Investor Sentiment: Does it augment the performance of asset pricing model?

Deven Bathia
Newcastle University*

Don Bredin
University College Dublin†

Abstract

This paper examines whether incorporating various investor sentiment measures in conditional asset pricing models can help to capture the impacts of the size, value, liquidity and momentum effects on risk-adjusted returns of the U.S. individual stocks. Using monthly data of individual securities for the period January 1981 to September 2010, we determine the significance of equity fund flow, investor survey, IPO first day returns, IPO volume, closed-end fund discount, equity put-call ratio, dividend premium, and change in margin debt and sentiment index, by including them as conditioning information in asset pricing models. Our results show that sentiment augmented asset pricing models often contributes in capturing the predictive power of firm attributes. In particular, we observe the out performance of equity fund flow, investor survey and sentiment index in capturing the asset pricing anomalies. Furthermore, we find that the value and momentum effects is effectively captured by sentiment augmented conditional version of the Fama-French (1993) three factor model.

Keywords: Investor sentiment, Asset Pricing, Conditioning information
JEL Classification: G12, G14

*E-mail: deven.bathia@ncl.ac.uk

†E-mail: don.bredin@ucd.ie. **Corresponding author:** Deven Bathia, Newcastle University Business School, Newcastle Upon Tyne, NE1 4SE, UK

1 Introduction

The static capital asset pricing model (CAPM) of Sharpe (1964) and Lintner (1965) assumes that a stock beta remains constant over time. However, it may be difficult to rely on this implausible assumption, as stock's beta continuously changes over a period of time due to dynamic nature of economy as well as nature of information available to an investors'. The CAPM assumption was later invalidated by Fama and French (1992) where they find 'flat' relationship between market beta and average returns. Furthermore, the CAPM argues that securities' systematic risk alone can explain its expected returns. However, previous studies have shown that firm specific factors also play significant role in explaining expected stock returns. Some of these factors that are considered to explain average stock returns are firm size (Banz (1981), Chan et al. (1985), Chan and Chen (1988, 1991)), earnings yield (Basu (1977), Ball (1978)), book-to-market ratio (Rosenberg et al. (1985), Chan, Hamao and Lakonishok (1991), Fama and French (1992)), dividend yield (Litzenberger and Ramaswamy (1979)), and leverage (Bhandari (1988)). Several studies have shown that time-varying beta version of multi-factor models can significantly capture the impact of firm pricing anomalies. Ferson et al. (1987) test asset pricing model where they allow expected risk premium and market betas to vary over time. They note that conditional models outperform unconditional models in capturing dynamics of factor loadings. Avramov and Chordia (2006) show that the time-varying beta version of the Fama-French model captures the predictive ability of size and book-to-market ratio.[1]

Previous studies have also attempted to attribute behavioral factors to securities mispricing. For instance, the presence of investors' under-reaction and overreaction are cited as main reasons for securities mispricing (De Bondt and Thaler (1985, 1987), Barberis et al (1998) and Daniel et al (1998)). Furthermore, Black (1986) and De Long et al. (1990) note that investors trade on 'noise' rather than fundamentals, resulting in securities mispricing. More recently, the presence of uninformed demand shocks and limits to arbitrage were highlighted as potential explanations for asset pricing anomalies (for example Baker and Wurgler (2007) and Brown and Cliff (2005)). Baker and Wurgler (2006) show that stocks that have subjective valuations and are difficult to arbitrage mostly tend to be small, young, highly volatile, unprofitable, non-dividend paying, extreme growth and distressed

[1] Also see Hansen and Richard (1987), Guo (2006) and Li (2007), who show that conditional models are better than unconditional models in explaining asset pricing anomalies.

stocks, and these stocks are main victims of investor sentiment. Lakonishok, Shleifer and Vishny (1994) highlight the possibility of judgemental errors of individual and institutional investors' focus on glamour stocks, to be explanation for anomalous excess returns of value stocks. Shliefer and Vishny (1997) note that, in the extreme circumstances, it may be difficult for professional arbitrageurs to bring the mispriced security value back to its fundamental values.

In this paper, we incorporate different investor sentiment measures, as conditioning information, in different asset pricing models to determine if it enhances the performance of these models. We assess the significance of each sentiment measure to determine whether it effectively captures the impacts of the size, value, liquidity and momentum effects on the risk-adjusted returns of individual stocks. The asset pricing models that we include in our study are the capital asset pricing model (CAPM), the Fama-French (1993) three-factor model (FF), FF model augmented with Pastor and Stambaugh (2003) liquidity factor (FFL), FF model augmented with momentum factor as explained by winners-minus-losers portfolio (FFM) and FF model augmented with liquidity factor and momentum factor (FFLM). In determining the significance of investor sentiment in asset pricing models, we adopt two-pass regression framework of Avramov and Chrodia (2006). In the first pass, we run time-series regression of excess returns of individual stocks on the risk factors of asset pricing models. In doing so, we allow factor loadings to vary with conditioning variables. Besides different sentiment proxies, the other conditioning variables that we include in specifying time-varying betas are firm-level variables, represented by market capitalization and book-to-market ratio (B/M) (e.g. Lewellen (1999), Gomes et al. (2003)), and macroeconomic variables, represented by default spread (e.g. Ferson and Harvey (1999), Lettau and Ludvigson (2003)). In the second pass regression, we run cross-sectional regression of risk-adjusted returns from the first pass regression, on the factors representing asset pricing anomalies. Risk-adjusted returns from the first pass regression is the sum of intercept and residuals. The variables representing asset pricing anomalies are firm size, measured by market capitalization, firm value, measured by book-to-market ratio, liquidity, measured by turnover, and momentum, measured by cumulative prior returns.

Ho and Hung (2009) laid the platform by considering only survey sentiment, as conditioning information, in asset pricing models. We extend their study by considering a range of sentiment measures and assess the significance of these measures on the impacts of size, value, liquidity and momentum effects on the risk-adjusted returns of individual stocks.

The different sentiment measures included in our study are equity fund flow, survey sentiment, IPO first day returns, IPO volume, closed-end fund discount, equity put-call ratio, dividend premium and percentage change in margin debt. We also determine the significance of composite sentiment index, constructed using first principal component analysis, as conditioning information in explaining the performance of our asset pricing framework.[2]

Our paper contributes to the existing literature in the following areas. First, we expand the set of sentiment proxies, to be considered as conditioning information, in asset pricing study. To our knowledge, this is the first study that attempts to determine the performance of asset pricing models by considering different sentiment proxies as conditioning variables. Our study attempts to determine the role different sentiment proxy plays in improving the performance of the conditional asset pricing model. Second, we attempt to find the significance of different sentiment measures in performance of different conditional asset pricing model considered in our study. As noted before, we want to determine the contribution of different sentiment measures in enhancing the performance of the conditional versions of the CAPM, FF model, FFL model, FFM model and FFLM model. We want to find how well each sentiment measures can capture the impacts of the size, value, liquidity and momentum effects on risk-adjusted returns of individual stocks for different asset pricing models. Third, as there seems to exists some controversy whether certain proxy (for example CEFD) should indeed be considered as sentiment measure, our study will shed some light on its importance in asset pricing study. For instance, if CEFD plays any significant role in our study, than it significance in behavioral finance literature should not be ignored. And lastly, since we consider all sentiment measures in aggregate by constructing composite sentiment index using principal component analysis, our study attempts to find the place for investor sentiment in asset pricing literature, instead of merely viewing them as an isolated behavioral factors.

Our findings show that the sentiment augmented asset pricing models often captures the impacts of the size, value, liquidity and momentum effects on cross-section of risk-adjusted returns. Although previous studies have shown that the conditional models often fail to capture the impact of liquidity and momentum effects (e.g. Avaramov and Chordia (2006)), our results show that the sentiment augmented asset pricing models successfully captures the impact of both liquidity and momentum effects on the risk-adjusted returns. Our

[2]Brown and Cliff (2004) and Baker and Wurgler (2006) also adopted first principal component analysis approach where they extract sentiment factor from the range of sentiment proxies.

results of the sentiment augment conditional CAPM show that the size effect os captured for all sentiment proxies (except for CEFD). The inclusion of PCR and sentiment index as conditioning information effectively explains asset pricing anomalies. When we incorporate investor sentiment in the Fama-French (1993) three factor model, we find that liquidity and momentum effect is captured for all sentiment variables. Furthermore, equity fund flow, investor survey and sentiment index display their prominence in explaining predictive power of firm attributes. Similarly, when FF model is augmented with Pastor and Stambaugh liquidity factor, we find that the impact of the momentum effect on the risk-adjusted returns is captured for all sentiment proxies (except for IPO first day returns). We again find that equity fund flow, investor survey, change in margin debt and sentiment index play significant role in capturing the impacts of the firm pricing anomalies. The significance of put-call ratio as well as sentiment index is observed in explaining the predictive power firm attributes when they are incorporated in the FF model augmented with momentum factor. And finally, momentum effect is explained for all sentiment variables when investor sentiment is incorporated in the FF model augmented with liquidity and momentum factor. Similar to the FFL model, sentiment augmented FFLM model performance is enhanced when equity fund flow, investor survey, change in margin debt and sentiment index are incorporated as conditioning information. The rest of the paper is structured as follows. In section 2 we discuss the relevant literature followed by the discussion of methodology in section 3. We provide the description of data in section 4. Section 5 discusses the empirical results followed by conclusion in section 6.

2 Literature Review

2.1 Asset Pricing

The CAPM argues that securities' systematic risk alone can explain its expected returns. The static CAPM assumption was, however, invalidated by Fama and French (1992), who found 'flat' relationship between market beta and average returns. Besides risk factors, previous studies have also shown that firm-specific variables also play significant role in explaining average stock returns. Some of these factors include firm size, book-to-market ratio, earnings yield, dividend yield, leverage, etc to name a few.[3] Fama and French (1993) in its three-factor model, show that the firm size (market capitalization) and firm value (book-to-market ratio) play significant role in capturing cross-sectional variation in average stock returns than market beta.[4] Furthermore, Fama and French (1996) highlight the significance of multi-factor model in explaining the returns of portfolio formed on earnings/price, cash flow/price and sales growth. However, the CAPM and Fama and French (1993) three-factor model failed to explain asset-pricing anomalies due to momentum effect or continuation of short term returns as shown by Jegadeesh and Titman (1993, 2001) and Grundy and Martin (2001). Furthermore, researchers have also considered liquidity factors (Pastor and Stambaugh (2003)) and downside risk factors (Post and Vliet (2006)) in explaining pricing anomalies.

The failure of static CAPM in accounting for risk dynamics across individual stocks, led academicians to determine the significance of conditional asset pricing models in explaining firm pricing anomalies. In these models, factor loadings are allowed to vary over time. In specifying time-varying betas, previous studies have considered firm specific variables, for example book-to-market ratio, dividend yield, market capitalization, etc (Lewellen (1999)), and variables related to business cycle conditions, for example, default spread, consumption-wealth ratio, etc (Lettau and Ludvigson (2003)). Jagannathan and Wang (1996) study the ability of the conditional CAPM in explaining the cross-sectional variation in average returns of stock portfolios and found that the conditional models perform substantially better than the static model. Later, Avramov and Chordia (2006) examined the empirical performance of conditional CAPM where they allow factor loadings to vary with the conditioning information. They apply conditional framework to single securities rather than to the large numbers of stock portfolios. They observe that the time-varying betas efficiently captures size and value effects.[5] We, therefore, consider conditional asset pricing models in our study, where we scale factor loadings with firm specific variables (size and book-to market ratio) and macro-economic variable (default spread), besides incorporating sentiment measure, as a conditioning variable. The different conditional specifications

[3]See Basu (1977), Banz (1981), Rosenberg (1985), Bhandari (1988), Litzenberg and Ramaswamy (1979) for detailed discussion and significance of these variables in explaining the average stock returns.

[4]The significance of three-factor model in explaining industry returns was shown by Fama and French (1997).

[5]Also see He et al. (1996), Ferson and Harvey (1999), Gomes et al. (2003), Wang (2003), who show that conditional models outperform unconditional models in explaining stock returns.

considered in our analysis is discussed later in methodology section.

2.2 Investor Sentiment

Previous studies have also determined number of sentiment measures and its significance in affecting security returns. Some of these proxies are widely accepted as sentiment measures by practitioners (e.g. investor survey, percentage change in margin debt, etc), and for some, there still exists some controversy (e.g. closed-end fund discount, fund flow, etc). In our sentiment augmented conditional asset pricing study, we include number of sentiment measures, for its significance, as discussed below.

Firstly, we consider direct measure of investor sentiment, investor survey, as it is widely popular and accepted sentiment proxy without any controversy. Investor surveys are often conducted across different countries to determine the level of investors' perception of the current and future state of economy, their financial situation, household income, etc. Previous studies have shown that information contained in the survey results are useful predictors of stock returns.[6] For instance, Fisher and Statman (2003) show that increase in consumer confidence index is associated with bullishness of the individual investors. Lemmon and Portniaguina (2006) find the significance of consumer confidence index in forecasting both small-cap stock returns and returns of stocks with low institutional ownership. Using II survey data, Brown and Cliff (2005) highlight that an increase in investors' optimism is associated with subsequent low returns as valuation levels return to their intrinsic value.

