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Investment and Firm Value: Is There an Optimal Investment Level in Hotel Firms?

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ABSTRACT

This study aimed to examine whether an optimal investment level exists in hotel firms. The authors examined the quadratic relation between investments and hotel firm value. The results show that there is an optimal investment level that maximizes firm value. However, the optimal investment level varies across firms on the basis of the quality of investment opportunities or under- and overinvestment problems. The optimal investment level is higher for hotel firms with underinvestment problems, which suggests that these firms have valuable investment opportunities. However, the optimal investment level is lower for hotel firms with overinvestment problems, which implies that shareholders of these firms perceive additional investments to be value destroying. These results support the postulations of the Q theory of investment, pecking order theory, and free cash flow theory. Practical implications are discussed in the realm of financing, investment, and dividend policies.

Introduction

The main objective of the firm is to maximize shareholders' wealth or to maximize value and the value is maximized when the optimal investment level (OPT) is reached. The *irrelevance theorem* developed by Modigliani and Miller (1958) suggests that firms will make investments to maximize their value and investments are not related to firms' capital structures. Put differently, Modigliani and Miller (1958) argued that firms can finance their investments through internal capital, debt, equity, or through a combination of these financing instruments and that the financing decision will not affect profitability of investments. Although the irrelevance theorem postulates that a firm's investment decisions are independent from financing decisions, the results from the empirical finance literature showed substantial evidence that financing and investment decisions are not separate. There is asymmetric information that exists in the capital markets and hence firms' investment can deviate from the optimal level because of under- or overinvestment problems (Stein, 2003). An investment below the optimum investment

level is considered an underinvestment, whereas an investment beyond the optimum investment level is considered an overinvestment. Both under- and overinvestment is problematic for the firm because these investment levels are beyond the maximum firm value.

On the one hand, underinvestment problems occur when there is a substantial difference between the cost of internal and external funds that turns a positive net present value (NPV) investment negative. Myers and Majluf (1984) posit that firms will bypass an investment that requires financing beyond the available internal funds because issuing debt or equity to finance the investment will make the investment unprofitable. Firms will mainly be dependent on internal funds to make investments and hence they will operate in a suboptimal investment level, which leaves firms below the maximum firm value (Hadlock & Pierce, 2010). Hotel firms' investments, such as mergers and acquisitions and development and building of hotel properties require substantial capital spending (Lee & Upneja, 2007; Dogru & Sirakaya-Turk, 2016).

However, a hotel firm may not be able to finance all of its value-increasing projects with available internal funds and face underinvestment problems.

On the other hand, overinvestment problems occur when there is a misalignment of interests between firms' managers and shareholders. Jensen (1986) proposed the free cash flow theory, postulating that managers of firms are likely to use internal funds to make investments that increase their compensations even if the investment is not profitable. Managers will rely on internal funds to undertake investments that mainly benefit them because capital market will not finance unprofitable investments. Hence, these firms will operate beyond the OPT, which decreases firm value (Harford, Humphery-Jenner, & Powell, 2012). However, managers of hotel firms may finance value-decreasing projects with available internal funds and creates overinvestment problems.

A large hospitality finance literature examined the relation between hotel investments and firm value to analyze the extent to which investments create value for hotel firms. Canina (2001) showed that acquisitions increases hotel firm value; however, Hsu and Jang (2007) found acquisitions to be value-decreasing investments. Dalbor, Lee, and Upneja (2007), on the other hand, showed that the relation between investment and firm value was not significant. Subsequent studies have used similar methods that were used in previous studies and have reported mixed evidence (Canina, Kim, & Ma, 2010; Dogru, 2017). Therefore, it is not clear why investments create value in some hotels and deteriorate firm value in others.

