Bear Beta

Online Appendix

Abstract

Section I presents a more detailed discussion of the AD Bear portfolio and bear market risk in Wachter (2013)'s model, and provides the associated derivations. Section II derives the priors we use for the Bayes shrinkage methodology. Section III provides the details of the calculation of the control variables. Section IV reports additional empirical results, including univariate portfolio analyses using factor models augmented with the betting against beta factor and complete regression results for Tables 9 and 10 in the main paper.

I. AD Bear and Bear Market Risk in a Model

In Wachter (2013)'s model, the endowment (aggregate consumption, C_t) follows a jump-diffusion process

$$dC_t = \mu C_{t^-} dt + \sigma C_{t^-} dB_t + (e^{Z_t} - 1) C_{t^-} dN_t, \tag{A1}$$

where B_t is a standard Brownian motion and Z_t is a negative random variable with a time-invariant distribution that captures jump realizations. N_t is a Poisson process with time-varying intensity λ_t defined by

$$d\lambda_t = \kappa(\bar{\lambda} - \lambda_t) + \sigma_\lambda \sqrt{\lambda_t} dB_{\lambda,t}, \tag{A2}$$

where $B_{\lambda,t}$ is a standard Brownian motion independent of both B_t and Z_t. Three independent sources of risk affect the endowment process: 1) B_t – a standard Brownian motion capturing continuous consumption shocks, 2) Z_t – the realized consumption jump at time t, and 3) λ_t – the time-varying intensity of future jumps. Bear market risk in this model is the innovation in the intensity of future jumps, or $dB_{\lambda,t}$, since λ_t is the sole state variable that determines time-variation in the probability of future bear market states.

Assuming a recursive utility function and that the market portfolio is a levered claim to aggregate consumption (i.e., dividend $D_t = C_t^\phi$), Wachter (2013) shows that the evolution of the price of the market portfolio, F_t, is given by

$$\frac{dF_t}{F_t} = \mu_{F,t} dt + \phi\sigma dB_t + b_{F,\lambda}\sigma_\lambda \sqrt{\lambda_t} dB_{\lambda,t} + (e^{\phi Z_t} - 1) dN_t, \tag{A3}$$

and the evolution of the state price density π_t is defined by

$$\frac{d\pi_t}{\pi_{t^-}} = \mu_{\pi,t} dt - \gamma\sigma dB_t + b_{\pi,\lambda}\sigma_\lambda \sqrt{\lambda_t} dB_{\lambda,t} + (e^{-\gamma Z_t} - 1) dN_t \tag{A4}$$

where ϕ is the market portfolio's leverage with respect to aggregate consumption, γ is the risk aversion parameter, and $b_{F,\lambda}$ and $b_{\pi,\lambda}$ are the sensitivities of the market return and the stochastic discount factor, respectively, to $dB_{\lambda,t}$. Because heightened jump intensity increases marginal utility and depresses stock prices, $b_{F,\lambda} < 0$ and $b_{\pi,\lambda} > 0$.

The AD Bear portfolio is defined to generate payoff X_T of \$1 at expiration date T if the time T price of the market portfolio is below a threshold identified by K. Specifically, $X_T = 1\left\{\frac{F_T}{F_0} \leq K\right\}$, where time 0 is the portfolio formation day and F_0 is the T-year forward price at time 0. At any point in time $t < T$, the price of the AD Bear portfolio is given by

$$X_t = E_t^Q\left(e^{-\int_t^T r_\tau d\tau} 1\left\{\frac{F_T}{F_0} \leq K\right\}\right) \tag{A5}$$

where $E^{\mathbb{Q}}$ is the risk-neutral expectation function and r_s is the time s instantaneous risk-free rate.

While Eq. (A5) can be solved using numerical methods, it does not have an analytical solution. We make two approximations to arrive at an approximate analytical solution that delivers transparent economic intuition.

Approximation 1: We assume the instantaneous risk-free rate over the time interval from 0 to T is constant. In our empirical set-up, the time to maturity is about one month and thus the approximation should be quite accurate. Under this assumption,

$$
\begin{aligned}
dX_t &= X_t - X_0 \\
&= E_t^Q\left(1\left\{\frac{F_T}{F_0} \leq K\right\}\right)e^{-r(T-t)} - E_0^Q\left(1\left\{\frac{F_T}{F_0} \leq K\right\}\right)e^{-rT} \qquad \text{(A6)} \\
&= \left[E_t^Q\left(1\left\{\frac{F_T}{F_0} \leq K\right\}\right) - E_0^Q\left(1\left\{\frac{F_T}{F_0} \leq K\right\}\right)\right]e^{-r(T-t)} \\
&+ E_0^Q\left(1\left\{\frac{F_T}{F_0} \leq K\right\}\right)\left(e^{-r(T-t)} - e^{-rT}\right) \\
&= \left[E_t^Q\left(1\left\{\frac{F_T}{F_0} \leq K\right\}\right) - E_0^Q\left(1\left\{\frac{F_T}{F_0} \leq K\right\}\right)\right]e^{-r(T-t)} + X_0\left(e^{rt} - 1\right) \qquad \text{(A7)}
\end{aligned}
$$

Letting $P_t = E_t^Q\left(1\left\{\frac{F_T}{F_0} \leq K\right\}\right)$ gives

$$
dX_t = dP_t e^{-r(T-t)} + X_0\left(e^{rt} - 1\right). \qquad \text{(A8)}
$$

In the following analysis, we focus on the sensitivity of dP_t to the fundamental risks, which determines the sensitivity of dX_t to the fundamental risks. Under Wachter's model, $\frac{F_T}{F_0} = exp\left(\phi log\left(\frac{C_T}{C_0}\right) + b_{F,\lambda}\left(\lambda_T - \lambda_0\right)\right)$ and thus

$$
P_t \quad = \quad E_t^Q\left(1\left\{\phi log\left(C_T\right) + b_{F,\lambda}\lambda_T \leq log\left(K\right) + \phi log\left(C_0\right) + b_{F,\lambda}\lambda_0\right\}\right). \qquad \text{(A9)}
$$

Approximation 2: λ_T follows a CIR model and does not have a closed-form solution. However, over the short interval T, λ_T can be approximated by a Vasicek model with constant volatility and thus follows a normal distribution:

$$
\lambda_T \sim N\left(\left(1 - e^{-\kappa(T-t)}\right)\overline{\lambda} + \lambda_t e^{-\kappa(T-t)}, \frac{\sigma_\lambda^2\lambda_t}{2\kappa}\left(1 - e^{-2\kappa(T-t)}\right)\right). \qquad \text{(A10)}
$$

We further assume Z_t is of constant size $\mu_Z < 0$. Therefore, following Merton (1976), we know that conditional on $N_T - N_t = n$,

$$\phi log\left(C_T\right) + b_{F,\lambda}\lambda_T \quad \sim \quad N\left(\mu_n, \nu^2\right) \tag{A11}$$

where

$$\mu_n = \mu^Q + \phi log\left(C_t\right) + n\phi\mu_Z + b_{F,\lambda}\lambda_t e^{-\kappa(T-t)}, \tag{A12}$$

$$\nu^2 = \phi^2\sigma^2\left(T-t\right) + b_{F,\lambda}^2\frac{\sigma_\lambda^2\lambda_t}{2\kappa}\left(1 - e^{-2\kappa(T-t)}\right), \tag{A13}$$

and μ^Q captures the drift term under the Q measure that is unrelated to λ_t, $log\left(C_t\right)$, or Z_t . We can then solve for P_t.

$$P_t \quad = \quad \sum_{n=0}^{\infty}\frac{e^{-\lambda_t(T-t)}\left(\lambda_t\left(T-t\right)\right)^n}{n!}N\left(d_n\right) \tag{A14}$$

where

$$d_n = \frac{log\left(K\right) + \phi log\left(C_0\right) + b_{F,\lambda}\lambda_0 - \mu_n}{\nu} \tag{A15}$$

We now examine the sensitivities of innovations in the price of AD Bear portfolio to different types of shocks. Specifically,

$$\Delta P_t = \frac{\partial P_t}{\partial B_t}dB_t + \frac{\partial P_t}{\partial B_{\lambda,t}}dB_{\lambda,t} + \frac{\partial P_t}{\partial J_t}dJ_t$$

First, we solve for the effect of dB_t on P_t. Because dB_t only affects d_n and we have

$\frac{\partial d_n}{\partial B_t} = -\frac{\phi\sigma}{\nu}$, we have

$$\begin{aligned}\frac{\partial P_t}{\partial B_t} &= \sum_{n=0}^{\infty} \frac{e^{-\lambda_t (T-t)} \left(\lambda_t \left(T-t\right)\right)^n}{n!} N'\left(d_n\right) \times \left(-\frac{\phi\sigma}{\nu}\right) \\ &= e^{-\lambda_t (T-t)} \left(\sum_{n=0}^{\infty} \delta_n\right) \times \left(-\frac{\phi\sigma}{\nu}\right) \end{aligned} \tag{A16}$$

where

$$\delta_n = \frac{\left(\lambda_t \left(T-t\right)\right)^n}{n!} \frac{1}{\sqrt{2\pi}} exp\left(-\frac{1}{2} d_n^2\right). \tag{A17}$$

Next , the first-order effect of Z_t on P_t is

$$\frac{\partial P_t}{\partial J_t} = e^{-\lambda_t (T-t)} \left(\sum_{n=0}^{\infty} \delta_n\right) \times -\frac{\phi\mu_Z}{\nu} + o\left(Z_t\right) \tag{A18}$$

where $o\left(Z_t^2\right)$ is a second and higher order effect.

Finally, we examine the effect of $dB_{\lambda,t}$ on P_t. Letting

$$\frac{\partial d_n}{\partial B_{\lambda,t}} = \left[-\frac{b_{F,\lambda} e^{-\kappa(T-t)}}{\nu} - \frac{d_n b_{F,\lambda}^2 \frac{\sigma_\lambda^2}{2\kappa}\left(1-e^{-2\kappa(T-t)}\right)}{\nu}\right] \sigma_\lambda \sqrt{\lambda_t} \tag{A19}$$

we have

$$\frac{\partial P_t}{\partial B_{\lambda,t}} = \sum_{n=0}^{\infty} \frac{\partial e^{-\lambda_t(T-t)}\left(\lambda_t\left(T-t\right)\right)^n}{\partial \lambda_t} N\left(d_n\right) \times \sigma_\lambda \sqrt{\lambda_t} + e^{-\lambda_t(T-t)}\left(\sum_{n=0}^{\infty}\delta_n\right) \times \frac{\partial d_n}{\partial B_{\lambda,t}}$$

$$= \sum_{n=0}^{\infty}\left(\frac{\left(\lambda_t\left(T-t\right)\right)^{n-1}}{(n-1)!} - \frac{\left(\lambda_t\left(T-t\right)\right)^n}{n!}\right) N\left(d_n\right) \times \sigma_\lambda\sqrt{\lambda_t} \times e^{-\lambda_t(T-t)}\left(T-t\right)$$

$$+e^{-\lambda_t(T-t)}\left(\sum_{n=0}^{\infty}\delta_n\right) \times \frac{\partial d_n}{\partial B_{\lambda,t}} \tag{A20}$$

$$= \sum_{n=1}^{\infty}\frac{\left(\lambda_t\left(T-t\right)\right)^{n-1}}{(n-1)!}\left[N\left(d_n\right) - N\left(d_{n-1}\right)\right] \times \sigma_\lambda\sqrt{\lambda_t} \times e^{-\lambda_t(T-t)}\left(T-t\right) \tag{A21}$$

$$+e^{-\lambda_t(T-t)}\left(\sum_{n=0}^{\infty}\delta_n\right) \times \frac{\partial d_n}{\partial B_{\lambda,t}}. \tag{A22}$$

Again, ignoring the second and higher-order effects of Z_t, we have $N\left(d_n\right) - N\left(d_{n-1}\right) = N'\left(d_{n-1}\right)\frac{-\phi\mu_Z}{\nu}$ and thus

$$\frac{\partial P_t}{\partial B_{\lambda,t}} = e^{-\lambda_t(T-t)}\left(T-t\right)\left[\sum_{n=0}^{\infty}\delta_n\frac{-\phi\mu_Z}{\nu}\right] \times \sigma_\lambda\sqrt{\lambda_t} + e^{-\lambda_t(T-t)}\left(\sum_{n=0}^{\infty}\delta_n\right) \times \frac{\partial d_n}{\partial B_{\lambda,t}}$$

$$= e^{-\lambda_t(T-t)}\left(\sum_{n=0}^{\infty}\delta_n\right) \times \left\{-\left(T-t\right)\phi\mu_Z - \frac{b_{F,\lambda}e^{-\kappa(T-t)}}{\nu} - \frac{d_n b_{F,\lambda}^2\frac{\sigma_\lambda^2}{2\kappa}\left(1-e^{-2\kappa(T-t)}\right)}{\nu}\right\} \times \sigma_\lambda\sqrt{\lambda_t}. \tag{A23}$$

Table 1 of the main paper summarizes the exposures of π_t, F_t, and X_t to the three sources of risk. The sensitivity of the SDF to dB_t (continuous consumption innovations) is the negative of the coefficient of risk aversion $(-\gamma)$. Intuitively, a positive consumption innovation decreases marginal utility. The sensitivity of the SDF to negative jumps in consumption is $-\gamma Z_t$. Finally, the SDF's sensitivity to bear market risk, captured by the innovations in the intensity of jumps, $dB_{\lambda,t}$, is $b_{\pi,\lambda}$ which is greater than zero since an increase in the intensity of jumps increases marginal utility.

We now examine the market portfolio return. An important observation from Table 1 of the main paper is that while both the market return and the SDF are sensitive to all three sources of risk, the SDF is not a linear function of the market return. Specifically, the sensitivities of the market return to the continuous consumption innovations (dB_t) and realized jumps (Z_t) are proportional to the corresponding SDF sensitivities, while the market return's sensitivity to innovations in jump intensity ($dB_{\lambda,t}$) is not. This means that in the economy described by Wachter (2013), the CAPM does not hold and, to correctly price assets, one must account for the effect of bear market risk (i.e., innovations in jump intensity).

Most importantly, Table 1 of the main paper shows that the sensitivities of the AD Bear portfolio's return to continuous consumption innovations (dB_t) and realized jumps (Z_t) are a simple multiple, $-\Delta$, of the market portfolio return's sensitivities to these risk factors. Therefore, a portfolio that is long one dollar of the AD Bear portfolio and long Δ dollars of the market portfolio has zero exposure to continuous consumption innovations (dB_t) and realized jumps (Z_t). The returns of this portfolio are exposed only to bear market risk ($dB_{\lambda,t}$).

The economic insights from the above discussions are two-fold. First, in the presence of bear market risk (captured in this model by time-variation in jump intensity), the market risk factor is insufficient to price assets, i.e., the CAPM does not hold. Second, the AD Bear portfolio is proportionally more sensitive than the market portfolio to bear market risk. Therefore, we can measure exposure to bear market risk by augmenting the CAPM model with the returns of the AD Bear portfolio. While our derivations focus on the first-order effects of the three shocks as a means to illustrate the theoretical intuition, in our empirical analyses we are careful to control for potential exposure to higher-order effects by controlling for jump risk, coskewness, and aggregate skewness risk.

II. Bayes Shrinkage Method

The following brief theoretical derivation clarifies the priors we use to implement the Bayes shrinkage methodology. We assume that the error term in Eq. (7) follows a normal distribution: $\epsilon_{i,d} \sim N\left(0, \nu_i^2\right)$. We also assume that the prior distribution of β_i^{BEAR} is normal: $\beta_i^{\text{BEAR}} | \nu_i^2, \beta_i^{\text{MKT}} \sim N\left(\beta_{\text{Prior}}, \sigma^2_{\text{Prior}}\right)$. The posterior distribution of β_i^{BEAR} then follows a normal distribution $\beta_i^{\text{BEAR}} | \sigma_i^2, \beta_i^{\text{MKT}}, \{R_{i,d}\} \sim N\left(\widetilde{\beta_i^{\text{BEAR}}}, \widetilde{\Sigma_i^{\text{BEAR}}}\right)$ with the posterior mean

$$\begin{aligned}
\widetilde{\beta_i^{\text{BEAR}}} &= \beta_{\text{Prior}} + \left(\sigma^{-2}_{\text{Prior}} + \sigma^{-2}\left(\beta^{\text{BEAR}}_{\text{OLS},i}\right)\right)^{-1} \sigma^{-2}\left(\beta^{\text{BEAR}}_{\text{OLS},i}\right)\left(\beta^{\text{BEAR}}_{\text{OLS},i} - \beta_{\text{Prior}}\right) \\
&= \frac{\left(\sigma^2_{\text{OLS},i}\right)^{-1}}{\left(\sigma^2_{\text{OLS},i}\right)^{-1} + \left(\sigma^2_{\text{Prior}}\right)^{-1}} \beta^{\text{BEAR}}_{\text{OLS},i} + \frac{\left(\sigma^2_{\text{Prior}}\right)^{-1}}{\left(\sigma^2_{\text{OLS},i}\right)^{-1} + \left(\sigma^2_{\text{Prior}}\right)^{-1}} \beta^{\text{BEAR}}_{\text{Prior}}. \qquad \text{(A1)}
\end{aligned}$$

Intuitively, $\widetilde{\beta_i^{\text{BEAR}}}$ shrinks the OLS estimate $\beta^{\text{BEAR}}_{\text{OLS},i}$ toward β_{Prior} to account for sampling errors. Higher (lower) OLS sampling errors, captured by $\sigma^2_{\text{OLS},i}$, result in more (less) weight being placed on β_{Prior} and less (more) weight being placed on $\beta^{\text{BEAR}}_{\text{OLS},i}$.

III. Control Variable Definitions

In this section we describe the calculation of each of the control variables used in our study. Each variable is calculated for each stock i at the end of each month t.

III.A. Risk Variables:

CAPM beta (β^{CAPM}): β^{CAPM} is the slope coefficient from a regression of excess stock returns on MKT using daily data from the one year period covering $t-11$ through t, inclusive. MKT is the excess return on the market portfolio from Kenneth French's data library.

Downside beta (β^{-}): β^{-} is calculated following Ang, Chen, and Xing (2006) as the slope coefficient from a regression of excess stock returns on MKT using only days when MKT is below its average from the one year period covering months $t-11$ through t, inclusive.

Relative downside beta ($\beta^{-}-\beta^{\text{CAPM}}$): $\beta^{-}-\beta^{\text{CAPM}}$ is calculated following Ang, Chen, and Xing (2006) as the difference between β^{-} and β^{CAPM}.

VIX beta (β^{VIX}): β^{VIX} is calculated following Ang, Hodrick, Xing, and Zhang (2006) as the slope coefficient on ΔVIX from a regression of excess stock returns on MKT and ΔVIX using daily data from month t.[1] ΔVIX is the daily change in the VIX index. We require the availability of a minimum of 17 (15 during September 2001) daily return observations during the regression period to calculate β^{VIX}.

Volatility Beta (β^{VOL}): β^{VOL} is calculated following Cremers, Halling, and Weinbaum (2015) as the sum of the coefficients on contemporaneous and lagged VOL factor returns from a regression of excess stock returns on contemporaneous and one-day-lagged VOL factor returns using daily data from the one year period covering months $t-11$ through t, inclusive.[2]

Jump Beta (β^{JUMP}): β^{JUMP} is calculated following Cremers, Halling, and Weinbaum (2015) as the sum of the coefficients on contemporaneous and lagged JUMP factor returns from a regression of excess stock returns on contemporaneous and one-day-lagged JUMP factor returns using daily data from the one year period covering months $t-11$ through t, inclusive.

Coskewness (COSKEW): COSKEW is calculated following Harvey and Siddique (2000) as the slope coefficient on MKT^2 from a regression of excess stock returns on MKT and MKT^2 using monthly data from the five year period covering months $t-59$ through t, inclusive. We require the availability of a minimum of 24 monthly return observations during the regression period to calculate COSKEW.

[1] Ang et al. (2006) use VXO instead of VIX in their analysis.

[2] We thank Martijn Cremers, Michael Halling, and David Weinbaum for providing us with daily VOL and JUMP factor returns. The VOL and JUMP factor data end on March 31, 2012. Thus, analyses using β^{VOL} or β^{JUMP} or cover months t (return months $t+1$) from December 1996 (January 1997) through March 2012 (April 2012).

Skewness Beta ($\beta^{\Delta \text{SKEW}}$): $\beta^{\Delta \text{SKEW}}$ is calculated following Chang et al. (2013) as the slope coefficient on ΔSKEW from a regression of excess stock returns on MKT, ΔVOL, ΔSKEW, and ΔKURT using daily data from month t. ΔVOL, ΔSKEW, and ΔKURT are the daily innovations in risk-neutral volatility, skewness, and kurtosis from Chang et al. (2013).[3] As in Chang et al. (2013), we othogonalize ΔKURT to ΔSKEW prior to calculating $\beta^{\Delta \text{SKEW}}$. We require the availability of a minimum of 17 (15 during September 2001) daily return observations during the regression period to calculate $\beta^{\Delta \text{SKEW}}$.