Secondly, we include closed-end fund discount, as a conditioning variable, in our conditional asset pricing study; although this measure still continue to remain popular, although controversial amongst academicians. For instance, researchers are still indifferent on whether closed-end fund discount (CEFD), the percentage difference between funds NAV and funds share price, can be considered as a measure of investor sentiment. As fixed number of shares are issued in the closed-end fund, the fund NAV should be equal to fund share price. However Weiss (1989) have shown that closed-end funds starts trading at an average of 10 percent discount within 120 days of trading. Furthermore, Lee et al. (1991) show that when CEFD is high (low), investors are pessimistic (optimistic) about

[6] In the U.S., American Association of Individual Investors (AAII), University of Michigan Consumer Confidence Index Survey and the Conference Board conducts monthly survey while Investors Intelligence conducts weekly surveys.

the future returns. However these findings were subsequently challenged by several authors (for example Chen et al. (1993), Elton et al. (1998), Chordia and Swaminathan (1998)).

Similar to CEFD, equity fund flow is not widely accepted as a measure of investor sentiment. Researchers explain the positive association between concurrent fund flow and stock returns to either price pressure effect or information effect (Warther (1995), Edelen and Warner (2001)). However, equity fund flow continues to remain popular sentiment proxy amongst practitioners, as studies have shown that the causality running from fund flow to stock returns is due to price pressure effect.[7] Furthermore, Brown et al. (2002) show that daily mutual fund flow can be considered as an instrument of investor sentiment. Frazzini and Lamont (2006) find that high sentiment, as measured by fund flow, predicts lower future returns and growth stocks tend to be main victims of high sentiment. Indro (2004) also notes that the increase in fund flow is associated with simultaneous increase in consumer confidence index.

Previous studies have also shown that the information contained in non-price derivative measure can be helpful in determining the level of investor sentiment in the stock markets. Some of these measures include open interest, volatility index (VIX) and equity put-call ratio (PCR). Studies by Easely et al. (1998) and Pan and Poteshman (2006) show that information contained in options volume are useful in determining future stock prices. Ahoniemi (2008) find that ARIMA (1, 1, 1) model augmented with GARCH errors helps in forecasting directional change in the VIX by up to 58.5%.

Numerous trading indicator are often considered as sentiment proxies by practitioners. Some of these measures include trading volume, percentage change in short interest, percentage change in margin debt, etc. These measures have been included in previous studies to determine its effect on stock returns (Brown and Cliff (2004)). In our study, we include the percentage change in margin debt, as a conditional sentiment variable. The increase in margin debt is often considered as a bullish indicator since investors' rely heavily on margin debt when they perceive excessive optimism about the future economy. Baker and Wurgler (2006, 2007) consider 'dividend premium' as a measure of sentiment, as they note that it helps to assess the relative demand of an investors for dividend paying stocks.[8] Similarly

[7]Bathia and Bredin (2012) highlight the positive association between equity fund flow and concurrent aggregate market returns to price pressure effect.

[8]Baker and Wurgler (2004) define 'dividend premium' as the difference between the average market-to-book ratio of dividend payers and non-payers. They show that dividend non-payers tend to pay dividends

IPO first day average returns are associated with investors' enthusiasm, as previous studies have shown that IPO are mostly underpriced.[9] Similarly, IPO volume is often considered to be a measure of sentiment, due to the presence of phenomenon which is often termed as "hot-issue" markets. Previous studies have shown that IPO activity usually happens during boom times or when investor sentiment is high.[10]

In our sentiment-augmented conditional asset pricing study, we include all the above measures in isolation and also construct composite sentiment index using first principal component analysis (PCA). The data source of investor sentiment measures and description of PCA is explained later in data section.

3 Methodology

In assessing the significance of different sentiment measures, as conditioning variables, in explaining asset pricing anomalies, we extend two-pass regression framework of Avramov and Chordia (2006). In the first pass regression, we regress excess stock returns on the asset pricing factors where we allow factor loadings to vary conditionally over time. In the second pass regression, we run cross-sectional regressions of the risk-adjusted returns, which is the sum of the pricing error and the residual from the first pass regression, on the firm characteristics of size, book-to-market ratio, and other variables that represent liquidity (turnover) and momentum effects (cumulative prior returns). The conditional framework for testing sentiment-augmented asset pricing models is explained below.

Under the conditional framework of K-factor model, returns for security i is given by,

$$[R_{it} \mid I_{t-1}] = R_{ft} + \Sigma_{k=1}^{K} \gamma_{kt-1} \beta_{ikt-1} \tag{1}$$

where, R_{it} is return on stock i at time t, I_{t-1} is the common information available to an investors at *t-1*, R_{ft} is the risk-free rate, γ_{kt-1} is the risk premium for factor K at *t-1*, and β_{ikt-1} is the conditional beta of asset i corresponding to factor K at *t-1*. We run on the risk premium of the Kth factor in the first pass regression, where the excess return on security

when demand from investors is high and tend to avoid paying dividend when demand is low.

[9]See Ritter (2003) and Ljungqvist (2006) for detailed explanation of IPO underpricing.

[10]Also see Ritter (1984, 1991) and Ibbotson and Ritter (1995) for detailed discussion of IPO and relevant literature.

i is regressed on risk premium of Kth factor and conditional beta.

$$[R_{it} \mid I_{t-1}] - R_{ft} = \alpha_i + \Sigma_{k=1}^{K} \gamma_{kt-1}\beta_{ikt-1} + \epsilon_{it} \tag{2}$$

where, $[R_{it} \mid I_{t-1}] - R_{ft}$ is excess return of stock i, α_i is the intercept of asset i, γ_{kt-1} is risk premium for factor K at *t-1*, β_{ikt-1} is scaled beta for factor K at *t-1* and ϵ_{it} is the residual error of asset i at time t. We then run the second pass regression, where we regress risk-adjusted returns from the first pass regression on the variables of the firm characteristics of size and book-to-market ratio as well as liquidity and momentum factors. The general form of second-pass regression framework is given by:,

$$R_{it}^{*} \equiv R_{it} - [R_{ft} + \beta(\theta; s_{t-1}, f_{t-1}, m_{it-1})' X_t] \tag{3}$$

$$R_{it}^{*} = \alpha_{0t} + \beta_t^{*} Y_{it-1} + e_{it} \tag{4}$$

where, R_{it}^{*} is the estimated risk-adjusted return of stock i at time t and is the sum of pricing errors (intercept) and residual, both obtained from the first-pass regression as per different specification explained later in this section. θ represents the parameters that captures the dependence of β on investor sentiment, s_{t-1}, firm specific characteristics (size and book-to-market ratio), f_{it-1}, and macro-economic variable (default spread), m_{it-1}. X_t represents vector of risk factors specified in the asset pricing model. Y_{it-1} includes all the factors that represents size, value, liquidity and momentum effects. Since the null hypothesis of exact pricing should successfully capture asset pricing anomalies in the fist pass time-series regression, our aim is to find that the factor loadings, represented by β_t^{*} in equation 4, is insignificant and equal to zero. In specifying firm characteristics variables, we use lagged value at one period (*t-1*) so as to account for bid-ask effects and thin trading, due to possible biases of the risk-adjusted returns.

We model the beta (β) in the first-pass regression in four different specifications discussed below. The conditional beta equation is given by,

$$\beta_{i,t-1} = f(z_{t-1}) \tag{5}$$

$$\beta_{i,t-1} = \beta_{i,0} + \beta_{i,1}(z_{t-1}) \tag{6}$$

where, $\beta_{i,t-1}$ is the conditional beta to be modeled, and $f(z_{t-1})$ is the function of all 'z' exogenous variables at t-1. In our conditional asset pricing framework, we condition beta as a function of sentiment measure (s_{t-1}), macro-economic variable (default spread (m_{t-1}))

and firm characteristics (($size_{t-1}$) and (B/M_{t-1})). As noted before, the justification for specifying macro-economic variable and firm specific variables is derived from the pervious studies (e.g. Lewellen (1999), Lettau and Ludvigson (2001)). The conditional beta can then be expressed in the following form,

$$\begin{aligned} \beta_{i,t-1} = \quad & \beta_{i,0} + \beta_{i,1}(s_{t-1}) + \beta_{i,2}(m_{t-1}) + \beta_{i,3}(m_{t-1})(s_{t-1}) \\ & + (\beta_{i,4} + \beta_{i,5}(s_{t-1}) + \beta_{i,6}(m_{t-1}))size_{i,t-1} \\ & + (\beta_{i,7} + \beta_{i,8}(s_{t-1}) + \beta_{i,9}(m_{t-1}))B/M_{i,t-1} \end{aligned} \tag{7}$$

The following four specifications are implemented for modeling beta with conditioning variables:

Specification A: function of (size + B/M) and s [i.e. $\beta_{i,2} = \beta_{i,3} = \beta_{i,6} = \beta_{i,9} = 0$]
Specification B: function of m and s [i.e. $\beta_{i,4} = \beta_{i,5} = \beta_{i,6} = \beta_{i,7} = \beta_{i,8} = \beta_{i,9} = 0$]
Specification C: function of s [i.e. $\beta_{i,2} = \beta_{i,3} = \beta_{i,4} = \beta_{i,5} = \beta_{i,6} = \beta_{i,7} = \beta_{i,8} = \beta_{i,9} = 0$]
Specification D: function of all variables; s, m, size and B/M [i.e. all $\beta \neq 0$]

We also test for unconditional case for each model, where we do not incorporate sentiment measures, firm characteristics (size and B/M) and macro-economic variable. We illustrate first pass regression using conditional beta for a single factor CAPM. For instance, the first-pass regression of Specification D of the CAPM will be given by,

$$\begin{aligned} R_{it} - R_{ft} = \alpha_i + \gamma_t[& \beta_{i,0} + \beta_{i,1}(s_{t-1}) + \beta_{i,2}(m_{t-1}) + \beta_{i,3}(s_{t-1})(m_{t-1}) \\ & + (\beta_{i,4} + \beta_{i,5}(s_{t-1}) + \beta_{i,6}(m_{t-1}))size_{i,t-1} \\ & + (\beta_{i,7} + \beta_{i,8}(s_{t-1}) + \beta_{i,9}(m_{t-1}))B/M_{i,t-1}] + \epsilon_{i,t} \end{aligned} \tag{8}$$

$$\begin{aligned} R^*_{it} = & \alpha_i + \beta_{i,0}\gamma_t + \beta_{i,1}(s_{t-1})\gamma_t + \beta_{i,2}(m_{t-1})\gamma_t + \beta_{i,3}(m_{t-1})(s_{t-1})\gamma_t \\ & + \beta_{i,4}SIZE_{i,t-1}\gamma_t + \beta_{i,5}(s_{t-1})SIZE_{i,t-1}\gamma_t + \beta_{i,6}(m_{t-1})size_{i,t-1}\gamma_t \\ & + \beta_{i,7}B/M_{i,t-1}\gamma_t + \beta_{i,8}(s_{t-1})B/M_{i,t-1}\gamma_t + \beta_{i,9}(m_{t-1})B/M_{i,t-1}\gamma_t + \epsilon_{i,t} \end{aligned} \tag{9}$$

where, R^*_{it} is excess return over and above the risk-free rate ($R_{it} - R_{ft}$), γ_t is excess market return at time t over and above the risk-free rate (market risk premium).

We implement Fama-Macbeth (1973) approach in estimating the precision of cross-sectional regression (CSR) estimates. To account for error-in-variable bias as a result of Fama-Macbeth CSR, we implement the corrections proposed by Shanken (1992).[11]

[11] We do not report the corrections of Jagannathan and Wang (1998) as they show that with the as-

4 Data

4.1 Market Data

The main data consist of monthly equity data for all the equity shares listed on the New York Stock Exchange (NYSE) and American Stock Exchange (AMEX). The data is sourced from the Center for Research for Security Prices (CRSP) and COMPUSTAT database. In our analysis, we only consider common shares (CRSP share code 10 and 11) for the period January 1981 through September 2010. Given the lack of sentiment data pre-1980 and the significant survivorship bias in pre-1980 COMPUSTAT data, our sample starts from 1981.[12] This gives us about 357 monthly observations. The common stock should satisfy the following criteria in order to be included in our analysis. First, the returns data for the current month t and previous 36 months should be available from the CRSP. Second, sufficient data on stock price and common shares outstanding should be available in order to compute size, which is measured by market capitalization. Third, sufficient data on t-2 trading volume should be available so as to compute turnover (T/O). Fourth, sufficient data should be available from COMPUSTAT for computing book-to-market (B/M) ratio as of December of previous calendar year. Following Fama and French (1992), the value of B/M for July of year t to June of year t+1 is computed using accounting data at the end of calendar year t-1. The B/M ratio greater than 0.995 fractile or less than 0.005 fractile is set as 0.995 and 0.005 respectively. We drop all the firms that have negative B/M ratio.

After this screening process, we arrive at an average of 4,067 stocks. In running cross-sectional regressions, we consider natural logarithmic transformation of all our monthly variables (except security returns). For instance, size, which is measured by market capitalization (measured in billion of dollars), is the natural logarithm of the market capitalization of an individual firm. Turnover, which is a measure of liquidity, is the logarithmic transformation of the turnover ratio (turnover ratio is arrived by dividing trading volume by number of shares outstanding). Similarly, B/M is the logarithmic transformation of the

sumptions of conditional heteroskedasticy, Fama-MacBeth (1973) t-statistics calculation procedure does not necessarily understate the standard errors of the estimates. To follow conservative approach, we therefore report Shanken (1992) corrections, besides Fama-MacBeth estimates.

