The Financial Review
EFA Eastern Finance Association

Is Financial Flexibility a Priced Factor in the Stock Market?

Journal:	*The Financial Review*
Manuscript ID	FIRE-2016-03-033.R3
Manuscript Type:	Paper Submitted for Review
Keywords:	financial flexibility, asset pricing, latent risk factor, Financial flexibility, asset pricing, risk factors.

Is Financial Flexibility a Priced Factor in the Stock Market?

Suresh Kumar Oad Rajput (1st)
Sukkur IBA University, Pakistan

Udomsak Wongchoti* (2nd)
Massey University, New Zealand

Jianguo Chen (3rd)
Massey University, New Zealand

Robert Faff (4th)
The University of Queensland, Australia

Abstract

This paper develops a factor analysis–based measure for shifts in corporate financial flexibility (FFLEX) that can be observed from public accounting information. Companies that experience positive shifts in FFLEX are associated with higher future investment growth opportunities. We show that FFLEX is a robust determinant of future stock returns. Firms that have increased their financial flexibility are associated with lower stock returns in the subsequent period. A zero-cost return portfolio produces a significant positive monthly premium of 0.69%, which is driven by covariance (risk). Risk inherent in the flexibility factor is not explained away by either prominent pricing characteristics or factors.

Keywords: financial flexibility, asset pricing, risk factors

JEL Classifications: G11, G12, G31, G32

* Please send correspondence to Udomsak (Jeff) Wongchoti, School of Economics & Finance, Room 2.06, Business Studies West (BSW), Massey University, Palmerston North, New Zealand. Telephone: +64 (06) 356 9099 ext. 84053. Email: J.Wongchoti@massey.ac.nz. We thank The Financial Review editor-Richard Warr and the anonymous referee for valuable suggestions. Our thanks also extend to Leigh Roberts, Hai Lin, Ben Marshall, David Tripe, Terry Walter, Kevin Davis, Petko Kalev, Vitali Alexeev, Paul Docherty, Chris Malone, Michael Naylor, and Song Shi for their beneficial discussions and other participants at the 2014 SEF Research Symposium at Victoria University, Wellington, 2014 School of Economics and Finance Seminar at Massey University, Fourth SIRCA Young Research Workshop at SIRCA in Sydney, and Fourth Auckland Finance Meeting at Auckland University of Technology, Auckland, for useful comments. Lastly, we thank Professor Lu Zhang for the data on q-factor model factors (ROE and I/A).

1. Introduction

Financial flexibility can be viewed as a firm's capacity to respond in a timely and value-maximizing way to unexpected shocks to the firm's cash flows or investment opportunity set (Denis, 2011). Such flexibility is considered by U.S. CFOs as the most important determinant of capital structure (Graham and Harvey, 2001).[1] While established as a critical aspect of corporate policy, the asset pricing role of financial flexibility is largely unresolved, especially regarding its measurement due to the unobserved nature of management responses to unexpected shocks to the cash flows and growth options.[2] Given this background, we have three aims in this paper. First, we operationalize an alternative measure of financial flexibility (*FFLEX*) from publicly available accounting information that can be observed by investors. Second, we explore the association between this new measure of financial flexibility and stock returns. Third, we explore the sources of the stock return predictability, with particular emphasis on whether and to what extent any such predictability is driven by risk.

To achieve these goals, we employ the correlational structure of accounting growth information content to create an alternative proxy for financial flexibility that is relevant to the stock market.[3] This approach is largely motivated by studies that stress the importance of sophisticated and comprehensive uses of accounting information (a primary source of information) by investors. Ou and Penman (1989) combine a large set of financial statement items into one summary measure that integrally predicts one-year-ahead earnings of a company. They then show that this measure, in turn, predicts future stock returns (through the fundamental

[1] Financial flexibility considerations also have a significant impact on several aspects of corporate financial policies including cash management, capital structure, payout policies, and risk management (Agha and Faff, 2014; Bonaimé, Hankins, and Harford, 2013; DeAngelo and DeAngelo, 2007; Denis, 2011; Denis and McKeon, 2012; Gamba and Triantis, 2008; Marchica and Mura, 2010).

[2] For example, Marchica and Mura (2010) consider financial flexibility as an unobserved measure.

[3] The study uses growth rates rather than levels of variables—proxies that conserve flexibility—to understand the implications of effective use and accumulation of the financial flexibility.

relation between stock returns and companies' earnings (see, e.g., Ball and Brown, 1968; Ohlson, 1995) but cannot be linked to "risk" directly. On the other hand, Lipe (1990) and Basu (1997) acknowledge the comprehensive use of financial statement items in predicting stock returns but note that researchers should look at alternative measures "beyond earnings-related items" as earnings themselves can be biased. In this paper, we aim to make use of comprehensive lists of accounting items in the balance sheet that are indicators of firms' future financial flexibility policy employed by management. Another complexity in fundamental analysis by sophisticated investors is about the need to acknowledge the interaction or co-movements of various accounting items. This is consistent with Subrahmanyam's (2010) statement that researchers should employ the correlational structure and varying methodologies to the candidate variables in search of determinants of stock returns.[4] As correlation structure captures the interactions among various accounting constructs that share the same variance, factor analysis is our chosen tool for extracting this common variance among balance sheet items that capture common (systematic) movements across firms.

We input a comprehensive set of balance sheet growth variables into the factor analysis and annually extract five latent factors over the period 1985–2009. We let the "data talk," and they confirm that financial flexibility (labeled as *FFLEX*) is the most common shift observed in accounting items across firms and years. It is the first principal factor (out of five natural latent factors) that consists of components such as simultaneous shifts in common equity-total, common equity-liquidation, cash and equivalents, and common equity-tangible scaled by lagged

[4] Tsay (2005) observes that the number of factors is more well-defined in statistical factor models than the way the three factors are obtained using the Fama-French (1993) approach. According to Fabozzi and Markowitz (2011), the latent (unobserved) factors are preferred because the observed factors may be measured with error or have already been anticipated by investors. Factor analysis can explain complex phenomena through a small number of basic factors.

total assets. The positive simultaneous shifts of these items reflect a conserving of financial flexibility through proactive equity issuances as in the Barclay, Fu, and Smith (2012) model. Specifically, cash balances surge (Denis, 2011) through equity issuances (Byoun, 2016) and the accumulation of liquidation capital (Gamba and Triantis, 2008), even among firms that are far from being financially constrained.

The *FFLEX* measure is forward-looking regarding firms' fundamentals, as current improvements in preserved flexibility (through proactive equity issuances) will allow companies to exercise future growth options more optimally (e.g., to cope with the random nature of arrivals of investment opportunities in a timely manner as partly reflected in management perspectives).[5] Importantly, we show in this paper that the increase in *FLEX* is associated with future investment growth opportunities in the context of Gamba and Triantis (2008) and Byoun (2016). The relation is also robust in the presence of liquidity, cash holdings, and (equity) agency problems within firms.[6] We further argue that firms with high flexibility are even less constrained, have higher Tobin's Q, are larger in size, and possess greater cash holdings compared to firms with low flexibility. These firms are also usually profitable and have a higher investment-to-asset ratio, due to more tangible assets, and higher liquidation value. Increasing financial flexibility through proactive equity issuances allows them to employ tangible assets and cash to exploit positive net present value investment opportunities or cope with cash flow shortages (all of which are random and systematic in nature) more effectively than firms of low flexibility.

Our primary result regarding the role of financial flexibility in asset pricing indicates that a positive shift in *FFLEX* is negatively associated with future excess stock returns. The relation is robust in terms of the inclusion of prominent characteristics such as firm size, book-to-market

---

[5] See, e.g., Denis (2011), Gamba and Triantis (2008), and Ang and Smedema (2011).

[6] We thank our anonymous referee for the suggestions to do robustness checks on these issues.

ratio, and momentum. *FFLEX* is able to earn substantial abnormal returns annually ranging from 17% (13%) at the equal (value) weighted basis in a strategy that is long Low *FFLEX* decile and short High *FFLEX* decile (unreported results). *FFLEX* is profitable in 20 (19) years out of 23 years on equal- (value-)weighted basis. Further, regression analysis controlling for gross profitability (*GPA*) (Novy-Marx, 2013) does not erode the significance or return predictability of *FFLEX*. We also control for other measures of profitability—firm earnings and free cash flows scaled by total assets—but *FFLEX* persists as a robust return predictor.

The main asset pricing test in this research follows the two-stage cross-sectional regression approach extended by Cochrane (2001). The *FLEX* portfolio is constructed following Core, Guay, and Verdi (2008) and Kim and Qi's (2010) methodology. Our results show that there is a significant positive *FLEX* premium, thus favoring *FLEX* as a risk-priced factor. In other words, firms that are behind in preserving financial flexibility through proactive equity issuances could be perceived by the stock market as being systematically riskier. Specifically, they are relatively less capable of coping with systematic shocks that adversely affect firms' investment opportunities and operation shortfalls. Collectively, our analysis is robust to the inclusion of prominent factors such as the market, *SMB*, *HML*, *UMD*, *LIQ*, *RMW*, *CMA*, *ROE*, *I/A*, *BAB*, *TSMOM*, and *QMJ*.[7]

2. The value of corporate financial flexibility and its impact on stock returns

[7] *RMW* is a profitability premium that is long robust and short weak profitability stock portfolios (Fama and French, 2015). *CMA* is the premium on the investment portfolio that is long on low and short high investment firms (Fama and French, 2015). The *BAB* factor goes long leveraged low-beta assets and short high-beta assets (Frazzini and Pedersen, 2014). The *TSMOM* factor contains excess returns for long/short time-series momentum strategies (Moskowitz, Ooi, and Pedersen, 2012). The *QMJ* factor goes long high-quality stocks and shorts low-quality stocks (Asness, Frazzini, and Pedersen, 2013). The *ROE* factor is the difference of going long high *ROE* portfolios and short low *ROE* portfolios for each month (Hou, Xue, and Zhang, 2015). The *I/A* factor is obtained by taking the difference of average returns on low and high *I/A* portfolios (Hou, Xue, and Zhang, 2015).

"I have always understood that the world changes a lot. Just because you're doing well now, doesn't mean you should be set in your ways. It's my habit that I am always very careful with my cash flows. That means I have the extra capital to get into another industry/business whenever I want to." (In Cantonese—translated caption)

Above is the first statement Li Ka-shing (Hong Kong's wealthiest businessman for consecutive decades, Asia's Warren Buffet) made in his interview with Bloomberg in 2016.[8] It indicates that building financial flexibility is one of the key principles in dealing with uncertainty in the financial world. This is consistent with Graham and Harvey's (2001) survey results that U.S. CFOs appraise financial flexibility as a primary aspect for their companies' capital structure. Nevertheless, researchers and practitioners have turned their attention to this nontraditional view of capital structure only recently. For example, the importance of financial flexibility has been echoed in a 2016 issue of the *Journal of Applied Corporate Finance*. In such issue, the financial flexibility model by De Angelo, De Angelo, and Whited ([DDW] 2011) is highlighted while Denis and McKeon's (2012) empirical findings are reproduced in Denis and McKeon (2016)—a brief version targeted for practitioner-based readers. In the same issue, De Angelo and Roll (2016) mentioned several high-profile anecdotal evidence that CEOs in companies such as AT&T and DuPont made the constant building up of financial flexibility their priority.

