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Managerial Incentives and the Valuation of International Joint Venture Formation

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Abstract

Strategic management decisions and actions involving international joint venture formations are significant to many firms and have major economic consequences. Previous empirical evidence on the effects of joint venture formation announcements on shareholder wealth reveals that firm value is more often positively impacted. However, many previous analyses of shareholder wealth from joint venture formations do not fully explore cross-sectional differences in managerial incentives to pursue these international investments. The primary purpose of this study is to exploit these cross-sectional differences using agency theory to explain managerial behavior and subsequent shareholder effects. This study capitalizes on agency theory's notion that managers are not necessarily motivated solely by the maximization of firm value, but instead are interested in maximizing their own utility. The study's findings are consistent with agency theoretic hypotheses based on a broad cross-section of international joint ventures. Results demonstrate that shareholder returns to international joint venture formation exhibit considerable variability and, importantly, are at least partially explained by cross-sectional differences in agency incentives. Specifically, returns to shareholders are positively related to the level of managerial ownership and inversely related to the level of free cash flow. Moreover, a positive relation is found between shareholder returns and the joint interaction between leverage and free cash flow. These findings indicate that the effect of international joint venture formation on shareholder value is not uniform and, more importantly is at least partly influenced by managers' agency incentives.

1. Introduction

Firms invest in new projects for numerous reasons including the expansion of existing operations, the ability to vertically integrate into upstream or downstream activities, and to broaden the existing business portfolio through diversification into unrelated product markets. A firm might also desire access to certain factors of production or attempt to enhance its competitive position in product markets. The joint venture form of organizational structure is one possible means for a firm to achieve these strategic goals.

There are many economic and strategic explanations for joint venture formation. Joint ventures can create economies of scale, reduce costs, and create synergies with the firm's other operations. *International* joint ventures can empower the firm to enter new geographic markets, present a local image in an otherwise foreign market, satisfy provincial ownership or content requirements, and reduce country-risk exposure inherent in sole-firm international ventures.

There is the possibility that some managers use joint ventures to advance their personal interests beyond the economic and strategic goals for joint ventures. The separation of equity ownership from operational control is one of the factors that creates opportunities for managers to take advantage of their position and indulge in self-serving behavior.

This study provides empirical evidence on the extent to which shareholders expect managers to engage in such self-serving behavior. Specifically, we investigate whether the market effect of international joint venture formation on firm valuation depends on the firm's level of managerial ownership, free cash flow, and the interactive influences of free cash flow and leverage. We provide empirical evidence consistent with these hypotheses, which are all drawn from agency theory.

Section 2 provides the agency theoretical framework for this study's hypotheses. Section 3 describes the sample and Section 4 presents the research methodology. Section 5 communicates the empirical results and Section 6 offers a summary.

2. Agency Theory Explanations of Returns to Joint Venture Formation
2.1. Foundations of Agency Theory

The development of a theory of the firm emphasizing the behavioral aspects of management was precipitated by research that uncovered evidence inconsistent with conventional economic pricing models, see seminal works by Cyert and March (1963) and Simon (1959). These studies provided evidence that managerial behavior was not exclusively motivated by the maximization of profits and shareholder value. Instead, it can be argued that managers also were driven by additional business factors such as growth, sales, staffing, and compensation. Subsequent research expanded on this notion revealing that managers frequently engage in satisficing behavior, defined as maximization subject to the costs of information and decision making, and are not always interested in maximising profit, see Jensen and Meckling (1976).

The market's response to this managerial behavior is a demand for the monitoring of managers through the use of contracts that place primary emphasis on the risk bearers (shareholders) but allows for other *correcting* mechanisms including managerial labor markets and the market for corporate control. Many recognize the interplay of these forces and stress the disciplinary role of managerial labor markets, viewing corporate takeover a last resort, see (Alchian & Demsetz, 1972; Fama, 1980).

2.2. Managerial Ownership
2.2.1. Alignment Properties of Managerial Ownership

Agency theory, premised on the separation of equity ownership from operational control, predicts that managers exploit their position and indulge in behavior inconsistent with shareholder interests. Theory further predicts that as the interests of managers and shareholders *diverge*, there is more self-serving behavior by managers; conversely, the *more aligned* those interests, the lower are agency costs.

Agency theory articulates a demand for contracts between owners and managers that serves to align their interests and enhance firm performance (the convergence-of-interests hypothesis). Although managerial behavior is often not directly observable, principals can improve their monitoring of agents by investing in better information systems or by writing outcome-based contracts with agents. This study investigates one form of outcome-based compensation, the level of managerial stock ownership.