Tail beta (β^{TAIL}): β^{TAIL} is calculated following Kelly and Jiang (2014) as the slope coefficient on lagged aggregate tail risk (TAIL) from a regression of excess stock returns on one-month-lagged TAIL using 10 years of monthly return data covering months $t - 119$ through t, inclusive.[4] We require the availability of a minimum of 36 monthly return observations during the regression period to calculate β^{TAIL}.

Idiosyncratic Volatility (IVOL): IVOL is calculated following Ang et al. (2006) as the standard deviation of the residuals from a regression of excess stock returns on MKT, SMB, and HML using daily data from month t. We require the availability of a minimum of 17 (15 during September 2001) daily return observations during the regression period to calculate IVOL.

III.B. Characteristic Variables:

Market Capitalization (MKTCAP and SIZE): MKTCAP is calculated as the number of shares outstanding times the stock price at the end of month$t$, recorded in $millions. SIZE is the natural log of $1 + \text{MKTCAP}$.

[3] We thank Bo Young Chang, Peter Christoffersen, and Kris Jacobs for providing the ΔVOL, ΔSKEW, and ΔKURT factor data. The ΔVOL, ΔSKEW, and ΔKURT data end on December 31, 2007. Thus, analyses using $\beta^{\Delta \text{SKEW}}$ cover months t (return months $t + 1$) from December 1996 (January 1997) through December 2007 (January 2008).

[4] We thank Bryan Kelly for providing the TAIL data. The TAIL data end on December 31, 2011. The TAIL data end in December 2011, thus analyses using β^{TAIL} cover months t (return months $t + 1$) from December 1996 (January 1997) through December 2011 (January 2012).

Book-to-Market Ratio (BM): BM is calculated as the log of book equity divided by market capitalization (MKTCAP). Following Fama and French (1992), book equity for months from June of year y through May of year $y+1$ is calculated using book equity from the fiscal year ending in calendar year $y-1$.

Momentum (MOM): MOM is the stock return during the 11-month period from month $t-11$ through $t-1$, inclusive, recorded in percent.

Illiquidity (ILLIQ): ILLIQ is calculated following Amihud (2002) as the absolute daily return measured in percent divided by the daily dollar trading volume in $millions, averaged over all days in months $t-11$ through t, inclusive. We require the availability of a minimum of 180 daily observations during the measurement period to calculate ILLIQ.

Profitability (Y): Y is cash-based operating profiability calculated following Ball et al. (2016) as cost of goods sold (COGS) minus reported sales, general, and administrative expenses (XSGA−XRD) minus accounts receivable (RECT) minus inventory (INVT) minus prepaid expenses (XPP) plus deferred revenue (DRC+DRLT) plus trade accounts payable (AP), scaled by total asset (AT)

Investment (INV): INV is calculated following Fama and French (2015) as the ratio of total assets to lagged total assets. Specifically, the value of INV for months from June of year y through May of year $y+1$ is taken to be total assets (TA) from the fiscal year ending in calendar year $y-1$ divided by total assets from the fiscal year ending in calendar year $y-2$.

IV. Additional Empirical Results

IV.A. Betting against Beta

In this section we repeat the univariate portfolio analyses in Table 5 of the main paper, but augment each of the factor models with the betting-against-beta factor (BAB) of Frazzini and Pedersen (2014). BAB factor data are gathered from the AQR website (https://www.aqr.com/library/data-sets/betting-against-beta-equity-factors-monthly). The results of these analyses are shown in Table A1.

IV.B. Predictive Power Beyond One Month

In this section we repeat the Fama and MacBeth (1973, FM hereafter) regression analysis in Table 8 of the main paper using month $t+k$ excess returns ($k \in 2, 3, 4, 5, 6$), instead of month $t+1$ excess returns, as the dependent variable. All other aspects of the analysis are unchanged. The results of the FM regression analyses using month $t+2$, $t+3$, $t+4$, $t+5$, and $t+6$ excess returns are shown in Tables A2, A3, A4, A4, and A6, respectively.

IV.C. Alternative Bear Beta Definitions

We repeat the FM regression analyses in Table 8 of the main paper using alternative measures of bear beta instead of our focal measure β^{BEAR}. We begin by investigating the impact of alternative definitions of bear market states. The results of FM regression analyses using $\beta^{\mathrm{BEAR}}_{\sigma=20\%}$, $\beta^{\mathrm{BEAR}}_{1\sigma}$ and $\beta^{\mathrm{BEAR}}_{0.5\sigma}$ are shown in Table A7, A8 and Table A9, respectively. Next we examine the impact of empirical choices intended to reduce the noise in our measurement of bear beta. The results of FM regression analyses using $\beta^{\mathrm{BEAR}}_{\mathrm{2Month}}$, $\beta^{\mathrm{BEAR}}_{\mathrm{EW}}$, $\beta^{\mathrm{BEAR}}_{\mathrm{4Day}}$, $\beta^{\mathrm{BEAR}}_{\mathrm{3Day}}$, $\beta^{\mathrm{BEAR}}_{\mathrm{2Day}}$, and $\beta^{\mathrm{BEAR}}_{\mathrm{1Day}}$ are shown in Tables A10 to A15, respectively. Finally, we show the results of FM regression analyses using $\beta^{\mathrm{BEAR}}_{\mathrm{UnAdj}}$ in Table A16 and results using β^{PUT} in Table A17.

IV.D. The Financial Crisis Period

We next remove return months from December 2007 through June 2009, the period identified by the NBER as recessionary, from the sample.The results of FM regression analyses using the sample excluding the financial crisis period are shown in Table A18.

IV.E. Extended Sample Period

Finally, we repeat the FM regressions analyses using $\beta_{\mathrm{CME}}^{\mathrm{BEAR}}$ as the measure of bear market risk exposure. We conduct these tests using months t (return months $t+1$) from December 1988 (January 1999) through August 2015 (September 2015). The results of these tests are in Table A19. We then repeat these tests using months t (return months $t+1$) from December 1988 (January 1989) through November (December) 1996. The results of these tests are in Table A20.

References

Amihud, Y., 2002. Illiquidity and stock returns: Cross-section and time-series effects. Journal of Financial Markets 5, 31–56.

Ang, A., Chen, J., Xing, Y., 2006. Downside risk. Review of Financial Studies 19, 1191–1239.

Ang, A., Hodrick, R. J., Xing, Y., Zhang, X., 2006. The cross-section of volatility and expected returns. Journal of Finance 61, 259–299.

Ball, R., Gerakos, J., Linnainmaa, J. T., Nikolaev, V., 2016. Accruals, cash flows, and operating profitability in the cross section of stock returns. Journal of Financial Economics 121, 28–45.

Chang, B. Y., Christoffersen, P., Jacobs, K., 2013. Market skewness risk and the cross section of stock returns. Journal of Financial Economics 107, 46–68.

Cremers, M., Halling, M., Weinbaum, D., 2015. Aggregate jump and volatility risk in the cross-section of stock returns. The Journal of Finance 70, 577–614.

Fama, E. F., French, K. R., 1992. The cross-section of expected stock returns. Journal of Finance 47, 427–465.

Fama, E. F., French, K. R., 2015. A five-factor asset pricing model. Journal of Financial Economics 116, 1–22.

Fama, E. F., MacBeth, J. D., 1973. Risk, return, and equilibrium: Empirical tests. Journal of Political Economy 81, 607–636.

Frazzini, A., Pedersen, L. H., 2014. Betting against beta. Journal of Financial Economics 111, 1–25.

Harvey, C. R., Siddique, A., 2000. Conditional skewness in asset pricing tests. Journal of Finance 55, 1263–1295.

Kelly, B., Jiang, H., 2014. Tail risk and asset prices. Review of Financial Studies 27, 2841–2871.

Merton, R. C., 1976. Option pricing when underlying stock returns are discontinuous. Journal of financial economics 3, 125–144.

Wachter, J. A., 2013. Can time-varying risk of rare disasters explain aggregate stock market volatility? The Journal of Finance 68, 987–1035.

Table A1: $\beta^{\mathbf{BEAR}}$-Sorted Portfolios Returns

The table below presents the results of univariate portfolio analyses of the relation between β^{BEAR} and future stock returns. The factor regressions are identical to those reported in Table 5 of the main paper, except in this table the BAB factor is included in each of the factor models.

Panel A: All Stocks Sample

Model	Value	β^{BEAR} 1	β^{BEAR} 2	β^{BEAR} 3	β^{BEAR} 4	β^{BEAR} 5	β^{BEAR} 6	β^{BEAR} 7	β^{BEAR} 8	β^{BEAR} 9	β^{BEAR} 10	β^{BEAR} 10 − 1
Excess Return	Excess Returns	0.98	0.82	0.66	0.47	0.62	0.41	0.48	0.39	0.32	−0.15	−1.13
		(2.62)	(2.75)	(2.29)	(1.58)	(1.74)	(1.02)	(1.14)	(0.78)	(0.59)	(−0.24)	(−2.70)
CAPM	α	0.37	0.29	0.17	−0.02	0.15	−0.05	−0.00	−0.12	−0.20	−0.60	−0.97
		(1.94)	(2.02)	(1.37)	(−0.15)	(1.29)	(−0.37)	(−0.04)	(−0.75)	(−1.23)	(−2.17)	(−2.78)
FF3	α	0.38	0.34	0.20	−0.02	0.16	−0.07	−0.03	−0.17	−0.28	−0.77	−1.15
		(2.11)	(2.68)	(1.66)	(−0.14)	(1.42)	(−0.58)	(−0.23)	(−0.96)	(−1.60)	(−3.08)	(−3.37)
FFC	α	0.40	0.35	0.21	−0.00	0.16	−0.08	−0.02	−0.15	−0.26	−0.73	−1.13
		(2.09)	(2.68)	(1.65)	(−0.02)	(1.29)	(−0.61)	(−0.21)	(−0.85)	(−1.46)	(−3.01)	(−3.15)
Q	α	0.30	0.25	0.18	0.05	0.17	0.05	0.03	−0.05	−0.12	−0.43	−0.73
		(1.67)	(1.91)	(1.38)	(0.30)	(1.22)	(0.44)	(0.30)	(−0.27)	(−0.70)	(−1.83)	(−2.29)
FF5	α	0.24	0.22	0.08	−0.03	0.15	−0.00	0.06	−0.02	−0.05	−0.38	−0.62
		(1.33)	(1.96)	(0.80)	(−0.21)	(1.29)	(−0.04)	(0.43)	(−0.11)	(−0.37)	(−1.56)	(−1.95)
	β_{MKT}	1.10	1.01	0.94	0.91	0.98	0.97	1.02	1.06	1.18	1.23	0.13
		(26.25)	(21.14)	(35.64)	(17.60)	(33.35)	(25.01)	(31.39)	(23.95)	(21.44)	(17.80)	(1.39)
	β_{SMB_5}	0.02	−0.16	−0.05	0.01	−0.04	0.04	−0.00	0.13	0.24	0.40	0.38
		(0.29)	(−2.38)	(−0.92)	(0.11)	(−0.98)	(0.83)	(−0.02)	(2.43)	(3.37)	(3.77)	(2.68)
	β_{HML}	0.10	0.09	−0.04	0.05	−0.02	−0.12	−0.14	0.06	0.10	−0.04	−0.14
		(0.81)	(0.93)	(−0.51)	(0.41)	(−0.36)	(−2.07)	(−1.99)	(0.54)	(0.87)	(−0.26)	(−0.59)
	β_{RMW}	0.11	0.05	0.18	0.03	0.01	−0.06	−0.15	−0.22	−0.25	−0.68	−0.79
		(0.66)	(0.43)	(1.63)	(0.54)	(0.21)	(−0.80)	(−2.74)	(−1.74)	(−1.97)	(−5.33)	(−2.92)
	β_{CMA}	0.39	0.37	0.26	−0.00	0.01	−0.17	−0.10	−0.31	−0.57	−0.60	−0.99
		(1.55)	(1.69)	(3.37)	(−0.02)	(0.15)	(−1.00)	(−0.84)	(−1.88)	(−4.11)	(−2.34)	(−2.21)
	β_{BAB}	−0.00	−0.03	−0.03	0.01	−0.06	−0.01	−0.00	−0.05	−0.14	−0.18	−0.18
		(−0.02)	(−0.51)	(−0.36)	(0.19)	(−0.88)	(−0.24)	(−0.02)	(−0.63)	(−1.87)	(−1.72)	(−0.91)

Table A1: $\beta^{\mathbf{BEAR}}$-Sorted Portfolios Returns - continued

Panel B: Liquid Sample

Model	Value	β^{BEAR} 1	β^{BEAR} 2	β^{BEAR} 3	β^{BEAR} 4	β^{BEAR} 5	β^{BEAR} 6	β^{BEAR} 7	β^{BEAR} 8	β^{BEAR} 9	β^{BEAR} 10	β^{BEAR} 10 − 1
Excess Return	Excess Returns	0.90	0.79	0.69	0.67	0.56	0.35	0.46	0.37	0.35	−0.18	−1.08
		(2.60)	(2.67)	(2.39)	(2.24)	(1.54)	(0.82)	(1.14)	(0.73)	(0.71)	(−0.27)	(−2.35)
CAPM	α	0.34	0.25	0.15	0.17	0.03	−0.10	−0.02	−0.12	−0.12	−0.65	−0.98
		(2.04)	(1.86)	(1.29)	(1.13)	(0.24)	(−0.75)	(−0.27)	(−0.71)	(−0.72)	(−2.57)	(−2.99)
FF3	α	0.36	0.31	0.21	0.19	0.05	−0.10	−0.03	−0.15	−0.19	−0.79	−1.15
		(2.50)	(2.22)	(1.50)	(1.35)	(0.52)	(−0.79)	(−0.38)	(−0.88)	(−1.12)	(−3.16)	(−3.73)
FFC	α	0.38	0.33	0.20	0.19	0.06	−0.08	−0.03	−0.12	−0.16	−0.74	−1.11
		(2.46)	(2.27)	(1.45)	(1.31)	(0.59)	(−0.62)	(−0.30)	(−0.77)	(−0.95)	(−2.95)	(−3.43)
Q	α	0.30	0.24	0.13	0.12	0.08	−0.01	0.05	−0.04	−0.02	−0.46	−0.76
		(1.95)	(1.59)	(1.03)	(0.89)	(0.58)	(−0.07)	(0.53)	(−0.22)	(−0.12)	(−1.91)	(−2.63)
FF5	α	0.23	0.20	0.06	0.10	0.06	−0.06	0.07	0.01	0.04	−0.39	−0.62
		(1.41)	(1.49)	(0.55)	(0.83)	(0.51)	(−0.50)	(0.74)	(0.09)	(0.26)	(−1.80)	(−2.23)
	β_{MKT}	1.03	0.97	0.99	0.93	0.99	1.02	1.00	1.08	1.16	1.28	0.25
		(25.24)	(23.57)	(22.97)	(40.40)	(23.98)	(30.68)	(33.47)	(25.44)	(22.40)	(16.21)	(2.58)
	β_{SMB_5}	−0.03	−0.19	−0.14	−0.03	−0.04	−0.01	−0.03	0.05	0.22	0.30	0.33
		(−0.49)	(−2.77)	(−2.63)	(−0.45)	(−0.95)	(−0.12)	(−0.57)	(0.74)	(2.45)	(2.51)	(2.16)
	β_{HML}	0.10	0.05	−0.02	0.02	0.06	−0.11	−0.10	0.07	0.13	−0.02	−0.12
		(1.07)	(0.54)	(−0.24)	(0.38)	(0.82)	(−2.25)	(−1.77)	(0.69)	(1.15)	(−0.14)	(−0.58)
	β_{RMW}	0.12	0.06	0.21	0.14	0.08	0.06	−0.15	−0.21	−0.23	−0.63	−0.75
		(0.74)	(0.52)	(2.51)	(1.78)	(1.48)	(1.12)	(−1.64)	(−1.71)	(−1.41)	(−4.87)	(−2.83)
	β_{CMA}	0.35	0.34	0.30	0.17	−0.15	−0.21	−0.22	−0.37	−0.59	−0.68	−1.03
		(1.41)	(2.02)	(2.12)	(2.84)	(−1.06)	(−1.38)	(−1.73)	(−2.26)	(−3.67)	(−2.64)	(−2.30)
	β_{BAB}	−0.03	0.01	0.00	0.00	0.01	−0.09	−0.00	−0.09	−0.20	−0.21	−0.18
		(−0.26)	(0.21)	(0.06)	(0.01)	(0.14)	(−1.73)	(−0.02)	(−0.99)	(−2.48)	(−2.14)	(−1.03)

Panel C: Large Cap Sample

Model	Value	β^{BEAR} 1	β^{BEAR} 2	β^{BEAR} 3	β^{BEAR} 4	β^{BEAR} 5	β^{BEAR} 6	β^{BEAR} 7	β^{BEAR} 8	β^{BEAR} 9	β^{BEAR} 10	β^{BEAR} 10 − 1
Excess Return	Excess Returns	0.83	0.80	0.64	0.57	0.67	0.60	0.35	0.27	0.25	−0.07	−0.90
		(2.46)	(2.84)	(2.24)	(1.77)	(2.21)	(1.79)	(0.81)	(0.60)	(0.47)	(−0.12)	(−2.05)
CAPM	α	0.27	0.25	0.07	0.02	0.17	0.11	−0.16	−0.23	−0.20	−0.54	−0.81
		(2.03)	(2.19)	(0.52)	(0.12)	(1.35)	(1.27)	(−0.96)	(−1.80)	(−0.98)	(−2.21)	(−2.70)
FF3	α	0.31	0.32	0.13	0.08	0.19	0.11	−0.13	−0.25	−0.22	−0.64	−0.95
		(2.75)	(2.55)	(0.91)	(0.58)	(1.52)	(1.35)	(−0.90)	(−1.97)	(−1.09)	(−2.63)	(−3.43)
FFC	α	0.32	0.32	0.13	0.07	0.17	0.10	−0.13	−0.23	−0.22	−0.60	−0.92
		(2.66)	(2.49)	(0.85)	(0.54)	(1.39)	(1.23)	(−0.81)	(−1.87)	(−1.05)	(−2.51)	(−3.21)
Q	α	0.24	0.22	0.05	−0.01	0.10	0.10	−0.09	−0.12	−0.11	−0.33	−0.57
		(1.94)	(1.77)	(0.40)	(−0.07)	(0.88)	(1.23)	(−0.59)	(−0.87)	(−0.56)	(−1.46)	(−2.32)
FF5	α	0.18	0.20	0.02	−0.03	0.09	0.08	−0.09	−0.10	−0.03	−0.25	−0.43
		(1.29)	(1.67)	(0.17)	(−0.23)	(0.86)	(0.90)	(−0.57)	(−0.77)	(−0.18)	(−1.21)	(−1.77)
	β_{MKT}	1.02	0.96	0.94	0.97	0.94	0.96	1.04	1.00	1.12	1.24	0.21
		(26.47)	(23.01)	(46.65)	(24.50)	(39.19)	(33.58)	(22.02)	(27.72)	(25.61)	(16.18)	(2.22)
	β_{SMB_5}	−0.11	−0.19	−0.16	−0.16	−0.03	0.05	−0.10	−0.02	0.01	0.14	0.24
		(−1.42)	(−3.41)	(−4.34)	(−3.38)	(−0.60)	(1.01)	(−2.03)	(−0.35)	(0.12)	(1.13)	(1.39)
	β_{HML}	0.08	0.03	0.05	0.05	−0.03	−0.02	−0.11	−0.07	0.07	−0.05	−0.13
		(0.89)	(0.33)	(0.60)	(0.63)	(−0.55)	(−0.32)	(−2.13)	(−0.95)	(0.46)	(−0.28)	(−0.59)
	β_{RMW}	0.12	0.13	0.18	0.17	0.19	0.14	−0.01	−0.25	−0.21	−0.66	−0.78
		(0.75)	(1.63)	(2.66)	(2.02)	(2.88)	(3.02)	(−0.20)	(−2.27)	(−1.47)	(−4.52)	(−2.75)
	β_{CMA}	0.34	0.28	0.20	0.18	0.15	−0.04	−0.17	−0.25	−0.45	−0.64	−0.99
		(1.51)	(2.33)	(2.03)	(2.02)	(2.10)	(−0.66)	(−1.31)	(−1.45)	(−2.93)	(−2.86)	(−2.45)
	β_{BAB}	−0.01	0.04	0.08	0.04	0.00	−0.02	0.00	0.03	−0.18	−0.16	−0.15
		(−0.15)	(1.00)	(1.46)	(1.14)	(0.08)	(−0.93)	(0.00)	(0.38)	(−1.70)	(−1.66)	(−0.88)