[12] It is widely acknowledged that survivorship-bias exists in COMPUSTAT's pre-1978 data. For example, Davis (1994) notes the 1963-1978 period to be a period where Compustat data is more suspectible to survivorship bias. Kothari et al. (1995) provides a detailed assessment of Compustat's selection procedure.

book-to-market ratio. As a proxy for market returns, we consider CRSP value-weighted returns including distributions and one month T-Bill rate as a proxy for risk-free rate. To proxy for momentum, we calculate Ret 2-3, Ret 4-6 and Ret 7-12, which is cumulative returns over the past second through past third months, past fourth through past sixth month and past seventh through the past twelfth months respectively. The Fama-French factors, small-minus-big (SMB) and high-minus-low (HML), and momentum factor are sourced from Kenneth French data library.[13] We include default spread, as a conditioning variable, to proxy for macro-economic variable. Default spread is measured by taking the differences in yield between Moody's BAA and AAA corporate bonds (data taken from the Board of Governors of the Federal Reserve System).

Table 1 presents the summary statistics of time-series averages of cross-sectional means and standard deviation for 4067 NYSE-AMEX stocks for the period January 1981 to September 2010.The fourth and fifth column labeled coefficients and t-values are Fama Macbeth coefficients and t-values derived from running cross-sectional OLS regression of excess returns on the firm specific variables (size and B/M), turnover and cumulative prior returns. The positive significant coefficient of B/M ratio indicate that small firms and the firms that have high B/M ratio) earn higher excess returns, the finding consistent with the previous studies (Avramov and Chordia (2006), Brennan, Chordia and Subrahmanyam (1998), etc). We get significant negative coefficient for turnover further indicating that firms with lower liquidity earns higher excess returns. Furthermore, we also obtain positive and significant coefficient for cumulative returns, the finding which is in line with the momentum phenomenon highlighted by Jegadeesh and Titman (1993). This indicates that the prior returns are positive related to excess returns.

4.2 Investor Sentiment Data

In assessing the significance of investor sentiment as a conditioning variable in asset pricing models, we consider eight monthly sentiment variables in its standardized form. We source investor survey data from University of Michigan, Survey of Consumer (UMC), whereas equity fund flow data (EFF) is obtained from the Investment Company Institute. Following Indro (2004), we compute equity fund flow variable as a percentage of total equity fund

[13]Prof. French data library is available at, `http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html`

assets. We source Margin Debt data (MD) from NYSE Factbook and the equity options volume data from the Chicago Board of Options Exchange. Following Pan and Poteshman (2006), we calculate put-call ratio (PCR) as put volume divided by total equity options volume (put and call volume). IPO volume (IPOV) and IPO average first day returns (IPOR) are sourced from Jay Ritter data library and dividend premium (DP) and closed-end fund discount data (CEFD) are sourced from from Prof Jeffery Wurgler web page.[14].

As each individual sentiment proxy may include sentiment component and non-sentiment, idiosyncratic, component, we use first principal component analysis (PCA) to isolate sentiment component. Before constructing a sentiment index, we remove business cycle variation from each of these proxies, where we regress each raw sentiment variable on five macro-economic variables and use the residuals from the regression in the first principal component analysis (PCA). These residuals can, therefore, be considered as a cleaner measure of investor sentiment.[15] The five macro-economic variables on which raw sentiment proxies are regressed on are change in consumer durables, consumer non-durables, consumer services (data obtained from the U.S. Department of Commerce, Bureau Economic Analysis), dummy variable for NBER recession, and change in industrial production (data obtained from the Board of Governors of the Federal Reserve System).

The resulting index of the orthogonalized sentiment proxies using PCA is of following form:

$$\begin{aligned} SENT_t = {} & 0.3001 Survey + 0.3686 FundFlow + 0.4140 CEFD + 0.3350 IPOReturns \\ & + 0.3876 IPOVolume - 0.3797 PCR - 0.3980 DivPremium + 0.1941 MarginDebt \end{aligned} \quad (10)$$

where $SENT_t$ represents the composite sentiment index. The resulting sentiment index (IND, henceforth) is constructed after standardizing each sentiment proxies. This index constructed from the first principal component explains 45% of the total standardized variance of the orthogonalized proxies.

[14]The data from Prof Jeffery Wurgler webpage can be accessed at `http://people.stern.nyu.edu/jwurgler/`, whereas data library of Prof Jay Ritter can be accessed at `http://bear.warrington.ufl.edu/ritter/ipodata.htm`

[15]The approach that we adopt is similar to Baker and Wurgler (2006). They construct their sentiment index using six sentiment variables, viz. CEFD, IPO first day returns, IPO volume, dividend premium, NYSE share turnover and the equity shares in new issues for the period 1961 to 2005.

5 Empirical Results

In discussing the results for each model, we will look at the significance of Fama-Macbeth coefficient obtained from running the second pass cross-sectional OLS regression. To account for error-in-variable bias from running the cross-sectional OLS regression, we also report Shanken (1992) corrected t-values, besides Fama-Macbeth t-values. As noted before, the null hypothesis of exact pricing should successfully capture pricing anomalies in the first pass time series regression. Therefore, the coefficients obtained in the second pass cross-sectional OLS regression should be insignificant. However, if the obtained Fama-Macbeth coefficient in the second pass cross-sectional OLS regression is significant, it indicates that the pricing anomaly variables (size, value, liquidity and momentum) are related to the cross-sectional risk adjusted excess returns. We also compare the magnitude of Adj R^2 obtained in the unconditional case for all the models in our study with the conditional case. The lower adj R^2 and insignificant coefficient will indicate that the given model successfully captures size, value, liquidity and momentum effects. Further, if this holds true for conditional models, then it indicates that conditional models outperform unconditional models in capturing the firm pricing anomalies. We discuss our findings for each asset pricing models in the following subsections.

5.1 The capital asset pricing model (CAPM)

The results of the unconditional CAPM is presented in table 2 and that of conditional CAPM is presented in table 3. In both the tables, we present Fama-Macbeth coefficients and its respective t-values from running the cross-sectional OLS regression of the monthly risk-adjusted returns of individual stocks on the variables representing firm characteristics (size and B/M), and liquidity (turnover) and momentum (cumulative past returns: Ret 2-3, Ret 4-6 and Ret 7-12) effects. The conditional specification (A, B, C and D) is given in the second row. The first column presents nine sentiment variables including sentiment index (as discussed in the earlier section). The corresponding Fama-Macbeth coefficient estimates is presented in the first row for each sentiment proxy followed by the Fama-Macbeth t-values (fmb) and Shanken (1992) corrected t-values (shk) in the second and third row respectively. And the fourth row for each sentiment variable explains the adjusted R^2.

From table 2, we see that the firms with small market capitalization, high B/M ratio, low

T/O and high prior returns give higher risk-adjusted excess returns, as we get significant coefficient estimates for all the variables representing pricing anomalies. The unconditional CAPM, therefore, fails to capture the asset pricing anomalies as the null hypothesis of exact pricing is completely invalidated. However, in our single factor conditional CAPM (see table 3), we find that the size effect is effectively captured for all sentiment variables for specification A where beta is conditioned on firm characteristics and investor sentiment. For specification B, where beta is scaled on investor sentiment and default spread, we get insignificant coefficient estimates for equity fund flow, investor survey and IPO returns. Furthermore, for specification D, where all variables (sentiment, size, B/M ratio and default spread) enter in beta conditioning process, we get insignificant coefficient estimates for IPO volume, CEFD and PCR. Overall, our results show that the size effect is effectively captured with the inclusion of investor sentiment in the conditional CAPM.

We also find that the sentiment augmented conditional CAPM successfully captures the value effect for IPO first day return, IPO volume, PCR, dividend premium and sentiment index (specification A). The inclusion of CEFD along with the other variables (firm characteristics and default spread) in specification D also captures the impact of value effect on the risk-adjusted returns. Furthermore, the impact of liquidity effect on the risk-adjusted returns is captured in specification D for IPO first day returns, dividend premium and sentiment index. We get positive and insignificant coefficient estimates for investor survey, CEFD and PCR in specification B of cumulative prior returns (Ret 2-3), further indicating that sentiment augmented conditional CAPM also captures the impact of momentum effect on the risk-adjusted returns. The coefficient estimates for Ret 4-6 and Ret 7-12 are positive and significant indicating that they are related to the risk-adjusted returns. In all, we find the inclusion of PCR and sentiment index as conditioning variable effectively captures the impacts of the size, value, liquidity and momentum effects on the risk-adjusted returns.

As noted earlier, we also look at the adjusted R^2 to determine the efficacy of the model. The adjusted R^2 of the sentiment augmented conditional CAPM is relatively lower than the unconditional CAPM, indicating that the conditional CAPM outperforms unconditional CAPM in capturing firm pricing anomalies. This holds true for all sentiment proxies conditioned in four different specifications. For instance, the magnitude of the adjusted R^2 is significantly reduced from 4.87% for the unconditional CAPM (see table 2) to 2.76% for sentiment index in specification D for the conditional CAPM (see table 3). Our findings are not consistent with that of Avramov and Chrodia (2006), where they highlight that the conditional CAPM fails to capture the impact of firm attributes on risk-adjusted returns. We note the difference in results is mainly due to the inclusion of different sentiment proxies, as a conditioning variable, in scaling factor loadings.

5.2 The Fama-French three factor model (FF)

Similar to the unconditional CAPM, the unconditional version of the FF model (see table 2) fails to capture the predictive power of firm attributes, as we get significant coefficient estimates for all pricing anomalies. The addition of SMB and HML risk factors, in addition to excess market returns, result in a decrease of the adjusted R^2 from 4.82% of the unconditional CAPM to 2.79% of the unconditional FF model. This indicates that the FF model are relatively better than the CAPM in capturing the firm pricing anomalies.

The findings of the conditional FF model is reported in table 4. Our results show that the size and value effect is effectively captured when investor sentiment is incorporated as a conditioning variable. For instance, the impact of the size effect on the risk-adjusted returns is captured effectively for equity fund flow, investor survey, CEFD and sentiment index in specification D where beta is conditioned on investor sentiment along with the other variables (firm characteristics and default spread). Furthermore, the impact of the value effect on the risk-adjusted returns is captured for all sentiment measures. For instance, specification D, where beta is scaled on all variables including investor sentiment, we get insignificant coefficient estimates for all sentiment variables (except for dividend premium and change in margin debt). The liquidity effect, as measured by turnover, is effectively captured in specification D for equity fund flow, change in margin debt and sentiment index and in specification B (where beta is scaled on investor sentiment and default spread) for investor survey. We also obtain insignificant coefficient estimates on prior cumulative returns (Ret 2-3) for all sentiment variables, further indicating that the impact of momentum effect is captured on risk-adjusted returns. However, we get significant estimates for Ret 4-6 and Ret 7-12. Avramov and Chordia (2006) argue that their conditional version of the FF model fails to capture the impact of momentum effect on stock returns. However, they do not include investor sentiment as conditioning variable in specifying time-varying betas. Our results, therefore, confirms the prominence of investor sentiment and an important role it plays in capturing the momentum effect in the conditional FF model.

We also find that the magnitude of adjusted R^2 for specification D has decreased significantly to 2.37% relative to 2.79% of the unconditional FF model, further indicating efficacy of the conditional FF models. The beta specification C (function of investor sentiment) fails to capture the impacts of size, value, liquidity and momentum effects for all sentiment proxies, thus defying the isolated role sentiment in capturing firm pricing anomalies. It therefore appears that the role of sentiment is enhanced only when it is included as conditioning variable along with the other variables (firm characteristics and/or default spread). In all, we note that when equity fund flow, investor survey and sentiment index is included as conditioning variables in beta conditioning process, the impacts of the size, value, liquidity and momentum effects is captured on the risk-adjusted returns of individual stocks.

5.3 The FF model augmented with the Pastor-Stambaugh liquidity factor (FFL)

Pastor and Stambaugh (2003) highlight that stocks with high liquidity betas earn higher average returns than stocks with low liquidity betas. We determine whether FF model augmented with liquidity factor contributes in capturing size, value, liquidity and momentum effects on risk-adjusted returns of individual stocks. The findings of the unconditional FFL model is similar to that of the unconditional FF model (see table 2). The unconditional FFL model fails to capture predictive power of firm attributes, as we get significant coefficient estimates. The overall explanatory power, adjusted R^2, of the unconditional FFL model is 2.71%. The results of the FF model augmented with Pastor-Stambaugh liquidity factor is reported in table 5. We find that the specification A, where beta is conditioned on firm characteristics and investor sentiment, successfully captures the impact of the size effect for all sentiment measures (except for CEFD), as we get insignificant coefficient estimates. Similarly, the impact of the value effect on risk-adjusted returns is captured for all sentiment variables (except for IPO first day returns, IPO volume and PCR). For instance, specification A where beta is conditioned on firm characteristics and investor sentiment, captures the impact of the value effect for equity fund flow, investor survey and CEFD. The inclusion of equity fund flow, CEFD and change in margin debt along with all other variables (specification D) helps to capture the impact of the liquidity effect on the risk-adjusted returns. We get significant coefficients estimates for all sentiment proxies for specifications A, B and C of turnover. Furthermore, momentum effect, as measured by Ret

2-3, is captured for all sentiment variables (except for IPO first day returns). For instance, specification B where beta is conditioned on investor sentiment and default spread, capture the impact of momentum effect on risk-adjusted returns for all sentiment proxies (except for IPO first day returns and CEFD). We also obtain lower adjusted R^2 for all conditional specifications relative to that of the unconditional specification of the FFL model, justifying the superiority of the conditional models over unconditional models.