The theory further suggests that imperfect managerial labor markets result in internal monitoring devices such as increased stock ownership concentration. In this way, the effort expended by equity owners in monitoring managers is more cost-effective and yields greater firm performance. However, a countervailing view asserts that greater concentration of ownership results in a higher cost of capital, among other costs, that offset the benefits of a more closely monitored management (for background see (Coles, Daniel, & Naveen, 2006; Demsetz & Lehn, 1985; Ofek & Yermack, 2000; Wright, Kroll, Krug, & Pettus, 2007)). Prior empirical evidence does show a positive relation between firm performance and the level of director and officer ownership, see Oswald and Jahera (1991). There are at least two attributes of international joint ventures that are especially relevant to agency theory. First, information concerning international business opportunities can lack timeliness, reliability, and verifiability. Second, relative to domestic investments, international business projects can involve a greater number of *uncontrollable* factors. In the case of poor performance, managers might point to such factors as causes and thereby mask poor performance. Accordingly, international joint ventures can accentuate agency problems and offer unique research opportunities.

Empirical investigations into the performance of joint venture formations have examined the wealth effect on shareholders. Typically, these studies reveal that, on average, joint ventures contribute positively to firm value, see Lai, Chen, and Chen (2017); Wild, Wild, and Wild (2022); Boone and Ivanov (2012); Johnson and Houston (2000). Nevertheless, approximately 50 percent of all joint venture announcements have a negative

impact on shareholder wealth, see Talay, Dalgic, and Dalgic (2010); Slovin, Sushka, and Mantecon (2007). Accordingly, one question that this study investigates is the extent to which variables derived from agency theory explain the positive and negative impacts of joint venture formation on shareholder wealth.

This study formulates a key hypothesis in aiming to explain the returns to shareholders from international joint venture formations conditional on managerial ownership and drawing on agency theory and the empirical evidence (see Lai et al. (2017)). Specifically, theory predicts that shareholder wealth effects attributed to international joint venture formations are more favorable for firms with higher levels of managerial ownership. This is because as managerial ownership increases, the interests of shareholders and managers are more aligned. The testable hypothesis is:

A positive relation exists between the level of managerial ownership in the firm and shareholder returns from international joint venture formation.

2.2.2. Investigation of a Non-Linear Relation

Agency theory suggests that managers potentially undertake investments to *entrench* themselves with respect to the firm they manage. Entrenchment is defined as the managerial employment of resources that help make themselves replaceable at a very high cost to shareholders by investing in projects specific to their personal skills, rather than projects in the best interests of shareholders. It is suggested that managers with a substantial share of equity can effectively assume their employment in the firm, and that in such cases the firm's assets are under-exploited compared to a management comprised of individuals with an even greater personal stake in the firm. The hypothesis has explanatory power not only for the selection of a firm's investments, but also for the structure of its contracts and the motivation behind diversification strategies.

Previous research has used the entrenchment hypothesis to predict a negative relation between firm value and ownership when managerial ownership exceeds *a predetermined*, but unknown, level. That evidence generally suggests that (i) a positive relation between firm value and ownership in the 0 to 5 percent ownership range, (ii) a negative relation in the 5 to 25 percent range, and (iii) a positive relation for over 25 percent. While prior evidence is not entirely consistent, it does highlight the possibility of a non-linear relation between firm value and ownership. Accordingly, this study estimates piecewise linear regressions after decomposing ownership levels into different categories (also see (McConell & Servaes, 1990; Morck, Shleifer, & Vishny, 1988; Shleifer & Vishny, 1989)).

2.3. Influence of Free Cash Flow

According to agency theory, managers have incentives to reinvest free cash flows to increase firm size beyond what's optimal under certain circumstances. Reasons for this behavior derive from increased manager power attributed to (i) control of a greater amount of resources, (ii) increased manager compensation due to a positive relation between sales growth and salary, and (iii) increased promotion opportunities for talented young managers. Management can also select among the menu of potential investment opportunities to either reduce their employment risk with the firm or enhance income smoothing possibilities. With regard to an international joint venture, managers can be subject to increased pressure for such formation to demonstrate the firm's expansion opportunities or to justify previous expenditures into global projects.

Prior evidence is consistent with the notion that managers bear costs for poor investments. Evidence further suggests that shareholders penalize managers who pursue unrelated diversification, perform poorly before acquisition, and purchase a rapidly growing target. Conversely, research finds that attempts to diversify a firm's risk allow better access to the factors of production and increase the efficiency of operations. That research documents an increase in cash flow and a lower total business risk with such firms, see Morck, Shleifer, and Vishny (1990); Amit and Wernerfelt (1990).