Table A2: Fama and MacBeth Regression Analyses - R_{t+2}

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+2$ excess stock returns on month t β^{BEAR} and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table the dependent variable is the excess return in month $t+2$ instead of the excess return in month $t+1$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.54	−0.46	−0.48	−0.47	−0.61	−0.57	−0.48	−0.55	−0.40	−0.50	−0.45
	(−2.93)	(−3.13)	(−3.35)	(−3.15)	(−3.68)	(−3.94)	(−2.76)	(−3.89)	(−3.27)	(−4.20)	(−4.44)
β^{CAPM}		−0.12	−0.01	−0.13	−0.12	−0.10	−0.29	0.00	−0.11	−0.03	0.23
		(−0.48)	(−0.04)	(−0.51)	(−0.39)	(−0.40)	(−0.73)	(0.01)	(−0.46)	(−0.14)	(1.00)
β^{-}			−0.15							−0.08	−0.11
			(−0.88)							(−0.75)	(−0.99)
$\beta^{\Delta\text{VIX}}$				0.05						0.01	0.02
				(1.60)						(0.56)	(0.75)
β^{JUMP}					1.02						
					(1.60)						
β^{VOL}					0.33						
					(1.58)						
COSKEW						−0.00				−0.00	0.00
						(−0.26)				(−0.07)	(0.80)
$\beta^{\Delta\text{SKEW}}$							0.00				
							(0.24)				
β^{TAIL}								−0.00			
								(−0.69)			
IVOL									−0.12	−0.10	−0.19
									(−1.61)	(−1.33)	(−3.72)
SIZE											−0.11
											(−1.91)
BM											0.09
											(0.85)
MOM											0.00
											(0.21)
ILLIQ											0.00
											(4.84)
Y											1.49
											(6.09)
INV											−0.79
											(−3.99)
Intercept	0.88	0.96	1.00	0.97	0.88	1.02	1.04	0.89	1.18	1.19	1.63
	(2.06)	(2.42)	(2.59)	(2.45)	(1.92)	(2.61)	(2.29)	(1.91)	(3.29)	(3.42)	(3.23)
Adj. R^2	0.56%	2.12%	2.33%	2.19%	2.61%	2.20%	2.56%	2.57%	3.47%	3.76%	5.43%
n	4738	4738	4738	4737	5007	4325	5406	4252	4737	4325	3872

Table A2: Fama and MacBeth Regression Analyses - R_{t+2} - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.75	−0.58	−0.61	−0.58	−0.68	−0.63	−0.66	−0.60	−0.52	−0.57	−0.48
	(−2.94)	(−3.37)	(−3.43)	(−3.40)	(−3.65)	(−3.56)	(−3.71)	(−3.29)	(−3.27)	(−3.38)	(−3.15)
β^{CAPM}		0.15	0.40	0.15	0.16	0.18	0.10	0.30	0.30	0.41	0.29
		(0.37)	(0.99)	(0.39)	(0.34)	(0.47)	(0.18)	(0.65)	(0.91)	(1.14)	(0.88)
β^{-}			−0.31							−0.16	−0.18
			(−1.28)							(−0.72)	(−0.93)
$\beta^{\Delta\mathrm{VIX}}$				0.08						0.06	0.05
				(1.24)						(0.94)	(1.29)
β^{JUMP}					1.48						
					(1.41)						
β^{VOL}					−0.07						
					(−0.25)						
COSKEW						0.01				0.01	0.00
						(0.54)				(0.61)	(0.47)
$\beta^{\Delta\mathrm{SKEW}}$							−0.00				
							(−0.31)				
β^{TAIL}								−0.00			
								(−0.40)			
IVOL									−0.20	−0.17	−0.16
									(−2.52)	(−2.29)	(−2.91)
SIZE											−0.10
											(−1.50)
BM											0.05
											(0.63)
MOM											0.00
											(0.21)
ILLIQ											0.34
											(1.55)
Y											1.76
											(4.24)
INV											−0.48
											(−3.75)
Intercept	0.75	0.63	0.70	0.61	0.53	0.67	0.56	0.46	0.83	0.85	1.34
	(2.04)	(1.88)	(2.22)	(1.83)	(1.42)	(2.11)	(1.24)	(1.25)	(2.22)	(2.57)	(2.13)
Adj. R^2	1.34%	4.74%	5.23%	5.02%	5.94%	4.97%	5.78%	5.54%	5.73%	6.58%	9.16%
n	2029	2029	2029	2029	2095	1907	2220	1865	2029	1907	1841

Table A2: Fama and MacBeth Regression Analyses - R_{t+2} - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.88	−0.72	−0.72	−0.70	−0.82	−0.74	−0.78	−0.78	−0.63	−0.63	−0.54
	(−2.87)	(−3.13)	(−3.12)	(−3.17)	(−4.09)	(−3.09)	(−3.08)	(−3.22)	(−2.86)	(−2.84)	(−2.94)
β^{CAPM}		0.20	0.38	0.19	0.23	0.22	0.30	0.30	0.23	0.36	0.36
		(0.49)	(0.88)	(0.49)	(0.45)	(0.56)	(0.51)	(0.66)	(0.65)	(0.95)	(0.97)
β^{-}			−0.23							−0.19	−0.28
			(−1.13)							(−0.97)	(−1.32)
$\beta^{\Delta\text{VIX}}$				−0.01						−0.07	−0.06
				(−0.16)						(−1.17)	(−1.32)
β^{JUMP}					0.75						
					(0.64)						
β^{VOL}					−0.01						
					(−0.02)						
COSKEW						−0.00				−0.00	−0.00
						(−0.05)				(−0.03)	(−0.40)
$\beta^{\Delta\text{SKEW}}$							−0.01				
							(−0.75)				
β^{TAIL}								−0.00			
								(−0.40)			
IVOL									−0.10	−0.07	−0.08
									(−1.15)	(−0.87)	(−1.05)
SIZE											−0.13
											(−2.26)
BM											0.12
											(1.76)
MOM											0.00
											(0.60)
ILLIQ											0.01
											(0.06)
Y											1.39
											(2.59)
INV											−0.28
											(−1.85)
Intercept	0.73	0.56	0.62	0.55	0.40	0.57	0.33	0.37	0.68	0.69	1.68
	(2.09)	(1.68)	(2.00)	(1.69)	(1.09)	(1.84)	(0.72)	(1.03)	(1.82)	(2.02)	(2.72)
Adj. R^2	2.02%	6.85%	7.54%	7.39%	8.78%	7.11%	8.55%	7.85%	7.75%	8.96%	12.08%
n	1001	1001	1001	1001	1018	959	1067	943	1001	959	928

Table A3: Fama and MacBeth Regression Analyses - R_{t+3}

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+3$ excess stock returns on month t β^{BEAR} and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table the dependent variable is the excess return in month $t+3$ instead of the excess return in month $t+1$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.59	−0.52	−0.53	−0.51	−0.68	−0.63	−0.61	−0.66	−0.45	−0.55	−0.52
	(−3.22)	(−3.74)	(−3.93)	(−3.75)	(−4.28)	(−4.68)	(−3.79)	(−4.75)	(−4.04)	(−4.92)	(−4.99)
β^{CAPM}		−0.12	0.03	−0.11	−0.09	−0.09	−0.20	0.01	−0.15	−0.01	0.25
		(−0.46)	(0.14)	(−0.45)	(−0.30)	(−0.38)	(−0.51)	(0.04)	(−0.58)	(−0.06)	(1.02)
β^{-}			−0.18							−0.13	−0.17
			(−1.21)							(−1.09)	(−1.29)
$\beta^{\Delta\text{VIX}}$				0.01						−0.00	−0.01
				(0.37)						(−0.08)	(−0.22)
β^{JUMP}					0.72						
					(1.16)						
β^{VOL}					0.46						
					(2.61)						
COSKEW						−0.00				0.00	0.01
						(−0.39)				(0.30)	(1.05)
$\beta^{\Delta\text{SKEW}}$							0.00				
							(0.57)				
β^{TAIL}								−0.00			
								(−0.24)			
IVOL									−0.08	−0.06	−0.14
									(−1.01)	(−0.82)	(−2.58)
SIZE											−0.09
											(−1.58)
BM											0.05
											(0.47)
MOM											−0.00
											(−0.09)
ILLIQ											0.00
											(4.22)
Y											1.51
											(5.96)
INV											−0.77
											(−4.08)
Intercept	0.91	1.00	1.03	0.99	0.90	1.04	0.99	0.91	1.06	1.08	1.39
	(2.13)	(2.53)	(2.70)	(2.52)	(1.99)	(2.67)	(2.09)	(1.98)	(2.95)	(3.14)	(2.84)
Adj. R^2	0.54%	2.04%	2.24%	2.10%	2.52%	2.13%	2.50%	2.49%	3.38%	3.67%	5.23%
n	4697	4697	4697	4696	4961	4288	5353	4215	4696	4288	3841

Table A3: Fama and MacBeth Regression Analyses - R_{t+3} - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.73	−0.54	−0.57	−0.53	−0.69	−0.58	−0.69	−0.58	−0.45	−0.51	−0.43
	(−2.70)	(−3.51)	(−3.45)	(−3.45)	(−3.72)	(−3.70)	(−4.29)	(−3.32)	(−3.22)	(−3.15)	(−3.02)
β^{CAPM}		0.14	0.40	0.13	0.12	0.18	0.16	0.27	0.19	0.35	0.26
		(0.36)	(1.03)	(0.33)	(0.25)	(0.46)	(0.29)	(0.60)	(0.57)	(1.01)	(0.82)
β^{-}			−0.31							−0.22	−0.23
			(−1.29)							(−0.99)	(−1.17)
$\beta^{\Delta\text{VIX}}$				−0.01						−0.00	−0.01
				(−0.08)						(−0.01)	(−0.14)
β^{JUMP}					1.11						
					(1.09)						
β^{VOL}					0.38						
					(1.33)						
COSKEW						0.01				0.01	0.01
						(0.79)				(0.89)	(0.70)
$\beta^{\Delta\text{SKEW}}$							−0.01				
							(−0.68)				
β^{TAIL}								−0.00			
								(−0.40)			
IVOL									−0.11	−0.07	−0.10
									(−1.32)	(−0.99)	(−1.56)
SIZE											−0.09
											(−1.41)
BM											0.02
											(0.27)
MOM											0.00
											(0.31)
ILLIQ											0.41
											(1.57)
Y											1.56
											(3.69)
INV											−0.49
											(−3.50)
Intercept	0.77	0.66	0.73	0.68	0.60	0.68	0.50	0.51	0.77	0.81	1.24
	(2.11)	(2.00)	(2.33)	(2.08)	(1.62)	(2.20)	(1.11)	(1.43)	(2.12)	(2.52)	(2.10)
Adj. R^2	1.32%	4.59%	5.03%	4.85%	5.73%	4.79%	5.53%	5.33%	5.53%	6.34%	8.82%
n	2019	2019	2019	2019	2084	1897	2206	1855	2019	1897	1831

Table A3: Fama and MacBeth Regression Analyses - R_{t+3} - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.74	−0.59	−0.64	−0.57	−0.73	−0.61	−0.77	−0.68	−0.53	−0.56	−0.48
	(−2.52)	(−3.51)	(−3.50)	(−3.41)	(−4.60)	(−3.51)	(−4.15)	(−4.04)	(−3.22)	(−3.10)	(−3.20)
β^{CAPM}		0.22	0.46	0.19	0.18	0.24	0.33	0.32	0.18	0.35	0.37
		(0.54)	(1.04)	(0.47)	(0.36)	(0.61)	(0.57)	(0.67)	(0.50)	(0.89)	(1.02)
β^{-}			−0.28							−0.23	−0.29
			(−1.18)							(−1.04)	(−1.33)
$\beta^{\Delta\mathrm{VIX}}$				−0.05						−0.05	−0.07
				(−0.70)						(−0.73)	(−1.15)
β^{JUMP}					0.36						
					(0.25)						
β^{VOL}					0.32						
					(1.05)						
COSKEW						0.01				0.01	0.00
						(0.50)				(0.61)	(0.40)
$\beta^{\Delta\mathrm{SKEW}}$							−0.00				
							(−0.22)				
β^{TAIL}								−0.00			
								(−0.40)			
IVOL									0.02	0.03	−0.01
									(0.21)	(0.39)	(−0.17)
SIZE											−0.14
											(−2.52)
BM											0.05
											(0.87)
MOM											0.00
											(0.64)
ILLIQ											0.04
											(0.36)
Y											1.11
											(2.15)
INV											−0.31
											(−2.04)
Intercept	0.76	0.56	0.62	0.59	0.48	0.57	0.31	0.38	0.55	0.59	1.67
	(2.17)	(1.73)	(2.01)	(1.84)	(1.30)	(1.83)	(0.68)	(1.08)	(1.58)	(1.81)	(2.91)
Adj. R^2	2.00%	6.71%	7.34%	7.17%	8.54%	6.96%	8.14%	7.75%	7.57%	8.69%	11.61%
n	996	996	996	996	1012	954	1061	938	996	954	924

Table A4: Fama and MacBeth Regression Analyses - R_{t+4}

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+4$ excess stock returns on month t β^{BEAR} and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table the dependent variable is the excess return in month $t+4$ instead of the excess return in month $t+1$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.62	−0.53	−0.54	−0.53	−0.62	−0.62	−0.57	−0.63	−0.46	−0.55	−0.47
	(−3.26)	(−3.64)	(−3.76)	(−3.66)	(−3.48)	(−4.34)	(−3.40)	(−3.79)	(−3.95)	(−4.62)	(−4.36)
β^{CAPM}		−0.11	0.00	−0.12	−0.08	−0.10	−0.16	−0.03	−0.12	−0.00	0.23
		(−0.44)	(0.02)	(−0.45)	(−0.27)	(−0.39)	(−0.39)	(−0.10)	(−0.46)	(−0.00)	(0.90)
β^{-}			−0.15							−0.12	−0.15
			(−0.88)							(−1.00)	(−1.13)
$\beta^{\Delta\mathrm{VIX}}$				0.07						0.09	0.08
				(1.96)						(2.37)	(2.22)
β^{JUMP}					0.65						
					(1.02)						
β^{VOL}					0.30						
					(2.20)						
COSKEW						−0.01				−0.00	0.00
						(−0.96)				(−0.32)	(0.52)
$\beta^{\Delta\mathrm{SKEW}}$							−0.00				
							(−0.69)				
β^{TAIL}								−0.00			
								(−0.03)			
IVOL									−0.05	−0.03	−0.09
									(−0.61)	(−0.42)	(−1.71)
SIZE											−0.09
											(−1.48)
BM											0.08
											(0.75)
MOM											0.00
											(0.16)
ILLIQ											0.00
											(3.38)
Y											1.66
											(6.85)
INV											−0.70
											(−4.18)
Intercept	0.91	1.00	1.02	1.00	0.92	1.04	1.01	0.95	0.98	1.02	1.34
	(2.13)	(2.51)	(2.65)	(2.52)	(2.02)	(2.64)	(2.12)	(2.04)	(2.68)	(2.86)	(2.46)
Adj. R^2	0.51%	1.98%	2.20%	2.06%	2.44%	2.08%	2.40%	2.41%	3.32%	3.62%	5.08%
n	4656	4656	4656	4655	4916	4252	5301	4178	4655	4251	3811

Table A4: Fama and MacBeth Regression Analyses - R_{t+4} - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.73	−0.54	−0.55	−0.53	−0.62	−0.55	−0.63	−0.54	−0.48	−0.50	−0.39
	(−2.66)	(−3.16)	(−3.06)	(−3.18)	(−3.15)	(−3.23)	(−3.64)	(−2.73)	(−3.07)	(−2.95)	(−2.66)
β^{CAPM}		0.11	0.34	0.12	0.09	0.14	0.18	0.20	0.12	0.30	0.21
		(0.28)	(0.89)	(0.32)	(0.20)	(0.37)	(0.33)	(0.45)	(0.38)	(0.93)	(0.68)
β^{-}			−0.26							−0.21	−0.18
			(−1.09)							(−1.00)	(−0.92)
$\beta^{\Delta\text{VIX}}$				0.07						0.10	0.11
				(1.27)						(1.94)	(2.14)
β^{JUMP}					1.06						
					(1.04)						
β^{VOL}					0.07						
					(0.33)						
COSKEW						0.00				0.00	0.01
						(0.32)				(0.51)	(0.66)
$\beta^{\Delta\text{SKEW}}$							−0.00				
							(−0.02)				
β^{TAIL}								−0.00			
								(−0.13)			
IVOL									−0.08	−0.05	−0.06
									(−1.07)	(−0.68)	(−1.13)
SIZE											−0.07
											(−1.13)
BM											0.04
											(0.49)
MOM											0.00
											(0.47)
ILLIQ											0.45
											(1.55)
Y											1.75
											(4.06)
INV											−0.54
											(−4.43)
Intercept	0.79	0.70	0.75	0.69	0.66	0.72	0.56	0.60	0.78	0.77	1.06
	(2.10)	(2.21)	(2.47)	(2.18)	(1.84)	(2.43)	(1.26)	(1.71)	(2.26)	(2.38)	(1.71)
Adj. R^2	1.30%	4.50%	4.95%	4.78%	5.57%	4.69%	5.40%	5.21%	5.58%	6.34%	8.65%
n	2008	2008	2008	2008	2072	1887	2193	1845	2008	1887	1822

Table A4: Fama and MacBeth Regression Analyses - R_{t+4} - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.65	−0.48	−0.50	−0.46	−0.61	−0.47	−0.66	−0.58	−0.44	−0.42	−0.34
	(−2.40)	(−3.06)	(−2.93)	(−3.00)	(−3.56)	(−2.82)	(−3.68)	(−3.56)	(−2.79)	(−2.37)	(−2.29)
β^{CAPM}		0.13	0.28	0.14	0.14	0.16	0.31	0.20	0.07	0.27	0.24
		(0.30)	(0.65)	(0.35)	(0.27)	(0.40)	(0.52)	(0.41)	(0.19)	(0.76)	(0.70)
β^{-}			−0.16							−0.17	−0.18
			(−0.68)							(−0.77)	(−0.84)
$\beta^{\Delta\text{VIX}}$				0.04						0.06	0.07
				(0.68)						(0.91)	(1.04)
β^{JUMP}					0.62						
					(0.42)						
β^{VOL}					−0.11						
					(−0.31)						
COSKEW						−0.00				−0.00	−0.00
						(−0.14)				(−0.17)	(−0.01)
$\beta^{\Delta\text{SKEW}}$							−0.00				
							(−0.05)				
β^{TAIL}								−0.00			
								(−0.09)			
IVOL									0.05	0.05	0.02
									(0.65)	(0.70)	(0.28)
SIZE											−0.11
											(−1.85)
BM											0.06
											(0.88)
MOM											0.00
											(0.70)
ILLIQ											0.07
											(0.69)
Y											1.01
											(1.94)
INV											−0.31
											(−2.38)
Intercept	0.75	0.66	0.68	0.64	0.54	0.64	0.41	0.52	0.61	0.59	1.44
	(2.10)	(2.09)	(2.22)	(2.06)	(1.51)	(2.13)	(0.88)	(1.47)	(1.79)	(1.80)	(2.32)
Adj. R^2	2.00%	6.60%	7.23%	7.17%	8.36%	6.88%	8.05%	7.72%	7.45%	8.65%	11.37%
n	991	991	991	991	1007	950	1055	934	991	950	920

Table A5: Fama and MacBeth Regression Analyses - R_{t+5}

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+5$ excess stock returns on month t β^{BEAR} and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table the dependent variable is the excess return in month $t+5$ instead of the excess return in month $t+1$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.58	−0.50	−0.52	−0.50	−0.59	−0.58	−0.53	−0.58	−0.44	−0.51	−0.42
	(−3.04)	(−3.16)	(−3.29)	(−3.14)	(−2.91)	(−3.74)	(−2.96)	(−3.17)	(−3.49)	(−4.22)	(−3.87)
β^{CAPM}		−0.11	−0.00	−0.11	−0.06	−0.09	−0.14	−0.03	−0.10	0.02	0.22
		(−0.40)	(−0.02)	(−0.43)	(−0.20)	(−0.37)	(−0.33)	(−0.10)	(−0.41)	(0.09)	(0.83)
β^{-}			−0.14							−0.13	−0.11
			(−0.83)							(−1.01)	(−0.79)
$\beta^{\Delta\text{VIX}}$				−0.01						0.01	0.01
				(−0.53)						(0.52)	(0.36)
β^{JUMP}					0.38						
					(0.62)						
β^{VOL}					0.32						
					(2.34)						
COSKEW						−0.01				−0.00	0.00
						(−0.84)				(−0.40)	(0.44)
$\beta^{\Delta\text{SKEW}}$							−0.01				
							(−0.90)				
β^{TAIL}								0.00			
								(0.12)			
IVOL									−0.04	−0.03	−0.11
									(−0.55)	(−0.43)	(−1.99)
SIZE											−0.10
											(−1.57)
BM											0.04
											(0.39)
MOM											−0.00
											(−0.15)
ILLIQ											0.00
											(3.60)
Y											1.69
											(6.46)
INV											−0.70
											(−3.93)
Intercept	0.94	1.01	1.04	1.01	0.92	1.06	1.03	0.93	0.99	1.03	1.39
	(2.16)	(2.50)	(2.63)	(2.50)	(1.98)	(2.62)	(2.16)	(1.96)	(2.72)	(2.92)	(2.63)
Adj. R^2	0.47%	1.95%	2.15%	2.03%	2.38%	2.03%	2.36%	2.33%	3.21%	3.48%	4.88%
n	4621	4621	4621	4620	4871	4221	5249	4142	4620	4220	3784

