# “The behavior of franchisor stocks”


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| **AUTHORS** | E. Hachemi Aliouche<br>Robert J. Bianchi<br>Michael E. Drew |



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E. Hachemi Aliouche (USA), Robert J. Bianchi (Ausralia), Michael E. Drew (Ausralia)

# The behavior of franchisor stocks

## Abstract

The franchise business model is distinct in the way it seeks to lower agency costs when compared to a 'traditional' corporation. This study seeks to ascertain whether the potential benefits of reduced agency costs can be captured in the returns of a portfolio of franchisor stocks. Using a purpose-built portfolio of companies employing 'business format franchising' as their core strategy over the past two decades, we find that the sources of systematic risk for our portfolio of franchisor stocks include market beta, size and the value premia. We find historical evidence that franchisor stocks have significantly outperformed the market in the past, however, these excess returns seem to be slowly declining in recent times. We show that franchisor stocks outperform the broader market in both expansionary and contractionary phases of the U.S. business cycle and they are more sensitive to changes in monetary conditions than the wider market, reflecting their size and value characteristics.

**Keywords:** franchising, asset pricing, performance evaluation.
**JEL Classification:** G10, G11, G12.

## Introduction

The organizational structure of franchises is unique in the way it addresses the economic problems of agency theory, which differs from a 'traditional' or conventional business structure[1]. Rubin (1978) and Brickley and Dark (1987) find that organizations employ the franchise business model in order to reduce the issues relating to agency costs. Michael and Combs (2008) posit that the franchising business model partially solves the two key agency problems: adverse selection and moral hazard. The problem of adverse selection can occur when corporate managers act in their own interest and are not aligned with the best interests of the principal. As franchisees invest a significant amount of their personal wealth and time into the business, the spectre of adverse selection is reduced as the interests of the principal (franchisor) and agent (franchisee) are aligned (Eisenhardt, 1989; Norton, 1988; and Shane, 1996). The related informational problem of moral hazard refers to the principal's inability to observe the quality of decisions being made by the agent. It is argued that the franchise business model is superior in mitigating moral hazard due to heightened self-monitoring (resulting in lower franchisor costs) and localized performance-based remuneration (Bradach, 1997; Eisenhardt, 1989). With issues arising from informational asymmetry better managed, the net benefits accruing to the franchising business model would result in a higher return on equity to the franchisor, higher profits to the franchisee, or a combination of both.

In this study, we are interested in the potential benefits from investing in franchisor stocks and the return behavior exhibited by this portfolio over the past two decades. The only study that has considered this issue was Aliouche, Kaen and Schlentrich (2012), documenting that franchisor stocks deliver superior, risk-adjusted returns to investors. The positive findings of Aliouche et al. (2012) were the result of using Jensen's (1968) single-factor approach to estimate excess returns. This study contributes to the franchising literature by examining franchisor stock returns in a Fama and French (1993)/Carhart (1997) multi-factor asset pricing framework. Furthermore, we examine the performance of franchisor stock returns and its relationship with the U.S. business cycle, macroeconomic risks and changes in monetary conditions.

To further explore the relationship between franchisor stocks and various asset pricing factors, there are a number of industry characteristics that allows us to develop a set of research expectations. First, Stanworth, Stanworth, Watson, Purdy and Healeas (2004) reveal that franchises are, in general, small businesses. This suggests that franchisors are dependent on small business franchisees for their profits. Therefore, we expect that franchisor stocks exhibit a positive relationship with the size premium. Second, the works of Bates (1995) and Holmberg and Boe Morgan (2003) note that franchise businesses in saturated markets tend to exhibit survival rates which are similar to new independent business start-ups. In short, purchasing a franchise business does not reduce the likelihood of non-survival in highly competitive markets. This finding suggests that the risk of non-survival associated with franchises is clearly non-zero, so we hypothesize a positive relationship between franchisor stock returns and the value premium. Whilst this study does not


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[1] The importance of this business model is highlighted by the International Franchise Association (2011) who estimate that franchising in the U.S. directly and indirectly accounts for around $1.2 trillion of private nonfarm gross domestic product.

contend the source(s) of the value premium, we are certainly interested whether the behavior of franchisor stocks comes from received systematic risk factors such as market beta, size, value and momentum[1].

Understanding the asset pricing behavior of these returns is an important starting point, however, we are also interested in the performance of franchisor stock returns over the business cycle and their behavior to changes in macroeconomic risks. Studies by Kelly (2003) and Vassalou (2003) show that the size (SMB) and value (HML) risk factors are related to the business cycle. For example, Liew and Vassalou (2000) show a positive relation in the performance of the size and value effects and good states of the economy. Other studies by Garcia-Feijoo and Jorgensen (2010) and Gulen, Xing and Zhang (2010) show that value stocks are riskier than growth stocks especially during economic downturns. Given our hypothesized characteristics of franchises, we expect to observe positive size and value effects in franchisor stocks across the business cycle.

To complement this line of investigation, we also examine the behavior of franchisor stocks in response to changes in macroeconomic variables. Given the small business nature of the underlying assets in this study, we are specifically interested in whether the franchise business model may be more sensitive to changes in interest rates than other sectors of the U.S. stockmarket. Studies such as Petkova (2006) find no relation between the size premium (SMB) and innovations in the term spread, however, Hahn and Lee (2006) show that the size and value premiums are compensation for higher exposures to credit market and interest rate conditions. In our study, we perform an analysis to identify whether franchisor stock returns reflect reward for bearing specific macroeconomic risks, namely, unexpected and expected inflation, term premium and industrial production.

