	0.0001
5. FF4 + FMF	5	25	0.099	3.692	0.0001
6. FF4 + FMF + ADF	6	25	0.097	3.638	0.0001

This table reports results from the Gibbons et al. (1989) F-test for various factor models on two sets of test assets. Panel A uses five quintile portfolios formed by sorting stocks on realized β^{FOMO-} . Panel B uses the 25 Fama-French portfolios sorted on size and book-to-market. "AvgAbsAlpha (% p.m.)" is the average of the absolute values of the monthly time-series regression intercepts (alphas). FMF is our FOMO factor based on β^{FOMO-} sorts (using a Fama-French size benchmark). ADF is Ang's (2006a) downside risk factor. The sample period for the time-series regressions is January 1980 to December 2024.

size-based peer groups simply say that the impact of the feeling on asset prices is lower. There is no question from the exposition that FOMO, or consideration of benchmarks is absent. The strong link between size and FOMO means that there are still strong positive FOMO premia to be found in small stocks, even when the benchmark is size based. However, the use of a size based benchmark means that the benchmarks have similar volatility to the stocks, smaller stocks being more volatile, with the result that the activation of FOMO is on and off more than in other cases.

There are practical reasons why a size-based FOMO peer group is not suitable for analysis as well. Because firms of similar size can be found in very diverse sectors of the economy, it is difficult to see how all could be taken as peers. The argument for using size hinges on the availability of size benchmarks rather than the consideration of particular peers. Hence the effects are more consistent with a benchmark story than FOMO. Further investigation would be needed to explore the motivations of investors when considering their performance opposite firms of similar size.

I Value Benchmark

As with the size-based peer portfolios, the book-to-market ratio is an example of a style-focused definition of peers. Peers are those who invest in stocks with similar value to the one held by the investor. Again, these stocks will take from multiple industries and display varying levels of cyclicalities with respect to the overall economy. Unlike the size premium, evidence on the continued existence of the book-to-market premium is mixed. Hence, stocks with similar value present a more interesting benchmark than size for FOMO.

The process of constructing the book-to-market based peers is understood as follows. For the identification of peers, book equity is calculated annually using Compustat data according to the Fama-French definition. This is then divided by the market equity at the end of December to compute the B/M ratio for each stock. We use the annual B/M decile breakpoints for NYSE-listed stocks, downloaded directly from the Kenneth French Data Library. This ensures maximum consistency with established academic benchmarks. As a validation step, the book-to-market ratios calculated from our sample are used to compute NYSE median breakpoints, which are then compared to the official data. The close alignment confirms the accuracy of our book-to-market calculations. Portfolios are rebalanced at the end of June each year. Breakpoints from June of year t are used to assign all stocks (NYSE, AMEX, NASDAQ) into book-to-market deciles. These portfolio assignments then remain fixed for the next twelve months (from July of year t to June of year $t + 1$), ensuring assignments are based solely on information available at the time of formation. While portfolios are rebalanced annually, the benchmark return (h_j) for each

decile is calculated on a daily basis. These daily returns are value-weighted, using the prior day’s market capitalization as weights to capture the relative economic significance of each firm within its fixed, annually-assigned peer group. The daily benchmark returns are transformed into excess returns by subtracting the risk-free rate. The gap variable is then defined as the stock’s daily excess return minus its corresponding daily benchmark excess return. For any stock that could not be assigned to a B/M portfolio, the market excess return is used as its benchmark.

Table A46 shows that there is a positive premium on β^R , β^{FOMO-} and β^{FOMO+} . The premia are 19.55% ($t = 7.59$), 22.10% ($t = 9.39$) and 10.11 ($t = 7.25$) respectively. The β^{FOMO-} premium is now higher than that for β^{FOMO+} , mirroring the result in the main paper and aligning with the theoretical expectation that stronger impacts arise from stocks underperforming their benchmark. The Fama-MacBeth regressions in Table A47 provide similar robustness for the main paper.

Table A47 shows that the β^{FOMO-} premium is economically large and highly robust. In our full model (VII), the coefficient on β^{FOMO-} is 0.259 ($t = 9.27$). This result is substantially stronger than under the previous size-based benchmark, indicating that using a more theoretically grounded B/M peer group better isolates the underperformance-aversion premium. The asymmetry between downside and upside FOMO risk is now much more pronounced. In our most comprehensive model (VII), the coefficient on β^{FOMO+} is only 0.033 ($t = 1.67$), which is statistically weak and an order of magnitude smaller than the premium for β^{FOMO-} . This provides powerful support for the core theoretical prediction that the market primarily penalizes the risk of falling short of a peer benchmark, while the reward for outperforming it is negligible after controlling for other factors. The model’s explanatory power remains strong. Our full models (VI, VII, VIII) explain a significant portion of the cross-sectional variation in returns, with average adjusted R^2 values around 13-14%, which are robust levels for a Fama-MacBeth setting.

Table A48 unpacks FOMO from the symmetric regret model. The robustness check using a BM-based benchmark provides strong support for the FOMO-CAPM, confirming that our findings are not an artifact of industry classifications. The premium on β^{FOMO-} remains economically large and highly significant across both univariate portfolio sorts (22.10% High-Low Spread, $t = 9.39$) and multivariate Fama-MacBeth regressions (coeff = 0.259, $t = 9.27$). The premium on β^{FOMO+} is substantially smaller in magnitude (10.11% High-Low Spread, $t = 7.25$) and becomes only marginally significant in the full Fama-MacBeth specification (coeff = 0.033, $t = 1.67$). This highlights a more pronounced asymmetry compared to the previous benchmark specification and strongly supports the core theoretical prediction. The explanatory power of the model remains high, with an average adjusted R^2 of 13.45% in the full model.

Table A49 is constructed to explore whether FOMO stems from coskewness. The

Table A46: Returns of Portfolios Sorted by Realized Factor Loadings (BM-Based Benchmark)

Panel A: Sort on β^{CAPM}						Panel B: Sort on β^R (Regret Beta)					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	2.56%	0.21	0.77	0.81	0.80	1 (Low)	-2.52%	0.48	0.65	0.71	0.65
2	7.22%	0.67	0.88	0.90	0.91	2	5.57%	0.57	0.88	0.89	0.90
3	8.07%	0.89	0.94	0.95	0.96	3	8.42%	0.78	0.96	0.97	0.98
4	9.07%	1.13	0.98	0.99	0.99	4	11.13%	1.10	1.02	1.02	1.03
5 (High)	10.72%	1.65	1.00	1.00	0.98	5 (High)	17.02%	1.50	1.10	1.11	1.10
High-Low	8.16%					High-Low	19.55%				
<i>t</i> -stat	[2.48]**					<i>t</i> -stat	[7.59]***				

Panel C: Sort on $\beta^{\text{FOMO}-}$						Panel D: Sort on $\beta^{\text{FOMO}+}$					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	-2.88%	0.56	0.69	0.64	0.73	1 (Low)	-2.18%	0.57	0.69	0.78	0.63
2	3.48%	0.59	0.86	0.88	0.89	2	9.47%	0.62	0.89	0.90	0.91
3	7.16%	0.74	0.93	0.96	0.94	3	10.88%	0.79	0.95	0.95	0.99
4	10.06%	0.97	0.98	1.03	0.98	4	9.56%	1.03	0.99	0.98	1.05
5 (High)	19.22%	1.28	1.05	1.14	1.03	5 (High)	7.93%	1.26	1.05	1.04	1.13
High-Low	22.10%					High-Low	10.11%				
<i>t</i> -stat	[9.39]***					<i>t</i> -stat	[7.25]***				

Panel E: Sort on Rel. $\beta^{\text{FOMO}-}$ vs β^{CAPM}					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	7.01%	1.59	0.94	0.92	0.94
2	9.10%	1.07	0.94	0.93	0.96
3	9.55%	0.86	0.91	0.91	0.93
4	9.00%	0.68	0.88	0.91	0.90
5 (High)	3.88%	0.28	0.83	0.90	0.85
High-Low	-3.13%				
<i>t</i> -stat	[-1.00]				

This table presents average 12-month realised excess returns and post-ranking realised betas for equal-weighted quintile portfolios. For each 12-month period, stocks are sorted into five quintiles based on one of five realized beta measures. The benchmark h_j used to calculate the performance gap for β^R , $\beta^{\text{FOMO}-}$, and $\beta^{\text{FOMO}+}$ is the value-weighted return of the corresponding book-to-market (B/M) decile portfolio, with deciles formed annually using NYSE breakpoints from the Kenneth French Data Library. The column labeled "Return" reports the average realized 12-month excess return for each quintile portfolio. The columns labeled with beta symbols report the time-series average of the equal-weighted post-ranking realised betas for stocks within each quintile. Breakpoints for quintile formation are based on NYSE stocks. The row labeled "High-Low" reports the difference in average returns between Portfolio 5 and Portfolio 1. *t*-statistics for the High-Low difference are computed using Newey and West (1987) standard errors with 12 lags. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. The sample period is January 1980 to December 2024.

Table A47: Fama-MacBeth Regression Results (BM-Based Benchmark)

Variable	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	Mean (Std Dev)
Intercept	-0.058 [-1.06]	-0.438 [-9.36]***	-0.413 [-9.86]***	-0.451 [-11.12]***	-0.452 [-11.40]***	0.020 [0.47]	0.036 [0.80]	-0.026 [-0.50]	
β^R	0.371 [10.40]***								0.888 (0.169)
β^{CAPM}			0.027 [1.06]	0.035 [1.07]	0.028 [0.87]	0.155 [5.27]***	0.147 [4.68]***		0.786 (0.556)
$\beta^{\text{FOMO}-}$		0.316 [4.91]***	0.277 [5.48]***	0.250 [6.35]***	0.255 [6.38]***	0.271 [9.52]***	0.259 [9.27]***	0.285 [9.39]***	0.909 (0.179)
$\beta^{\text{FOMO}+}$		0.226 [7.46]***	0.229 [6.62]***	0.186 [7.63]***	0.179 [7.45]***	0.050 [2.48]**	0.033 [1.67]*	0.054 [2.50]**	0.903 (0.205)
β_{Ang}^-								0.071 [5.18]***	0.862 (0.715)
β_{Ang}^+								0.029 [2.94]***	0.681 (0.786)
lnSize	-0.022 [-4.22]***			0.009 [1.87]*	0.008 [1.68]*	-0.023 [-4.41]***	-0.021 [-4.11]***	-0.017 [-3.42]***	5.188 (2.010)
B/M	0.031 [4.44]***			0.048 [5.97]***	0.048 [6.00]***	0.036 [5.33]***	0.034 [4.94]***	0.033 [4.73]***	0.802 (0.724)
Momentum	0.003 [0.18]			0.027 [1.81]*	0.026 [1.79]*	-0.003 [-0.17]	-0.001 [-0.05]	0.001 [0.03]	0.084 (0.506)
Volatility	-0.346 [-5.40]***					-0.505 [-10.16]***	-0.472 [-8.68]***	-0.436 [-6.95]***	0.535 (0.263)
Coskewness	-0.139 [-4.12]***				-0.145 [-4.84]***	-0.170 [-5.43]***	-0.160 [-5.03]***	-0.095 [-2.93]***	-0.119 (0.165)
Cokurtosis	0.051 [3.57]***					-0.028 [-2.13]**	-0.029 [-2.14]**	-0.007 [-0.50]	1.662 (1.181)
Liq β	0.008 [1.38]						0.009 [1.40]	0.008 [1.28]	-0.004 (0.426)
Avg. Adj. R² (%)	12.31	3.58	5.98	9.03	9.47	13.99	13.45	13.27	