Furthermore, existing studies assumed a monotonic relation between investments and firm value; however, there is no theoretical reason to expect a monotonic relation between investment and firm value. On the contrary, Q theory of investment, pecking order theory, and free cash flow theory jointly suggest that the relation between investment and firm value is nonmonotonic (Jensen, 1986; Myers & Majluf, 1984; Tobin, 1969). That is, there is an OPT, where firm value is maximized. The optimal investment can be different for each firm. Firms' growth prospects, the quality of investments, and alignment of interests between managers and shareholders determines the OPT.

Investments will increase firm value until the OPT is reached, and investments beyond the optimal level will decrease firm value. Therefore, the relation between investment and firm value is parabolic rather than monotonic (Morgado & Pindado, 2003). However, previous studies have not tested these postulations to examine whether an OPT exists in hotel firms.

This study therefore aims to examine whether there is an OPT in hotel firms. We examine the quadratic relation between investments and hotel firm value. Investigating the relation between hotel firm investment and value can help to determine why investments create value in some hotel firms and destroy value in others. If an OPT exists that maximizes firm value, firms can better devise investment, financing, and dividend policy decisions on the basis of their OPTs.

Current and prospective shareholders can make buy-sell-hold decisions on the basis of the firms' OPT and post hoc investment, financing, and dividend policies.

Theoretical framework

According to the irrelevance theorem developed by Modigliani and Miller (1958), firms' investment decision is irrelevant to financing decision, suggesting that the costs of internal and external capital do not diverge. Thus, firms can finance their investments through internal capital, debt, equity, or through a combination of these financing instruments and that the financing decision will not affect return on firms' investments. Building on the irrelevance theorem, Jorgenson (1963) developed the neoclassical theory of investment, postulating that there might be a cost of capital and this cost might be different under different capital structures. Nevertheless, additional investments will increase firm value as long as the return on investment is higher than the cost of capital. According to this notion, firms' investment decisions depend on the cost of capital, suggesting that firm will continue to make investments as long as the investment has a positive NPV.

While Jorgenson (1963) argued that firms would make additional investment as long as the return on investment is positive, counterarguments have been developed against this proposition. Q theory of investment postulates that a firm

reaches an equilibrium when the Tobin's Q equals to one or industry average; a point in which OPT is reached and firm value is maximized (Tobin, 1969). Tobin's Q is the ratio of the market value of the firm to replacement cost of the firm's assets. A Tobin's Q higher than 1 or the industry average suggests that firms have great investment opportunities and growth prospects, whereas a Tobin's Q lower than 1 or the industry average indicates that firm does not have profitable investment projects or potential to generate excess cash flows from the existing projects. Therefore, firms will continue to make investments when the Tobin's Q is higher than 1 or the industry average to reach the equilibrium, and firms will not make additional investments when the equilibrium is reached. Q theory of investment suggests that the relation between investments and firm value depends on the firms' Tobin's Q ratios.

Furthermore, pecking order theory suggests that that there is asymmetric information that exists between a firm and outside investors and lenders, which makes the external financing more costly than internal financing (Myers, 1977; Myers & Majluf, 1984). Asymmetric information problem creates a deviation between the costs of internal and external funds and for some firms the deviation can be so high that it can turn a positive NPV project into negative.

That is, a project will have a positive NPV when the project is financed with internal funds and cost of internal funds is used as a discount rate; however, the same project will have a negative NPV when external funds are required to finance the project and hence cost of external funds is used as a discount rate. Firms that encounter asymmetric information problem will forego potentially value-increasing projects and operate in a suboptimal investment level, which creates underinvestment problems. In general, these firms are small and young and have unexploited growth opportunities (Fazzari, Hubbard, Petersen, Blinder, & Poterba, 1988). These firms will not waste their limited resources on value-decreasing projects because they are highly dependent on their limited internal funds to make investments (Denis & Sibilkov, 2009; Dogru, 2017). Therefore, investments are expected to increase firm value and move these firms toward the OPT.