Finally, we evaluate the performance of franchisor stocks during changes in monetary conditions. Gertler and Gilchrist (1994) and Thorbecke (1997) find that small firms are more sensitive to changes in monetary conditions than large firms. Perez-Quiros and Timmermann (2000) show that tightening credit markets have a larger impact on small firms than large firms. These studies suggest that changes in monetary conditions affect firms' access to credit and this has a greater impact on smaller firms than larger corporations[2]. Given the characteristics of the franchise business model, we examine whether franchisor stock returns exhibit greater volatility of returns to changes in monetary conditions.

Our key findings can be summarized as follows: using a purpose-built portfolio of franchisor stocks from 1990 through 2010, we find that franchisor stocks exhibit moderate beta with significantly positive size (SMB) and value (HML) premia characteristics. The performance evaluation of returns shows that franchisor stocks exhibit significant excess returns in the first half of the data sample, which diminish over time. This finding suggests that the net benefits from reduced agency costs in franchisor stocks have been garnered by early investors, however, this benefit is slowly being factored into franchisor stock returns. We find that the small-firm size effect causes franchisor stocks to exhibit higher volatility in returns in comparison to broad U.S. stocks during economic contractions in the business cycle. This result accords with Chan and Chen (1991) and Liew and Vassalou (2000) and suggests that the positive size and value characteristics of franchisor stock returns exhibit higher levels of risk during economic downturns in comparison to the broad U.S. market. We also find that franchisor stock returns are significantly more sensitive to changes in U.S. monetary conditions than broad U.S. stocks during expansionary environments which occur during worsening economic conditions. Consistent with Gertler and Gilchrist (1991) and Thorbecke (1997), the higher sensitivity to changes in U.S. monetary conditions during difficult economic conditions by franchisor stocks is consistent given the significant size premia characteristics in their returns. Overall, we find that the size premium influences the behavior of franchisor returns more than the value premium.

The remainder of this study is structured as follows. In the following section, we detail the sample and data employed in the study. The methodology and research design are documented, with the study then presenting the results of the empirical analysis. The paper concludes with a synopsis of the key findings and areas for future research.

## 1. Sample and data

Following the methodology in Aliouche et al. (2012), we construct a franchisor stock portfolio comprised of all publicly traded U.S. franchise firms based on market capitalization. Franchise companies are defined as firms who employ 'business format franchising' as a core strategy for market expansion and as a primary source of income. These franchise firms were compiled using a number of sources, including company 10-K reports; company Uniform Franchise Offering Circulars (UFOC) and Franchise Disclosure Documents (FDD); Entrepreneur magazine's "Franchise 500" listings; Franchise Times; Bond's Franchise Guide; and Securities and Exchange Commission (SEC) filings.

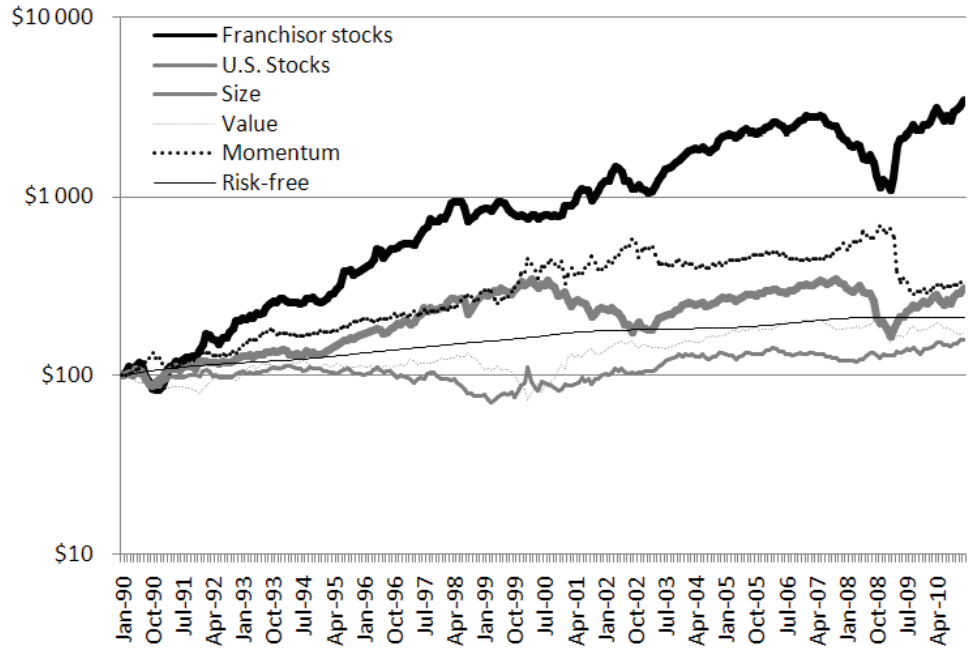
[1] See Zhang (2005) for an overview of the value premium debate.
[2] For an alternative perspective, see Durham (2005).

The composition of the franchise stock portfolio changes only when there is a business reorganization involving a franchise company. Changes in the composition of the franchise portfolio occurred at the end of the month of a qualifying event. A business reorganization (for example, mergers and acquisitions, initial public offerings, privatizations, bankruptcies, etc.) of a franchising company triggers a change in the stock portfolio at the end of the respective month. For example, Hilton Hotels exited the data sample after it was acquired by Blackstone in 2007. The monthly total returns (adjusted for dividends and splits) of these publicly listed franchise firms were sourced from the Center for Research in Securities Prices (CRSP) for the period from February 1990 to December 2010. To minimize the possibility of ex post selection bias, the franchise stock portfolio dataset was constructed in 1990 and then moved forward every month through until December 2010.

