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Executive Summary

This critique addresses the relation between management ownership and company performance. By discursively analysing the underlying assumptions, theoretical foundations, empirical evidence and qualitative discussion of representative literatures, we assess the relevance and soundness of the models proposed by these literatures.

Our conceptual framework features thorough understanding of the background of each study, an original statistical testing method we devised for testing empirical fit of the literatures, as well as a comparative and comprehensive discussion.

Evidenced by our empirical results on McConnell and Servaes (1990) and Short and Keasey (1999) as well as reference to subsequent changes in corporate governance practice, we find their explanatory power to be still robust in our contemporary economic environment. Through an elaborated discussion on endogeneity by comparing Himmelberg et al (1999), McConnell and Servaes (1990) and Davies et al (2005), we arrived at a conclusion that even after controlling endogeneity, a significant link still exists directing from management ownership to company performance.

We further develop our study to a theoretical level and propose a hypothetical polynomial model in explaining the relation between management ownership and company performance. This model features taking into account multiple fundamental economic forces that drive the change in company performance. Our hypothetical model is subject to further empirical examination, and can throw light upon future researches.

1. Introduction

Corporate governance is a realm of escalating importance since a series of corporate failures like Enron. A widely debated topic in corporate governance is the relation between ownership structure and company performance, which involves the implications of managerial ownership, institutional ownership and blockholdership. This dissertation serves as a critique on literatures addressing the relation between managerial ownership and company performance. With an objective to evaluate the **relevance** and **soundness** of models proposed by each literature in the contemporary timeframe, we seek to answer two research questions:

(a) What patterns of correlation, if any, have scholars shown on the relation between percentage of management ownership and company performance? How robust are their arguments when used for examining current data (i.e. 2016 data)?

(b) If any statistical correlation found by literatures, does it represent causality? Is the causality endogenous?

This dissertation begins with a brief summary of the findings of past literatures in this field. Then we introduce our conceptual framework of methodologies and methods to this critique. Next we conduct in-depth analysis on 3 typical literatures each representing a significant school of thoughts as designed in our conceptual framework. Consolidating the discussion of the tests, we provide a comparative and comprehensive perspective to view different literatures in this field.

We conclude that our selected literatures have shown mixed result in statistical validity for current business world, with models featuring non-linearity seeing consistent signs of parameters and downgraded R^2 as compared with historical results. We also take a stance from comparative discussion that, despite endogeneity, there is still a directional relation running from ownership to performance.

2. Background of Past Literatures

The implication of ownership structure originates from the introduction of separation of ownership and control. Studies before 1970s adopted dummy variables of “owner-controlled” vs “management-controlled” firms, and proposed a linear relation where higher percentage of external ownership results in lower performance.

Later scholars (Morck et al, 1988, McConnell and Servaes, 1990, Short and Keasey, 1999) found non-linear relationship using piecewise regression. Their theoretical foundation can be found based on agency models and takeover models.

On the contrary, some scholars questioned the endogeneity of management ownership and company performance. Himmelberg et al (1999) and Demsetz and Villalonga (2001) found no relationship between ownership structure and performance.

Overall, studies in this field have adopted varying models, studied firms across different countries, produced mixed results, and led to ongoing debates. To address these debates, we introduce a conceptual framework of methodologies and methods for evaluating the relevance and soundness of literatures in the current timeframe (i.e. the year of 2016) in the following section.

3. Methodologies and Methods

We leverage theoretical explanations and empirical evidences to construct our arguments.

3.1 Conceptual Framework of Methodologies (Figure 3.1)

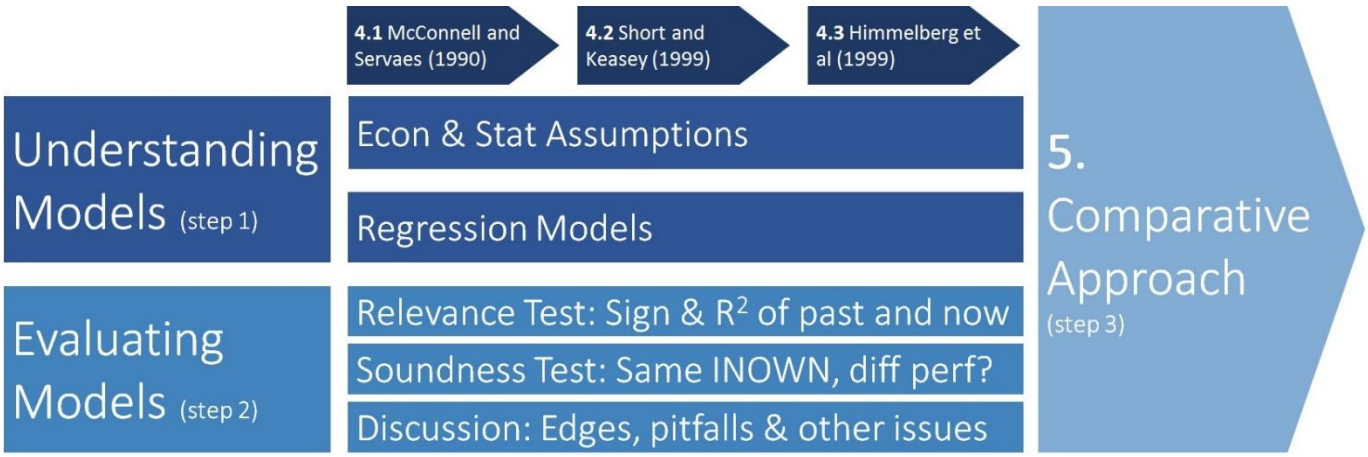
We have devised a three-step approach to this critique:

In the first step we **analyse and understand** three typical US and UK literatures, and understand underlying economical and statistical assumptions and explain regression models (we would not explain the regression model of Himmelberg et al (1999), as the essence of this literature is built on their qualitative argument that spurious correlation does not amount to causality).

In the second step, we **evaluate the relevance and soundness** of those explanation models, and find their edges and pitfalls. To do this, we utilise a statistical study to run a portfolio consisting of 747 firms into each model to test their relevance and soundness (no statistical test will be run for Himmelberg et al (1999), for the same reason above).

Discussions in the third step will consolidate the findings in step two and **provide a comparative and comprehensive perspective** to look at the relation between managerial ownership and performance.

Figure 3.1: Conceptual Framework of Methodologies



3.2 Specific Methods

(a) Approach to the statistical study and its sample data

We use a sample with 747 observations to simulate the behaviours of data used in literatures we are going to validate. A sufficiently large sample size based on the selection criteria set out in the literatures guarantees minimalising the influence of idiosyncratic discrepancies.

(b) Measurement of relevance and soundness

Relevance:

-Do the data interpretations match economic reality?

-Are the statistical relationships between variables show the way their underlying economic relationship interact?

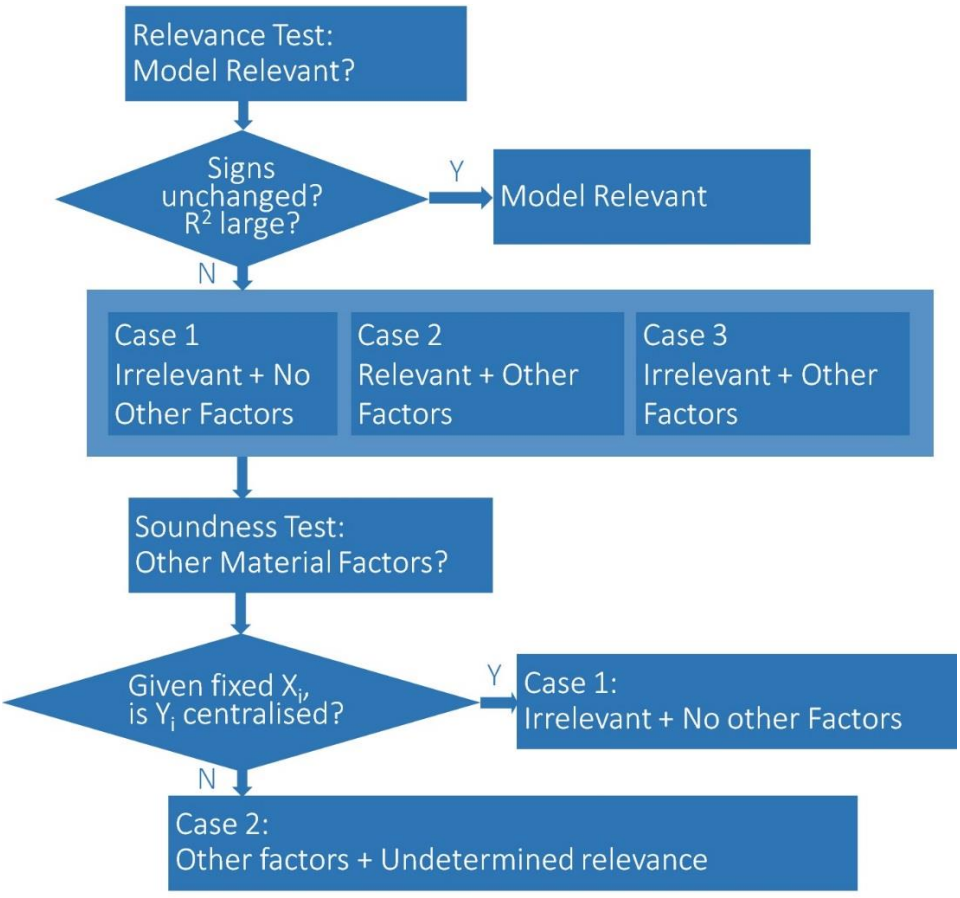
Soundness:

-Does it neglect any other significant factors that can materially influence subject matter?

(c) Testing methods (Figure 3.2.1)

We name an observation (Xi, Yi) where Xi is the percentage of management ownership of an element (i.e. firm) in a sample, Yi is company performance measured by specific proxies. Sample size is n.

Figure 3.2.1: Testing Method Paradigm of Mini Study



Relevance Test (Figure 3.2.2): Select a new sample of observations (Xi, Yi) using existing sampling criteria described in a literature, regress Yi against Xi to obtain a new regression formula with R^2. Then we see whether the signs of parameters have changed, and whether the new R^2 is big or small.