Table A5: Fama and MacBeth Regression Analyses - R_{t+5} - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	-0.64	-0.45	-0.46	-0.45	-0.50	-0.46	-0.53	-0.40	-0.39	-0.40	-0.34
	(-2.45)	(-2.71)	(-2.78)	(-2.79)	(-2.36)	(-2.89)	(-2.94)	(-2.14)	(-2.64)	(-2.71)	(-2.61)
β^{CAPM}		0.08	0.20	0.07	0.07	0.12	0.12	0.16	0.12	0.18	0.16
		(0.21)	(0.53)	(0.18)	(0.15)	(0.32)	(0.21)	(0.35)	(0.38)	(0.55)	(0.48)
β^{-}			-0.14							-0.06	-0.06
			(-0.56)							(-0.28)	(-0.27)
$\beta^{\Delta\text{VIX}}$				0.00						0.03	0.03
				(0.01)						(0.48)	(0.57)
β^{JUMP}					0.61						
					(0.67)						
β^{VOL}					-0.13						
					(-0.57)						
COSKEW						0.00				0.00	0.01
						(0.26)				(0.37)	(0.73)
$\beta^{\Delta\text{SKEW}}$							-0.00				
							(-0.30)				
β^{TAIL}								0.00			
								(0.23)			
IVOL									-0.12	-0.11	-0.13
									(-1.41)	(-1.23)	(-1.85)
SIZE											-0.09
											(-1.39)
BM											-0.01
											(-0.06)
MOM											0.00
											(0.40)
ILLIQ											0.39
											(1.46)
Y											1.68
											(3.67)
INV											-0.58
											(-4.10)
Intercept	0.80	0.72	0.77	0.72	0.67	0.73	0.62	0.60	0.84	0.82	1.21
	(2.10)	(2.22)	(2.42)	(2.21)	(1.82)	(2.39)	(1.35)	(1.67)	(2.42)	(2.61)	(2.03)
Adj. R^2	1.14%	4.33%	4.75%	4.61%	5.37%	4.50%	5.21%	5.06%	5.38%	6.07%	8.28%
n	1999	1999	1999	1999	2061	1879	2179	1836	1999	1879	1814

Table A5: Fama and MacBeth Regression Analyses - R_{t+5} - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.64	−0.49	−0.52	−0.49	−0.61	−0.47	−0.64	−0.50	−0.46	−0.45	−0.39
	(−2.23)	(−2.81)	(−2.74)	(−2.91)	(−3.10)	(−2.83)	(−3.22)	(−2.75)	(−2.78)	(−2.64)	(−2.81)
β^{CAPM}		0.16	0.24	0.13	0.18	0.19	0.36	0.21	0.12	0.19	0.19
		(0.39)	(0.58)	(0.31)	(0.37)	(0.48)	(0.62)	(0.46)	(0.36)	(0.53)	(0.52)
β^{-}			−0.10							−0.07	−0.07
			(−0.39)							(−0.28)	(−0.30)
$\beta^{\Delta\text{VIX}}$				−0.00						0.02	0.03
				(−0.05)						(0.27)	(0.46)
β^{JUMP}					0.64						
					(0.47)						
β^{VOL}					−0.14						
					(−0.36)						
COSKEW						0.00				0.00	0.00
						(0.08)				(0.02)	(0.32)
$\beta^{\Delta\text{SKEW}}$							−0.00				
							(−0.07)				
β^{TAIL}								0.00			
								(0.30)			
IVOL									−0.03	−0.03	−0.07
									(−0.29)	(−0.39)	(−0.92)
SIZE											−0.13
											(−2.24)
BM											0.01
											(0.15)
MOM											0.00
											(0.62)
ILLIQ											0.07
											(0.68)
Y											1.15
											(1.95)
INV											−0.36
											(−2.35)
Intercept	0.73	0.60	0.64	0.62	0.49	0.60	0.36	0.45	0.64	0.67	1.60
	(2.03)	(1.88)	(2.04)	(1.96)	(1.36)	(1.92)	(0.77)	(1.26)	(1.93)	(2.05)	(2.70)
Adj. R^2	1.81%	6.33%	6.87%	6.86%	7.98%	6.61%	7.70%	7.50%	7.21%	8.35%	11.02%
n	987	987	987	987	1003	946	1049	930	987	946	916

Table A6: Fama and MacBeth Regression Analyses - R_{t+6}

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+6$ excess stock returns on month t β^{BEAR} and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table the dependent variable is the excess return in month $t+6$ instead of the excess return in month $t+1$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.58	−0.51	−0.52	−0.51	−0.61	−0.56	−0.66	−0.56	−0.45	−0.50	−0.41
	(−2.81)	(−2.96)	(−3.17)	(−3.01)	(−2.72)	(−3.55)	(−3.16)	(−2.88)	(−3.30)	(−4.26)	(−4.23)
β^{CAPM}		−0.14	−0.03	−0.15	−0.10	−0.13	−0.25	−0.05	−0.15	−0.05	0.12
		(−0.54)	(−0.14)	(−0.56)	(−0.31)	(−0.51)	(−0.62)	(−0.16)	(−0.60)	(−0.22)	(0.45)
β^{-}			−0.14							−0.10	−0.04
			(−0.87)							(−0.81)	(−0.32)
$\beta^{\Delta\text{VIX}}$				0.03						0.02	0.04
				(0.61)						(0.45)	(0.95)
β^{JUMP}					0.72						
					(1.14)						
β^{VOL}					0.47						
					(3.21)						
COSKEW						−0.00				0.00	0.01
						(−0.06)				(0.30)	(1.09)
$\beta^{\Delta\text{SKEW}}$							−0.01				
							(−2.55)				
β^{TAIL}								0.00			
								(0.11)			
IVOL									−0.02	−0.01	−0.07
									(−0.28)	(−0.14)	(−1.18)
SIZE											−0.09
											(−1.43)
BM											0.05
											(0.49)
MOM											−0.00
											(−0.56)
ILLIQ											0.00
											(3.37)
Y											1.65
											(6.21)
INV											−0.56
											(−3.36)
Intercept	0.90	1.00	1.02	1.00	0.92	1.05	0.97	0.90	0.90	0.94	1.20
	(2.09)	(2.46)	(2.59)	(2.50)	(1.99)	(2.59)	(2.00)	(1.92)	(2.34)	(2.51)	(2.22)
Adj. R^2	0.47%	1.91%	2.09%	1.99%	2.30%	1.98%	2.29%	2.25%	3.15%	3.41%	4.76%
n	4586	4586	4586	4584	4826	4190	5198	4106	4584	4188	3758

Table A6: Fama and MacBeth Regression Analyses - R_{t+6} - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.67	−0.47	−0.48	−0.47	−0.55	−0.45	−0.69	−0.38	−0.43	−0.43	−0.34
	(−2.42)	(−2.66)	(−2.87)	(−2.87)	(−2.23)	(−2.74)	(−2.84)	(−1.87)	(−2.67)	(−3.06)	(−2.87)
β^{CAPM}		0.03	0.17	0.03	0.03	0.07	−0.01	0.13	0.00	0.14	0.12
		(0.07)	(0.44)	(0.08)	(0.07)	(0.18)	(−0.02)	(0.28)	(0.01)	(0.42)	(0.37)
β^{-}			−0.18							−0.13	−0.07
			(−0.68)							(−0.61)	(−0.34)
$\beta^{\Delta\text{VIX}}$				0.14						0.13	0.16
				(1.96)						(1.77)	(2.46)
β^{JUMP}					1.07						
					(0.83)						
β^{VOL}					0.02						
					(0.06)						
COSKEW						0.01				0.01	0.01
						(0.52)				(0.67)	(0.87)
$\beta^{\Delta\text{SKEW}}$							−0.01				
							(−0.55)				
β^{TAIL}								0.00			
								(0.02)			
IVOL									−0.07	−0.05	−0.07
									(−0.90)	(−0.63)	(−1.14)
SIZE											−0.07
											(−1.00)
BM											0.01
											(0.11)
MOM											−0.00
											(−0.06)
ILLIQ											0.45
											(1.68)
Y											1.66
											(3.73)
INV											−0.55
											(−4.26)
Intercept	0.76	0.74	0.81	0.73	0.68	0.75	0.57	0.60	0.79	0.79	0.99
	(2.04)	(2.23)	(2.52)	(2.26)	(1.84)	(2.36)	(1.26)	(1.62)	(2.16)	(2.33)	(1.62)
Adj. R^2	1.08%	4.23%	4.63%	4.51%	5.19%	4.37%	5.12%	4.86%	5.29%	5.96%	8.07%
n	1989	1989	1989	1989	2049	1870	2166	1826	1989	1870	1806

Table A6: Fama and MacBeth Regression Analyses - R_{t+6} - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.73	−0.56	−0.55	−0.53	−0.73	−0.48	−0.73	−0.59	−0.50	−0.43	−0.40
	(−2.23)	(−2.77)	(−2.63)	(−3.01)	(−2.70)	(−2.47)	(−2.77)	(−2.48)	(−2.62)	(−2.49)	(−2.73)
β^{CAPM}		0.12	0.20	0.11	0.13	0.15	0.24	0.17	0.03	0.15	0.14
		(0.30)	(0.46)	(0.29)	(0.27)	(0.39)	(0.42)	(0.38)	(0.08)	(0.40)	(0.39)
β^{-}			−0.11							−0.12	−0.10
			(−0.38)							(−0.47)	(−0.43)
$\beta^{\Delta\text{VIX}}$				0.19						0.18	0.21
				(1.53)						(1.42)	(1.80)
β^{JUMP}					1.22						
					(0.75)						
β^{VOL}					0.05						
					(0.12)						
COSKEW						0.01				0.00	0.00
						(0.55)				(0.43)	(0.48)
$\beta^{\Delta\text{SKEW}}$							−0.00				
							(−0.12)				
β^{TAIL}								0.00			
								(0.12)			
IVOL									0.01	0.02	−0.01
									(0.17)	(0.30)	(−0.11)
SIZE											−0.13
											(−2.35)
BM											0.01
											(0.19)
MOM											0.00
											(0.24)
ILLIQ											0.08
											(0.75)
Y											1.11
											(2.05)
INV											−0.40
											(−2.53)
Intercept	0.71	0.61	0.66	0.62	0.51	0.61	0.31	0.47	0.59	0.60	1.58
	(2.00)	(1.88)	(2.10)	(1.96)	(1.39)	(1.94)	(0.67)	(1.28)	(1.67)	(1.81)	(2.75)
Adj. R^2	1.74%	6.16%	6.68%	6.66%	7.70%	6.42%	7.57%	7.17%	7.03%	8.11%	10.68%
n	983	983	983	983	998	942	1044	926	983	942	912

Table A7: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\sigma=20\%}$

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta^{\mathbf{BEAR}}_{\sigma=20\%}$ and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table we use $\beta^{\mathbf{BEAR}}_{\sigma=20\%}$ as the measure of bear market risk exposure instead of $\beta^{\mathbf{BEAR}}$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\mathrm{BEAR}}_{\sigma=20\%}$	−0.40	−0.31	−0.33	−0.32	−0.35	−0.38	−0.26	−0.34	−0.28	−0.35	−0.33
	(−2.28)	(−2.29)	(−2.50)	(−2.39)	(−2.31)	(−2.93)	(−1.45)	(−2.61)	(−2.52)	(−3.25)	(−3.07)
β^{CAPM}		−0.14	−0.09	−0.15	−0.08	−0.13	−0.23	0.02	−0.13	−0.11	0.23
		(−0.54)	(−0.37)	(−0.55)	(−0.25)	(−0.51)	(−0.56)	(0.08)	(−0.52)	(−0.47)	(0.95)
β^{-}			−0.08							−0.02	−0.04
			(−0.44)							(−0.18)	(−0.41)
$\beta^{\Delta\mathrm{VIX}}$				−0.01						−0.03	−0.04
				(−0.28)						(−1.04)	(−1.10)
β^{JUMP}					0.47						
					(0.77)						
β^{VOL}					0.32						
					(1.43)						
COSKEW						−0.01				−0.01	−0.00
						(−1.06)				(−1.21)	(−0.39)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−2.15)				
β^{TAIL}								−0.00			
								(−0.47)			
IVOL									−0.14	−0.12	−0.24
									(−1.98)	(−1.75)	(−4.94)
SIZE											−0.15
											(−2.57)
BM											0.20
											(1.82)
MOM											0.00
											(0.70)
ILLIQ											0.00
											(4.97)
Y											1.35
											(5.58)
INV											−0.74
											(−3.55)
Intercept	0.85	0.97	0.98	0.97	0.88	1.02	1.03	0.86	1.25	1.25	2.03
	(1.98)	(2.43)	(2.52)	(2.44)	(1.87)	(2.60)	(2.23)	(1.82)	(3.55)	(3.59)	(3.87)
Adj. R^2	0.59%	2.22%	2.45%	2.35%	2.71%	2.32%	2.68%	2.73%	3.68%	4.03%	5.82%
n	4778	4778	4778	4778	5052	4363	5458	4290	4778	4362	3903

Table A7: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\sigma=20\%}$ - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{\sigma=20\%}$	-0.68	-0.50	-0.50	-0.49	-0.46	-0.55	-0.50	-0.50	-0.44	-0.46	-0.38
	(-2.91)	(-3.20)	(-3.26)	(-3.31)	(-3.44)	(-3.20)	(-3.04)	(-2.86)	(-3.04)	(-3.02)	(-2.73)
β^{CAPM}		0.07	0.19	0.09	0.20	0.11	0.09	0.26	0.17	0.22	0.12
		(0.17)	(0.47)	(0.22)	(0.43)	(0.28)	(0.15)	(0.56)	(0.48)	(0.62)	(0.37)
β^{-}			-0.16							-0.06	-0.12
			(-0.74)							(-0.34)	(-0.74)
$\beta^{\Delta\text{VIX}}$				-0.10						-0.13	-0.12
				(-1.31)						(-1.96)	(-1.84)
β^{JUMP}					0.11						
					(0.10)						
β^{VOL}					0.15						
					(0.59)						
COSKEW						-0.00				-0.00	-0.00
						(-0.41)				(-0.13)	(-0.42)
$\beta^{\Delta\text{SKEW}}$							-0.01				
							(-0.69)				
β^{TAIL}								-0.00			
								(-0.37)			
IVOL									-0.16	-0.14	-0.15
									(-2.13)	(-1.90)	(-2.50)
SIZE											-0.13
											(-2.12)
BM											0.12
											(1.26)
MOM											0.00
											(0.55)
ILLIQ											0.29
											(1.45)
Y											1.77
											(4.07)
INV											-0.38
											(-2.51)
Intercept	0.73	0.70	0.75	0.69	0.52	0.72	0.63	0.51	0.86	0.87	1.73
	(1.95)	(2.09)	(2.34)	(2.11)	(1.38)	(2.24)	(1.42)	(1.39)	(2.32)	(2.57)	(2.76)
Adj. R^2	1.37%	4.92%	5.40%	5.28%	6.12%	5.17%	5.99%	5.82%	5.93%	6.80%	9.57%
n	2040	2040	2040	2040	2107	1917	2234	1875	2040	1917	1850

Table A7: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\sigma=20\%}$ - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{\sigma=20\%}$	−0.74	−0.58	−0.59	−0.57	−0.58	−0.62	−0.82	−0.58	−0.53	−0.55	−0.46
	(−2.62)	(−2.75)	(−2.89)	(−2.83)	(−3.36)	(−2.62)	(−2.93)	(−2.38)	(−2.49)	(−2.46)	(−2.50)
β^{CAPM}		0.10	0.32	0.12	0.26	0.12	0.28	0.24	0.16	0.30	0.35
		(0.23)	(0.76)	(0.30)	(0.54)	(0.29)	(0.47)	(0.51)	(0.42)	(0.78)	(0.93)
β^{-}			−0.26							−0.17	−0.35
			(−1.17)							(−0.83)	(−1.63)
$\beta^{\Delta\text{VIX}}$				−0.07						−0.10	−0.10
				(−0.67)						(−1.05)	(−0.99)
β^{JUMP}					−0.34						
					(−0.19)						
β^{VOL}					0.30						
					(0.90)						
COSKEW						−0.01				−0.01	−0.01
						(−1.02)				(−0.93)	(−1.74)
$\beta^{\Delta\text{SKEW}}$							−0.00				
							(−0.10)				
β^{TAIL}								−0.00			
								(−0.22)			
IVOL									−0.09	−0.05	−0.08
									(−1.16)	(−0.77)	(−1.29)
SIZE											−0.13
											(−2.17)
BM											0.16
											(2.16)
MOM											0.00
											(0.98)
ILLIQ											−0.01
											(−0.14)
Y											1.55
											(2.79)
INV											−0.18
											(−1.12)
Intercept	0.67	0.63	0.67	0.61	0.39	0.64	0.38	0.43	0.73	0.71	1.70
	(1.88)	(1.96)	(2.18)	(1.91)	(1.11)	(2.07)	(0.85)	(1.26)	(2.06)	(2.09)	(2.92)
Adj. R^2	2.09%	7.11%	7.79%	7.62%	8.98%	7.34%	8.86%	8.28%	7.99%	9.13%	12.44%
n	1005	1005	1005	1005	1023	963	1072	947	1005	963	932

Table A8: Fama and MacBeth Regression Analyses - $\beta_{1\sigma}^{\mathbf{BEAR}}$

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta_{1\sigma}^{\mathbf{BEAR}}$ and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table we use $\beta_{1\sigma}^{\mathbf{BEAR}}$ as the measure of bear market risk exposure instead of $\beta^{\mathbf{BEAR}}$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta_{1\sigma}^{\mathrm{BEAR}}$	−0.46	−0.37	−0.37	−0.38	−0.44	−0.41	−0.37	−0.41	−0.32	−0.35	−0.35
	(−2.59)	(−2.54)	(−2.59)	(−2.65)	(−2.84)	(−2.77)	(−1.87)	(−2.55)	(−2.75)	(−3.15)	(−3.57)
β^{CAPM}		−0.14	−0.10	−0.14	−0.08	−0.13	−0.21	0.02	−0.13	−0.12	0.23
		(−0.53)	(−0.39)	(−0.55)	(−0.25)	(−0.51)	(−0.51)	(0.08)	(−0.52)	(−0.50)	(0.92)
β^{-}			−0.07							−0.01	−0.04
			(−0.40)							(−0.12)	(−0.41)
$\beta^{\Delta\mathrm{VIX}}$				−0.01						−0.03	−0.04
				(−0.32)						(−1.05)	(−1.11)
β^{JUMP}					0.49						
					(0.80)						
β^{VOL}					0.33						
					(1.52)						
COSKEW						−0.01				−0.01	−0.00
						(−1.15)				(−1.26)	(−0.36)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−2.10)				
β^{TAIL}								−0.00			
								(−0.43)			
IVOL									−0.14	−0.12	−0.24
									(−1.95)	(−1.73)	(−4.93)
SIZE											−0.15
											(−2.63)
BM											0.20
											(1.82)
MOM											0.00
											(0.69)
ILLIQ											0.00
											(4.98)
Y											1.35
											(5.63)
INV											−0.73
											(−3.50)
Intercept	0.87	0.98	1.00	0.99	0.90	1.04	1.04	0.88	1.26	1.26	2.04
	(2.06)	(2.49)	(2.58)	(2.50)	(1.93)	(2.66)	(2.25)	(1.86)	(3.57)	(3.60)	(3.91)
Adj. R^2	0.74%	2.31%	2.53%	2.44%	2.81%	2.42%	2.81%	2.82%	3.71%	4.06%	5.83%
n	4780	4780	4780	4779	5054	4363	5460	4290	4779	4362	3903

Table A8: Fama and MacBeth Regression Analyses - $\beta_{1\sigma}^{\mathbf{BEAR}}$ - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta_{1\sigma}^{\mathrm{BEAR}}$	−0.60	−0.46	−0.44	−0.47	−0.45	−0.46	−0.51	−0.44	−0.40	−0.38	−0.35
	(−2.77)	(−3.07)	(−3.11)	(−3.18)	(−2.99)	(−3.06)	(−2.67)	(−2.70)	(−2.98)	(−2.94)	(−3.12)
β^{CAPM}		0.08	0.16	0.10	0.22	0.11	0.13	0.26	0.17	0.18	0.10
		(0.21)	(0.41)	(0.26)	(0.47)	(0.28)	(0.22)	(0.56)	(0.46)	(0.51)	(0.32)
β^{-}			−0.12							−0.03	−0.10
			(−0.58)							(−0.19)	(−0.65)
$\beta^{\Delta\mathrm{VIX}}$				−0.10						−0.13	−0.12
				(−1.35)						(−2.02)	(−1.85)
β^{JUMP}					−0.05						
					(−0.05)						
β^{VOL}					0.11						
					(0.41)						
COSKEW						−0.00				−0.00	−0.00
						(−0.49)				(−0.18)	(−0.41)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−0.57)				
β^{TAIL}								−0.00			
								(−0.31)			
IVOL									−0.15	−0.13	−0.14
									(−2.09)	(−1.88)	(−2.48)
SIZE											−0.14
											(−2.21)
BM											0.11
											(1.24)
MOM											0.00
											(0.55)
ILLIQ											0.27
											(1.41)
Y											1.77
											(4.05)
INV											−0.37
											(−2.45)
Intercept	0.75	0.71	0.76	0.71	0.54	0.74	0.64	0.53	0.87	0.88	1.76
	(2.05)	(2.12)	(2.37)	(2.14)	(1.42)	(2.31)	(1.40)	(1.44)	(2.35)	(2.62)	(2.80)
Adj. R^2	1.63%	5.00%	5.47%	5.37%	6.23%	5.26%	6.12%	5.91%	5.93%	6.82%	9.56%
n	2040	2040	2040	2040	2108	1917	2234	1875	2040	1917	1850