Although the Q theory of investment suggested that firms would not make additional investment when the equilibrium is reached, free cash flow theory proposed by Jensen (1986) argued that there is a conflict of interests between managers and shareholders. Misaligned managers are likely to invest the generated free cash flow in projects to increase their compensation and control over the firm, even if an investment has a negative NPV. These firms operate above the OPT, which creates overinvestment problems. In general, these firms are large and mature, with limited growth opportunities. These firms are also highly dependent on internal funds. However, managers of such firms are likely to waste firms' internal funds to make investments that will increase their personal benefits. Therefore, investments are expected to decrease firm value and move these firms away from the OPT.

Previous empirical finance literature has shown evidence supporting under- and overinvestment theory propositions using Tobin's Q to identify firms with under- and overinvestment problems. Vogt (1997), for example, showed that capital expenditures create value in firms with a Tobin's Q higher than 1 and decrease value in firms with a Tobin's Q lower than 1. Earlier studies, however, assumed that the relation between investment is firm value is monotonic and analyzed the relation between investment and firm value by dividing the firms as under- and overinvestment firms. However, there is no theoretical reason to assume a monotonic relation between investment and firm value. Investigating the relation between investment and firm value in Spanish Stock Market, Morgado and Pindado (2003) found a quadratic relation between investment and firm value, which suggests that there is an optimal investment value that maximizes shareholders' wealth. In summary, Q theory of investment, pecking order theory, and free cash flow theory suggest that the relation between investment and firm value is not monotonic but rather quadratic. Figure 1 illustrates the quadratic relation between investment and firm value.

Firms will continue to make investment until the optimum investment level is reached. At this point, the marginal cost of capital is equal to marginal value of investment and hence firm

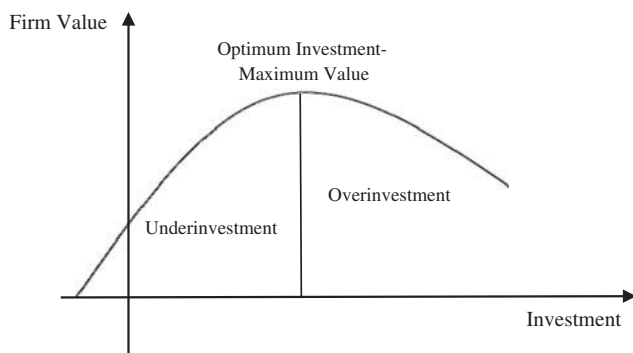


Figure 1. Quadratic relation between investment and firm value.

value is maximized. However, firms' investment can deviate from the optimal as a result of asymmetric information that exists in capital markets or agency problems that creates a conflict of interests between shareholders and the manager. On the one hand, firms may not undertake a positive NPV project when they do not have sufficient internal funds because raising external funds increases the project's cost, which leave firms below the OPT and maximum firm value (underinvestment). On the other hand, managers of firms, who seek personal benefits, might invest in projects beyond the level that maximizes firm value using firms' internal resources, which move firms above the OPT and shifts firm value beyond the maximization (overinvestment). Therefore, based on the postulations of Q theory of investment, pecking order theory, and free cash flow theory, the following hypothesis is developed.

Hypothesis 1: There is an OPT in hotel firms, where firm value is maximized.

The OPT, however, will be different for hotel firms depending on the quality of their investments. On the one hand, the OPT will be higher for firms with underinvestment problems (firms with Tobin's Q higher than one or industry average) because these firms have limited funds but greater investment opportunities. On the other hand, the OPT will be lower for firms with overinvestment problems (firms with Tobin's Q lower than one or industry average) because these firms have excess funds but limited growth opportunities. Almeida, Campello, and Weisbach (2004) found empirical evidence showing that firms with underinvestment problems retain more cash to

undertake positive NPV projects. Denis and Sibilkov (2009) show that the marginal value of cash holdings is higher in firms with underinvestment problems, which suggests that these firms keep higher cash to make value-increasing investments. Gompers, Ishii, and Metrick (2003) showed that investments decreases value in firms with overinvestment problems. Studies of Masulis, Wang, and Xie (2007) and Harford and colleagues (2012) also showed that managers of firms with excess cash flows invest in value-decreasing projects. Analyzing the joint effects of under- and overinvestment problems on the relation between investment and firm value, Franzoni (2009) found that investments increase firm value in firms with underinvestment problems whereas decrease firm value in firms with overinvestment problems. Thus, the following hypotheses are offered for testing purposes.