Firms are subject to the scrutiny of investors when raising capital for new projects from the financial markets. One way managers can avoid a potential increase in the cost of capital, or its limited availability, is to fund projects internally. However, firms with little or no free cash flow are forced to enter the financial markets earlier than other firms, resulting in increased market scrutiny. Agency theory suggests that firms with greater free cash flow are subject to less scrutiny and potentially invest this free cash flow in less positive net present value projects. Predictably therefore, shareholder expectations are lower for new projects at firms with excess cash flow. This yields our second hypothesis:

There exists an inverse relation between returns to shareholders of firms entering international joint ventures and the level of free cash flow for these firms.

2.4. Interaction of Free Cash Flow and Debt

Agency theory predicts that debt can effectively serve as a mechanism to distribute excess cash, whereas dividends can be reduced and any assurances to increase dividends might never materialize. This is referred to as the *control hypothesis* in which debt assists in controlling management's abuse of excess cash flow, thereby reducing agency costs.[1] This theory argues that the control characteristics of debt vary across firms, and a

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[1] Theory recognizes that there exists some *a priori* level of debt beyond where the benefits of the monitoring mechanism are exceeded by the serious consequences of an excessive debt level.

major determinant (interaction) is free cash flow. Specifically, firms with potential profitable projects and low cash flow are especially scrutinized and screened when appealing to financial markets for funds. Meanwhile, firms with high cash flow are not subject to the same market review because these firms can fund projects internally.

Consequently, firms with increasing free cash flow yield predictably greater agency costs with decreasing debt. This results from the greater latitude in investment decisions accorded managers at these firms. That is, managers of firms with higher free cash flow are relatively less constrained by restrictions emanating from debt. This joint consideration of free cash flow and debt levels yields this study's final hypothesis:

The interaction between the firm's free cash flow and debt level is positively related to returns to shareholders from international joint venture formation.

3. Sample Selection and Data

The sample of international joint venture announcements is obtained from the *LexisNexis* database. This database provides press releases and news articles on important corporate events occurring worldwide from multiple global news sources. The first known announcement of a specific international joint venture, as reported by *LexisNexis*, is used in this study as the announcement date. Because two firms announcing two separate joint ventures on the same day make it impossible to analyze the value created by just one of the ventures in isolation, these observations (two pairs) are excluded.

Each international joint venture included in the final sample must adhere to one of four organizational structures.[2] The firm's stock return data also must be available on the *Center for Research in Security Prices* (CRSP) database, which includes securities listed on the New York and American Stock Exchanges as well as the Nasdaq exchange. Daily return data for each firm in the sample, and the market index, are extracted from the CRSP database for a period before and around the day of the joint venture announcement. The market index is based on the value-weighted returns of all firms listed on the respective exchanges.

Firms headquartered outside the United States (U.S.) can also list their shares on a U.S. stock exchange. Accordingly, the sample also includes joint venture formations by firms based outside the U.S. The nationality of each firm forming an international joint venture is manually recorded for each announcement. These data are cross-checked with information from *Standard & Poor's (S&P) Compustat* database, and any discrepancies are resolved. Nearly 80 percent of all firms in the sample are headquartered in North America, while roughly 10 percent are headquartered in each of Europe and Asia. The economic sectors most represented in the sample are manufacturing (electronics, chemicals and industrial machinery) at 60 percent, transportation and public utilities (communications) at 10 percent, and services (computer and data processing) at 10 percent.

Data necessary to calculate free cash flow and leverage for each firm are obtained from the *S&P Compustat* database for the year of joint venture formation.[3] Ownership data on each firm are obtained from filings with the U.S. Securities and Exchange Commission (SEC).[4] The imposition of these constraints on the data results in a final sample of 316 announcements of international joint venture formations.

4. Research Methodology

This study employs a capital markets methodology and uses the market model to calculate abnormal (or unexpected) shareholder returns. Many previous studies of shareholder reaction to information disclosures have examined the role of agency costs using a capital markets methodology. (for example, see (Barth, Li, & McClure, 2021; Beaver, McNichols, & Wang, 2020; Binz & Graham, 2022; Carvalho & Guimaraes, 2018; Eden, Miller, Khan, Weiner, & Li, 2022; Warfield, Wild, & Wild, 1995)).

According to economic theory, management invests in a new project when the present value of its expected future cash flows, less the initial investment, is positive. Since the market value of the firm represents the present value of expected future cash flows from existing assets and future opportunities, a new investment positively affects the share price if the present value of its expected net future benefits is positive.

The market model characterization of unexpected returns describes the return on a particular stock as a linear function of its expected return, its sensitivity to market movement (beta), and a random error component. Estimates of the firm's expected return and its beta are obtained from a regression of the market model using 200 daily stock returns from the period preceding the joint venture announcement (referred to as the estimation period). The joint venture announcement date for each observation is labeled $t = 0$; with days preceding the announcement labeled $t = -1$, $t = -2$, ... , $t = -j$, and with days following the announcement labeled $t = 1$, $t = 2$, ..., $t = j$. This procedure arrays the sample's return data in event time, centered on the joint

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[2] Joint ventures must adhere to one of four organization patterns: (i) two or more U.S. entities in a venture outside the U.S., (ii) one or more U.S. entities and one or more non-U.S. entities involved in a venture within or outside the U.S., (iii) two or more non-U.S. entities of different nationalities involved in a venture outside the U.S., or (iv) two or more non-U.S. entities involved in a venture inside the U.S.

