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Estimating Cost of Equity in the Restaurant Industry: What is Your Required Rate of Return?

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ABSTRACT

Accurate estimation of cost of equity is critical when making capital investment decisions to allocate valuable corporate resources. While the importance of proper estimation of required rate of return of an investment project is well documented, challenges surrounding estimation of the cost of equity still abound. This paper empirically evaluates the viability of common cost of equity models to estimate required rate of return for the U.S. restaurant industry for the 1996-2010 period. The Full model which consists of five risk factors emerges as the soundest cost of equity model for the U.S. restaurant industry. We recommend that future studies assess the performance of cost of equity models in other countries and other segments of the hospitality industry.

Introduction

When a firm executive evaluates the feasibility of an investment project, he/she should consider three key estimates; (1) economic useful life of the asset, (2) future cash flows that the project will generate, and (3) the discount rate that will properly account for the time value of the capital invested. From the financial management perspective, only investments whose present value of cash flows exceeds the cost of investment must be chosen by a firm. However, obtaining an accurate estimate of present value of cash flow is dependent upon the required rate of return (RRR) method. From the perspective of a public restaurant chain, making new capital investment decisions which focus on expansion of operations is paramount to the long-term viability of the firm. The restaurant industry is generally viewed as a risky industry and thus accurate estimation of the RRR is even more critical for restaurant firms. The restaurant industry is very sensitive to business risk in nature, and is fixed-asset intensive (Ashley et. al, 2000). Thus, determining required rate of return should match with investors' marginal utility of expected wealth in their investments. Furthermore, estimating the cost of equity is even more exacerbated when one has to estimate the required return for a multi-divisional corporation or a private company (Fama and French, 1997). This is because, an incorrect estimate of the cost of equity may lead to inefficient capital rationing among competing projects.

Various RRR or costs of equity models have their roots in the 1960's (e.g., the Dividend Growth of Myron Gordon (1962), the Capital Asset Pricing Model (CAPM) of Lintner (1965) and Sharpe (1964)). However, since the 1990s, extant finance literature provides different approaches such as Fama-French Three Factor Model (hereafter FF) (Fama & French, 1993), Four Factor Model (Carhart, 1997), and Liquidity Factor of Pastor and Stambaugh (2001). Some of these contemporary models still fall short of meeting the needs of investors and capital markets. For instance, standard errors of more than 3.0% per year are a commonplace for both the CAPM and the three-factor model (Fama and French, 1997). That means that a required rate of return of 6% may range anywhere from 3% to 9% due to large standard errors. Fama and French (1997) claim that these large standard errors are the result of two issues: 1) true factor risk premiums are uncertain; 2) the loadings of industries on the risk factors are imprecise. When it comes to estimating the cost of equity for individual firms or projects, then the estimates are even less precise (Fama & French, 1997). The imprecision surrounding cost of equity creates an added challenge for restaurant firm executives to create economic value for their shareholders. This is because, to reward their investors with an acceptable level of return, firms must be able to calculate the risk investors undertake by investing in a certain restaurant firm. Hence, the industry practitioners are in quest for better models that provide more accurate estimates of the discount rates for their equity capital investments.

In the restaurant industry, one of the few studies that shed some light into this conundrum is that of Madanoglu, Erdem and Gursoy (2008) which demonstrates that FF model produces more reliable estimates compared to the CAPM for small casual-dining restaurant portfolio. However, it is still unclear how these RRR models perform when applied to the overall restaurant industry portfolio. Moreover, the issue of what market indices should be used in the cost of equity estimation process in the restaurant industry is still not settled. Hence, the motivation of this paper is to assess the performance of divergent cost of equity models and the influence of market index selection on the cost of equity estimates in the restaurant industry.

The remainder of this paper is organized as follows. First, authors cover common cost of equity models and offer some examples of studies conducted in the hospitality industry. Next, the authors present the method and findings of the study. Last, limitations, conclusions and directions for future studies are offered.

Literature Review

Background

Theoretical approaches to estimate cost-of-equity and the relationship of these approaches to investment/divestment decisions are central to modern finance. Despite the guidance provided by previous studies, cost-of-equity estimation methods still confront practitioners with several alternatives. In the interest of assessing the best practices in estimating cost of equity capital, Bruner et al. (1998) surveyed 50 U.S. leading companies including large corporations and financial advisory firms. Their findings denote that (i) Discounted Cash Flow (DCF) remains the most dominant technique to evaluate investments, (ii) Weighted Average Cost of Capital (WACC) is the most widely used method to estimate discount rate, (iii) The CAPM is the dominant model for estimating the cost of equity, and (iv) Choosing a method and assign a value to an equity market risk premium is subject to considerable controversy.

