International Journal of Hospitality Management 63 (2017) 63–71

Contents lists available at ScienceDirect

International Journal of Hospitality Management

journal homepage: www.elsevier.com/locate/ijhosman

Is restaurant franchising capital a substitute for or a complement to debt?

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ARTICLE INFO

Article history:
Received 20 November 2015
Received in revised form 23 January 2017
Accepted 9 March 2017

Keywords:
Franchise financing
Capital structure
Substitute
Complement
Debt leverage

ABSTRACT

Since Oxenfeldt and Kelly's 1969 study, the resource scarcity hypothesis has been considered a representative theory to explain franchising motivations. Whether franchising capital is a substitute for or a complement to debt has been discussed in the franchise literature but the relationship remains unclear. Using Frank and Goyal's (2003) financial deficit model along with trade-off and pecking order theories, this study shed light on whether franchising capital acts as a substitute for and/or to complement debt in the restaurant industry. This study discovered that the adjustment speed of long-term debt leverage was faster for franchise restaurant firms than non-franchise restaurant firms. Further, the average long-term leverage target was lower for franchise restaurants. Consequently, this study revealed that franchising capital functioned as a substitute for long-term debt. In contrast, the adjustment speed of short-term debt leverage was slower for franchise restaurants and, thus, franchising capital complemented short-term debt.

1. Introduction

As a business format, many restaurants operate franchise outlets together with company-operated outlets, which is called a dual distribution system. Previous studies have examined which factors trigger franchising in particular industries (Lafontaine, 1992; Rubin, 1978; Scott, 1995). There are two major theories that purport to explain why businesses choose to go into franchising: agency theory (Jensen and Meckling, 1976; Lafontaine, 1992) and resource scarcity theory (Caves and Murphy, 1976; Ozanne and Hunt, 1971). Agency theory posits that agents (i.e., outlet managers) and principals (i.e., owners) each have their own set of unaligned interests. Unsurprisingly, agents tend to pursue their own interests. For example, outlet managers may not make a sincere effort to reduce all costs or increase sales because those efforts do not directly benefit them. Thus, agency costs exist between outlet managers and restaurant owners (Brickley et al., 1991; Jensen and Meckling, 1976; Lafontaine, 1992; Rubin, 1978). The franchising system is a solution to this problem because it converts outlet managers into entrepreneurs who receive residual profits from franchise operations. Accordingly, the entrepreneurs' interests are more closely aligned with the interests of the owners, which minimizes agency costs. On the other hand, the resource scarcity theory developed by Oxenfeldt and Kelly (1969) posits that owners decide to franchise when they have difficulty obtaining adequate managerial resources. One of the most important of these resources is financial capital (Caves and Murphy, 1976; Oxenfeldt and Kelly, 1969; Ozanne and Hunt, 1971). When a brand owner has difficulty obtaining enough financial capital to expand, the franchising system offers an effective business format for expansion via franchisees.

Although there are ongoing debates regarding why businesses choose to franchise, the scope of franchising studies remains small (Combs et al., 2004). As part of an effort to expand our understanding of franchising, Norton (1995) examined the financial effectiveness of franchising under different capital structures and whether the capital from franchisees' substitutes for franchisors' debt. Since Norton's (1995) study only a few other researchers have examined franchise financing using capital structure theories, but even in these cases the findings were mostly descriptive (Combs and Ketchen, 1999; Gonzalez-Diaz and Solis-Rodriguez, 2012; Roh et al., 2013). For example, Combs and Ketchen (1999) and Gonzalez-Diaz and Solis-Rodriguez (2012) found that higher debt leverage pushed companies towards franchise expansion. Roh et al. (2013) simply compared the average level of debt ratio between franchise and non-franchise restaurants. These studies may provide evidence of the capital scarcity hypothesis for franchise expansion, but they fail to show the effect of franchising funds on capital structure differences between franchise and non-franchise firms. Further, a handful of prior studies partially examined the role of franchising funds, but they had theoretical and methodologi-

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http://dx.doi.org/10.1016/j.ijhm.2017.03.001
0278-4319/

cal limitations. As mentioned above, Combs and Ketchen (1999) used a cross-sectional analysis that could be biased due to individual firms' heterogeneity. To overcome this problem Gonzalez-Diaz and Solis-Rodriguez (2012) employed panel analysis using instrumental variables, but their model estimated the effect of debt leverage on the percentage of franchised establishments. Moreover, those models were not based on financial theory but instead on the empirical variables from resource scarcity hypothesis. Finally, because Roh et al. (2013) used a simple comparison of the mean levels of debt ratio between franchise and non-franchise firms, which is simply a stylized fact from descriptive data. Therefore, we applied the dynamic panel data estimator suggested by Arellano and Bond (1991).

Under the resource scarcity concept, we incorporated the financial deficit model from prior finance literature (Frank and Goyal, 2003) and then combined it with a trade-off framework. As mentioned above, prior studies' examinations focused on the effect of debt leverage on franchise expansion. This could explain the motivations in terms of the resource scarcity hypothesis about franchise growth, but it fails to provide evidence that franchise funds are an efficient financial source that change the capital structure of franchise firms. Thus, this study examined the role of funds under the capital structure of firms and incorporated financial theory, which is closely related to a firm's financial deficit model. If franchise funds are a sound financial resource, then the firm's financial deficit should be explained by the franchise funds. Although we agree with the prior studies' results, they only explain motivations for franchising due to high debt ratios. Thus, this study analyzed the role of franchise funds under well-developed financial theory using a more advanced methodology.