Table A8: Fama and MacBeth Regression Analyses - $\beta_{1\sigma}^{\mathbf{BEAR}}$ - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta_{1\sigma}^{\mathrm{BEAR}}$	−0.60	−0.47	−0.45	−0.48	−0.48	−0.47	−0.68	−0.45	−0.41	−0.39	−0.38
	(−2.58)	(−2.79)	(−2.85)	(−2.92)	(−3.13)	(−2.65)	(−3.49)	(−2.53)	(−2.60)	(−2.47)	(−2.75)
β^{CAPM}		0.11	0.27	0.14	0.27	0.12	0.33	0.24	0.15	0.24	0.31
		(0.27)	(0.64)	(0.34)	(0.57)	(0.29)	(0.55)	(0.51)	(0.40)	(0.62)	(0.82)
β^{-}			−0.20							−0.13	−0.32
			(−0.91)							(−0.62)	(−1.44)
$\beta^{\Delta\mathrm{VIX}}$				−0.07						−0.11	−0.11
				(−0.75)						(−1.19)	(−1.07)
β^{JUMP}					−0.74						
					(−0.43)						
β^{VOL}					0.21						
					(0.66)						
COSKEW						−0.01				−0.01	−0.01
						(−1.14)				(−1.02)	(−1.73)
$\beta^{\Delta\mathrm{SKEW}}$							0.00				
							(0.02)				
β^{TAIL}								−0.00			
								(−0.17)			
IVOL									−0.07	−0.04	−0.08
									(−0.98)	(−0.63)	(−1.24)
SIZE											−0.13
											(−2.28)
BM											0.16
											(2.13)
MOM											0.00
											(1.00)
ILLIQ											−0.02
											(−0.23)
Y											1.56
											(2.79)
INV											−0.17
											(−1.07)
Intercept	0.68	0.63	0.68	0.62	0.39	0.65	0.36	0.44	0.72	0.71	1.73
	(1.93)	(1.97)	(2.19)	(1.92)	(1.11)	(2.12)	(0.81)	(1.30)	(2.03)	(2.11)	(2.98)
Adj. R^2	2.30%	7.10%	7.80%	7.64%	9.02%	7.34%	8.88%	8.28%	7.92%	9.11%	12.42%
n	1005	1005	1005	1005	1023	963	1073	947	1005	963	932

Table A9: Fama and MacBeth Regression Analyses - $\beta_{0.5\sigma}^{\mathbf{BEAR}}$

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta_{0.5\sigma}^{\mathbf{BEAR}}$ and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table we use $\beta_{0.5\sigma}^{\mathbf{BEAR}}$ as the measure of bear market risk exposure instead of $\beta^{\mathbf{BEAR}}$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta_{0.5\sigma}^{\mathrm{BEAR}}$	−0.37	−0.32	−0.31	−0.33	−0.37	−0.34	−0.33	−0.36	−0.25	−0.28	−0.26
	(−2.58)	(−2.55)	(−2.56)	(−2.65)	(−2.78)	(−2.68)	(−1.87)	(−2.55)	(−2.56)	(−2.92)	(−3.40)
β^{CAPM}		−0.14	−0.12	−0.14	−0.08	−0.12	−0.20	0.03	−0.14	−0.14	0.20
		(−0.52)	(−0.50)	(−0.53)	(−0.24)	(−0.49)	(−0.49)	(0.10)	(−0.53)	(−0.61)	(0.81)
β^{-}			−0.04							0.01	−0.02
			(−0.23)							(0.13)	(−0.19)
$\beta^{\Delta\mathrm{VIX}}$				−0.01						−0.03	−0.04
				(−0.32)						(−1.05)	(−1.11)
β^{JUMP}					0.34						
					(0.55)						
β^{VOL}					0.28						
					(1.34)						
COSKEW						−0.01				−0.01	−0.00
						(−1.31)				(−1.37)	(−0.50)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−2.08)				
β^{TAIL}								−0.00			
								(−0.41)			
IVOL									−0.14	−0.12	−0.24
									(−1.97)	(−1.75)	(−4.97)
SIZE											−0.16
											(−2.70)
BM											0.19
											(1.78)
MOM											0.00
											(0.70)
ILLIQ											0.00
											(4.96)
Y											1.36
											(5.70)
INV											−0.72
											(−3.44)
Intercept	0.90	1.01	1.02	1.01	0.92	1.06	1.07	0.90	1.28	1.28	2.06
	(2.14)	(2.58)	(2.65)	(2.59)	(1.99)	(2.75)	(2.32)	(1.93)	(3.66)	(3.68)	(3.99)
Adj. R^2	0.88%	2.41%	2.61%	2.53%	2.91%	2.52%	2.96%	2.93%	3.77%	4.11%	5.86%
n	4781	4781	4781	4780	5055	4363	5462	4290	4780	4362	3903

Table A9: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{0.5\sigma}$ - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\mathrm{BEAR}}_{0.5\sigma}$	−0.43	−0.32	−0.31	−0.34	−0.31	−0.32	−0.33	−0.32	−0.26	−0.26	−0.25
	(−2.49)	(−2.54)	(−2.64)	(−2.67)	(−2.51)	(−2.48)	(−1.91)	(−2.26)	(−2.35)	(−2.42)	(−2.71)
β^{CAPM}		0.07	0.10	0.09	0.20	0.09	0.11	0.24	0.13	0.11	0.04
		(0.17)	(0.25)	(0.22)	(0.43)	(0.24)	(0.20)	(0.52)	(0.37)	(0.32)	(0.13)
β^{-}			−0.07							0.01	−0.07
			(−0.37)							(0.05)	(−0.43)
$\beta^{\Delta\mathrm{VIX}}$				−0.10						−0.13	−0.12
				(−1.39)						(−2.08)	(−1.92)
β^{JUMP}					−0.28						
					(−0.27)						
β^{VOL}					0.02						
					(0.06)						
COSKEW						−0.01				−0.00	−0.00
						(−0.66)				(−0.29)	(−0.59)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−0.58)				
β^{TAIL}								−0.00			
								(−0.27)			
IVOL									−0.15	−0.13	−0.14
									(−2.09)	(−1.91)	(−2.51)
SIZE											−0.14
											(−2.22)
BM											0.11
											(1.17)
MOM											0.00
											(0.58)
ILLIQ											0.29
											(1.47)
Y											1.76
											(4.02)
INV											−0.36
											(−2.37)
Intercept	0.77	0.75	0.79	0.74	0.57	0.77	0.68	0.57	0.90	0.91	1.80
	(2.08)	(2.29)	(2.52)	(2.31)	(1.52)	(2.48)	(1.52)	(1.59)	(2.51)	(2.79)	(2.84)
Adj. R^2	1.86%	5.13%	5.57%	5.49%	6.35%	5.38%	6.30%	6.05%	6.00%	6.88%	9.60%
n	2041	2041	2041	2041	2108	1917	2235	1875	2041	1917	1850

Table A9: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{0.5\sigma}$ - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{0.5\sigma}$	−0.35	−0.26	−0.23	−0.27	−0.27	−0.25	−0.39	−0.24	−0.21	−0.19	−0.21
	(−1.86)	(−1.78)	(−1.74)	(−1.93)	(−1.91)	(−1.70)	(−2.14)	(−1.61)	(−1.57)	(−1.51)	(−1.90)
β^{CAPM}		0.08	0.21	0.11	0.24	0.09	0.30	0.20	0.11	0.18	0.25
		(0.19)	(0.49)	(0.26)	(0.51)	(0.23)	(0.52)	(0.43)	(0.29)	(0.48)	(0.67)
β^{-}			−0.17							−0.10	−0.29
			(−0.76)							(−0.51)	(−1.31)
$\beta^{\Delta\text{VIX}}$				−0.08						−0.12	−0.11
				(−0.84)						(−1.30)	(−1.14)
β^{JUMP}					−1.13						
					(−0.67)						
β^{VOL}					0.09						
					(0.30)						
COSKEW						−0.01				−0.01	−0.01
						(−1.34)				(−1.19)	(−1.97)
$\beta^{\Delta\text{SKEW}}$							0.00				
							(0.05)				
β^{TAIL}								−0.00			
								(−0.18)			
IVOL									−0.06	−0.04	−0.07
									(−0.90)	(−0.55)	(−1.19)
SIZE											−0.13
											(−2.29)
BM											0.15
											(2.02)
MOM											0.00
											(1.04)
ILLIQ											−0.03
											(−0.34)
Y											1.56
											(2.80)
INV											−0.15
											(−0.93)
Intercept	0.68	0.67	0.71	0.65	0.42	0.68	0.39	0.48	0.74	0.73	1.75
	(1.92)	(2.12)	(2.36)	(2.08)	(1.22)	(2.25)	(0.90)	(1.45)	(2.16)	(2.21)	(3.01)
Adj. R^2	2.52%	7.24%	7.91%	7.77%	9.17%	7.48%	9.00%	8.43%	8.00%	9.18%	12.46%
n	1006	1006	1006	1006	1023	963	1073	947	1006	963	932

Table A10: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{2Month}}$

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta^{\mathbf{BEAR}}_{\mathbf{2Month}}$ and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table we use $\beta^{\mathbf{BEAR}}_{\mathbf{2Month}}$ as the measure of bear market risk exposure instead of $\beta^{\mathbf{BEAR}}$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\mathrm{BEAR}}_{\mathrm{2Month}}$	−0.31	−0.23	−0.23	−0.24	−0.28	−0.27	−0.20	−0.25	−0.21	−0.26	−0.25
	(−1.79)	(−1.80)	(−1.83)	(−1.92)	(−1.98)	(−2.01)	(−1.15)	(−1.62)	(−2.24)	(−2.74)	(−2.84)
β^{CAPM}		−0.14	−0.10	−0.14	−0.08	−0.13	−0.21	0.03	−0.13	−0.11	0.24
		(−0.55)	(−0.42)	(−0.56)	(−0.26)	(−0.53)	(−0.53)	(0.10)	(−0.52)	(−0.52)	(1.00)
β^{-}			−0.06							−0.01	−0.04
			(−0.37)							(−0.10)	(−0.36)
$\beta^{\Delta\mathrm{VIX}}$				−0.01						−0.03	−0.04
				(−0.29)						(−1.07)	(−1.09)
β^{JUMP}					0.44						
					(0.71)						
β^{VOL}					0.37						
					(1.79)						
COSKEW						−0.01				−0.01	−0.00
						(−1.09)				(−1.21)	(−0.29)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−1.82)				
β^{TAIL}								−0.00			
								(−0.45)			
IVOL									−0.14	−0.12	−0.23
									(−1.93)	(−1.71)	(−4.93)
SIZE											−0.16
											(−2.68)
BM											0.20
											(1.82)
MOM											0.00
											(0.69)
ILLIQ											0.00
											(4.97)
Y											1.36
											(5.64)
INV											−0.73
											(−3.49)
Intercept	0.87	0.97	0.99	0.98	0.89	1.03	1.02	0.86	1.25	1.25	2.05
	(2.07)	(2.46)	(2.56)	(2.48)	(1.92)	(2.63)	(2.20)	(1.83)	(3.54)	(3.58)	(3.93)
Adj. R^2	0.74%	2.28%	2.50%	2.41%	2.78%	2.39%	2.77%	2.81%	3.70%	4.06%	5.82%
n	4759	4759	4759	4758	5028	4362	5425	4289	4758	4362	3903

Table A10: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{2Month}}$ - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{\text{2Month}}$	−0.41	−0.32	−0.30	−0.31	−0.30	−0.32	−0.41	−0.29	−0.29	−0.26	−0.24
	(−1.76)	(−2.25)	(−2.17)	(−2.33)	(−1.99)	(−2.14)	(−2.63)	(−1.79)	(−2.37)	(−2.14)	(−2.52)
β^{CAPM}		0.08	0.16	0.09	0.20	0.11	0.15	0.26	0.17	0.19	0.12
		(0.20)	(0.44)	(0.24)	(0.43)	(0.29)	(0.27)	(0.59)	(0.49)	(0.58)	(0.39)
β^{-}			−0.14							−0.05	−0.12
			(−0.64)							(−0.30)	(−0.74)
$\beta^{\Delta\text{VIX}}$				−0.09						−0.12	−0.11
				(−1.31)						(−1.98)	(−1.78)
β^{JUMP}					−0.11						
					(−0.09)						
β^{VOL}					0.17						
					(0.68)						
COSKEW						−0.00				−0.00	−0.00
						(−0.43)				(−0.14)	(−0.37)
$\beta^{\Delta\text{SKEW}}$							−0.01				
							(−0.46)				
β^{TAIL}								−0.00			
								(−0.54)			
IVOL									−0.15	−0.13	−0.14
									(−2.06)	(−1.84)	(−2.45)
SIZE											−0.14
											(−2.22)
BM											0.11
											(1.24)
MOM											0.00
											(0.58)
ILLIQ											0.29
											(1.44)
Y											1.79
											(4.08)
INV											−0.37
											(−2.48)
Intercept	0.74	0.70	0.76	0.69	0.53	0.72	0.58	0.50	0.85	0.87	1.76
	(2.06)	(2.11)	(2.40)	(2.14)	(1.44)	(2.27)	(1.28)	(1.39)	(2.31)	(2.62)	(2.84)
Adj. R^2	1.68%	5.01%	5.48%	5.36%	6.22%	5.27%	6.09%	5.92%	5.95%	6.83%	9.57%
n	2034	2034	2034	2034	2100	1917	2224	1875	2034	1917	1850

Table A10: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{2Month}}$ - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\mathrm{BEAR}}_{\mathrm{2Month}}$	−0.54	−0.45	−0.44	−0.43	−0.45	−0.43	−0.68	−0.42	−0.41	−0.36	−0.36
	(−2.15)	(−2.71)	(−2.76)	(−2.68)	(−2.61)	(−2.47)	(−3.76)	(−2.31)	(−2.72)	(−2.41)	(−2.95)
β^{CAPM}		0.11	0.31	0.13	0.25	0.12	0.34	0.25	0.14	0.27	0.35
		(0.26)	(0.77)	(0.32)	(0.54)	(0.30)	(0.59)	(0.55)	(0.40)	(0.74)	(0.96)
β^{-}			−0.24							−0.16	−0.35
			(−1.12)							(−0.80)	(−1.61)
$\beta^{\Delta\mathrm{VIX}}$				−0.07						−0.10	−0.10
				(−0.69)						(−1.05)	(−0.95)
β^{JUMP}					−0.74						
					(−0.40)						
β^{VOL}					0.31						
					(0.96)						
COSKEW						−0.01				−0.01	−0.01
						(−1.01)				(−0.88)	(−1.65)
$\beta^{\Delta\mathrm{SKEW}}$							0.00				
							(0.07)				
β^{TAIL}								−0.00			
								(−0.39)			
IVOL									−0.07	−0.04	−0.07
									(−0.92)	(−0.54)	(−1.13)
SIZE											−0.14
											(−2.35)
BM											0.16
											(2.16)
MOM											0.00
											(1.00)
ILLIQ											−0.02
											(−0.21)
Y											1.58
											(2.80)
INV											−0.15
											(−1.02)
Intercept	0.68	0.63	0.68	0.62	0.41	0.64	0.34	0.42	0.71	0.70	1.77
	(1.95)	(2.00)	(2.26)	(1.96)	(1.18)	(2.11)	(0.77)	(1.24)	(2.04)	(2.10)	(3.10)
Adj. R^2	2.37%	7.11%	7.81%	7.63%	9.01%	7.36%	8.87%	8.28%	7.92%	9.13%	12.42%
n	1004	1004	1004	1004	1021	963	1069	947	1004	963	932

Table A11: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{EW}}$

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta^{\mathbf{BEAR}}_{\mathbf{EW}}$ and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table we use $\beta^{\mathbf{BEAR}}_{\mathbf{EW}}$ as the measure of bear market risk exposure instead of $\beta^{\mathbf{BEAR}}$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\mathrm{BEAR}}_{\mathrm{EW}}$	−0.45	−0.35	−0.36	−0.35	−0.43	−0.40	−0.35	−0.38	−0.33	−0.37	−0.37
	(−2.33)	(−2.36)	(−2.50)	(−2.46)	(−2.75)	(−2.84)	(−1.78)	(−2.63)	(−2.75)	(−3.46)	(−3.58)
β^{CAPM}		−0.15	−0.09	−0.15	−0.08	−0.14	−0.22	0.02	−0.13	−0.11	0.24
		(−0.55)	(−0.37)	(−0.56)	(−0.25)	(−0.53)	(−0.54)	(0.08)	(−0.51)	(−0.46)	(0.99)
β^{-}			−0.08							−0.02	−0.05
			(−0.46)							(−0.22)	(−0.50)
$\beta^{\Delta\mathrm{VIX}}$				−0.01						−0.04	−0.04
				(−0.34)						(−1.06)	(−1.09)
β^{JUMP}					0.51						
					(0.83)						
β^{VOL}					0.33						
					(1.51)						
COSKEW						−0.01				−0.01	−0.00
						(−1.02)				(−1.18)	(−0.26)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−2.12)				
β^{TAIL}								−0.00			
								(−0.46)			
IVOL									−0.14	−0.12	−0.24
									(−1.96)	(−1.74)	(−4.93)
SIZE											−0.15
											(−2.59)
BM											0.20
											(1.84)
MOM											0.00
											(0.70)
ILLIQ											0.00
											(4.98)
Y											1.34
											(5.55)
INV											−0.74
											(−3.55)
Intercept	0.85	0.97	0.99	0.97	0.88	1.03	1.03	0.86	1.25	1.25	2.03
	(1.99)	(2.43)	(2.52)	(2.44)	(1.88)	(2.60)	(2.22)	(1.81)	(3.53)	(3.57)	(3.88)
Adj. R^2	0.61%	2.23%	2.46%	2.36%	2.72%	2.33%	2.69%	2.74%	3.68%	4.04%	5.82%
n	4780	4780	4780	4779	5054	4363	5460	4290	4779	4362	3903

Table A11: Fama and MacBeth Regression Analyses - $\beta_{\mathbf{EW}}^{\mathbf{BEAR}}$ - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta_{\mathrm{EW}}^{\mathrm{BEAR}}$	−0.68	−0.52	−0.51	−0.51	−0.53	−0.54	−0.62	−0.51	−0.48	−0.47	−0.41
	(−2.67)	(−3.24)	(−3.20)	(−3.35)	(−3.40)	(−3.30)	(−3.31)	(−3.13)	(−3.22)	(−3.16)	(−3.08)
β^{CAPM}		0.08	0.20	0.10	0.21	0.11	0.12	0.26	0.18	0.23	0.14
		(0.19)	(0.50)	(0.24)	(0.45)	(0.28)	(0.20)	(0.58)	(0.51)	(0.66)	(0.44)
β^{-}			−0.16							−0.07	−0.13
			(−0.73)							(−0.39)	(−0.81)
$\beta^{\Delta\mathrm{VIX}}$				−0.10						−0.13	−0.11
				(−1.35)						(−1.99)	(−1.83)
β^{JUMP}					0.17						
					(0.15)						
β^{VOL}					0.15						
					(0.61)						
COSKEW						−0.00				−0.00	−0.00
						(−0.37)				(−0.11)	(−0.33)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−0.61)				
β^{TAIL}								−0.00			
								(−0.44)			
IVOL									−0.16	−0.14	−0.15
									(−2.13)	(−1.89)	(−2.49)
SIZE											−0.14
											(−2.15)
BM											0.11
											(1.25)
MOM											0.00
											(0.55)
ILLIQ											0.28
											(1.41)
Y											1.77
											(4.05)
INV											−0.38
											(−2.53)
Intercept	0.73	0.69	0.74	0.69	0.52	0.72	0.61	0.50	0.85	0.87	1.73
	(1.97)	(2.05)	(2.31)	(2.07)	(1.37)	(2.23)	(1.35)	(1.37)	(2.27)	(2.55)	(2.78)
Adj. R^2	1.43%	4.95%	5.44%	5.31%	6.15%	5.20%	6.02%	5.85%	5.94%	6.82%	9.58%
n	2040	2040	2040	2040	2108	1917	2235	1875	2040	1917	1850