Dechow et al. (1999) used an empirical assessment of the residual income valuation model proposed by Ohlson (1995). These authors claimed that existing empirical applications of the residual income valuation model were generally similar to past applications of traditional earnings capitalization models. Their results indicated that while the information dynamics were reasonably empirically descriptive, a simple valuation model that capitalizes analysts' earnings forecasts in perpetuity was better at explaining contemporaneous stock prices. Furthermore, Botosan and Plumlee (2005) assessed the relative reliability of five popular approaches to estimating the risk premium. The basis for their assessment was the extent to which the estimates were associated with firm risk in a stable and meaningful manner. Hence, they found that the

Target Price Model (TPM) and Price Earnings to Growth (PEG) ratio model estimates were consistently and predictably related to market risk, leverage risk, information risk, residual risk (as measured by firm size and/or book-to-price), and growth. Based on their results, they concluded that TPM and PEG dominate the alternative models and recommended that individuals requiring firm-specific estimates of expected cost of equity capital relied on either of these two methods as opposed to the alternatives they examined.

There are several issues surrounding cost of equity estimates. First, it is not clear which asset pricing model should be used. The Capital Asset Pricing Model (CAPM) (Lintner, 1965; Sharpe, 1964), which is described later, is the common choice. However, recent evidence shows that this model is not a good description of expected returns. As an alternative, Fama and French (1993, 1995) propose a three-factor pricing model. But some argue that this model is empirically inspired and lacks strong theoretical foundations. Other multifactor models such as dividend growth model and arbitrage pricing theory have been used to estimate the cost of equity capital (Fama & French, 1997). The next section briefly describes and reviews the most common cost of equity models.

The Capital Asset Pricing Model (CAPM)

The attraction of the CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relationship between expected return and risk. Unfortunately, the empirical record of the model is generally poor which invalidates the way it is used in practice. The CAPM is based on the assumption of a positive risk-return tradeoff and asserts that the expected return of an asset is determined by three variables; (1) beta (a function of the stock's responsiveness to the overall movements in the market), (2) the risk-free rate of return, and (3) the expected market return (Fama & French, 1992). The CAPM builds on Harry

Markowitz's (1952, 1959) mean-variance portfolio model in which an investor selects a portfolio at time *t-1* that produces a random return (*Rpt*) at *t*. The model assumes that investors are risk averse and, when choosing among portfolios, they are only concerned about the mean and variance of their one-period investment return. This argument is in essence the cornerstone of the CAPM. The model can be stated as in equation 1:

$$E(R_i) = R_f + [\beta * (R_m - R_f)] \qquad (1)$$

where, R_m is the market return of stocks and securities, R_f is the risk- free rate, β is the coefficient that measures the covariance of the risky asset with the market portfolio, and $E(R_i)$ is the expected return of i stock.

Thus, the model postulates that the expected return on a security is equal to the risk-free rate plus the market risk premium (R_m-R_f) multiplied by the company's β. The model assumes that (1) all investors are single period expected utility wealth maximizers; (2) investors can borrow or lend funds at the risk-free rate; (3) investors have identical subjective estimates of the means, variances, and covariances of the returns of all securities; (4) securities markets are perfectly competitive and all investors are price takers; (5) the quantity of securities is fixed; (6) all securities are liquid and without transaction costs; (7) individual securities are related to each other through a common relationship with a basic underlying factor, the 'market portfolio;' and (8) this relationship is linear in nature (Rosenberg, 1981).

Arbitrage Pricing Theory (APT)

Another key model in modern finance is the Arbitrage Pricing Theory (APT) (Ross, 1976). This model posits that factors other than beta affect the systematic risk. Contrary to the CAPM, the APT relaxes the assumption that there is one efficient portfolio for every investor in the world. Instead the APT is based on the underlying premise that asset returns, R_i, are generated by a factor model that can be stated as in equation 2:

$$R_i = E_i + \sum_{j=1}^{k} b_{ij}\delta_j + \varepsilon_i \quad (2)$$

where, R_i is the uncertain return to asset *i*, E_i is the expected return to asset *i*, b_{ij} is the factor loading for asset *i* related to factor *j*, or asset *i*'s sensitivity to movements in factor *j*, δ_j is the factor *j* (*j*=1, …, k), and ε_i is the error term for asset *i*. In addition, the model assumes that the factors and error terms have a mean of zero.

The APT offers a depiction of a world that consists of several many possible sources of risk and uncertainty. More specifically, the APT recognizes that there are some major macroeconomic factors that influence security returns. As a result, no matter how thoroughly investors diversify, they cannot avoid these risk factors. Therefore, investors have to "price" these factors precisely because they are sources of risk that cannot be diversified away. This is the reason why investors will demand compensation in terms of expected return for holding securities exposed to these risks (Goetzmann, 1996).