[3] Firm *i*'s free cash flow (*FCF*) is measured as income before extraordinary items, plus depreciation and amortization, and minus capital expenditures. This quantity is then scaled by market value to adjust for firm size. The firm's degree of leverage (*LEV*) is measured as total liabilities divided by total assets.

[4] Information is from SEC filings 13-F, 13-D, 13-G, 14-D, and Forms 3 and 4. Owners are defined as individuals who "have significant power to exercise influence over corporate affairs or decisions of the registrant due to either ownership of a substantial number of shares of the company's stock or a combination of a management position and stock ownership." Moreover, "officers, directors and beneficial owners are only included if they hold at least 1,000 shares" and principal stockholders must own "ten percent or more of the company stock."

venture announcement date of $t = 0$. The estimation period for each firm begins at day $t = -220$, and ends with day $t = -21$. This means the model's parameter estimates are not contaminated by share price fluctuations attributed to the joint venture announcement.

The unexplained error from the market model is referred to as the abnormal return generated by the joint venture announcement. The sample mean abnormal return at time t is the simple arithmetic average of the abnormal returns of the entire sample. To estimate shareholder returns from joint venture formation, a measure covering the day prior to, and the day of, the announcement is constructed. This cumulative mean abnormal return is calculated as the sum of the mean abnormal returns for each of the two days covering the joint venture announcement.

5. Empirical Results

5.1. Preliminary Evidence on Managerial Ownership and Free Cash Flow

Summary statistics on the level of managerial ownership for the sample reveal an average ownership level of 7.8 percent and a median level of 0.95 percent. The skewed nature of managerial ownership levels across firms is readily apparent. Specifically, 45 observations (14.2%) have zero or insignificant managerial ownership and 164 observations (51.9%) have less than 1 percent managerial ownership. On the other hand, 75 observations (23.7%) report 10 percent or greater managerial ownership.

The distribution of managerial ownership for this sample is slightly more concentrated in lower ownership categories as compared with prior research. This is expected as the rationale for lower ownership concentration is likely linked with the type of firms forming international joint ventures. That is, due to the extensive financial and organizational commitments necessary for international joint venture formation, firms are generally larger and often have previous international experience. These larger, multi-divisional firms tend to have more dispersed ownership relative to smaller-capitalization firms that often have concentrated ownership.

To examine the relation between managerial ownership and shareholder returns to international joint venture formation, data are separated into ownership portfolios. This organization of data enables both a statistical and visual analysis of the relation between ownership and shareholder returns. Descriptive statistics are provided in panel A of Table 1. We see that returns range from a low of 0.09 percent for the 0 to 5 percent ownership portfolio, to a high of 1.10 percent for the 25 to 35 percent ownership portfolio. The Spearman rank correlation between ownership portfolios and shareholder returns in Panel A is equal to 0.70 and is significantly greater than zero at better than the 0.10 level.

Table 1. Descriptive statistics and preliminary results.

Panel A: Level of abnormal returns dependent on managerial stock ownership

Percent ownership	Number of observations	Abnormal stock return (%)
0 − 5	231	0.09
5 − 15	28	0.50
15 − 25	27	0.92
25 − 35	10	1.10
> 35	20	0.66

Panel B: Level of abnormal returns dependent on free cash flow

Quintile	Number of observations	Abnormal stock return (%)
1	63	1.09
2	63	0.30
3	64	−0.14
4	63	0.31
5	63	−0.22

Note: Managerial ownership is measured as the percent of managerial stock ownership in firm i. Free cash flow is defined as income before extraordinary items, plus depreciation and amortization, minus capital expenditures; this quantity is then scaled by market value to control for firm size. The 20% lowest free cash flow firms are contained in quintile 1, the next 20% in quintile 2, and so forth. Abnormal stock returns are calculated as the summation of shareholder returns over the two-day announcement period, consisting of the day prior to and the day of announcement.