Hypothesis 2: The OPT for firms with underinvestment problems will be higher than the average OPT for hotel firms.

Hypothesis 3: The OPT for firms with overinvestment problems will be lower than the average OPT for hotel firms.

Figure 2 presents the projected relation between investment and firm value for firms with under- and overinvestment problems. Accordingly, the proposed hypotheses jointly suggest that there will be three different OPTs with the following order. $OPT\text{-over} < OPT\text{-all} < OPT\text{-under}$.

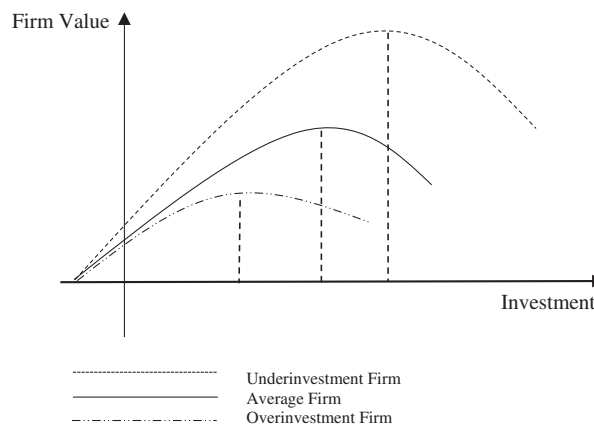


Figure 2. Investment and firm value: Underinvestment versus overinvestment.

- An OPT in hotel firms with overinvestment problems (or Tobin's Q below one or industry average): OPT-over;
- An OPT in hotel firms (including both firms with under- and overinvestment problems): OPT-all; and
- An OPT in hotel firms with underinvestment problems (or Tobin's Q higher than one or industry average): OPT-under.

Method

The sample of this study comprises the hotel firms that are publicly traded in the New York Stock Exchange, American Exchange, or NASDAQ with the SIC code 7011 during the period of 1995–2015. The sample was limited to firms with financial information available on the COMPUSTAT annual database. The final sample consists of 280 firm-year observations.

Based on the hospitality finance and mainstream corporate finance literature, the following variables are used in this study (Dalbor et al., 2007; Lee & Upneja, 2007; Morgado & Pindado, 2003; Vogt, 1997). Investment is measured by capital expenditures (item 128), firm value is measured by capital stocks outstanding (item 54) times the fiscal year closing price for stock i on year t (item 199), long term debt is measured by total long term debt (item 9), dividends is measured by total dividends (item 21). Following the previous literature, we used Tobin's Q, as measured by total assets plus firm's market value minus common equity (item 60), balance sheet deferred taxes (item 74) and leverage divided by total assets, to divide the firms as firms with underinvestment problems and overinvestment problems (Morgado & Pindado, 2003; Vogt, 1997). Firms with Tobin's Q values greater than the median values are firms with underinvestment problems, whereas firms below the median Tobin's Q values are firms with overinvestment problems. We used Tobin's Q median values to divide the sample of firms as firms with under- and overinvestment problems because most of the hotel firms had a Tobin's Q value higher than one in our sample. More specifically, 260 out of 280 observations had Tobin's Q higher than one. Also, Hua, Nusair, and Upneja (2012) showed that industry median values should be used for benchmarking