Similar to the conditional version of the FF model, we find that beta specification C (function of investor sentiment) fails to capture the impacts of the size, value, liquidity and momentum effects on the risk-adjusted returns. As noted before, we would again like to stress that the inclusion of sentiment proxies, in specifying time-varying betas help to capture firm pricing anomalies. In the case of the conditional version of the FFL model, we find that the inclusion of equity fund flow, investor survey, change in margin debt and sentiment index as conditioning information captures the predictive power of firm attributes. Our findings again not consistent with that of Avramov and Chordia (2006), where they show that the inclusion of liquidity factor does not capture the impact of liquidity and momentum effects on the cross-section of individual stock returns.

5.4 The FF model augmented with the momentum factor (FFM)

The results of the unconditional FF model augmented with the momentum factor, as explained by the winners-minus-losers portfolio (WML) is reported in table 2. We again obtain significant coefficient estimates of the firm attributes indicating the failure of the unconditional FFM in capturing the impacts of the size, value, liquidity and momentum effects on the risk-adjusted returns. The adjusted R^2 of the unconditional FFM model is lower than the CAPM and FF model, but almost same as that of the FFL model (i.e. 2.71%). The lower adjusted R^2 shows that the FFM model is at least better than the CAPM and FF model in capturing predictive power of the firm attributes.

The results of the conditional FFM model is presented in table 6. We find that the beta specifications A and B capture size effect for equity fund flow, investor survey and sentiment index. Furthermore, beta specification D captures the size effect for IPO first day returns and IPO volume. The value effect is successfully captured in beta specification D (function of all variables including investor sentiment) for put-call ratio and sentiment index. The beta specification A (function of investor sentiment and firm characteristics) captures liquidity effect for IPO first day returns and sentiment index. The momentum effect, as measured by the past cumulative returns, is well captured in specification A of Ret 2-3 for all the sentiment measures (except equity fund flow, CEFD, dividend premium and change in margin debt). The inclusion of equity fund flow and change in margin debt in in beta specification B (function of investor sentiment and default spread) captures the impact of momentum effect on the risk-adjusted stock returns. Similar to the findings of the previous model, we get significant coefficient estimates for Ret 4-6 and Ret 7-12. In all, we find that the inclusion of PCR and sentiment index as conditioning information contributes to an enhancement of conditional FFM model.

5.5 The FF model augmented with the liquidity and momentum factor (FFLM)

Consistent with the findings of the other unconditional models discussed before, we again observe significant coefficient estimates for firm pricing anomalies (see table 2), indicating that unconditional FF model augmented with liquidity and momentum factor fails to capture the impacts of size, value, liquidity and momentum effects on the risk-adjusted returns. However, the performance of the FFLM model is significantly better than the other unconditional models (CAPM, FF, FFL and FFM) which is reflected in the lower adjusted R^2 (i.e. 2.65%).

The results of the conditional FFLM model is reported in table 7. We find that the size effect is effectively captured for all sentiment proxies (except for dividend premium) in either beta specification A, B or D. The beta specification D captures value effect for equity fund flow and CEFD. The inclusion of change in margin debt and sentiment index in beta specification B (function of sentiment and default spread) capture the impact of both value and liquidity effects on the risk-adjusted returns. Similar to the conditional versions of the FFL and FFM model, the beta specification C fails to capture all pricing anomalies.

The impact of momentum effect, measured by Ret 2-3, on risk-adjusted returns is captured for all sentiment proxies. For instance, the beta specification A captures momentum effect for investor survey, IPO volume, CEFD, PCR and change in margin debt, whereas the beta specification B captures momentum effect for equity fund flow, investor survey, IPO first day returns, dividend premium and sentiment index. We also find the adjusted R^2 for all sentiment proxies in all beta specifications to be lower than that of the conditional

FFLM model, indicating that the sentiment augmented conditional version of the FFLM model outperforms unconditional FFLM model. Overall, we note that the inclusion of equity fund flow, investor survey, change in margin debt and sentiment index as conditioning information in the FFLM model helps to capture the impacts of the size, value, liquidity and momentum effects on the risk-adjusted returns.

6 Conclusion

In this paper, we examine whether incorporating investor sentiment, as conditioning information, can help to capture the predictive ability of size, book-to-market ratio, turnover and past returns in explaining risk-adjusted returns of individual stocks. In assessing the predictive ability of these pricing attributes, we study the conditional case of the single factor CAPM, Fama-French three-factor (FF) model, FF model incorporated with Pastor and Stambaugh liquidity factor, FF model incorporated with momentum factor, and FF model incorporated with liquidity and momentum factor. We adopt single securities pricing framework, where in, we condition factor loadings in the first pass time series regression by incorporating investor sentiment along with the firm specific variables (size and book-to-market ratio) and macro-economic variable (default spread). To assess the efficacy of different asset pricing models, we regress risk-adjusted returns (the sum of alpha and residuals) obtained from the first pass time-series regression on the pricing attributes as measured by market capitalization, book-to-market ratio, turnover and past returns; variables representing size, value, liquidity and momentum effects respectively. We find that the conditional models outperform unconditional model in capturing the impacts of the size, value, liquidity and momentum effects on the risk-adjusted returns of individual stocks.

In particular, we find that the inclusion of put-call ratio and sentiment index as conditioning information in the CAPM contributes in capturing the impacts of the size, value, liquidity and momentum effects on the risk-adjusted returns. The sentiment augmented conditional FF model (e.g. equity fund flow, investor survey and sentiment index) play significant role in explaining the predictive power of firm attributes. Furthermore, the sentiment augmented FF model captures value and momentum effect for all sentiment proxies. Interestingly, in specification C where factor loading is conditioned on only investor sentiment, we get significant coefficient estimates, further indicating that the role of sentiment is enhance only when it is included as conditioning variable along with either firm characteristics and/or default spread. This holds true even for the FFL model, FFM model and FFLM model. We also find that equity fund flow, investor survey, change in margin debt and sentiment index play critical role in conditional FFL model as well as conditional FFLM model in explaining the predictive power of firm attributes. Furthermore, the momentum effect is well captured in conditional FFLM model for all sentiment proxies. And finally, the inclusion of put-call ratio and sentiment index as conditioning information in the FFM model contributes in capturing the impacts of the size, value, liquidity and momentum effect on the risk-adjusted returns of individual stocks.

As previous studies have shown that conditional models at its very least fail to capture the impact of turnover and momentum effects on the risk-adjusted returns (e.g. Avramov and Chordia (2006), etc), we find that sentiment-augmented conditional asset pricing models play significant role in capturing the impacts of the size, value, liquidity and momentum effects on the risk-adjusted returns of individual stocks. Of all the role of nine different sentiment proxies examined in conditional asset pricing models, we find the role of equity fund flow, investor survey, put-call ratio, change in margin debt and sentiment index to be effective in capturing the predictive power of firm attributes. Furthermore, we also note that conditional versions of sentiment augmented FFL model and sentiment augmented FFLM model to be more helpful in explaining cross-section of risk-adjusted returns of individual stocks. Overall the contributory role of investor sentiment should not be ignored in explaining pricing anomalies, as they certainly play significant role in augmenting the performance of the conditional asset pricing models.

References

[1] Ahoniemi, K., 2008. Modeling and Forecasting the VIX Index. Working Paper. Helsinki Center of Economic Research.

[2] Avramov, D., and Chordia, T., 2006. Asset Pricing Models and financial markets anomalies. Review of financial studies 19. 1001-1040.

[3] Baker, M., and Wurgler, J., 2004. A Catering theory of Dividends. Journal of Finance 59. 1125-1166.

[4] Baker, M., and Wurgler, J., 2006. Investor Sentiment and the Cross-Section of Stock Returns. Journal of Finance 61. 1645-1680.

[5] Baker, M., and Wurgler, J., 2007. Investor Sentiment in the Stock Market. Journal of Economic Perspectives 21. 129-151.

[6] Ball, R., 1978. Anomalies in relationships between securities' yields yield-surrogates. Journal of Financial Economics 6. 103-126.

[7] Banz, R., 1981. The relationship between returns and market value of common stocks. Journal of Financial Economics 9. 3-18.

[8] Barberis, N., Shleifer, A., and Vishny, R., 1998. A model of investor sentiment. Journal of Financial Economics 49. 307-343.

[9] Basu, S., 1977. Investment performance of cormnon stocks in relation to their price earnings ratios: A test of the efficient market hypothesis. Journal of Finance 32. 663-682.

[10] Bathia, D., and Bredin, D., 2012. An examination of investor sentiment effect on G7 stock market returns. European Journal of Finance. Forthcoming.

[11] Bhandari, L., 1988. Debt-Equity ratio and expected common stock returns: Empirical evidence. Journal of Finance 43. 507-528.

[12] Black, F., 1986. Noise. Journal of Finance 41. 529-543.

[13] Brennan, M., Chordia, T., and Subrahmanyam, A., 1998. Alternative factor specification, security characteristics, and the cross-section of expected stock returns. Journal of Financial Economics 49. 345-373.

[14] Brown, G., and Cliff, M., 2004. Investor Sentiment and the near term stock market. Journal of Empirical Finance 11. 1-27.

[15] Brown, G., and Cliff, M., 2005. Investor Sentiment and Asset Valuation. Journal of Business 78. 405-440.

[16] Brown, S., Goetzmann, W., Hiraki, T., Shiraishi, N., and Watanabe, N., 2003. Investor Sentiment in Japanese and US Daily Mutual Fund Flows. Working Paper. NBER 9470.

[17] Chan, K., Chen, N., and Hsieh, D., 1985. An exploratory investigation of the firm size effect. Journal of Financial Economics 14. 451-471.

[18] Chan, K., and Chen, N., 1988. An unconditional asset pricing test and the role of firm size as an instrument variable for risk. Journal of Finance 43. 309-325.

[19] Chan, K., and Chen, N., 1991. Structural and return characteristics of small and large firms. Journal of Finance 46. 1467-1484.

[20] Chan, L., Hamao, Y., and Lakonishok, J., 1991. Fundamentals and stock returns in Japan. Journal of Finance 46. 1739-1789.

[21] Chen, N., Kan, R., and Miller, M., 1993. Are the discounts on closed-end funds a sentiment index?. Journal of Finance 58. 795-800.

[22] Chordia, T., and Swaminathan, B., 1998. Market Segmentation, Imperfect Information, and Closed-End Fund Discounts. Working Paper. Vanderbilt University.

[23] Daniel, K., Hirshleifer, D., and Subrahmanyam, A., 1998. Investor psychology and security market under and overreactions. Journal of Finance 53. 1839 1886.

[24] Davis, J., 1994, The cross-section of stock returns and survivorship bias: Evidence from delisted stocks. Quarterly Review of Economics and Finance 36. 365-375.

[25] De Bondt, W., and Thaler, R., 1985. Does the stock market overreact?. Journal of Finance 40. 793-805.

[26] DeBondt, W., and Thaler, R. H., 1987. Further evidence on investor overreaction and stock market seasonality. Journal of Finance 42. 557-581

[27] De Long, J.B., Shleifer, A., Summers, L. and Waldmann, R., 1990. Noise Trader Risk in Financial Markets. Journal of Political Economy 98. 703-738.

[28] Easley, D., O'Hara, M., and Srinivas, P., 1998. Option volume and stock prices: Evidence on where informed traders trade. Journal of Finance 53. 431-465.

[29] Edelen, R., and Warner, J., 2001. Aggregate price effects of institutional trading: A study of mutual fund flow and market returns. Journal of Financial Economics 59. 195-220.

[30] Elton, E., Gruber, M., and Busse, J., 1998. Do investors care about sentiment?. Journal of Business 71. 477-500.

[31] Fama, E., and French, K., 1992. The cross-section of expected stock returns. Journal of Finance 47. 427-465.

[32] Fama, E., and French, K., 1993. Common risk factors in the returns on stocks and bonds. Journal of Financial Economics 33. 3-56.

[33] Fama, E., and French, K., 1996. Multifactor explanations of asset pricing anomalies. Journal of Finance 51. 55-84.

[34] Fama, E., and French, K., 1997. Industry costs of equity. Journal of Financial Economics 43. 153-193.

[35] Fama, E., and Macbeth, J., 1973. Risk, Return and Equilibrium: Empirical Tests. Journal of Political Economy 81. 609-636.

[36] Ferson, W., Kandel, S., and Stambaugh, R., 1987. Test of asset pricing with time varying expected risk premiums and market betas. Journal of Finance 42. 201-220.

[37] Ferson, W., and Harvey, C., 1999. Conditioning variables and the cross-section of stock returns. Journal of Finance 54. 1325-1360.

[38] Fisher, K., and Statman, M., 2003. Consumer Confidence and Stock Returns. Journal of Portfolio Management 30. 115-127.

[39] Frazzini, A., and Lamont, O., 2006. ‘Dumb Money: Mutual Fund Flows and the Cross Section of Stock Returns. Journal of Financial Economics 88. 299-322.

[40] Gomes, J., Kogan, L., and Zhang, L., 2003. Equilibrium corss-section of returns. Journal of Political Economy 111. 693-732.

[41] Grundy, B., and Martin, S., 2001. Understaning the nature of the risks and source of the rewards to momentum investing. Review of Fianncial Studies 14. 29-78.

[42] Guo, H., 2006. Time-varying risk premia and the cross-section of stock returns. Journal of Banking and Finance 31. 2087-2107.

[43] Hansen, L., and Richard, P., 1987. The Role of Conditioning Information in Deducing Testable Restrictions Implied by Dynamic Asset Pricing Models. Econometrica: Journal of the Econometric Society 55. 587-613.