In the DWW (2011) model, the financial goal of management is to preserve the ability of the firm to gain access to the capital market in the event of "unexpected" cash flow shortfalls or investment opportunities. The main implication of the model is that firms often issue new (transitory) debt or equity that (can perseveringly) deviate them from their long-term target capital structure to prepare for possible exogenous (and thus unpredictable) shocks in cash flow

[8] https://www.youtube.com/watch?v=S3LEI8OCGrU

requirements. Studying 2,314 proactive leverage jumps (increase in debt ratio of at least 0.1 above the long-term target average in one transaction—e.g., the tapping of accumulated financial flexibility in the form of unused debt capacity) in the United States during the 1971–1999 period, Denis and McKeon (2012) report that two-thirds of the proceeds were used in long-term investments, while another 27% were used to support operational shortfalls (e.g., working capital and operations). Importantly, they show that sample firms would not have met such major and sudden financial needs without the tapping of accumulated financial flexibility. Related to our study, Barclay, Fu, and Smith (2012) advocate proactive equity issuances as another important tool in building up financial flexibility. They document that large seasoned equity offerings (SEO) tend to move firms' leverage below the long-term target debt ratio. Furthermore, firms that engage in proactive equity issuances are generally healthy firms. They have low leverage, unused debt capacity (which will be improved even further), and substantial cash balances. Barclay, Fu, and Smith (2012) also document that these firms actually increase and maintain the higher level of capital expenditures for two years after SEO activities.

The above literature formulates the view that financial flexibility is critically valuable to companies. Fundamentally, it helps managers dealing with the uncertain nature of cash flow needs and allows firms to optimize their embedded growth options. As financial flexibility is value-relevant, it helps us establish why the stock market should price changes in corporate financial flexibility. However, with market frictions, the stock market can only reflect what it can observe (with a lag; see, e.g., Ou and Penman, 1989). We propose in this paper that the factor-analysis approach in extracting the information about common shifts in accounting items (observable by investors) is a useful tool in measuring shifts in corporate financial flexibility that are observable by rational investors who make the best use of information from balance sheets.

As will be shown in the later sections, the *FFLEX* factor documented in our paper effectively reflects shifts in financial flexibility in the spirit of Barclay, Fu, and Smith (2012) model—the proactive equity issuances and simultaneous buffer cash holdings. To the extent that *FFLEX* proxies for corporate financial flexibility observed by investors, we hypothesize that

Hypothesis 1: Future stock returns of firms (year t + 1) are associated with their current-year shifts in FFLEX (year t).

The above hypothesis is generic and does not indicate how (the direction) the stock market should "price" corporate financial flexibility. Two lines of thoughts are presented here. First, in the context of Berk, Green, and Naik ([BGN] 1999) formal model, the relative importance of existing assets and growth options within a firm formulates its dynamics of systematic risk through time (and thus subsequent dynamic stock returns). Applying this to our context, it is possible that positive changes (increases) in financial flexibility (e.g., increase in *FFLEX*) signal the change in the composition of a firm's assets to the stock market. Specifically, parallel to high-value firms in BGN model, firms that are able to improve their financial flexibility are firms that existing assets may be dying off in each period, and they are motivated to take investments with lower systematic risks leading to lower average stock returns in subsequent periods.

The second line of thought is simple and true to the value of financial flexibility. As investment needs and shortage in cash flows from operation is random and affect firms across the economy (e.g., cannot be diversified away), firms that cannot build up financial flexibility are perceived as bearing higher systematic risk by investors. By the same token, increases in *FLEX* would allow firms to cope better with randomness of cash requirement shocks. In a rational risk-return framework, investors are expected to react rationally to the arrival of such information and incorporate it into prices. This argument also yields support from the core function of financial flexibility, which is its ability to avoid underinvestment and financial distress. Both underinvestment and financial distress are key features of the risk management that is found related to financial flexibility (Bonaimé, Hankins, and Harford, 2013).[9] As a result, we posit the following:

Hypothesis 2: Firms that experience positive shifts in FLEX in the current period provide lower future stock returns (year t + 1).

Hypothesis 3: The lower future stock returns of firms that improve their financial flexibility reflect the lower risk.

3. Data, model, and method

3.1. Data

This study uses a universe of nonfinancial and nonutilities, U.S. stocks listed on NYSE, AMEX, and NASDAQ. The data set consists of the CRSP monthly stock return files (1983–2011) and the COMPUSTAT annual industrial files for balance sheet data (1984–2009). The accounting data require complete information for total assets for each firm. The variables used in this paper are growth variables. The estimations of these variables require at least two years of data. Consistent with the standard literature in this area, the sample excludes financial and utility firms (i.e., stocks with four-digit SIC Codes 6000–6999 and 4900–4999).[10]

Firm size is estimated using market equity at June of the fiscal year *t-1*. The market equity in December is obtained to estimate the book-to-market ratio at the end of fiscal year *t-1*, which follows Fama and French (1992). The final data sample contains 876,348 firm-month

[9] While it is interesting to distinguish between the two hypotheses, it is beyond the scope of our study and therefore left for future research.

[10] Cases in which the shares outstanding are negative or zero are also excluded. In order to calculate the book equity for the book-to-market ratio, firms with negative or zero book equity are deleted.

observations for the research period. The accounting characteristics are matched to the 12 monthly stock returns that start within 12 months after the end of the fiscal year. This comfortably covers possible lags between the announcements and disseminations of the financial information.[11]

The CEO characteristics data are obtained from the Risk Metrics Directors database. The data for CEO ownership, CEO Option ownership, CEO Cash Component, and CEO Tenure is available starting from 1992 to 2009. The data period for Board Size and the fraction of Independent Directors is from 1996 to 2009.

3.2. Model

This study conjectures that there are certain corporate financing decisions that are typically embedded in a specific set of balance sheet entries (due to double-entry bookkeeping). This, in turn, causes them to share a common variance that can be identified and meaningfully reveals the changes in corporate financing decisions. These decisions are fundamental/common to businesses.

Suppose there are $N = f\ \{I_1, I_2, I_3, \ldots, I_n\}$ common shifts in corporate finance decisions among businesses. Each shift $I_n = f\ \{b_1, b_2, b_3, b_3, \ldots, b_n\}$ is a function of b_n—a shift in the balance sheet items. Each b_n element is expected to have a significant correlation with other unknown items depending on a particular type of change in the corporate finance decisions and their offsetting entries on both sides of the balance sheet owing to the double-entry bookkeeping system. The elements of a balance sheet that represent a decision to adjust to a certain type of corporate finance policy are expected to follow simultaneous co-movements systematically

[11] The six-month, rather than twelve-month, lag for accounting information does not change the quality of our results.

across time. Thus, the consistencies of co-movements would bring heterogeneity among corporate finance decisions. The above assumed setting of the I_n orthogonality may appear to be violated by the balance sheet items that are aggregates of certain business activities—for example, total assets, total liabilities, long-term debt, and invested capital. To overcome this violation, the aggregates are decomposed into their respective I_n decisions based on their potential uses or specific transactions.

3.3. Method

3.3.1. Derivation of financial flexibility measure

The balance sheet items are converted into the growth variables defined as:

$$X_{i,\,t-1} = (b_{i,\,t-1} - b_{i,t-2})/Total\ Asset_{t-2} \tag{1}$$

where, $b_{i,\,t-1}$ stands for the balance sheet entry i at time $t\text{-}1$. The individual growth item is further winsorized at 1% and 99%.[12] Subsequently, the data are standardized to make each variable equal in importance for simplicity in making relations between the different variables of interest (Jobson, 1992).[13] Importantly, this data treatment focuses on only balance sheet data ($X_{i,\,t-1}$), not on stock returns. The asset growth information ($X_{i,\,t-1}$) is then decomposed into five well-defined and orthogonal latent factors (corporate financing decisions) using a factor analysis procedure.

This study is motivated by a need to understand the common interactions or common causal variances of the balance sheet change rate information. Factor analysis is a useful tool to understand these common interactions owing to its capabilities in isolating the common variance

[12] For winsorization of 1% at both tails, Butler, Cornaggia, Grullon, and Weston, (2011), Baxamusa (2011), Sullivan and Zhang (2011), and Teoh, Welch, and Wong (1998), among others, are followed. The study opts for 1% winsorization instead of 5% to reduce the loss of information.

[13] Brown and Goetzmann (1997) argue that the change rate of time-series of historical accounting information would free the data from units and scale questions.

from the unique variance.[14] As mentioned earlier, the commonalities exist among the balance sheet items due to the practice of the double-entry bookkeeping system. This accounting system brings offsetting changes in two or more accounts at the same time. These accounts can be on either side or both sides of the balance sheet. For example, firms use cash to run the current operations or to exploit future growth options, and this is either raised via equity and debt financing or by the use of internal cash holdings. This kind of investment would generate the future cash flows that could be used for several options including paying liabilities, distributing to shareholders as dividends, repurchasing of shares, or reinvesting in new projects. All these business activities are continuous and bring changes in several accounts, and thus they are expected to share variances. The identification of such a causal variance would actually help to identify factors that reflect the basic operating business activities of these time-varying businesses. Factor analysis through the correlation matrix identifies the commonalities and reduces the original set of variables to a few common factors that share highest correlations.

The factor analysis is implemented using an SAS FACTOR procedure. At the start of the research, we make sure data meet the basic assumptions of the factor analysis model.[15] The assumption testing reduces the initial set of 50 b_n variables to 37 variables (see Figure 1 caption for the complete variable list). This removal of variables is followed by the identification of a number of factors. This study observes the eigenvalue—equal to one and above one—and the scree plot in order to determine the exact number of factors to be extracted. Moreover, the

[14] Factor analysis differs from the principal component analysis in its objective. The former takes into account common variances and later full variances among the original variables. See King (1966), Lehmann and Modest (1988), Pinches and Mingo (1973), Bushee (1988), Sorensen (2000), and Abarbanel, Bushee, and Raedy (2003), among others, who use factor analysis model.

[15] The factor analysis assumptions include small partial correlations among the input variables: a sampling adequacy of around 0.60 and a correlation cutoff of 0.45 (Hair, Black, Babin, Anderson, and Tatham, 1998). A sampling adequacy of 0.50 is suggested for both the overall test and individual variables and of 0.60 for successful factor analysis. Correlations below 0.30 make factor analysis inappropriate (Hair, Black, Babin, Anderson, and Tatham, 1998).

correct factor structure requires that at least three variables are grouped together with distinct loadings for individual factors.

Our factor analysis on comprehensive balance sheet items (the primary source of information about firms used by the public) shows that in each year, the five factors are consistently adequate in explaining most of the covariance among the original variables. Each of the five factors consists of the same components each year. Every year, the five factors are given orthogonal rotation with a principal component factor analysis method, using the *SAS VARIMAX* function, to create the final factor structure. The factors are labeled based on the highest loadings of factors' constituent change rates.

Figure 1 provides the factor analysis–based output showing component loadings of the first factor across the 25-year sample period. Factor one is of prime interest in this paper. It is labeled as *FFLEX* subject to components that bear higher loadings. Panels A and B of Table 1 show the summary statistics and correlation matrix of *FFLEX* and its components. Panel C of Table 1 shows the distribution of *FFLEX* components across its ranked decile. This table suggests that all components are highly correlated with the *FFLEX* and they are monotonically distributed across deciles. The components include the constructs that are more often used for valuing the financial flexibility or close substitutes (Barclay, Fu, and Smith, 2012; Denis, 2011; Faulkender and Wang, 2006; Gamba and Triantis, 2008). Examples are Cash and Equivalents (Compustat Item No. A1), Common Equity-Total (Compustat Item No. A60), Common Equity-Liquidation (Compustat Item No. A238), Common Equity-Tangible (Compustat Item No. A11), Invested Capital (Compustat Item No. A37), Current Assets (Compustat Item No. A4), Capital Surplus (Compustat Item No. A210), and Total Assets (Compustat Item No. A6). The annual interactions of shifts in the above balance sheet items (capturing management's perceptions) create the factor that mainly reflect proactive equity issuances and simultaneous buffer cash holdings documented by Barclay, Fu, and Smith (2012). Specifically, the growth in Cash and Equivalents reflects the firm's liquidity policy, the growth in Common Equity-Total indicates the shifts in the external financing, and the Common Equity-Liquidation shows shifts in the liquidation capital of the firm. Further, the growth variables such as Common Equity-Tangible and Invested Capital reflect the firm's desire to invest in new growth options via liquidating the current fixed assets, when external capital and liquidity reserves are inadequate. The factor is also consistent with the definition of financial flexibility defined in several other literature.[16] Interestingly, financial flexibility (*FFLEX*) is constantly justified as the first factor every year, and all the component growth variables appear with a loading above 0.4 as shown in Figure 1. The component loadings magnitudes and their ordering, on average, are strikingly the same across the 25-year study period.[17]

3.3.2. Derivation of financial flexibility return mimicking factor (from FFLEX to FLEX)

To construct the counterpart financial flexibility latent growth–based return mimicking factor, we follow Francis, LaFond, Olsson, and Schipper (2005) and Core, Guay, and Verdi (2008). The characteristic *FFLEX* is matched with 12-month returns starting from the 12th month after the end of the fiscal year (e.g., if the fiscal year ends in June *t-1*, then the returns are collected from July of year *t+1* to June of year *t+2*).