Table 1. Summary Statistics

Variable	Descriptive statistics			Correlation matrix				
	<i>M</i>	<i>SD</i>	Median	1	2	3	4	5
1. Firm value	1.29	3.00	0.58	1				
2. Investment	0.13	0.45	0.05	0.38 ^a	1			
3. Debt	0.53	1.00	0.39	0.69 ^a	0.32 ^a	1		
4. Dividends	0.01	0.00	0.03	0.11 ^c	-0.04	0.07	1	
5. Tobin's Q	2.51	3.53	1.63	0.94 ^a	0.57 ^a	0.65 ^a	0.08	1

Superscript a and c indicate 1% and 10% statistical significance levels, respectively.

firms' financial performances. Items are COMPUSTAT items, and all variables are adjusted by total asset (item 6). Variables are trimmed from 1% and 99% to remove the effects of outliers.

Table 1 shows the descriptive statistics of the variables used in this study along with the correlation matrix of these variables. The results show that there is a positive and statistically significant relation between firm value and investment, firm value and debt, firm value and dividends, and firm value and Tobin's Q. These results suggest that firm value increases with the increased investments, debt, payment of dividends, and Tobin's Q ratio. However, further analyses are required to examine the effects of these variables on firm value.

The following models are used to examine the relation between investment and firm value.

$$FV_{it} = a_0 + \beta_1 I_{it} + \sum_{k=1}^n \beta_k X_{kt} + e_{it} \quad (1)$$

$$FV_{it} = a_0 + \beta_2 I_{it} + \beta_3 I_{it}^2 + \sum_{k=1}^n \beta_k X_{kt} + e_{it} \quad (2)$$

where I is the firm i 's capital expenditure at time t ; X is a set of control variables including long-term debt and dividends at time t ; e is the error term; and α , β_1 , β_2 , β_3 , and β_k are the models' parameters. Also, models are controlled for time and firm effects. Taking the derivative of the parameters from the equation 2, the OPT will be equal to:

$$OPT = \frac{\delta FV_{it}}{\delta I_{it}} = \frac{\beta_2}{2\beta_3} \quad (3)$$

Empirical results

Multivariate analyses are conducted using panel ordinary least square (OLS) techniques, panel

Table 2 Linear Relation Between Firm Value and Investment

Independent variable	Panel ordinary least square	Panel fixed effect	Panel random effect
Investment	1.28 ^a (3.44)	1.28 ^a (3.44)	0.96 ^a (3.27)
Debt	2.02 ^a (14.99)	2.02 ^a (14.99)	1.99 (15.69)
Dividends	9.56 (1.92)	9.56 (1.92)	6.53 (1.49)
Constant	0.57 (0.60)	0.58 (0.98)	0.04 (0.18)
R^2	0.73		
Adjusted R^2	0.65		
Overall R^2		0.54	0.55
F	9.19 ^a	16.15 ^a	
Wald test of joint significance			390.54 ^a

Note. There were a total of 280 observations. Firm value is the dependent variable; t and z statistics are in parentheses.

Superscripts a, b, and c indicate 1%, 5%, and 10% statistical significance levels, respectively.

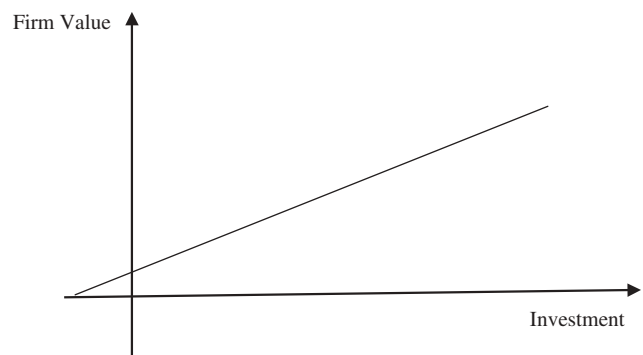
fixed and random effects. While panel OLS technique is widely used in the mainstream corporate finance literature by controlling for year-fixed effect (i.e., including year dummy variables), whereas panel fixed and random effects are utilized in hospitality literature.

Therefore, we conduct our analyses using three different methods.