If signs remain unchanged and R^2 is large, then the model holds, and ownership is relevant. Otherwise, 3 cases might exist: 1, Ownership irrelevant and no other factors; 2, Ownership relevant but other factor(s) caused large discrepancies; 3, Ownership irrelevant and other factor(s) also caused large discrepancies.

Soundness Test is run if Relevance Test shows changed signs of parameters and a low R^2: Select a new sample of observations with a fixed management ownership Xk, denoted (Xk, Yi), and see if the n Yi are centralised or dispersed. If centralized (low variance, see Figure 3.2.3) which means Yi are almost equal for firms with similar X, then no other factors, and ownership is irrelevant (case 1). If dispersed (high variance, see Figure 3.2.4) which means Yi varies sizably for firms with similar X, then there are other factors, and we do not have enough evidence to find out if it is case 2 or 3. For the purpose of this study, we would not investigate further on these other factors.

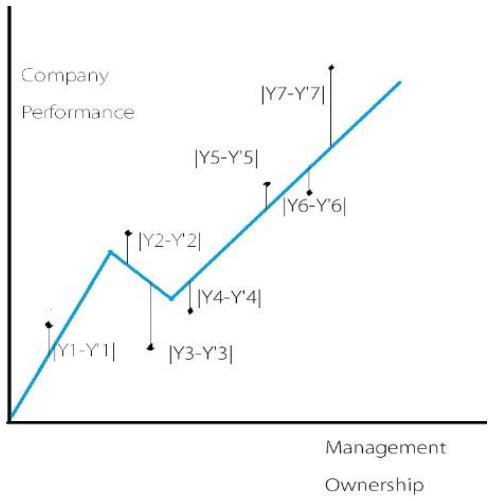


Figure 3.2.2 Relevance Test

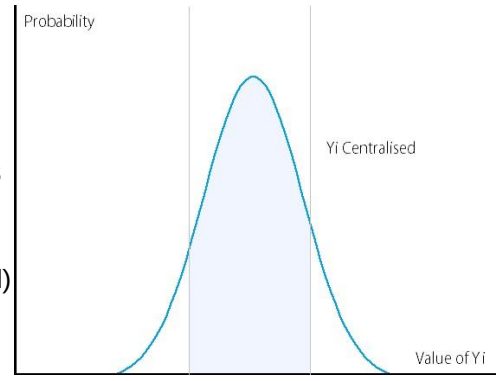


Figure 3.2.3 Soundness Test (Centralised)

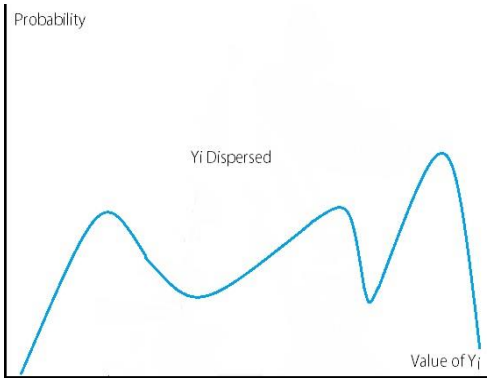


Figure 3.2.4 Soundness Test (Dispersed)

4. Understanding and Evaluating Three Models

We selected three representative and comparable articles, and evaluated the relevance and soundness of their models. These articles represent curvilinear relation (McConnell and Servaes, 1990), cubic relation (Short and Keasey, 1999) and no relation (Himmelberg et al, 1999) between managerial ownership and company performance.

We base our logical flow in this section on the conceptual framework shown in Figure 3.1 in subsection 3.1. Table 4 summarises major characteristics of the three literatures and our test results on each literature.

Table 4: Summary of characteristics of selected literatures, and test results on them

Model	Curvilinear relation (McConnell and Servaes, 1990)	Cubic relation (Short and Keasey, 1999)	No relation (Himmelberg et al, 1999)
Year of Data	1976 & 1986	1988-1992	1982-1984
Proxy of Performance	Tobin's Q	ROE ('RSE') & P/B ('VAL')	Tobin's Q
Proxy of Management Ownership	'Various measures of ownership' (for the purpose for our study, INOWN, i.e. insider ownership)	Percentage of equity shares owned by directors' and immediate families	'the percentage of the firm's shares owned by those managers and directors' (pp360, Himmelberg et al, 1999)
Source of Data	Compustat & *Value Line Investment Survey*	Datastream	Compustat
The Data & Sampling Criteria	1,173 firms in 1976 & 1,093 in 1986 listed on NYSE or AMEX. Contains not only Fortune 500 firms but also smaller firms.	225 UK firms quoted on LSE for 1988 to 1992, and quoted at least a year before 1988 Excluding financial, oil, broadcasting, privatised firms, and firms whose ownership structure do not go with 'one share one vote'	600 firms randomly sampled from the universe of Compustat firms with data available over the period 1982-1984
Theoretical Framework	Jensen & Meckling (1976) agency theory: Alignment & Entrenchment Stulz (1988) takeover model	Jensen & Meckling (1976) agency theory: Alignment & Entrenchment	Unobserved firm characters influence both management ownership and performance, hence spurious correlation (not causation)

Quantitative Model	Q regressed against INOWN and $INOWN^2$. Result: INOWN and $INOWN^2$ statistically relevant, with R^2=2.7% for 1976 R^2=6.0% for 1986	Performance= $\alpha+\beta_1DIR+\beta_2DIR^2+\beta_3DIR^3+\gamma$Control Variables Result: DIR, DIR^2 and DIR^3 statistically relevant, R^2=24.5% Implicit assumption: causality runs from ownership to performance, not the other way round. Ownership data is gathered at the beginning of each period to avoid the reverse causality direction.	$m_{it}=\beta_1x_{it}+\gamma_1u_i+e_{it}$ (1) $y_{it}=\theta m_{it}+\beta_2x_{it}+\gamma_2u_i+v_{it}$ (2) $Q_{it}=\sigma y_{it}+\beta_3x_{it}+\gamma_3u_i+w_{it}$ (3) put (1)(2) into(3) $Q_{it}=\sigma\theta m_{it}+(\sigma\beta_2+\beta_3)x_{it}+(\sigma\gamma_2+\gamma_3)u_i+\sigma v_{it}+w_{it}$ (4) $Q_{it}=a_0+a_1m_{it}+a_2x_{it}+\varepsilon_{it}$ (5) $E(m_{it}x_{it})=\gamma_1(\sigma\gamma_2+\gamma_3)SD^2$ (6) [Not to be discussed]
Relevance Test: Sign of parameters + Magnitude of R^2	Signs unchanged R^2=1.0% < 2.7% in 1976 < 6.0% in 1986 Relevance Test passed from totality of fact	Signs unchanged R^2=0.43% < 24.5% of panel data in 1988-1992 Relevance Test passed from totality of fact	N/A (for the reason stipulated in subsection 3.1 paragraph 2)
Soundness Test: Dispersion of P/TB given fixed managerial ownership	SD=257% CV=321% P/TB dispersed Other factors = YES	SD=330% CV=83% P/TB dispersed Other factors = YES	N/A (for the reason stipulated in subsection 3.1 paragraph 3)

4.1 McConnell & Servaes (1990)

[Understanding Models] McConnell and Servaes (1990) found, inter alia, a significant curvilinear relation between insider ownership (one of their multiple measures of ownership structure) and Tobin's Q (measure of performance) for 1,093 firms listed on NYSE and AMEX in 1986.

A basic hypothesis underlying McConnell and Servaes (1990) is that the value of a firm is a function of the distribution of equity ownership between corporate insiders, outside atomic shareholder, blockholders and institutional investors. Corporate insiders are defined as officers and members of the Board of Directors. In their data, financial institutions are excluded from the sample, and also non-financial companies with Q over 6 are also excluded to avoid outliers.

They regressed Tobin's Q with the percentage of insider ownership (INOWN) and squared insider ownership ($INOWN^2$), as well as a set of variables for other purposes of their study. For the

purpose of our study on the implication of managerial ownership only, we can rewrite their regression formula as:

$$Q = a1*(INOWN) + a2*(INOWN^2) + \text{error term}$$

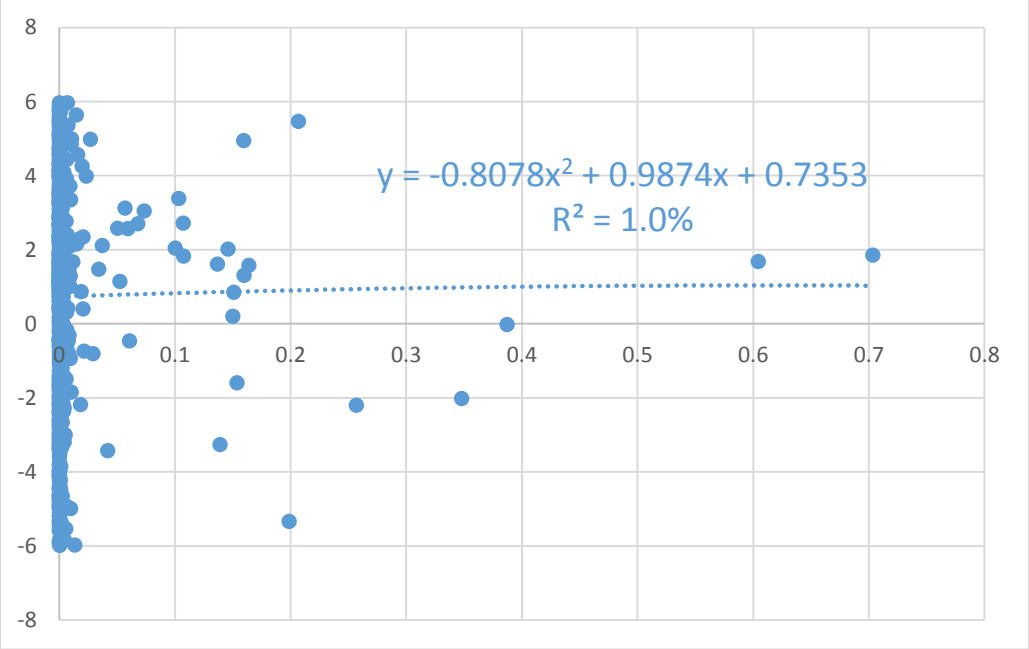
1986 evidence produced a1=-4.074, a2=3.0644, inflection point around 40%, hence a statistically significant curvilinear relationship where performance first increases and then decreases as managerial ownership goes up.