Table 1. Descriptive statistics

| Variable | Mean | SD | Median | Skew. | Kurt | Max | Min | Sharpe |
|---|---|---|---|---|---|---|---|---|
| U.S. franchisor excess returns | 1.92 | 6.45 | 1.86 | 1.44 | 15.33 | 50.41 | -16.69 | 0.87 |
| U.S. stocks (Rm-Rf) excess returns | 0.85 | 4.52 | 1.41 | -0.76 | 4.37 | 11.05 | -18.46 | 0.42 |
| Size (SMB) premium | 0.07 | 3.50 | 0.05 | -1.10 | 11.01 | 13.81 | -22.19 | 0.24 |
| Value (HML) premium | 0.38 | 3.33 | 0.27 | 0.43 | 5.36 | 13.84 | -9.95 | 0.29 |
| Momentum (MOM) effect | 0.61 | 5.28 | 0.89 | -1.60 | 13.15 | 18.39 | -34.75 | 0.40 |
| U.S. Govt. 1-month Treasury bill | 0.30 | 0.17 | 0.32 | -0.16 | 2.20 | 0.69 | 0.00 | N/A |

Notes: This table reports the summary statistics of the monthly returns employed in this study for the period February 1990 to December 2010. The table presents the name of the index, monthly means, monthly standard deviations (SD), medians, skewness (Skew.), kurtosis (Kurt.), maximum (Max) and minimum (Min) monthly return and Sharpe denotes the annualized Sharpe ratio for every risky asset and risk factor.




Notes: This figure shows $100 invested in (1) franchisor excess returns; (2) the U.S. stock excess returns; (3) size (SMB) factor; (4) value (HML) factor; (5) momentum (MOM) effect; and (6) the U.S. 1-month Treasury bills. The sample period is based on monthly returns from February 1990 to December 2010.

**Fig. 1. $100 invested in the U.S. markets and risk factors (log-scale)**

Table 1 presents the summary statistics of the franchisor stock portfolio returns, the broad U.S. market return, the Fama and French (1993) size and value risk factors, the Carhart (1997) momentum risk factor and the U.S. government 1-month Treasury bills which represent the risk-free rate of return. Figure 1 illustrates the comparison of $100 invested in every time series over the sample period. Table 1 shows that the portfolio of the U.S. franchisor stocks exhibits the highest mean and median returns in comparison to broad U.S. stocks and the respective risk factors. Whilst franchisor stocks outperform broad U.S. stocks on a raw return basis, this reflects the commensurate higher risk associated with franchisor stocks, which can be observed by their higher standard deviation in returns. We explain the rationale for their higher level of risk at a later stage in this study. From a risk-adjusted perspective, franchisor stock returns also exhibit the highest Sharpe ratio over the sample period.

## 2. Methodology and design

The performance evaluation of franchisor stocks must account for a number of issues. First, we are interested in measuring the risk-adjusted returns in order to estimate whether lower agency costs in the franchising business model translate into excess returns in franchisor stocks. Second, given the small-firm nature of franchises, we need to control for these inherent characteristics. Aliouche et al. (2012) employed the Jensen (1968) single index CAPM to measure Jensen's alpha and they estimated an average alpha of 1.12% per month in franchisor stocks. To extend this previous study, we introduce the Fama and French (1993) three-factor model and the Carhart (1997) four-factor model which allows us to measure the risk-adjusted performance of franchisor stocks whilst controlling for any size, value and momentum effects.

**2.1. Fama and French (1993) and Carhart (1997) asset pricing models.** We operationalize the Fama and French (1993) three-factor model and Carhart (1997) four-factor model by estimating the following ordinary least squares (OLS) regressions:

$$(r_t - r_{f,t}) = \alpha + \beta_1(R_{m,t} - r_{f,t}) + \\ + \beta_2(SMB_t) + \beta_3(HML_t) + \varepsilon_t, \quad (1)$$

$$(r_t - r_{f,t}) = \alpha + \beta_1(R_{m,t} - r_{f,t}) + \beta_2(SMB_t) + \\ + \beta_3(HML_t) + \beta_4(MOM_t) + \varepsilon_t, \quad (2)$$

where $r_t$ represents the franchisor stock portfolio return, $r_{f,t}$ is the risk-free rate of return estimated from the U.S. government 1-month Treasury bill, $\alpha$ is the intercept term which represents the risk-adjusted excess return of the franchisor stock portfolio returns, $\beta_1$ is the sensitivity of the first regressor, $R_{m,t}$ is the U.S. market proxy, $\beta_2$ is the sensitivity of the second regressor, $SMB_t$ is the Fama and French (1993) factor mimicking portfolio for size, $\beta_3$ is the sensitivity of the third regressor, $HML_t$ is the Fama and French (1993) factor mimicking portfolio for book-to-market, $\beta_4$ is the sensitivity of the fourth regressor, $MOM_t$ is the Carhart (1997) factor mimicking portfolio for the 12-month return momentum, and $\varepsilon_t$ is the random error term in month $t$.