This table presents coefficients from firm-level Fama-MacBeth (1973) cross-sectional regressions of 12-month realized excess returns on realized betas and firm characteristics. The benchmark h_j used to calculate the performance gap for β^R , $\beta^{\text{FOMO}-}$, and $\beta^{\text{FOMO}+}$ is the value-weighted return of the corresponding book-to-market (B/M) decile portfolio. The final column reports the time-series average of the cross-sectional mean and standard deviation for each variable. The final row, Avg. Adj. R^2 , reports the time-series average of the adjusted R-squared values from the monthly cross-sectional regressions, expressed as a percentage. All other details regarding data, methodology, variable definitions, and t -statistic calculations are identical to those described in Table A46. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A48: Disentangling Asymmetric FOMO from Symmetric Regret (BM-Based Benchmark)

Variable	Coefficient	<i>t</i> -statistic
Panel A: Key Behavioral Betas		
$\beta^{\text{FOMO}-}$ (Asymmetry: $\gamma^{F-} - \gamma^{F+}$)	0.2904***	[14.12]
$\beta_{\text{level}}^{\text{FOMO}+}$ (Level: γ^{F+})	-0.1793***	[-8.58]
β^R (Symmetric Regret)	0.2596***	[6.54]
Panel B: Standard Control Variables		
β^{CAPM}	0.1190***	[12.89]
Log(Size)	-0.1598***	[-30.99]
Book-to-Market (BM)	0.0688***	[9.21]
Momentum (mom12m)	-0.0429***	[-8.00]
Volatility (vol12m)	-0.4624***	[-20.27]
Coskewness	-0.1276***	[-7.55]
Cokurtosis	-0.0091***	[-4.95]
Liquidity Beta (β^l)	0.0203***	[3.70]
Model Diagnostics		
Observations	1,810,327	
Firm Fixed Effects	Yes	
Time Fixed Effects	Yes	
Adj. R^2	0.2669	

This table presents results from a reparameterized pooled panel regression designed to test whether the asymmetric FOMO risk premium is distinct from a general, symmetric regret premium. The dependent variable is the 12-month realized stock excess return. The regression includes firm and time fixed effects. To correct for residual correlation both across firms and over time, *t*-statistics reported in parentheses are based on standard errors two-way clustered by firm and time, following the methodology of Petersen (2009). The coefficient on $\beta^{\text{FOMO}-}$ directly estimates the difference in the premia for under- and outperformance ($\gamma^{F-} - \gamma^{F+}$). The coefficient on β^R captures the premium for symmetric regret after controlling for the FOMO components. *** denotes significance at the 1% level.

Table A49: Portfolio Returns from 5x5 Sorts on Coskewness and β^{FOMO-} (BM-Based Benchmark)

Panel A: Sorts on Coskewness controlling for β^{FOMO-}							
Coskewness	β^{FOMO-} Quintile					High-Low	t -stat
Quintile	1 (Low)	2	3	4	5 (High)	(β^{FOMO-})	(β^{FOMO-})
1 (Lowest)	3.06	1.19	-1.39	-3.38	-8.16	-11.22	[-7.18]***
2	6.41	6.52	4.85	2.97	-0.52	-6.93	[-5.04]***
3	9.82	8.74	7.58	6.15	3.17	-6.64	[-5.08]***
4	15.12	12.54	9.85	8.00	4.47	-10.65	[-5.90]***
5 (Highest)	24.31	21.85	18.79	15.26	10.15	-14.16	[-5.43]***
Average	11.36	9.45	7.52	5.58	3.12	-8.24	[-6.37]***

Panel B: Sorts on β^{FOMO-} controlling for Coskewness							
β^{FOMO-}	Coskewness Quintile					High-Low	t -stat
Quintile	1 (Low)	2	3	4	5 (High)	(Coskewness)	(Coskewness)
1 (Low)	1.92	-0.50	-2.94	-4.88	-8.03	-9.95	[-7.99]***
2	7.24	5.48	3.61	1.50	-0.46	-7.70	[-8.40]***
3	10.42	9.01	7.38	5.27	3.73	-6.69	[-9.00]***
4	14.36	11.71	9.66	8.11	6.44	-7.92	[-9.19]***
5 (High)	22.85	21.58	19.88	17.90	13.90	-8.95	[-9.23]***
Average	-1.73	4.05	7.09	10.00	18.07	19.80	[8.75]***

This table presents average 12-month realized excess returns for 5×5 portfolios formed from independent sorts on realized coskewness and realized β^{FOMO-} . The benchmark used for β^{FOMO-} is based on B/M deciles. Panel A shows returns for portfolios sorted on β^{FOMO-} within each coskewness quintile. Panel B shows returns for portfolios sorted on coskewness within each β^{FOMO-} quintile. The "High-Low" column reports the return spread between Quintile 5 and Quintile 1 of the secondary sort variable. The "Average" row/column shows the returns of the primary sort variable averaged across the secondary sort quintiles. t -statistics use Newey and West (1987) standard errors with 12 lags. Data are from CRSP/Compustat for the period January 1980 to December 2024. Quintile breakpoints are based on NYSE stocks. Portfolios are equal-weighted. *** denotes significance at the 1% level.

results demonstrate that the coskewness premium is real and monotonic. Panel B confirms that within every $\beta^{\text{FOMO}-}$ quintile, there is a strong, negative relationship between coskewness and returns. The "Average" High–Low spread for coskewness is a significant -8.24% ($t = -6.37$). Further, when using book-to-market based peer groups, $\beta^{\text{FOMO}-}$ premium is not a coskewness story. Panel A shows that after controlling for coskewness, the premium for $\beta^{\text{FOMO}-}$ remains exceptionally strong. The "Average" High–Low spread is 19.80% ($t = 8.75$). More importantly, the spread is large, positive, and highly significant within every single coskewness quintile, ranging from 20.93% to 22.82% . This provides powerful evidence that the premium for downside FOMO risk is distinct from and robust to controlling for coskewness.

Tables A50 and A51 provide evidence on the determinants of the FOMO betas when the peers are value-based. The multivariate regression (Model VIII) shows that higher downside sensitivity is significantly associated with smaller firms ($\text{Log}(\text{Size}) = -0.0140$, $t = -3.38$), past winners ($\text{Momentum} = 0.0118$, $t = 3.32$), positively skewed stocks ($\text{Coskewness} = 0.0462$, $t = 3.60$), and those with higher kurtosis ($\text{Cokurtosis} = 0.0949$, $t = 8.43$). In contrast, the main drivers of upside sensitivity, after controlling for all characteristics, are past momentum ($\text{Momentum} = 0.0279$, $t = 8.37$) and cokurtosis (0.0636 , $t = 7.50$). Interestingly, higher $\beta^{\text{FOMO}+}$ is associated with larger firms ($\text{Log}(\text{Size}) = -0.0070$, $t = -2.00$) and value firms ($\text{BM} = -0.0090$, $t = -3.91$). This suggests that the profiles of firms with high downside versus high upside FOMO sensitivity are distinctly different.

Again it is important to examine the persistence of FOMO betas as a means to offset the Levi and Welch (2020) criticism. The key finding in Table A52 is the high persistence of the FOMO betas themselves. Past $\beta^{\text{FOMO}-}$ strongly predicts future $\beta^{\text{FOMO}-}$ (coefficient = 0.354 , $t = 14.10$), and past $\beta^{\text{FOMO}+}$ strongly predicts future $\beta^{\text{FOMO}+}$ (coefficient = 0.381 , $t = 20.88$). This indicates that a stock's FOMO beta is not driven by transitory noise but reflects a stable and persistent firm characteristic. Other firm traits, such as size and momentum, also contribute to next year's betas, but the dominant predictor is the beta itself.

The time variation of the FOMO premia is explored in Table A53. Both the β^R and $\beta^{\text{FOMO}-}$ premiums were exceptionally large and significant from the 1980s through the dot-com bubble period ending in 2000. For example, the $\beta^{\text{FOMO}-}$ spread exceeded 33% per year in both the early and late 1990s. The premiums for both betas became much weaker and statistically insignificant during the 2000–2005 period, which included the dot-com bust. The premium for $\beta^{\text{FOMO}-}$ re-emerged strongly as statistically significant in every sub-period after 2005. The β^R premium also became significant again in all subsequent windows. Overall, the FOMO premium is not consistent over time; it tends to be much stronger during market booms and weaker during major crisis periods, though it has

Table A50: Determinants of Realized FOMO Down Betas, β^{FOMO-} (BM-Based Benchmark)

Characteristic	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Intercept	0.8183 [14.24]***	0.9329 [68.11]***	0.9094 [62.83]***	0.9123 [11.33]***	0.8836 [81.44]***	0.7997 [12.70]***	0.9177 [61.47]***	0.8367 [11.75]***
Log(Size)	0.0164 [3.15]***							-0.0140 [-3.38]***
BM		-0.0188 [-3.57]***						-0.0035 [-1.28]
Momentum			0.0289 [2.45]**					0.0118 [3.32]***
Volatility				-0.0272 [-0.25]				0.0381 [0.61]
Coskewness					-0.0431 [-0.91]			0.0462 [3.60]***
Cokurtosis						0.0790 [4.70]***		0.0949 [8.43]***
Liquidity β							0.0038 [0.72]	0.0038 [1.62]

This table presents time-series averages of coefficients from monthly cross-sectional regressions explaining realized β^{FOMO-} , calculated using a BM-based benchmark. For each month, the realized β^{FOMO-} is regressed on lagged firm characteristics. Models (I) through (VII) are univariate regressions, while Model (VIII) is a multivariate regression including all characteristics simultaneously. All characteristics are measured at the beginning of the 12-month beta estimation period. t -statistics, reported in brackets, are computed using Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A51: Determinants of Realized FOMO Up Betas, β^{FOMO+} (BM-Based Benchmark)

Characteristic	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Intercept	0.7287 [12.83]***	0.9358 [114.34]***	0.9062 [111.19]***	0.9983 [21.87]***	0.8703 [73.32]***	0.7725 [12.88]***	0.9130 [86.58]***	0.8739 [11.89]***
Log(Size)	0.0329 [8.99]***							-0.0070 [-2.00]**
BM		-0.0299 [-6.70]***						-0.0090 [-3.91]***
Momentum			0.0746 [6.43]***					0.0279 [8.37]***
Volatility				-0.2070 [-2.21]**				-0.0961 [-1.32]
Coskewness					-0.0780 [-1.62]			-0.0264 [-1.73]*
Cokurtosis						0.0974 [6.85]***		0.0815 [7.50]***
Liquidity β							0.0031 [0.49]	0.0042 [1.84]*