A concern exists surrounding the use of Tobin's Q as the measure of performance, and we propose that P/TB is used instead. We will scrutinise this issue in the discussion after the Relevance Test and Soundness Test (refer to Figure 3.1 Conceptual Framework).

In the subsequent quantitative test, we use the sampling criteria stipulated in McConnell and Servaes (1990) to create a portfolio (a mini-sample) consisting of 105 random NYSE firms, gathered their managerial ownership data and P/TB as at 16 Feb 2016, and denote the managerial ownership of each firm as INOWNi, P/TB as P/TBi.

[Relevance Test]

Figure 4.1.1: Relevance Test: P/TB regressed against INOWN



	2016	1976
$INOWN^2$	**-**0.808	**-**1.23
INOWN	**+**0.987	**+**1.21
k	0.735	0.93
R^2	**1.0%**	**2.7%**

Regressing the P/TBi of each firm against its INOWNi for 2016 data, we get:

P/TB = **- 0.8078***$INOWN^2$ + **0.9874***INOWN + **0.7353**,

with **R^2 = 1.0%**, inflection point INOWN = 61.1%

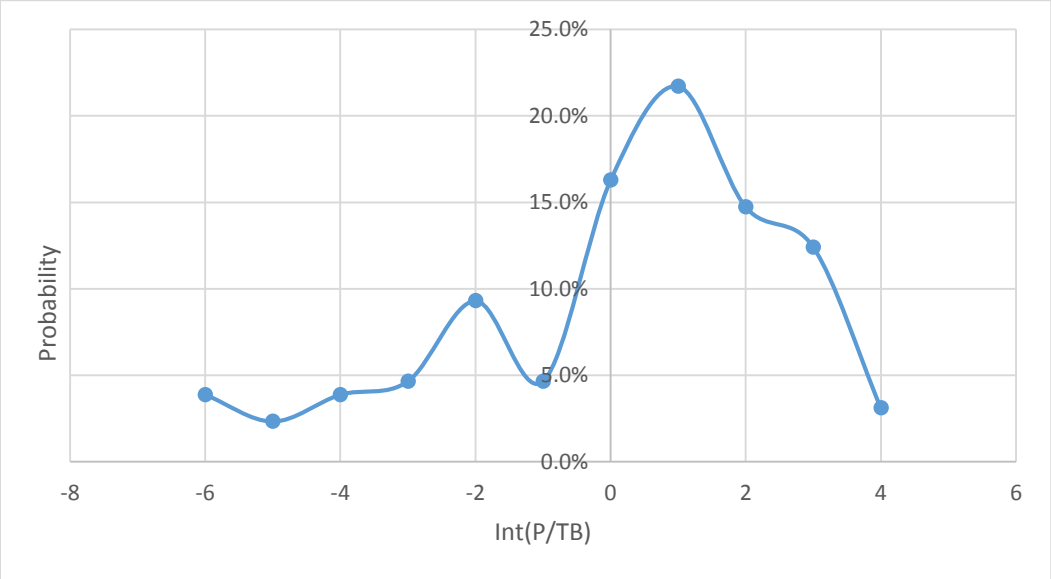
Compared with the regression formula obtained by the author for 1976 data:

P/TB = **- 1.23***$INOWN^2$ + **1.21***INOWN + **0.93**,

with **R^2 = 2.7%**, inflection point INOWN = 60.9% (and 43.2% in 1986)

[Soundness Test] As an R^2 of 1.0% cannot unequivocally convince us that INOWN is relevant, we conduct Soundness Test out of prudence: In our sample, the most common INOWNs fall around 0.35%. We screen companies by controlling INOWN to be within the narrow range of 0.10% to 0.60% (i.e. up and down 0.25% from mean 0.35%), and plotted the probability distribution of int(P/TB) (integer of P/TB) to see how dispersed the P/TBi are for different firms that have similar INOWN (shown in Figure 4.1.2).

Figure 4.1.2 Soundness Test: Distribution of P/TB given fixed INOWN (0.1%-0.6%)



SD	2.572634
Mean	0.801645
CV	3.209192

The mean of P/TB is 0.80, and standard deviation (SD) is 257%. Coefficient of Variation (CV, which is SD/Mean) is 321%. The considerably large SD and CV indicates a widely dispersed distribution of P/TB.

[Interpretation and Discussion] The relevance of this model is measured by sign change and magnitude of R^2: The signs of parameters remain consistent throughout time, which indicates that a curvilinear relation still exists. The 1.0% R^2 is lower than the 6.0% results of 1986 data of McConnell and Servaes (1990) and the 2.7% results of their 1976 data, which implies that the fitness of this curvilinear model is slightly impaired through time.

Combining the results of quantitative tests on McConnell and Servaes (1990), it can be interpreted that **managerial ownership is still statistically relevant**, and there are **other factors** to account for changes in performance. Note that the **impairment in relevance** of this 1990 literature in the contemporary setting **does not undermine its value in describing a curvilinear relation where performance first increases and then decreases**, as evidenced by the consistent signs of parameters throughout time.

Then we come to the qualitative concern of the use of Tobin's Q as measure of performance, as we mentioned in earlier this section: Market measure as Tobin's Q is, it may be prone to even more severe accounting distortion than accounting measures are, as pointed out by Demsetz and Villalonga (2001). While the numerator of Q is market value of the firm, the denominator is the estimated replacement cost of tangible assets, which assumes that a firm only generates revenue from its tangible assets. Q, therefore, yields various degrees of accounting distortion for firms with different weighting of intangible assets. Moreover, as the denominator of Q is smaller than total book value, a same amount of difference in accounting estimate amounts to a larger accounting distortion in Q than in P/TB. And it is also a widely accepted practice (Short and Keasey, 1999) in the academia that P/B and P/TB are used in lieu of Q. Therefore we use P/TB in our quantitative analysis.

We further discuss **the inflection point of the curve and its implications under current timeframe**: The turning point falls at 61.1% INOWN, as compared with 60.9% INOWN for 1976 data and 43.2% for 1986 data. This implies decreasing perk pursuit behaviours by management, as well as an improving state of corporate governance. According to agency theories, a higher inflection point suggests a higher level of management entrenchment (Jensen and Meckling, 1976). Agency theories dictate that management, after whose equity stake exceeds a certain level, are more prone to diverting corporate decisions away from the best interest of the company for the sake of their personal interest. Now that we can deduce from our empirical study that entrenchment happens at a higher level of management ownership, we have ex-ante stance (and support from an ownership research by Office of National Statistics, 2013) to believe that management entrenchment is curbed due to stricter corporate governance regime in the US after the failure of Enron in 2002. Ex-post robustness of this interpretation is subject to further research.

4.2 Short and Keasey (1999)

[Understanding Models] Studying 225 LSE listed firms, Short and Keasey (1999) found a cubic relation between director ownership (proxy of managerial ownership) and P/B (price to book, named VAL in the literature).

An underlying assumption of Short and Keasey (1999) is that the value of a firm is a function of the distribution of equity ownership between directors (and their direct relatives) and other controlled variables, including size (measured by sales), growth (% change in sales), gearing (Debt to Asset) and R&D intensity (R&D expense to average assets).

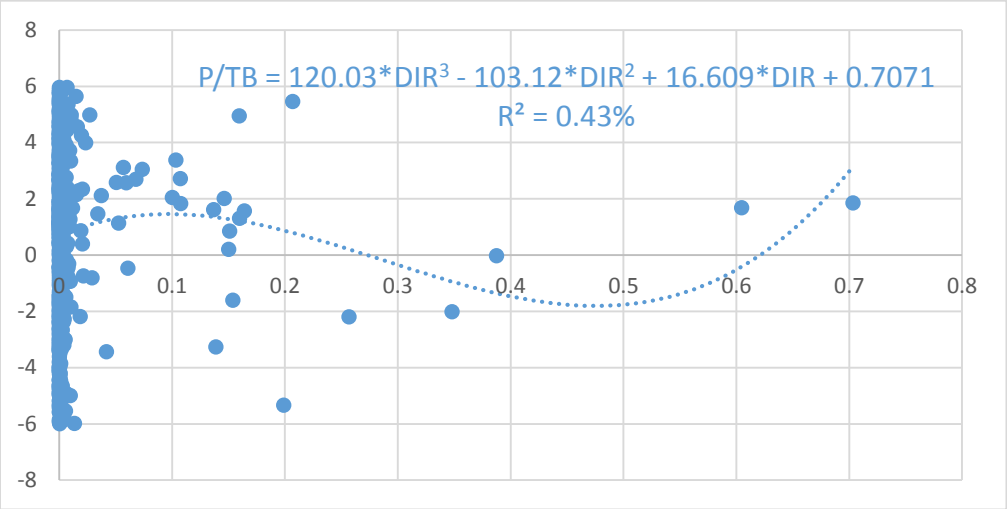
Using a regression formula of:

$$P/TB=\alpha+\beta_1 DIR+\beta_2 DIR^2+\beta_3 DIR^3+\gamma \text{Control Variables}$$

where P/TB is Price to Book Value of Tangible Assets, DIR is director ownership, they obtained: α=-1.09, β_1=0.025788, β_2=-0.001528, β_3=0.0000205, with an R^2=24.5%. We have noted no special issues to be discussed a priori, so we proceed to quantitative tests.