There has been a long debate regarding what factors are indeed priced by the investors. One of the seminal studies that added some clarity to this debate was conducted by Chen, Roll, and Ross (1986). These authors proposed five risk factors that influence security returns: (1) The industrial production index which is a measure of state of the economy based on the actual physical output, (2) the short-term interest rate measured by the difference between the yield on Treasury bills and the Consumer Price Index (CPI), (3) short-term inflation, measured by unexpected changes in CPI, (4) long-term inflation, measured as the difference between the yield to maturity on long- and short-term U.S. government bonds, and (5) default risk, measured by the difference between the yield to maturity on Aaa- and Baa-rated long-term corporate bonds (Chen et al., 1986; Copeland et al., 2000).

The Fama-French Three Factor Model (FF Model)

Fama and French (1992, 1993) uncovered that the relationship between average returns and beta was flat and there was a strong size effect on stock returns. As a result, they proposed a multi-factor model which postulates that factors other than the movement of the market and the risk-free rate impact security prices. The FF model (1993) is a multiple regression model that incorporates both size and financial distress in the regression equation. The model has gained a broad popularity in the late 1990s among the scholars and practitioners in several industries (Annin, 1997). The FF model is typically stated as:

$$E(R_i) - R_f = [(\beta_i * MRP) + (s * SMB) + (h * HML)] \quad (3)$$

where $E(R_i)$ is the expected return of i stock, R_f is the risk-free rate, β is the coefficient that measures the covariance of the risky asset with the market portfolio, MRP is the Market Risk Premium of the market (expressed as R_m-R_f), "s" is the slope coefficient and SMB is the difference between the returns on portfolios of small and big company stocks (below or above the NYSE median), "h" is the slope coefficient , and HML is the difference between the returns on portfolios of high- and low-BE/ME (Book Equity/Market Equity) stocks (above and below the 0.7 and 0.3 fractiles of BE/ME) (Fama & French, 1993).

The FF model anticipates an additional risk premium for investors holding stocks of small capitalization companies and firms with high book-to-market value ratios (Annin, 1997). Size argument is supported by Barad (2001) who reports that small stocks have outperformed their larger counterparts by an average of 5.4% over the last 75 years (1926-2000). On the other hand, Fama and French (1993) report that the book-to-market factor (HML) produces an average premium of 0.40% per month (t = 2.91) for the 1963-90 period, which in authors' view is large both in practical and statistical terms.

In 1997, Fama and French estimated the cost of equity for 48 industries by employing the CAPM and the FF model. One of their portfolios ("Meals") represented the hospitality industry (hotels, motels, restaurants, and entertainment companies listed under the following Standard Industry Codes (SICs): 5800-5813, 5890, 7000-7019, 7040-7049, and 7213). Their study found that the FF method explained more variance (R^2= .72) that the CAPM did (R^2= .64) in stock returns for the hospitality industry portfolio.

Extension Models/Variables

In the last 15 years, extensions models that included two other relevant variables took the stage on the cost of equity arena to improve estimation accuracy. The first variable was proposed by Jegadeesh (1990) who found that stock returns tend to exhibit short-term momentum; that is, stocks that have done well over the previous few months continue to have high returns over the next month. In contrast, stocks that have had low returns in recent months tend to continue the poor performance for another month. Jegadeesh and Titman (1993) confirmed these results, showing that the momentum lasts for more than just one month and that the momentum factor is stronger for companies that have had poor recent performance. The momentum variable is called "Up minus Down" (UMD) and is the cornerstone of the Carhart's (1997) Four-factor model which also includes market risk premium (Rm-Rf), SMB and HML.

The second variable that appears in extension models is coined liquidity (LIQ). This factor was put forward by Pastor and Stambaugh (2001) who documented that stocks which decline during periods of low market liquidity offer higher compensation in expected returns.

These authors divided stocks into ten portfolios based on their liquidity betas (regression coefficients of stock returns on market liquidity, with the three FF factors used as controls). These authors reported that the portfolio of high-beta stocks earned an additional 9 percent annual return over than the portfolio of low beta stocks, after accounting for three variables market risk premium (Rm-RF), size (SMB), and distress (HML) of the FF model.