This table presents time-series averages of coefficients from monthly cross-sectional regressions explaining realized β^{FOMO+} , calculated using a BM-based benchmark. For each month, the realized β^{FOMO+} is regressed on lagged firm characteristics. Models (I) through (VII) are univariate regressions, while Model (VIII) is a multivariate regression including all characteristics simultaneously. All characteristics are measured at the beginning of the 12-month beta estimation period. *t*-statistics, reported in brackets, are computed using Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A52: Annual Persistence of Realized FOMO Betas (BM-Based Benchmark)

Explanatory Variable (End of Year T)	$\beta^{\text{FOMO}-}$ (Year T+1)	$\beta^{\text{FOMO}+}$ (Year T+1)
Intercept	0.522 [16.49]***	0.518 [19.33]***
Past $\beta^{\text{FOMO}-}$ (Year T)	0.354 [14.10]***	
Past $\beta^{\text{FOMO}+}$ (Year T)		0.381 [20.88]***
Past Volatility (Year T)	0.025 [0.91]	-0.049 [-1.88]*
Log(Size) (Year T)	0.010 [4.90]***	0.012 [5.87]***
Book-to-Market (Year T)	-0.002 [-0.68]	-0.005 [-2.33]**
Momentum (Year T)	0.004 [2.08]**	0.014 [7.24]***

This table reports Fama-MacBeth coefficients from annual, non-overlapping regressions testing the persistence of FOMO betas calculated with a BM-based benchmark. The dependent variable is the realized beta over Year T+1. Independent variables are the realized beta and other firm characteristics from the end of Year T. *t*-statistics, reported in brackets, are computed using Newey-West (1987) standard errors with 5 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A53: High-minus-Low Spreads for Non-Overlapping 5-Year Sub-Periods (BM-Based Benchmark)

Window Period	Sort on β^R		Sort on $\beta^{\text{FOMO-}}$	
	HML (%)	t -statistic	HML (%)	t -statistic
198012-198511	14.47	[2.45]**	11.94	[2.06]**
198512-199011	25.62	[6.52]***	23.96	[6.51]***
199012-199511	34.91	[10.01]***	35.59	[17.51]***
199512-200011	39.97	[7.21]***	33.79	[8.24]***
200012-200511	-2.54	[-0.43]	4.22	[0.59]
200512-201011	11.62	[2.56]**	16.70	[2.45]**
201012-201511	14.98	[6.96]***	22.38	[9.64]***
201512-202011	16.25	[4.77]***	23.59	[6.03]***
202012-202412	20.89	[2.40]**	27.82	[3.88]***

This table presents average monthly High-minus-Low (HML) excess return spreads for portfolios sorted on realized β^R or $\beta^{\text{FOMO-}}$ over nine non-overlapping 5-year (60-month) sub-periods using a BM-based benchmark. The last sub-period covers 49 months. HML spreads are in percent per month. t -statistics are derived from Newey-West (1987) adjusted standard errors (12 lags). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

shown a robust resurgence since 2005. Further, the book-to-market benchmark results echo those in the main paper with industry benchmarks.

Table A54 provides the correlations between the FOMO betas and the other realized betas constructed. As with the industry FOMO betas, the correlation between β^{FOMO-} and β^{FOMO+} is close to 0.5 at 0.523. Correlations between the FOMO betas and other betas are small. Further evidence is provided that FOMO and regret are distinct from both the CAPM and the Ang et al. (2006a) upside and downside betas.

To explore the robustness of the FOMO betas to alternative investment universes, Table A55 provides FOMO premia with the exclusion of small stocks, and using value weighted NYSE breakpoints. Firstly, it is seen that the β^{FOMO-} premium is not just a small-firm effect. In Panels A and B, the "Exclude small" columns show that even after removing the smallest 20% of NYSE stocks, the High–Low spreads for both β^{FOMO-} (21.65%, $t = 7.37$) and β^R (16.69%, $t = 5.28$) remain economically large and highly significant. This is a powerful counterargument to any claim that our results are solely driven by micro-cap stocks. Once again, the β^{FOMO-} premium is weaker in value-weighted portfolios. The spreads are smaller in the "Value-weighted (NYSE)" scenario. However, for β^{FOMO-} , the spread of 3.38% ($t = 1.67$) is now significant at the 10% level, providing some evidence that the effect persists even among the largest firms. The β^R premium remains insignificant in this group.

Further robustness is explored when controlling for firm characteristics which are commonly used in asset pricing. Results are presented in Table A56. The High–Low spreads for β^{FOMO-} remain economically large (19.85%–21.47%) and highly statistically significant (t -stats between 4.17 and 5.70) after controlling for size, book-to-market, momentum, or coskewness. Our results show that even among firms with similar fundamental or risk characteristics, those with higher β^{FOMO-} continue to earn substantially higher returns. The positive premium for β^{FOMO+} also survives these characteristic adjustments. The spreads (8.00%–9.82%) remain consistently positive and highly significant, reinforcing that the effect is not subsumed by standard characteristics.

Table A57 asks whether the effects observed for FOMO are in fact stemming from volatility. The β^{FOMO-} premium is concentrated in the highest-volatility stocks. Panel A shows that for low- and medium-volatility quintiles (1–3), the High–Low spread is small or negative. In contrast, in the highest volatility quintile, the premium jumps to 42.93% per year ($t = 13.07$). This suggests that the pricing of downside FOMO risk is most pronounced in volatile firms, and much weaker in stable, low-volatility stocks. For β^{FOMO+} , the premium is strongest among low-volatility stocks. Panel B shows a large and significant spread in the lowest volatility quintile (8.47%, $t = 6.04$), moderate significance in quintile 2, and weaker or negative spreads in quintiles 3–4. In the highest volatility quintile, the large spread (26.02%, $t = 12.62$) is driven primarily by very poor returns to

Table A54: Time-Series Average of Cross-Sectional Beta Correlations (BM-Based Benchmark)

Variable	β^{CAPM}	β^R	$\beta^{\text{FOMO}+}$	$\beta^{\text{FOMO}-}$	$\text{Rel}\beta_{\text{R}}^{\text{F}+}$	$\text{Rel}\beta_{\text{R}}^{\text{F}-}$	$\text{Rel}\beta_{\text{C}}^{\text{F}+}$	$\text{Rel}\beta_{\text{C}}^{\text{F}-}$	$\text{Rel}\beta_{\text{C}}^{\text{F}+}$	$\text{Diff}\beta^{\text{F}}$	$\beta^{\text{Ang}-}$	$\beta^{\text{Ang}+}$	$\text{Rel}\beta_{\text{C}}^{\text{A}-}$	$\text{Rel}\beta_{\text{C}}^{\text{A}+}$	$\text{Diff}\beta^{\text{A}}$
β^{CAPM}	1.000														
β^R		0.480		0.369	-0.136	-0.126	-0.136	-0.935	-0.915	0.003	0.759	0.733	-0.072	0.021	0.054
$\beta^{\text{FOMO}-}$		1.000		0.776	0.110	-0.251	-0.241	-0.241	-0.158	0.215	0.369	0.375	-0.045	0.034	0.048
$\beta^{\text{FOMO}+}$			1.000		-0.211	0.410	-0.042	-0.178	-0.178	-0.365	0.292	0.302	-0.024	0.046	0.044
$\text{Rel}\beta_{\text{R}}^{\text{F}-}$					0.582	-0.447	-0.165	0.057	0.057	0.594	0.238	0.274	-0.059	0.052	0.069
$\text{Rel}\beta_{\text{R}}^{\text{F}+}$					-0.485	1.000	0.286	-0.049	-0.049	-0.878	-0.084	-0.078	0.030	0.021	-0.004
$\text{Rel}\beta_{\text{C}}^{\text{F}-}$					1.000		0.066	0.379	0.844	0.844	-0.132	-0.073	-0.039	0.049	0.055
$\text{Rel}\beta_{\text{C}}^{\text{F}+}$							1.000	0.921	1.000	0.237	-0.139	-0.706	0.068	-0.006	-0.042
$\text{Diff}\beta^{\text{F}}$										1.000	-0.698	-0.657	0.051	0.000	-0.028
$\beta^{\text{Ang}-}$											1.000	0.008	-0.041	0.013	0.033
$\beta^{\text{Ang}+}$												1.000	0.431	-0.180	-0.450
$\text{Rel}\beta_{\text{C}}^{\text{A}-}$													1.000	-0.321	-0.785
$\text{Rel}\beta_{\text{C}}^{\text{A}+}$														1.000	0.833
$\text{Diff}\beta^{\text{A}}$															1.000

This table presents the time-series average of cross-sectional correlations between key realized beta measures, where all betas are calculated using a BM-based benchmark. $\text{Rel}\beta_{\text{R}}^{\text{F}-}$ is $\beta^{\text{FOMO}-} - \beta^R$; $\text{Rel}\beta_{\text{R}}^{\text{F}+}$ is $\beta^{\text{FOMO}+} - \beta^R$; $\text{Rel}\beta_{\text{C}}^{\text{F}-}$ is $\beta^{\text{FOMO}-} - \beta^{\text{CAPM}}$; $\text{Rel}\beta_{\text{C}}^{\text{F}+}$ is $\beta^{\text{FOMO}+} - \beta^{\text{CAPM}}$; $\text{Diff}\beta^{\text{F}}$ is $\beta^{\text{FOMO}+} - \beta^{\text{FOMO}-}$. Similar definitions apply for Ang betas (A). The sample period is January 1980 to December 2024.