Based on this stable framework, we tested the role of franchising funds with a sound methodology. Because many restaurant firms face financial stress it is very important to clearly understand how franchising capital functions, in this case whether it is a substitute for or a complement to debt, in order to make effective long-term financial plans. If franchise funds work as a substitute for debt, then restaurants should carefully manage their franchising cash flows; unexpected franchising cash flow short-falls could damage long-term financial plans. On the other hand, if franchise funds complement debt, then franchise firms may need sufficient debt to manage their franchise business otherwise they could be hampered by firms' insufficient debt. To the authors' knowledge, no previous studies have examined whether franchise financing substitutes for or complements debt financing. Thus, to fill this research gap, the objective of this study was to identify the role of franchise financing: is it a substitute for or a complement to debt in the restaurant industry? This question is important to strategic planning in order to maintain the financial health of restaurant firms. If the role of franchising funds differs for short and long-term debt, it might mean that restaurant managers should change their financial position according to their franchising expansion strategy. Because misunderstandings regarding the role of franchising funds could result in an unexpected financial deficit, this study investigated the role of franchising funds. To achieve the purpose of this study, we borrowed traditional finance theories to develop testable models. More specifically, this study adopted a hypothetical model from capital structure theory and used it to analyze restaurant firms.

2. Literature review

2.1. Trade-off theory

The finance literature tends to emphasize two competing theories on corporate financing: trade-off and pecking order. The trade-off model argues that firms identify their optimal leverage by weighing the costs and benefits of an additional dollar of debt. The costs of debt include agency costs between stockholders and bondholders and/or bankruptcy costs, while the benefits of debt consist of tax deductions and/or reduction of free cash flows. At optimum leverage the costs and benefits of the last dollar of debt are balanced. Graham and Harvey (2001) found that 81% of firms consider a specific target debt–equity ratio when making debt decisions. Flannery and Rangan (2006) pointed out that most empirical studies heavily rely on the trade-off theory because the working version of the trade-off theory allows for the adjustment of debt leverage over time, creating a dynamic trade-off model.

This dynamic trade-off model recognizes that firms cannot instantaneously achieve their target leverage. Instead, they adjust their realized leverage over time. Thus, firms use the difference between realized leverage and target leverage in the last period in order to achieve a more desirable level in the next period. To operationalize leverage adjustment, this study used a two-stage dynamic partial adjustment capital structure model (Cook and Tang, 2010; Hovakimian et al., 2001). Following prior studies on capital structure (Fama and French, 2002; Kayhan and Titman, 2007), this study estimated capital structure adjustment speed towards the target using two-stage estimations based on a target leverage proxy from the first stage regression.

$$D^{*}_{\mathrm{i,t}} = \beta' X_{i,t} \tag{1}$$

$D^{*}_{i,t}$ is firm i's target debt leverage, which is unobservable. The vector $X_{i,t}$ in Eq. (1) contains a set of widely studied variables in the literature, such as dividend payout ratio, firm investment in fixed assets and working capital, internal cash flow, firm size, market-to-book value for the firm, etc. Once we identified a firm's target leverage in Stage 1, in Stage 2 we measured how quickly the firm adjusted toward its target leverage from a position of deviation. In a perfect market firms would move quickly back to their target level, which is the level a firm would choose in the absence of any adjustment costs (Hovakimian et al., 2001; De Miguel and Pindado, 2001). However, due to adjustment costs firms may partially adjust over multiple periods to their desired leverage. In the second stage, we used the standard partial adjustment model from the literature (Hovakimian et al., 2001; De Miguel and Pindado, 2001; Leary and Roberts, 2005; Strebulaev, 2007) as presented below:

$$\Delta D_{i,t} = \lambda_i (D^{*}_{\mathrm{i,t}} - D_{i,t-1}) + e_{i,t} \tag{2}$$

$$D_{i,t} = \lambda_i D^{*}_{\mathrm{i,t}} + (1-\lambda_i) D_{i,t-1} + e_{i,t} \tag{3}$$

$D_{i,t}$ is firm i's realized debt leverage in year t, Δ is the difference operator, and $e_{i,t}$ is a regression error. The coefficient $(1-\lambda_i)$ is the partial adjustment coefficient, which represents the proportion of leverage deviation away from a firm's target leverage for the next year, closed by the firm from year $t-1$ to year t. $\lambda_i = 1$ indicates that firms fully adjusted for any deviation away from their target leverage. In the presence of adjustment costs, it is expected that λ_i will be less than 1 ($0 \le \lambda_i \le 1$).

$$\begin{aligned} D_{i,t} &= \lambda_i(\beta' X_{i,t}) + (1-\lambda_i) D_{i,t-1} + e_{i,t} \\ &= \lambda_i \beta' X_{i,t} + (1-\lambda_i) D_{i,t-1} + e_{i,t} = \kappa' \mathrm{X}_{\mathrm{i,t}} + \gamma_1 \mathrm{D}_{\mathrm{i,t-1}} + e_{i,t} \end{aligned} \tag{4}$$

Because target debt leverage is unobservable, it is not possible to directly test the dynamic trade-off model in Eq. (2). However, it is common to model target debt leverage, $D^{*}_{i,t}$, as a linear function of a set of economic variables, as seen in Eq. (1). Because trade-off theory does not explicitly model target debt leverage, Eq. (1) is an ad-hoc formulation using explanatory variables derived from different theories (Rajan and Zingales, 1995; Fama and French, 2002). Next, we substituted Eq. (1) into (3) to yield Eq. (4). In Eq. (4), the coefficient, γ_1, is equivalent to $(1-\lambda_i)$, which is the speed of adjustment.

Flannery and Rangan (2006) found that the typical firm closes approximately one-third of the gap between its actual and target debt ratios each year. Drobetz and Wanzenried (2006) reported that firms with higher growth opportunities adjust more quickly toward their target leverage, while Lööf (2004) argued that firms with higher growth opportunities adjust more slowly toward optimal capital structures. However, Lööf (2004) also found that large firms in the UK and US are more concerned about capital structure than small firms, while Drobetz and Wanzenried (2006) reported contrasting results. Hackbarth et al. (2006) and Drobetz and Wanzenried (2006) consistently found that the speed of adjustment is higher during booms than during recessions. Additionally, McMillan and Camara (2012) found that on average US domestic corporations adjust to target leverage faster than US multi-national corporations. However, these studies did not investigate the difference in adjustment speeds of capital structure between franchise and non-franchise firms. Thus, this study expected franchise firms to adjust faster than non-franchise firms because they are in a better position to easily raise required capital due to franchising funds. Due to the same reasons, the target level of long-term debt leverage might also be lower for franchise firms compared with non-franchise firms.