We first analyzed the linear relation between investment and firm value. Table 2 presents these results.

The results from the panel OLS, fixed effect, and random effect models yield similar coefficients estimates. Therefore, the interpretation will be based on panel OLS results. Accordingly, there is a positive and significant relation between investment and firm value controlling for debt and dividends (1.28, $p < .01$). More specifically, a \$1 increase in investment increases firm value by \$1.28. Although the empirical results show a statistically significant relation between investment and firm value, there is no theoretical reason to expect a monotonic relation between investment and firm value. That is, this relation can simply be spurious. If a monotonic (or linear) relation were assumed, we would expect every additional investment to increase firm value, which suggests a linear relation between investment and firm value as presented in Figure 3.

Although this notion might be held to the extent the OPT is reached, an investment beyond this point will decrease firm value. Therefore, we further examine whether an OPT exists in hotel firms by introducing the quadratic term into the empirical model. Table 3 presents the results from

**Figure 3.** Linear relation between firm value and investment.**Table 3** Quadratic Relation Between Firm Value and Investment

Independent variable	Panel ordinary least square	Panel fixed effect	Panel random effect
Investment	5.68 ^a (6.78)	6.04 (6.44)	5.79 ^a (7.02)
Investment squared	-0.74 ^a (-5.93)	-0.75 ^a (-5.47)	-0.76 ^a (-6.22)
Debt	2.10 ^a (15.65)	2.17 ^a (16.77)	2.17 ^a (17.66)
Dividends	8.92 ^b (2.14)	11.80 ^b (2.51)	9.20 ^b (2.23)
Constant	-0.44 (-0.81)	-0.96 (-1.53)	-0.56 (-1.09)
R^2	0.60		
Adjusted R^2	0.57		
Overall R^2		0.59	0.60
F	17.22 ^a	18.84 ^a	
Wald test of joint significance			480.60 ^a

Note. There were a total of 280 observations. Firm value is the dependent variable; t and z statistics are in parentheses.

Superscripts a, b, and c indicate 1%, 5%, and 10% statistical significance levels, respectively.

the quadratic relation between investment and firm value.

The results from the panel OLS, fixed effect, and random effect models yield similar coefficients estimates. Therefore, the interpretation will be based on panel OLS results. The statistically significant positive coefficient estimate of investment (5.68, $p < .01$) and negative coefficient estimate of investment squared (-0.74, $p < .01$) variables provide empirical evidence that there exists an OPT in hotel firms. These results support the first hypothesis of this study. Using the equation (3), the OPT can be determined. Accordingly, the OPT for hotel firms is approximately \$3.83 million adjusted by firm size or book value of assets. In theory, this figure indicates that firms will continue to make investments until they reach this point and should not make additional investments once this point is reached because investments beyond this point will decrease firm value. However, the OPT can be different across

firms depending on their quality of investment opportunities. Firms with greater investment opportunities are expected to have a higher OPT, whereas firms with low investment opportunities are anticipated to have a lower OPT. To test this intuition, we divided the firms based on median Tobin's Q ratios. Firms with a Tobin's Q above the median are considered to be firms with underinvestment problems but with greater investment opportunities (OPT-under) and firms with a Tobin's Q below the median are considered to be firms with overinvestment problems with little or not investment opportunities (OPT-over). The quadratic relation between investment and firm value is separately analyzed for OPT-under and OPT-over firm samples. Tables 4 and 5 presents these results.

The results from the panel OLS, fixed effect, and random effect models in both Tables 4 and 5 yield similar coefficients estimates. Therefore, the interpretation will be based on Panel OLS results. The results from Table 4 show that the coefficient of investment is positive and statistically significant (8.65, $p < .01$) and the coefficient of investment-square is negative and statistically significant (-1.11 , $p < .01$).