The portfolio returns for this characteristic are measured in two alternative ways. First, as the core measure, the year-to-year firm observations are sorted and ranked into quintiles based

[16] Denis (2011) and Ang and Smedema (2011) define *financial flexibility* as the ability to respond in a well-timed and value-maximizing manner to unanticipated shifts in the firm's cash flows or investment options. Marchica and Mura (2010, p.1342) argue that "since there is no well-defined measure of flexibility in the literature, this is an unobservable factor that depends largely on managers' assessment of future growth options."

[17] Graham and Harvey (2001) note that financial flexibility is the chief determinant of capital structure and DeAngelo and DeAngelo (2007) find it a missing link that is important to connect capital structure theory.

on *FFLEX* each month. Then for each quintile, the monthly equal-weighted average returns are calculated. The new factor (*FLEX*) goes long in the bottom two (i.e., most negative change in the financial flexibility) and short in the top two (i.e., most positive change in the financial flexibility) quintiles.[18]

In the second case, following the Fama and French (2015) 2 x 3 sorting method, the stocks are sorted independently into two firm-size groups and three *FFLEX* groups. The NYSE median market capitalization is used as the firm-size breakpoint and *FFLEX*'s 30th and 70th percentiles for NYSE are used as the *FFLEX* breakpoints. Using the interactions of two size and three *FFLEX* portfolios, we produce six value-weighted portfolios that are used to construct $FLEX_{2x3}$ hedge portfolio. This hedge is obtained by the difference of the average returns on two low *FFLEX* portfolio returns and two high *FFLEX* portfolio returns.

In the third case, we control for both firm size and book-to-market ratio in each month.[19] Specifically, we independently sort stocks into terciles on size, book-to-market, and *FFLEX*, thereby producing 27 portfolios. The average equal-weighted returns are allocated to each portfolio. Then the hedge portfolios are constructed by going long in the bottom nine *FFLEX* portfolios and short in the top nine *FFLEX* portfolios. The latter two methods of constructing the return factor help mitigate multicollinearity concerns, owing to significant correlations between *FLEX* and *MKT_RF* and *HML*. However, there is no impact on the final conclusion of the asset pricing test due to the variations in construction of the return mimicking factors.

[18] In terms of *FFLEX* components, bottom two quintiles would mean firms that show high reduction in equity capital, cash holdings, liquidation value of equity capital, and equity capital-tangible and otherwise in case of top two quintiles.
[19] Analysis based on this measure is not reported for brevity concerns as results are comparable.

3.3.3. Asset pricing models: Two-stage cross-sectional regressions (2SCSR)

Cochrane (2001) explains the procedure of two-stage cross-sectional regressions, originally developed by Jensen, Black, and Scholes (1972) and Fama and MacBeth (1973) for Capital Asset Pricing Model (CAPM) testing along with others (Grauer and Janmaat, 2009, 2010). Brennan, Wang, and Xia (2004) and Petkova (2006) have used 2SCSR in the case of conditional CAPM, Campbell and Vuolteenaho (2004) for the two-beta model, and Huang and Wang (2009) for an investment-based asset pricing model. Recently, the 2SCSR has been used for testing the accrual quality factor and alternative three-factor model beyond the U.S. market for risk-based explanations (Core, Guay, and Verdi, 2008; Kim and Qi, 2010; Ogneva, 2012; Walkshäusl and Lobe, 2014). Intuitively, the risk premium should be positively related to the betas, where beta proxies risk exposures. We choose to use the Fama-French three-factor model as our baseline. First, time-series regressions of the following form are run to obtain the betas:

$$R_{it} - R_{ft} = \alpha + \beta_{i,MKT\_RF} MKT\_RF_t + \beta_{i,SMB} SMB_t + \beta_{i,HML} HML_t + \beta_{i,FLEX} FLEX_t + \varepsilon_{it} \qquad (2)$$

where $(\mathrm{R_{it}} - \mathrm{R_{ft}})$ are excess future returns for a portfolio of firms; (MKT_RF_t), (SMB_t), and (HML_t) are Fama and French (1993) factors.[20] *FLEX* represents the new return factor, constructed by going long on financial flexibility characteristics ranked in the bottom two quintiles of returns and shorting the top two quintiles.

In the second stage, we estimate the factor risk premium (γs) from the cross-sectional regression, with betas on the right-hand side as independent variables:

$$R_{it} - R_{ft} = \gamma_0 + \gamma_1 b_{i,MKT\_RF} + \gamma_2 b_{i,SMB} + \gamma_3 b_{i,HML} + \gamma_4 b_{i,FLEX} + \nu_{it} \qquad (3)$$

[20] The data for Fama and French three-factors and five-factors are obtained from Kenneth French's online library (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

We also augment the Fama and French (1993) three-risk factor model, with a momentum (*UMD*) factor (sourced from Ken French's data library) and Pastor and Stambaugh's (2003) liquidity factor (*LIQ*). Further, we also test in the context of the Fama and French (2015) five-factor model and its augmented models, which include Frazzini and Pedersen's (2014) *BAB* factor; Moskowitz, Ooi, and Pedersen's (2012) *TSMOM* factor; and Asness, Frazzini, and Pedersen's (2013) QMJ factor. The q-factor model (Hou, Xue, and Zhang, 2015) implications are tested for fair comparison of different factor models; the model introduces the two new factors *ROE* and *I/A*.[21]

Three types of portfolios are used as test assets. These are 25 *LSIZE-LBTM* portfolios, 100 *FFLEX* portfolios, and 64 *LSIZE-LBTM-FFLEX* portfolios, where the portfolio returns are value-weighted monthly returns. Kim and Qi (2010) note that the use of alternative portfolios as test assets alleviates the errors-in-variable bias. The 25 *LSIZE-LBTM* portfolios are constructed via ranking stocks into five groups independently on logarithm of market size and logarithm of book-to-market ratio every month. Each portfolio is capitalization weighted, further adjusted for risk-free rate to obtain excess value-weighted stock returns.

In the case of 100 *FFLEX* portfolios, the stocks are ranked into 100 groups based on *FFLEX* characteristics every month, and capitalization weighted excess returns (i.e., subtracting the risk-free rate). Similarly, 64 *LSIZE-LBTM-FFLEX* portfolios are obtained by independently ranking the stocks every month on *LSIZE*, *LBTM*, and *FFLEX* into quartiles. Each of the 64 portfolios is weighted by capitalization, further adjusted for risk-free rate.[22]

[21] We are thankful to Professors Lu Zhang, Kewei Hou, and Chen Xue for sharing the q-factor model data with us.
[22] Similarly, three test portfolios are also constructed for testing $FLEX_{2x3}$; however, we report results for only 64 *LSIZE-LBTM-FFLEX* portfolios in Table 6 to reduce the length of the paper.

3.4. Does FFLEX merely reflect "financing constraints (leverage effect)" or "cash holdings"?

Is it possible that high *FFLEX* firms borrow less simply due to their financing constraints? In the upper section of Table 2, we show that when sorted on market leverage, low-leverage group (almost zero leverage) firms are more likely to build financial flexibility as indicated by most positive shift in *FFLEX*. However, we argue that these firms are more likely to borrow less by choice as they pay relatively high dividends. Importantly, they deviate considerably from the target leverage while increasing capital expenditure to exploit a large number of growth opportunities. In addition, low-leverage group firms are cash-rich and employ excess cash in lowering debt while paying out to shareholders. All these imply that they are not constrained in their ability to raise external financing. Consistent with Strebulaev and Yang (2013), most zero-leverage firms are likely to have large CEO stock ownership, long tenures, small board size, and fewer independent directors. CEO option holdings are smaller. This result potentially indicates the presence of managerial preference to amass flexibility through stored cash and near-zero leverage.[23]

On the contrary, high-leverage group firms are utilizing their flexibility (i.e., firms with most negative shift in *FFLEX*) to increase debt, and use reserved cash, which is evident from the large increase in capital expenditure (Byoun, 2016). These more levered firms are poor in governance with small CEO ownership, higher cash compensation, small tenures, large board size, and large number of independent directors. The policy of increase debt and smart use of flexibility is coupled with good governance as indicated by higher cash flows. We find qualitatively similar results when controlling for the effect of cash holdings in the same table.

[23] We control for the effect of equity agency cost when formally examining the relation between *FFLEX* and future investment growth opportunities in the next section (e.g., Table 4). We thank our anonymous referee for this point.

3.5. Characteristics of FLEX factor in asset pricing setting

Table 3 shows the descriptive statistics for our *FLEX* factor together with its correlations between Fama-French factors (*MKT_RF*, *SMB*, and *HML*), the momentum factor (*UMD*), and our factor (*FLEX*). Panel A shows the average monthly return on *FLEX* factor with NYSE-AMEX-NASDAQ breakpoints is 0.69% with a *t*-statistic of 5.56. This *t*-statistic is considerably higher than the new benchmark of 3.00 proposed by Harvey, Liu, and Zhu (2014). The average monthly premium on *MKT_RF*, *SMB*, *HML*, *UMD*, and *LIQ* are 0.52%, 0.12%, 0.29%, 0.56%, and 0.51%, respectively. The correlations of *FLEX* and $FLEX_{2x3}$ factors with *I/A*, *CMA*, and *HML* are positive.

Compared to *FLEX*, the average monthly premium on $FLEX_{2x3}$ is 0.59% with a *t*-statistics of 4.80, which is 0.10% lower than *FLEX*. It is because of conservative NYSE breakpoints to limit the impact of small/microstocks. The correlation of 0.82 between *FLEX* and $FLEX_{2x3}$ is quite high.[24]

4. Empirical results

4.1. Does the financial flexibility measure (FFLEX) predict future investment growth opportunities?

As a primer, we establish that the *FFLEX* measure, a product of factor analysis that detects the most common co-movements or shifts in balance sheet items, is an effective measure of corporate financial flexibility. As discussed in Section 2, building up financial flexibility allows firms to preserve the ability to benefit from future growth opportunities. There are two major ways that firms can increase their financial flexibility. One is through the conservation of unused debt capacity (see, e.g., Denis and McKeon, 2012; DeAngelo, DeAngelo, and Whited, 2011).

[24] See, Appendix Table A3 for $FLEX_{2x3}$ summary statistics.

The other is through the "proactive equity issuance" (see, e.g., Barclay, Fu, and Smith, 2012; Denis and McKeon, 2016; Byoun, 2016). Our *FFLEX* reflects the latter, of which Barclay, Fu, and Smith (2012) show that it is due to the arrival of large investment opportunities. This argument is consistent with Gamba and Triantis (2008). They show that financial flexibility built up with cash and debt capacity is needed when there are more future growth opportunities relative to lower expected future cash flows. On the contrary, firms that utilize the flexibility would be associated with fewer or declining growth opportunities.