[Relevance Test]

Figure 4.2.1 Relevance Test: P/TB regressed against INOWN



	2016	Panel Data
DIR^3	+120.03	+2.05E-5
DIR^2	-103.12	-1.53E-3
DIR	+16.61	+0.0258
k	0.707	-1.09+err
R^2	**0.43%**	**24.5%**

Regressing the P/TBi of each firm against its INOWNi for 2016 data, we get:

P/TB = **120.03***DIR^3 **- 103.12***DIR^2 + **16.609***DIR + 0.7071

with R^2 = **0.43%**, inflection point INOWN=9.0%, INOWN=48.0%

Compared with the regression formula obtained by the author for panel data:

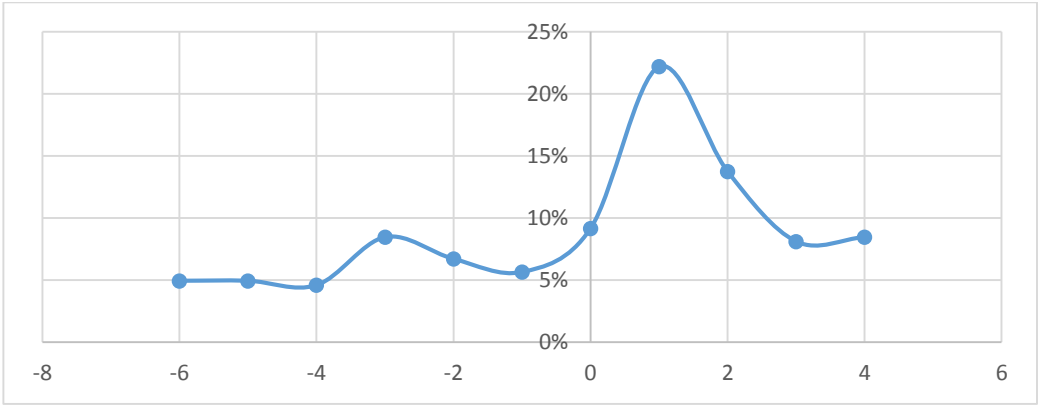
P/TB = **0.0000205***DIR^3 **- 0.001528***DIR^2 **+ 0.025788***DIR -1.09 + error term

with R^2 = **24.5%**, inflection point INOWN=10.8%, INOWN=38.9%

The fitness of this model in contemporary settings (see Figure 4.2.1) as measured by R^2 is considerably lower than the 24.5% results of 1988-90 panel data of Short and Keasey (1999). This implies that we **cannot determine whether managerial ownership is relevant**.

[Soundness Test] As an R^2 of 0.43% cannot convince us that DIR is relevant, we conduct Soundness Test: In our sample, the most common DIRs fall around 0.25%. We screen companies by controlling INOWN to be within the narrow range of 0.00% to 0.50%, and plotted the probability distribution of int(P/TB) (integer of P/TB) to see how dispersed the P/TBi are for different firms that have similar DIR (shown in Figure 4.2.2)

Figure 4.2.2 Soundness Test: Distribution of P/TB given fixed INOWN (0.0%-0.05%)



SD	2.916613
Mean	0.565306
CV	5.159356

The mean of P/TB is 0.57, standard deviation (SD) is 292%, Coefficient of Variation (CV, which is SD/Mean) is 516%. The considerably large SD and CV in indicative to a widely dispersed distribution of P/TB.

[Interpretation and Discussion] Relevance-wise, consistent signs of parameters in our results reveal the validity of this cubic explanation model towards ownership and performance. Despite the low R^2, the unchanged signs of parameters demonstrate the underlying economic relevance of the model, which dictates that performance first get enhanced, then deteriorates, and eventually betters as director stake increases.

When we take a deeper look at the parameters for economic evidence of relevance, we can deduce from the consistency in sign and increase in magnitude that director ownership is now better linked with performance as compared with 1988 to 1990, and corporate governance practice is improving. In late 1980s, corporates tended to entitle excessive equity ownership to executives in reward for (or to commensurate) their performance, only to find a drastic misalignment between ownership and performance. After the introduction of Greenbury Code in the UK in 1995, a scheme was enacted to align management shareholding with company performance. We can interpret from empirical results that interest alignment is effectively achieved by a series of initiatives for good corporate governance practice, including the Greenbury Code.

Soundness of this model is statistically low but qualitatively high in the current setting. Empirical evidence shows a considerably high variation in P/TB given a fixed level of managerial ownership. One plausible reason behind this change could be the increase in number of other factors (i.e. controlled variables as framed by Short and Keasey, 1999, and unobserved firm characteristics as phrased by Himmelberg et al, 1999) which the model has not accounted for. A relatively counterintuitive factor that might exacerbate the impairment in soundness is the great leap in sample size from 225 to 747 (i.e. increase in total number of listed companies), which makes the sample portfolio exposed to greater macroeconomic risks and hence a bigger variation even given same management ownership.

Another perspective to interpret the results regarding soundness would by to study the inflection points of our study with the original study performed by Short and Keasey (1999): We have successfully yielded a local maxima and a local minima at similar DIR levels to in their results, which indicates that entrenchment points have hardly changed since 1990s. This is conductive to the economic-wise soundness of Short and Keasey (1999), in that even after taking into account the not-yet-happened turmoil caused by the dot-com bubbles around the new Centennial (Davies et al, 2005) and the financial crisis in 2008, the cubic-relation methodology is still not out-dated.

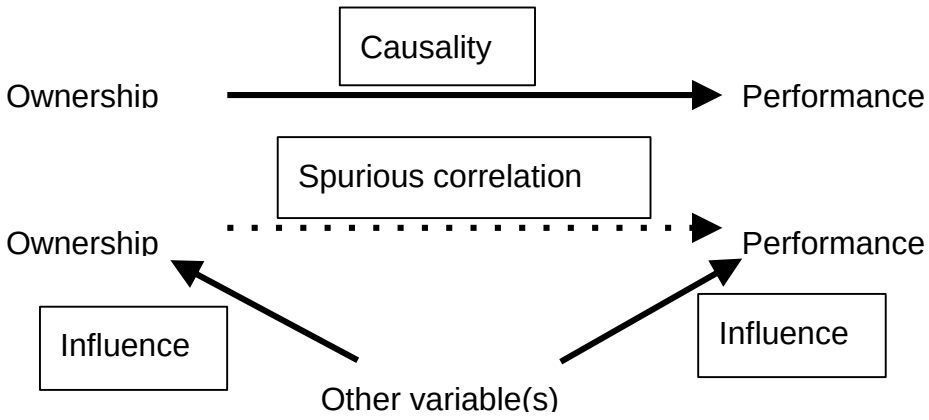
Combining the results of Relevance Test and Soundness Test on Short and Keasey (1999), it can be implied that the explanation power of underlying economic drives remains strong (and is enhancing). As our study focuses on the relation between management ownership and company performance, we cannot fully examine all the controlled variables studied by Short and Keasey (1999), who had taken into consideration multiple variables, and the soundness of this model stands qualitatively robust in accounting for changes in company performance. This model provides viable insights on how to build nexus with ownership structure and current performance for cutting-edge studies based on non-linear relations.

4.3 Himmelberg et al (1999)

[Understanding Model] Himmelberg et al (1999) studied 600 firms randomly sampled from the universe of Compustat firms with data available over the period 1982-1984, and proposed that no relation exists between managerial ownership and company performance. The special point in this literature is that its authors propose that statistical correlation does not necessarily amount to causality. For this reason, it is not our main purpose to analyse the statistical relevance of the model proposed by Himmelberg et al (1999), but rather the fundamental economic forces that underlie their arguments.

An underlying economic assumption of Himmelberg et al (1999) is that unobserved firm characters influence both management ownership and performance, hence a spurious correlation (rather than causality) between the two. Himmelberg et al (1999) has provided a means of explanation on how these sources of heterogeneities influence both insider ownership and company performance, thereby resulting in a spurious correlation which seems that it is insider ownership that influences performance, as shown in Figure 4.3:

Figure 4.3: Causality vs Spurious Correlation



[Interpretation and Discussion] Himmelberg et al (1999) are not the only scholars who noted the issue whether correlation represents causality or spurious correlation. McConnell and Servaes (1990) addressed the concern of spurious correlation by introducing three variables in the regression analysis: financial leverage, R&D intensity and replacement value of assets. After

controlling these three variables, the relation between managerial ownership structure and performance is still significant. Contradictory to the finding of McConnell and Servaes (1990), Himmelberg et al (1999) listed other sources of unobserved heterogeneity, which may influence both ownership and performance: monitoring technology, intangible assets and degree of market power. The quantitative regression also produced solid support for the spurious correlation of several sources of heterogeneity (aka “other variables” in Figure 4.3 above).

As it is never conclusive and exhaustive to exemplify all possible sources of endogeneity heterogeneity, an insight can be drawn from Himmelberg et al (1999) that one can only prove the existence of certain “other variables” in Figure 4.3, but not disprove the existence of them totally and unequivocally.

5. A Comparative and Comprehensive Perspective

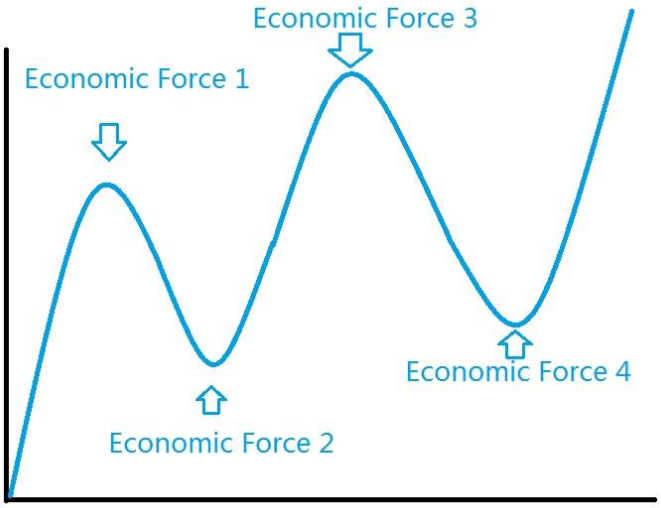
In this section, we consolidate the model-by-model insights from section 4, take the qualitative discussion to a higher level and provide a comparative approach to view different literatures together. As a main feature of this critique, holistic thinking will reveal to us a more complete image.