Challenges surrounding the CAPM and Cost of Equity Research

The CAPM's empirical problems may reflect theoretical failures which are the result of many simplifying assumptions (Fama & French, 2004). The key problem is imprecise estimates of risk loadings. Estimates of the CAPM and three-factor risk loadings for industries would have been precise if the loadings were constant. Another challenge for the CAPM has to do with is estimation of risk premiums. For example, in practice, the risk premium in the CAPM is expressed as return on the market portfolio minus the risk-free interest rate (Rm - Rf) (Fama & French, 1997). In theory though, the CAPM posits that the risk of a stock should be measured relative to a comprehensive "market portfolio" which includes not only traded financial assets, but also consumer durables, real estate and human capital (Fama & French, 2004).

Several other empirical studies (e.g. Lakonishok & Shapiro, 1986; Reinganum, 1981; Roll & Ross, 1994) challenged the model by contending that it is difficult to find the right proxy for the market portfolio and that CAPM does not appear to accurately capture the effect of firm size on the cost of equity calculation. In addition, these authors contend that not all systematic risk factors are reflected in returns of the market portfolio. Empirical evidences from lodging industry accentuated that contrary to the predictions of the CAPM, alternative models have significant explanatory power for cost of equity estimation. Lee and Upneja (2007) estimated the predictive ability of traditional asset pricing models (the CAPM and the FF model) along with other methods such as implied cost-of-equity (ICE). Their analysis suggests the price-to-forward earnings model provides the cost-of-equity capital estimate that has a higher predictive ability relative to other estimation methods for the lodging industry.

Ample evidence from several empirical studies have unveiled that the central implication of the CAPM is deficient in explaining risk-adjusted stock return predictability over the period. Kim et al. (2011) remark that alternative models to the CAPM in regards to risk adjusted return trade-off (i.e., Jensen's Alpha) are more flexible in explaining expected returns of securities. They used the Jensen's one-factor model in their lodging Real Estate Investment Trust (REIT) performance analysis to display better estimation of REIT portfolio performances in terms of percentage return during 1995-2005. These authors' findings show on a risk-adjusted basis, Jensen's alpha coefficients are found to be statistically insignificant for all three portfolios (lodging REITs, hotel C-corporations, and resorts and casinos) and there is no difference in their performances when compared to market portfolio. Additionally, their beta coefficients are lower than the benchmark, meaning they bear lower systematic risk than that of market portfolio. Madanoglu and Olsen (2005) approached this issue in a different manner. They acknowledge several costs of equity estimation models in order to decide on the best fitting model to the hospitality industry. Their key proposition is that since publicly-traded multinational lodging companies tend to differ on some important points regarding how assets are treated on the balance sheet, then industry specific factors such as human capital, enterprise brand value etc. should play an additional role across hospitality industry segments for cost of equity estimates in lodging segment of the hospitality industry.

Gitman and Vandenberg (2000) pointed out that, given its inherent limitations, the CAPM was the model to a model choice for about 65% of the Fortune 1000 companies in 1997

(Gitman &Vandenberg, 2000). In a similar fashion, 60% of the CFOs indicated that they employ CAPM as their primary cost of equity estimation method (Graham & Harvey, 2001).

Methodology

Sample and Data

The sample of this study is publicly-listed restaurant companies listed in the Nation's Restaurant News (NRN) Index published in Nation's Restaurant News magazine. A total of 78 restaurant firms which have at least 36 monthly observations over the full observation period were included in the final sample. The observation period of this study is between 1996 and 2010. In addition we analyzed three five-year sub-periods (i.e., 1996-2000, 2001-2005, 2006-2010) to confirm the robustness of our results. This is because, regression coefficients of risk variables become unstable when estimated over extended periods.

Variables

The dependent variable in this study is monthly restaurant industry stock returns that were calculated by forming an equal-weight portfolio based on restaurants listed in the Nation's Restaurants News in 2010. Stock return data for all restaurant firms were obtained from Center for Research in Security Prices (CRSP). The first independent variable was the market index return. Three market indices were used in this study, namely: (1) Equal Weight Return Index of CRSP (EWCRSP), (2) Value Weight Return Index of CRSP (VWCRSP), and (3) Standard & Poor's 500 (S&P500).

The second and third independent variables were obtained from the FF model: SMB and HML (Fama & French, 1993). The fourth independent variable is the momentum (UMD) (Carhart, 1997). The last independent variable is liquidity (Pastor & Stambaugh, 2001). Data for independent variables were obtained from Eventus database in Wharton Research Data Services

(WRDS). To estimate cost of equity for three models, we obtained the risk-free rate—i.e., the 1-month return of a Treasury Bill (T-bill) — from CRSP database.