In order to prove that *FFLEX* is an effective measure of financial flexibility, we follow the test approach by Gamba and Triantis (2008) and Byoun (2016) to examine the relation between *FFLEX* and future investment (forward-looking) growth opportunities (*QR*). Specifically, we test whether firms with higher positive shift in financial flexibility are associated with larger growth opportunities, and vice versa. The test is constructed through standard error clustered annual cross-sectional regressions (clustering both by firm and time) aimed at determining the forward-looking growth opportunities regressions (QR) for our sample period. Specifically, QR is the residual value obtained when Tobin's Q is regressed on the expected operating cash flows. In the regressions, we also control for earned-to-capital ratio (*EC*), financial flexibility index (*INDEX*) as defined in Byoun (2016), leverage effect (e.g., financing constraints), cash holdings, excess leverage, research and development to sales ratio (investment growth proxy), accounting size, dividends, and for list of governance variables that control for agency cost of equity (all variables are defined in the header of Table 4). Instead of using the market-to-book ratio (*Q*) as a proxy for future growth opportunities, we measure growth opportunities as a residual from the regression of *Q* on expected operating cash flows (*CF*). This measure excludes the information relating to expected profitability. The results reported in Table 4 largely support *FFLEX* as an effective measure of financial flexibility. The significant positive relation between *FFLEX* and growth opportunities (*QR*) indicates that *FFLEX* possess ability to predict or conserve future investment ability. Also, the positive relation is robust to inclusion of financing constraint (*LEV* and *EXS_LEV*), cash holdings (*CASH*), and other CEO-governance variables. For example, while governance variables through CEO option ownership have a positive relation with growth opportunities/CEO tenure while fraction of independent directors has a negative relation with growth opportunities, they do not alter the positive relation between *QR* and *FFLEX* in our models.[25]

4.2. Does financial flexibility (FFLEX) predict future stock returns?

The first two hypotheses formulated in this paper are whether financial flexibility matters to investors in the stock market and, if so, in what direction. We begin testing Hypotheses 1 and 2 by simply examining the return predictability of *FFLEX* measure through Fama-MacBeth (1973) regressions. The dependent variable is the subsequent monthly returns in excess of the risk-free rate during year *t+1* while the independent variables include the year *t-1*[26] financial flexibility measure (*FFLEX*) and other prominent capital asset pricing variables as controls (including log of the market value of equity [*LSIZE*], log of the book-to-market ratio [*LBTM*], gross profitability [*GPA*], buy-and-hold returns for months –6 to –2 [*BHRET6*], and buy-and-hold returns for months –36 to –2 [*BHRET36*]). Results shown in Table 5 largely support Hypothesis 1 as $FFLEX_{t-1}$ regression coefficients are significant at the 1% level across all models. The negative relation between future stock returns and increase in *FFLEX* characteristic

[25] We also perform the simpler regression that tests the relation between *FFLEX* in year *t* and capital expenditure in year *t+1*. The unreported results also confirm the positive relation between *FFLEX* and future investment. The results are available upon request.
[26] Following conventional practice in the accounting-based capital asset pricing studies, we leave the current year out to allow for accounting reporting time made available/known to the public.

also supports the prediction of Hypothesis 2. Firms that increase their financial flexibility in year *t*-1 provide lower monthly stock returns in the subsequent year on average. The lower monthly returns are between –0.25% per month to –0.33% per month conditional on the set of control variables used in each model. While the lags of value effect (*LBTM*), gross profitability effect (*GPA*), and 6-month buy-and-hold returns (*BHRET6*) lose their significance when all variables are pooled together in the same model (Model 4), the *FFLEX* regression coefficients maintain its negative sign and significance throughout. These introductory results establish that *FFLEX* has a significant role in explaining the subsequent year monthly excess returns, as hypothesized in our paper.[27]

4.3. Is financial flexibility priced in the cross-sectional regressions?

The main research question raised in our study is whether financial flexibility is priced in the stock market. According to Hypothesis 3, firms that worsen their financial flexibility become more sensitive (i.e., less adversely affected) to sudden and unpredictable shifts in investment needs. This leads to the higher systematic risk related to financial flexibility. But does the stock market price this financial flexibility's value effect? The Cochrane (2001) model allows us to formally test whether sensitivity to *FLEX* factor is reflected in individual stock risk premium cross-sectionally. We examine whether *FLEX* is an important determinant of the excess value-weighted returns on several test asset portfolios using 2SCSR proposed in Cochrane (2001) in Table 6. Our main interest is in the second-stage results. The time-series means of coefficients and Fama-MacBeth (1973) *t*-statistics for 25 *LSIZE-LBTM*, 100 *FLEX*, and 64 *LSIZE-LBTM-FLEX* portfolios are presented in Panels A, B, and C, respectively.

[27]As shown in Table 2, *FFLEX* is correlated to cash holdings and leverage to a certain extent. As a result, we control for these two effects in a robustness check using Lamont, Polk, and Saaá-Requejo's (2001) methodology. Our results (unreported) are qualitatively the same.

Generally, the results convey the message that *FLEX* bears positive and significant premium and thus is a priced factor. In Panel A, the γ_4 coefficients are significantly positive at the 1% level in Models 5–8, ranging from 0.739 to 0.831. In the strictest model (Model 8) where all other well-known risk factors (four-factor model plus liquidity factor) (Carhart, 1997) are included, the γ4 coefficient is reported as 0.753 and statistically significant at the 1% level. In Model 8, the other two risk factors that survive are the traditional CAPM risk and the value risk (*HML*). Our results are also robust to the construction of test portfolios. Panels B and C provide similar tests with the finer construction test portfolios. The γ_4 coefficients are still significantly positive at conventional levels throughout. For example, when *FFLEX* portfolio ranking is the finest (Panel B), the γ_4 coefficient is 0.403 and significant at the 5% level. Overall, persistence of sensitivity to *FLEX* factor ability to explain excess stock returns relative to the most prominent five risk factors in the literature (and among practitioners) warrants its potential as another risk factor in asset pricing studies.

In a further robustness check, we examine whether the $FLEX_{2x3}$ factor is persistent in the presence of the most recent version of the Fama and French model introduced in 2015. In Table 7, Panel A, we perform the 2SCSR procedure while also considering factors included in the Fama and French (2015) five-factor model—this is the augmented version of FF3 that adds with the investment factor (*CMA*) and the profitability factor (*RMW*). The inclusion of *CMA* and *RMW* factors further establishes that our *FLEX* risk factor does not merely proxy risks involved with the intensity of investment activities and profitability rationalized by Fama and French (2015). As shown in Model 6, the γ_4 coefficient is 0.709 and significant at the 1% level. In Model 7, the *FLEX* factor is robust when investment and profitability risk factors (see, e.g., Hou, Xue, and Zhang, 2015) through q-factor model are employed as control risk factors. For a final check, we comprehensively include other known risk factors in the asset pricing literature including Frazzini and Pedersen's (2014) Betting against Beta (*BAB*) factor; Moskowitz, Ooi, and Pedersen's (2012) Time Series Momentum (*TSMOM*) factor; and Asness, Frazzini, and Pedersen's (2017) Quality minus Junk (*QMJ*) factor to Fama and French's (2015) five-factor model and run 2SCSR on three test asset portfolios (25 *LSIZE-LBTM*, 100 *FLEX*, and 64 *LSIZE-LBTM-FLEX*). The results are reported in Table 7, Panel B. They are largely consistent with our main results in that the $FLEX_{2x3}$ factor is a persistent risk factor in all models and shows a significant positive premium in the presence of other known risk factors in the literature.[28]

4.4. Do covariances dominate characteristics?

The empirical evidence in previous sections suggests that the stock market is pricing the shift in financial flexibility (*FFLEX*) through proactive equity issuances, and *FLEX* (return mimicking factor derived from *FFLEX*) appears to be a robust-priced risk factor. However, in view of existing literature (Prombutr, Phengpis, and Zhang, 2012), there is a possibility that the *FLEX* premium is caused by mispricing. For example, given that *FFLEX* is estimated as the simultaneous growth in two consecutive previous fiscal year ends (12 months earlier than the observed stock returns), investors may underreact to the arrival of new financial flexibility information. To help resolve this concern, we start by preliminarily applying the Daniel and Titman (1997) characteristic versus covariance test on our data. It is worth noting that this general test is useful, as both covariance and characteristics can be endogenously related to expected stock returns in a rational general equilibrium model (Lin and Zhang, 2013). Consistent with Lin and Zhang (2013), we find estimated covariance tends to be noisier with weak return predictive power compared to its underlying characteristics. Our (unreported) results suggest that

[28] For brevity, Table 7 reports only the results on the test asset of 64 *LSIZE-LBTM-FLEX* portfolios.

the *FLEX* factor loading is really capable of driving returns and is rather consistent with the risk-based explanations.

The other way to formally differentiate the characteristic versus covariance is by running cross-sectional regression of models that include both characteristic and covariance loadings. Table 8 reports the results for the Fama and MacBeth (1973) cross-sectional regression of subsequent excess returns on the characteristics and the factor loadings of the financial flexibility while controlling for the Fama-French three-factor model and the past six-month return characteristic (*BHRET6*). The risk-based explanation demands that the characteristics do not subsume the premium or coefficient on the factor loading; and mispricing-based explanations demand that the characteristics should be able to subsume the explanatory power of the loading in cross-sectional regressions. Our evidence suggests that in regressions that include both characteristics (*FFLEX*) and loading (b_{FLEX}), the coefficient of loading 0.075 is significantly different from zero at the 10% level with *t*-statistics of 1.84. In other words, the control of characteristics (*FFLEX*) and the control of the Fama-French three-factor model and momentum are unable to subsume the explanatory power of b_{FLEX} in explaining stock returns through a risk-return framework.

5. Conclusions

This study provides a comprehensive measure of corporate financial flexibility (*FFLEX*) that is associated with an increase in future growth opportunities, which delivers insights useful for investors. Our analysis shows that firms that conserve *FFLEX* do so by choice and not because they face financial constraints. In addition, this study investigates whether *FFLEX* predicts future stock returns and attracts a return premium. The short answer is yes. Accordingly, we then ask, is such a premium characteristic driven or risk driven? We find that it is risk driven and also that it survives inclusion in prominent pricing factor models. Overall, our evidence that financial flexibility is a priced risk factor contrasts the literature, which suggests that observed investment growth–based anomalies reflect mispricing or characteristics. A range of additional analysis supports the priced factor interpretation and warrants financial flexibility as another risk factor in asset pricing studies.

While our study is primarily an empirical asset pricing study that is motivated by an emerging line of corporate finance literature (i.e., financial flexibility), we conjecture some potential practical implications for CEOs/CFOs of public companies that are worth noting. First, while there are two major alternative ways to build corporate financial flexibility—proactive leverage increases versus proactive equity issuances—our study suggests that the latter avenue is more common among public firms (in the sample). Second, such a policy of proactive equity issuances and simultaneous buffer cash holding is systematically perceived well by investors (i.e., consistent with value-maximizing actions) as it boosts future stock prices (and thus lowers future cost of equity). In other words, this approach to financial flexibility is an effective corporate risk management strategy as it reduces systematic risk/shocks that affect firms' investment opportunities and cash from operation shortfalls. Third, our study suggests that investors are sophisticated and may consider interaction between various accounting items' changes and react in the stock market accordingly. So it is important for good management to be cautious of changes that may show up in their balance sheets (e.g., not just earnings).

References

Abarbanell, J.S., B.J. Bushee, and J.S. Raedy, 2003. Institutional investor preferences and price pressure: The case of corporate spin-offs, *The Journal of Business* 76, 233–261.

Agha, M. and R. Faff, 2014. An investigation of the asymmetric link between credit re-ratings and corporate financial decisions: "Flicking the switch" with financial flexibility, *Journal of Corporate Finance* 29, 37–57.