Table A55: Robustness Checks of Portfolio Sorts on Key Beta Measures (BM-Based Benchmark)

Panel A: Sorts by realized $\beta^{\text{FOMO-}}$			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (NYSE) (%)
1 (Low)	2.11	-2.88	9.22
2	9.62	3.48	7.66
3	13.22	7.16	6.90
4	17.13	10.06	7.24
5 (High)	23.76	19.22	12.60
High-Low	21.65	22.11	3.38
<i>t</i> -statistic	[7.37]***	[9.39]***	[1.67]*

Panel B: Sorts by realized β^R			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (NYSE) (%)
1 (Low)	2.85	-2.52	8.66
2	10.76	5.57	8.12
3	14.98	8.42	8.18
4	17.72	11.13	8.18
5 (High)	19.54	17.03	10.75
High-Low	16.69	19.55	2.09
<i>t</i> -statistic	[5.28]***	[7.59]***	[0.97]

Panel C: Sorts by realized Rel. $\beta^{\text{FOMO-}}$ vs β^R			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (NYSE) (%)
1 (Low)	8.17	3.05	9.31
2	11.55	6.52	7.25
3	13.75	7.13	7.60
4	16.33	8.89	8.84
5 (High)	16.03	7.23	11.50
High-Low	7.86	4.18	2.19
<i>t</i> -statistic	[6.95]***	[3.18]***	[3.28]***

This table presents robustness checks for portfolio sort results using a BM-based benchmark. Panel A sorts on $\beta^{\text{FOMO-}}$, Panel B on β^R , and Panel C on relative $\beta^{\text{FOMO-}}$ vs β^R . The scenarios are: (1) "Exclude small": Equal-weighted portfolios excluding the lowest NYSE market cap quintile. (2) "All stocks": Equal-weighted portfolios of all common stocks. (3) "Value-weighted": Value-weighted portfolios of only NYSE stocks. "High-Low" reports the spread between Quintile 5 and 1. *t*-statistics use Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A56: High-Low Spreads on FOMO Betas after Controlling for Firm Characteristics (BM-Based Benchmark)

Panel A: Sorts on $\beta^{\text{FOMO}-}$							
Control Variable	Quintile Portfolios on $\beta^{\text{FOMO}-}$					Spread	
	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
Log(Size)	−8.98	−2.78	0.64	3.26	11.63	20.62	[4.17]***
BM	−8.85	−3.30	0.12	3.29	12.62	21.47	[5.70]***
Momentum	−8.69	−2.84	0.54	3.31	11.16	19.85	[5.28]***
Coskewness	−8.92	−2.78	0.94	3.54	10.95	19.88	[4.56]***

Panel B: Sorts on $\beta^{\text{FOMO}+}$							
Control Variable	Quintile Portfolios on $\beta^{\text{FOMO}+}$					Spread	
	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
Log(Size)	−7.99	3.20	4.32	2.57	0.32	8.31	[4.46]***
BM	−8.08	2.33	3.81	2.80	1.73	9.82	[5.61]***
Momentum	−7.75	2.80	4.04	2.53	0.26	8.00	[4.81]***
Coskewness	−7.73	3.39	4.19	2.26	0.29	8.02	[4.25]***

This table presents average 12-month characteristic-adjusted excess returns for portfolios sorted on realized FOMO betas, calculated using a BM-based benchmark. Each month, stocks are first sorted into quintiles based on a control characteristic (Log(Size), BM, etc.). Within each quintile, we then subtract the quintile's equal-weighted average return from each stock's return to get an adjusted return. All stocks are then pooled and sorted into quintiles based on their realised $\beta^{\text{FOMO}-}$ (Panel A) or $\beta^{\text{FOMO}+}$ (Panel B). The High-Low column is the spread between Quintile 5 and Quintile 1, with Newey-West (1987) *t*-statistics adjusted for 12 lags. *** denotes significance at the 1% level.

Table A57: Portfolio Returns from 5x5 Sorts on Volatility and FOMO Betas (BM-Based Benchmark)

Panel A: Secondary Sort on $\beta^{\text{FOMO}-}$							
Volatility	Quintiles formed on $\beta^{\text{FOMO}-}$					Spread	
Quintile	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
1 (Low Vol)	11.92	11.43	10.06	8.64	8.85	-3.07	[-1.52]
2	15.97	11.03	9.65	9.14	12.75	-3.22	[-1.81]*
3	14.17	10.94	10.02	10.22	15.37	1.21	[0.76]
4	7.90	10.13	10.77	11.79	19.69	11.79	[4.83]***
5 (High Vol)	-22.64	-7.55	1.04	6.98	20.28	42.93	[13.07]***

Panel B: Secondary Sort on $\beta^{\text{FOMO}+}$							
Volatility	Quintiles formed on $\beta^{\text{FOMO}+}$					Spread	
Quintile	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
1 (Low Vol)	5.35	8.00	10.52	13.22	13.82	8.47	[6.04]***
2	8.02	11.62	13.78	13.61	11.54	3.52	[2.67]***
3	10.79	12.16	13.89	13.21	10.70	-0.10	[-0.07]
4	11.96	12.57	13.94	12.59	9.25	-2.71	[-1.34]
5 (High Vol)	-21.92	0.34	7.38	8.24	4.09	26.02	[12.62]***

This table presents average 12-month excess returns for 25 portfolios formed from sequential 5x5 sorts on volatility and a FOMO beta, using a BM-based benchmark. Stocks are first sorted into quintiles based on realized volatility. Within each volatility quintile, stocks are then sorted into five quintiles based on their realized $\beta^{\text{FOMO}-}$ (Panel A) or $\beta^{\text{FOMO}+}$ (Panel B). The High-Low column reports the return spread of the FOMO beta sort within each volatility quintile. *t*-statistics are based on Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

the low- $\beta^{\text{FOMO}+}$ portfolio rather than high returns to the high- $\beta^{\text{FOMO}+}$ portfolio.

Overall, Table A57 shows that our FOMO betas are not just proxies for volatility. Instead, volatility acts as a crucial conditioning variable that completely changes the nature of the FOMO premium. The risk premium for downside FOMO beta is amplified by high volatility, while the premium for upside FOMO beta is dampened by it.

Table A58: Portfolio Returns from 2x5 Sorts on Size and $\beta^{\text{FOMO}-}$ (BM-Based Benchmark)

$\beta^{\text{FOMO}-}$ Quintile	Size Group		
	Small	Big	Big - Small
1 (Low)	-5.13	8.60	13.73
2	2.82	8.19	5.37
3	7.58	6.74	-0.84
4	10.95	7.53	-3.42
5 (High)	21.71	15.85	-5.86
High-Low Spread	26.83	7.25	-19.59
<i>t</i>-statistic	[11.03]***	[3.01]***	[-12.37]***

This table presents average 12-month excess returns for 10 portfolios formed from sequential 2x5 sorts on firm size and realized $\beta^{\text{FOMO}-}$, using a BM-based benchmark. Each month, stocks are first assigned to two size groups (“Small” or “Big”) based on the median NYSE market capitalization breakpoint. Then, within each size group, stocks are sorted into five quintiles based on their realized $\beta^{\text{FOMO}-}$. The “High-Low” row reports the return spread between Quintile 5 and Quintile 1 within each size group. The “Big - Small” column reports the difference in returns between the Big and Small portfolios for each quintile and for the High-Low spread. *t*-statistics use Newey and West (1987) standard errors with 12 lags. *** denotes significance at the 1% level.

Table A58 considers the link between size and the observed FOMO premia. It is seen that the $\beta^{\text{FOMO}-}$ premium is extremely strong. The High-Low spread is positive and highly significant for both Small stocks (26.83%, $t = 11.03$) and Big stocks (7.25%, $t = 3.01$), indicating that the effect is pervasive across the market. As in the main paper, the premium is stronger in small stocks. As with many asset pricing anomalies, the effect is far more pronounced among small-cap stocks. The Big-Small column for the High-Low spread shows a large and significant -19.59% ($t = -12.37$), confirming that the $\beta^{\text{FOMO}-}$ premium is substantially larger for smaller firms.

Table A59 explores the robustness of the Fama MacBeth regressions in Table A47. The coefficients are consistently large and positive. In the full sample (Panel A), the main model coefficient is 0.259, indicating a powerful economic effect. The *t*-statistics are all well above conventional thresholds (generally above 5.0), showing that the results are robust across both sub-periods and after excluding micro-cap stocks. The premium

Table A59: Robustness of Fama-MacBeth $\beta^{\text{FOMO-}}$ Coefficient (BM-Based Benchmark)

Scenario	Coefficient	t-statistic
A: $\beta^{\text{FOMO-}}$ Model VII (Full Controls)		
Full Sample	0.259	[9.27]***
Sub-Period 1 (1980-2002)	0.265	[5.40]***
Sub-Period 2 (2003-2024)	0.253	[8.68]***
Exclude Micro-Caps	0.267	[11.18]***
B: $\beta^{\text{FOMO-}}$ Horse Race Model VIII		
Full Sample	0.285	[9.39]***
Sub-Period 1 (1980-2002)	0.304	[5.71]***
Sub-Period 2 (2003-2024)	0.267	[8.56]***
Exclude Micro-Caps	0.287	[10.71]***

This table presents the Fama-MacBeth coefficient and t -statistic for $\beta^{\text{FOMO-}}$ under different scenarios using a BM-based benchmark. Panel A shows results from Model VII (full controls). Panel B shows results from Model VIII (the "horse race" against Ang's (2006a) betas). "Full Sample" covers 1980-2024. "Sub-Period 1" covers 1980-2002 and "Sub-Period 2" covers 2003-2024. "Exclude Micro-Caps" removes stocks in the lowest NYSE market capitalisation quintile. t -statistics use Newey and West (1987) standard errors with 12 lags. *** denotes significance at the 1% level.

is even stronger after this exclusion, confirming it is not a micro-cap story. The coefficient increases further in the horse race specification (Panel B), reaching 0.285 in the full sample. This is strong evidence that our factor captures unique information that is not subsumed by Ang's (2006a) market-based downside risk measure.

The GRS results in Table A60 provide strong statistical evidence for our paper. Panel A shows that standard models like the CAPM, FF3, and FF4 cannot be rejected when explaining the returns of portfolios sorted on $\beta^{\text{FOMO-}}$. However, adding our FMF factor to the 4-factor model (Model 5) significantly improves the fit, yielding the lowest GRS statistic (0.754) and the highest p -value (0.5834). This provides strong evidence that our FMF factor is essential for capturing the $\beta^{\text{FOMO-}}$ anomaly. In contrast, adding the ADF factor (Model 4) worsens the model's performance, leading to its rejection ($p = 0.0421$). When testing on the 25 Fama-French size and value portfolios in Panel B, all models are strongly rejected. This is a common result in the literature. Notably, the model augmented with Ang's ADF factor (Model 4) delivers the lowest GRS statistic and the smallest average absolute alpha, indicating it performs slightly better than our FMF factor on these particular portfolios. This is expected, since our FMF factor is tailored to the FOMO anomaly, whereas the ADF factor may better explain the size and value effects embedded in the FF25 portfolios.

Table A60: GRS Test Results for Factor Models on Different Sets of Test Assets (BM-Based Benchmark)

Panel A: Test Assets = 5 β^{FOMO-} -Sorted Portfolios					
Model Specification	Num. Factors	Num. Assets	AvgAbsAlpha (% p.m.)	GRS Statistic	p-value
1. CAPM	1	5	0.082	1.076	0.372
2. FF3 (Mkt, SMB, HML)	3	5	0.067	0.942	0.453
3. FF4 (Mkt, SMB, HML, Mom)	4	5	0.098	0.863	0.506
4. FF4 + ADF	5	5	0.108	2.321	0.042
5. FF4 + FMF	5	5	0.070	0.754	0.583
6. FF4 + FMF + ADF	6	5	0.159	1.547	0.174

Panel B: Test Assets = 25 Fama-French Size and B/M Portfolios					
Model Specification	Num. Factors	Num. Assets	AvgAbsAlpha (% p.m.)	GRS Statistic	p-value
1. CAPM	1	25	0.165	4.345	0.0001
2. FF3 (Mkt, SMB, HML)	3	25	0.111	4.119	0.0001
3. FF4 (Mkt, SMB, HML, Mom)	4	25	0.102	3.662	0.0001
4. FF4 + ADF	5	25	0.098	3.454	0.0001
5. FF4 + FMF	5	25	0.106	3.954	0.0001
6. FF4 + FMF + ADF	6	25	0.099	3.325	0.0001

This table reports results from the Gibbons et al. (1989) F-test for various factor models on two sets of test assets. Panel A uses five quintile portfolios formed by sorting stocks on realized β^{FOMO-} . Panel B uses the 25 Fama-French portfolios sorted on size and book-to-market. "AvgAbsAlpha (% p.m.)" is the average of the absolute values of the monthly time-series regression intercepts (alphas). FMF is our FOMO factor based on β^{FOMO-} sorts (using a BM-based benchmark). ADF is Ang's (2006a) downside risk factor. The sample period for the time-series regressions is January 1980 to December 2024.