2.2. Pecking order model

The second capital structure theory used in this study is the pecking order hypothesis from Myers (1984) and Myers and Majluf (1984). The pecking order assumes that there are three sources of funds available to firms: retained earnings, debt, and equity. From the point of view of an outside investor, equity is riskier than debt. Both have an adverse selection risk premium, but the premium is larger for equity. Therefore, an outside investor will demand a higher rate of return on equity compared to debt. Thus, retained earnings are a better source of funds than debt, but debt is still better than equity financing. Accordingly, firms will fund all projects using retained earnings if possible. If retained earnings are not sufficient, then debt financing will be used. Thus, under the pecking order hypothesis a firm operating under normal circumstances will use equity as a last resort. In reality, company operations and the associated accounting structures are more complex than the standard pecking order represents. Accordingly, some form of aggregation must be used to test the pecking order. This study used Frank and Goyal's (2003) flow of funds data to provide a partially aggregated form of the accounting cash flow identity:

$$DEF_{i,t} = DIV_{i,t} + INV_{i,t} + \Delta NWC_{i,t} - INTERCF_{i,t} = \Delta D_{i,t} + \Delta E_{i,t} \quad (5)$$

$DEF_{i,t}$ is the financing deficit, $DIV_{i,t}$ is cash dividends, $INV_{i,t}$ is the net investment, $\Delta NWC_{i,t}$ is the change in working capital, and $INTERCF_{i,t}$ is the internal cash flow after interest and taxes. $\Delta D_{i,t}$ and $\Delta E_{i,t}$ are the change of debt and equity, respectively. According to Shyam-Sunder and Myers (1999), under the pecking order hypothesis equity is only issued in extreme circumstances after an Initial Public Offering (IPO). Thus, the financial deficit is a function of ΔDebt and then ΔEquity is disappeared. Thus, Eq. (5) could be presented as follows:

$$\Delta D_{i,t} = \kappa_0 + \kappa_1 DIV_{i,t} + \kappa_2 INV_{i,t} + \kappa_3 \Delta NWC_{i,t} - \kappa_4 INTERCF_{i,t} + e_{i,t} \quad (6)$$

$$D_{i,t} = \kappa_0 + \kappa_1 DIV_{i,t} + \kappa_2 INV_{i,t} + \kappa_3 \Delta NWC_{i,t} - \kappa_4 INTERCF_{i,t} + \gamma_1 D_{i,t-1} + e_{i,t} \quad (7)$$

Eqs. (7) and (4) appear similar. Thus, this study used cash dividends, net investment, change in working capital, and internal cash flow after interest and taxes in Eq. (7) in order to identify Eq. (1). According to Myers (1984), a financing deficit should normally be matched dollar-for-dollar by a change in corporate debt (Shyam-Sunder and Myers, 1999). As a result, if firms follow the pecking order there is a regression of net debt being issued on the financing deficit, and a slope coefficient of one might be observed. Thus, pecking order theory assumes that coefficients of financing deficit variables are a unit. More specifically, as Frank and Goyal (2003) argued, pecking order predicts a positive sign and a unit coefficient on investments of both fixed and working capital after controlling for internal cash flows and dividends. They found that from 1971 to 1989 large firms followed the pecking order, while small firms did not. However, from 1990 to 1998, Frank and Goyal (2003) found that only the top quartile of firms followed the pecking order. Additionally, because this study induced the analytical model from the financial deficit model we used the same framework for long-term and short-term debt.

2.3. Substitute and/or complement: the role of franchising capital on debt

Norton (1995) found that franchising has an indirect influence on capital structure. The basic assumption was that franchising firms can obtain more cash from franchisees and, thus, franchising funds could substitute for external funds. In general, substitution means that there are at least two distinct options to choose from. The substitutionary role of franchising funds implies that they could replace debt. In other words, fee-based funds from franchisees could offer an alternative when firms experience a lack of internal funds from operations and have difficulties accessing external financing. This argument also aligns with the resource scarcity theory found in the franchise literature. Thus, franchising could help to reduce debt financing for franchise restaurants. Most finance and strategic management studies have focused on the substitutionary effect of franchising funds on long-term debt. As resource scarcity theory argues, firms lacking adequate funds to develop new establishments use funds from franchisees to quickly expand their chain via franchising outlets. Further, franchising funds could be used to invest in expanding company-operated outlets and reduce the required level of long-term debt for long-term investment. Thus, under the trade-off framework franchise firms may have a lower level of optimal long-term debt leverage than non-franchise firms because franchising funds could substitute for long-term debt and the cost of debt would decrease for franchise firms. In other words, franchise restaurants are in a better position to borrow long-term debt under favorable terms, which means that franchise restaurants could change their leverage position more easily and quickly than non-franchise restaurants. Thus, the adjustment speed of long-term debt leverage might be faster for franchise firms than non-franchise firms. In the same vein, under the pecking order framework franchise firms might have, relatively, enough internal capital because franchising funds are an additional internal financing source. Thus, franchise restaurants might follow the financial pecking order more closely than non-franchise restaurants. In sum, fee-based franchise income (franchising capital) can substitute for long-term debt for franchise firms. This means that long-term debt leverage decreases when fee-based franchise income increases.

Hypothesis 1. The speed of adjustment on long-term debt leverage is faster for franchise restaurants than for non-franchise restaurants.