Ang, J. and A. Smedema, 2011. Financial flexibility: Do firms prepare for recession? *Journal of Corporate Finance* 17, 774–787.

Asness, C.S., A. Frazzini, and L.H. Pedersen, 2017. Quality minus junk, Working paper, SSRN.

Ball, R. and P. Brown, 1968. An empirical evaluation of accounting income numbers, *Journal of Accounting Research* 6, 159–178.

Barclay, M.J., F. Fu, and C.W. Smith, 2012. Rational financial management: Evidence from seasoned equity offerings, Working paper, SSRN.

Basu, S., 1997. The conservatism principle and the asymmetric timeliness of earnings, *Journal of Accounting and Economics* 24, 3–37.

Baxamusa, M., 2011. How well do market timing, catering, and classical theories explain corporate decisions? *Journal of Financial Research* 34, 217–239.

Berk, J.B., R.C. Green, and V. Naik, 1999. Optimal investment, growth options, and security returns, *The Journal of Finance* 54, 1553–1607.

Bonaimé, A.A., K.W. Hankins, and J. Harford, 2013. Financial flexibility, risk management, and payout choice, *The Review of Financial Studies* 27, 1074–1101.

Brennan, M.J., A.W. Wang, and Y. Xia, 2004. Estimation and test of a simple model of intertemporal capital asset pricing, *The Journal of Finance* 59, 1743–1776.

Brown, S.J. and W.N. Goetzmann, 1997. Mutual fund styles, *Journal of Financial Economics* 43, 373–399.

Bushee, B.J., 1998. The influence of institutional investors on myopic R&D investment behavior. *Accounting review*, 73, 305-333.

Butler, A.W., J. Cornaggia, G. Grullon, and J.P. Weston, 2011. Corporate financing decisions, managerial market timing, and real investment, *Journal of Financial Economics* 101, 666–683.

Byoun, S., 2016. The effects of financial flexibility demand on corporate financial decisions, Working paper, SSRN.

Campbell, J.Y. and T. Vuolteenaho, 2004. Bad beta, good beta, *American Economic Review* 94, 1249–1275.

Carhart, M.M., 1997. On persistence in mutual fund performance, *The Journal of Finance* 52, 57–82.

Cochrane, J.H., 2001. *Asset Pricing*, Princeton, NJ, Princeton University Press.

Core, J.E., W.R. Guay, and R. Verdi, 2008. Is accruals quality a priced risk factor? *Journal of Accounting and Economics* 46, 2–22.

Daniel, K. and S. Titman, 1997. Evidence on the characteristics of cross sectional variation in stock returns, *The Journal of Finance* 52, 1–33.

DeAngelo, H. and L. DeAngelo, 2007. Capital structure, payout policy, and financial flexibility, Working paper, SSRN.

DeAngelo, H., L. DeAngelo, and T.M. Whited, 2011. Capital structure dynamics and transitory debt, *Journal of Financial Economics* 99, 235–261.

DeAngelo, H. and R. Roll, 2016. Capital structure instability, *Journal of Applied Corporate Finance* 28, 38–52.

Denis, D.J., 2011. Financial flexibility and corporate liquidity, *Journal of Corporate Finance* 17, 667–674.

Denis, D.J. and S.B. McKeon, 2012. Debt financing and financial flexibility evidence from proactive leverage increases, *The Review of Financial Studies* 25, 1897–1929.

Denis, D.J. and S.B. McKeon, 2016. Proactive leverage increases and the value of financial flexibility, *Journal of Applied Corporate Finance* 28, 17–28.

Fabozzi, F.J. and H.M. Markowitz, eds., 2011. *The Theory and Practice of Investment Management: Asset Allocation, Valuation, Portfolio Construction, and Strategies*, Vol. 19, New York, Wiley.

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

Fama, E.F. and K.R. French, 1993. Common risk factors in the returns on stocks and bonds, *Journal of Financial Economics* 33, 3–56.

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

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

Faulkender, M. and R. Wang, 2006. Corporate financial policy and the value of cash, *The Journal of Finance* 61, 1957–1990.

Francis, J., R. LaFond, P. Olsson, and K. Schipper, 2005. The market pricing of accruals quality, *Journal of Accounting and Economics* 39, 295–327.

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

Gamba, A. and A. Triantis, 2008. The value of financial flexibility, *The Journal of Finance* 63, 2263–2296.

Graham, J.R. and C.R. Harvey, 2001. The theory and practice of corporate finance: Evidence from the field, *Journal of Financial Economics* 60, 187–243.

Grauer, R.R. and J.A. Janmaat, 2009. On the power of cross-sectional and multivariate tests of the CAPM, *Journal of Banking and Finance* 33, 775–787.

Grauer, R.R. and J.A. Janmaat, 2010. Cross-sectional tests of the CAPM and Fama–French three-factor model, *Journal of Banking and Finance* 34, 457–470.

Hair, J.F., W.C. Black, B.J. Babin, R.E. Anderson, and R.L. Tatham, 1998. *Multivariate data analysis*, Vol. 5, Upper Saddle River, NJ, Prentice Hall.

Harvey, C.R., Y. Liu, and H. Zhu, 2016. . . . and the cross-section of expected returns, *The Review of Financial Studies* 29, 5–68.

Hou, K., C. Xue, and L. Zhang, 2015. Digesting anomalies: An investment approach, *The Review of Financial Studies* 28*,* 650–705.

Huang, D. and F. Wang, 2009. Cash, investments and asset returns, *Journal of Banking and Finance* 33, 2301–2311.

Jensen, M.C., F. Black, and M.S. Scholes, 1972. The capital asset pricing model: Some empirical tests, in M. Jensen, ed., *Studies in the Theory of Capital Markets*, New York, Praeger.

Jobson, J.D., 2012. *Applied Multivariate Data Analysis: Volume II: Categorical and Multivariate Methods*, New York, Science and Business Media, Springer.

Kim, D. and Y. Qi, 2010. Accruals quality, stock returns, and macroeconomic conditions, *The Accounting Review* 85, 937–978.

King, B.F., 1966. Market and industry factors in stock price behavior. *The Journal of Business*, *39*, 139-190.

Lamont, O., C. Polk, and J. Saaá-Requejo, 2001. Financial constraints and stock returns, *The Review of Financial Studies* 14, 529–554.

Lehmann, B.N. and D.M. Modest, 1988. The empirical foundations of the arbitrage pricing theory. *Journal of Financial Economics*, *21*, 213-254.

Lin, X. and L. Zhang, 2013. The investment manifesto, *Journal of Monetary Economics* 60, 351–366.

Lipe, R., 1990. The relation between stock returns and accounting earnings given alternative information, *Accounting Review* 65, 49–71.

Marchica, M.T. and R. Mura, 2010. Financial flexibility, investment ability, and firm value: Evidence from firms with spare debt capacity, *Financial Management* 39, 1339–1365.

Moskowitz, T.J., Y.H. Ooi, and L.H. Pedersen, 2012. Time series momentum, *Journal of Financial Economics* 104, 228–250.

Novy-Marx, R., 2013. The other side of value: The gross profitability premium, *Journal of Financial Economics* 108, 1–28.

Ogneva, M., 2012. Accrual quality, realized returns, and expected returns: The importance of controlling for cash flow shocks, *The Accounting Review* 87, 1415–1444.

Ohlson, J.A., 1995. Earnings, book values, and dividends in equity valuation, *Contemporary Accounting Research* 11, 661–687.

Ou, J.A. and S.H. Penman, 1989. Financial statement analysis and the prediction of stock returns, *Journal of Accounting and Economics* 11*,* 295–329.

Pástor, Ľ. and R.F. Stambaugh, 2003. Liquidity risk and expected stock returns, *Journal of Political Economy* 111, 642–685.

Petkova, R., 2006. Do the Fama–French factors proxy for innovations in predictive variables? *The Journal of Finance* 61, 581–612.

Pinches, G.E. and K.A. Mingo, 1973. A multivariate analysis of industrial bond ratings. *The Journal of Finance*, *28*, 1-18.

Prombutr, W., C. Phengpis, and Y. Zhang, 2012. What explains the investment growth anomaly? *Journal of Banking and Finance* 36*,* 2532–2542.

Sorensen, D.E., 2000. Characteristics of merging firms. *Journal of Economics and Business*, *52*, 423-433.

Strebulaev, I.A. and B. Yang, 2013. The mystery of zero-leverage firms, *Journal of Financial Economics* 109, 1–23.

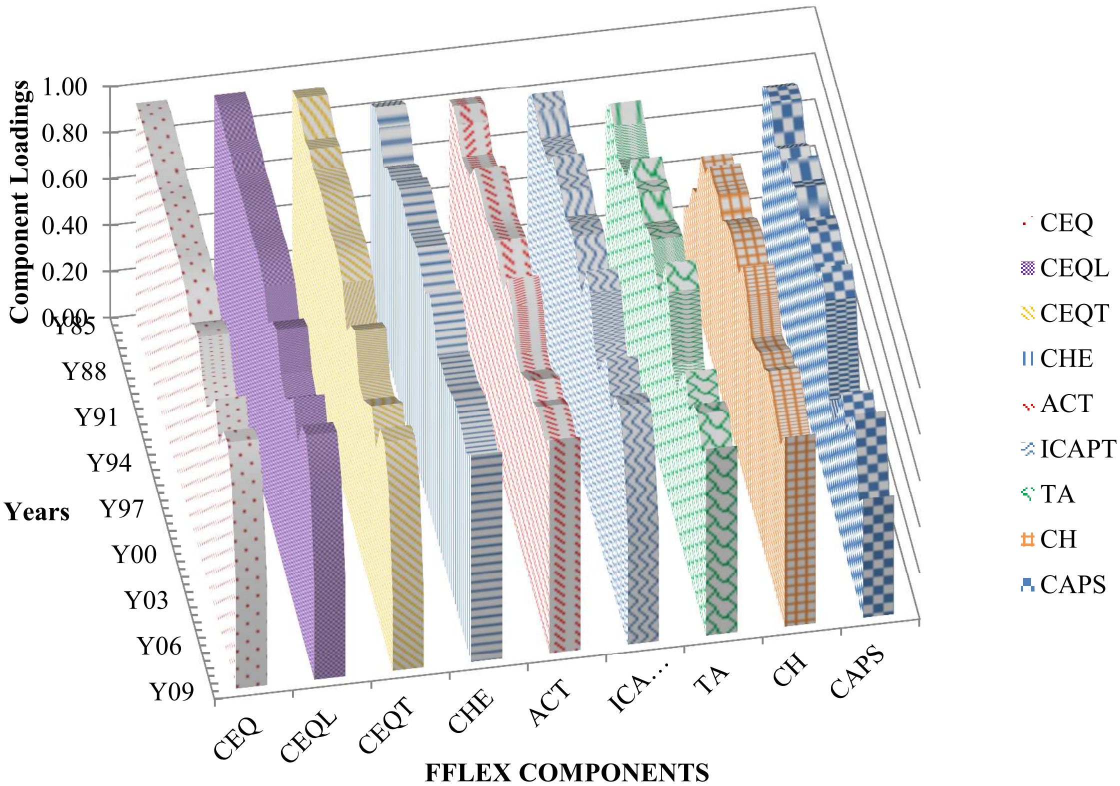
Subrahmanyam, A., 2010. The cross-section of expected stock returns: What have we learnt from the past twenty-five years of research? *European Financial Management* 16, 27–42.

Sullivan, M. and A.J. Zhang, 2011. Are investment and financing anomalies two sides of the same coin? *Journal of Empirical Finance* 18, 616–633.

Teoh, S.H., I .Welch, and T.J. Wong, 1998. Earnings management and the long-run market performance of initial public offerings, *The Journal of Finance* 53, 1935–1974.

Tsay, R.S., 2005. *Analysis of Financial Time Series*, Vol. 543, Hoboken, NJ, Wiley.