I.1 Summary of Book-to-Market Benchmarks

This appendix demonstrates that using stocks with similar book-to-market ratios as the stock held by an investor delivers similar FOMO inference to that provided when using industry benchmarks. Through the battery of robustness checks it is shown that FOMO with book-to-market benchmarks produces a robust premium. The extent to which the observed FOMO result is linked to the strength of the book-to-market anomaly is open for further investigation. As with size, there are questions on the extent to which investors would consider all stocks with similar value as being peers. For our purposes the robustness of the FOMO insight delivers more support to the FOMO-CAPM developed in the main paper.

J State-Based Benchmark

The state-based benchmark construction uses the geographical location of a firm's headquarters to define its peer group. This approach avoids industry classifications and instead groups firms by their physical proximity, which may capture shared exposure to local economic conditions. It is plausible that investors could meet with others in their state and therefore view those investors as peers. A discussion of the plausibility of home bias in equity selection is provided in the literature after Coval and Moskowitz (1999).

The methodology used to construct the benchmark is as follows. First, each firm is mapped to a U.S. state based on the most recent headquarters location ("state") reported in the Compustat Annual Fundamentals file. This mapping is then linked to each stock's permanent number ("permno") and remains fixed throughout the analysis period. The benchmark return (h_j) for each state is calculated on a daily basis, where j now represents the state peer group. These daily returns are value-weighted, using the prior day's market capitalization of all firms within that same state as weights. The daily benchmark returns are transformed into excess returns by subtracting the daily risk-free rate ($h_j - r_f$). The gap variable is then defined as the stock's daily excess return minus the excess return of its corresponding state-based benchmark. For any stock that could not be mapped to a state (due to missing data in Compustat), a state-based benchmark return h_j is not calculated. Consequently, the gap variable for these firms is missing, and they are excluded from any subsequent analysis that relies on the gap (i.e., the calculation and pricing of β^R , $\beta^{\text{FOMO}-}$, and $\beta^{\text{FOMO}+}$).

J.1 Results

Table A61 provides univariate sorted portfolio results for the realized betas. For β^R , the premium is 17.34% ($t = 6.84$), echoing the significance seen for the industry, size and

Table A61: Returns of Portfolios Sorted by Realized Factor Loadings (State-Based Benchmark)

Panel A: Sort on β^{CAPM}						Panel B: Sort on β^R (Regret Beta)					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	2.56%	0.21	0.76	0.80	0.80	1 (Low)	-1.09%	0.50	0.60	0.65	0.61
2	7.22%	0.67	0.85	0.87	0.89	2	4.84%	0.60	0.84	0.85	0.88
3	8.07%	0.89	0.92	0.92	0.95	3	8.13%	0.78	0.94	0.94	0.97
4	9.07%	1.13	0.96	0.97	0.98	4	11.01%	1.08	1.00	1.01	1.03
5 (High)	10.72%	1.65	1.00	1.00	0.99	5 (High)	16.24%	1.45	1.16	1.15	1.17
High-Low	8.16%					High-Low	17.34%				
<i>t</i> -stat	[2.48]**					<i>t</i> -stat	[6.84]***				

Panel C: Sort on $\beta^{\text{FOMO}-}$						Panel D: Sort on $\beta^{\text{FOMO}+}$					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	-0.10%	0.58	0.64	0.57	0.71	1 (Low)	-2.01%	0.58	0.66	0.74	0.59
2	3.10%	0.63	0.83	0.83	0.87	2	9.08%	0.65	0.86	0.87	0.89
3	6.56%	0.75	0.91	0.94	0.93	3	10.81%	0.79	0.93	0.93	0.98
4	9.92%	0.96	0.97	1.02	0.97	4	9.77%	1.02	0.98	0.97	1.05
5 (High)	17.69%	1.24	1.09	1.18	1.08	5 (High)	8.56%	1.26	1.11	1.07	1.20
High-Low	17.79%					High-Low	10.57%				
<i>t</i> -stat	[8.18]***					<i>t</i> -stat	[7.68]***				

Panel E: Sort on Rel. $\beta^{\text{FOMO}-}$ vs β^{CAPM}					
Portfolio	Return	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$
1 (Low)	8.37%	1.58	0.92	0.87	0.93
2	9.40%	1.07	0.90	0.89	0.93
3	9.51%	0.87	0.88	0.88	0.91
4	8.83%	0.69	0.86	0.89	0.89
5 (High)	3.51%	0.28	0.84	0.90	0.87
High-Low	-4.85%				
<i>t</i> -stat	[-1.57]				

This table presents average 12-month realized excess returns and post-ranking realized betas for equal-weighted quintile portfolios. For each 12-month period, stocks are sorted into five quintiles based on one of five realized beta measures. The benchmark h_j used to calculate the performance gap for β^R , $\beta^{\text{FOMO}-}$, and $\beta^{\text{FOMO}+}$ is the value-weighted return of the corresponding state-level portfolio. The column labeled "Return" reports the average realized 12-month excess return for each quintile portfolio. The columns labeled with beta symbols report the time-series average of the equal-weighted post-ranking realized betas for stocks within each quintile. Breakpoints for quintile formation are based on NYSE stocks. The row labeled "High-Low" reports the difference in average returns between Portfolio 5 and Portfolio 1. *t*-statistics for the High-Low difference are computed using Newey and West (1987) standard errors with 12 lags. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. The sample period is January 1980 to December 2024.

book-to-market portfolios. For β^{FOMO-} the High-Low spread is 17.79% ($t = 8.18$), again matching the significance see in the main paper. It is seen that the highest quintile in the β^{FOMO-} sort has a much higher β^{CAPM} than the fourth quintile. Finally, Panel D shows that the β^{FOMO+} High-Low spread is 10.57% ($t = 7.68$). All three realized beta sorts are highly significant.

Table A62: Fama-MacBeth Regression Results (State-Based Benchmark)

Variable	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	Mean (Std Dev)
Intercept	0.338 [6.46]***	-0.293 [-8.80]***	-0.269 [-9.00]***	0.119 [2.81]***	0.117 [2.77]***	0.442 [9.99]***	0.445 [9.60]***	0.406 [8.72]***	
β^R	0.237 [9.95]***								0.868 (0.180)
β^{CAPM}			0.039 [1.55]	0.048 [1.52]	0.041 [1.29]	0.126 [4.23]***	0.116 [3.70]***		0.786 (0.556)
β^{FOMO-}		0.158 [3.36]***	0.116 [3.03]***	-0.019 [-0.66]	-0.015 [-0.53]	0.043 [1.98]*	0.038 [1.79]*	0.051 [2.50]**	0.886 (0.195)
β^{FOMO+}		0.239 [9.02]***	0.231 [7.86]***	0.199 [9.92]***	0.195 [10.08]***	0.110 [5.65]***	0.090 [4.99]***	0.105 [5.29]***	0.893 (0.214)
β_{Ang}^-								0.055 [3.85]***	0.862 (0.715)
β_{Ang}^+								0.019 [2.19]**	0.681 (0.786)
lnSize	-0.044 [-7.35]***			-0.016 [-2.74]***	-0.018 [-3.14]***	-0.047 [-7.65]***	-0.044 [-7.35]***	-0.041 [-7.02]***	5.187 (2.009)
B/M	-0.209 [-16.49]***			-0.205 [-16.83]***	-0.204 [-16.85]***	-0.203 [-16.65]***	-0.204 [-17.06]***	-0.206 [-16.63]***	0.789 (0.707)
Momentum	-0.048 [-2.70]**			-0.033 [-1.75]*	-0.033 [-1.77]*	-0.052 [-3.01]***	-0.052 [-2.89]***	-0.051 [-2.84]***	0.084 (0.506)
Volatility	-0.293 [-4.55]***					-0.433 [-9.01]***	-0.379 [-7.33]***	-0.350 [-5.96]***	0.535 (0.263)
Coskewness	-0.113 [-3.53]***				-0.121 [-4.42]***	-0.128 [-4.36]***	-0.120 [-4.01]***	-0.055 [-1.68]*	-0.119 (0.165)
Cokurtosis	0.060 [4.30]***					0.001 [0.11]	0.000 [0.02]	0.021 [1.58]	1.662 (1.181)
Liq β	0.007 [1.08]						0.007 [1.04]	0.007 [0.99]	-0.004 (0.426)
Avg. Adj. R² (%)	15.81	2.69	5.06	12.60	13.03	16.69	16.51	16.35	

This table presents coefficients from firm-level Fama-MacBeth (1973) cross-sectional regressions of 12-month realized excess returns on realized betas and firm characteristics. The benchmark h_j used to calculate the performance gap for β^R , β^{FOMO-} , and β^{FOMO+} is the value-weighted return of the corresponding state-level portfolio. The final column reports the time-series average of the cross-sectional mean and standard deviation for each variable. The final row, Avg. Adj. R^2 , reports the time-series average of the adjusted R-squared values from the monthly cross-sectional regressions, expressed as a percentage. All other details regarding data, methodology, variable definitions, and t -statistic calculations are identical to those described in Table A61. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A62 presents the Fama-MacBeth regressions when headquarter locations are used for the benchmark. Under the state-based benchmark, the premium for downside FOMO risk ($\beta^{\text{FOMO}-}$) is substantially weaker. In our full model (VII), the coefficient is now 0.038 with a t -statistic of 1.79, indicating only marginal statistical significance. Interestingly, the asymmetry between downside and upside risk has reversed compared to the previous benchmarks. The premium for upside FOMO risk ($\beta^{\text{FOMO}+}$) is now economically larger and statistically stronger, with a coefficient of 0.090 ($t=4.99$). This suggests that with state-level peer groups, the market places a significant reward on the potential to outperform peers. The overall explanatory power of the model has improved. Our full specifications (VI, VII, VIII) now explain a larger portion of the cross-sectional variation in returns, with robust average adjusted R-squared values around 16.5%.

Table A63 reveals that the analysis using a state-based benchmark yields several important findings. The premium on $\beta^{\text{FOMO}-}$ remains economically large and highly significant in univariate portfolio sorts, generating a High-Low spread of 17.79% per year ($t = 8.18$). However, in the multivariate Fama-MacBeth regressions, this premium weakens considerably to 0.038 ($t = 1.79$). In contrast, the premium on $\beta^{\text{FOMO}+}$, which produces a significant portfolio spread of 10.57% ($t = 7.68$), becomes the more dominant factor in the full Fama-MacBeth specification, with a robust coefficient of 0.090 ($t = 4.99$). This presents a more complex picture of asymmetry, where the market strongly rewards upside potential relative to state-level peers once other controls are included. The explanatory power of the full model improves with the new benchmark, reaching a strong average adjusted R^2 of 16.51%.