Viewing from the totality of results, we have unveiled **a common trend that betterment in corporate governance practice has significantly improved the alignment of interest issue in the relation between ownership and performance**. Across different models among the three literatures elaborated in this critique, we observed slight impairments in the statistical fit of the models, which is partially explained by the aforesaid discussions under each literature; but we obtained improving explanation power from the perspective of underlying economic forces, whereby the agency relations and takeover models are playing increasingly influential roles in accounting for the subject matter due to ameliorated corporate governance. Deriving from agency theories, the nexus between ownership and performance has seen considerable enhancement from 1980s to the current days, when we compare classic studies from Jensen and Meckling (1976), Fama and Jensen (1983) to contemporary researches like Short and Keasey (1999) and Davies et al (2005) (to be covered in subsequent paragraphs).

We now synthesise contradictory literatures and seek ‘otherness’ regarding our research question of endogeneity: At the first glance, endogenous relations appear to readers a snake who eats its own tail, but endogeneity can, as a matter of statistically-proven fact, be controlled and still report causality flowing from ownership to performance. Amongst multiple researches in the academia (like Demsetz and Villalonga, 2001), more convincing evidences confirm the classic prediction of Jensen and Meckling (1976) with respect to the issue of endogeneity, such as Davies et al (2005). They reported results showing that, even after controlling endogeneity, a statistically significant link directing from ownership to performance exists, and so does a statistically significant link in the reverse direction. The insight we extract from their finding is that, the deemed

endogeneity whereby ownership and performance influence each other is less likely to be a representation of spurious correlation as proposed by Himmelberg et al (1999), but rather a reciprocal interaction between two economic forces, a healthy self-correcting mechanism of the share market.

Figure 5: Non-linear relation to the power N+1,
with N economic forces driving performance change.



Inspired by the reciprocal-influence of ownership and performance discussed above, we further generate original inspiration at a theoretical level: While McConnell and Serveas (1990) built their arguments on the theoretical foundation of takeover model, Short and Keasey (1999) rely largely on agency relations to explain the relation. We draw reference from Davies et al (2005) and found that, non-linear relations might be neither curvilinear nor cubic due to more complicated real economy in the current era. **Taking into account N economic drives that might come at different management ownership levels, we are now able to construct a hypothetical polynomial relation to the power (N+1) to explain the subject matter from a fresh perspective (and a perspective closer to economic reality).** The value of N depends on the specific economic forces to be included in a study. Our theoretical model can be elucidated by more recent researches: Besides the first local maxima around 10% of management ownership originally reported by Short and Keasey (1999), Davies et al (2005) also hypothesised an a priori quintic relation, and found posteriori a second local maxima around 50% which reflects the collapse of external monitoring precautions after management have taken collective control of the firm with majority shareholding. Our polynomial hypothetical model is subject to further empirical examination, and we hope that it throws light upon future studies in this field.

The imperative lesson from our comparative discussion comes back and gives an ultimate explanation to our initial research question: How relevant and how sound are the models

proposed by literatures? While we have devised our unique framework in measuring relevance, we admit that perfect soundness of a model is scarcely achievable, as circumstances will always exert extra economic forces to divert the relation away from the ideal model. As we learned from our thoughts in last paragraphs, the best answer to our fundamental research question would be: **As methodologies and models in corporate governance are consistently evolving, they keep relevant and become sounder, capable to better account for more theoretical drives of performance.**

6. Conclusions and Limitations

In this critique we have examined in depth three representative literatures on the relation between management ownership and company performance, and assessed their relevance and soundness in the contemporary economic setting.

By understanding in-depth, critically evaluating and comparatively discussing their theoretical foundations, economic assumptions, qualitative appropriateness and quantitative validity, we found that literatures supporting non-linear relations like McConnell and Serveas (1990) and Short and Keasey (1999), while experiencing a mixed change in statistical fit (as measured by sign changes of parameters and R^2 obtained by regressing with current data), have gained increasing explanation power in the sense of closeness to economic fundamentals that drive performance. We have utilised extensive qualitative discussion and comprehensive comparison to illustrate that the seemingly endogenous relation between ownership and performance represents more of interactions of economic forces that underlie the financial market that the explanation given by Himmelberg et al (1999), who suggested no relation by proposing spurious correlation instead of causality.

We have further taken our strategic thought on this subject matter to the next level, and synthesised a hypothetical theoretical framework so that, when we take into account N economic drive, we have been able to construct a non-linear relation to the power of (N+1). The justification for our hypothetical model has been demonstrated in analysing the evolution history of explanation models in corporate governance, from the early crude form of linear relation to non-linearity, from curvilinear and cubic relations in the literatures we scrutinised to quintic relations by Davies (2005).

Our critique is subject to two major limitations, one being the changing measurement of P/TB, the other being constrained time and scope to further examine our polynomial hypothetical model mentioned in section 6. The former limitation is inevitable due to the change in accounting standards regulating the measurement of intangible assets, which yields different measurements of P/TB used in historical literatures and our statistical analysis. The latter is intrinsic to our scope of studies given a limited timeframe, and can be turned into a research opportunity for future studies to explore.

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The Relationship Between Management Ownership and Company Performance

A Critique on US and UK Literatures

AF4912 Capstone Project
Group 164
Supervisor: Dr. Rita WONG

CHEUNG Ka Ho
ZHANG Ziyao

Act like an OWNER/MANAGER.

Act like an OWNER/MANAGER…

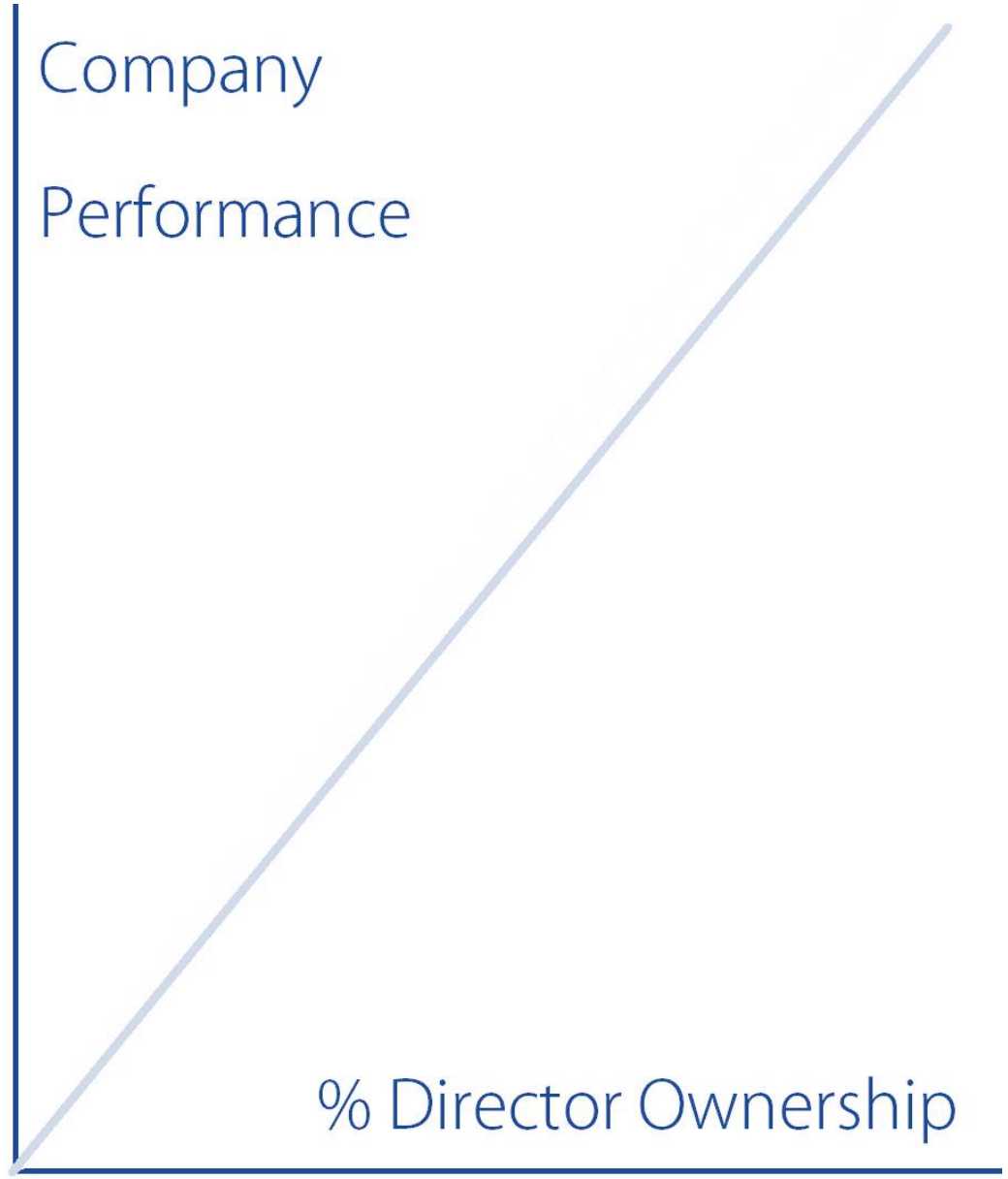
?