Hypothesis 2. Target long-term debt leverage is lower for franchise restaurants than for non-franchise restaurants.

Hypothesis 3. There is a negative relationship between fee-based franchise income and long-term debt leverage for franchise restaurants.

On the other hand, Gonzalez-Diaz and Solis-Rodriguez (2012) claimed that franchising might be a complement for other financing tools rather than a substitute because some firms are large and mature and would have no problem accessing capital markets (Brickley et al., 1991; Carney and Gedajlovic, 1991; Castrogiovanni et al., 2006). The complementary role of franchising funds means that firms may require both components to survive. Thus, the complementary role of franchising funds implies that franchising firms need more debt when franchising funds increase. However, the above argument is merely a very simple explanation of stylized fact and requires a more detailed explanation of the complementary role of franchising funds. Grünhagen and Dorsch (2003) and Kaufmann and Stanworth (1995) suggested that franchisors generally need more short-term capital than non-franchisor firms because franchisees need financial and transactional aid to open new outlets or purchase underperforming outlets. This means that the franchisors need enough short-term capital available to finance and support such transactions (Nisar, 2011). This is easily seen in the practical world of franchise restaurants. As Nisar (2011) reported, restaurant franchisors use a variety of specific programs to expand their franchise outlets. For example, Domino's offers veterans a $20,000 discount on franchise fees. Likewise, other franchisors (i.e., Pizza Hut, KFC, and Little Caesars Pizza) have also offered special incentive programs for veterans, minorities, and women. These programs help franchisees get financing, more favorable leases, and real estate terms. Through special incentive programs, restaurant franchisors can also demonstrate themselves to be firms with solid capital and take the opportunity to expand their franchise outlets. For example, Burger King offers short-term financial support for its operators who want to purchase additional locations, such as deferring royalties and small amounts of bridge financing. Little Caesars Pizza provided full financing for franchisees that purchase company-operated outlets and suspended royalty fees for specific periods. Similarly, Pizza Infi Inc. waives royalties for franchisees during the first year of operation and collects only a 2% royalty in the second year, while the firm's general royalty rate is 4%. Domino's even offered cash to its franchisees after the 2007 credit crunch. It is clear that restaurant franchisors provide short-term financial support in the form of small loans or payment deferrals for franchisees. All of the above programs help franchisees to secure the required capital for growth because it is not easy for franchisees to access traditional external resources, such as banks and lenders. Thus, franchisors need to offer more flexible financing arrangements and provide short-term capital for franchisees. While franchisors are not actually obligated to provide these opportunities, once a restaurant manager decides to expand a franchising contract their success is closely related. In other words, the interests of the franchisor and franchisee are aligned. Further competition among franchisors promotes providing short-term capital for franchisees in order to attract potential franchisees. Accordingly, the target level of short-term debt leverage might be higher for restaurant franchisors than non-franchisors. It might also affect the adjustment speed of short-term debt and, naturally, the adjustment speed of short-term debt is slower for franchise restaurants compared with non-franchise restaurants. In the same vein, due to the greater need for short-term funds, short-term debt leverage should increase as fee-based franchise income increases. This implies that franchising plays a complementary role to short-term debt.

Hypothesis 4. The speed of adjustment on short-term debt leverage is slower for franchise restaurants than for non-franchise restaurants.

Hypothesis 5. Target short-term debt leverage is higher for franchise restaurants than for non-franchise restaurants.

Hypothesis 6. There is a positive relationship between fee-based franchise income and short-term debt leverage for franchise restaurants.

3. Methodology

3.1. Data

The data used in this study was retrieved from the Compustat Industrial Annual database of Wharton Research Data Services for the restaurant industry (SIC 5812). The variables for franchise fee-based incomes were collected from 10-K annual reports for the sampled restaurant firms. The time span of the sample data covered from 1980 to 2012. The sample included 73 non-franchise restaurants and 199 franchise restaurants.

3.2. Model development

To test the research hypotheses of this study, we conducted a full sample regression and a group-wise regression on the franchise and non-franchise firms. The existence of franchise operations were identified through annual (10-K) reports. The models used to test the hypotheses can be seen below:

$$D_{i,t} = \alpha_0 + \alpha_1 D_{i,t-1} + \alpha_2 D_{i,t-1} \times DFR_{i,t} + \alpha_3 DFR_{i,t} + \beta_1 DIV_{i,t} + \beta_2 INV_{i,t} + \beta_3 \Delta NWC_{i,t} + \beta_4 INTERCF_{i,t} + \gamma_1 ln(TA)_{i,t} + MTB_{i,t} + ACQ_{i,t} + d_t + \eta_i + e_{i,t} \quad (\textit{The full sample regression model})$$

$$D_{i,t} = \alpha_0 + \alpha_1 D_{i,t-1} + \beta_1 DIV_{i,t} + \beta_2 INV_{i,t} + \beta_3 \Delta NWC_{i,t} + \beta_4 INTERCF_{i,t} + \gamma_1 ln(TA)_{i,t} + MTB_{i,t} + ACQ_{i,t} + d_t + \eta_i + e_{i,t} \quad (\textit{The group-wise regression model for non-franchise firms})$$

$$D_{i,t} = \alpha_0 + \alpha_1 D_{i,t-1} + \alpha_2 ln(FR)_{i,t} + \beta_1 DIV_{i,t} + \beta_2 INV_{i,t} + \beta_3 \Delta NWC_{i,t} + \beta_4 INTERCF_{i,t} + \gamma_1 ln(TA)i, t + \gamma_2 MTB_{i,t} + \gamma_3 ACQ_{i,t} + d_t + \eta_i + e_{i,t} \quad (\textit{The group-wise regression model for franchise firms})$$

$D_{i,t}$ is debt leverage, which is either long-term debt leverage ($ln(LTD)_{i,t}$) or short-term debt leverage ($ln(STD)_{i,t}$). d_t is a time-specific effect, while η_i is a firm-specific effect. It is assumed that firm-specific effects are unobservable but have a significant impact on leverage. They differ across firms but are fixed for a given firm over time. In contrast, time-specific effects vary over time but are the same for all firms in a given year, capturing mainly economy-wide factors that are outside a firm's control.