**2.2. Performance relative to characteristic-matched portfolios.** Chan, Dimmock and Lakonishok (2009) show that conventional measures of performance evaluation may not capture excess returns, but rather, reflect differences in the underlying characteristics between the stocks of the active portfolio and its relevant benchmark. Put differently, in this study, any excess returns may simply reflect the variation in firm-size and book-to-market characteristics of each stock between the franchisor stock portfolio and the Fama and French (1993) SMB and HML risk factors. Given the strong possibility of size and value characteristics in franchisor stocks, it is essential that we control for this effect by comparing the franchisor stocks with the 25 control breakpoint portfolios that are employed to construct the Fama and French (1993) size and value premia. We follow Chan et al. (2009) and employ 25 control portfolios sorted on firm size and book-to-market constructed from the Fama and French (1993) methodology. We match the franchisor stock portfolio returns to one of the 25 Fama-French size and book-to-market breakpoint (control) portfolios by minimizing the mean squared deviation as the matching criterion. This matching criteria allows us to find the Fama-French breakpoint portfolio that most closely resembles the return characteristics of the franchisor stock portfolio. We then re-estimate the regression whereby the dependent variable (ie. excess return) is calculated as the franchisor stock returns minus the closest matched Fama-French breakpoint portfolio returns. This regression is mathematically expressed as:

$$(r_t - r_{mp,t}) = \alpha + \beta_1(R_{m,t} - r_{f,t}) + \\ + \beta_2(SMB_t) + \beta_3(HML_t) + \varepsilon_t, \quad (3)$$

where $r_{mp,t}$ denotes the returns from one of the 25 Fama and French (1993) control breakpoint portfolios. The independent variables in equation (3) are the usual Fama and French (1993) risk factors from equation (1). The dependent variable in equation (3) is the return on the franchise stock portfolio in excess of the return on its closest matched Fama and French (1993) size and book-to-market breakpoint control portfolio. Essentially, the dependent variable represents the excess return of the franchisor stocks over and above its closest matched Fama and French breakpoint portfolio, therefore, the alpha ($\alpha$) estimated in equation (3) captures the genuine abnormal performance from the franchisor stock portfolio returns rather than any residual size or value effect stemming from the formation of the 25 breakpoint portfolios.

**2.3. Performance in U.S. business cycles.** We also examine the behavior of franchisor stocks over the U.S. business cycle as it is well established that economic conditions are a source of returns and risks. Studies by Liew and Vassalou (2000) and Perez-Quiros and Timmermann (2000) show that small firms are riskier than large firms during bad times causing investors to demand a higher premium for holding these shares. To evaluate the performance of franchisor stocks, we sort returns into months of economic expansions and contractions in the U.S. economy as defined by the National Bureau of Economic Research (NBER).

**2.4. Return behavior against macroeconomic risks.** Whilst the U.S. business cycle provides information over the long-term, we are also interested in whether the performance of franchisor stocks is a reward for bearing various macroeconomic risks. We measure the sensitivity of returns against U.S. macroeconomic risks by employing the following predictive regression:

$$r_{i,t} = \alpha_i + \beta_{UI,i} UI_{t-p} + \beta_{DEI,i} DEI_{t-p} + \\ + \beta_{UTS,i} UTS_{t-p} + \beta_{MP,i} MP_{t-p} + \varepsilon_{i,t}, \quad (4)$$

where $r_{i,t}$ is the excess return of each respective stock index or relevant risk factor, $\alpha_i$ is the respective intercept term, $\beta_{UI,i}$ is the coefficient for the first regressor, $UI_{t-p}$ is unexpected inflation, $\beta_{DEI,i}$ is the coefficient for the second regressor, $DEI_{t-p}$ is the change in expected inflation, $\beta_{UTS,i}$ is the coefficient for the third regressor, $UTS_{t-p}$ is the unanticipated change in the term premium between the U.S. government 10-year T-bond and 3-month T-bill rates, $\beta_{MP,i}$ is the coefficient for the fourth regressor, $MP_{t-p}$ is changes in industrial production, $t$ is the time (month) and $p$ is the value from 0 to 2. Equation (4) is specified as a conventional regression when $p = 0$. Equation (4) becomes a predictive regression when $p = 1$ or 2. We employ a predictive regression where $p = 2$ (i.e. the independent variables are employed at time $t - 2$) as many macroeconomic variables have a substantial reporting lag and this information may not be readily available to the investor at time $t$ or even at $t - 1$. We follow the Chen, Roll and Ross (1986) methodology in constructing the independent variables of these macroeconomic risks. Equation (4) informs us whether macroeconomic risks can explain or predict the variation of franchisor stock returns.

**2.5. Behavior during changes in the U.S. monetary conditions.** Waud (1970) and Laurent (1988) argue that the U.S. discount rate and the Fed Funds rate are good proxies in measuring changes in U.S. monetary conditions. The subsequent work of Thorbecke (1997) finds that changes in monetary conditions have larger effects on small firms than large firms. In this study, we compare the sensitivity of franchisor stocks and broad U.S. stocks to U.S. monetary conditions by measuring their performance during changes in the Federal Reserve Target Discount Rate.

Table 2. Fama and French (1992, 1993) three-factor model

| Variables | Intercept | Rm-Rf | SMB | HML | Adj. $R^2$ |
|---|---|---|---|---|---|
| Panel A: Full sample | | | | | |
| Coefficient | 0.0079 | 0.9886 | 0.7345 | 0.6199 | 0.6574 |
| *t*-statistic | 2.8064** | 11.7785** | 7.1111** | 4.9049** | |
| Panel B: January 1990 to June 2000 | | | | | |
| Coefficient | 0.0088 | 1.0608 | 0.6908 | 0.6807 | 0.6108 |
| *t*-statistic | 2.8146** | 15.7359** | 7.6989** | 4.0381** | |
| Panel C: July 2000 to December 2010 | | | | | |
| Coefficient | 0.0055 | 0.9132 | 0.9339 | 0.5819 | 0.6849 |
| *t*-statistic | 1.2663 | 7.3633** | 6.8771** | 4.2116** | |

Notes: This table presents the Fama and French (1993) three-factor model regression on the excess returns of a market capitalization weighted portfolio of all U.S. publicly listed franchise firms. The table presents the regression estimates with the intercept, U.S. stocks excess return (Rm-Rf), Fama-French size premium (SMB), Fama-French value premium (HML) and the respective adjusted $R^2$. Panel A presents the regression estimates for the full sample period from February 1990 to December 2010. Panel B presents the regression results for the first half of the sample period from February 1990 to June 2000. Panel C presents the regression results for the second half of the sample period from July 2000 to December 2010. The *t*-statistics are estimated using heteroskedasticity and autocorrelation-consistent standard errors. * and ** denotes statistical significance at the 5% and 1% levels, respectively.