The regression equations were estimated three times: first by the CAPM (Model 1) (Equation 4), the second equation employed the FF model (Model 2) (Equation 5), and the third analysis was conducted by using the five-variable "Full model" (Model 3) ((Equation 6), which consisted of the CAPM, Fama-French, UMD and liquidity variables, respectively:

$$E(R_i) = R_f + [\beta *(R_m-R_f)] \quad (4)$$

$$E(R_i) = R_f + (\beta_i * MRP) + (s* SMB)+(h* HML), \quad (5)$$

$$E(R_i) = R_f + (\beta_i * MRP) + (s* SMB)+(h* HML) + m * UMD + l*LIQ \quad (6)$$

Data Analysis

We employed regressions with cluster robust standard errors. The clustering was done by date (i.e., January, 1996). Using cluster robust regression helps alleviate concerns about autocorrelation and helps reduce the bias in standard errors as well as provides accuracy check. We also used Breusch-Godfrey test to analyze the validity of autocorrelation issues when observing data series such as our sample. Our intention to use this test is to assess the presence of serial dependence (i.e., autocorrelation) to omit incorrect conclusions drawn from multiple regressions. Findings revealed that no serial dependence was present which increased our confidence about our modeling procedures.

Three separate regression analyses were employed by using the three market indices for the three different costs of equity models. This resulted in 9 regression equations. Once this procedure was repeated for the four observation periods (the full period and the three sub-periods), we estimated a total of 36 regression equations.

Findings

Table 1 demonstrates the descriptive statistics and correlation coefficients of the parameters used in this study. Based on means, the restaurant industry returns (RETURN) were higher than S&P500 and VWCRSP. In addition, findings reveal that S&P500 and VWCRSP are highly correlated with the NRN index.

Insert Table 1 about here

Table 2 displays the regression results for the full period (1996-2010) with three different benchmarks. Findings indicate that the Full model performed the best in explaining restaurant industry stock returns for all three market indices. The adj. R^2 for the full model was fairly consistent as well (45.12% with S&P500, 48.73% with EWCRSP, and 58.43% with VWCRSP). The full model with EWCRSP was the only estimation where all five risk variables were significant at the .05 level. All variables except SMB were positively related to restaurant industry stock returns. The market beta (VWRET) had the highest regression coefficient and the highest t-value among five risk factors. Another model that displayed good performance was the one with VWCRSP. The full model with VWCRSP had the highest adjusted R-squared across three market indices. However, UMD did not account for significance variance in restaurant industry stock returns in this model.

As a robustness check, we also analyzed three five-year sub periods of the full 15-year period. The first two sub-periods yielded results that was consistent with the full observation period. As a result, for sake of brevity and due to last period being more recent we report results of the 2006-2010 period in Table 2. As can be seen in Table 2, the regression results show that when S&P500 is used as a market portfolio, only the market return explains significant variation in restaurant industry stock returns. It is worth noting that across three models the explained variation in restaurant industry returns was over 60%. When one looks at the EWCRSP estimation, it is evident that the full model has the highest adjusted R-squared (.5842). However, neither of the FF variables (SMB and HML) is significant. The VWCRSP mirrors the results of S&P500 since only market beta is significant. This is to be expected since both indices (VWCRSP and S&P500) are weighted based on market value of common stocks.

Insert Table 2 about here

Insert Table 3 about here

The researchers used the regression coefficients and computed annualized premiums for all risk factors (e.g., SMB, LIQ) to obtain the cost of equity for the restaurant industry. In addition, we calculated the average annual risk-free rate for the full period as 3.13%. We used EWCRSP index as the benchmark portfolio for market return because this is the only benchmark return that produced significant results for all independent variables:

Ke (CAPM) = 3.13 + (.36*5.49) = 5.15%

Ke (FF) = 3.13 + (.64*5.49) + (-.68*3.89) + (.21*3.73)= 4.88%

Ke (Full) = 3.13 + (.79*5.49) + (-.84+3.73) + (.22*5.3) + (.22*10.4) =8.93%

As it can be seen from the equations above, the Full model with EWCRSP generated the highest cost of equity estimate for the restaurant industry. On the other hand, the FF model yielded the lowest cost of equity. This was due to the negative risk-premium of the size factor (SMB). While not computed in detail, the Full model with VWCRSP had a cost of equity of 9.37% which was similar to the cost of equity of Full model with EWCRSP.

Discussion and Conclusion

The results of this study showed that estimating industry cost of equity accurately remains a challenging task. For example, the inclusion of SMB factor leads to underestimation of the cost of equity by overadjusting for size effect in restaurant industry stocks. On the other hand, when value-weight indices such as S&P500 and VWCRSP are used, the effect size in returns disappears. One would expect that restaurant industry stocks are generally viewed as small to medium market capitalization firms. However, the SMB factor of the FF model shows that the restaurant industry portfolio behaves like stocks of large firms. Hence, we recommend that present and potential restaurant executives/entrepreneurs use the Full model to estimate the cost of equity for their potential investments in S&P500 market due to its nature being the most common investment platform. Otherwise, the required rate of return may be underestimated by almost 4% which is of great importance.