Similarly, the results from Table 5 also show that the coefficient of investment is positive and statistically significant (2.43, $p < .05$) and the coefficient of investment-square is negative and statistically significant (-8.92 , $p < .05$). Using the equation (3), the OPT can be determined for OPT-under and OPT-over firm samples.

Table 4 Quadratic Relation Between Firm Value and Investment: OPT-Under

Independent variable	Panel ordinary least square	Panel fixed effect	Panel random effect
Investment	8.65 ^a (4.73)	8.65 ^a (4.73)	6.46 ^a (4.82)
Investment squared	-1.11 ^a (-4.42)	-1.11 ^a (-4.42)	-0.86 ^a (-4.42)
Debt	2.25 ^a (6.47)	2.25 ^a (6.47)	2.24 ^a (12.09)
Dividends	11.39 (0.78)	11.39 (0.78)	9.40 (1.35)
Constant	-0.96 (-0.35)	-0.75 (0.67)	-0.60 (-0.69)
R^2	0.80		
Adjusted R^2	0.66		
Overall R^2		0.57	0.62
F	5.71 ^a	6.98 ^a	
Wald test of joint significance			219.53 ^a

Note. There were a total of 140 observations. Firm value is the dependent variable; t and z statistics are in parentheses. Superscripts a, b, and c indicate 1%, 5%, and 10% statistical significance levels, respectively.

Table 5. Quadratic Relation Between Firm Value and Investment: OPT-Over

Independent variable	Panel ordinary least square	Panel fixed effect	Panel random effect
Investment	2.43 ^b (2.54)	2.43 ^b (2.54)	1.62 ^c (1.85)
Investment squared	-8.92 ^b (-2.05)	-8.92 ^b (-2.05)	-5.02 (-1.27)
Debt	-0.07 (-1.12)	-0.07 (-1.12)	-0.08 (-1.30)
Dividends	2.62 ^a (3.05)	2.62 ^a (3.05)	2.14 ^a (2.71)
Constant	0.38 ^a (2.97)	0.22 ^c (1.98)	0.30 ^a (3.07)
R^2	0.76		
Adjusted R^2	0.62		
Overall R^2		0.11	0.14
F	5.53 ^a	4.31 ^a	
Wald test of joint significance			92.91 ^a

Note. There were a total of 140 observations. Firm value is the dependent variable; t and z statistics are in parentheses.

Superscripts a, b, and c indicate 1%, 5%, and 10% statistical significance levels, respectively.

Accordingly, the OPT for OPT-under hotel firms is approximately \$3.9 and for OPT-over hotel firms is approximately \$0.13 million adjusted by firm size or book value of assets. These results support the second and third hypotheses of this study, and they provide evidence that the OPT will be lower for firms with overinvestment problems than for firms with underinvestment problems: OPT-over < OPT-all < OPT-under.

Discussion

In a frictionless world (i.e., with no conflict of interests between different stakeholders), financing decision of investments does not affect the profitability of investments and firm value; hence, the source of capital is irrelevant to investment decisions (Modigliani & Miller, 1958).

That is, an investment with a positive NPV will increase firm value regardless of sources of funds. However, Q theory of investment suggests that a firm will continue to make investment until the OPT is reached and it will not make any further investment because at this point firm value is maximized an investment beyond the optimal level deteriorates firm value (Tobin, 1969).

Moreover, there has been an extensive empirical research providing evidence that using external and internal funds to finance investments may negatively or positively affect firm value depending on asymmetric information and agency problems.

On the one hand, proposing the pecking order theory, Myers and Majluf (1984) postulated that firms with asymmetric information problem should rely on internal funds to make investments because raising external funds will make these projects unprofitable due the cost differences between internal and external funds. Myers and Majluf (1984) argue that firms with asymmetric information problems will operate in a suboptimal investment level because they will not have sufficient funds to undertake all valuable projects. Hence, they will forego value-increasing investments and encounter underinvestment problems.