Table 3. Carhart (1997) four-factor model

| Variables | Intercept | Rm-Rf | SMB | HML | MOM | Adj. $R^2$ |
|---|---|---|---|---|---|---|
| Panel A: Full sample | | | | | | |
| Coefficient | 0.0104 | 0.8972 | 0.6884 | 0.5538 | -0.2845 | 0.7059 |
| *t*-statistic | 3.4060** | 14.8514** | 7.1897** | 5.6315** | -2.2681* | |
| Panel B: January 1990 to June 2000 | | | | | | |
| Coefficient | 0.0102 | 1.0600 | 0.6642 | 0.6269 | -0.1171 | 0.6147 |
| *t*-statistic | 3.4161** | 15.2612** | 6.7549** | 3.9841** | -1.3085 | |
| Panel C: July 2000 to December 2010 | | | | | | |
| Coefficient | 0.0056 | 0.6536 | 0.9067 | 0.6259 | -0.4462 | 0.7944 |
| *t*-statistic | 1.6398 | 7.4751** | 7.4105** | 5.0130** | -2.6343** | |

Notes: This table presents the Carhart (1997) four-factor model regression on the excess returns of a market capitalization weighted portfolio of all U.S. publicly listed franchise firms. The table reports the regression estimates with the intercept, U.S. stocks excess return (Rm-Rf), Fama-French size premium (SMB), Fama-French value premium (HML), the Carhart (1997) 12-month momentum effect (MOM) and the respective adjusted $R^2$. Panel A presents the regression estimates for the full sample period from February 1990 to December 2010. Panel B presents the regression results for the first half of the sample period from February 1990 to June 2000. Panel C presents the regression results for the second half of the sample period from July 2000 to December 2010. The *t*-statistics are estimated using heteroskedasticity and autocorrelation-consistent standard errors. * and ** denote statistical significance at the 5% and 1% levels, respectively.

## 3. Raw and risk-adjusted performance

Table 2 reveals that franchisor stocks exhibit positive and significant regression coefficients for all three Fama and French (1993) systematic risk factors of market beta (Rm-Rf), size (SMB) and value (HML) premium. It is clear that franchisor stocks are a 'small-value' index. The inherent riskiness from both size and value premia explains the higher standard deviation of franchisor stock returns reported earlier in Table 1. In terms of risk-adjusted performance, the intercept term in Panel A of Table 2 shows that franchisor stocks earned 79 basis points (b.p.) per month (9.48% p.a.) of excess returns for the full sample period. We subdivide the full sample period into two equal sub-periods and report their regressions in Panels B and C. The intercept term in Panel B is estimated at 88 b.p. per month (10.56% p.a.) and is statistically significant at the 1% level. Panel C shows that the intercept term diminishes in the second half of the sample to 55 b.p. per month (6.60% p.a.) which is no longer statistically significant, but remains persistently economically significant.

To test the robustness of the estimated alpha from the Fama and French (1993) model, Table 3 presents the Carhart (1997) four-factor model regression and we report similar findings. The Carhart (1997) momentum risk factor (MOM) is insignificant in the first half of the sample and becomes significantly negative in recent years only. We cannot find an explanation for this result. Again, the alpha in Table 3 shows that it is significant in the first sub-sample period, however, it loses statistical significance, but remains economically significant in the second sub-sample period. Overall, the findings from the Carhart (1997) model lend support to the Fama and French (1993) results.

We interpret these results as evidence that the alpha is a function of the lower agency costs in franchise businesses, which cannot be observed in conventional business organizations. These results are pervasive given that the alpha is observable in both Fama and French (1993) and Carhart (1997) models which control for the size (SMB) and value (HML) effects in franchisor stock returns. Finally, we interpret the diminishing alpha over time as a reflection of the informational and pricing efficiency being reflected in franchisor stock prices.

Table 4. Performance relative to characteristic-matched portfolio

| | Variable | Full sample | First half | Second half |
|---|---|---|---|---|
| Abnormal returns | Intercept term | 0.0077 | 0.0087 | 0.0066 |
| | Standard error | 0.0027 | 0.0029 | 0.0048 |
| | *t*-statistic | 2.8675** | 2.9962** | 1.3884 |
| | *p*-value | 0.0045 | 0.0033 | 0.1675 |

Notes: This table presents the intercept terms from the characteristic-matched portfolio regression specified in equation (3). The intercept term is expressed as the average excess return per month and its respective standard error, *t*-statistic and *p*-value. Full sample denotes the intercept term estimated from February 1990 to December 2010. First half denotes the intercept term estimated from February 1990 to June 2000. Second half denotes the intercept term estimated from July 2000 to December 2010. The standard errors are estimated using heteroskedasticity and autocorrelation-consistent standard errors. * and ** denote statistical significance at the 5% and 1% levels, respectively.