The relation between ownership and abnormal returns is portrayed graphically in Figure 1. We see larger abnormal returns from firms forming joint ventures with higher ownership levels—this increasing returns pattern persists up to 35%, after which the abnormal returns are less pronounced. These preliminary results in Table 1 and Figure 1 are consistent with the convergence-of-interests hypothesis, but only up to an ownership

level of 35 percent. Once ownership level exceeds 35 percent the evidence is consistent with the entrenchment hypothesis for the joint behavior of ownership and returns.
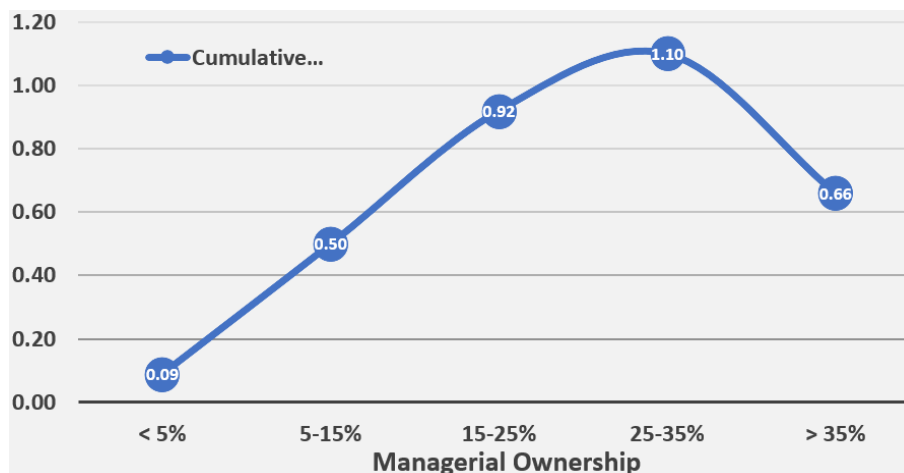

Figure 1. Returns from international joint venture formation by ownership.

Preliminary evidence on the relation between shareholder returns to joint venture formation and the level of free cash flow is provided in panel B of Table 1 and in Figure 2. Evidence suggests an inverse relation between returns and free cash flow at the point of joint venture formation. Shareholder returns range from a high of 1.09 percent for firms in the lowest free cash flow quintile, to a low of -0.22 percent for firms in the highest free cash flow quintile. This evidence is generally consistent with this study's hypothesis that predicts a lower return to shareholders when the level of free cash flow is high.
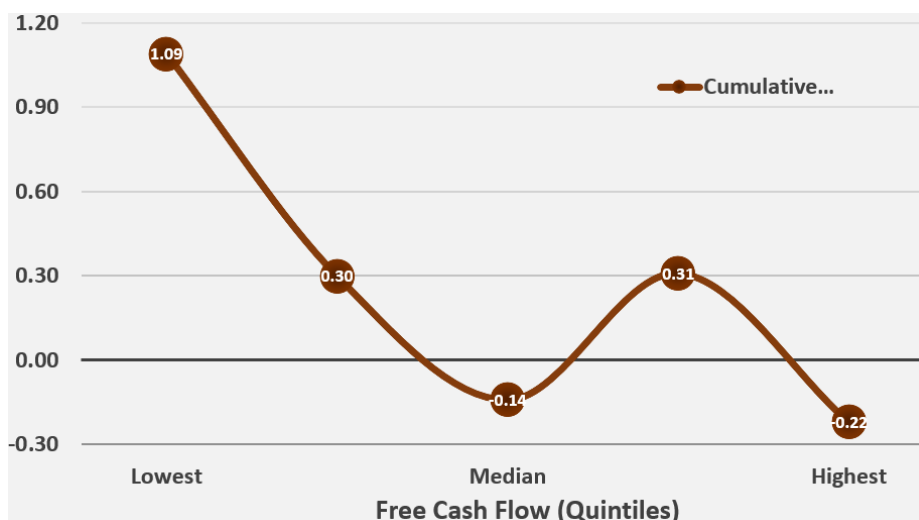

Figure 2. Returns from international joint venture formation by free cash flow.

5.2. Tests of Agency Hypotheses Involving the Joint Relation between Ownership and Returns

The analyses in the previous section are extended to investigate the extent to which the convergence-of-interests hypothesis is valid throughout the full range of managerial ownership. For this purpose, the following model is formulated, where returns to shareholders are the dependent variable, and the independent variables consist of managerial ownership in the firm, the level of free cash flow, and an interaction term involving free cash flow and debt.

$$CAR_{i,t} = \gamma_0 + \gamma_1 \cdot OWN_i + \gamma_2 \cdot FCF_i + \gamma_3 \cdot (FCF_i \cdot LEV_i) + \varepsilon_{i,t}$$

where $CAR_{i,t}$ is the two-day abnormal stock return attributed to firm i's international joint venture formation at time t, OWN_i is the percent of managerial ownership in firm i, FCF_i is firm i's level of free cash flow, and LEV_i is the debt level carried by firm i.

$$CAR_{i,t} = \gamma_0 + \gamma_1 \cdot OWN_i + \gamma_2 \cdot FCF_i + \gamma_3 \cdot (FCF_i \cdot LEV_i) + \gamma_4 \cdot SIZE_i + \varepsilon_{i,t}$$