Walkshäusl, C. and S. Lobe, 2014. The alternative three-factor model: An alternative beyond US markets? *European Financial Management* 20, 33–70.



FFLEX Components	CEQ	CEQL	CEQT	CHE	ACT	ICAPT	TA	CH	CAPS
Avg. Loadings	0.89	0.88	0.84	0.86	0.85	0.83	0.77	0.72	0.68

Figure 1

Time-series loadings obtained via factor analysis model of FFLEX factor components

This figure provides the result of factor analysis (FA) model applied to 37 accounting change variables that are screened out of total 50 variables whose data were obtained from Compustat (Data Item # A1, A162, A193, A3, A68, A4, A8, A196, A31, A7, A32, A33, A69, A6, A152, A160, A2, A34, 206, A70, A71, A72, A5, A9, DT (A9+134), A75, A35, A74, A208, A38, A181, A130, A175, A209, A60, A85, A210, A36, A88, A135, A235, A11, A25, A39, A79, A82, A80, A154, A37, and A10), but shows only high loading components of the first factor for brevity. The other components are part of the factor with low or negative loading. The FA model assumptions include partial correlation of 0.30; a sampling adequacy of 0.60 and above; a correlation cutoff of 0.45 (Hair, Black, Babin, Anderson, and Tatham, 1998).The FA model applied year by year to compute 76,707 firm-year observations of the financial flexibility instead of whole-period factors (i.e., 25 years), and the FA model takes the same input variables yearly. The first factor output is labeled as FFLEX. The components of FFLEX include Cash and Equivalents (CHE), Common Equity-Total (CEQ), Common Equity-Liquidation (CEQL), Common Equity-Tangible (CEQT), Invested Capital (ICAPT), Current Assets (ACT), Capital Surplus (CAPS), Cash (CH), and Total Assets (TA). This figure shows the component loadings across years in 3-D area plot and the average of loadings.

Table 1

Descriptive statistics

This table provides the general descriptive statistics for the factor analysis (*FA*) model–based first factor output (i.e., financial flexibility [*FFLEX*]) and its components that bear higher loadings. The final data consist of 76,707 firm-year observations for a 25-year analysis period. The *FA* takes the input of balance sheet growth variables of 50 variables (only 37 survive the assumption testing) obtained via following equation:

$X_{i,\ t-1} = (b_{i,\ t-1} - b_{i,t-2})/Total\ Asset_{t-2}.$

The $b_{i,\ t-1}$ stands for the balance sheet entry *i* at time *t-1*. The components of *FFLEX* include Cash and Equivalents (*CHE*), Common Equity-Total (*CEQ*), Common Equity-Liquidation (*CEQL*), Common Equity-Tangible (*CEQT*), Invested Capital (*ICAPT*), Current Assets (*ACT*), Capital Surplus (*CAPS*), Cash (*CH*), and Total Assets (*TA*). Panel A of this table provides summary statistics of the above components, Panel B provides the Pearson correlations, and Panel C provides average values of the *FFLEX* components across their ranked decile.

Panel A: Summary statistics of FFLEX components

	Mean	Std Dev	Min	1st	Median	75th	Max	Skewness	Kurtosis	Pr > |t|
FFLEX	0.023	1.067	–4.943	–1.547	–0.169	0.002	10.365	4.531	26.689	<.0001
CEQ	0.222	1.331	–3.936	–1.406	0.030	0.133	24.590	8.598	112.085	<.0001
CEQL	0.219	1.350	–4.192	–1.559	0.029	0.131	24.208	8.184	102.456	<.0001
CHE	0.126	0.826	–0.660	–0.499	0.001	0.052	18.473	12.170	215.129	<.0001
CEQT	0.160	1.195	–4.692	–1.831	0.020	0.115	19.928	6.958	80.910	<.0001
ACT	0.203	1.055	–0.710	–0.568	0.023	0.136	22.904	10.966	181.907	<.0001
ICAPT	0.281	1.468	–3.143	–1.047	0.039	0.192	30.005	9.704	145.787	<.0001
TA	0.372	1.651	–0.886	–0.712	0.058	0.257	34.930	10.292	161.705	<.0001
CH	0.086	0.627	–0.628	–0.467	0.001	0.040	15.557	14.468	301.786	<.0001
CAPS	0.417	2.023	–0.400	–0.180	0.005	0.070	32.230	9.758	119.581	<.0001

Panel B: Pearson correlation matrix of FFLEX components

	FFLEX	*CEQ*	*CEQL*	*CHE*	*CEQT*	*ACT*	*ICAPT*	*TA*	*CH*	*CAPS*
FFLEX	1	0.767	0.762	0.686	0.745	0.719	0.730	0.683	0.598	0.565
CEQ		1	0.962	0.757	0.893	0.770	0.893	0.796	0.682	0.683
CEQL			1	0.729	0.937	0.738	0.860	0.760	0.648	0.642
CHE				1	0.708	0.937	0.815	0.829	0.918	0.609
CEQT					1	0.690	0.761	0.640	0.620	0.551
ACT						1	0.854	0.910	0.866	0.632
ICAPT							1	0.918	0.755	0.673
TA								1	0.775	0.682
CH									1	0.570
CAPS										1

Panel C: Distributions of FFLEX components across their ranked decile

FLEX_rank	*CEQ*	*CEQL*	*CHE*	*CEQT*	*ACT*	*ICAPT*	*TA*	*CH*	*CAPS*
0	–0.471	–0.506	–0.180	–0.580	–0.180	–0.277	0.014	–0.120	0.409
1	–0.129	–0.134	–0.073	–0.157	–0.086	–0.059	0.009	–0.045	0.105
2	–0.051	–0.052	–0.033	–0.066	–0.034	–0.012	0.028	–0.021	0.056
3	–0.012	–0.012	–0.015	–0.023	–0.003	0.011	0.040	–0.009	0.038
4	0.013	0.012	–0.005	0.004	0.013	0.027	0.048	–0.002	0.034
5	0.035	0.035	0.005	0.026	0.032	0.042	0.066	0.006	0.036
6	0.063	0.062	0.021	0.052	0.058	0.065	0.093	0.017	0.053
7	0.118	0.115	0.053	0.095	0.115	0.128	0.173	0.039	0.112
8	0.292	0.288	0.147	0.237	0.265	0.329	0.413	0.103	0.340
9	2.364	2.380	1.343	2.014	1.851	2.562	2.833	0.889	2.992

Table 2

Characteristics of financial flexibility (FFLEX)

This table presents the mean statistics of various firm characteristics defining the financial flexibility when sorted and ranked on the leverage and the cash holdings for the period 1985–2010. The final data consist of 76,707 firm-year observations for a 25-year analysis period. *FFLEX* is the new measure of financial flexibility obtained in this paper using factor analysis model. *LEV* is the measure of firm leverage measured as the sum of long-term debt and short-term debt scaled by total assets. *ΔLEV* is change of two consecutive-year market leverage. *EXS_LEV* is the deviation of observed *LEV* from the target leverage, which is measured by double-sided Tobit regression model censored at 0 and 1 for each year following Denis and McKeon (2012). *ΔCAPX* is change of two consecutive-year capital expenditure. *S_DEBT* is the ratio of short-term debt to total debt. *DIV* is the ratio of common dividends to total assets. *CASH* is measure of cash holdings obtained as the ratio of cash and equivalents to total assets. *CFLOW* is ratio of sum of operating income and depreciation scaled by total assets. *TANG* is tangibility measure obtained as the ratio of tangible assets to total assets. *NETDEBT* is measured as *LEV* minus *CASH*. *SIZE_A* is the accounting size measured as the natural logarithm of total assets converted to 2004 dollars using *CPI* index. *MTB* is the market-to-book ratio measured as the market equity plus total assets minus book equity and divided by total assets. *CEO ownership* is the CEO holdings of the firm's stock as a fraction of total shares outstanding. *CEO Options* is the CEO holdings of the firm's stock options as a fraction of stock shares outstanding. *CEO Cash Comp.* is the sum of CEO salary and bonus. *CEO Tenure* is the number of years that the current CEO has served as the firm's CEO. *Dir. Indep* shows the fraction of independent (insider and nonaffiliated) directors on the board. *Board Size* refers to the number of board directors.

Levgroup	*FFLEX*	*LEV*	*ΔLEV*	*EXS_LEV*	*ΔCAPX*	*DIV*	*CASH*	*CFLOW*	*TANG*	*S_DEBT*	*NETDEBT*	*SIZE_A*	*MTB*	*CEO ownership*	*CEO Options*	*CEO Cash Comp.*	*CEO Tenure*	*Board Size*	*Dir. Indep*
LOW	0.308	0.007	–0.012	–0.125	1.637	0.010	0.377	0.007	0.171	0.426	–0.370	4.177	3.322	0.058	0.003	6.351	8.342	7.422	0.634
2	0.066	0.093	–0.006	–0.082	4.569	0.008	0.203	0.021	0.250	0.350	–0.110	4.812	2.492	0.065	0.002	6.693	7.537	8.840	0.662
3	–0.098	0.245	0.016	0.016	6.998	0.008	0.096	0.053	0.324	0.250	0.149	5.613	1.857	0.045	0.002	6.944	6.896	9.727	0.683
HIGH	–0.171	0.462	0.042	0.186	5.389	0.005	0.080	0.029	0.366	0.198	0.382	5.599	1.621	0.044	0.002	6.864	7.276	9.522	0.667
Cashgroup	*FFLEX*	*LEV*	*CH_LEV*	*EXS_LEV*	*CH_CAPX*	*DIV*	*CASH*	*CFLOW*	*TANG*	*S_DEBT*	*NETDEBT*	*SIZE_A*	*MTB*	*CEO ownership*	*CEO Options*	*CEO Cash Comp.*	*CEO Tenure*	*Board Size*	*Dir. Indep*
LOW	–0.170	0.315	0.022	0.076	8.208	0.008	0.012	0.063	0.362	0.242	0.303	5.623	1.579	0.056	0.002	6.884	7.127	9.741	0.665
2	–0.138	0.259	0.015	0.030	5.149	0.009	0.057	0.060	0.337	0.258	0.202	5.517	1.762	0.049	0.002	6.936	7.159	9.636	0.673
3	–0.042	0.156	0.002	–0.042	3.454	0.009	0.176	0.045	0.268	0.300	–0.020	4.939	2.294	0.049	0.002	6.645	7.588	8.547	0.658
HIGH	0.455	0.075	0.003	–0.071	1.610	0.007	0.510	–0.059	0.143	0.356	–0.435	4.121	3.657	0.053	0.004	6.346	8.082	7.310	0.668

Table 3

Summary statistics and correlations for prominent factors and FLEX

Panel A of this table reports the descriptive statistics of the prominent pricing factors and the financial flexibility–based factors. The data consist of 294-month observations spread across July 1986 to December 2010. We use two financial flexibility (*FFLEX*) ranked factors *FLEX* and $FLEX_{2X3}$. *FLEX* is used for main test results in this paper, which is obtained following Core, Guay, and Verdi (2008). $FLEX_{2X3}$ is constructed by 2 x 3 sorts following Fama and French (2015). The prominent pricing factors include Fama and French (1993, 2015) factors: the *MKT_RF* is the premium on the market in excess of risk-free rate; *SMB* is the premium on the size portfolio that is long on small-size stock portfolios and long on big stock portfolios; *HML* is the premium on the high minus low book-to-market ratio stock portfolios; *RMW* is a profitability premium that is long robust and short weak profitability stock portfolios; and *CMA* is the premium on the investment portfolio that is long on low and short high investment firms (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html). Other factors included as Carhart's (1997) momentum factor (*UMD*); Pastor and Stambaugh's (2003) liquidity risk factor (*LIQ*); Frazzini and Pedersen's (2014) *BAB* factor that is long leveraged low-beta assets and short high-beta assets; Moskowitz, Ooi, and Pedersen's (2012) *TSMOM* factor which contains excess returns for long/short time-series momentum strategies; and Asness, Frazzini, and Pedersen's (2017) *QMJ* factor which goes long high-quality stocks and shorts low-quality stocks. The data for *BAB*, *TSMOM*, and *QMJ* are obtained from *AQR* Capital Management's website (https://www.aqr.com/library). The table shows statistics for factor from q-factor model such as *I/A* is an investment factor and *ROE* is the profitability factor as given in Hou, Xue, and Zhang (2015). The data for *I/A* and *ROE* are obtained from the authors. Panel B reports the Pearson correlation matrix.