To check the robustness of the alpha, Table 4 reports the intercept terms of the characteristic-matched portfolio method detailed in equation (3). The franchisor stock portfolio excess returns exhibit the closest match to the Fama and French (1993) 9$^{th}$ breakpoint portfolio. This characteristic-matched portfolio exhibits the second smallest SMB quintile portfolio based on firm-size with the second highest quintile of HML stocks based on the book-to-market ratio. The result from this matching procedure lends support to the findings in Table 2 and confirms that franchisor stocks can be essentially described as a 'small-value' index.

Table 4 reports statistically significant alphas of 0.77 basis points (b.p.) per month (i.e. 9.24% p.a.) against its closest matched Fama and French SMB/HML breakpoint portfolio over the full sample period. When we subdivide the sample period, Table 4 shows that the statistical significance in these excess returns can be observed in the first half of the data sample (0.87 b.p.) and it loses its statistical significance in the second half of the subsample, but it remains economically significant at 0.66 b.p. per month (7.92% p.a.). Overall, we can conclude that the estimated alpha reflects lower agency costs in the franchising business model which are being captured as a net benefit in the form of a higher return on equity to the franchisor. Despite losing its statistical significance over time, the estimated alpha in the second half of the sample period remains economically significant for investors.

Table 5. Raw performance across all U.S. business cycles

| Reference dates | Expansion or contraction | Franchisor stocks Excess returns | U.S. stocks Excess returns | Outperformance |
|---|---|---|---|---|
| Feb/90-Jul/90 | Expansion | 2.41% | 0.79% | +1.62% |
| Aug/90-Mar/91 | Contraction | -0.01% | 0.57% | -0.58% |
| Apr/91-Mar/01 | Expansion | 1.86% | 0.76% | +1.10% |
| Apr/01-Nov/01 | Contraction | 2.77% | -0.10% | +2.87% |

Table 5 (cont.). Raw performance across all U.S. business cycles

| Reference dates | Expansion or contraction | Franchisor stocks Excess returns | U.S. stocks Excess returns | Outperformance |
|---|---|---|---|---|
| Dec/01-Dec/07 | Expansion | 1.02% | 0.50% | +0.52% |
| Jan/08-Jun/09 | Contraction | 0.98% | -2.11% | +3.09% |
| Jul/09-Dec/10 | Expansion | 3.02% | 2.23% | +0.79% |

Notes: This table presents every U.S. business cycle in the data sample from February 1990 to December 2010. The first column reports the reference month and year of the commencement and end of every economic business cycle. The second column denotes whether the U.S. economy is in an economic expansion or contraction as defined by NBER. The third column reports the mean monthly excess returns of franchisor stocks over the sample period. The fourth column denotes the mean monthly excess return of broad U.S. stocks over the sample period. The final column denotes the average monthly outperformance of franchisor stocks versus broad U.S. stocks.

Table 6. Performance during economic expansions and contractions

| | Franchise Excess returns | U.S. composite Excess returns | Diff. in mean | Diff. in median | Diff. in variance |
|---|---|---|---|---|---|
| Panel A: 1990-2010 Full sample | | | | | |
| Mean | 1.62% | 0.55% | | | |
| Standard deviation | 6.46% | 4.52% | | | |
| Test-statistic | | | 2.150* | 1.903 | 2.043** |
| *p*-value | | | 0.032 | 0.057 | 0.000 |
| Panel B: Economic expansions | | | | | |
| Mean | 1.69% | 0.79% | | | |
| Standard deviation | 4.95% | 4.00% | | | |
| Test-statistic | | | 2.074* | 1.855 | 1.536** |
| *p*-value | | | 0.039 | 0.064 | 0.002 |
| Panel C: Economic contractions | | | | | |
| Mean | 1.17% | -1.01% | | | |
| Standard deviation | 12.46% | 6.87% | | | |
| Test-statistic | | | 0.891 | 0.570 | 3.286** |
| *p*-value | | | 0.376 | 0.568 | 0.001 |

Notes: This table presents the monthly mean excess returns and standard deviations of franchisor stocks and broad U.S. stocks from 1990-2010. The first two columns report the mean and standard deviations of the two indexes. The final three columns report the test-statistic and *p*-value of various tests of equality. Diff. in mean denotes the equality of mean *t*-test. Diff. in median denotes the nonparametric Wilcoxon signed ranks test for equality of median. Diff. in variance denotes the *F*-test which measures the equality of variance. Panel A presents the statistics for the full sample. Panel B reports the statistics during months of economic expansion as defined by the National Bureau of Economic Research (NBER). Panel C reports the statistics during months of economic contraction as defined by NBER.

## 4. Behavior over the business cycle

Given the performance of franchisor stocks, it is important to understand the behavior of these returns over the U.S. business cycle. The importance of this information is motivated by two rationales. First, it has been previously reported that franchising accounts for nearly 10% of private nonfarm U.S. GDP. Given the significance of franchising in the U.S. economy, it is important to understand how franchisor stocks behave during economic expansion and contraction periods relative to broad U.S. stocks. Second, franchisor stock returns are positively related to the size effect and Liew and Vassalou (2000) shows that small-firm returns are riskier than large market capitalization firms. These empirical findings suggest that we expect franchisor stocks to be riskier than the overall market especially during economic contractions.