Parameter estimates							
γ_0	γ_1	γ_2	γ_3	γ_4	Sample size	Adj. R^2%	F-value (sig. level)
Panel A: Managerial ownership, free cash flow, and interaction of free cash flow & debt							
0.003 (1.25)	0.0002* (1.39)	-0.204*** (-3.42)	0.248*** (3.16)	—	316	3.18	4.45 (0.01)
Panel B: Managerial ownership, free cash flow, interaction of free cash flow & debt, and firm size							
0.003 (1.11)	0.0002* (1.28)	-0.203*** (-3.40)	0.248*** (3.15)	0.000 (0.22)	316	2.89	3.34 (0.01)

Note: Cumulative abnormal returns (*CAR_i*) are measured over the two-day announcement period consisting of the day prior to and the day of announcement, *OWN_i* is the percent of firm *i*'s equity shares held by individuals (officers, directors, and principal owners) who can exercise significant influence over corporate affairs, *FCF_i* is firm *i*'s estimated level of free cash flow, *LEV_i* is firm *i*'s level of debt, *FCF·LEV_i* is the free cash flow and debt interaction term, and *SIZE_i* represents firm *i*'s size defined as market value of equity. Parameter estimates and t-statistics (in parentheses) are reported for the regressions. A * (***) designates statistical significance at the 0.10 (0.01) level, one-tailed tests.

Results from estimation of this model are displayed in panel A of Table 2. Parameter estimates are of the predicted signs, and the overall model is statistically significant (F-value of 4.45, significant at 0.01). The positive coefficient of 0.0002 on managerial ownership (*OWN_i*) is significantly greater than zero at better than the 0.10 level. A significant relation between ownership and returns is consistent with agency arguments, and this study's hypothesis, in that the level of managerial ownership at least partly determines shareholder wealth effects from international joint venture formation. Specifically, evidence suggests that managers with higher personal ownership in the firms they manage, undertake investments more in line with the interests and expectations of shareholders.

We also see that the impact of free cash flow (*FCF_i*) on shareholder returns, as reflected in the negative coefficient value of -0.204 (*t*-value of 3.42), is significant at better than the 0.01 level. This result is consistent with the agency hypothesis and implies that as free cash flow increases, shareholder expectations regarding the success of the newly formed venture significantly decline. Evidently, when free cash flow is high, shareholders are less convinced that management's joint venture decisions are in the best interest of firm value.

The free cash flow and leverage interaction term (*FCF_i ·LEV_i*) yields a coefficient estimate of 0.248 that is significantly greater than zero at the 0.01 level. This finding is also consistent with the agency hypothesis and provides evidence that debt, in concert with free cash flow, plays an important control mechanism in restraining suboptimal behavior of managers. This finding suggests that for a given level of free cash flow, shareholders of firms with higher debt have greater expectations for success of the joint venture. For firms where suboptimal manager behavior is more restrained by scrutiny from financial markets, as characterized by firms with relatively higher debt, joint venture investments are more in line with shareholder expectations (i.e., reflect lower agency costs).[5]

Analysis to this point provided no control for firm size. Previous research implies a positive association between firm size and the amount of information available to market participants. This in turn implies that shareholder returns, irrespective of direction, are greater for joint venture formation announcements by small firms. Since managerial ownership and firm size are predictably inversely related, ownership is potentially confounded by the role of firm size on returns. To control for this possibility, firm size is introduced in the regression model as follows.

$$CAR_{i,t} = \gamma_0 + \gamma_1 \cdot OWN_i + \gamma_2 \cdot FCF_i + \gamma_3 \cdot (FCF_i \cdot LEV_i) + \gamma_4 \cdot SIZE_i + \varepsilon_{i,t}$$

where *SIZE_i* is defined as firm *i*'s market value of equity.

Estimation results for this model are reported in panel B of Table 2. The coefficients and *t*-values for each of the agency variables are qualitatively identical to those in panel A. Firm size is not a significant factor (*t*-value equal to 0.22) in explaining shareholder returns from joint venture formation. Consequently, firm size is not a significant confounding factor in the agency explanations to joint venture formation for this sample.

5.3. Tests of Agency Hypotheses Involving a Non-Linear Joint Relation between Ownership and Returns

This section extends the analyses to consider a non-linear relation between managerial ownership and returns as well as potential implications for other agency relations. A potential non-linear relation between ownership and returns is a concern motivated by prior research that provides some evidence of non-linearity. The following ownership categories are defined using prior research as a basis:

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[5] Sensitivity tests were run where leverage was also included as a main effect (in addition to the interaction term). The results of those tests are qualitatively similar to those reported here.