The results point out that the Full model seems to better mirror the realities of today's financial conjecture in business world. The model achieves this by properly adjusting the firm's cost of equity capital based on risk factors such as distress (HML), momentum (UMD) and liquidity (LIQ). For instance, we find that traded liquidity of the restaurant portfolio for the 15-year observation period produces an additional annual risk premium of over 2% a year. It is possible that if a small restaurant firm estimates its cost of equity, the annual liquidity risk premium may be even larger. Therefore, the authors of the present paper contend that the Full should become a model of choice for the restaurant executives until the industry develops its own custom cost of equity capital model. In addition, we recommend that the cost of equity is estimated by using an observation period of more than 5 years. This is because, results for 2006-

2010 sub-period showed that only the market return explained a significant variation in restaurant industry stock returns.

While this paper provides a temporary empirical resolution to the cost of equity estimation by favoring Full model over the FF and CAPM, it does raise subsequent future inquiries to be examined in the nearest future. This is attributed to the assertion made by Fama and French (1993) who state that their work (FF model) leaves many open questions. As a consequence, the findings of this study constitute only half of the good news for the restaurant industry. The most important missing piece of the puzzle is that that Fama and French (1993) have not shown how the size and book-to-market factors in returns are driven by the stochastic behavior of firm earnings. That implies that it is not yet known how firm fundamentals such as profitability or growth produce common variation in returns associated with size and BE/ME factors and this variation is not captured by the market return itself. Fama and French (1993) further query whether specific fundamentals can be identified as variables that lead to common variation in returns and those variables are independent of the market and carry a different premium than general market risk. This query is of utmost importance for the restaurant industry executives who are aiming to identify the major drivers of their companies' stock return in their effort to increase their financial performance. For instance, Lee (2010) notes that capital intensity level has a negative effect on U.S. restaurant firms' value performance. This increases firm's leverage and in turn augments firm risk. Therefore, developing a thorough understanding of the value drivers in the restaurant industry is possible through a collaboration of financial management practitioners and researchers in the restaurant industry.

Sheel (1995) was the first researcher in the hospitality industry to point out that the CAPM does not seem to meet the industry needs and called for further research into industry specific factors. In the mainstream financial economics field, Downe (2000) further argued that in a world of increasing returns, risk cannot be considered a function of only systematic factors, and thus beta. He postulated that the position of the firm in the industry, as well as the nature of the industry itself become risk factors. Thus, firms with a dominant position in the industry that succeed to adapt to the complexities of the business environment, will have a different risk profile than their competitors.

The increased importance of intangibles in driving firm cash flows brings up the question of whether these intangibles (e.g. human capital, branding, franchising networks) become also risk factors for the restaurant corporations. Put in other words, one would wonder whether a hypothetical investor will require the same level of return for two types of say hotel companies: one with sophisticated safety and security measures (and consistent investment in safety and security) and another with negligible level of commitment to safety and security.

In marketing literature, Srivastava, Shervani and Fahey (1998) provided an analytical example of how successful market based assets (the term authors use in lieu of intangibles) lowers costs by building superior relationships with and knowledge of channels and customers, enables firms to attain price a premium, and generate competitive barriers (via customer loyalty and switching costs). All these factors lead to the conclusion that a better grasp of the market based assets reduces the uncertainty pertaining to the future cash flows which in turn decreases the required return by the investors for the risk they bear by investing in a particular firm.

At this juncture, the implications of this study are twofold: First, the study acts as a messenger between scholars and the restaurant executives and informs the restaurant industry executives about the option of estimating cost of equity by using the Full model with different benchmarks. Second, it maintains that the restaurant industry practitioners and academicians should join their forces to respond to Sheel's (1995) and Madanoglu and Olsen's (2005) call for developing industry specific models to estimate the cost of equity capital. It is the authors' contention that this collaboration will be one of the keys for the restaurant executives to invest in projects that will generate positive cash flows over the life of their investments.

Limitations and Future Directions

It should be noted benefits of using the Full model come with some considerable drawbacks. The major challenge at the present is that that some of the factors in the Full model are not applicable on a global basis. That is, one cannot use the FF model to estimate the cost of equity of a certain capital investment project in a developing country. Likewise, the liquidity factor is also not available for many emerging and developing markets. Therefore, some time is needed for mainstream corporate finance field to develop risk factors for each of the countries that has a stock exchange. Only then a corporate executive in the hospitality in industry may have a more reliable estimate about the magnitude of the risk premium associated with a capital investment in a particular country.