When the full sample regression model was estimated this study first examined coefficient α_2, which is an interaction term of the dummy variable for franchise operations, $DFR_{i,t}$, and lagged leverage, $D_{i,t-1}$. The null hypothesis is that $\alpha_2 = 0$, which means that the speed of adjustment is independent from the franchise business. However, this study expected coefficient α_2 to be significantly negative for long-term debt leverage, which indicates that franchise restaurant firms have a faster adjustment speed (Hypothesis 1). On the other hand, we expected α_2 for short-term debt leverage to be significant and positive, which implies a slower adjustment speed for franchise restaurant firms (Hypothesis 4). Next, this study

Table 1
Mean and median values of variables.

Variables	Mean			Median		
	Non-Franchise Firms	Franchise Firms	Full Sample	Non-Franchise Firms	Franchise Firms	Full Sample
LTDL	0.243	0.321	0.294	0.159	0.256	0.229
STDL	0.070	0.049	0.056	0.020	0.023	0.022
DIV	0.009	0.007	0.008	0	0	0
INV	0.190	0.200	0.197	0.118	0.119	0.119
ΔNWC	0.037	0.035	0.036	0.001	0.003	0.002
INTERCF	0.112	0.135	0.127	0.120	0.136	0.131
TA	285.132	751.740	592.029	62.643	129.578	97.667
MTB	2.028	3.284	2.854	1.484	1.828	1.713
FR	–	0.128	0.128	–	0.062	0.062

Note: The units of all the variables except for TA are ratios. The unit of TA (book value of total assets) is million U.S. dollars.

examined coefficient α_3 in the full sample analysis. In the long-term debt leverage model we expected α_3 to be negative and significant, which signifies that the average target level of long-term debt leverage is lower for franchise restaurant firms (Hypothesis 2). Conversely, this study expected α_3 to be positive and significant in the short-term debt leverage model, which implies that the average target level of short-term debt leverage is higher for franchise restaurant firms (Hypothesis 5). In the group-wise regression, this study examined coefficient α_2 in the franchise firm regression. For long-term debt leverage, we expected a negative coefficient α_2, which means that franchising funds are a substitute for long-term debt (Hypothesis 3). On the other hand, in the short-term debt leverage regression this study expected a positive α_2, which implies that franchising funds play a complementary role to short-term debt leverage (Hypothesis 6). Details of the variable descriptions are shown in Appendix A.

Using panel data, Banerjee et al. (2000) and Lööf (2004) applied non-linear least square estimation, which is similar to our full sample regression model. However, their estimation techniques lead to biased and inconsistent estimators because the error term was correlated with the lagged leverage variable, $D_{i,t-1}$. Thus, it is better to estimate this model by controlling for fixed-effects with a first-difference transformation. Even though unobservable firm-specific effects are not correlated with the regressors, it is still necessary to control for them in the dynamic framework. This is because $D_{i,t-1}$ can be correlated with η_i when it does not vary through time. However, a first-difference transformation eliminates fixed effects by introducing correlation between lagged dependent and differenced errors. Therefore, $\Delta D_{i,t-1}$ and $\Delta e_{i,t}$ can be correlated through terms $D_{i,t-1}$ and $e_{i,t-1}$, and OLS cannot consistently estimate the coefficient parameters.

Another estimation problem arises because firm-specific variables are unlikely to be strictly exogenous. Shocks that affect leverage are also likely to affect other variables. Furthermore, it is likely that some of them are correlated with past and current values of the idiosyncratic component of disturbances. This suggests the need for instrumental variables, where the lagged dependent and endogenous variables are instrumented. Therefore, we applied the dynamic panel data estimator suggested by Arellano and Bond (1991). They proved that Generalized Method of Moments (GMM) estimation provides consistent parameter estimates by utilizing instruments that can be obtained from orthogonal conditions that exist between the lagged values of the variables and the disturbances. Specifically, the regression model was estimated in first differences using GMM, and then the levels of all the right-hand side variables at the second lag were used as instruments. Further, Arellano and Bond (1991) showed that the coefficient estimates are only consistent if there is no second order serial correlation in the differenced residuals. Therefore, we reported a test-statistic for the null hypothesis confirming no second order serial correlation in the residuals. Following the recommendation of Arellano and Bond (1991), the two-step GMM estimator for inference regarding model specification was adopted. With respect to the validity of the instruments, a Sargan (1958) test of the null hypothesis was conducted and revealed that the over-identifying restrictions are valid. Finally, to assess the stability of the system, we checked whether the sum of coefficients α_1 and α_2 in the full sample regression and coefficient α_1 in the group-wise regression falls between 0 and 1.

4. Results

4.1. Descriptive information

Table 1 shows the mean and median values of the variables used in this study. The mean long-term debt leverage was 29.4% and the median for the full sample was 22.9%. Both the mean and median long-term debt leverage were larger for franchise firms than for non-franchise firms. This result did not match our expectation that the average long-term debt leverage of franchise firms might be lower than that of non-franchise firms. However, long-term debt leverage might be severely influenced by firm size; the average size of franchise firms was much larger than non-franchise firms. Thus, further investigation was needed to control for firm size. We conducted regression analysis and controlled the firm size variable. Short-term debt leverage revealed mixed results. The mean short-term debt leverage was larger for non-franchise firms, while the median value was larger for franchise firms. Thus, this also required further investigation through regression analysis. The dividend pay-out was very small for all restaurant firms and investment and net working capital changes looked very similar between franchise and non-franchise firms. However, internal cash flows and market to book value equity were larger for franchise firms in terms of both mean and median values.