Table 5 reports the raw performance of franchisor stocks versus broad U.S. stocks in every U.S. business cycle in the data sample. The monthly returns are grouped into economic expansion and contraction periods using the reference dates employed by the National Bureau of Economic Research (NBER). Table 5 shows that franchisor stocks outperformed broad U.S. stocks in every business cycle except in the economic contraction from August 1990 to March 1991. Table 5 also shows that franchisor stocks report positive monthly average returns for every business cycle except in the 1990-1991 contraction period. These findings suggest that franchisor stocks tend to outperform broad U.S. stocks in both good states and bad states in the business cycle.

Whilst Table 5 summarizes the relative performance of franchisor stocks versus broad U.S. stocks across the business cycle, it does not explain how this is

achieved. To better understand the characteristics of franchisor stock returns, Table 6 groups the monthly returns of both indexes according to the expansionary and contractionary periods of the business cycle. Panels A to C show that franchisor stocks outperform broad U.S. stocks in both phases of the business cycle and the outperformance is statistically significant in the mean returns during economic expansion periods. This result is consistent with Liew and Vassalou (2000) who argue that smaller firms have a higher probability of achieving higher returns compared to large companies during expansionary periods in the business cycle, however, in this case, franchisor stocks outperform broad U.S. stocks. Table 6 also reports difference in variance tests which show that franchisor stocks are more volatile than broad U.S. stocks in all economic conditions, however, this difference in the volatility of returns is most significant during economic contractions. During months of economic contractions, franchisor stocks are riskier than broad U.S. stocks as their standard deviations of returns are 12.46% and 6.87%, respectively. Again, this finding is consistent with Liew and Vassalou (2000) and Perez-Quiros and Timmermann (2000) who argue that small firms are riskier than large firms during bad times causing investors to demand a higher premium for holding these shares.

Table 7. Regressions of macroeconomic variables

| | Dependent variables | | | | |
|---|---|---|---|---|---|
| | Regression 1 | Regression 2 | Regression 3 | Regression 4 | Regression 5 |
| Independent variables | Franchisor stocks | U.S. stocks | Size | Value | Momentum |
| Panel A: Conventional regressions (where $p = 0$) | | | | | |
| $\beta_{UI,i}UI_t$ | 0.0791 | -0.0106 | 0.0532 | -0.0893 | -0.0509 |
| $\beta_{DEI,i}DEI_t$ | 0.0913 | 0.0925 | 0.0362 | 0.0184 | -0.0802 |
| $\beta_{UTS,i}UTS_t$ | 0.7248* | 0.1738 | 0.4125** | 0.1327 | -0.2656 |
| $\beta_{MP,i}MP_t$ | -1.0218 | 0.0403 | -0.5584 | 0.3386 | 0.9142 |
| Constant ($\alpha_i$) | 0.0065 | 0.0031 | -0.0049 | 0.0022 | 0.0094 |
| Monthly observations | 251 | 251 | 251 | 251 | 251 |
| Adj. $R^2$ | 0.025 | -0.003 | 0.026 | 0.001 | 0.007 |
| Panel B: Predictive regressions (where $p = 1$) | | | | | |
| $\beta_{UI,i}UI_{t-1}$ | 0.3107* | 0.1135 | 0.1156** | -0.0358 | -0.0833 |
| $\beta_{DEI,i}DEI_{t-1}$ | -0.1136 | -0.0549 | -0.0874 | 0.0959 | 0.1419 |
| $\beta_{UTS,i}UTS_{t-1}$ | 0.6578* | 0.1500 | 0.3820** | 0.1669 | -0.1652 |
| $\beta_{MP,i}MP_{t-1}$ | 0.1042 | 2.7610 | -0.6371 | 0.1669 | 2.4675 |
| Constant ($\alpha_i$) | 0.0053 | 0.0009 | -0.0048 | 0.0013 | 0.0086 |
| Monthly observations | 250 | 250 | 250 | 250 | 250 |
| Adj$R^2$ | 0.031 | 0.023 | 0.017 | 0.010 | 0.007 |
| Panel C: Predictive regressions (where $p = 2$) | | | | | |
| $\beta_{UI,i}UI_{t-2}$ | 0.3007* | 0.0273 | 0.0686 | 0.0117 | -0.0658 |
| $\beta_{DEI,i}DEI_{t-2}$ | -0.2633* | -0.0727 | -0.0913 | -0.0305 | 0.0434 |
| $\beta_{UTS,i}UTS_{t-2}$ | 0.5737* | 0.1292 | 0.3236* | 0.1754 | -0.2262 |
| $\beta_{MP,i}MP_{t-2}$ | 1.0591 | 2.6309 | -1.0056 | 0.0608 | 0.7505 |
| Constant ($\alpha_i$) | 0.0060 | 0.0018 | -0.0035 | 0.0013 | 0.0091 |
| Monthly observations | 250 | 250 | 250 | 250 | 250 |
| Adj. $R^2$ | 0.029 | 0.022 | 0.013 | -0.010 | -0.009 |

Notes: The table reports the regression coefficients for five time series regressions, one in each column. Standard errors are corrected for heteroscedasticity and autocorrelation. The dependent variables are the excess returns of franchisor stocks, excess returns of U.S. composite stocks, size premium (SMB), value premium (HML) and momentum effect (MOM). The independent variables are unexpected inflation (UI), the change in expected inflation (DEI), the term premium (UTS) and the growth rate of industrial production (MP). Panel A reports the conventional regressions where all variables are at time *t*. Panel B presents the predictive regressions whereby the independent variables are at time *t*-1. Panel C reports the predictive regressions whereby the independent variables are at time *t*-2. Equation (4) summarizes the mathematical specification of the regressions reported in this table. * and ** denote statistical significance at the 5% and 1% levels, respectively.