[44] He, J., Kan, R., Ng, L., and Zhang, C., 1996. Tests of the relations among marketwide factors, firm-specific variables, and stock returns using conditional asset pricing model. Journal of Finance 60. 1891-1908.

[45] Ho, C., and Hung, C., 2009. Investor Sentimenr as conditioning information in asset pricing. Journal of Banking and Finance 33. 892-903.

[46] Ibottson, R., Ritter, J., 1995. Initial public offerings. North-Holland Handbooks of Operations Research and Management Science: Finance. North-Holland, Amsterdam. 9931016.

[47] Indro, D., 2004. Does Mutual Fund Flow Reflect Investor Sentiment?. Journal of Behavioral Finance 5. 105-115.

[48] Jagannathan, R., and Wang, Z., 1996. The conditional CAPM and the cross-section of expected returns. Journal of Finance 51. 3-53.

[49] Jegadeesh, N., and Titman, S., 1993. Returns to buying winners and selling losers:Implications for stock market efficiency. Journal of Finance 48. 65-91.

[50] Jegadeesh, N., and Titman, S., 2001. Profitability of momentum strategies: An evaluation of alternative explanations. Journal of Finance 56. 699-720.

[51] Kothari, S., Shanken, J., and Sloan, R., 1995. Another Look at the Cross-section of Expected Stock Returns. Journal of Finance 50. 185-224.

[52] Lakonishok, J., Shleifer, A., and Vishny, R., 1994. Contrarian investment, extrapolation, and risk. Journal of Finance 49. 1541-1578.

[53] Lee, C., Shleifer, A., and Thaler, R., 1991. Investor Sentiment and the Closed End Puzzle. Journal of Finance 46. 75-109.

[54] Lemmon, M., and Portniaguina, E., 2006. Consumer confidence and Asset Prices: Some Empirical Evidence. Review of Financial Studies 19. 1499-1529.

[55] Lettau, M., and Ludvigson, S., 2001. Resurrecting the (C)CAPM: A cross-sectional test when risk premia are time varying. Journal of Political Economy. 109. 1238-1287.

[56] Lewellen, J., 1999. The time-series relations among expected return, risk, and book-to-market. Journal of Financial Economics 54. 543

[57] Li, G., 2007. Time-varying risk aversion and asset prices. Journal of Banking and Finance 31. 243-257.

[58] Lintner, J., 1965. The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. Review of Economics and Statistics 47. 13-37.

[59] Litzenberger, R. and Ramaswamy, K., 1979. The effect of personal taxes and dividends on capital asset prices: Theory and empirical evidence. Journal of Finanical Economics 7. 163-195.

[60] Ljungqvist, A., 2006. IPO Underpricing. Handbook of Corporate Finance: Empirical Corporate Finance Chapter 7. Elsevier/North-Holland Publication.

[61] Pan, J., and Poteshman, A., 2006. The Information in Option Volume for Future Stock Prices. Review of Financial Studies 19. 871-908.

[62] Pastor, L., and Stambaugh, R., 2003. Liquidity riska and expected stock returns. Journal of Political Economy 111. 642-685.

[63] Post, T., and Vliet, P., 2006. Downside risk and asset pricing. Journal of Banking and Finance 30. 823-849.

[64] Ritter, J., 1984. The 'hot issue' market of 1980, Journal of Business 32. 215-240.

[65] Ritter, J., 1991. The Long-Run Performance of Initial Public Offerings, Journal of Finance 46. 3-27.

[66] Ritter, J., 2003. Investment Banking and Securities Issuance. Handbook of the Economics of Finance Chapter 5. Elsevier Science Publication.

[67] Rosenberg, B., Reid, K., and Lanstein, R., 1985. Persuasive evidence of market inefficiency. Journal of Portfolio Management 11. 9-17.

[68] Shanken, J., 1992. On the estimation of beta-pricing models. Review of Financial Studies 5. 1-33.

[69] Sharpe, W., 1964. Capital asset prices: A theory of market equilibrium under conditions of risk. Journal of Finance 19. 425-442.

[70] Shleifer, A., and Vishny, R., 1997. The limits of arbitrage. Journal of Finance 52. 35-55.

[71] Wang, K., 2003. Asset Pricing with Conditioning Information: A New Test. Journal of Finance 58. 161-196.

[72] Warther, V., 1995. Aggregate mutual fund flows and security returns. Journal of Financial Economics 39. 209-235.

[73] Weiss, K., 1989. The post-offering price performance of closed-end funds. Financial Management 18. 57-57.

Table 1: Summary Statistics (4067 firms for the period Jan 1981 to Sept 2010)

	Mean	**Std Dev**	**Coefficient (%)**	**T-statistics**
Excess Returns (%)	0.90	6.45		
Size ($ billion)	2.15	2.48	-0.10	-2.07
B/M	0.60	0.29	0.29	3.50
T/O	0.07	0.05	-0.11	-1.65
Ret 2-3	2.61	8.51	0.53	1.94
Ret 4-6	3.90	11.10	0.70	2.97
Ret 7-12	7.77	16.22	1.16	4.45
Adj R^2 (%)	5.14			

The above table presents the time-series averages of cross-sectional means and standard deviations for 4067 NYSE-AMEX common stocks for the period January 1981 to September 2010. The fourth and fifth column labeled 'coefficient' and 'T-statistics' respectively represents Fama-Mcbeth coefficients and t-values derived from running regression of excess returns on the firm characteristics of size, book-to-market ratio, turnover as well as cumulative returns. Adj R^2 is the average of the adjusted R-square from running the cross-sectional OLS regression. SIZE represents market capitalization, the product of share price and shares outstanding, measured in billion of dollars. B/M represents book-to market ratio of equity. T/O is share turnover, which is monthly trading volume divided by shares outstanding. Ret 2-3, Ret 4-6, and Ret 7-12 are the cumulative returns over the second through third, fourth to sixth and seventh to twelfth months defore the current month respectively. A common stock must meet following criteria in order to be included in the analysis: a) the returns data for the current month t and previous 36 months should be available from the CRSP. b) Sufficient data on stock price and common shares outstanding should be available so as to compute SIZE, which is measured by the market capitalization. c) Sufficient data on t-2 trading volume should be available so as to compute TURNOVER, which is measured by the ratio of trading volume to the number of common shares outstanding. d) Sufficient data should be available from COMPUSTAT for computing book-to-market (B/M) ratio as of December of previous calendar year. The value of B/M for July of year t to June of year t+1 is computed using accounting data at the end of calendar year t-1. The B/M ratio greater that 0.995 fractile or less than 0.005 fractile is set as 0.995 and 0.005 respectively. The firms with negative B/M is dropped from our analysis.

Table 2: Unconditional Case (CAPM, FF, FFL, FFM and FFLM)

	CAPM	**FF**	**FFL**	**FFM**	**FFLM**
SIZE	-0.07	-0.03	-0.02	-0.02	-0.02
fmb	-2.18	-3.36	-2.35	-2.66	-2.73
shk	-2.07	-3.23	-2.22	-2.53	-2.64
B/M	0.18	0.13	0.09	0.19	0.09
fmb	2.98	3.45	3.52	3.48	3.51
shk	2.85	3.37	3.43	3.39	3.44
T/O	-0.14	-0.15	-0.09	-0.05	-0.09
fmb	-2.19	-2.94	-2.83	-2.83	-2.83
shk	-2.08	-2.83	-2.72	-2.77	-2.72
RET 2-3	0.55	0.65	0.55	0.54	0.44
fmb	2.22	2.44	2.29	2.25	2.20
shk	2.11	2.33	2.18	2.16	2.09
RET 4-6	0.76	0.77	0.68	0.69	0.59
fmb	3.03	3.15	3.04	2.98	3.56
shk	2.94	3.05	2.94	2.88	3.44
RET 7-12	0.99	0.91	0.81	0.81	0.71
fmb	4.19	4.15	4.12	4.18	5.05
shk	4.09	4.08	4.06	4.11	4.92
Adj R^2	4.82	2.79	2.71	2.72	2.65

The above table presents the averages of the coefficient estimates derived from running the second pass cross-sectional OLS regression for the NYSE-AMEX common stocks over 357 months from January 1981 through September 2010. The dependent variable is the excess risk adjusted return using excess market return as the risk factor for the CAPM, excess market returns, SMB,and HML as risk factors for the FF, fama french three factors augmented with Pastor Stambaugh liquidity factor as risk factors for the FFL, fama fremch three factors augmented with momentum factor as risk factors for the FFM and fama fremch three factors augmented with Pastor Stambaugh liquidity factor and momentum factor as risk factors for the FFLM. The independent variables are SIZE, B/M, T/O, RET 2-3, RET 4-6 and RET 7-12 as defined in the methodology section. Values against 'fmb' and 'shk' are Fama-Macbeth t-values and Shanken (1992) corrected t-values. Adj R^2 is the average of the adjusted R-square from running the second pass cross-sectional OLS regression.

Table 3: Fama-Macbeth estimates with excess market return as the risk factor (the CAPM)

	SIZE				B/M				T/O				RET 2-3				RET 4-6				RET 7-12			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
EFF	-0.01	-0.02	-0.04	-0.06	0.09	0.18	0.28	0.19	-0.14	-0.08	-0.11	-0.04	0.10	0.08	0.22	0.42	0.18	0.19	0.47	0.77	0.32	0.32	0.83	1.01
fmb	-1.21	-1.35	-1.85	-1.99	1.74	2.54	2.87	2.57	-3.09	-2.15	-2.82	-1.71	2.46	2.34	2.27	1.69	3.16	3.10	3.03	2.48	4.01	4.17	4.58	3.18
shk	-1.17	-1.29	-1.80	-1.95	1.69	2.49	2.79	2.50	-3.06	-2.04	-2.73	-1.68	2.41	2.25	2.18	1.66	3.13	3.01	2.94	2.45	3.95	4.12	4.50	3.11
Adj R^2	2.96	2.86	2.91	2.37																				
UMC	-0.01	-0.02	-0.04	-0.05	0.15	0.28	0.26	0.20	-0.14	-0.16	-0.18	-0.11	0.12	0.16	0.25	0.35	0.54	0.43	0.42	0.58	0.89	0.65	0.63	0.99
fmb	-1.59	-1.70	-1.88	-2.02	1.69	2.84	2.40	2.09	-1.96	-2.53	-2.84	-1.67	2.47	1.61	2.25	2.48	3.87	2.55	3.92	3.06	4.54	3.19	4.25	4.86
shk	-1.56	-1.67	-1.83	-1.97	1.66	2.76	2.83	2.02	-1.91	-2.45	-2.72	-1.64	2.40	1.58	2.16	2.42	3.82	2.51	3.85	2.98	4.43	3.13	4.19	4.79
Adj R^2	2.61	2.43	2.74	2.73																				
IPOR	-0.01	-0.03	-0.07	-0.18	0.17	0.28	0.32	0.21	-0.22	-0.16	-0.18	-0.08	0.14	0.16	0.19	0.32	0.34	0.49	0.42	0.74	0.65	0.74	0.76	1.06
fmb	-1.41	-1.59	-1.96	-2.53	1.62	2.54	2.93	1.89	-3.61	-2.66	-2.84	-1.62	2.64	2.11	2.32	1.86	3.13	3.33	3.85	2.97	4.65	4.68	4.08	3.37
shk	-1.38	-1.55	-1.91	-2.45	1.58	2.51	2.86	1.83	-3.55	-2.55	-2.70	-1.58	2.58	2.04	2.27	1.81	3.09	3.27	3.78	2.90	4.54	4.61	4.03	3.31
Adj R^2	2.64	2.53	2.82	2.13																				
IPOV	-0.01	-0.05	-0.06	-0.04	0.11	0.24	0.29	0.25	-0.09	-0.04	-0.06	-0.04	0.21	0.19	0.12	0.48	0.39	0.43	0.41	0.73	0.64	0.76	0.65	1.03
fmb	-1.21	-1.77	-1.88	-1.60	1.53	2.60	2.93	2.67	-3.44	-2.28	-2.80	-2.36	2.45	2.56	2.19	1.73	3.06	3.15	3.83	2.50	4.15	4.19	4.27	3.48
shk	-1.18	-1.71	-1.83	-1.56	1.48	2.52	2.87	2.61	-3.39	-2.18	-2.72	-2.32	2.38	2.47	2.12	1.67	3.02	3.08	3.79	2.48	4.04	4.14	4.21	3.39
Adj R^2	2.86	2.53	2.84	2.93																				
CEFD	-0.01	-0.02	-0.03	-0.01	0.17	0.29	0.32	0.10	-0.27	-0.20	-0.21	-0.10	0.29	0.12	0.25	0.21	0.42	0.26	0.42	0.65	0.63	0.38	0.72	1.02
fmb	-1.10	-1.86	-1.95	-1.19	1.97	2.97	3.06	1.58	-4.86	-2.72	-2.78	-1.69	2.05	1.52	2.26	1.64	3.12	2.08	3.12	2.51	4.24	3.35	4.73	3.95
shk	-1.04	-1.77	-1.87	-1.15	1.94	2.88	2.97	1.55	-4.71	-2.65	-2.68	-1.66	1.98	1.47	2.19	1.59	3.08	2.01	3.04	2.46	4.18	3.27	4.65	3.87
Adj R^2	2.60	2.68	2.85	2.90																				
PCR	-0.01	-0.05	-0.03	-0.02	0.14	0.24	0.27	0.21	-0.10	-0.06	-0.08	-0.01	0.21	0.19	0.16	0.14	0.48	0.48	0.38	0.48	0.64	0.78	0.74	0.85
fmb	-1.41	-1.98	-1.70	-1.59	1.56	2.40	2.75	2.08	-3.10	-2.63	-2.90	-1.48	2.59	1.61	2.22	2.12	3.32	2.64	3.25	3.78	4.14	3.29	4.90	4.27
shk	-1.38	-1.93	-1.66	-1.56	1.51	2.34	2.68	2.01	-3.06	-2.55	-2.79	-1.43	2.52	1.57	2.14	2.07	3.23	2.59	3.17	3.71	4.02	3.23	4.83	4.23
Adj R^2	2.83	2.76	2.82	2.62																				
DP	-0.02	-0.06	-0.04	-0.04	0.12	0.26	0.31	0.36	-0.10	-0.05	-0.07	-0.01	0.19	0.16	0.17	0.12	0.46	0.32	0.39	0.67	0.62	0.56	0.67	1.05
fmb	-1.42	-1.96	-1.81	-1.79	1.46	2.57	2.85	3.02	-4.80	-2.54	-2.79	-1.55	2.33	2.02	2.08	1.72	3.19	3.77	3.79	2.79	4.29	4.14	4.20	3.28
shk	-1.39	-1.91	-1.73	-1.72	1.41	2.53	2.82	2.96	-4.73	-2.50	-2.68	-1.51	2.26	1.97	2.01	1.68	3.13	3.70	3.72	2.73	4.18	4.09	4.14	3.24
Adj R^2	2.62	2.60	2.85	1.64																				
MD	-0.03	-0.05	-0.06	-0.08	0.22	0.27	0.32	0.28	-0.05	-0.18	-0.19	-0.13	0.24	0.19	0.20	0.16	0.53	0.42	0.53	0.59	0.71	0.61	0.86	0.97
fmb	-1.41	-1.87	-1.94	-2.10	2.17	2.62	2.95	2.77	-1.58	-2.67	-2.71	-2.03	2.61	2.01	2.17	1.83	3.72	3.83	3.78	2.40	4.09	4.28	4.59	3.29
shk	-1.37	-1.83	-1.88	-2.05	2.11	2.55	2.88	2.70	-1.53	-2.53	-2.58	-1.98	2.55	1.95	2.09	1.78	3.65	3.75	3.72	2.36	4.01	4.21	4.53	3.24
Adj R^2	2.59	2.67	2.77	2.70																				
IND	-0.04	-0.07	-0.09	-0.13	0.08	0.18	0.29	0.25	-0.21	-0.15	-0.18	-0.07	0.24	0.18	0.21	0.12	0.43	0.49	0.48	0.64	0.62	0.82	0.79	1.03
fmb	-1.54	-1.81	-1.94	-2.11	1.43	2.14	2.89	2.68	-3.24	-2.11	-2.79	-1.51	2.69	2.19	2.14	1.46	3.34	3.43	3.89	2.79	4.20	4.98	4.40	3.67
shk	-1.51	-1.77	-1.88	-2.06	1.38	2.08	2.82	2.63	-3.18	-2.04	-2.69	-1.47	2.64	2.15	2.07	1.43	3.30	3.37	3.82	2.75	4.16	4.91	4.34	3.62
Adj R^2	2.19	2.70	2.88	2.76																				