Table 2 shows the correlation of franchise and non-franchise restaurants. The upper diagonal is a correlation matrix of franchise firms, while the bottom diagonal represents non-franchise firms. Interestingly, the correlation coefficient of short and long-term debt leverage was smaller for franchise firms, while it was larger for non-franchise firms. Further, the correlation coefficient of long-term debt leverage and dividend payouts was positive for franchise firms, whereas it was negative for non-franchise firms. The correlation coefficient of long-term debt leverage and investments was slightly larger for franchise firms, while the correlation coefficient of short-term debt leverage and net working capital change was much larger for non-franchise firms. Even though the correlation matrix shows a simple relationship, it provides evidence that franchise and non-franchise restaurant firms present heterogeneous financial behaviors. Further investigations were conducted using regression analyses.

Table 2
Correlation matrix.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	LTDL	1	0.088	0.037	0.091	0.061	0.109	0.057	−0.062
(2)	STDL	0.615	1	0.007	0.074	0.018	−0.116	−0.050	0.003
(3)	DIV	−0.132	−0.040	1	−0.002	0.015	0.106	0.186	0.020
(4)	INV	0.071	0.088	0.289	1	0.451	0.254	−0.056	0.007
(5)	ΔNWC	0.146	0.216	0.325	0.447	1	0.342	−0.022	0.011
(6)	INTERCF	−0.254	−0.288	0.337	0.404	0.322	1	0.028	0.016
(7)	TA	0.066	−0.032	0.064	−0.042	−0.014	0.107	1	−0.008
(8)	MTB	−0.015	0.015	0.080	0.036	0.018	0.009	0.019	1

Note: The upper diagonal is a correlation matrix of franchise firms, while the bottom diagonal is non-franchise firms.

Table 3
Arellano and Bond's estimation of the long-term debt leverage model.

Dependent Variable: $ln(LTD)_{i,t}$	Full Sample	Group-wise regression	
		Non-franchise Firms	Franchise Firms
Constant	−2.638***	−2.656***	−3.385***
	(0.0437)	(0.166)	(0.187)
$ln(LTD)_{i,t-1}$	0.416***	0.462***	0.245***
	(0.00398)	(0.0104)	(0.00751)
$ln(LTD)_{i,t-1} \times DFR_{i,t}$	−0.160***		
	(0.00509)		
$DFR_{i,t}$	−0.919***		
	(0.0404)		
$ln(FR)_{i,t}$			−0.0657***
			(0.0159)
$DIV_{i,t}$	1.179***	0.809	1.026
	(0.0838)	(1.783)	(1.080)
$INV_{i,t}$	0.899***	0.700***	1.069***
	(0.00599)	(0.0723)	(0.126)
$\Delta NWC_{i,t}$	0.654***	0.174**	0.649***
	(0.0231)	(0.0709)	(0.0604)
$INTERCF_{i,t}$	−0.336***	0.648***	−0.998***
	(0.0142)	(0.180)	(0.147)
$ln(TA)_{i,t}$	0.409***	0.310***	0.351***
	(0.00712)	(0.0360)	(0.0293)
$MTB_{i,t}$	−0.000868***	−0.000570	−0.00164***
	(0.000316)	(0.000427)	(7.11e-05)
$ACQ_{i,t}$	0.0782***	0.861**	−0.0485
	(0.0127)	(0.360)	(0.188)
Observations	1485	476	560
Number of firms	152	53	66
Sargan statistics	139.5	45.80	61.08
z_1	−4.008***	−3.312***	−2.224**
z_2	−0.158	−1.138	1.329

* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

4.2. Regression results

Table 3 shows the estimation results of long-term debt leverage using Arellano and Bond's (1991) estimation. The first column presents the results of the full sample for Hypothesis 1 and Hypothesis 2. The coefficient of lagged long-term debt leverage was 0.416, and its interaction term with the franchise dummy was minus 0.160. This means that restaurant firms follow the dynamic trade-off model, and franchise and non-franchise restaurants firms' speeds of adjustment significantly differ. For non-franchise firms, the coefficient of lagged long-term debt leverage implies that firms close 58.4% (=1 − 0.416) of the gap between current and desired leverage within one year. On the other hand, the results showed that franchise firms close 74.4% (=1 − (0.416 − 0.160)) of the gap between current and desired leverage within one year. Additional tests were conducted to examine whether the coefficient of adjustment speed was a unit or not. The two adjustment speeds significantly differed from each other, which means that the estimated results aligned with the theory. Thus, this result confirmed that the adjustment speed of long-term debt leverage was faster for franchise restaurants compared with non-franchise restaurants, supporting Hypothesis 1. Flannery and Rangan (2006) reported in their analysis that adjustment speeds from various estimations ranged from 13.3% to 38%. The large difference between adjustment speeds in Flannery and Rangan's (2006) study and this study might be due to heterogeneous sample characteristics. Flannery and Rangan (2006) collected data from all industries, excluding financial firms, from 1965 to 2001. As we indicated earlier, this study only retrieved data from the restaurant industry and the time span was shorter, from 1980 to 2012. Thus, it can be presumed that the difference in adjustment speeds may be due to sample characteristics. This result supports that restaurant franchise capital contributes to a faster adjustment speed for long-term debt by contributing additional financial capital from the franchise business.

Next, the coefficient of the franchise dummy ($DFR_{i,t}$) was negative and significant in the full sample regression. The result signifies that the average long-term debt leverage target is significantly lower for franchise firms than for non-franchise firms, supporting Hypothesis 2. From these results, we can confirm that franchise

Table 4
Arellano and Bond's estimation of the short-term debt leverage model.