Panel A: Descriptive statistics on factors

	Mkt_RF	*SMB*	*HML*	*UMD*	*LIQ*	*RMW*	*CMA*	$FLEX_{2X3}$	*FLEX*	*BAB*	*TSMOM*	*QMJ*	*I/A*	*ROE*
Mean	0.52%	0.12%	0.29%	0.56%	0.51%	0.38%	0.37%	0.59%	0.69%	0.65%	1.34%	0.42%	0.39%	0.51%
t-stat	1.89	0.60	1.56	1.91	2.21	2.50	2.96	4.80	5.56	2.73	6.77	2.58	3.23	3.08
Stdev	0.047	0.034	0.032	0.050	0.039	0.026	0.021	0.021	0.021	0.041	0.034	0.028	0.021	0.028

Panel B: Pearson correlation matrix between factors

	Mkt_RF	*SMB*	*HML*	*UMD*	*LIQ*	*RMW*	*CMA*	$FLEX_{2X3}$	*FLEX*	*BAB*	*TSMOM*	*QMJ*	*I/A*	*ROE*
Mkt_RF	1													
SMB	0.220	1												
HML	–0.299	–0.336	1											
UMD	–0.178	0.056	–0.162	1										
LIQ	–0.035	–0.048	–0.072	0.028	1									
RMW	–0.335	–0.544	0.411	0.062	0.003	1								
CMA	–0.404	–0.152	0.672	0.035	–0.019	0.143	1							
$FLEX_{2X3}$	–0.190	–0.068	0.581	–0.091	0.007	0.034	0.692	1						
FLEX	–0.203	–0.020	0.561	–0.081	0.024	0.027	0.651	0.816	1					
BAB	–0.222	–0.158	0.482	0.237	0.069	0.384	0.357	0.292	0.339	1				
TSMOM	–0.001	–0.007	–0.060	0.379	–0.068	0.068	0.014	–0.050	–0.031	0.197	1			
QMJ	–0.595	–0.538	0.174	0.288	0.031	0.809	0.156	–0.061	–0.089	0.264	0.136	1		
I/A	–0.384	–0.281	0.708	0.006	–0.043	0.259	0.907	0.684	0.629	0.388	–0.025	0.221	1	
ROE	–0.351	–0.440	0.146	0.497	–0.061	0.733	0.047	–0.134	–0.156	0.357	0.215	0.782	0.143	1

Table 4

Standard error clustered regression estimation on determinants of growth opportunities

For the full study period (1985–2009) estimation results, this table reports standard error clustered regressions with both firm and time fixed effects of growth opportunities (*QR*) on the financial flexibility (*FFLEX*) measure developed via factor analysis model in this paper, and other determinants of the QR. *INDEX* is the sum of *ECR*, *CFR*, and *QRR*. *ECR* is Earned Capital's (*EC*) percentile rank. *CFR* is the expected operating cash flows' (*CF*) percentile rank. *QRR* is the growth opportunities' (*QR*) percentile rank. *EC* is constructed by scaling retained earnings by total assets. *CF* is the centered moving average of the five years' operating cash flows to total assets. *QR* is the residual value obtained when Tobin's Q is regressed on the expected operating cash flows. *LEV* is measured as total debt divided by total assets. *NETDEBT* is measured as *LEV* minus *CASH*. *CASH* is a measure of cash holdings obtained as the ratio of cash and equivalents to total assets. *EXS_LEV* is the deviation of observed *LEV* from the target leverage, which is measured by double-sided Tobit regression model censored at 0 and 1 for each year following Denis and McKeon (2012). *DIV* is the ratio of common dividends to total assets. *INV_GROWTH* is the ratio of research and development expenses to net sales. *SIZE_A* is the accounting size measured as the natural logarithm of total assets converted to 2004 dollars using *CPI* index. *CEO ownership* is the CEO holdings of the firm's stock as a fraction of total shares outstanding. *CEO Options* is the CEO holdings of the firm's stock options as a fraction of stock shares outstanding. *CEO Cash Comp.* is the sum of CEO salary and bonus. *CEO Tenure* is the number of years that the current CEO has served as the firm's CEO. *Dir. Indep* shows the fraction of independent (insider and nonaffiliated) directors on the board. *Board Size* refers to the number of board directors.

	M-1	M-2	M-3	M-4	M-5	M-6	M-7
INTERCEPT	–1.702***	–2.404***	–2.544***	–2.553***	–2.366***	–3.879***	–3.555***
	(–20.41)	(–16.18)	(–18.67)	(–15.81)	(–17.06)	(–27.68)	(–24.29)
FFLEX	0.451***	0.228**	0.804***	0.807***	0.808***	0.319***	0.325***
	(9.14)	(2.38)	(4.49)	(4.50)	(4.33)	(2.65)	(2.69)
EC	–0.4243***	–0.137***	–0.279***	–0.279***	–0.269***	–0.914***	–0.915***
	(–7.93)	(–3.36)	(–5.02)	(–4.99)	(–4.89)	(–8.59)	(–8.64)
INDEX	0.134***	0.127***	0.155***	0.153***	0.152***	0.195***	0.194***
	(25.46)	(18.35)	(30.05)	(29.68)	(28.98)	(29.04)	(28.99)
LEV	0.282**	–0.278	–0.430**	–0.409**	–0.398**	–0.802***	–0.838***
	(2.51)	(–1.16)	(–2.54)	(–2.41)	(–2.25)	(–3.74)	(–3.88)
CASH	2.369***	1.956***	2.803***	2.842***	2.831***	2.582***	2.654***
	(18.27)	(11.56)	(16.58)	(16.69)	(15.92)	(13.46)	(13.69)
EXS_LEV	–0.329**	–0.062	0.356	0.347	0.322	0.599**	0.633**
	(–2.39)	(–0.26)	(1.62)	(1.58)	(1.39)	(2.27)	(2.37)
DIVIDEND	–1.699***	0.452	–0.249	–0.293	–0.026	1.185	1.274
	(–6.21)	(0.71)	(–0.45)	(–0.53)	(–0.04)	(1.41)	(1.50)
INV_GROWTH	–0.00004	0.262**	0.028	0.030	0.027	0.083	0.086
	(–0.81)	(2.36)	(1.31)	(1.35)	(1.27)	(1.09)	(1.13)
SIZE_A	–0.130***	–0.020	–0.029**	–0.042***	–0.041***	0.091***	0.099***
	(–18.78)	(–1.28)	(–2.41)	(–3.15)	(–3.30)	(6.03)	(7.03)
CEO Ownership		–0.023					
		(–0.40)					
CEO Options			11.634**				
			(2.27)				
CEO Cash Comp.				0.022			
				(1.15)			
CEO Tenure					–0.005***		
					(–2.92)		
Board Size						–0.010	
						(–1.50)	
Dir. Indep							–0.686***
							(–5.63)
R2	0.1774	0.2741	0.2228	0.2218	0.2176	0.2744	0.2777
Time Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	61,642	4,795	17,783	17,731	16,562	10,966	10,966

*, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

Table 5

Does financial flexibility (FFLEX) determine future excess stock returns?

$$R_{i,t+1} - R_{ft} = \alpha + \beta_1 FFLEX_{i,t-1} + \beta_2 Controls_{i,t-1} + \varepsilon_{i,t+1}$$

For the full study period (July 1986 to December 2010) estimation results, this table reports Fama and MacBeth's (1973) regressions of monthly subsequent stock return in excess of risk-free rate on the financial flexibility latent growth measure and the control characteristics. The controls include logarithm of firm size (*LSIZE*), which is measured by stock price times shares outstanding. The logarithm of the book-to-market ratio (LBTM) is measured as the ratio of the market value of equity in June *t-1* fiscal year end and the book equity estimated at the December fiscal year *t-1*. The gross profitability (*GPA*) measure is the difference of revenues minus cost of goods sold scaled by total assets (Novy-Marx, 2013). The other control variables include buy-and-hold return for months *–6 to –1* (*BHRET6*) and buy-and-hold return for the months *–36 to –1* (*BHRET36*). The final data consist of 876,348 firm-month observations for the analysis period.

	M-1	M-2	M-3	M-4
Intercept	0.0102***	0.0195***	0.0180***	0.0187***
	(2.68)	(3.54)	(3.03)	(2.94)
FFLEX	–0.0031***	–0.0025***	–0.0033***	–0.0027***
	(–4.22)	(–3.91)	(–3.89)	(–2.75)
LSIZE		–0.0024***	–0.0022***	–0.0021***
		(–3.90)	(–3.85)	(–3.57)
LBTM		0.0052**	0.0026	0.0031
		(2.20)	(1.17)	(1.30)
GPA				0.0031
				(1.61)
BHRET6			–0.0035	–0.0038
			(–1.18)	(–1.27)
BHRET36			–0.0022***	–0.0021***
			(–3.34)	(–3.27)
Adj R-Sq	0.003***	0.016***	0.025***	0.029***

*, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

Table 6

Two-pass cross-sectional regression on test portfolios

$$R_{it} - R_{ft} = \alpha + \beta_{i,MKT\_RF} MKT\_RF_t + \beta_{i,SMB} SMB_t + \beta_{i,HML} HML_t + \beta_{i,FLEX} FLEX_t + \varepsilon_{it}$$

$$R_{it} - R_{ft} = \gamma_0 + \gamma_1 b_{i,MKT\_RF} + \gamma_2 b_{i,SMB} + \gamma_3 b_{i,HML} + \gamma_4 b_{i,FLEX} + \nu_{it}$$

This table reports the results of two-stage cross-sectional regressions for asset pricing tests on three test assets. Panel A provides the results for 25 *LSIZE-LBTM* portfolios for the full sample. The 25 *LSIZE-LBTM* portfolios are constructed at the start of each month by sorting and ranking into both *LSIZE* and *LBTM* quintiles independently. The intersection of both sets of controls gives 25 portfolios. Panel B provides the results for 100 *FFLEX* portfolios for the full sample. The 100 portfolios for *FFLEX* are constructed at the start of each month by sorting and ranking into 100 *FFLEX* percentiles independently. Panel C provides the results for 64 *LSIZE-LBTM-FFLEX* portfolios. The 64 portfolios are constructed at the start of each month by sorting and ranking firms into 4 *LSIZE*, 4 *BTM*, and 4 *FFLEX* quartiles and their intersections as 64 portfolios separately. The portfolio returns are monthly excess value-weighted returns. The first stage estimates factor betas from a time-series regression for each firm using the corresponding model. In the second stage, estimated betas are used as explanatory variables in a cross-sectional regression for each month. For each model's intercept and explanatory variables, time-series means and Fama-MacBeth (1973) *t*-statistics of the coefficients of factor loadings are reported. The stock return data consist of 876,348 firm-month observations for 25 years (July 1986–December 2010).