The above table presents the averages of the coefficient estimates derived from running the second pass cross-sectional OLS regression for the NYSE-AMEX common stocks over 357 months from January 1981 through September 2010. The dependent variable is the excess risk adjusted return using excess market return as the risk factor. The independent variables are SIZE, B/M, T/O, RET 2-3, RET 4-6 and RET 7-12 as defined in the methodology section. A, B, C and D denotes four different conditional specifications, as also discussed in the methodology section. The conditional variables considered in the study are various sentiment measures, firm characteristics (SIZE and B/M) and default spread. Different sentiment measures considered in our conditional asset pricing study are equity fund flow (EFF), University of Michigan consumer confidence index (UMC), IPO first day returns (IPOR), IPO volume (IPOV), closed-end fund discount (CEFD), equity put-call ratio (PCR), dividend premium (DP), change in margin debt (MD) and composite sentiment index (IND) constructed using the first principal component analysis. Values against 'fmb' and 'shk' are Fama-Macbeth t-values and Shanken (1992) corrected t-values. Adj R^2 is the average of the adjusted R-square from running the second pass cross-sectional OLS regression.

Table 4: Fama Macbeth estimates with the Fama-French three factors

	SIZE				B/M				T/O				RET 2-3				RET 4-6				RET 7-12			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
EFF	-0.01	-0.04	-0.04	-0.02	0.06	0.04	0.09	0.02	-0.12	-0.10	-0.14	-0.07	0.15	0.18	0.36	0.17	0.38	0.37	0.51	0.41	0.64	0.72	0.82	0.91
fmb	-1.31	-2.24	-2.11	-1.58	2.25	2.02	3.22	1.62	-2.03	-1.73	-2.80	-1.33	2.17	1.80	1.97	1.45	3.81	2.16	2.44	2.08	4.21	3.86	3.15	3.09
shk	-1.27	-2.21	2.06	-1.54	2.22	1.98	3.16	1.57	-2.01	-1.69	-2.76	-1.29	2.12	1.75	1.93	1.41	3.78	2.11	2.40	2.03	4.18	3.83	3.11	3.02
Adj R^2	2.16	2.19	2.69	2.42																				
UMC	-0.02	-0.03	-0.04	-0.02	0.12	0.09	0.19	0.06	-0.08	-0.05	-0.13	-0.10	0.57	0.14	0.39	0.20	0.93	0.43	0.93	0.49	1.04	0.84	1.02	0.92
fmb	-1.54	-1.88	-2.38	-1.47	2.48	1.97	3.28	1.49	-1.99	-1.36	-2.70	-2.10	2.19	1.54	2.05	1.70	3.74	2.20	3.94	2.79	4.09	3.93	4.30	3.33
shk	-1.51	-1.83	-2.33	-1.44	2.43	1.94	3.26	1.45	-1.95	-1.33	-2.66	-2.07	2.14	1.51	2.01	1.67	3.71	2.16	3.90	2.73	4.04	3.87	4.25	3.28
Adj R^2	2.64	2.68	2.21	2.59																				
IPOR	-0.03	-0.01	-0.02	-0.02	0.08	0.07	0.10	0.02	-0.10	-0.14	-0.18	-0.09	0.22	0.11	0.41	0.25	0.62	0.52	0.78	0.51	0.96	0.72	1.00	0.94
fmb	-2.09	-1.70	-1.87	-1.78	2.49	2.20	3.23	1.49	-1.76	-2.12	-2.80	-1.69	2.02	1.41	2.14	1.77	3.45	2.46	3.73	2.50	4.93	3.30	4.19	3.13
shk	-2.05	-1.66	-1.83	-1.73	2.45	2.17	3.16	1.46	-1.72	-2.07	-2.76	-1.66	1.97	1.38	2.09	1.71	3.41	2.41	3.69	2.46	4.87	3.26	4.15	3.07
Adj R^2	2.12	2.43	2.74	2.45																				
IPOV	-0.01	-0.03	-0.02	-0.02	0.03	0.07	0.09	0.03	-0.11	-0.15	-0.17	-0.18	0.12	0.10	0.45	0.21	0.41	0.43	0.88	0.38	0.78	0.88	1.04	0.87
fmb	-1.73	-1.99	-1.89	-1.82	1.38	2.71	3.16	1.44	-1.99	-2.56	-2.72	-2.88	2.05	1.45	2.18	1.81	3.57	2.12	3.04	2.12	4.22	3.46	4.88	3.05
shk	-1.70	-1.95	-1.83	-1.77	1.35	2.65	3.13	1.39	-1.95	-2.52	-2.67	-2.84	1.99	1.42	2.15	1.78	3.52	2.07	3.00	2.09	4.18	3.40	4.84	3.01
Adj R^2	2.43	2.32	2.69	2.25																				
CEFD	-0.03	-0.03	-0.05	-0.01	0.05	0.08	0.11	0.03	-0.07	-0.10	-0.15	-0.05	0.21	0.19	0.17	0.20	0.53	0.41	0.51	0.37	0.89	0.71	0.90	0.98
fmb	-1.81	-1.75	-2.78	-1.62	1.69	2.80	3.53	1.16	-1.95	-2.25	-2.87	-1.72	2.35	1.98	1.59	1.71	3.63	2.49	2.30	2.16	4.31	3.07	3.13	3.26
shk	-1.77	-1.72	-2.72	-1.59	1.65	2.76	3.48	1.11	-1.92	-2.21	-2.84	-1.69	2.32	1.93	1.56	1.68	3.58	2.46	2.26	2.12	4.27	3.01	3.09	3.22
Adj R^2	2.24	2.60	2.63	2.16																				
PCR	-0.01	-0.04	-0.03	-0.01	0.13	0.12	0.18	0.06	-0.22	-0.10	-0.15	-0.06	0.20	0.21	0.46	0.24	0.68	0.58	0.84	0.59	0.83	0.87	1.01	1.00
fmb	-1.92	-2.46	-2.15	-1.88	1.99	1.92	3.21	1.26	-4.33	-1.95	-2.93	-1.75	2.15	2.07	2.20	1.62	3.72	3.74	3.93	2.43	4.17	4.24	4.26	3.66
shk	-1.87	-2.41	-2.11	-1.85	1.96	1.88	3.16	1.23	-4.26	-1.92	-2.88	-1.72	2.11	2.02	2.17	1.59	3.68	3.69	3.88	2.39	4.13	4.20	4.22	3.62
Adj R^2	2.71	2.36	2.71	2.69																				
DP	-0.02	-0.03	-0.04	-0.02	0.02	0.07	0.09	0.04	-0.07	-0.13	-0.15	-0.11	0.39	0.41	0.38	0.24	0.79	0.68	0.94	0.57	1.02	0.88	1.03	0.78
fmb	-1.73	-1.97	-2.37	-1.68	1.57	2.70	3.48	1.84	-1.78	-2.48	-2.85	-2.10	2.25	2.57	2.16	1.61	3.62	3.36	3.96	2.83	4.42	4.19	4.62	3.67
shk	-1.67	-1.92	-2.33	-1.65	1.54	2.65	3.42	1.79	-1.75	-2.42	-2.82	-2.06	2.21	2.51	2.11	1.57	3.55	3.29	3.91	2.77	4.36	4.13	4.58	3.61
Adj R^2	2.45	2.76	2.68	2.29																				
MD	-0.01	-0.02	-0.03	-0.01	0.07	0.18	0.21	0.13	-0.10	-0.17	-0.16	-0.05	0.23	0.12	0.33	0.34	0.77	0.42	0.49	0.56	0.99	0.74	0.88	0.91
fmb	-1.69	-1.93	-2.69	-1.75	1.52	2.53	3.55	1.81	-2.09	-2.87	-2.80	-1.56	2.51	1.44	1.93	1.76	3.60	2.12	2.19	2.31	4.08	3.07	3.09	3.00
shk	-1.66	-1.89	-2.63	-1.72	1.49	2.49	3.52	1.77	-2.05	-2.84	-2.75	-1.53	2.46	1.40	1.89	1.73	3.56	2.08	2.15	2.27	4.03	3.04	3.05	2.96
Adj R^2	2.03	2.55	2.60	2.01																				
IND	-0.02	-0.03	-0.04	-0.01	0.10	0.12	0.15	0.05	-0.11	-0.12	-0.18	-0.09	0.26	0.25	0.28	0.31	0.67	0.67	0.48	0.85	1.01	0.91	0.93	1.00
fmb	-1.77	-2.23	-2.42	-1.59	1.82	2.13	3.24	1.38	-1.77	-1.81	-2.78	-1.63	1.61	2.16	1.83	1.79	2.60	3.21	2.32	2.98	3.74	4.69	3.19	4.20
shk	-1.74	-2.18	-2.38	-1.56	1.78	2.09	3.21	1.35	-1.74	-1.78	-2.73	-1.59	1.58	2.12	1.78	1.75	2.54	3.18	2.27	2.94	3.69	4.65	3.14	4.14
Adj R^2	2.75	2.35	2.76	2.37																				

The above table presents the averages of the coefficient estimates derived from running the second pass cross-sectional OLS regression for the NYSE-AMEX common stocks over 357 months from January 1981 through September 2010. The dependent variable is the excess risk adjusted return using excess market return, SMB and HML as the risk factors. The independent variables are SIZE, B/M, T/O, RET 2-3, RET 4-6 and RET 7-12 as defined in the methodology section. A, B, C and D denotes four different conditional specifications, as also discussed in the methodology section. The conditional variables considered in the study are various sentiment measures, firm characteristics (SIZE and B/M) and default spread. Different sentiment measures considered in our conditional asset pricing study are equity fund flow (EFF), University of Michigan consumer confidence index (UMC), IPO first day returns (IPOR), IPO volume (IPOV), closed-end fund discount (CEFD), equity put-call ratio (PCR), dividend premium (DP), change in margin debt (MD) and composite sentiment index (IND) constructed using the first principal component analysis. Values against 'fmb' and 'shk' are Fama-Macbeth t-values and Shanken (1992) corrected t-values. Adj R^2 is the average of the adjusted R-square from running the second pass cross-sectional OLS regression.