Dependent Variable: $ln(STD)_{i,t}$	Full Sample	Group-wise regression	
		Non-franchise Firms	Franchise Firms
Constant	−2.957***	−1.708***	−2.140***
	(0.127)	(0.370)	(0.529)
$ln(STD)_{i,t-1}$	0.0546***	−0.00527	0.182***
	(0.00943)	(0.0211)	(0.00985)
$ln(STD)_{i,t-1} \times DFR_{i,t}$	0.147***		
	(0.0133)		
$DFR_{i,t}$	0.0664		
	(0.0971)		
$ln(FR)_{i,t}$			0.106***
			(0.0368)
$DIV_{i,t}$	−0.224*	−11.45***	−5.050
	(0.132)	(3.703)	(3.452)
$INV_{i,t}$	0.419***	0.514	0.590***
	(0.0292)	(0.341)	(0.179)
$\Delta NWC_{i,t}$	−0.607***	−0.177	0.00758
	(0.0429)	(0.176)	(0.197)
$INTERCF_{i,t}$	−1.103***	−1.428**	−1.924***
	(0.0574)	(0.562)	(0.705)
$ln(TA)_{i,t}$	−0.0718***	−0.502***	−0.150*
	(0.0210)	(0.0914)	(0.0792)
$MTB_{i,t}$	0.000662**	0.00183	−0.00107*
	(0.000264)	(0.00132)	(0.000564)
$ACQ_{i,t}$	0.194*	1.831**	1.468***
	(0.116)	(0.753)	(0.474)
Observations	1474	472	543
Number of firms	154	55	67
Sargan statistics	141.6	45.19	56.80
z_1	−4.004***	−1.785*	−3.290***
z_2	1.208	0.634	0.378

* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

capital plays an important role for franchise restaurant firms. Franchise funds lower restaurant firms' long-term debt leverage targets more compared with non-franchise restaurant firms. They also contribute to the faster adjustment speed of long-term debt leverage. This study checked the full sample regression using the Arellano-Bond test and the Sargan test and found that the estimation was stable and sound.

The group-wise regression results are also shown in Table 3. The focus of this estimation lies in the franchise group's coefficient $\ln(FR)_{i,t}$. This variable was calculated as the ratio of franchise fee-based income to total assets. If this variable is positive and significant, it means that franchise funds complement long-term debt. If it is negative and significant, it means that franchise funds substitute for long-term debt. Table 3 shows that the coefficient of $\ln(FR)_{i,t}$ was negative and significant. Thus, the result confirms that franchise capital functions as a substitute for long-term debt, supporting Hypothesis 3. Results of the Sargan test and the Arellano-Bond test were good and the adjustment speed coefficient for the group-wise regression significantly differed from a unit. Consequently, franchise restaurant firms use franchise funds from fee-based income as a substitute for long-term debt. The funds also lower the long-term debt leverage target. Thus, the speed of adjustment is faster for franchise rather than non-franchise restaurant firms.

Table 4 shows the regression results of short-term debt leverage. The first column of Table 4 presents the results of full sample regression for Hypothesis 4 and Hypothesis 5. The coefficient of lagged short-term debt leverage was 0.055 and its interaction term with the franchise dummy was plus 0.147. The main differences between the short and long-term debt leverage regressions were the magnitudes of the coefficient of the lagged dependent variable and the opposing direction of the interaction terms. This result implies that restaurant firms follow dynamic behavior even though the size of adjustment coefficient was very small (i.e., adjustment speed is very fast). For non-franchise firms, the coefficient of the lagged short-term debt leverage shows that firms close 94.5% (=1 − 0.055) of the gap between current and desired leverage within one year. This means that non-franchise restaurant firms almost reach their target level of short-term debt leverage, while franchise firms close 79.8% (=1 − (0.055 + 0.147)) of the gap between current and desired leverage within one year. Additional tests were conducted to investigate whether the coefficient of adjustment speed was a unit or not. The two adjustment speeds were significantly different from a unit, confirming that the estimation results were sound. The adjustment speed of short-term debt leverage was slower for franchise restaurants than for non-franchise restaurants, supporting Hypothesis 4. However, the coefficient of $DFR_{i,t}$ was not significant, meaning that the average short-term debt leverage target did not statistically differ between franchise and non-franchise restaurants. Thus, the results did not support Hypothesis 5. The Sargan and Arellano-Bond tests showed that there were no estimation problems.

To check Hypothesis 6, this study conducted group-wise regression for short-term debt leverage. In the non-franchise group regression, the coefficient of lagged short-term debt leverage was not significant. The Arellano-Bond test was significant for only under 10% level in first order autocorrelation (z_1). Thus, the non-franchise group regression estimation means that non-franchise firms do not fully follow dynamic short-term debt behavior. However, considering the results of the full sample regression, we can interpret this to mean that non-franchise restaurants' short-term debt financing remains at a desirable level. Hypothesis 6 is determined based on the coefficient of $\ln(FR)_{i,t}$ in the franchise group regression. The interpretation of the coefficient is the same as in the long-term debt leverage regression. If it is positive, it implies that franchise funds complement short-term debt. If it is negative, it means that franchise restaurants use franchise financing as a

substitute for short-term debt. As Table 4 shows, the coefficient of $\ln(FR)_{i,t}$ was positive and significant. Thus, it can be interpreted that franchise restaurant firms use franchise financing as a complement to short-term debt, supporting Hypothesis 6. Consequently, even though the target level of short-term debt leverage was similar for franchise and non-franchise restaurants, the adjustment speed of short-term debt leverage was slower for franchise restaurants because they need more short-term capital for their franchisees.

5. Conclusions

To verify the influence of franchise capital on firms' financial behaviors, this study incorporated traditional finance theories and adapted them to the resource scarcity theory using restaurant firms. Some scholars argue that franchising is a substitute for traditional financing (Norton, 1995), while others contend it merely complements debt (Gonzalez-Diaz and Solis-Rodriguez, 2012). However, prior studies did not consider the effect of franchise fee-based income on short and long-term debt under traditional finance theories. This study found that franchise funds play a heterogeneous role in short and long-term financing. Franchising capital is a substitute for long-term debt and a complement to short-term debt. Thus, this study expanded the theoretical and practical understanding of franchises in corporate finance.