This paper attempted to estimate the cost of equity for the U.S. restaurant industry. However, it is common knowledge that many of the publicly-traded restaurant firms have a significant portion of their units located outside of the U.S. Thus, the authors recommend that future studies employ global market indices to estimate the cost of equity. While the results of this study shed some light into the cost of equity puzzle in the restaurant industry, the present findings did also raise some subsequent questions. How would restaurant executives estimate the cost of equity in international projects? What market index will be used as a proxy for market return in international/global settings? Would the use of a global equity index such as Morgan Stanley Capital International (MSCI) result in more reliable cost of equity estimates? We hope that these questions will spark some interest among industry and academia that will result in future collaborative research studies.

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Table 1
Descriptive statistics and correlations

Variable	Mean	SD	RETURN	SMB	HML	UMD	LIQ	EWCRSP	VWCRSP	S&P 500
RETURN	0.0071	0.0477	1.0000							
SMB	0.0034	0.0246	0.3568*	1.0000						
HML	0.0022	0.0296	0.2872*	0.2815*	1.0000					
UMD	0.0001	0.0637	-0.2520	-0.1709	-0.4403*	1.0000				
LIQ	0.0019	0.0439	0.0697	0.02311	-0.0661	-0.0970	1.0000			
Indices										
EWCRSP	0.0070	0.0643	0.7447*	0.5336*	0.4478*	-0.5424*	-0.0380	1.0000		
VWCRSP	0.0044	0.0540	0.8076*	0.3836*	0.4389*	-0.4077*	-0.0702	0.9486*	1.0000	
S&P 500	0.0014	0.0515	0.8057*	0.3369*	0.4576*	-0.4003*	-0.0851	0.9241*	0.9935*	1.0000

Note: *$p \leq .05$. (one-tailed); SD=Standard Deviation; N=180.

Table 2
Regression results for the full 15-year period

This table analyzes 15 year full period (1996-2010) of the full period for 3 different market benchmarks (S&P500, EWCRSP, VWCRSP).
VWCRSP stands for Value-weighted CRSP Index, EWCRSP stands for Equally-weighted CRSP Index,
SMB=Size, HML=Distress, UMD=Momentum, LIQ=Liquidity, SE=Standard Error.
Dependent variable represents stock returns for the restaurant industry.

Panel A - S&P 500

Independent Variables	CAPM *Coefficient*	*SE*	*p*	FF Model *Coefficient*	*SE*	*p*	Full Model *Coefficient*	*SE*	*p*
SPRET	0.734293*** (9.82)	0.074775	0.000	0.785138*** (11.76)	0.066736	0.000	0.827073*** (11.84)	0.069844	0.000
SMB				-0.157931 (-1.60)	0.09858	0.1109	-0.180146* (-1.84)	0.097708	0.0669
HML				0.308715*** (3.13)	0.09863	0.002	0.336943*** (3.47)	0.09700	0.0006
UMD							0.095227 (1.43)	0.066723	0.1553
LIQ							0.171723*** (2.62)	0.065424	0.0094
Constant	0.005777*	0.003099	0.064	0.005059*	0.002936	0.087	0.004547	0.002856	0.1132

	(1.86)			(1.72)			(1.59)		
F		96.43			50.17			35.08	
Df		1			3			5	
Adjusted R^2		0.4095			0.4763			0.4970	

Panel B - EWCRSP

Independent Variables	CAPM			FF Model			Full Model		
	Coefficient	*SE*	*p*	*Coefficient*	*SE*	*p*	*Coefficient*	*SE*	*p*
EWRET	0.369216*** (4.10)	0.089956	0.0001	0.645860*** (7.06)	0.091467	0.0000	0.795373*** (11.29)	0.070448	0.0000
SMB				-0.683744*** (-5.77)	0.118482	0.0000	-0.843594*** (-6.93)	0.121659	0.0000
HML				0.215843** (2.06)	0.104547	0.0404	0.282002*** (2.74)	0.102929	0.0068
UMD							0.228957** (2.57)	0.089102	0.0110
LIQ							0.228286*** (3.28)	0.069654	0.0013
Constant	0.005406 (1.48)	0.003642	0.1395	0.003819 (1.21)	0.003157	0.2280	0.001626 (0.52)	0.003149	0.6062
F		16.85			24.29			32.93	
Df		1			3			5	