Table 5: Fama Macbeth estimates with the Fama-French risk factors augmented with Pastor Staumbagh Liquidity Factor

	SIZE				B/M				T/O				RET 2-3				RET 4-6				RET 7-12			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
EFF	-0.01	-0.02	-0.04	-0.03	0.04	0.13	0.09	0.06	-0.11	-0.10	-0.15	-0.07	0.53	0.24	0.30	0.32	0.77	0.45	0.51	0.58	0.92	0.98	0.71	0.89
fmb	-1.33	-1.69	-1.95	-1.85	1.53	2.44	2.08	1.78	-1.82	-1.72	-2.78	-1.63	1.91	1.35	1.72	1.86	2.53	2.21	2.10	2.61	3.16	3.92	3.21	3.73
shk	-1.31	-1.66	-1.92	-1.82	1.47	2.40	2.05	1.75	-1.80	-1.67	-2.75	-1.59	1.88	1.32	1.68	1.83	2.49	2.17	2.07	2.56	3.10	3.87	3.14	3.65
Adj R^2	2.67	2.21	2.52	2.55																				
UMC	-0.01	-0.02	-0.04	-0.05	0.05	0.10	0.18	0.15	-0.15	-0.17	-0.19	-0.16	0.64	0.28	0.48	0.46	0.94	0.72	0.84	0.79	1.06	0.99	0.98	0.91
fmb	-1.42	-1.54	-1.79	-1.95	1.59	2.04	2.46	2.26	-1.69	-1.75	-2.81	-1.72	2.05	1.31	2.05	1.95	3.75	2.10	3.79	2.75	4.51	3.73	4.49	3.68
shk	-1.39	-1.51	-1.75	-1.91	1.56	2.01	2.40	2.21	-1.66	-1.70	-2.76	-1.68	2.01	1.27	2.01	1.91	3.69	2.06	3.71	2.67	4.46	3.68	4.43	3.64
Adj R^2	2.49	2.18	2.67	2.69																				
IPOR	-0.02	-0.02	-0.03	-0.06	0.17	0.14	0.19	0.36	-0.17	-0.10	-0.15	-0.22	0.57	0.47	0.41	0.45	0.79	0.66	0.76	0.81	1.01	1.01	0.99	1.02
fmb	-1.57	-1.59	-1.84	-2.29	2.56	2.35	2.94	4.90	-2.85	-1.98	-2.59	-3.85	2.24	1.92	2.03	2.16	3.07	2.52	3.13	3.85	4.23	3.76	4.21	4.33
shk	-1.54	-1.55	-1.79	-2.24	2.53	2.31	2.91	4.85	-2.81	-1.95	-2.55	-3.78	2.20	1.87	1.99	2.06	3.03	2.48	3.08	3.77	4.15	3.70	4.14	4.29
Adj R^2	2.24	2.34	2.64	2.05																				
IPOV	-0.01	-0.02	-0.05	-0.07	0.14	0.18	0.25	0.30	-0.14	-0.18	-0.19	-0.28	0.55	0.22	0.46	0.34	0.74	0.53	0.57	0.69	0.96	0.88	0.95	0.99
fmb	-1.51	-1.76	-2.05	-2.37	1.97	2.33	3.05	3.36	-2.31	-2.69	-2.78	-4.28	2.43	1.23	2.20	2.89	3.01	2.07	3.19	3.76	4.18	3.94	4.14	4.67
shk	-1.48	-1.72	-2.01	-2.32	1.94	2.30	3.00	3.31	-2.28	-2.65	-2.75	-4.20	2.39	1.19	2.14	2.85	2.96	2.02	3.10	3.70	4.11	3.84	4.07	4.58
Adj R^2	2.66	2.60	2.63	2.30																				
CEFD	-0.07	-0.01	-0.01	-0.06	0.10	0.18	0.20	0.15	-0.22	-0.16	-0.25	-0.07	0.35	0.42	0.29	0.27	0.71	0.69	0.57	0.54	0.96	0.92	0.92	0.89
fmb	-2.22	-1.73	-1.78	-2.06	1.58	2.07	2.58	1.79	-2.57	-1.96	-2.94	-1.57	1.81	1.93	2.15	1.95	2.59	2.24	3.08	2.53	3.58	3.22	4.19	3.62
shk	-2.18	-1.69	-1.75	-2.01	1.54	2.02	2.55	1.75	-2.53	-1.93	-2.92	-1.53	1.77	1.88	2.10	1.90	2.55	2.20	3.01	2.47	3.51	3.15	4.08	3.56
Adj R^2	2.49	2.63	2.61	2.59																				
PCR	-0.02	-0.02	-0.03	-0.05	0.26	0.12	0.22	0.19	-0.32	-0.17	-0.25	-0.23	0.76	0.28	0.33	0.36	0.97	0.52	0.59	0.72	1.09	0.90	0.93	1.05
fmb	-1.62	-1.69	-1.88	-2.14	3.65	1.86	3.25	3.01	-4.96	-2.10	-2.79	-2.62	2.67	1.54	2.19	2.21	3.28	2.09	3.12	3.48	4.29	3.37	4.15	4.75
shk	-1.59	-1.66	-1.84	-2.09	3.59	1.83	3.22	2.97	-4.90	-2.06	-2.74	-2.57	2.64	1.51	2.13	2.19	3.25	2.07	3.09	3.44	4.22	3.36	4.08	4.70
Adj R^2	2.19	2.12	2.69	2.49																				
DP	-0.01	-0.02	-0.04	-0.02	0.19	0.08	0.11	0.17	-0.30	-0.11	-0.21	-0.18	0.97	0.39	0.35	0.46	1.05	0.58	0.69	0.97	1.11	0.98	0.90	1.04
fmb	-1.49	-1.79	-2.22	-1.68	4.28	1.83	2.90	3.11	-4.20	-1.86	-3.02	-2.79	3.64	1.89	1.86	2.36	4.16	2.06	2.45	3.85	5.76	3.78	3.29	4.37
shk	-1.45	-1.76	-2.18	-1.65	4.17	1.79	2.86	3.07	-4.17	-1.83	-2.97	-2.76	3.57	1.86	1.78	2.31	4.11	2.05	2.39	3.75	5.69	3.72	3.25	4.24
Adj R^2	2.19	2.18	2.67	2.06																				
MD	-0.01	-0.07	-0.08	-0.02	0.23	0.18	0.21	0.15	-0.42	-0.35	-0.24	-0.08	0.79	0.29	0.36	0.35	0.96	0.57	0.43	0.47	1.12	0.99	0.75	0.93
fmb	-1.59	-2.08	-2.36	-1.71	2.42	1.97	2.26	1.61	-4.39	-3.47	-2.85	-1.59	2.54	1.49	1.85	1.82	3.01	2.03	2.11	2.32	4.59	3.84	3.06	3.46
shk	-1.56	-2.03	-2.32	-1.68	2.37	1.94	2.23	1.58	-4.27	-3.43	-2.82	-1.56	2.51	1.44	1.78	1.77	2.97	2.02	2.08	2.28	4.54	3.77	3.01	3.41
Adj R^2	2.63	2.35	2.46	2.66																				
IND	-0.01	-0.04	-0.05	-0.02	0.21	0.18	0.25	0.12	-0.27	-0.20	-0.23	-0.10	0.89	0.29	0.33	0.35	1.01	0.77	0.41	0.54	1.12	1.01	0.77	0.88
fmb	-1.57	-1.98	-2.03	-1.76	2.38	1.90	2.76	1.55	-3.11	-2.59	-2.80	-1.74	2.52	1.58	1.73	1.79	3.98	2.68	2.12	2.43	4.63	3.81	3.14	3.15
shk	-1.54	-1.95	-1.97	-1.73	2.36	1.87	2.72	1.52	-3.07	-2.54	-2.76	-1.69	2.49	1.55	1.69	1.74	3.95	2.66	2.07	2.38	4.59	3.74	3.10	3.08
Adj R^2	2.33	2.09	2.69	2.54																				

The above table presents the averages of the coefficient estimates derived from running the second pass cross-sectional OLS regression for the NYSE-AMEX common stocks over 357 months from January 1981 through September 2010. The dependent variable is the excess risk adjusted return using excess market return, SMB, HML, and Pastor STambaugh liquidity factor as the risk factors. The independent variables are SIZE, B/M, T/O, RET 2-3, RET 4-6 and RET 7-12 as defined in the methodology section. A, B, C and D denotes four different conditional specifications, as also discussed in the methodology section. The conditional variables considered in the study are various sentiment measures, firm characteristics (SIZE and B/M) and default spread. Different sentiment measures considered in our conditional asset pricing study are equity fund flow (EFF), University of Michigan consumer confidence index (UMC), IPO first day returns (IPOR), IPO volume (IPOV), closed-end fund discount (CEFD), equity put-call ratio (PCR), dividend premium (DP), change in margin debt (MD) and composite sentiment index (IND) constructed using the first principal component analysis. Values against 'fmb' and 'shk' are Fama-Macbeth t-values and Shanken (1992) corrected t-values. Adj R^2 is the average of the adjusted R-square from running the second pass cross-sectional OLS regression.

Table 6: Fama Macbeth estimates with the Fama-French risk factors augmented with Momentum Factor (WML)

	SIZE				B/M				T/O				RET 2-3				RET 4-6				RET 7-12			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
EFF	-0.02	-0.05	-0.08	-0.07	0.05	0.01	0.09	0.06	-0.08	-0.06	-0.15	-0.11	0.35	0.29	0.56	0.43	0.75	0.66	0.83	0.75	0.86	0.84	0.98	0.93
fmb	-1.47	-1.33	-2.66	-2.54	2.23	1.58	3.58	2.32	-1.99	-1.73	-2.93	-2.57	1.69	1.50	1.99	1.74	2.82	2.52	2.74	2.28	3.37	3.28	3.76	3.39
shk	-1.44	-1.28	-2.59	-2.52	2.20	1.55	3.52	2.28	-1.96	-1.69	-2.86	-2.52	1.65	1.47	1.94	1.69	2.77	2.46	2.69	2.23	3.32	3.22	3.69	3.34
Adj R^2	2.50	2.35	2.66	2.43																				
UMC	-0.01	-0.02	-0.07	-0.05	0.06	0.09	0.15	0.11	-0.23	-0.18	-0.16	-0.10	0.32	0.48	0.72	0.79	0.79	0.72	0.94	0.93	1.00	1.02	0.08	1.11
fmb	-1.36	-1.52	-2.64	-2.12	1.74	2.08	3.41	2.60	-3.18	-2.79	-2.64	-1.86	1.57	2.18	2.20	2.54	2.94	3.09	3.35	3.32	3.98	4.12	4.21	4.84
shk	-1.33	-1.48	-2.57	-2.07	1.69	2.03	3.34	2.56	-3.14	-2.73	-2.61	-1.83	1.52	2.13	2.12	2.49	2.89	3.03	3.30	3.27	3.95	4.07	4.16	4.77
Adj R^2	2.68	2.58	2.42	2.55																				
IPOR	-0.05	-0.07	-0.06	-0.01	0.10	0.07	0.13	0.04	-0.10	-0.17	-0.19	-0.13	0.29	0.38	0.62	0.44	0.45	0.59	0.90	0.79	0.89	0.94	0.94	0.87
fmb	-1.93	-2.74	-2.21	-1.20	2.26	1.91	3.18	1.72	-1.61	-2.40	-2.80	-1.85	1.49	1.87	1.94	2.06	2.14	2.56	2.76	2.33	3.43	3.65	3.22	3.11
shk	-1.89	-2.68	-2.14	-1.17	2.23	1.85	3.13	1.68	-1.57	-2.32	-2.73	-1.81	1.45	1.81	1.85	2.01	2.09	2.50	2.71	2.27	3.38	3.59	3.18	3.06
Adj R^2	2.23	2.51	2.70	2.13																				
IPOV	-0.09	-0.05	-0.07	-0.02	0.16	0.06	0.14	0.10	-0.25	-0.14	-0.21	-0.19	0.34	0.38	0.59	0.60	0.57	0.69	0.72	0.91	0.83	1.06	0.91	0.99
fmb	-3.19	-1.86	-2.45	-1.53	3.61	1.98	3.23	2.34	-3.60	-1.72	-2.83	-2.56	1.63	2.01	1.90	1.94	2.76	3.14	2.08	2.83	3.62	4.83	3.20	3.64
shk	-3.15	-1.82	-2.37	-1.49	3.55	1.92	3.18	2.30	-3.53	-1.67	-2.76	-2.52	1.59	1.98	1.84	1.89	2.70	3.09	2.07	2.78	3.58	4.76	3.17	3.59
Adj R^2	2.66	2.54	2.56	2.62																				
CEFD	-0.06	-0.07	-0.09	-0.05	0.09	0.15	0.20	0.07	-0.20	-0.13	-0.23	-0.18	0.45	0.54	0.58	0.53	0.77	0.86	0.86	0.93	0.96	1.00	1.05	1.03
fmb	-1.84	-2.69	-3.15	-1.73	1.96	2.87	3.62	1.71	-2.43	-1.99	-2.81	-2.28	1.86	2.13	2.34	2.07	2.89	3.08	3.03	3.66	3.44	4.01	4.27	4.16
shk	-1.81	-2.66	-3.06	-1.69	1.91	2.80	3.57	1.67	-2.39	-1.95	-2.71	-2.24	1.82	2.06	2.27	2.01	2.86	3.04	3.02	3.61	3.37	3.97	4.24	4.11
Adj R^2	2.58	2.44	2.69	2.69																				
PCR	-0.13	-0.01	-0.08	-0.09	0.12	0.09	0.14	0.07	-0.13	-0.10	-0.16	-0.04	0.31	0.63	0.48	0.43	0.55	0.75	0.84	0.61	0.81	1.05	1.01	0.95
fmb	-2.87	-1.55	-2.38	-2.50	3.18	2.68	3.27	1.63	-2.23	-1.90	-2.83	-1.48	1.49	2.67	2.15	1.81	2.25	3.20	3.24	2.40	3.38	4.37	4.15	3.49
shk	-2.84	-1.52	-2.33	-2.48	3.13	2.64	3.22	1.59	-2.18	-1.85	-2.74	-1.44	1.44	2.63	2.08	1.77	2.21	3.14	3.19	2.34	3.32	4.30	0.12	3.42
Adj R^2	2.70	2.69	2.64	2.53																				
DP	-0.06	-0.02	-0.02	-0.01	0.13	0.09	0.15	0.04	-0.18	-0.10	-0.15	-0.07	0.73	0.63	0.51	0.42	0.94	0.85	0.87	0.85	1.06	1.02	1.05	0.98
fmb	-3.24	-2.30	-2.55	-2.10	3.20	2.59	3.39	1.81	-3.17	-2.13	-2.76	-1.82	2.94	2.32	2.21	1.91	3.59	3.35	3.09	2.90	4.39	4.16	4.18	3.71
shk	-3.19	-2.25	-2.48	-2.06	3.15	2.52	3.32	1.79	-3.13	-2.06	-2.68	-1.79	2.89	2.26	2.14	1.87	3.56	3.27	3.07	2.84	4.35	4.09	4.13	3.66
Adj R^2	2.66	2.59	2.51	2.47																				
MD	-0.06	-0.03	-0.07	-0.01	0.06	0.09	0.21	0.16	-0.13	-0.10	-0.17	-0.24	0.62	0.36	0.55	0.69	0.95	0.56	0.79	0.94	1.02	0.98	0.98	1.09
fmb	-2.39	-1.73	-2.85	-1.49	1.76	2.20	3.56	3.15	-2.13	-2.03	-2.69	-3.15	2.18	1.63	1.85	2.55	3.64	2.43	2.62	3.75	4.09	3.90	3.87	4.54
shk	-2.37	-1.69	-2.79	-1.46	1.71	2.14	3.47	3.11	-2.10	-1.96	-2.64	-3.11	2.15	1.58	1.78	2.48	3.59	2.38	2.57	3.67	4.05	3.81	3.83	4.48
Adj R^2	2.28	2.68	2.64	2.62																				
IND	-0.03	-0.01	-0.07	-0.05	0.08	0.12	0.19	0.05	-0.09	-0.12	-0.19	-0.15	0.36	0.59	0.49	0.58	0.61	0.89	0.68	0.90	0.92	1.09	0.97	1.08
fmb	-1.58	-1.31	-2.62	-2.15	1.88	2.31	3.18	1.59	-1.59	-1.73	-2.65	-1.91	1.61	2.16	1.82	2.48	2.28	3.52	2.43	3.61	3.79	4.66	3.77	4.43
shk	-1.55	-1.27	-2.56	-2.11	1.83	2.23	3.12	1.56	-1.55	-1.69	-2.58	-1.88	1.58	2.12	1.77	2.44	2.24	3.44	2.39	3.56	3.73	4.59	3.73	4.36
Adj R^2	2.67	2.59	2.69	2.68																				