On the other hand, free cash flow theory developed by Jensen (1986) posits that firms with agency problems should raise debt to finance their investment and distribute the internal funds to shareholders because financing a project with internal funds will make these projects unprofitable. Jensen (1986) argues that firms with agency problems or managers with excess cash flows will continuously make investments with the free cash flows that increase their compensation or power. Therefore, these firms will operate on level that is beyond the shareholders' wealth maximization. Although there corroborative evidence supporting both theories and that collectively Q theory of investment, pecking order theory, and free cash flows theory suggest that there is an OPT, where firm value is maximized, the OPT that maximizes hotel firm value is yet to be determined.

The approach in previous hospitality literature has been that of a linear relation between investment and firm value and that the results remain inconclusive. Whereas some studies have reported that investments increase firm value, others have provided contrary evidence. Why investments create value in some firms and destroy value in other firms is not clear.

Therefore, in spite of the well-documented magnitude of the under- and overinvestment problems in corporate finance literature, there is still critical need to examine why investments create or destroy value. One explanation can be under- and overinvestment problems, where an OPT exists. Therefore, the approach in this paper instead was to analyze the quadratic relation between investment and firm value to determine whether OPT exist in hotel firms. The results show that an OPT

exists in hotel firms, where firm value is maximized. An investment below this level is considered to be underinvestment, whereas an investment beyond this level is considered to be overinvestment. Nevertheless, the OPT is different across the hotel firms. This is because firms with underinvestment problems have more valuable investment projects and hence the expected firm value is higher. That is, shareholders expectations of the firm to create value are higher. However, firms with overinvestment problems have lower investment opportunities and thus shareholders' expectation of the value maximization point is lower. Our results support these postulations by showing that the OPT is higher for firms with underinvestment problems compared to the OPT for firms with overinvestment problems. These results provide support for the Q theory of investment, pecking order theory, and free cash flow theory that there is an OPT, where firm value is maximized, and the OPT is higher for firms with underinvestment problems relative to firms with overinvestment problems.

The practical implications of this study are noteworthy. Firms should make investments until the OPT is reached and discontinue their investments beyond this point because further investments will decrease firm value. Firms with overinvestment problems should distribute the excess cash to the shareholders as dividends or use the excess cash to repurchase outstanding shares. These firms should finance their investments through only debt because banks or creditors will not finance projects with negative NPV. Nevertheless, firms with overinvestment problems can use their cash to acquire firms with underinvestment problems because these firms have value increasing investment opportunities. Acquisitions are more valuable for firms with overinvestment than investment projects that are developed internally to expand the firms' operations. Because firms with overinvestment problems have excess cash but lower investment opportunities, they should acquire firms with underinvestment problems. The firm value after acquisition will be higher than the individual value of these firms because of the synergy effect, which will further increase firms' stock prices and value. However, a diversifying acquisition, which extends

beyond the hotel business, is likely to be a value decreasing investment. Instituting corporate governance mechanisms can help these firms to further reduce overinvestment problems. Firms with underinvestment problems have value increasing investment opportunities but limited internal funds. Therefore, these firms should keep more cash to undertake valuable investment opportunities. When their internal funds are not sufficient to make investments, they should expand their operations through acquisitions, which is paid in stocks. Furthermore, the acquisition of a company can increase the amount of internal funds two firms combined and hence may provide further investment opportunities. Although asymmetric information still exists, firms with underinvestment problems should seek financing through crowdfunding, where individuals or institutions can determine the true quality of the investment opportunity and may provide inexpensive funds.

Despite its contribution to the hospitality and finance literature, this study has limitations. Tobin's Q is a good starting point to determine firms' investment opportunities and the quality of investments opportunities. Nevertheless, Tobin's Q per se may not determine the conflict of interests between shareholders and chief executive officers, asymmetric information problems that firms with underinvestment problems are facing in raising external debts. Future studies should replicate these study using corporate governance and financial constraints measures to identify firms with under- and overinvestment problems. Also, the replication of this study in other industry settings will corroborate the results of this study.

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