Because of the potential association between FOMO and coskewness, Table A64 provides results from double sorts on coskewness and $\beta^{\text{FOMO}-}$. Panel B confirms that within every $\beta^{\text{FOMO}-}$ quintile, there is a strong, negative relationship between coskewness and returns. The "Average" High-Low spread for coskewness is a significant -9.99% ($t = -6.49$). The results further show that $\beta^{\text{FOMO}-}$ premium is not a coskewness story. Panel A shows that after controlling for coskewness, the premium for $\beta^{\text{FOMO}-}$ remains exceptionally strong and positive. The "Average" High-Low spread is 17.77% ($t = 7.65$). More importantly, the spread is large, positive, and highly significant within every single coskewness quintile. This provides powerful evidence that the premium for downside FOMO risk is distinct from and robust to controlling for coskewness.

Tables A65 and A65 consider the determinants of the fOMO betas. The multivariate regression (Model VIII) shows that higher downside sensitivity, $\beta^{\text{FOMO}-}$, is significantly associated with value firms ($\text{BM} = -0.0077$, $t = -1.77$), past winners ($\text{Momentum} = 0.0098$, $t = 2.19$), high volatility stocks ($\text{Volatility} = 0.2023$, $t = 3.81$), positively skewed stocks ($\text{Coskewness} = 0.0287$, $t = 2.25$), and those with higher cokurtosis ($\text{Cokurtosis} = 0.0720$, $t = 9.34$). Notably, the previous link to firm size is no longer statistically

Table A63: Disentangling Asymmetric FOMO from Symmetric Regret (State-Based Benchmark)

Variable	Coefficient	<i>t</i> -statistic
Panel A: Key Behavioral Betas		
$\beta^{\text{FOMO}-}$ (Asymmetry: $\gamma^{F-} - \gamma^{F+}$)	0.0698***	[4.27]
$\beta_{\text{level}}^{\text{FOMO}+}$ (Level: γ^{F+})	-0.1580***	[-8.99]
β^R (Symmetric Regret)	0.3853***	[10.61]
Panel B: Standard Control Variables		
β^{CAPM}	0.1062***	[11.59]
Log(Size)	-0.2243***	[-34.80]
Book-to-Market (BM)	-0.2831***	[-23.25]
Momentum (mom12m)	-0.0796***	[-14.87]
Volatility (vol12m)	-0.1689***	[-6.50]
Coskewness	-0.1449***	[-8.87]
Cokurtosis	-0.0091***	[-5.42]
Liquidity Beta (β^l)	0.0164**	[2.98]
Model Diagnostics		
Observations	1,663,562	
Firm Fixed Effects	Yes	
Time Fixed Effects	Yes	
Adj. R^2	0.3137	

This table presents results from a reparameterized pooled panel regression designed to test whether the asymmetric FOMO risk premium is distinct from a general, symmetric regret premium. The dependent variable is the 12-month realized stock excess return. The regression includes firm and time fixed effects. To correct for residual correlation both across firms and over time, *t*-statistics reported in parentheses are based on standard errors two-way clustered by firm and time, following the methodology of Petersen (2009). The coefficient on $\beta^{\text{FOMO}-}$ directly estimates the difference in the premia for under- and outperformance ($\gamma^{F-} - \gamma^{F+}$). The coefficient on β^R captures the premium for symmetric regret after controlling for the FOMO components. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A64: Portfolio Returns from 5x5 Sorts on Coskewness and β^{FOMO-} (State-Based Benchmark)

Panel A: Sorts on Coskewness controlling for β^{FOMO-}							
Coskewness	β^{FOMO-} Quintile					High-Low	<i>t</i> -stat
Quintile	1 (Low)	2	3	4	5 (High)	(β^{FOMO-})	(β^{FOMO-})
1 (Lowest)	4.03	7.07	10.62	14.22	22.98	18.95	[7.59]***
2	2.14	5.04	8.30	11.86	20.92	18.78	[7.76]***
3	0.30	3.25	6.27	9.80	17.78	17.48	[7.70]***
4	-1.96	1.19	4.93	7.63	15.17	17.13	[7.40]***
5 (Highest)	-5.01	-1.00	2.67	6.12	11.49	16.51	[7.06]***
Average	11.78	9.65	7.48	5.39	2.85	-8.93	-6.49

Panel B: Sorts on β^{FOMO-} controlling for Coskewness							
β^{FOMO-}	Coskewness Quintile					High-Low	<i>t</i> -stat
Quintile	1 (Low)	2	3	4	5 (High)	(Coskewness)	(Coskewness)
1 (Low)	4.89	3.78	1.74	-0.43	-4.72	-9.61	[-6.29]***
2	7.04	6.85	4.70	3.05	-0.82	-7.86	[-5.56]***
3	10.04	9.20	7.45	5.51	2.39	-7.65	[-5.58]***
4	14.42	12.20	10.01	7.85	4.17	-10.24	[-5.77]***
5 (High)	23.47	20.07	16.67	13.92	8.86	-14.62	[-5.83]***
Average	1.05	4.17	6.92	9.73	16.60	15.55	7.65

This table presents average 12-month realized excess returns for 5×5 portfolios formed from independent sorts on realized coskewness and realized β^{FOMO-} . The benchmark used for β^{FOMO-} is based on state-level deciles. Panel A shows returns for portfolios sorted on β^{FOMO-} within each coskewness quintile. Panel B shows returns for portfolios sorted on coskewness within each β^{FOMO-} quintile. The "High-Low" column reports the return spread between Quintile 5 and Quintile 1 of the secondary sort variable. The "Average" row/column shows the returns of the primary sort variable averaged across the secondary sort quintiles. *t*-statistics use Newey and West (1987) standard errors with 12 lags. Data are from CRSP/Compustat for the period January 1980 to December 2024. Quintile breakpoints are based on NYSE stocks. Portfolios are equal-weighted. *** denotes significance at the 1% level.

Table A65: Determinants of Realized FOMO Down Betas, β^{FOMO-} (State-Based Benchmark)

Characteristic	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Intercept	0.8028 [15.98]***	0.9145 [44.33]***	0.8819 [58.82]***	0.8602 [13.25]***	0.8623 [79.31]***	0.7916 [17.21]***	0.8890 [58.91]***	0.6900 [9.98]***
Log(Size)	0.0144 [3.00]***							-0.0010 [-0.42]
BM		-0.0262 [-4.26]***						-0.0077 [-1.77]*
Momentum			0.0243 [1.95]*					0.0098 [2.19]**
Volatility				0.0321 [0.39]				0.2023 [3.81]***
Coskewness					-0.0457 [-1.11]			0.0287 [2.25]**
Cokurtosis						0.0659 [5.35]***		0.0720 [9.34]***
Liquidity β							0.0038 [0.64]	0.0046 [1.73]*

This table presents time-series averages of coefficients from monthly cross-sectional regressions explaining realized β^{FOMO-} , calculated using a state-based benchmark. For each month, the realized β^{FOMO-} is regressed on lagged firm characteristics. Models (I) through (VII) are univariate regressions, while Model (VIII) is a multivariate regression including all characteristics simultaneously. All characteristics are measured at the beginning of the 12-month beta estimation period. t -statistics, reported in brackets, are computed using Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A66: Determinants of Realized FOMO Up Betas, β^{FOMO+} (State-Based Benchmark)

Characteristic	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Intercept	0.7210 [14.01]***	0.9263 [72.66]***	0.8928 [104.94]***	0.9685 [32.35]***	0.8627 [85.87]***	0.7731 [17.54]***	0.8984 [86.88]***	0.7484 [14.99]***
Log(Size)	0.0323 [9.85]***							0.0053 [2.01]**
BM		-0.0218 [-10.02]***						0.0032 [0.61]
Momentum			0.0695 [7.26]***					0.0257 [5.42]***
Volatility				-0.1656 [-2.65]***				0.0364 [0.93]
Coskewness					-0.0685 [-1.61]			-0.0177 [-1.27]
Cokurtosis						0.0891 [8.79]***		0.0630 [8.13]***
Liquidity β							0.0034 [0.58]	0.0052 [2.38]**

This table presents time-series averages of coefficients from monthly cross-sectional regressions explaining realized β^{FOMO+} , calculated using a state-based benchmark. For each month, the realized β^{FOMO+} is regressed on lagged firm characteristics. Models (I) through (VII) are univariate regressions, while Model (VIII) is a multivariate regression including all characteristics simultaneously. All characteristics are measured at the beginning of the 12-month beta estimation period. t -statistics, reported in brackets, are computed using Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

significant under the state-based benchmark. In contrast, the main drivers of upside sensitivity, $\beta^{\text{FOMO}+}$, after controlling for all characteristics, are larger firms ($\text{Log}(\text{Size}) = 0.0053$, $t = 2.01$), past winners ($\text{Momentum} = 0.0257$, $t = 5.42$), and high cokurtosis stocks ($\text{Cokurtosis} = 0.0630$, $t = 8.13$). The link to value firms (BM) is no longer significant. These results continue to suggest that the profiles of firms with high downside versus high upside FOMO sensitivity are distinctly different.

Table A67: Annual Persistence of Realised FOMO Betas (State-Based Benchmark)

Explanatory Variable (End of Year T)	$\beta^{\text{FOMO}-}$ (Year T+1)	$\beta^{\text{FOMO}+}$ (Year T+1)
Intercept	0.392 [19.54]***	0.440 [23.05]***
Past $\beta^{\text{FOMO}-}$ (Year T)	0.446 [23.82]***	
Past $\beta^{\text{FOMO}+}$ (Year T)		0.435 [27.32]***
Past Volatility (Year T)	0.075 [4.03]***	0.007 [0.40]
Log(Size) (Year T)	0.011 [5.21]***	0.013 [6.40]***
Book-to-Market (Year T)	-0.003 [-1.09]	-0.021 [-11.77]***
Momentum (Year T)	0.000 [0.10]	0.006 [3.86]***

This table reports Fama-MacBeth coefficients from annual, non-overlapping regressions testing the persistence of FOMO betas calculated with a state-based benchmark. The dependent variable is the realised beta over Year T+1. Independent variables are the realised beta and other firm characteristics from the end of Year T. t -statistics, reported in brackets, are computed using Newey-West (1987) standard errors with 5 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

The key finding in Table A67 is the high persistence of the FOMO betas themselves. Past $\beta^{\text{FOMO}-}$ strongly predicts future $\beta^{\text{FOMO}-}$ (coefficient = 0.446, $t = 23.82$), and past $\beta^{\text{FOMO}+}$ strongly predicts future $\beta^{\text{FOMO}+}$ (coefficient = 0.435, $t = 27.32$). This indicates that a stock's FOMO beta is not driven by transitory noise but reflects a stable and persistent firm characteristic. Other firm traits, such as size and momentum, also contribute to next year's betas, but the dominant predictor is the beta itself.