The above table presents the averages of the coefficient estimates derived from running the second pass cross-sectional OLS regression for the NYSE-AMEX common stocks over 357 months from January 1981 through September 2010. The dependent variable is the excess risk adjusted return using excess market return, SMB, HML, and WML as the risk factors. The independent variables are SIZE, B/M, T/O, RET 2-3, RET 4-6 and RET 7-12 as defined in the methodology section. A, B, C and D denotes four different conditional specifications, as also discussed in the methodology section. The conditional variables considered in the study are various sentiment measures, firm characteristics (SIZE and B/M) and default spread. Different sentiment measures considered in our conditional asset pricing study are equity fund flow (EFF), University of Michigan consumer confidence index (UMC), IPO first day returns (IPOR), IPO volume (IPOV), closed-end fund discount (CEFD), equity put-call ratio (PCR), dividend premium (DP), change in margin debt (MD) and composite sentiment index (IND) constructed using the first principal component analysis. Values against 'fmb' and 'shk' are Fama-Macbeth t-values and Shanken (1992) corrected t-values. Adj R^2 is the average of the adjusted R-square from running the second pass cross-sectional OLS regression.

Table 7: Fama Macbeth estimates with the Fama-French risk factors augmented with Liquidity factor and Momentum Factor (WML)

	SIZE				B/M				T/O				RET 2-3				RET 4-6				RET 7-12			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
EFF	-0.03	-0.02	-0.05	-0.01	0.12	0.14	0.18	0.08	-0.22	-0.19	-0.27	-0.13	0.43	0.38	0.46	0.70	0.62	0.56	0.63	0.89	0.74	0.79	0.91	1.06
fmb	-2.25	-1.79	-2.65	-1.64	1.91	2.12	3.70	1.62	-2.12	-1.99	-2.98	-1.59	1.74	1.53	1.79	2.51	2.95	2.28	2.26	3.99	3.57	3.87	3.21	4.39
shk	-2.21	-1.73	-2.59	-1.59	1.86	2.04	3.64	1.57	-2.07	-1.96	-2.89	-1.55	1.69	1.49	1.75	2.48	2.90	2.25	2.23	3.95	3.53	3.79	3.17	4.34
Adj R^2	2.42	2.59	2.43	2.32																				
UMC	-0.03	-0.01	-0.04	-0.08	0.07	0.12	0.21	0.19	-0.22	-0.16	-0.19	-0.10	0.38	0.41	0.62	0.58	0.78	0.76	0.89	0.94	0.93	0.92	1.00	1.09
fmb	-1.60	-1.24	-1.77	-2.15	1.47	1.71	3.00	2.75	-3.60	-2.14	-2.83	-1.53	1.43	1.62	2.20	2.01	2.27	2.18	3.23	3.59	3.55	3.52	4.07	4.80
shk	-1.54	-1.19	-1.73	-2.11	1.44	1.66	2.94	2.72	-3.53	-2.10	-2.74	-1.48	1.39	1.59	2.11	1.97	2.23	2.15	3.19	3.54	3.49	3.47	4.02	4.75
Adj R^2	2.50	2.35	2.56	2.26																				
IPOR	-0.09	-0.01	-0.05	-0.04	0.19	0.06	0.10	0.15	-0.18	-0.03	-0.09	-0.12	0.49	0.33	0.52	0.63	0.82	0.56	0.64	0.92	0.99	0.96	0.88	1.01
fmb	-3.09	-1.48	-2.13	-1.96	4.91	1.99	2.81	3.92	-3.36	-1.55	-2.62	-2.96	2.15	1.46	1.84	2.56	3.15	2.03	2.18	3.62	4.07	3.92	3.20	4.15
shk	-3.04	-1.45	-2.04	-1.91	4.85	1.96	2.74	3.84	-3.25	-1.48	-2.55	-2.93	2.11	1.43	1.81	2.51	3.09	1.98	2.15	3.56	4.01	3.85	3.11	4.09
Adj R^2	2.59	2.35	2.62	2.63																				
IPOV	-0.01	-0.02	-0.07	-0.09	0.12	0.16	0.21	0.09	-0.10	-0.06	-0.15	-0.12	0.21	0.36	0.55	0.48	0.42	0.60	0.76	0.69	0.91	0.93	0.91	0.94
fmb	-1.30	-1.61	-2.55	-2.86	1.94	2.30	3.05	1.73	-2.24	-1.87	-2.92	-2.60	1.28	1.80	1.93	1.72	2.25	2.62	2.88	2.35	3.73	3.57	3.32	3.48
shk	-1.26	-1.56	-2.46	-2.82	1.89	2.24	2.96	1.69	-2.22	-1.82	-2.86	-2.56	1.25	1.74	1.85	1.69	2.22	2.57	2.84	2.32	3.71	3.53	3.28	3.43
Adj R^2	2.56	2.50	2.62	2.61																				
CEFD	-0.01	-0.02	-0.07	-0.03	0.11	0.15	0.22	0.09	-0.11	-0.19	-0.22	-0.16	0.46	0.54	0.48	0.47	0.61	0.79	0.67	0.69	0.78	0.99	0.91	0.95
fmb	-1.19	-1.42	-2.25	-1.73	1.88	2.24	3.36	1.63	-1.86	-2.38	-3.01	-2.29	1.54	2.06	1.76	1.71	2.83	3.34	2.46	2.51	3.25	4.02	3.13	3.55
shk	-1.16	-1.39	-2.16	-1.69	1.83	2.16	3.28	1.59	-1.81	-2.33	-2.95	-2.25	1.52	2.03	1.68	1.69	2.79	3.29	2.39	2.48	3.21	3.97	3.06	3.49
Adj R^2	2.50	2.24	2.49	2.63																				
PCR	-0.03	-0.01	-0.04	-0.04	0.07	0.10	0.19	0.18	-0.07	-0.11	-0.15	-0.12	0.21	0.31	0.64	0.83	0.43	0.51	0.84	0.99	0.82	0.89	1.00	1.11
fmb	-1.85	-1.28	-2.34	-2.24	1.95	2.45	3.39	3.27	-1.89	-2.27	-2.78	-2.33	1.32	1.69	2.16	3.25	2.30	2.45	3.04	4.04	3.74	3.32	4.14	5.12
shk	-1.81	-1.25	-2.25	-2.19	1.91	2.41	3.33	3.22	-1.84	-2.21	-2.71	-2.27	1.29	1.66	2.08	3.19	2.26	2.40	3.00	3.98	3.69	3.28	4.08	5.07
Adj R^2	2.29	2.39	2.61	2.20																				
DP	-0.04	-0.01	-0.04	-0.03	0.12	0.07	0.15	0.22	-0.14	-0.18	-0.25	-0.22	0.32	0.25	0.78	0.84	0.85	0.51	0.91	1.01	1.00	0.89	1.01	1.09
fmb	-2.59	-1.89	-2.51	-2.23	2.24	1.73	2.77	3.62	-1.71	-2.22	-3.00	-2.58	2.52	1.63	2.82	3.28	3.39	2.66	3.39	4.15	4.01	3.72	4.16	5.07
shk	-2.54	-1.84	-2.45	-2.16	2.18	1.69	2.69	3.56	-1.65	-2.15	-2.92	-2.52	2.49	1.58	2.75	3.22	3.35	2.61	3.34	4.09	3.96	3.67	4.10	5.02
Adj R^2	2.39	2.49	2.63	2.55																				
MD	-0.03	-0.02	-0.05	-0.01	0.13	0.07	0.17	0.16	-0.19	-0.07	-0.15	-0.12	0.31	0.47	0.53	0.85	0.59	0.87	0.63	1.00	0.91	1.02	0.91	1.08
fmb	-1.99	-1.71	-2.89	-1.42	1.87	1.52	2.29	2.15	-2.91	-1.59	-2.62	-2.11	1.53	2.53	1.92	3.17	2.73	3.23	2.16	4.14	3.31	4.16	3.29	5.04
shk	-1.95	-1.66	-2.82	-1.37	1.84	1.47	2.22	2.09	-2.86	-1.56	-2.55	-2.05	1.50	2.48	1.87	3.11	2.68	3.18	2.11	4.09	3.27	4.10	3.24	4.98
Adj R^2	2.50	2.39	2.47	2.54																				
IND	-0.05	-0.08	-0.04	-0.01	0.20	0.08	0.24	0.15	-0.21	-0.07	-0.19	-0.15	0.52	0.48	0.57	0.68	0.87	0.58	0.64	0.95	1.01	0.90	0.90	1.07
fmb	-2.85	-3.70	-2.48	-1.64	2.89	1.59	3.14	2.27	-3.16	-1.59	-2.72	-2.29	2.56	1.62	1.93	2.61	3.30	2.44	2.45	3.40	4.15	3.26	3.11	4.31
shk	-2.79	-3.63	-2.41	-1.61	2.83	1.54	3.06	2.21	-3.10	-1.55	-2.67	-2.25	2.49	1.56	1.90	2.55	3.26	2.37	2.41	3.33	4.09	3.22	3.04	4.28
Adj R^2	2.48	2.43	2.56	2.47																				

]

The above table presents the averages of the coefficient estimates derived from running the second pass cross-sectional OLS regression for the NYSE-AMEX common stocks over 357 months from January 1981 through September 2010. The dependent variable is the excess risk adjusted return using excess market return, SMB, HML, Pastor Stambaugh liquidity factor, and WML as the risk factors. The independent variables are SIZE, B/M, T/O, RET 2-3, RET 4-6 and RET 7-12 as defined in the methodology section. A, B, C and D denotes four different conditional specifications, as also discussed in the methodology section. The conditional variables considered in the study are various sentiment measures, firm characteristics (SIZE and B/M) and default spread. Different sentiment measures considered in our conditional asset pricing study are equity fund flow (EFF), University of Michigan consumer confidence index (UMC), IPO first day returns (IPOR), IPO volume (IPOV), closed-end fund discount (CEFD), equity put-call ratio (PCR), dividend premium (DP), change in margin debt (MD) and composite sentiment index (IND) constructed using the first principal component analysis. Values against 'fmb' and 'shk' are Fama-Macbeth t-values and Shanken (1992) corrected t-values. Adj R^2 is the adjusted R-square from running the second pass cross-sectional OLS regression.