OWN0to5	= Percent managerial ownership (*OWN*) in firm *i* if *OWN* < 5,
	= 5 if *OWN* ≥ 5;
OWN5to25	= 0 if *OWN* < 5,
	= *OWN* minus 5 if 5 ≤ *OWN* ≤ 25,
	= 20 if *OWN* > 25;
OWN25to100	= 0 if *OWN* < 25,
	= *OWN* minus 25 if *OWN* ≥ 25.

This categorization of firms into distinct ownership portfolios is used to investigate the potential for a non-linear relation between ownership and returns. Specifically, this model allows the relation between ownership and returns to vary across three ownership portfolios. The following model is formulated for these tests.

$$CAR_{i,t} = \gamma_o + \gamma_1 \cdot OWN0to5_i + \gamma_2 \cdot OWN5to25_i + \gamma_3 \cdot OWN25to100_i + \gamma_4 \cdot FCF_i + \gamma_5 \cdot (FCF_i \cdot LEV_i) + \varepsilon_{i,t}$$

Estimation results for this regression are reported in panel A of Table 3. Analogous with the results in Table 2, parameter estimates on free cash flow, and the free cash flow and leverage interaction term, are qualitatively identical. Higher free cash flow is associated with lower shareholder returns to international joint venture formation; that is, the γ_4 coefficient is negative, -0.209, and significant at 0.01. Furthermore, the interaction between free cash flow and debt is positively related to shareholder returns; where the γ_5 parameter value of 0.258 is significantly greater than zero at the 0.01 level.

Table 3. Piecewise regressions of stock returns on distinct ownership categories and other agency theoretic factors.

$$CAR_{i,t} = \gamma_o + \gamma_1 \cdot OWN0to5_i + \gamma_2 \cdot OWN5to25_i + \gamma_3 \cdot OWN25to100_i + \gamma_4 \cdot FCF + \gamma_5 \cdot (FCF_i \cdot LEV_i)$$
$$+ \gamma_6 \cdot SIZE_i + \varepsilon_{i,t}$$

Panel A: Categories of managerial ownership, free cash flow, and interaction of free cash flow & debt.

Parameter estimates									
γ_0	γ_1	γ_2	γ_3	γ_4	γ_5	γ_6	Sample size	Adj. R²%	(sig. level)
0.004*	-0.002	0.001**	-0.000	-0.209***	0.258***		316	3.94	3.58
(1.39)	(-1.18)	(2.32)	(-0.99)	(-3.53)	(3.30)				(0.01)

Panel B: Categories of managerial ownership, free cash flow, interaction of free cash flow & debt, and firm size.

0.005*	-0.002	0.001***	-0.000	-0.208***	0.257***	-0.000	316	3.69	3.01
(1.35)	(-1.25)	(2.35)	(-1.02)	(-3.49)	(3.28)	(-0.44)			(0.01)

Note: Cumulative abnormal returns (*CAR*ᵢ) are measured for the two-day announcement period, consisting of the day prior to and the day of announcement, *OWN0to5*ᵢ, *OWN5to25*ᵢ and *OWN25to100*ᵢ are the 0 to 5%, 5 to 25% and greater than 25% categories, respectively, of firm *i*'s equity shares held by individuals (officers, directors, and principal owners) who can exercise significant influence over corporate affairs, *FCF*ᵢ is firm *i*'s estimated level of free cash flow, *LEV*ᵢ is firm *i*'s level of debt, *FCF*ᵢ·*LEV*ᵢ is the free cash flow and debt interaction term, and *SIZE*ᵢ represents firm *i*'s size defined as market value of equity. Parameter estimates and t-statistics (in parentheses) are reported for the regressions. A * (**/***) designates statistical significance at the 0.10 (0.05/0.01) level, one-tailed tests.

Partitioning ownership into three distinct categories reveals the existence of a non-linear relation which is important for our understanding. The predicted positive relation between ownership and returns (reflecting the convergence-of-interests hypothesis) is confined to the intermediate-level ownership portfolios of firms. That is, firms with managerial ownership levels between 5 and 25 percent reveal a predictably positive (0.001) and significant (at the 0.02 level) parameter estimate. In contrast, there is no significant relation between ownership and shareholder returns in the 0 to 5 percent and in the greater than 25 percent ownership categories (parameter estimates are insignificant). These results show that the relation between ownership and returns varies depending on the level of managerial ownership.

Overall, the convergence-of-interests hypothesis is descriptively valid for firms between the 5 to 25 percent managerial ownership range. For firms with more than 25 percent managerial ownership, there is a hint of the predicted inverse relation, which is indicative of managerial entrenchment. However, the latter inference is inconclusive given the less than marginally significant estimate on this ownership parameter.