The results of this study suggest several implications. Franchise firms could lower their optimal target for long-term debt leverage, which could expedite long-term debt adjustment speeds. It can be concluded that franchise funds are used as a substitute for long-term debt. This sequential pattern looks optimistic for franchise firms. Theoretically, the results of this study confirmed and expanded the resource scarcity hypothesis in the franchise literature. Clearly, this study showed that franchise funds replace long-term debt in the restaurant industry. However, this should be carefully interpreted in practical business situations. To actualize this pattern, franchise businesses should obtain sufficient funds from franchise operations. That is, from another point of view substitutionary franchise funds could be a double edged sword for franchise firms. If a franchise business is not successful, the firm could experience a difficult period due to long-term financing. In turn, the long-term financing deficit from franchising funds could result in an under-investment situation. Specifically, such undesirable situations might occur when a firm is about to expand into the initial stages of the franchise system and experience an unexpected economic shock.

Similarly, franchise firms can also suffer from short-term financing, which could cause more serious financial shocks. As explained earlier, franchise funds act as a complement to short-term debt. That is, when franchise businesses are in an initial stage or when external macroeconomic turbulence is on the horizon, restaurant franchisors will likely endure serious short-term financing difficulties. Franchisors need more short-term capital in order to provide financial support for their franchisees. This is in accordance with Drobetz and Wanzenried's (2006) argument that adjustment speeds are greatly influenced by macroeconomic factors. For example, adjustment speeds are significantly slower when economic prospects are not good. Thus, when the macroeconomic situation is tough, franchise firms will suffer due to both short and long-term financing needs. Consequently, franchising restaurant managers need to carefully monitor funds from their franchise businesses. As the results indicate, non-franchise restaurant firms maintain close to desirable levels of short-term debt while franchise restaurant firms do not. This means that franchise restaurant firms are exposed to higher risk due to short-term capital shortages when unexpected shocks occur.

This study also contributed to the franchise literature by increasing the understanding of franchising capital. There have been arguments regarding whether franchising capital acts as a substitute or a complement for debt. By separately considering the effect of franchising capital on short and long-term debt leverage, this study found that franchising capital plays a dual role. Franchising funds are used instead of long-term debt, supporting the resource scarcity theory in the franchise literature. On the other hand, similar to Nisar's (2011) study of a variety of industries, this study also found that restaurant franchising capital complements short-term debt. Franchise restaurants need more short-term capital to provide for their franchisees, which requires them to increase the level of short-term financing. Consequently, the faster adjustment speed of long-term debt leverage could be understood in terms of the substitutionary role of franchising capital. Conversely, the slower adjustment speed of short-term debt leverage could be interpreted as the result of the complementary role of franchising capital. Thus, from the results, the theoretical contribution of this study is clear.

Further studies need to advance the results of this study. Although this study found that franchising capital plays a dual role, it cannot answer other questions. For example, what portion of franchising funds flow into long-term debt? Thus, future research needs to investigate how much short-term debt should be increased as a franchise business grows. We also need to know which factors affect franchises. Further, future studies need to examine the dual role of franchising capital in other franchise industries. Finally, further studies need to examine the risk sharing role of franchising funds in the restaurant industry.

Appendix A. Variable descriptions

$ln(LTD)_{i,t}$: long-term debt at time t divided by book value of total assets at time $t-1$.

$ln(STD)_{i,t}$: debt in current liabilities at time t divided by book value of total assets at time $t-1$.

$DFR_{i,t}$: franchise dummy, which is one if the firm has franchise outlets. Otherwise, it is zero.

$ln(FR)_{i,t}$: sum of fee-based franchise income at time t divided by book value of total assets at time $t-1$.

$DIV_{i,t}$: cash dividends at time t divided by book value of total assets at time $t-1$.

INV: For firms reporting format codes 1–3, (capital expenditure + increase in investments + acquisition − sale of property − sale of investments − change of short-term investments − other investing activities) ÷ book value of total assets at time $t-1$.

For firms reporting format code 7, (capital expenditure + increase in investments + acquisition + other use of funds − sale of property − sale of investments) ÷ book value of total assets at time $t-1$

ΔNWC: For firms reporting format code 1, (other working capital change + cash and cash equivalents + change of current debt) ÷ book value of total assets at time $t-1$. For firms reporting format codes 2 and 3, change in net working capital equals (− other working capital change + cash and cash equivalents − change of current debt) ÷ book value of total assets at time $t-1$. For firms reporting format code 7, (− accounts receivable − inventory − accounts payable and accrued liabilities − accrued income taxes − other assets and liabilities + cash and cash equivalents − other financing activities − change of current debt) ÷ book value of total assets at time $t-1$.

$INTERCF_{i,t}$: For firms reporting format codes 1–3, (income before extraordinary items + extraordinary items and discontinued operations + depreciation and amortization + deferred taxes + equity in net loss + sale of property, plant and equipment and investments + other funds from operation + other sources of

funds) ÷ book value of total assets at time $t-1$. For firms reporting format code 7, (income before extraordinary items + extraordinary items and discontinued operations + depreciation and amortization + deferred taxes + equity in net loss + sale of property, plant and equipment and investments + other funds from operation + exchange rate effect) ÷ book value of total assets at time $t-1$.

ln(: book value of total assets at time t for firm i.

MTB: market-to-book value of equity, which is the ratio of market value of equity to book value of equity. Book value of equity is total stockholders' equity minus liquidating value of preferred stock plus deferred taxes and investment tax credit. Market value of equity is common shares outstanding multiplied by closed price of stock.

$ACQ_{i,t}$: acquisitions at time t divided by book value of total assets at time $t-1$.

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