## 5. Behavior across macroeconomic risks

To understand the behavior of franchisor stocks over the long term, it is important to assess whether their returns reflect a reward for changing macroeconomic risks. Due to the short empirical history of franchisor stocks from 1990-2010, including the crisis of 2008, it is difficult to develop statistical inference with macroeconomic variables. To address this limitation, we employ both conventional and predictive macroeconomic regressions as specified in equation (4) by employing a variety of dependent variables (i.e. franchisor stocks, broad U.S. stocks, the

size premium, value premium and the momentum effect) to evaluate whether we can identify macroeconomic commonalities between franchisor stocks and the systematic risk factors.

Panels A to C in Table 7 reveal that both franchisor stocks and the size premium exhibit a significant and positive relation with the term spread over the sample period for both conventional and predictive regressions. Franchisor stocks exhibit larger regression coefficients than the size premium which suggests that they are more sensitive to changes in the term premium. We do not identify significant commonalities between franchisor stocks and the value premium, which suggests that franchisor stocks are more similarly related to the size premium rather than the value premium when evaluating their sensitivities to macroeconomic variables. Despite these findings, the commonality between franchisor stocks and the size premium must be tempered by the low adjusted $R^2$s. Overall, these results lend support to the notion that franchisor stocks exhibit larger commonalities with the size premium than with the value premium.

## 6. Behavior during changes in monetary conditions

We now compare the behavior of franchisor stocks versus broad U.S. stocks during changes in the U.S. monetary conditions. Gertler and Gilchrist (1994) and Thorbecke (1997) suggest that changes in monetary conditions have larger effects on small firms than large firms as monetary conditions affects firms' access to credit. The influence of the size premium on franchisor stocks lead us to the expectation that their returns are indeed influenced by changes in U.S. monetary conditions.

Table 8. Performance during changes in U.S. monetary conditions (1990-2010)

| Index | Expansive environment | | | Restrictive environment | | |
|---|---|---|---|---|---|---|
| | Return | Standard deviation | Test statistic | Return | Standard deviation | Test statistic |
| Franchise stocks | 0.90% | 4.11% | | 2.56% | 6.67% | |
| U.S. composite | 1.28% | 2.66% | | 0.85% | 5.97% | |
| Diff. in mean | | | -0.403 | | | 1.065 |
| Diff. in median | | | 0.225 | | | 1.183 |
| Diff. in variance | | | 2.386* | | | 1.248 |

Notes: This table presents the mean and standard deviation of monthly excess returns of franchisor stocks and broad U.S. stocks during monthly changes in the U.S. monetary conditions. Changes in the U.S. monetary conditions are defined as movements in the Federal Reserve Target Discount Rate available from the Federal Reserve Bank of New York. Diff. in mean denotes the parametric *t*-test for equality of means. Diff. in median denotes the nonparametric Wilcoxon signed ranks test for equality of medians. Diff. in variance denotes the *F*-test which measures the equality of variance.

Table 8 compares the performance between franchisor stocks and broad U.S. stocks during months when there are changes in U.S. monetary conditions. Table 8 reports no significant differences in return or risk between these indexes with the exception of significant differences in volatility (*F*-test statistic of 2.386) during expansionary environments in monetary policy. This finding suggests that franchisor stocks exhibit significantly more volatility than broad U.S. stocks during accommodative monetary policy, which generally occurs with worsening economic conditions. The findings in Table 8 lend support to Gertler and Gilchrist (1994) and Thorbecke (1997) who show that a small-firm dominated index (such as franchisor stocks) is more sensitive to changes in U.S. monetary conditions than large-cap stocks. In this case, the findings reveal that franchisor stocks are significantly riskier than broad U.S. stocks during accommodative monetary conditions.

## Concluding remarks

Previous research has shown that franchise businesses exhibit lower agency costs in comparison to conventional business structures. This unique organizational structure of franchises provided the motivation to examine the long-term performance of publicly listed franchisor stock returns from 1990-2010. The return behavior of the purpose-built portfolio exhibited significant size and value characteristics. The findings revealed that franchisor stocks outperformed the broader market on a risk-adjusted basis, however, this alpha has slowly diminished over time. Whilst the excess returns in the second half of the sample period were no longer statistically significant, they remained economically significant. This evidence suggests that market forces are pricing the benefits of the franchising business model into stock prices.

We then examined the behavior of franchisor stocks under various economic and monetary conditions. Over the sample period, franchisor stocks were significantly riskier than the market in both economic expansions and contractions, however, risk was significantly magnified during periods of economic contractions. We attribute this behavior to the influence of the small firm effect in franchisor stock returns. We also showed that franchisor stocks exhibit the same significant sensitivities as the size

premium to various macroeconomic risks. Finally, we examined the behavior of franchisor stocks during changes in monetary conditions and found that they exhibit a significantly higher level of risk than broad U.S. stocks during monetary expansionary environments, which tend to be associated with worsening economic conditions. Again, this result is consistent with the size premia inherent in franchisor stocks.

We find that the behavior of the franchisor stock portfolio is characterized by exposure to both size and value premia, with the potential for excess returns. The multi-factor performance evaluation of franchisor stocks highlighted the superior performance over the entire observation period, however, we do caution that this is only a sample window of two decades. From an economic perspective, we have attempted to unravel the behavior of franchisor stocks (and the hypothesized benefits of reduced agency costs) across a variety of market, macroeconomic and monetary conditions. The findings presented in this study open a range of research avenues for the future, including: the further development of franchisor stock indexes (and associated sub-indexes); and, continued work on agency costs and franchisor returns.

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