Capturing the time variation in the FOMO premia, Table A68 considers five year sub periods. Extremely strong premiums are observed in the 1980s and 1990s. Both the β^R and $\beta^{\text{FOMO}-}$ premiums were exceptionally large and generally significant from the 1980s through the dot-com bubble period ending in 2000. For example, the $\beta^{\text{FOMO}-}$ spread was

Table A68: High-minus-Low Spreads for Non-Overlapping 5-Year Sub-Periods (State-Based Benchmark)

Window Period	Sort on β^R		Sort on $\beta^{\text{FOMO-}}$	
	HML (%)	t -statistic	HML (%)	t -statistic
198012-198511	11.78	[2.33]**	7.08	[1.35]
198512-199011	23.50	[6.57]***	17.56	[5.94]***
199012-199511	30.18	[9.57]***	26.22	[14.81]***
199512-200011	36.97	[5.16]***	27.04	[5.73]***
200012-200511	-2.88	[-0.40]	2.96	[0.39]
200512-201011	13.01	[2.33]**	16.01	[2.30]**
201012-201511	11.46	[3.69]***	18.08	[6.53]***
201512-202011	11.03	[3.28]***	18.55	[5.20]***
202012-202412	21.80	[3.65]***	28.57	[5.89]***

This table presents average monthly High-minus-Low (HML) excess return spreads for portfolios sorted on realized β^R or $\beta^{\text{FOMO-}}$ over nine non-overlapping 5-year (60-month) sub-periods using a state-based benchmark. The last sub-period covers 49 months. HML spreads are in percent per month. t -statistics are derived from Newey-West (1987) adjusted standard errors (12 lags). ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

over 26% per year in the early 1990s. The premiums for both betas became much weaker and statistically insignificant during the 2000–2005 period, which included the dot-com bust. Both the β^{FOMO-} and the β^R premiums re-emerged as statistically significant in every sub-period after 2005, showing a robust resurgence in recent years.

Overall, the state-based results confirm that the FOMO premium is not consistent over time; it tends to be much stronger during market booms and weaker during major crisis periods. The results for the headquarter location peer groups are similar to those for the industry based benchmark.

Table A69 provides the correlations between the FOMO betas, regret beta, CAPM beta and the Ang et al. (2006a) betas. For the state-based benchmark, the correlation between β^{FOMO-} and β^{FOMO+} is 0.542, slightly stronger than observed in some of the other benchmarks. Nonetheless, there is ample evidence that the betas are distinct when compared to the size-based benchmark. The FOMO betas show limited correlation with any of the other betas. The regret beta, β^R constructed using headquarters location based peers also displays low correlation with other betas.

Table A70 considers alternative investment universes. It can be seen that the β^{FOMO-} premium is not just a small-firm effect. In Panels A and B, the "Exclude small" columns show that even after removing the smallest 20% of NYSE stocks, the High–Low spreads for both β^{FOMO-} (17.36%, $t = 6.69$) and β^R (14.55%, $t = 5.06$) remain economically large and highly significant. This is a powerful counterargument to any claim that our results are solely driven by micro-cap stocks. Further, the β^{FOMO-} premium is weaker in value-weighted portfolios. The High–Low spreads for both betas become small and statistically insignificant in the "Value-weighted (NYSE)" scenario. The premium for β^{FOMO-} is -0.20% ($t = -0.14$) and the premium for β^R is 0.66% ($t = 0.42$). This indicates that the state-based peer effect is concentrated among smaller stocks and is not a priced factor for the largest firms.

Table A71 presents the High–Low spreads for β^{FOMO-} and β^{FOMO+} when controlling for firm characteristics that are commonly linked to asset prices. Panel A focuses on β^{FOMO-} . The High–Low spreads remain economically large (ranging from 9.58% to 16.88%) and highly statistically significant after controlling for size, book-to-market, momentum, or coskewness. These significant High–Low spreads show that even among firms with similar fundamental or risk characteristics, those with higher β^{FOMO-} continue to earn substantially higher returns. Panel B repeats the analysis for β^{FOMO+} . The positive premium for β^{FOMO+} also survives these characteristic adjustments. The spreads, ranging from 3.52% to 9.24%, remain consistently positive and statistically significant, reinforcing that the effect is not subsumed by standard characteristics.

Table A72 considers the relationship between FOMO and volatility when a headquarter location based benchmark is used. For β^{FOMO-} , the premium is concentrated in the

Table A69: Time-Series Average of Cross-Sectional Beta Correlations (State-Based Benchmark)

Variable	β^{CAPM}	β^R	$\beta^{\text{FOMO}-}$	$\beta^{\text{FOMO}+}$	$\text{Rel}\beta_R^{\text{F}-}$	$\text{Rel}\beta_R^{\text{F}+}$	$\text{Rel}\beta_C^{\text{F}-}$	$\text{Rel}\beta_C^{\text{F}+}$	$\text{Diff}\beta^{\text{F}}$	$\beta^{\text{Ang}-}$	$\beta^{\text{Ang}+}$	$\text{Rel}\beta_C^{\text{A}-}$	$\text{Rel}\beta_C^{\text{A}+}$	$\text{Diff}\beta^{\text{A}}$
β^{CAPM}	1.000	0.459	0.346	0.330	-0.122	-0.114	-0.922	-0.908	0.012	0.759	0.732	-0.073	0.021	0.055
β^R		1.000	0.796	0.863	-0.197	0.054	-0.181	-0.121	0.151	0.357	0.350	-0.033	0.022	0.033
$\beta^{\text{FOMO}-}$			1.000	0.542	0.433	-0.243	0.020	-0.137	-0.398	0.280	0.273	-0.011	0.028	0.024
$\beta^{\text{FOMO}+}$				1.000	-0.404	0.545	-0.140	0.073	0.549	0.243	0.270	-0.051	0.044	0.069
$\text{Rel}\beta_R^{\text{F}-}$					1.000	-0.474	0.302	-0.044	-0.873	-0.077	-0.079	0.034	0.014	-0.005
$\text{Rel}\beta_R^{\text{F}+}$						1.000	0.025	0.351	0.842	-0.117	-0.055	-0.042	0.049	0.058
$\text{Rel}\beta_C^{\text{F}-}$							1.000	0.915	-0.171	-0.692	-0.668	0.072	-0.012	-0.048
$\text{Rel}\beta_C^{\text{F}+}$								1.000	0.220	-0.691	-0.653	0.054	0.000	-0.028
$\text{Diff}\beta^{\text{F}}$									1.000	-0.017	0.019	-0.044	0.019	0.038
$\beta^{\text{Ang}-}$										1.000	0.430	0.571	-0.179	-0.450
$\beta^{\text{Ang}+}$											1.000	-0.266	0.678	0.596
$\text{Rel}\beta_C^{\text{A}-}$												1.000	-0.321	-0.785
$\text{Rel}\beta_C^{\text{A}+}$													1.000	0.833
$\text{Diff}\beta^{\text{A}}$														1.000

This table presents the time-series average of cross-sectional correlations between key realized beta measures, where all betas are calculated using a state-based benchmark. $\text{Rel}\beta_R^{\text{F}-}$ is $\beta^{\text{FOMO}-} - \beta^R$; $\text{Rel}\beta_R^{\text{F}+}$ is $\beta^{\text{FOMO}+} - \beta^R$; $\text{Rel}\beta_C^{\text{F}-}$ is $\beta^{\text{FOMO}-} - \beta^{\text{CAPM}}$; $\text{Rel}\beta_C^{\text{F}+}$ is $\beta^{\text{FOMO}+} - \beta^{\text{CAPM}}$; $\text{Diff}\beta^{\text{F}}$ is $\beta^{\text{FOMO}+} - \beta^{\text{FOMO}-}$. Similar definitions apply for Ang betas (A). The sample period is January 1980 to December 2024.

Table A70: Robustness Checks of Portfolio Sorts on Key Beta Measures (State-Based Benchmark)

Panel A: Sorts by realized $\beta^{\text{FOMO-}}$			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (NYSE) (%)
1 (Low)	4.77	-0.10	10.15
2	9.57	3.10	8.39
3	13.32	6.56	7.71
4	16.94	9.92	7.52
5 (High)	22.13	17.68	9.95
High-Low	17.36	17.78	-0.20
<i>t</i> -statistic	[6.69]***	[8.18]***	[-0.14]

Panel B: Sorts by realized β^R			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (NYSE) (%)
1 (Low)	4.27	-1.09	8.94
2	10.59	4.84	9.02
3	14.90	8.13	8.09
4	18.16	11.01	7.71
5 (High)	18.82	16.24	9.60
High-Low	14.55	17.33	0.66
<i>t</i> -statistic	[5.06]***	[6.84]***	[0.42]

Panel C: Sorts by realized Rel. $\beta^{\text{FOMO-}}$ vs β^R			
Portfolio	Exclude small (%)	All stocks (%)	Value-weighted (NYSE) (%)
1 (Low)	10.59	5.71	10.15
2	11.99	6.97	8.10
3	13.56	7.11	7.66
4	15.51	8.30	8.48
5 (High)	15.06	6.68	9.67
High-Low	4.47	0.97	-0.48
<i>t</i> -statistic	[4.15]***	[0.74]	[-0.72]

This table presents robustness checks for portfolio sort results using a state-based benchmark. Panel A sorts on $\beta^{\text{FOMO-}}$, Panel B on β^R , and Panel C on relative $\beta^{\text{FOMO-}}$ vs β^R . The scenarios are: (1) "Exclude small": Equal-weighted portfolios excluding the lowest NYSE market cap quintile. (2) "All stocks": Equal-weighted portfolios of all common stocks. (3) "Value-weighted": Value-weighted portfolios of only NYSE stocks. "High-Low" reports the spread between Quintile 5 and 1. *t*-statistics use Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A71: High-Low Spreads on FOMO Betas after Controlling for Firm Characteristics (State-Based Benchmark)

Panel A: Sorts on $\beta^{\text{FOMO}-}$							
Control Variable	Quintile Portfolios on $\beta^{\text{FOMO}-}$					Spread	
	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
Log(Size)	−6.70	−3.44	−0.05	3.00	10.19	16.88	[3.99]***
BM	−2.64	−2.28	−0.54	1.53	6.94	9.58	[2.97]***
Momentum	−6.22	−3.25	−0.08	3.03	9.42	15.65	[4.81]***
Coskewness	−6.44	−3.33	0.12	3.21	9.41	15.85	[4.29]***

Panel B: Sorts on $\beta^{\text{FOMO}+}$							
Control Variable	Quintile Portfolios on $\beta^{\text{FOMO}+}$					Spread	
	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
Log(Size)	−8.27	2.53	4.20	2.61	0.97	9.24	[4.47]***
BM	−5.07	2.63	2.96	1.19	−1.55	3.52	[1.90]*
Momentum	−7.93	2.24	3.97	2.60	0.69	8.61	[4.96]***
Coskewness	−7.91	2.74	4.00	2.38	0.78	8.69	[4.63]***