Table A11: Fama and MacBeth Regression Analyses - $\beta_{\mathbf{EW}}^{\mathbf{BEAR}}$ - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta_{\mathrm{EW}}^{\mathrm{BEAR}}$	−0.81	−0.64	−0.66	−0.63	−0.68	−0.64	−0.92	−0.62	−0.58	−0.56	−0.49
	(−2.82)	(−3.21)	(−3.32)	(−3.26)	(−4.06)	(−3.04)	(−4.15)	(−3.25)	(−3.02)	(−2.85)	(−2.94)
β^{CAPM}		0.12	0.34	0.14	0.27	0.13	0.32	0.25	0.17	0.30	0.36
		(0.28)	(0.79)	(0.34)	(0.56)	(0.31)	(0.53)	(0.54)	(0.46)	(0.79)	(0.94)
β^{-}			−0.26							−0.17	−0.35
			(−1.15)							(−0.83)	(−1.60)
$\beta^{\Delta\mathrm{VIX}}$				−0.07						−0.10	−0.10
				(−0.71)						(−1.07)	(−0.98)
β^{JUMP}					−0.31						
					(−0.18)						
β^{VOL}					0.29						
					(0.92)						
COSKEW						−0.01				−0.01	−0.01
						(−0.94)				(−0.85)	(−1.59)
$\beta^{\Delta\mathrm{SKEW}}$							−0.00				
							(−0.04)				
β^{TAIL}								−0.00			
								(−0.29)			
IVOL									−0.09	−0.05	−0.08
									(−1.14)	(−0.75)	(−1.30)
SIZE											−0.13
											(−2.20)
BM											0.16
											(2.14)
MOM											0.00
											(0.99)
ILLIQ											−0.02
											(−0.23)
Y											1.55
											(2.76)
INV											−0.17
											(−1.12)
Intercept	0.68	0.62	0.66	0.60	0.38	0.63	0.36	0.42	0.72	0.70	1.70
	(1.93)	(1.88)	(2.10)	(1.84)	(1.07)	(2.03)	(0.78)	(1.21)	(1.98)	(2.06)	(2.94)
Adj. R^2	2.17%	7.14%	7.83%	7.66%	9.00%	7.37%	8.91%	8.32%	8.00%	9.17%	12.48%
n	1005	1005	1005	1005	1023	963	1073	947	1005	963	932

Table A12: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{4Day}}$

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta^{\mathbf{BEAR}}_{\mathbf{4Day}}$ and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table we use $\beta^{\mathbf{BEAR}}_{\mathbf{4Day}}$ as the measure of bear market risk exposure instead of $\beta^{\mathbf{BEAR}}$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\mathrm{BEAR}}_{\mathrm{4Day}}$	−0.48	−0.36	−0.38	−0.36	−0.40	−0.40	−0.24	−0.35	−0.33	−0.37	−0.39
	(−2.10)	(−1.99)	(−2.06)	(−2.01)	(−1.95)	(−2.17)	(−0.94)	(−1.74)	(−2.36)	(−2.56)	(−3.06)
β^{CAPM}		−0.15	−0.08	−0.15	−0.10	−0.14	−0.26	0.02	−0.14	−0.11	0.24
		(−0.56)	(−0.34)	(−0.58)	(−0.31)	(−0.54)	(−0.64)	(0.07)	(−0.53)	(−0.48)	(1.00)
β^{-}			−0.09							−0.03	−0.06
			(−0.54)							(−0.25)	(−0.54)
$\beta^{\Delta\mathrm{VIX}}$				−0.01						−0.03	−0.04
				(−0.24)						(−1.00)	(−1.04)
β^{JUMP}					0.53						
					(0.84)						
β^{VOL}					0.32						
					(1.54)						
COSKEW						−0.01				−0.01	−0.00
						(−1.04)				(−1.23)	(−0.35)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−2.19)				
β^{TAIL}								−0.00			
								(−0.40)			
IVOL									−0.14	−0.12	−0.24
									(−1.97)	(−1.75)	(−4.97)
SIZE											−0.15
											(−2.60)
BM											0.20
											(1.86)
MOM											0.00
											(0.72)
ILLIQ											0.00
											(5.00)
Y											1.34
											(5.55)
INV											−0.74
											(−3.52)
Intercept	0.86	0.97	0.99	0.97	0.89	1.03	1.05	0.86	1.26	1.26	2.03
	(2.01)	(2.43)	(2.54)	(2.44)	(1.90)	(2.60)	(2.25)	(1.81)	(3.54)	(3.58)	(3.89)
Adj. R^2	0.65%	2.25%	2.48%	2.38%	2.74%	2.36%	2.71%	2.76%	3.70%	4.05%	5.83%
n	4780	4780	4780	4780	5055	4363	5460	4290	4780	4362	3903

Table A12: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{4Day}}$ - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{\text{4Day}}$	−0.71	−0.53	−0.52	−0.51	−0.52	−0.56	−0.52	−0.49	−0.47	−0.46	−0.41
	(−2.35)	(−2.87)	(−2.76)	(−2.89)	(−2.61)	(−2.89)	(−2.29)	(−2.43)	(−2.79)	(−2.60)	(−2.63)
β^{CAPM}		0.07	0.22	0.08	0.19	0.10	0.07	0.25	0.17	0.23	0.14
		(0.17)	(0.56)	(0.21)	(0.40)	(0.27)	(0.12)	(0.56)	(0.49)	(0.67)	(0.45)
β^{-}			−0.19							−0.09	−0.14
			(−0.85)							(−0.46)	(−0.84)
$\beta^{\Delta\text{VIX}}$				−0.09						−0.12	−0.12
				(−1.25)						(−1.99)	(−1.85)
β^{JUMP}					0.22						
					(0.19)						
β^{VOL}					0.13						
					(0.51)						
COSKEW						−0.00				−0.00	−0.00
						(−0.36)				(−0.10)	(−0.36)
$\beta^{\Delta\text{SKEW}}$							−0.01				
							(−0.60)				
β^{TAIL}								−0.00			
								(−0.39)			
IVOL									−0.16	−0.14	−0.14
									(−2.14)	(−1.92)	(−2.49)
SIZE											−0.13
											(−2.12)
BM											0.12
											(1.30)
MOM											0.00
											(0.57)
ILLIQ											0.28
											(1.43)
Y											1.78
											(4.03)
INV											−0.38
											(−2.53)
Intercept	0.73	0.69	0.75	0.69	0.53	0.72	0.65	0.51	0.85	0.87	1.71
	(1.99)	(2.05)	(2.32)	(2.09)	(1.40)	(2.24)	(1.43)	(1.38)	(2.28)	(2.59)	(2.75)
Adj. R^2	1.53%	4.99%	5.47%	5.34%	6.18%	5.25%	6.05%	5.90%	5.97%	6.84%	9.59%
n	2040	2040	2040	2040	2108	1917	2234	1875	2040	1917	1850

Table A12: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{4Day}}$ - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{\text{4Day}}$	−0.79	−0.64	−0.65	−0.60	−0.62	−0.64	−0.81	−0.59	−0.55	−0.55	−0.49
	(−2.29)	(−2.74)	(−2.81)	(−2.77)	(−3.02)	(−2.65)	(−3.23)	(−2.58)	(−2.51)	(−2.42)	(−2.44)
β^{CAPM}		0.11	0.35	0.13	0.25	0.12	0.29	0.25	0.16	0.31	0.36
		(0.27)	(0.82)	(0.32)	(0.53)	(0.30)	(0.49)	(0.54)	(0.43)	(0.80)	(0.98)
β^{-}			−0.27							−0.19	−0.37
			(−1.19)							(−0.89)	(−1.64)
$\beta^{\Delta\text{VIX}}$				−0.07						−0.11	−0.11
				(−0.71)						(−1.12)	(−1.03)
β^{JUMP}					−0.50						
					(−0.28)						
β^{VOL}					0.21						
					(0.63)						
COSKEW						−0.01				−0.01	−0.01
						(−0.98)				(−0.89)	(−1.70)
$\beta^{\Delta\text{SKEW}}$							−0.00				
							(−0.06)				
β^{TAIL}								−0.00			
								(−0.25)			
IVOL									−0.09	−0.05	−0.08
									(−1.12)	(−0.72)	(−1.26)
SIZE											−0.12
											(−2.19)
BM											0.16
											(2.20)
MOM											0.00
											(1.03)
ILLIQ											−0.01
											(−0.19)
Y											1.56
											(2.73)
INV											−0.18
											(−1.15)
Intercept	0.68	0.61	0.66	0.60	0.39	0.63	0.37	0.41	0.71	0.70	1.67
	(1.94)	(1.87)	(2.10)	(1.84)	(1.09)	(2.02)	(0.82)	(1.19)	(1.98)	(2.06)	(2.92)
Adj. R^2	2.26%	7.16%	7.83%	7.68%	8.98%	7.40%	8.88%	8.35%	8.01%	9.17%	12.48%
n	1006	1006	1006	1006	1023	963	1073	947	1006	963	932

Table A13: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{3Day}}$

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta^{\mathbf{BEAR}}_{\mathbf{3Day}}$ and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table we use $\beta^{\mathbf{BEAR}}_{\mathbf{3Day}}$ as the measure of bear market risk exposure instead of $\beta^{\mathbf{BEAR}}$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{\text{3Day}}$	−0.49	−0.35	−0.38	−0.35	−0.37	−0.36	−0.21	−0.33	−0.31	−0.32	−0.34
	(−2.11)	(−1.95)	(−2.04)	(−1.97)	(−1.72)	(−2.03)	(−0.82)	(−1.58)	(−2.13)	(−2.24)	(−2.62)
β^{CAPM}		−0.13	−0.06	−0.14	−0.08	−0.13	−0.25	0.04	−0.13	−0.11	0.24
		(−0.51)	(−0.25)	(−0.53)	(−0.25)	(−0.50)	(−0.63)	(0.12)	(−0.49)	(−0.47)	(0.99)
β^{-}			−0.10							−0.02	−0.05
			(−0.55)							(−0.20)	(−0.48)
$\beta^{\Delta\text{VIX}}$				−0.01						−0.03	−0.03
				(−0.22)						(−0.93)	(−0.99)
β^{JUMP}					0.48						
					(0.74)						
β^{VOL}					0.30						
					(1.36)						
COSKEW						−0.01				−0.01	−0.00
						(−1.03)				(−1.22)	(−0.34)
$\beta^{\Delta\text{SKEW}}$							−0.01				
							(−2.20)				
β^{TAIL}								−0.00			
								(−0.40)			
IVOL									−0.14	−0.12	−0.24
									(−1.97)	(−1.75)	(−4.96)
SIZE											−0.15
											(−2.59)
BM											0.20
											(1.85)
MOM											0.00
											(0.72)
ILLIQ											0.00
											(4.98)
Y											1.34
											(5.53)
INV											−0.74
											(−3.52)
Intercept	0.88	0.97	0.99	0.97	0.89	1.03	1.06	0.87	1.26	1.26	2.04
	(2.05)	(2.41)	(2.52)	(2.43)	(1.90)	(2.58)	(2.27)	(1.80)	(3.53)	(3.58)	(3.88)
Adj. R^2	0.65%	2.24%	2.48%	2.37%	2.73%	2.34%	2.69%	2.74%	3.69%	4.04%	5.83%
n	4782	4782	4782	4781	5056	4363	5462	4290	4781	4362	3903

Table A13: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{3Day}}$ - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{\text{3Day}}$	−0.62	−0.41	−0.41	−0.38	−0.36	−0.40	−0.36	−0.37	−0.33	−0.29	−0.24
	(−2.05)	(−2.16)	(−2.12)	(−2.12)	(−1.60)	(−2.11)	(−1.39)	(−1.72)	(−1.96)	(−1.69)	(−1.49)
β^{CAPM}		0.06	0.21	0.07	0.19	0.09	0.05	0.25	0.16	0.19	0.09
		(0.15)	(0.53)	(0.18)	(0.41)	(0.22)	(0.09)	(0.53)	(0.44)	(0.56)	(0.30)
β^{-}			−0.18							−0.06	−0.12
			(−0.83)							(−0.34)	(−0.70)
$\beta^{\Delta\text{VIX}}$				−0.08						−0.12	−0.11
				(−1.21)						(−1.92)	(−1.84)
β^{JUMP}					0.03						
					(0.02)						
β^{VOL}					0.08						
					(0.29)						
COSKEW						−0.00				−0.00	−0.00
						(−0.38)				(−0.12)	(−0.40)
$\beta^{\Delta\text{SKEW}}$							−0.01				
							(−0.64)				
β^{TAIL}								−0.00			
								(−0.35)			
IVOL									−0.16	−0.14	−0.15
									(−2.14)	(−1.94)	(−2.50)
SIZE											−0.13
											(−2.04)
BM											0.12
											(1.30)
MOM											0.00
											(0.57)
ILLIQ											0.29
											(1.47)
Y											1.76
											(3.98)
INV											−0.39
											(−2.58)
Intercept	0.75	0.71	0.75	0.71	0.53	0.74	0.67	0.52	0.87	0.89	1.71
	(2.05)	(2.07)	(2.32)	(2.12)	(1.39)	(2.28)	(1.45)	(1.40)	(2.31)	(2.64)	(2.71)
Adj. R^2	1.49%	4.98%	5.45%	5.32%	6.18%	5.23%	6.01%	5.87%	5.94%	6.82%	9.58%
n	2041	2041	2041	2041	2108	1917	2235	1875	2041	1917	1850

Table A13: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{3Day}}$ - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{\text{3Day}}$	−0.67	−0.47	−0.49	−0.44	−0.41	−0.48	−0.61	−0.44	−0.39	−0.38	−0.33
	(−1.88)	(−1.96)	(−2.09)	(−1.96)	(−1.66)	(−1.92)	(−2.19)	(−1.73)	(−1.73)	(−1.70)	(−1.63)
β^{CAPM}		0.09	0.31	0.11	0.23	0.10	0.26	0.22	0.13	0.26	0.32
		(0.21)	(0.74)	(0.26)	(0.48)	(0.24)	(0.43)	(0.48)	(0.35)	(0.70)	(0.89)
β^{-}			−0.26							−0.17	−0.35
			(−1.11)							(−0.80)	(−1.56)
$\beta^{\Delta\text{VIX}}$				−0.06						−0.10	−0.10
				(−0.60)						(−1.04)	(−1.00)
β^{JUMP}					−0.77						
					(−0.41)						
β^{VOL}					0.17						
					(0.48)						
COSKEW						−0.01				−0.01	−0.01
						(−1.06)				(−0.99)	(−1.82)
$\beta^{\Delta\text{SKEW}}$							−0.00				
							(−0.10)				
β^{TAIL}								−0.00			
								(−0.21)			
IVOL									−0.08	−0.05	−0.08
									(−1.08)	(−0.70)	(−1.23)
SIZE											−0.12
											(−2.16)
BM											0.17
											(2.24)
MOM											0.00
											(1.04)
ILLIQ											−0.02
											(−0.26)
Y											1.58
											(2.75)
INV											−0.19
											(−1.20)
Intercept	0.69	0.63	0.68	0.62	0.41	0.65	0.40	0.43	0.73	0.72	1.67
	(2.00)	(1.91)	(2.14)	(1.89)	(1.15)	(2.07)	(0.87)	(1.24)	(2.03)	(2.11)	(2.87)
Adj. R^2	2.11%	7.08%	7.78%	7.61%	8.96%	7.34%	8.77%	8.25%	7.91%	9.10%	12.42%
n	1006	1006	1006	1006	1023	963	1073	947	1006	963	932

Table A14: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{2Day}}$
The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta^{\mathbf{BEAR}}_{\mathbf{2Day}}$ and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table we use $\beta^{\mathbf{BEAR}}_{\mathbf{2Day}}$ as the measure of bear market risk exposure instead of $\beta^{\mathbf{BEAR}}$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\mathrm{BEAR}}_{\mathrm{2Day}}$	−0.47	−0.28	−0.36	−0.30	−0.40	−0.30	−0.16	−0.27	−0.25	−0.30	−0.36
	(−1.79)	(−1.49)	(−1.82)	(−1.56)	(−1.65)	(−1.54)	(−0.59)	(−1.14)	(−1.59)	(−1.80)	(−2.36)
β^{CAPM}		−0.15	−0.09	−0.16	−0.09	−0.15	−0.26	0.02	−0.14	−0.14	0.21
		(−0.58)	(−0.38)	(−0.60)	(−0.28)	(−0.57)	(−0.65)	(0.07)	(−0.56)	(−0.62)	(0.88)
β^{-}			−0.08							0.00	−0.03
			(−0.44)							(0.01)	(−0.29)
$\beta^{\Delta\mathrm{VIX}}$				−0.01						−0.04	−0.04
				(−0.33)						(−1.07)	(−1.10)
β^{JUMP}					0.59						
					(0.88)						
β^{VOL}					0.33						
					(1.42)						
COSKEW						−0.01				−0.01	−0.00
						(−1.09)				(−1.27)	(−0.46)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−2.13)				
β^{TAIL}								−0.00			
								(−0.40)			
IVOL									−0.14	−0.13	−0.24
									(−1.99)	(−1.77)	(−4.96)
SIZE											−0.16
											(−2.59)
BM											0.20
											(1.84)
MOM											0.00
											(0.74)
ILLIQ											0.00
											(4.95)
Y											1.34
											(5.51)
INV											−0.74
											(−3.56)
Intercept	0.88	0.98	1.00	0.98	0.90	1.04	1.06	0.88	1.27	1.28	2.06
	(2.03)	(2.41)	(2.51)	(2.43)	(1.90)	(2.58)	(2.27)	(1.81)	(3.57)	(3.62)	(3.92)
Adj. R^2	0.61%	2.21%	2.46%	2.34%	2.72%	2.30%	2.64%	2.71%	3.68%	4.04%	5.83%
n	4783	4783	4783	4782	5057	4363	5463	4290	4782	4362	3903

Table A14: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{2Day}}$ - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\mathrm{BEAR}}_{\mathrm{2Day}}$	-0.67	-0.38	-0.41	-0.36	-0.41	-0.36	-0.31	-0.34	-0.30	-0.25	-0.20
	(-2.00)	(-1.80)	(-1.83)	(-1.80)	(-1.38)	(-1.71)	(-1.07)	(-1.37)	(-1.55)	(-1.30)	(-1.10)
β^{CAPM}		0.03	0.16	0.04	0.18	0.06	0.03	0.22	0.13	0.14	0.06
		(0.07)	(0.41)	(0.10)	(0.39)	(0.14)	(0.04)	(0.46)	(0.36)	(0.41)	(0.20)
β^{-}			-0.16							-0.04	-0.10
			(-0.72)							(-0.19)	(-0.57)
$\beta^{\Delta\mathrm{VIX}}$				-0.09						-0.12	-0.12
				(-1.35)						(-2.01)	(-1.91)
β^{JUMP}					0.12						
					(0.09)						
β^{VOL}					0.11						
					(0.34)						
COSKEW						-0.00				-0.00	-0.00
						(-0.43)				(-0.14)	(-0.44)
$\beta^{\Delta\mathrm{SKEW}}$							-0.01				
							(-0.57)				
β^{TAIL}								-0.00			
								(-0.40)			
IVOL									-0.16	-0.14	-0.15
									(-2.12)	(-1.94)	(-2.54)
SIZE											-0.13
											(-2.03)
BM											0.12
											(1.29)
MOM											0.00
											(0.59)
ILLIQ											0.32
											(1.55)
Y											1.76
											(4.00)
INV											-0.39
											(-2.62)
Intercept	0.76	0.73	0.78	0.73	0.54	0.76	0.69	0.55	0.89	0.91	1.73
	(2.07)	(2.16)	(2.40)	(2.21)	(1.43)	(2.39)	(1.52)	(1.50)	(2.36)	(2.70)	(2.75)
Adj. R^2	1.47%	4.96%	5.44%	5.30%	6.21%	5.21%	5.96%	5.86%	5.93%	6.80%	9.56%
n	2041	2041	2041	2041	2108	1917	2235	1875	2041	1917	1850

Table A14: Fama and MacBeth Regression Analyses - $\beta_{\mathbf{2Day}}^{\mathbf{BEAR}}$ - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta_{\text{2Day}}^{\text{BEAR}}$	−0.70	−0.40	−0.46	−0.36	−0.40	−0.41	−0.56	−0.43	−0.33	−0.31	−0.27
	(−1.75)	(−1.40)	(−1.54)	(−1.33)	(−1.23)	(−1.40)	(−1.59)	(−1.31)	(−1.24)	(−1.16)	(−1.24)
β^{CAPM}		0.04	0.24	0.06	0.20	0.05	0.20	0.19	0.10	0.19	0.26
		(0.09)	(0.57)	(0.15)	(0.41)	(0.13)	(0.33)	(0.39)	(0.25)	(0.49)	(0.69)
β^{-}			−0.22							−0.12	−0.29
			(−0.94)							(−0.54)	(−1.30)
$\beta^{\Delta\text{VIX}}$				−0.07						−0.11	−0.11
				(−0.69)						(−1.11)	(−1.08)
β^{JUMP}					−0.81						
					(−0.44)						
β^{VOL}					0.14						
					(0.39)						
COSKEW						−0.01				−0.01	−0.01
						(−1.14)				(−1.03)	(−1.90)
$\beta^{\Delta\text{SKEW}}$							−0.00				
							(−0.01)				
β^{TAIL}								−0.00			
								(−0.31)			
IVOL									−0.08	−0.05	−0.08
									(−1.10)	(−0.74)	(−1.30)
SIZE											−0.13
											(−2.30)
BM											0.16
											(2.14)
MOM											0.00
											(1.03)
ILLIQ											−0.03
											(−0.35)
Y											1.60
											(2.79)
INV											−0.17
											(−1.12)
Intercept	0.71	0.67	0.71	0.66	0.43	0.69	0.44	0.46	0.77	0.74	1.73
	(2.06)	(2.03)	(2.21)	(1.99)	(1.22)	(2.19)	(0.96)	(1.34)	(2.11)	(2.16)	(3.02)
Adj. R^2	2.19%	7.04%	7.76%	7.56%	9.02%	7.29%	8.66%	8.24%	7.88%	9.07%	12.37%
n	1006	1006	1006	1006	1023	963	1073	947	1006	963	932