Background

Early 1960s studies

Linear relation

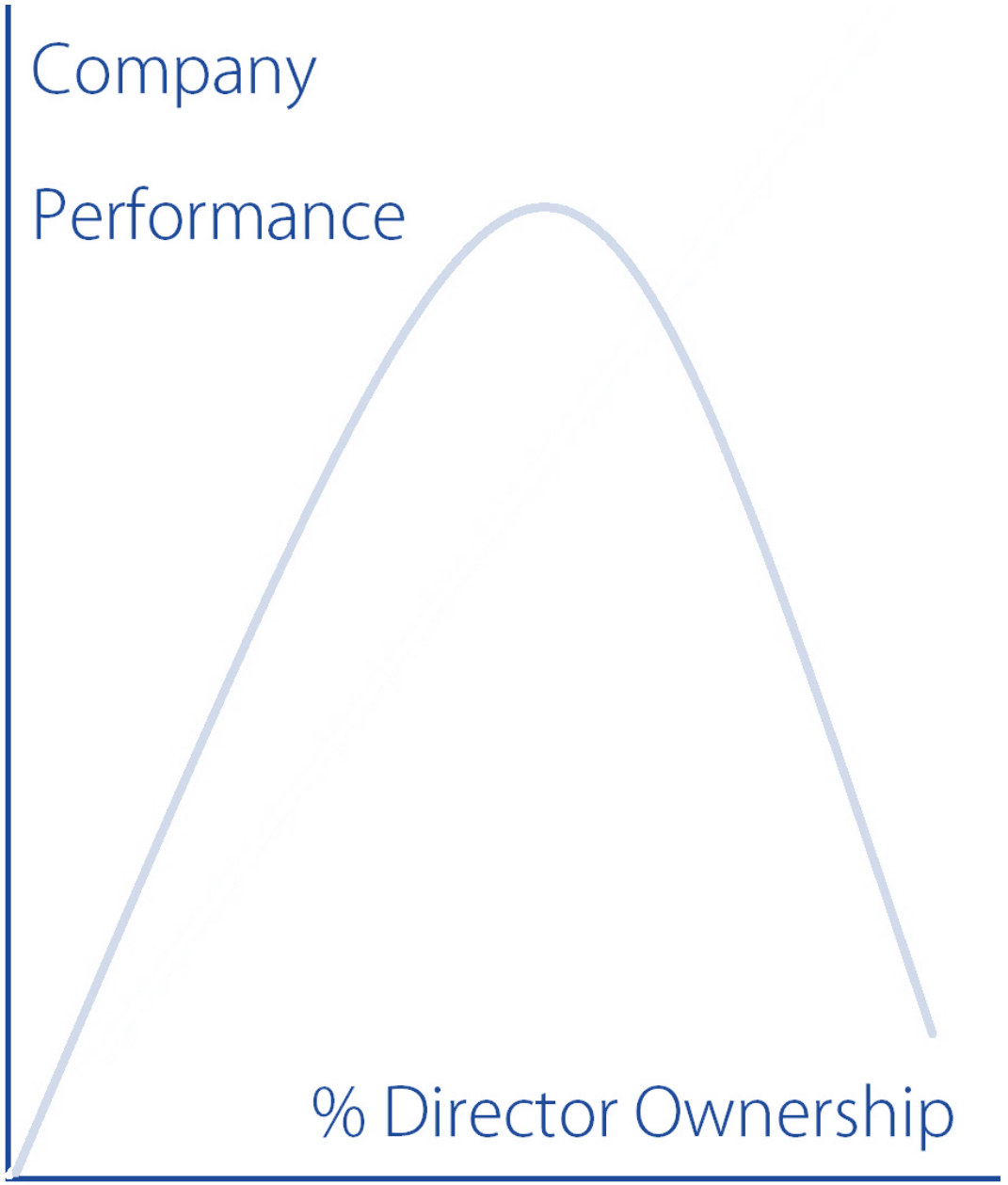
P/B=k*DIR



McConnell & Servaes (1990)

Curvilinear relation

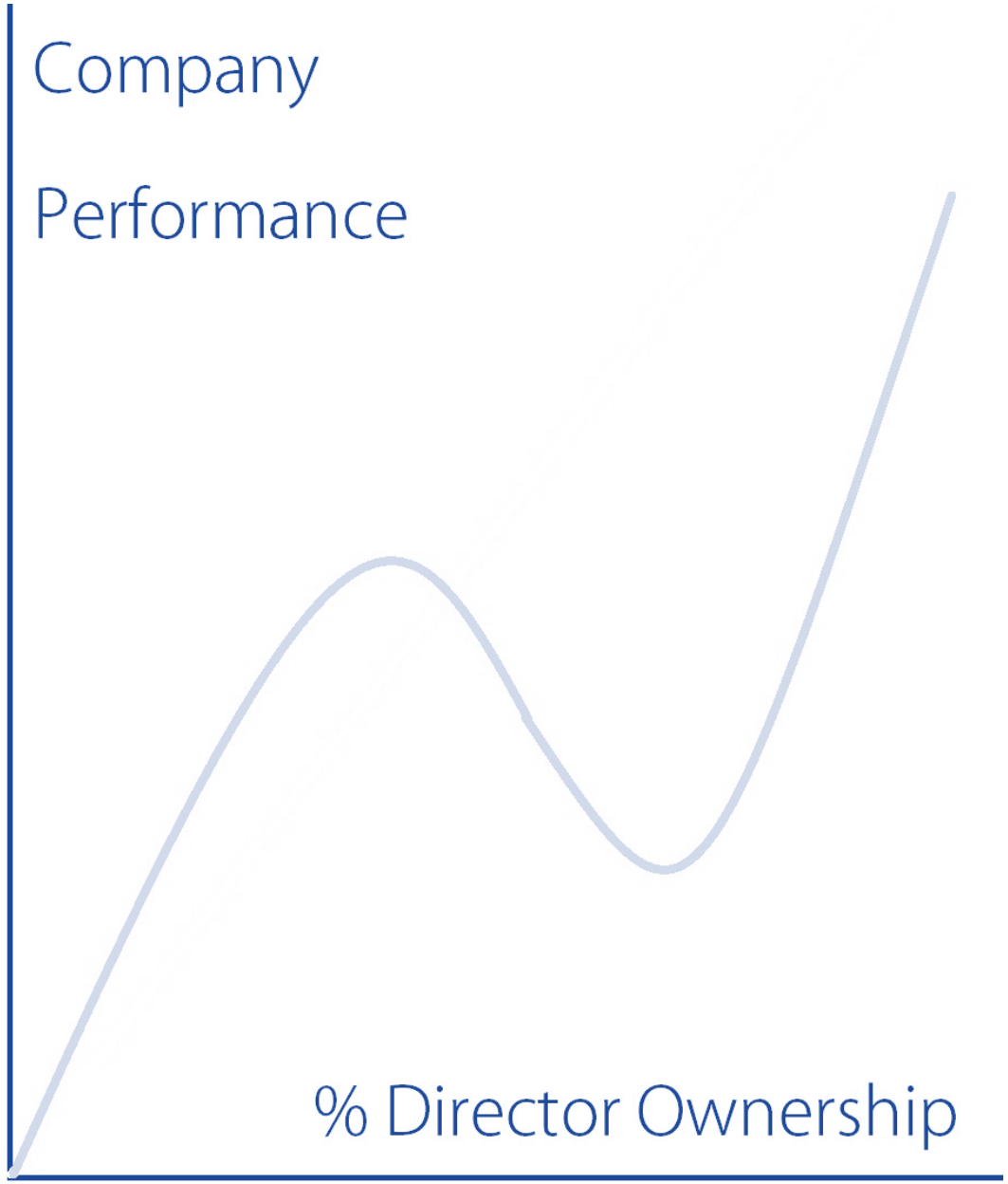
$Q = a_1*(INOWN) + a_2*(INOWN^2) + error\ term$



Short & Keasey (1999)