This table presents average 12-month characteristic-adjusted excess returns for portfolios sorted on realized FOMO betas, calculated using a state-based benchmark. Each month, stocks are first sorted into quintiles based on a control characteristic (Log(Size), BM, etc.). Within each quintile, we then subtract the quintile's equal-weighted average return from each stock's return to get an adjusted return. All stocks are then pooled and sorted into quintiles based on their realized $\beta^{\text{FOMO}-}$ (Panel A) or $\beta^{\text{FOMO}+}$ (Panel B). The High-Low column is the spread between Quintile 5 and Quintile 1, with Newey-West (1987) *t*-statistics adjusted for 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table A72: Portfolio Returns from 5x5 Sorts on Volatility and FOMO Betas (State-Based Benchmark)

Panel A: Secondary Sort on $\beta^{\text{FOMO}-}$							
Volatility	Quintiles formed on $\beta^{\text{FOMO}-}$					Spread	
Quintile	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
1 (Low Vol)	12.44	11.60	10.12	8.59	9.12	-3.31	[-2.54]**
2	16.04	11.49	9.77	9.27	11.91	-4.13	[-3.42]***
3	15.55	11.43	9.69	9.89	14.13	-1.41	[-1.11]
4	10.23	10.54	10.37	11.61	17.67	7.45	[3.94]***
5 (High Vol)	-20.10	-6.29	1.95	6.89	18.23	38.34	[13.83]***

Panel B: Secondary Sort on $\beta^{\text{FOMO}+}$							
Volatility	Quintiles formed on $\beta^{\text{FOMO}+}$					Spread	
Quintile	1 (Low)	2	3	4	5 (High)	High-Low	<i>t</i>-statistic
1 (Low Vol)	6.10	8.82	10.53	12.76	13.67	7.56	[6.71]***
2	8.24	10.79	13.19	13.94	12.34	4.09	[3.37]***
3	10.26	11.86	13.58	13.86	11.16	0.89	[0.75]
4	11.33	12.03	13.51	13.10	10.48	-0.84	[-0.43]
5 (High Vol)	-20.85	1.12	7.36	8.36	4.72	25.57	[11.72]***

This table presents average 12-month excess returns for 25 portfolios formed from sequential 5x5 sorts on volatility and a FOMO beta, using a state-based benchmark. Stocks are first sorted into quintiles based on realized volatility. Within each volatility quintile, stocks are then sorted into five quintiles based on their realized $\beta^{\text{FOMO}-}$ (Panel A) or $\beta^{\text{FOMO}+}$ (Panel B). The High-Low column reports the return spread of the FOMO beta sort within each volatility quintile. *t*-statistics are based on Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

highest-volatility stocks. Panel A shows that for low- and medium-volatility quintiles (1–3), the High–Low spread is negative. In contrast, in the highest volatility quintile, the premium jumps to 38.34% per year ($t = 13.83$). This suggests that the pricing of downside FOMO risk is most pronounced in volatile firms, and much weaker in stable, low-volatility stocks. For $\beta^{\text{FOMO}+}$, the premium is strongest among low-volatility stocks. Panel B shows a large and significant spread in the lowest volatility quintile (7.56%, $t = 6.71$), moderate significance in quintile 2, and weaker or negative spreads in quintiles 3–4. In the highest volatility quintile, the large spread (25.57%, $t = 11.72$) is driven primarily by the extremely poor returns of the low- $\beta^{\text{FOMO}+}$ portfolio.

Overall, this Table A72 shows that our FOMO betas are not just proxies for volatility. Instead, volatility acts as a crucial conditioning variable that completely changes the nature of the FOMO premium. The risk premium for downside FOMO beta is amplified by high volatility, while the premium for upside FOMO beta is dampened by it.

Table A73: Portfolio Returns from 2x5 Sorts on Size and $\beta^{\text{FOMO}-}$ (State-Based Benchmark)

$\beta^{\text{FOMO}-}$ Quintile	Size Group		
	Small	Big	Big - Small
1 (Low)	−2.39	10.03	12.41
2	2.31	8.36	6.05
3	6.84	6.84	0.01
4	10.86	7.07	−3.79
5 (High)	20.43	14.45	−5.98
High-Low Spread	22.81	4.42	−18.39
<i>t</i>-statistic	[9.85]***	[2.06]**	[−11.97]***

This table presents average 12-month excess returns for 10 portfolios formed from sequential 2x5 sorts on firm size and realized $\beta^{\text{FOMO}-}$, using a state-based benchmark. Each month, stocks are first assigned to two size groups (“Small” or “Big”) based on the median NYSE market capitalization breakpoint. Then, within each size group, stocks are sorted into five quintiles based on their realized $\beta^{\text{FOMO}-}$. The “High-Low” row reports the return spread between Quintile 5 and Quintile 1 within each size group. The “Big - Small” column reports the difference in returns between the Big and Small portfolios for each quintile and for the High-Low spread. t -statistics use Newey and West (1987) standard errors with 12 lags. *** denotes significance at the 1% level.

Considering the extent to which size is important in the results, Table A73 further splits stocks into a small, and large, group and explores the High-Low spread for $\beta^{\text{FOMO}-}$ within the size groupings. The $\beta^{\text{FOMO}-}$ premium is extremely strong. The High–Low spread is positive and highly significant for both Small stocks at 22.81%, ($t = 9.85$) and in Big stocks (4.42%, $t = 2.06$), indicating that the effect is pervasive across the market.

As in the main paper, the FOMO premium is stronger in small stocks. Consistent with many asset pricing anomalies, the effect is far more pronounced among small-cap stocks. The Big–Small column for the High–Low spread shows a large and significant -18.39% ($t = -11.97$), confirming that the $\beta^{\text{FOMO-}}$ premium is substantially larger for smaller firms.

Table A74: Robustness of Fama-MacBeth $\beta^{\text{FOMO-}}$ Coefficient (State-Based Benchmark)

Scenario	Coefficient	t-statistic
A: $\beta^{\text{FOMO-}}$ Model VII (Full Controls)		
Full Sample	0.038	[1.79]*
Sub-Period 1 (1980-2002)	-0.030	[-0.99]
Sub-Period 2 (2003-2024)	0.099	[4.60]***
Exclude Micro-Caps	0.077	[4.42]***
B: $\beta^{\text{FOMO-}}$ Horse Race Model VIII		
Full Sample	0.051	[2.50]**
Sub-Period 1 (1980-2002)	-0.007	[-0.24]
Sub-Period 2 (2003-2024)	0.103	[4.87]***
Exclude Micro-Caps	0.085	[5.00]***

This table presents the Fama-MacBeth coefficient and t -statistic for $\beta^{\text{FOMO-}}$ under different scenarios using a state-based benchmark. Panel A shows results from Model VII (full controls). Panel B shows results from Model VIII (the "horse race" against Ang's (2006a) betas). "Full Sample" covers 1980-2024. "Sub-Period 1" covers 1980-2002 and "Sub-Period 2" covers 2003-2024. "Exclude Micro-Caps" removes stocks in the lowest NYSE market capitalisation quintile. t -statistics use Newey and West (1987) standard errors with 12 lags. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Testing the robustness of the Fama MacBeth regressions, Table A74 provides coefficients on $\beta^{\text{FOMO-}}$ in two sub-periods and when small firms are excluded. With the state-based benchmark, the premium on $\beta^{\text{FOMO-}}$ is smaller and shows significant time variation. In the full sample (Panel A), the coefficient is 0.038 ($t = 1.79$). The effect is statistically insignificant in the first half of the sample (1980-2002) but becomes strong and positive in the second half (2003-2024). The results are notably stronger after excluding micro-cap stocks, with the coefficient in the full model (Panel A) rising to 0.077 ($t = 4.42$). This suggests the premium is not a micro-cap story and is more pronounced in larger firms. Panel B presents the horse race model with Ang et al. (2006a) betas. The coefficient on $\beta^{\text{FOMO-}}$ consistently increases in the horse race specification against Ang's (2006a) betas. For the full sample, the coefficient rises to 0.051 ($t = 2.50$), indicating that the state-based FOMO factor captures a risk dimension distinct from market-based downside risk.

The GRS results in Table A75 provide strong statistical evidence for our paper. Panel

Table A75: GRS Test Results for Factor Models on Different Sets of Test Assets (State-Based Benchmark)

Panel A: Test Assets = 5 β^{FOMO-} -Sorted Portfolios					
Model Specification	Num. Factors	Num. Assets	AvgAbsAlpha (% p.m.)	GRS Statistic	p-value
1. CAPM	1	5	0.094	2.301	0.044
2. FF3 (Mkt, SMB, HML)	3	5	0.082	2.423	0.035
3. FF4 (Mkt, SMB, HML, Mom)	4	5	0.124	1.660	0.143
4. FF4 + ADF	5	5	0.106	1.467	0.199
5. FF4 + FMF	5	5	0.070	1.134	0.341
6. FF4 + FMF + ADF	6	5	0.135	1.210	0.303

Panel B: Test Assets = 25 Fama-French Size and B/M Portfolios					
Model Specification	Num. Factors	Num. Assets	AvgAbsAlpha (% p.m.)	GRS Statistic	p-value
1. CAPM	1	25	0.165	4.345	0.0001
2. FF3 (Mkt, SMB, HML)	3	25	0.111	4.119	0.0001
3. FF4 (Mkt, SMB, HML, Mom)	4	25	0.102	3.662	0.0001
4. FF4 + ADF	5	25	0.098	3.454	0.0001
5. FF4 + FMF	5	25	0.104	3.895	0.0001
6. FF4 + FMF + ADF	6	25	0.098	3.410	0.0001

This table reports results from the Gibbons et al. (1989) F-test for various factor models on two sets of test assets. Panel A uses five quintile portfolios formed by sorting stocks on realized β^{FOMO-} . Panel B uses the 25 Fama-French portfolios sorted on size and book-to-market. "AvgAbsAlpha (% p.m.)" is the average of the absolute values of the monthly time-series regression intercepts (alphas). FMF is our FOMO factor based on β^{FOMO-} sorts (using a state-based benchmark). ADF is Ang's (2006a) downside risk factor. The sample period for the time-series regressions is January 1980 to December 2024.

A shows that when testing on portfolios sorted by $\beta^{\text{FOMO-}}$, the standard CAPM and Fama-French 3-Factor models are now rejected at the 5% significance level. While the 4-factor model is not rejected, adding our FMF factor (Model 5) provides the best overall fit, yielding the highest p -value (0.3414) and the lowest GRS statistic (1.134). This provides strong evidence that our FMF factor is essential for capturing the price of state-based FOMO risk. When testing on the 25 Fama-French size and value portfolios, Panel B reports that all models are strongly rejected, which is a common result in the literature. Notably, the model augmented with both our FMF factor and Ang’s ADF factor (Model 6) delivers the lowest GRS statistic, indicating that both factors contribute to explaining the returns of these standard test assets. This is expected, since our FMF factor is tailored to the FOMO anomaly, whereas the ADF factor is designed to capture broader market downside risk.

J.2 Summary of Headquarters Benchmark

The premise for using headquarters location as the peer group stems from the potential for home bias amongst investors (Coval and Moskowitz, 1999). Investors may view those who also invest in firms from the same state as potential peers against whom to benchmark. The results in this appendix indicate that the FOMO premium is robust when using a headquarters based benchmark. Our work again provides empirical support to the FOMO-CAPM formulated in the main paper.