Table A15: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{1Day}}$

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta^{\mathbf{BEAR}}_{\mathbf{1Day}}$ and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table we use $\beta^{\mathbf{BEAR}}_{\mathbf{1Day}}$ as the measure of bear market risk exposure instead of $\beta^{\mathbf{BEAR}}$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\mathrm{BEAR}}_{\mathrm{1Day}}$	−0.44	−0.27	−0.35	−0.26	−0.57	−0.26	−0.19	−0.27	−0.23	−0.24	−0.29
	(−1.70)	(−1.39)	(−1.67)	(−1.36)	(−2.04)	(−1.29)	(−0.68)	(−1.09)	(−1.39)	(−1.29)	(−1.73)
β^{CAPM}		−0.17	−0.09	−0.18	−0.10	−0.17	−0.27	0.00	−0.16	−0.15	0.21
		(−0.64)	(−0.37)	(−0.67)	(−0.32)	(−0.65)	(−0.66)	(0.01)	(−0.61)	(−0.62)	(0.82)
β^{-}			−0.10							−0.01	−0.05
			(−0.55)							(−0.11)	(−0.43)
$\beta^{\Delta\mathrm{VIX}}$				−0.01						−0.03	−0.04
				(−0.27)						(−1.01)	(−1.07)
β^{JUMP}					0.92						
					(1.24)						
β^{VOL}					0.41						
					(1.86)						
COSKEW						−0.01				−0.01	−0.00
						(−0.94)				(−1.18)	(−0.46)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−2.34)				
β^{TAIL}								−0.00			
								(−0.40)			
IVOL									−0.15	−0.13	−0.24
									(−2.00)	(−1.77)	(−4.92)
SIZE											−0.15
											(−2.48)
BM											0.20
											(1.85)
MOM											0.00
											(0.70)
ILLIQ											0.00
											(4.94)
Y											1.36
											(5.54)
INV											−0.75
											(−3.58)
Intercept	0.88	0.99	1.01	0.99	0.92	1.06	1.08	0.89	1.29	1.29	2.04
	(2.03)	(2.44)	(2.55)	(2.46)	(1.94)	(2.63)	(2.30)	(1.83)	(3.61)	(3.67)	(3.87)
Adj. R^2	0.41%	2.11%	2.37%	2.25%	2.64%	2.21%	2.53%	2.61%	3.63%	3.99%	5.80%
n	4785	4785	4785	4784	5059	4363	5465	4290	4784	4363	3903

Table A15: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{1Day}}$ - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{\text{1Day}}$	−0.74	−0.39	−0.36	−0.34	−0.21	−0.38	−0.37	−0.37	−0.30	−0.19	−0.11
	(−2.06)	(−1.65)	(−1.50)	(−1.63)	(−0.72)	(−1.63)	(−1.22)	(−1.41)	(−1.33)	(−0.95)	(−0.63)
β^{CAPM}		0.00	0.13	0.01	0.15	0.04	0.01	0.21	0.10	0.13	0.05
		(0.01)	(0.32)	(0.03)	(0.31)	(0.09)	(0.01)	(0.44)	(0.28)	(0.36)	(0.15)
β^{-}			−0.15							−0.04	−0.11
			(−0.67)							(−0.21)	(−0.59)
$\beta^{\Delta\text{VIX}}$				−0.09						−0.12	−0.12
				(−1.29)						(−1.97)	(−1.88)
β^{JUMP}					−0.18						
					(−0.13)						
β^{VOL}					0.01						
					(0.04)						
COSKEW						−0.00				−0.00	−0.00
						(−0.39)				(−0.14)	(−0.47)
$\beta^{\Delta\text{SKEW}}$							−0.01				
							(−0.63)				
β^{TAIL}								−0.00			
								(−0.39)			
IVOL									−0.16	−0.14	−0.15
									(−2.12)	(−1.91)	(−2.54)
SIZE											−0.13
											(−2.01)
BM											0.12
											(1.31)
MOM											0.00
											(0.57)
ILLIQ											0.31
											(1.49)
Y											1.80
											(4.07)
INV											−0.40
											(−2.67)
Intercept	0.76	0.77	0.81	0.77	0.58	0.80	0.72	0.57	0.93	0.94	1.75
	(2.08)	(2.21)	(2.44)	(2.28)	(1.52)	(2.45)	(1.55)	(1.55)	(2.41)	(2.72)	(2.77)
Adj. R^2	1.19%	4.89%	5.38%	5.24%	6.20%	5.13%	5.88%	5.77%	5.89%	6.76%	9.53%
n	2041	2041	2041	2041	2109	1917	2236	1875	2041	1917	1850

Table A15: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{1Day}}$ - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{\text{1Day}}$	−0.71	−0.45	−0.43	−0.40	−0.51	−0.43	−0.68	−0.64	−0.36	−0.27	−0.22
	(−1.49)	(−1.20)	(−1.09)	(−1.21)	(−1.46)	(−1.13)	(−1.60)	(−1.39)	(−1.00)	(−0.76)	(−0.86)
β^{CAPM}		0.05	0.25	0.07	0.20	0.06	0.21	0.23	0.10	0.20	0.28
		(0.11)	(0.57)	(0.16)	(0.40)	(0.14)	(0.34)	(0.48)	(0.26)	(0.51)	(0.72)
β^{-}			−0.23							−0.13	−0.32
			(−0.87)							(−0.54)	(−1.26)
$\beta^{\Delta\text{VIX}}$				−0.06						−0.10	−0.10
				(−0.63)						(−1.06)	(−1.00)
β^{JUMP}					−0.45						
					(−0.28)						
β^{VOL}					0.15						
					(0.42)						
COSKEW						−0.01				−0.01	−0.01
						(−1.17)				(−1.08)	(−1.96)
$\beta^{\Delta\text{SKEW}}$							−0.00				
							(−0.09)				
β^{TAIL}								−0.00			
								(−0.30)			
IVOL									−0.08	−0.05	−0.08
									(−1.09)	(−0.70)	(−1.30)
SIZE											−0.13
											(−2.24)
BM											0.16
											(2.17)
MOM											0.00
											(1.05)
ILLIQ											−0.03
											(−0.34)
Y											1.61
											(2.88)
INV											−0.18
											(−1.13)
Intercept	0.70	0.68	0.71	0.67	0.45	0.70	0.46	0.44	0.78	0.74	1.79
	(2.02)	(2.01)	(2.19)	(1.99)	(1.26)	(2.18)	(0.98)	(1.26)	(2.10)	(2.13)	(3.01)
Adj. R^2	1.98%	7.05%	7.77%	7.57%	9.10%	7.31%	8.60%	8.22%	7.89%	9.08%	12.38%
n	1006	1006	1006	1006	1023	963	1073	947	1006	963	932

Table A16: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{UnAdj}}$

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta^{\mathbf{BEAR}}_{\mathbf{UnAdj}}$ and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table we use $\beta^{\mathbf{BEAR}}_{\mathbf{UnAdj}}$ as the measure of bear market risk exposure instead of $\beta^{\mathbf{BEAR}}$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\mathrm{BEAR}}_{\mathrm{UnAdj}}$	−0.26	−0.20	−0.22	−0.21	−0.26	−0.25	−0.19	−0.23	−0.21	−0.26	−0.27
	(−1.94)	(−1.76)	(−1.93)	(−1.85)	(−2.03)	(−2.17)	(−1.28)	(−1.90)	(−2.30)	(−2.86)	(−3.05)
β^{CAPM}		−0.16	−0.10	−0.16	−0.10	−0.15	−0.23	0.01	−0.14	−0.11	0.23
		(−0.61)	(−0.40)	(−0.62)	(−0.31)	(−0.58)	(−0.58)	(0.03)	(−0.55)	(−0.46)	(0.95)
β^{-}			−0.08							−0.03	−0.06
			(−0.51)							(−0.28)	(−0.55)
$\beta^{\Delta\mathrm{VIX}}$				−0.02						−0.04	−0.04
				(−0.35)						(−1.09)	(−1.09)
β^{JUMP}					0.52						
					(0.85)						
β^{VOL}					0.32						
					(1.54)						
COSKEW						−0.01				−0.01	−0.00
						(−1.09)				(−1.20)	(−0.22)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−2.18)				
β^{TAIL}								−0.00			
								(−0.52)			
IVOL									−0.14	−0.12	−0.24
									(−2.00)	(−1.78)	(−4.98)
SIZE											−0.15
											(−2.56)
BM											0.20
											(1.85)
MOM											0.00
											(0.69)
ILLIQ											0.00
											(5.00)
Y											1.34
											(5.59)
INV											−0.74
											(−3.57)
Intercept	0.84	0.97	0.99	0.97	0.88	1.03	1.03	0.86	1.25	1.26	2.02
	(1.97)	(2.44)	(2.54)	(2.45)	(1.89)	(2.60)	(2.22)	(1.82)	(3.55)	(3.60)	(3.86)
Adj. R^2	0.67%	2.30%	2.52%	2.42%	2.79%	2.42%	2.79%	2.81%	3.72%	4.07%	5.85%
n	4779	4779	4779	4778	5053	4363	5459	4290	4778	4362	3903

Table A16: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{UnAdj}}$ - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{\text{UnAdj}}$	-0.51	-0.41	-0.41	-0.40	-0.41	-0.44	-0.47	-0.42	-0.38	-0.40	-0.35
	(-2.68)	(-3.08)	(-3.04)	(-3.20)	(-3.20)	(-3.11)	(-3.24)	(-2.85)	(-3.10)	(-3.09)	(-3.02)
β^{CAPM}		0.07	0.18	0.08	0.19	0.10	0.10	0.24	0.18	0.23	0.15
		(0.16)	(0.46)	(0.22)	(0.42)	(0.25)	(0.18)	(0.53)	(0.51)	(0.66)	(0.45)
β^{-}			-0.16							-0.08	-0.14
			(-0.74)							(-0.44)	(-0.86)
$\beta^{\Delta\text{VIX}}$				-0.10						-0.13	-0.11
				(-1.38)						(-2.01)	(-1.83)
β^{JUMP}					0.23						
					(0.20)						
β^{VOL}					0.17						
					(0.67)						
COSKEW						-0.00				-0.00	-0.00
						(-0.43)				(-0.15)	(-0.33)
$\beta^{\Delta\text{SKEW}}$							-0.01				
							(-0.60)				
β^{TAIL}								-0.00			
								(-0.49)			
IVOL									-0.16	-0.14	-0.14
									(-2.15)	(-1.91)	(-2.48)
SIZE											-0.13
											(-2.13)
BM											0.11
											(1.26)
MOM											0.00
											(0.55)
ILLIQ											0.28
											(1.42)
Y											1.76
											(4.04)
INV											-0.38
											(-2.53)
Intercept	0.73	0.70	0.76	0.70	0.53	0.73	0.63	0.52	0.85	0.87	1.72
	(1.98)	(2.09)	(2.36)	(2.11)	(1.42)	(2.28)	(1.38)	(1.42)	(2.29)	(2.57)	(2.76)
Adj. R^2	1.49%	5.00%	5.48%	5.36%	6.21%	5.26%	6.07%	5.93%	5.98%	6.86%	9.61%
n	2040	2040	2040	2040	2107	1917	2234	1875	2040	1917	1850

Table A16: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{UnAdj}}$ - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\mathrm{BEAR}}_{\mathrm{UnAdj}}$	−0.62	−0.50	−0.51	−0.49	−0.52	−0.52	−0.74	−0.49	−0.46	−0.46	−0.40
	(−2.66)	(−2.74)	(−2.83)	(−2.76)	(−3.55)	(−2.56)	(−3.63)	(−2.56)	(−2.57)	(−2.38)	(−2.40)
β^{CAPM}		0.10	0.30	0.13	0.26	0.10	0.31	0.22	0.16	0.28	0.33
		(0.25)	(0.71)	(0.31)	(0.54)	(0.25)	(0.51)	(0.47)	(0.43)	(0.72)	(0.87)
β^{-}			−0.24							−0.17	−0.34
			(−1.10)							(−0.82)	(−1.58)
$\beta^{\Delta\mathrm{VIX}}$				−0.07						−0.11	−0.10
				(−0.75)						(−1.10)	(−1.00)
β^{JUMP}					−0.34						
					(−0.19)						
β^{VOL}					0.31						
					(0.97)						
COSKEW						−0.01				−0.01	−0.01
						(−0.99)				(−0.89)	(−1.64)
$\beta^{\Delta\mathrm{SKEW}}$							−0.00				
							(−0.03)				
β^{TAIL}								−0.00			
								(−0.26)			
IVOL									−0.08	−0.06	−0.08
									(−1.11)	(−0.78)	(−1.32)
SIZE											−0.12
											(−2.17)
BM											0.16
											(2.18)
MOM											0.00
											(0.99)
ILLIQ											−0.01
											(−0.18)
Y											1.52
											(2.72)
INV											−0.19
											(−1.21)
Intercept	0.69	0.63	0.68	0.62	0.40	0.66	0.38	0.45	0.72	0.72	1.71
	(1.98)	(1.94)	(2.17)	(1.90)	(1.13)	(2.11)	(0.82)	(1.29)	(2.00)	(2.11)	(2.93)
Adj. R^2	2.27%	7.23%	7.92%	7.76%	9.10%	7.47%	9.01%	8.39%	8.08%	9.24%	12.54%
n	1005	1005	1005	1005	1023	963	1073	947	1005	963	932

Table A17: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{PUT}}$
The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta^{\mathbf{PUT}}$ and control variables. The analyses are identical to those whose results are reported in Table 8 of the main paper, except in this table we use $\beta^{\mathbf{PUT}}$ as the measure of bear market risk exposure instead of $\beta^{\mathbf{BEAR}}$.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{PUT}	−0.21	−0.13	−0.15	−0.13	−0.18	−0.20	−0.14	−0.16	−0.17	−0.24	−0.25
	(−1.14)	(−1.02)	(−1.27)	(−1.07)	(−1.25)	(−1.69)	(−0.76)	(−1.27)	(−1.55)	(−2.31)	(−2.31)
β^{CAPM}		−0.16	−0.11	−0.17	−0.09	−0.15	−0.24	0.02	−0.14	−0.11	0.23
		(−0.60)	(−0.46)	(−0.61)	(−0.28)	(−0.58)	(−0.60)	(0.06)	(−0.53)	(−0.50)	(0.93)
β^{-}			−0.07							−0.02	−0.04
			(−0.39)							(−0.19)	(−0.41)
$\beta^{\Delta\mathrm{VIX}}$				−0.02						−0.04	−0.04
				(−0.50)						(−1.14)	(−1.16)
β^{JUMP}					0.46						
					(0.75)						
β^{VOL}					0.31						
					(1.40)						
COSKEW						−0.01				−0.01	−0.00
						(−0.78)				(−1.01)	(−0.12)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−2.06)				
β^{TAIL}								−0.00			
								(−0.35)			
IVOL									−0.15	−0.13	−0.24
									(−2.00)	(−1.77)	(−4.94)
SIZE											−0.15
											(−2.48)
BM											0.21
											(1.89)
MOM											0.00
											(0.70)
ILLIQ											0.00
											(4.95)
Y											1.36
											(5.57)
INV											−0.75
											(−3.59)
Intercept	0.83	0.97	0.98	0.97	0.87	1.02	1.04	0.86	1.26	1.26	2.01
	(1.89)	(2.39)	(2.48)	(2.41)	(1.84)	(2.56)	(2.23)	(1.78)	(3.55)	(3.58)	(3.81)
Adj. R^2	0.44%	2.13%	2.38%	2.27%	2.61%	2.24%	2.51%	2.65%	3.66%	4.03%	5.83%
n	4780	4780	4780	4779	5054	4363	5460	4290	4779	4362	3903

Table A17: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{PUT}}$ - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{PUT}	−0.48	−0.32	−0.34	−0.29	−0.36	−0.35	−0.45	−0.30	−0.33	−0.33	−0.28
	(−1.58)	(−1.68)	(−1.77)	(−1.65)	(−2.07)	(−1.70)	(−2.18)	(−1.43)	(−1.93)	(−1.90)	(−2.02)
β^{CAPM}		0.02	0.13	0.03	0.17	0.05	0.08	0.22	0.14	0.20	0.13
		(0.04)	(0.36)	(0.08)	(0.36)	(0.14)	(0.14)	(0.49)	(0.39)	(0.58)	(0.39)
β^{-}			−0.15							−0.08	−0.14
			(−0.64)							(−0.39)	(−0.84)
$\beta^{\Delta\mathrm{VIX}}$				−0.11						−0.13	−0.12
				(−1.50)						(−2.05)	(−1.86)
β^{JUMP}					0.23						
					(0.21)						
β^{VOL}					0.18						
					(0.81)						
COSKEW						−0.00				−0.00	−0.00
						(−0.31)				(−0.12)	(−0.34)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−0.67)				
β^{TAIL}								−0.00			
								(−0.34)			
IVOL									−0.16	−0.14	−0.15
									(−2.16)	(−1.93)	(−2.51)
SIZE											−0.13
											(−2.07)
BM											0.12
											(1.33)
MOM											0.00
											(0.57)
ILLIQ											0.28
											(1.45)
Y											1.79
											(4.10)
INV											−0.39
											(−2.61)
Intercept	0.70	0.73	0.77	0.73	0.53	0.75	0.63	0.52	0.88	0.90	1.72
	(1.87)	(2.18)	(2.39)	(2.23)	(1.43)	(2.39)	(1.37)	(1.48)	(2.37)	(2.66)	(2.76)
Adj. R^2	1.25%	4.98%	5.44%	5.33%	6.10%	5.22%	5.89%	5.89%	6.02%	6.85%	9.60%
n	2040	2040	2040	2040	2107	1917	2234	1875	2040	1917	1850

Table A17: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{PUT}}$ - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{PUT}	−0.76	−0.56	−0.64	−0.51	−0.61	−0.54	−0.81	−0.51	−0.55	−0.53	−0.45
	(−2.17)	(−2.24)	(−2.60)	(−2.22)	(−2.94)	(−2.12)	(−2.87)	(−1.90)	(−2.24)	(−2.27)	(−2.44)
β^{CAPM}		0.05	0.34	0.08	0.21	0.07	0.26	0.22	0.12	0.29	0.34
		(0.13)	(0.84)	(0.18)	(0.43)	(0.17)	(0.43)	(0.46)	(0.32)	(0.79)	(0.91)
β^{-}			−0.31							−0.20	−0.37
			(−1.42)							(−0.99)	(−1.77)
$\beta^{\Delta\mathrm{VIX}}$				−0.08						−0.10	−0.10
				(−0.83)						(−1.07)	(−0.99)
β^{JUMP}					−0.13						
					(−0.08)						
β^{VOL}					0.37						
					(1.19)						
COSKEW						−0.01				−0.01	−0.01
						(−0.78)				(−0.71)	(−1.55)
$\beta^{\Delta\mathrm{SKEW}}$							−0.00				
							(−0.06)				
β^{TAIL}								−0.00			
								(−0.21)			
IVOL									−0.09	−0.06	−0.08
									(−1.18)	(−0.79)	(−1.27)
SIZE											−0.12
											(−2.09)
BM											0.16
											(2.19)
MOM											0.00
											(1.01)
ILLIQ											−0.02
											(−0.26)
Y											1.56
											(2.83)
INV											−0.17
											(−1.07)
Intercept	0.67	0.66	0.69	0.64	0.42	0.67	0.39	0.44	0.76	0.74	1.69
	(1.88)	(2.03)	(2.19)	(2.00)	(1.18)	(2.19)	(0.84)	(1.30)	(2.12)	(2.17)	(2.91)
Adj. R^2	2.07%	7.29%	7.90%	7.78%	9.01%	7.49%	8.79%	8.51%	8.16%	9.22%	12.51%
n	1005	1005	1005	1005	1023	963	1073	947	1005	963	932