Adjusted R^2	0.1721			0.3869			0.4512		

Panel C - VWCRSP									
Independent Variables	CAPM *Coefficient*	*SE*	*p*	FF Model *Coefficient*	*SE*	*p*	Full Model *Coefficient*	*SE*	*p*
VWRET	0.652122*** (8.68)	0.075151	0.0000	0.770672*** (11.35)	0.067922	0.0000	0.805323*** (11.31)	0.071180	0.0000
SMB				-0.307368*** (-2.89)	0.106427	0.0044	-0.335741*** (-3.19)	0.105244	0.0017
HML				0.333102*** (-3.31)	0.100563	0.0011	0.357645*** (-3.65)	0.097997	0.0003
UMD							0.080926 (-1.22)	0.066124	0.2226
LIQ							0.175748*** (-2.66)	0.066132	0.0086
Constant	0.004847 (1.49)	0.003257	0.1385	0.003937 (1.33)	0.002968	0.1864	0.003488 (1.21)	0.002873	0.2263
F	75.30			47.05			32.02		
Df	1			3			5		
Adjusted R^2	0.3485			0.4675			0.4873		

Note: t-values in parentheses

* p<0.10, ** p<0.05, *** p<0.01

Table 3
Regression results for the last 5 year sub-period (2006-2010)

This table analyzes 5 year sub-period (2006-2010) of the full period for 3 different market benchmarks (S&P500, EWCRSP, VWCRSP).
VWCRSP stands for Value-weighted CRSP Index, EWCRSP stands for Equally-weighted CRSP Index,
SMB=Size, HML=Distress, UMD=Momentum, LIQ=Liquidity, SE=Standard Error.
Dependent variable represents stock returns for the restaurant industry.

Panel A - S&P 500

Independent Variables	CAPM			FF Model			Full Model		
	Coefficient	*SE*	*p*	*Coefficient*	*SE*	*p*	*Coefficient*	*SE*	*p*
SPRET	0.746991*** (12.38)	0.060356	0.000	0.763003*** (9.84)	0.077504	0.000	0.799916*** (10.71)	0.074713	0.000
SMB				0.220474 (1.33)	0.166004	0.1893	0.143651 (0.79)	0.181196	0.4311
HML				-0.19593 (-1.36)	0.14416	0.1793	-0.13583 (-0.95)	0.142837	0.3455
UMD							0.060978 (1.10)	0.055501	0.2764
LIQ							0.139323 (1.66)	0.084124	0.103

Constant	0.006084 (1.66)	0.00367	0.1026	0.005308 (1.49)	0.003574	0.1428	0.005493 (1.56)	0.003529	0.1249
F	153.17			42.43			30.14		
Df	1			3			5		
Adjusted R^2	0.6431			0.6510			0.6567		

Panel B - EWCRSP

Independent Variables	CAPM			FF Model			Full Model		
	Coefficient	*SE*	*p*	*Coefficient*	*SE*	*p*	*Coefficient*	*SE*	*p*
EWRET	0.553064*** (8.25)	0.067039	0.000	0.592508*** (7.20)	0.082307	0.000	0.726711*** (9.17)	0.079277	0.000
SMB				-0.103301 (-0.56)	0.185633	0.5800	-0.322259 (-1.53)	0.210264	0.1307
HML				-0.088819 (-0.41)	0.217666	0.6847	0.050033 (0.25)	0.199816	0.8032
UMD							0.210355*** (2.90)	0.072611	0.0053
LIQ							0.189546** (2.23)	0.084898	0.0294
Constant	0.003303 (0.80)	0.004106	0.4243	0.003396 (0.82)	0.004126	0.4138	0.003692 (0.95)	0.003885	0.3459
F	68.06			23.67			27.16		

Df	1			3			5		
Adjusted R^2	0.5468			0.5356			0.5843		

Panel C - VWCRSP

Independent Variables	CAPM *Coefficient*	*SE*	*p*	FF Model *Coefficient*	*SE*	*p*	Full Model *Coefficient*	*SE*	*p*
VWRET	0.713877*** (11.51)	0.06201	0.000	0.726971*** (9.46)	0.076819	0.000	0.768247*** (10.26)	0.074857	0.000
SMB				0.130836 (0.80)	0.164045	0.4283	0.045835 (0.26)	0.17922	0.799
HML				-0.149592 (-1.02)	0.146515	0.3114	-0.079582 (-0.55)	0.14481	0.5847
UMD							0.072924 (1.28)	0.056931	0.2052
LIQ							0.142704 (1.66)	0.085946	0.1021
Constant	0.004032 (1.11)	0.003641	0.2726	0.003531 (0.97)	0.003628	0.3344	0.003658 (1.03)	0.003565	0.3091
F	132.53			39.07			27.58		
Df	1			3			5		
Adjusted R^2	0.6462			0.6435			0.6512		

Note: t-values in parentheses

* p<0.10, ** p<0.05, *** p<0.01