Panel A: 25 LSIZE-LBTM sorted portfolios

	M-1	M-2	M-3	M-4	M-5	M-6	M-7	M-8
	2.941***	4.045***	3.925***	4.003***	0.965	1.927***	2.326***	2.407***
	(5.46)	(6.49)	(6.58)	(6.81)	(1.20)	(3.57)	(3.77)	(3.92)
b_{MKT}	–1.729***	–3.203***	–3.485***	–3.545***	–0.320	–1.189**	–1.772**	–1.801**
	(–2.95)	(–4.96)	(–4.95)	(–5.09)	(–0.40)	(–2.03)	(–2.52)	(–2.57)
b_{SMB}		0.303	–0.030	–0.044		–0.0001	–0.105	–0.144
		(1.25)	(–0.13)	(–0.19)		(–0.001)	(–0.47)	(–0.65)
b_{HML}		0.429*	0.619***	0.640***		0.362	0.474**	0.516**
		(1.91)	(2.84)	(2.84)		(1.56)	(2.01)	(2.16)
b_{UMD}			–2.057**	–2.110**			–1.131	–1.199
			(–2.40)	(–2.51)			(–1.41)	(–1.51)
b_{LIQ}				–0.279				–0.697
				(–0.40)				(–0.99)
b_{FLEX}					0.831***	0.826***	0.739***	0.753***
					(4.20)	(4.04)	(3.63)	(3.67)
Adj R2	0.14	0.43	0.45	0.46	0.27	0.48	0.49	0.50

Panel B: 100 FFLEX sorted portfolios

	M-1	M-2	M-3	M-4	M-5	M-6	M-7	M-8
Intercept	1.409***	0.706*	0.439	0.428	0.720*	0.748*	0.566	0.575
	(3.11)	(1.82)	(1.15)	(1.15)	(1.76)	(1.91)	(1.48)	(1.54)
b_{MKT}	–0.666	–0.102	0.234	0.240	–0.079	–0.096	0.124	0.118
	(–1.34)	(–0.22)	(0.51)	(0.53)	(–0.17)	(–0.21)	(0.27)	(0.26)
b_{SMB}		0.194	0.200	0.190		–0.036	0.004	0.008
		(0.72)	(0.74)	(0.70)		(–0.14)	(0.02)	(0.03)
b_{HML}		0.575**	0.575**	0.566**		0.290	0.335	0.339
		(2.30)	(2.30)	(2.25)		(1.17)	(1.35)	(1.36)
b_{UMD}			0.44	0.436			0.294	0.298
			(1.02)	(1.01)			(0.71)	(0.71)
b_{LIQ}				–0.003				–0.057
				(–0.01)				(–0.12)
b_{FLEX}					0.421***	0.436***	0.400**	0.403**
					(2.67)	(2.72)	(2.53)	(2.53)
Adj R^2	0.09	0.12	0.13	0.14	0.12	0.13	0.14	0.14

Panel C: 64 LSIZE-LBTM-FFLEX sorted portfolios

	M-1	M-2	M-3	M-4	M-5	M-6	M-7	M-8
Intercept	1.90***	2.229***	2.262***	2.226***	0.886*	1.528***	1.550***	1.512***
	(4.53)	(5.34)	(5.31)	(5.37)	(1.93)	(4.32)	(4.09)	(4.09)
b_{MKT}	–0.870*	–1.519***	–1.804***	–1.78***	–0.227	–0.802*	–0.860*	–0.838*
	(–1.73)	(–3.13)	(–3.29)	(–3.29)	(–0.41)	(–1.84)	(–1.75)	(–1.72)
b_{SMB}		0.323	0.080	0.097		0.024	–0.004	0.014
		(1.29)	(0.35)	(0.42)		(0.10)	(–0.02)	(0.06)
b_{HML}		0.253	0.410*	0.393*		0.238	0.261	0.243
		(1.09)	(1.85)	(1.74)		(1.02)	(1.16)	(1.05)
b_{UMD}			–1.521**	–1.441**			–0.158	–0.073
			(–2.19)	(–2.14)			(–0.25)	(–0.12)
b_{LIQ}				0.304				0.404
				(0.49)				(0.64)
b_{FLEX}					0.666***	0.675***	0.671***	0.675***
					(4.43)	(4.90)	(4.91)	(4.91)
Adj R2	0.10	0.24	0.25	0.27	0.19	0.28	0.28	0.31

*, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

Table 7

Two-pass cross-sectional regression on test portfolios

$$R_{it} - R_{ft} = \gamma_0 + \gamma_1 b_{i,MKT\_RF} + \gamma_2 b_{i,SMB} + \gamma_3 b_{i,HML} + \gamma_3 b_{i,RMW} + \gamma_3 b_{i,CMA} + \gamma_4 b_{i,FLEX(2x3)} + \nu_{it}$$

$$R_{it} - R_{ft} = \gamma_0 + \gamma_1 b_{i,MKT\_RF} + \gamma_2 b_{i,SMB} + \gamma_3 b_{i,HML} + \gamma_3 b_{i,RMW} + \gamma_3 b_{i,CMA} + \gamma_4 b_{i,FLEX(2x3)} + \nu_{it}$$

This table reports the second-stage results of two-stage cross-sectional regressions for asset pricing tests on 64 *LSIZE-LBTM-FFLEX* portfolios. The first stage estimates factor betas from a time-series regression for each firm using the corresponding model. In the second stage, estimated betas are used as explanatory variables in a cross-sectional regression for each month. The 64 portfolios are constructed at the start of each month by sorting and ranking firms into 4 *LSIZE*, 4 *BTM*, and 4 *FFLEX* quartiles and their intersections as 64 portfolios separately. The portfolio returns are monthly excess value-weighted returns. Panel A compares two prominent pricing factors—that is, b_{MKT} is the loading on the market (*MKT_RF*) factor, b_{SMB} is the loading on the size (*SMB*) factor, b_{HML} is the loading on the value-growth (*HML*) factor, b_{RMW} is the loading on the profitability (*RMW*) factor, b_{CMA} is the loading on the investment (*CMA*) *factor*, $b_{I/A}$ is q-factor model–based investment factor (I/A) loading, b_{ROE} is q-factor model–based profitability factor (*ROE*) loading (Hou, Xue, and Zhang, 2015), and $b_{FLEX(2x3)}$ is the second-stage loading on the $FLEX_{2x3}$ factor's beta coefficient obtained from stage one. Panel B tests for newly added pricing factors to the asset pricing literature—that is, b_{BAB} is the loading on the betting against beta (*BAB*) factor, b_{TSMOM} is the loading on the time-series momentum (*TSMOM*) factor, b_{QMJ} is the loading on the quality minus junk (*QMJ*) factor. The stock return data consist of 876,348 firm-month observations for 25 years (July 1986–December 2010).

Panel A: 64 SIZE-BTM-FFLEX sorted portfolios—comparing

	M-1	*M-2*	*M-3*	*M-4*	*M-5*	*M-6*	*M-7*
Intercept	2.022***	2.086***	2.056***	1.850***	1.992***	1.992***	1.934***
	(5.39)	(5.15)	(5.16)	(4.88)	(5.04)	(5.04)	(5.13)
b_{MKT}	–1.237***	–1.331***	–1.281***	–1.101**	–1.366***	–1.37***	–1.236***
	(–2.79)	(–2.82)	(–2.77)	(–2.48)	(–2.88)	(–2.94)	(–2.68)
b_{SMB}	–0.013	0.268	–0.027	0.188	0.252	0.271*	0.161
	(–0.06)	(1.10)	(–0.12)	(0.83)	(1.04)	(1.20)	(0.74)
b_{HML}	0.590***	0.221	0.638***	0.139	0.144	0.115	
	(2.61)	(0.94)	(2.71)	(0.59)	(0.60)	(0.49)	
b_{RMW}	0.086086		0.9102	–0.101		0.102	
				(–0.38)		(0.40)	
b_{CMA}		0.530***	0.446**		–0.252	–0.263	
		(2.94)	(2.55)		(–1.27)	(–1.38)	
$b_{I/A}$							–0.047
							(–0.26)
b_{ROE}							–0.106
							(–0.38)
$b_{FLEX(2x3)}$				0.673***	0.706***	0.709***	0.734***
				(4.47)	(4.56)	(4.65)	(4.74)
Adj R2	0.27	0.26	0.28	0.28	0.28	0.29	0.28

Panel B: 64 SIZE-BTM-FFLEX sorted portfolios						
	M-1	M-2	M-3	M-4	M-5	M-6
Intercept	1.454***	1.783***	1.290***	1.300***	1.116***	1.212***
	(3.34)	(4.02)	(3.02)	(3.04)	(3.02)	(3.25)
b_{MKT}	–0.605	–0.960*	–0.424	–0.478**	–0.400	–0.520
	(–1.16)	(–1.82)	(–0.84)	(–0.95)	(–0.84)	(–1.08)
b_{SMB}	0.256	0.403	0.301	0.480	0.147	0.310
	(0.88)	(1.35)	(1.03)	(1.61)	(0.52)	(1.08)
b_{HML}	0.331	0.074	0.287	–0.026	0.212	–0.043
	(1.19)	(0.26)	(1.02)	(–0.09)	(0.73)	(–0.14)
b_{RMW}	–0.349	–0.241	–0.361	–0.193	0.054	0.153
	(–1.14)	(–0.79)	(–1.15)	(–0.62)	(0.18)	(0.52)
b_{CMA}	0.610***	0.301	0.627***	0.278	0.560***	0.253
	(3.08)	(1.48)	(3.12)	(1.37)	(2.84)	(1.26)
b_{BAB}	0.331	–0.207				
	(0.64)	(–0.41)				
b_{TSMOM}			0.846	1.028*		
			(1.37)	(1.69)		
b_{QMJ}					–0.316	–0.144
					(–1.20)	(–0.55)
$b_{FLEX(2x3)}$		0.775***		0.740***		0.644***
		(4.32)		(4.04)		(3.61)
Adj R2	0.29	0.31	0.29	0.30	0.30	0.31

*, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

Table 8

Fama-MacBeth cross-sectional regressions

$$R_{it} - R_{ft} = \alpha + \beta_{i,MKT\_RF} MKT\_RF_t + \beta_{i,SMB} SMB_t + \beta_{i,HML} HML_t + \beta_{i,FLEX} FLEX_t + \varepsilon_{it}$$

In this table, results are reported for the Fama-MacBeth (1973) cross-sectional regressions. Firm excess returns are regressed each month on FLEX factor and control variables. The control variables are the Fama-French (1993) three-risk factors. *MKTRF* is the excess return on the market portfolio. *SMB* is the return to size factor-mimicking portfolio. *HML* is the return to book-to-market factor mimicking portfolio. *FLEX* is the long (short) portfolio of low (high) financial flexibility stock portfolios. The factor loading is estimated through time-series regressions over a 60-month rolling window with at least 24 months of requirement of the form given in the table header. For each model's intercept and explanatory variables, time-series means and Fama-MacBeth (1973) *t*-statistics of the coefficients of factor loadings are reported. The stock return data consist of 876,348 firm-month observations for 25 years (July 1986–December 2010).

Fama-MacBeth cross-sectional regressions (Testing FLEX)

	M-1	M-2	M-3	M-4	M-5	M-6
Intercept	1.113***	1.088***	1.052***	0.778***	0.708***	0.664***
	(3.06)	(2.91)	(2.85)	(3.34)	(3.07)	(2.89)
b_{MKT}				0.192	0.206	0.127
				(1.20)	(1.29)	(0.92)
b_{SMB}				0.093	0.103	0.078
				(0.96)	(1.07)	(0.83)
b_{HML}				0.097	0.077	0.057
				(0.84)	(0.67)	(0.55)
b_{FLEX}	0.072*		0.075*	0.092*	0.084*	0.085*
	(1.75)		(1.84)	(1.84)	(1.69)	(1.78)
FFLEX		–0.612***	–0.592***		–0.499***	–0.490***
		(–4.44)	(–4.36)		(–4.47)	(–4.62)
BHRET6						–0.249
						(–0.91)
Adj-R^2	0.004	0.002	0.01	0.03	0.03	0.03

*, **, *** indicate statistical significance at the 0.10, 0.05, and 0.01 level, respectively.