Table A18: Fama and MacBeth Regression Analyses - Excluding Financial Crisis The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta^{\mathbf{BEAR}}$ and control variables after removing return months from December 2007 through June 2009, the period identified by the NBER as recessionary, from the sample. The analyses are otherwise identical to those whose results are reported in Table 8 of the main paper.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.42	−0.31	−0.32	−0.32	−0.39	−0.37	−0.41	−0.35	−0.31	−0.37	−0.32
	(−2.21)	(−2.14)	(−2.37)	(−2.24)	(−2.48)	(−2.82)	(−2.07)	(−2.54)	(−2.49)	(−3.37)	(−3.25)
β^{CAPM}		−0.17	−0.02	−0.17	−0.10	−0.15	−0.23	0.01	−0.16	−0.08	0.25
		(−0.59)	(−0.09)	(−0.59)	(−0.30)	(−0.55)	(−0.56)	(0.04)	(−0.57)	(−0.32)	(0.95)
β^{-}			−0.16							−0.06	−0.02
			(−1.16)							(−0.71)	(−0.32)
$\beta^{\Delta\text{VIX}}$				−0.01						−0.03	−0.01
				(−0.20)						(−0.88)	(−0.47)
β^{JUMP}					0.52						
					(0.80)						
β^{VOL}					0.37						
					(1.70)						
COSKEW						−0.00				−0.00	0.00
						(−0.41)				(−0.48)	(0.21)
$\beta^{\Delta\text{SKEW}}$							−0.01				
							(−1.99)				
β^{TAIL}								−0.00			
								(−0.81)			
IVOL									−0.14	−0.13	−0.24
									(−2.00)	(−1.78)	(−4.54)
SIZE											−0.15
											(−2.46)
BM											0.19
											(1.67)
MOM											0.00
											(3.11)
ILLIQ											0.00
											(5.08)
Y											1.23
											(4.96)
INV											−0.78
											(−3.61)
Intercept	1.05	1.19	1.21	1.19	1.15	1.25	1.10	1.14	1.49	1.49	2.31
	(3.22)	(3.99)	(4.12)	(3.99)	(3.27)	(4.32)	(2.49)	(3.19)	(4.86)	(4.94)	(5.10)
Adj. R^2	0.61%	2.26%	2.47%	2.39%	2.75%	2.35%	2.71%	2.83%	3.75%	4.06%	5.82%
n	4824	4824	4824	4823	5141	4404	5476	4361	4823	4404	3932

Table A18: Fama and MacBeth Regression Analyses - Excluding Financial Crisis - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.66	−0.46	−0.45	−0.45	−0.48	−0.49	−0.63	−0.43	−0.41	−0.40	−0.31
	(−2.87)	(−3.10)	(−3.11)	(−3.15)	(−2.92)	(−3.44)	(−3.23)	(−3.09)	(−2.95)	(−3.03)	(−2.48)
β^{CAPM}		0.05	0.20	0.06	0.21	0.09	0.09	0.27	0.21	0.24	0.20
		(0.13)	(0.49)	(0.16)	(0.44)	(0.24)	(0.16)	(0.59)	(0.56)	(0.64)	(0.59)
β^{-}			−0.16							−0.03	−0.04
			(−0.76)							(−0.18)	(−0.33)
$\beta^{\Delta\mathrm{VIX}}$				−0.06						−0.08	−0.06
				(−0.86)						(−1.57)	(−1.23)
β^{JUMP}					−0.03						
					(−0.03)						
β^{VOL}					0.13						
					(0.59)						
COSKEW						0.01				0.01	0.00
						(0.74)				(0.90)	(0.19)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−0.72)				
β^{TAIL}								−0.00			
								(−0.59)			
IVOL									−0.19	−0.16	−0.17
									(−2.54)	(−2.33)	(−2.84)
SIZE											−0.12
											(−1.74)
BM											0.13
											(1.31)
MOM											0.00
											(2.54)
ILLIQ											0.26
											(1.48)
Y											1.71
											(3.60)
INV											−0.43
											(−2.83)
Intercept	0.93	0.93	0.96	0.93	0.77	0.94	0.70	0.76	1.10	1.09	1.78
	(3.20)	(3.03)	(3.16)	(3.12)	(2.14)	(3.20)	(1.53)	(2.22)	(3.16)	(3.40)	(2.80)
Adj. R^2	1.38%	5.05%	5.40%	5.36%	6.13%	5.24%	6.09%	6.06%	6.03%	6.71%	9.38%
n	2062	2062	2062	2062	2142	1934	2241	1900	2062	1934	1866

Table A18: Fama and MacBeth Regression Analyses - Excluding Financial Crisis - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
β^{BEAR}	−0.80	−0.63	−0.64	−0.60	−0.72	−0.61	−0.92	−0.55	−0.56	−0.52	−0.44
	(−2.92)	(−3.00)	(−3.00)	(−3.04)	(−3.85)	(−2.90)	(−3.70)	(−3.28)	(−2.76)	(−2.55)	(−2.53)
β^{CAPM}		0.17	0.37	0.19	0.37	0.18	0.30	0.36	0.24	0.30	0.38
		(0.40)	(0.84)	(0.45)	(0.75)	(0.44)	(0.49)	(0.76)	(0.61)	(0.75)	(0.96)
β^{-}			−0.21							−0.08	−0.22
			(−0.96)							(−0.44)	(−1.15)
$\beta^{\Delta\text{VIX}}$				0.01						−0.02	−0.01
				(0.09)						(−0.29)	(−0.14)
β^{JUMP}					−0.44						
					(−0.28)						
β^{VOL}					0.29						
					(0.85)						
COSKEW						−0.00				−0.00	−0.01
						(−0.02)				(−0.03)	(−1.13)
$\beta^{\Delta\text{SKEW}}$							−0.00				
							(−0.26)				
β^{TAIL}								−0.00			
								(−0.21)			
IVOL									−0.09	−0.07	−0.09
									(−1.12)	(−0.90)	(−1.41)
SIZE											−0.11
											(−1.78)
BM											0.17
											(2.21)
MOM											0.01
											(2.64)
ILLIQ											−0.02
											(−0.32)
Y											1.26
											(2.18)
INV											−0.23
											(−1.46)
Intercept	0.92	0.80	0.83	0.79	0.58	0.81	0.43	0.61	0.90	0.88	1.80
	(3.34)	(2.47)	(2.61)	(2.46)	(1.58)	(2.63)	(0.94)	(1.72)	(2.47)	(2.55)	(2.96)
Adj. R^2	2.19%	7.39%	7.89%	7.79%	9.07%	7.52%	9.02%	8.73%	8.20%	9.05%	12.27%
n	1016	1016	1016	1016	1038	972	1075	960	1016	972	941

Table A19: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{CME}}$ - 1989-2015

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta^{\mathbf{BEAR}}_{\mathbf{CME}}$ and control variables. The specification that includes β^{JUMP} and β^{VOL} covers the 280 months t (return months $t+1$) from December 1988 (January 1989) through March 2012 (April 2012). The specification that includes $\beta^{\Delta\text{SKEW}}$ covers the 144 months t (return months $t+1$) from January 1996 (February 1996) through December 2007 (January 2008). The specification that controls for β^{TAIL} covers the 277 months t (return months $t+1$) from December 1988 (January 1989) through December 2011 (January 2012). All other specifications cover the 321 months t (return months $t+1$) from December 1988 (January 1989) through August 2015 (September 2015). Because VXO is available for the entire sample period while VIX is not, we use exposure to VXO (β^{VXO}) instead of β^{VIX}. The regressions are otherwise identical to those reported in Table 8 of the main paper.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{\text{CME}}$	−0.41	−0.32	−0.33	−0.30	−0.38	−0.35	−0.38	−0.34	−0.31	−0.33	−0.32
	(−2.93)	(−2.89)	(−3.14)	(−2.79)	(−3.28)	(−3.27)	(−2.13)	(−3.10)	(−3.40)	(−3.85)	(−3.87)
β^{CAPM}		−0.15	−0.08	−0.15	−0.11	−0.16	−0.24	−0.05	−0.13	−0.09	0.24
		(−0.78)	(−0.46)	(−0.79)	(−0.50)	(−0.82)	(−0.63)	(−0.22)	(−0.71)	(−0.55)	(1.33)
β^{-}			−0.09							−0.05	−0.06
			(−0.72)							(−0.58)	(−0.83)
$\beta^{\Delta\text{VXO}}$				−0.05						−0.06	−0.04
				(−1.36)						(−2.01)	(−1.50)
β^{JUMP}					0.59						
					(1.33)						
β^{VOL}					0.17						
					(0.94)						
COSKEW						−0.01				−0.01	0.00
						(−1.26)				(−1.54)	(0.03)
$\beta^{\Delta\text{SKEW}}$							−0.01				
							(−1.98)				
β^{TAIL}								−0.00			
								(−0.52)			
IVOL									−0.10	−0.08	−0.20
									(−1.78)	(−1.44)	(−5.49)
SIZE											−0.14
											(−3.01)
BM											0.23
											(2.56)
MOM											0.01
											(1.97)
ILLIQ											0.00
											(5.47)
Y											1.39
											(6.44)
INV											−0.63
											(−4.11)
Intercept	0.86	0.97	0.99	0.98	0.92	1.04	1.06	0.94	1.14	1.15	1.88
	(2.57)	(3.03)	(3.13)	(3.05)	(2.57)	(3.24)	(2.45)	(2.59)	(4.06)	(4.08)	(4.44)
Adj. R^2	0.44%	1.73%	1.91%	1.86%	2.02%	1.82%	2.57%	2.04%	3.06%	3.39%	5.25%
n	5068	5068	5068	5067	5290	4571	5538	4383	5067	4571	3766

Table A19: Fama and MacBeth Regression Analyses - $\beta_{\mathbf{CME}}^{\mathbf{BEAR}}$ - 1989-2015 - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta_{\mathrm{CME}}^{\mathrm{BEAR}}$	−0.63	−0.49	−0.51	−0.47	−0.51	−0.52	−0.63	−0.47	−0.43	−0.43	−0.38
	(−3.32)	(−3.98)	(−4.15)	(−4.03)	(−4.11)	(−4.33)	(−3.93)	(−4.03)	(−3.87)	(−4.03)	(−3.87)
β^{CAPM}		0.10	0.27	0.11	0.20	0.13	0.08	0.24	0.29	0.30	0.26
		(0.35)	(0.96)	(0.39)	(0.63)	(0.46)	(0.14)	(0.78)	(1.11)	(1.17)	(1.10)
β^{-}			−0.19							−0.03	−0.11
			(−1.20)							(−0.24)	(−0.92)
$\beta^{\Delta\mathrm{VXO}}$				−0.07						−0.08	−0.09
				(−1.38)						(−1.68)	(−1.75)
β^{JUMP}					0.38						
					(0.46)						
β^{VOL}					0.06						
					(0.28)						
COSKEW						−0.00				−0.00	0.00
						(−0.23)				(−0.31)	(0.46)
$\beta^{\Delta\mathrm{SKEW}}$							−0.01				
							(−0.88)				
β^{TAIL}								0.00			
								(0.01)			
IVOL									−0.27	−0.25	−0.23
									(−3.99)	(−3.67)	(−4.43)
SIZE											−0.12
											(−2.31)
BM											0.13
											(1.60)
MOM											0.00
											(1.60)
ILLIQ											0.21
											(1.52)
Y											1.73
											(5.07)
INV											−0.28
											(−2.24)
Intercept	0.73	0.66	0.71	0.66	0.54	0.68	0.69	0.53	0.98	0.97	1.60
	(2.57)	(2.54)	(2.81)	(2.55)	(1.95)	(2.71)	(1.61)	(1.96)	(3.50)	(3.76)	(3.29)
Adj. R^2	1.12%	4.18%	4.58%	4.44%	4.98%	4.38%	5.83%	4.75%	5.30%	6.03%	8.63%
n	2022	2022	2022	2022	2064	1888	2256	1814	2022	1888	1812

Table A19: Fama and MacBeth Regression Analyses - $\beta_{\mathbf{CME}}^{\mathbf{BEAR}}$ - 1989-2015 - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta_{\mathrm{CME}}^{\mathrm{BEAR}}$	−0.65	−0.50	−0.53	−0.48	−0.52	−0.50	−0.84	−0.45	−0.45	−0.44	−0.39
	(−2.95)	(−3.45)	(−3.71)	(−3.43)	(−3.89)	(−3.38)	(−4.44)	(−3.40)	(−3.26)	(−3.26)	(−3.17)
β^{CAPM}		0.19	0.40	0.20	0.29	0.19	0.27	0.31	0.26	0.40	0.43
		(0.64)	(1.33)	(0.69)	(0.90)	(0.66)	(0.48)	(0.99)	(0.96)	(1.43)	(1.60)
β^{-}			−0.24							−0.17	−0.31
			(−1.40)							(−1.10)	(−1.93)
$\beta^{\Delta\mathrm{VXO}}$				−0.10						−0.11	−0.12
				(−1.43)						(−1.68)	(−1.79)
β^{JUMP}					0.19						
					(0.15)						
β^{VOL}					−0.02						
					(−0.07)						
COSKEW						−0.01				−0.01	−0.01
						(−1.03)				(−1.24)	(−0.82)
$\beta^{\Delta\mathrm{SKEW}}$							−0.00				
							(−0.18)				
β^{TAIL}								−0.00			
								(−0.28)			
IVOL									−0.12	−0.10	−0.14
									(−1.84)	(−1.79)	(−2.73)
SIZE											−0.11
											(−2.35)
BM											0.15
											(2.21)
MOM											0.01
											(2.06)
ILLIQ											−0.00
											(−0.09)
Y											1.32
											(3.05)
INV											−0.08
											(−0.56)
Intercept	0.75	0.59	0.63	0.59	0.45	0.61	0.44	0.45	0.72	0.72	1.55
	(2.79)	(2.40)	(2.61)	(2.37)	(1.74)	(2.58)	(1.02)	(1.80)	(2.66)	(2.84)	(3.44)
Adj. R^2	1.68%	6.09%	6.66%	6.53%	7.32%	6.37%	8.55%	6.92%	6.92%	7.98%	11.31%
n	985	985	985	985	994	944	1078	920	985	944	912

Table A20: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{CME}}$ - 1989-1996

The table below presents the results of Fama and MacBeth (1973) regressions of month $t+1$ excess stock returns on month t $\beta^{\mathbf{BEAR}}_{\mathbf{CME}}$ and control variables. The specification that includes $\beta^{\Delta\mathrm{SKEW}}$ covers the 11 months t (return months $t+1$) from January 1996 (February 1996) through November (December) 1996. All other specifications cover the 96 months t (return months $t+1$) from December 1988 (January 1989) through November (December) 1996. Because VXO is available for the entire sample period while VIX is not, we use exposure to VXO (β^{VXO}) instead of β^{VIX}. The regressions are otherwise identical to those reported in Table 8 of the main paper.

Panel A: All Stocks Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\mathrm{BEAR}}_{\mathrm{CME}}$	−0.28	−0.22	−0.25	−0.19	−0.27	−0.23	−0.68	−0.24	−0.25	−0.26	−0.22
	(−1.64)	(−1.42)	(−1.68)	(−1.21)	(−1.51)	(−1.45)	(−1.97)	(−1.53)	(−1.69)	(−1.80)	(−1.50)
β^{CAPM}		−0.17	−0.07	−0.18	−0.16	−0.20	−0.42	−0.18	−0.14	−0.04	0.26
		(−1.07)	(−0.59)	(−1.07)	(−1.03)	(−1.14)	(−1.66)	(−1.14)	(−0.88)	(−0.31)	(1.57)
β^{-}			−0.10							−0.11	−0.09
			(−1.01)							(−1.22)	(−2.01)
$\beta^{\Delta\mathrm{VXO}}$				−0.11						−0.12	−0.07
				(−2.52)						(−2.46)	(−1.60)
β^{JUMP}					0.70						
					(1.26)						
β^{VOL}					−0.16						
					(−0.63)						
COSKEW						−0.01				−0.01	0.00
						(−0.90)				(−1.03)	(0.12)
$\beta^{\Delta\mathrm{SKEW}}$							0.00				
							(0.28)				
β^{TAIL}								−0.00			
								(−0.32)			
IVOL									0.00	0.03	−0.13
									(0.05)	(0.44)	(−3.15)
SIZE											−0.09
											(−1.48)
BM											0.42
											(3.11)
MOM											0.01
											(7.87)
ILLIQ											0.00
											(4.94)
Y											1.47
											(3.16)
INV											−0.40
											(−2.78)
Intercept	0.88	0.99	1.00	1.00	1.00	1.07	1.33	1.09	0.87	0.89	1.45
	(1.76)	(1.87)	(1.88)	(1.90)	(1.88)	(1.99)	(2.43)	(2.06)	(2.19)	(2.14)	(2.29)
Adj. R^2	0.10%	0.60%	0.67%	0.70%	0.71%	0.65%	1.41%	0.76%	1.63%	1.90%	3.96%
n	5739	5739	5739	5738	5739	5059	6456	4559	5738	5058	3452

Table A20: Fama and MacBeth Regression Analyses - $\beta^{\mathbf{BEAR}}_{\mathbf{CME}}$ - 1989-1996 - continued

Panel B: Liquid Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta^{\text{BEAR}}_{\text{CME}}$	−0.50	−0.46	−0.55	−0.42	−0.50	−0.52	−0.65	−0.45	−0.35	−0.37	−0.31
	(−1.97)	(−2.13)	(−2.54)	(−1.95)	(−2.20)	(−2.70)	(−2.15)	(−2.30)	(−1.94)	(−2.39)	(−1.94)
β^{CAPM}		0.19	0.46	0.19	0.20	0.20	−0.26	0.21	0.57	0.48	0.53
		(0.85)	(2.36)	(0.85)	(0.91)	(0.92)	(−0.66)	(1.08)	(2.72)	(2.25)	(2.82)
β^{-}			−0.26							0.07	−0.04
			(−1.93)							(0.47)	(−0.40)
$\beta^{\Delta\text{VXO}}$				−0.13						−0.11	−0.10
				(−1.91)						(−1.90)	(−1.91)
β^{JUMP}					0.77						
					(0.82)						
β^{VOL}					−0.18						
					(−0.65)						
COSKEW						0.00				−0.01	0.01
						(0.04)				(−0.34)	(0.91)
$\beta^{\Delta\text{SKEW}}$							−0.05				
							(−3.09)				
β^{TAIL}								0.00			
								(0.73)			
IVOL									−0.53	−0.49	−0.42
									(−6.01)	(−5.17)	(−6.30)
SIZE											−0.07
											(−0.98)
BM											0.26
											(1.74)
MOM											0.01
											(6.79)
ILLIQ											0.03
											(2.71)
Y											1.73
											(3.22)
INV											−0.07
											(−0.33)
Intercept	0.74	0.56	0.58	0.57	0.56	0.56	1.32	0.56	1.25	1.20	1.31
	(1.84)	(1.61)	(1.67)	(1.63)	(1.62)	(1.58)	(5.67)	(1.61)	(4.48)	(4.13)	(2.00)
Adj. R^2	0.51%	2.43%	2.64%	2.56%	2.79%	2.53%	4.13%	2.71%	3.85%	4.29%	6.54%
n	1978	1978	1978	1978	1978	1819	2505	1698	1978	1819	1726

Table A20: Fama and MacBeth Regression Analyses - $\beta_{\mathbf{CME}}^{\mathbf{BEAR}}$ - 1989-1996 - continued

Panel C: Large Cap Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\beta_{\mathrm{CME}}^{\mathrm{BEAR}}$	−0.24	−0.25	−0.31	−0.18	−0.31	−0.26	−0.51	−0.25	−0.21	−0.19	−0.15
	(−0.91)	(−1.31)	(−1.57)	(−0.93)	(−1.36)	(−1.43)	(−2.29)	(−1.38)	(−1.24)	(−1.16)	(−0.84)
β^{CAPM}		0.42	0.58	0.41	0.38	0.40	0.02	0.45	0.50	0.57	0.61
		(1.75)	(2.93)	(1.69)	(1.65)	(1.69)	(0.06)	(2.06)	(2.24)	(2.50)	(2.68)
β^{-}			−0.17							−0.10	−0.17
			(−0.88)							(−0.55)	(−1.19)
$\beta^{\Delta\mathrm{VXO}}$				−0.26						−0.22	−0.21
				(−4.62)						(−4.19)	(−4.00)
β^{JUMP}					1.14						
					(0.87)						
β^{VOL}					−0.67						
					(−1.07)						
COSKEW						−0.01				−0.02	0.01
						(−0.57)				(−0.89)	(0.50)
$\beta^{\Delta\mathrm{SKEW}}$							−0.03				
							(−1.74)				
β^{TAIL}								−0.00			
								(−0.12)			
IVOL									−0.18	−0.21	−0.27
									(−1.98)	(−2.54)	(−3.29)
SIZE											−0.07
											(−0.99)
BM											0.20
											(1.41)
MOM											0.01
											(4.78)
ILLIQ											0.01
											(0.77)
Y											0.88
											(1.44)
INV											0.08
											(0.32)
Intercept	0.91	0.50	0.51	0.53	0.55	0.50	1.06	0.48	0.68	0.73	1.20
	(2.71)	(1.64)	(1.62)	(1.69)	(1.78)	(1.71)	(2.80)	(1.61)	(2.31)	(2.47)	(1.90)
Adj. R^2	0.71%	3.68%	3.97%	3.97%	4.17%	4.08%	5.22%	4.31%	4.41%	5.32%	8.71%
n	938	938	938	938	938	900	1138	869	938	900	866