As previously mentioned, there is a well-documented correlation between firm size and ownership. Therefore, the regression model is extended to explicitly include firm size in the analysis. The following regression is formulated and estimated:

$$CAR_{i,t} = \gamma_o + \gamma_1 \cdot OWN0to5_i + \gamma_2 \cdot OWN5to25_i + \gamma_3 \cdot OWN25to100_i + \gamma_4 \cdot FCF_i + \gamma_5 \cdot (FCF_i \cdot LEV_i)$$
$$+ \gamma_6 \cdot SIZE_i + \varepsilon_{i,t}$$

Results for this regression are reported in panel B of Table 3. The parameter estimates for the model with firm size are qualitatively identical to those in panel A of Table 3. Similar results are also obtained after including debt (*LEV*ᵢ) as a main effect. Overall, these results are consistent with agency theory explanations of returns to shareholders from international joint venture formation. These results also offer insights into prior

evidence involving joint ventures (see (Acharya, Myers, & Rajan, 2011; Arslan, 2018; Harrigan, 1988; Henhart, 1988; Larimo, Le Nguyen, & Ali, 2016; Merchant & Schendel, 2000; Nippa & Reuer, 2019)).

5.4. Sensitivity Tests of Empirical Analyses

Several sensitivity tests are performed to investigate for any variation in inferences due to alternative variable definitions and measurements. First, tests are extended to consider the logarithm of managerial ownership; the empirical analyses to this point use the percentage of managerial ownership. This transformation is motivated by the skewed nature of the distribution of managerial ownership across firms. Results of regression analyses using the logarithmic transformation of ownership are similar to, but somewhat weaker than, those based on the percentage of managerial ownership.

Next, regression models are re-estimated using debt-to-equity in lieu of the debt-to-total-assets leverage ratio. The inferences are identical to those reported. Tests are also extended to include alternative measures of firm size, defined as either total assets or sales, in lieu of market value of equity. Again, inferences are unaffected by this variation in measurement of firm size.

Sensitivity tests also investigate variations in the measurement of free cash flow. The difficulty in utilizing alternative measures of this variable (such as net profit margin, cash flow from operations, and return on assets) is that those measures fail to account for capital expenditures. The free cash flow measure employed in the tests reported here approximates 'cash flow in excess of that required to fund all potential projects with positive net present values' by subtracting the most recent year's capital expenditures. Nevertheless, results from using these alternative measures of free cash flow are qualitatively similar to those reported here.

6. Summary and Conclusions

The primary purpose of this study is to investigate explanations for the strategic value of international joint ventures to shareholders. The research employs agency theory to explain cross-sectional variation in shareholder returns in response to announcements of international joint venture formations. Agency theory predicts that increased stock ownership by managers helps align their interests with those of shareholders by linking manager compensation to firm valuation. This suggests that the strategic value of international joint venture formation is greater when managerial ownership is higher. Moreover, theory suggests that there is a point at which the level of managerial ownership becomes so high as to mitigate, or even flip, the positive relation between managerial ownership and shareholder returns.

Evidence from tests of the first hypothesis are supportive in that linear estimations of the relation between managerial ownership and shareholder returns yields a significant positive relation. Furthermore, additional analyses using non-linear modeling suggest the positive and significant relation is concentrated at intermediate levels of managerial ownership, while a slightly negative but statistically insignificant relation emerges at high levels of managerial ownership. This evidence is consistent with the convergence-of-interests hypothesis at intermediate ownership levels, while the managerial entrenchment hypothesis is potentially descriptive of firms with high managerial ownership. Managerial entrenchment derives from increased agency costs at higher levels of ownership due to limited monitoring pressures.

This study's second hypothesis, predicated on agency theory and the level of free cash flow, predicts non-optimal managerial use of resources as the level of excess funds increases. Results support this agency hypothesis with evidence of a significant negative relation between free cash flow and shareholder returns. This finding suggests that shareholders are less optimistic regarding international joint venture formations emanating from firms that possess high levels of free cash flow.

The study's third hypothesis exploits the interaction between free cash flow and debt to predict that for a given level of free cash flow, investors respond more favorably to joint venture formations from firms that carry more debt (within reasonable bounds). Evidence supports this hypothesis and emphasizes the ability of debt to act as another control mechanism on non-value maximizing behavior of managers. An implication of this finding is that shareholders have lower expectations for international joint ventures formed by firms with less than optimal levels of debt (and correspondingly greater latitude over free cash flow). More generally, this study reveals that the capital structure of firms has important repercussions for agency costs associated with international joint venture formations.

Shareholders are important stakeholders in management's strategic decisions. This study's research design explicitly captures cross-sectional variation in managerial incentives, and these variations are shown to yield insights into shareholder returns to international joint venture formation. Overall, this research suggests that shareholder returns to international joint venture formation exhibit behavior that can be at least partially explained by agency cost considerations.

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