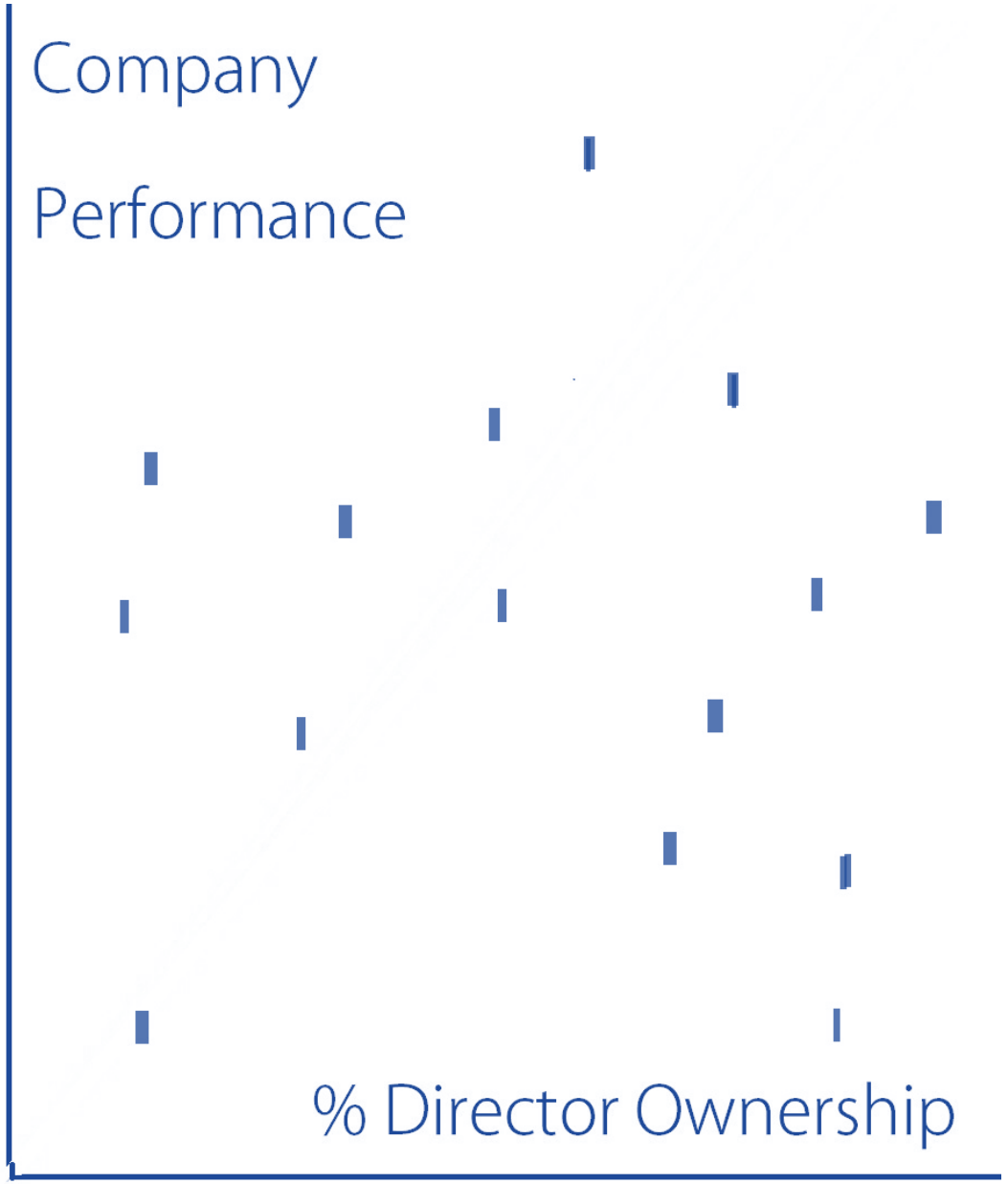
Cubic relation

$P/TB = a + b_1 * DIR + b_2 * DIR^2 + b_3 * DIR^3 + c * Ctrl$ Variables



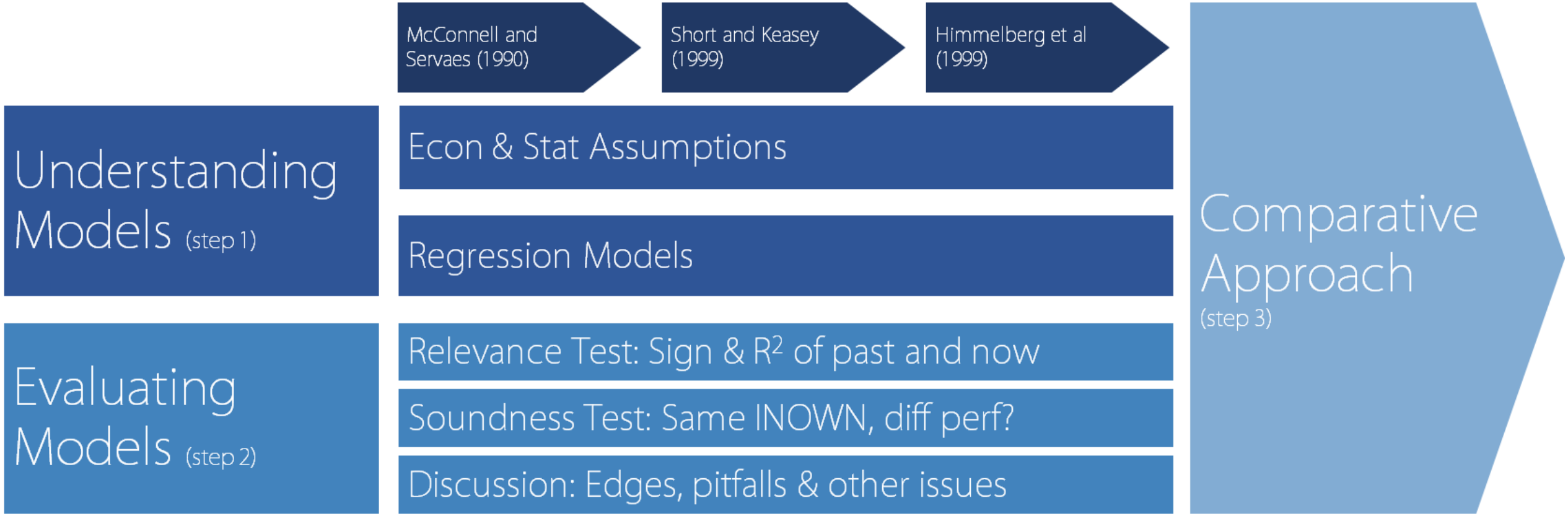
Himmelberg et al (1999)

No relation

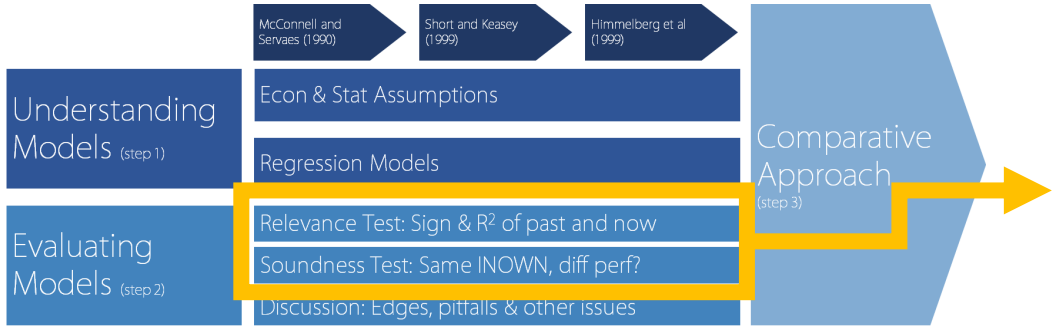


Methodology & Methods

3-step Conceptual Framework



Testing Method



Relevance Test:
Model Relevant?

Signs unchanged? R^2 large?

Y → Model Relevant

N

Case 1
Irrelevant + No Other Factors

Case 2
Relevant + Other Factors

Case 3
Irrelevant + Other Factors

Soundness Test:
Other Material Factors?

Given fixed X_i, is Y_i centralised?

Y → Case 1:
Irrelevant + No other Factors

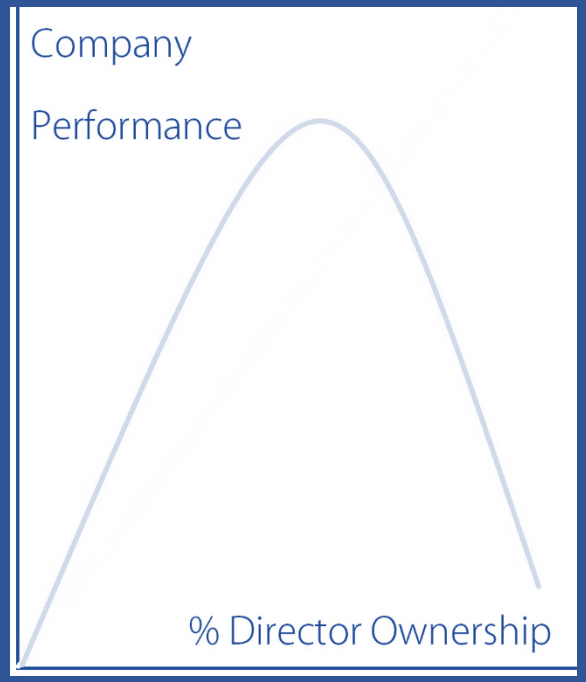
N

Case 2:
Other factors + Undetermined relevance

Understandin g & Evaluating Models

McConnell & Servaes (1990)

Curvilinear relation



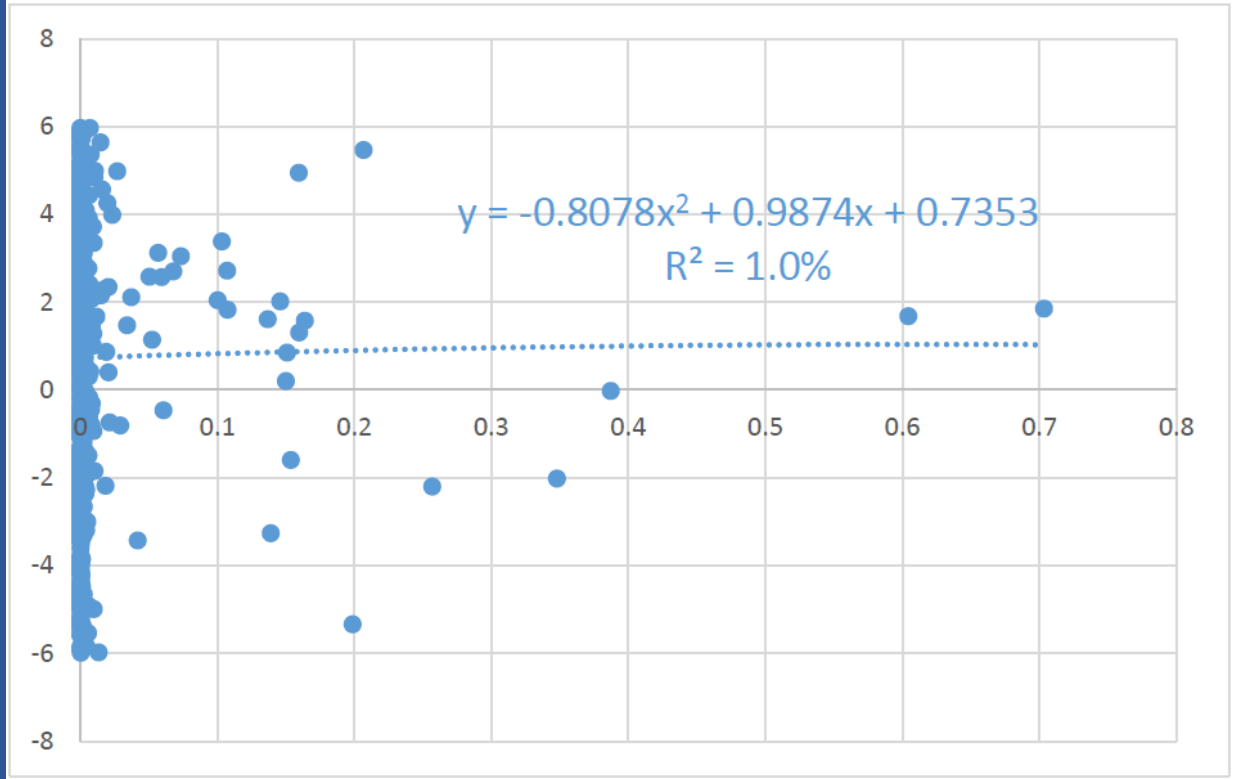
$Q = a_1*(INOWN) + a_2*(INOWN^2) + error\ te$

Relevance Test:

Sign unchanged? **Yes**

R^2 large? **Yes (but less than original)**

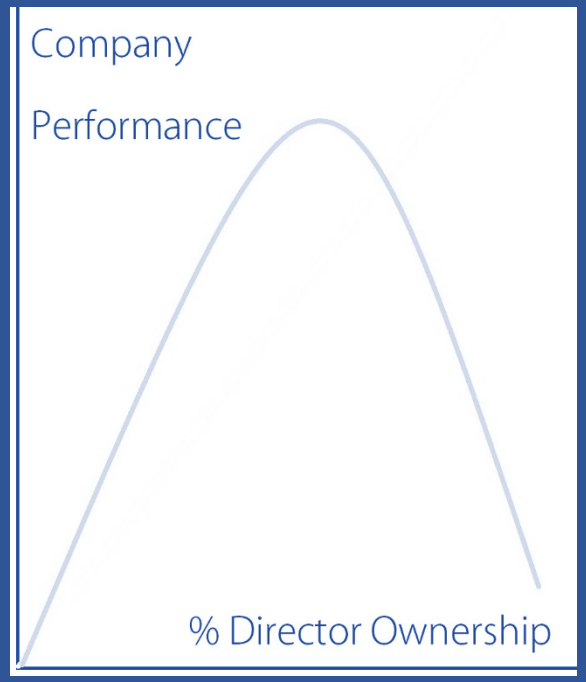
Inflection Points: **Close**



	2016	1976
$INOWN^2$	-0.808	-1.23
INOWN	+0.987	+1.21
k	0.735	0.93
R^2	**1.0%**	**2.7%**
Inf	**61.1%**	**60.9%**

McConnell & Servaes (1990)

Curvilinear relation

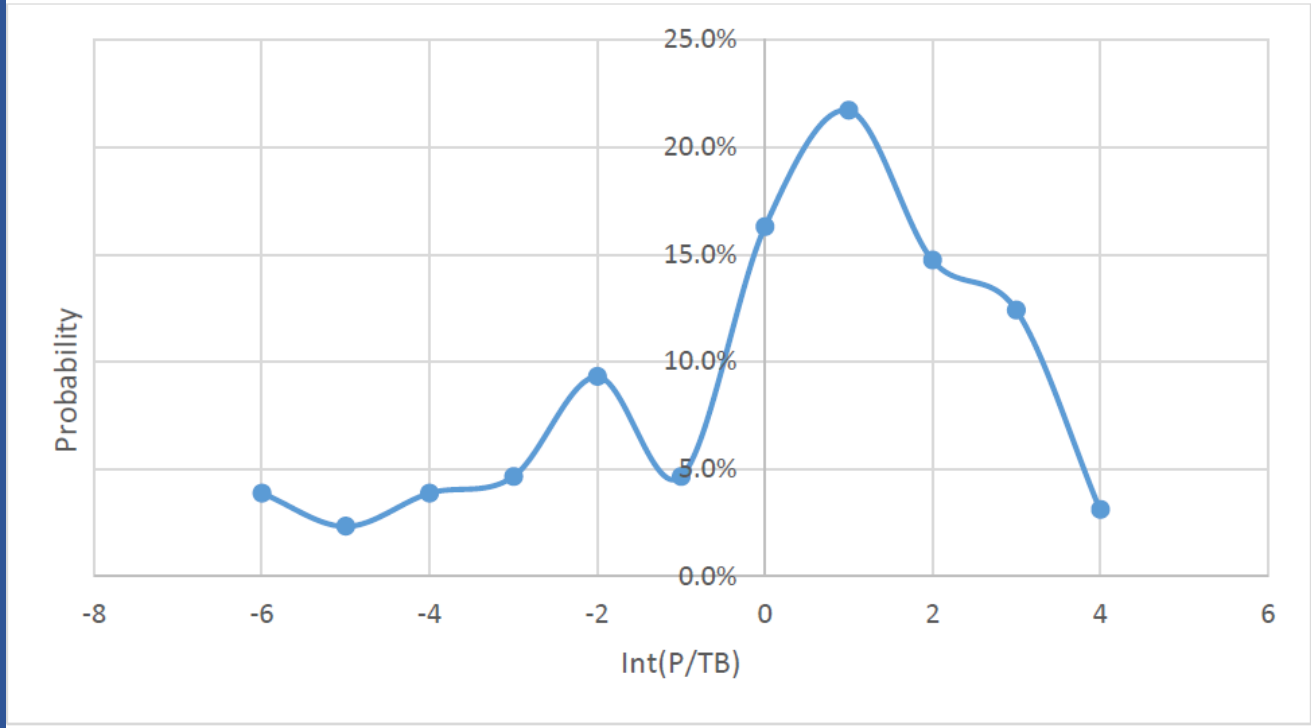


$Q = a_1*(INOWN) + a_2*(INOWN^2) + error\ te$

Soundness Test:

Distribution of P/TB centralised or dispersed?

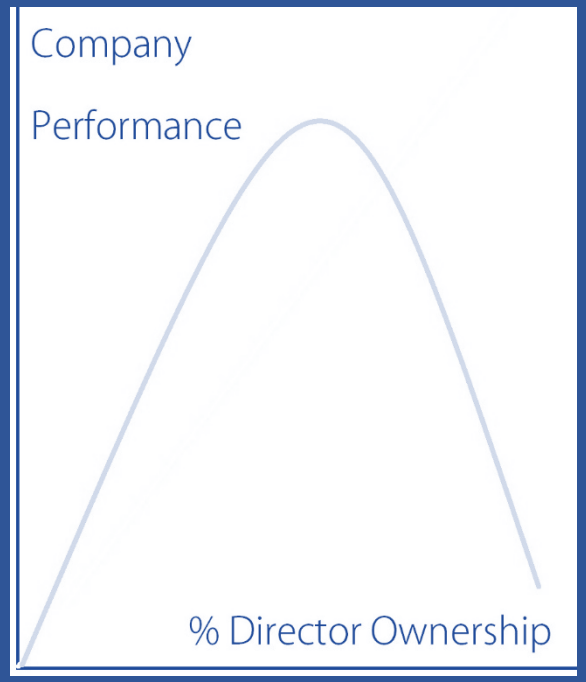
Dispersed



SD	2.572634
Mean	0.801645
CV	3.209192

McConnell & Servaes (1990)

Curvilinear relation



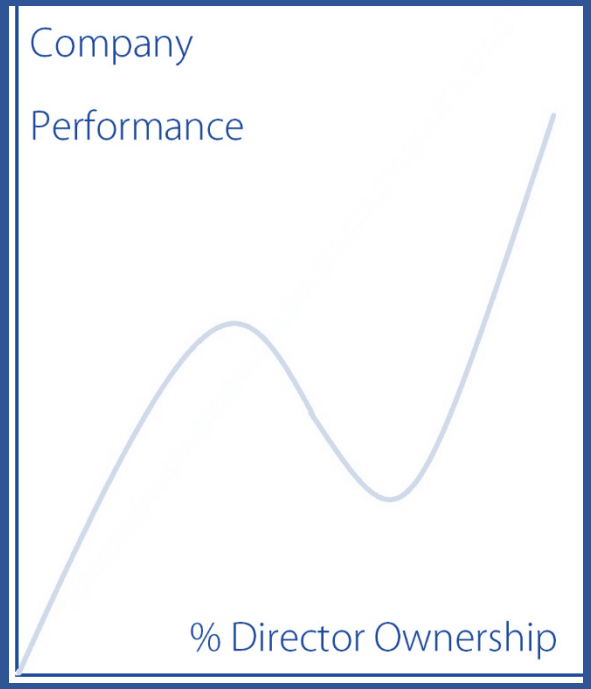
$Q = a_1*(INOWN) + a_2*(INOWN^2) + error\ te$

Relevance Test: Pass (signs, R^2 & inflection p
Soundness Test: Other factors

Conclusion:
Relevant + Other factors

Short & Keasey (1999)

Cubic relation



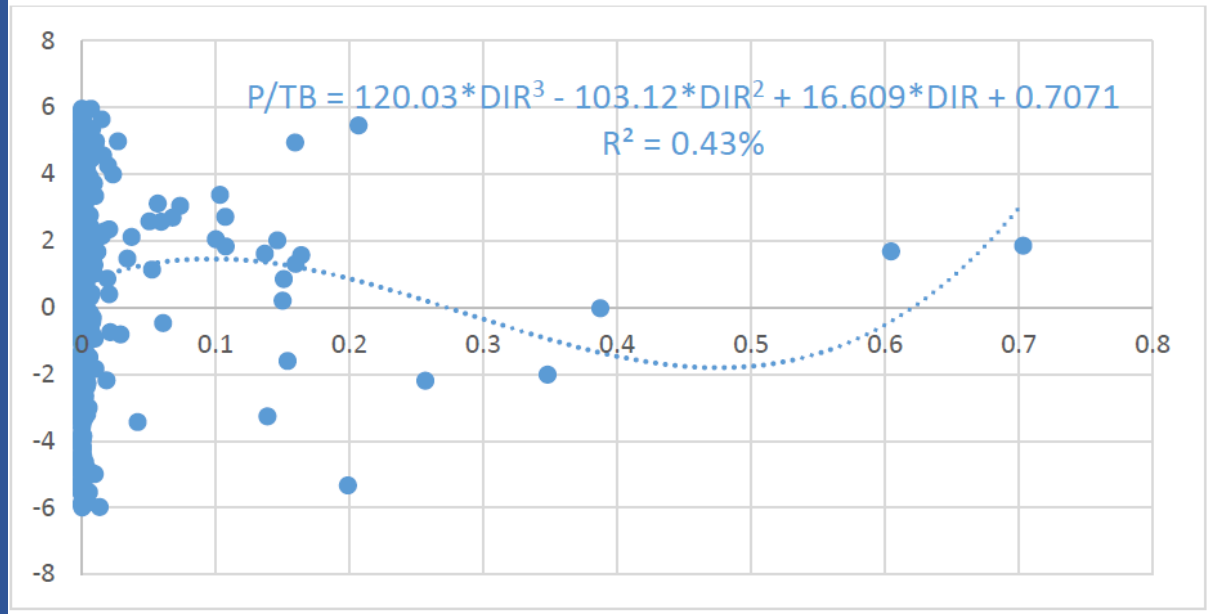
$P/TB=a+b_1*DIR+b_2*DIR^2+b_3*DIR^3+c*Ctrl\ Varia$

Relevance Test:

Sign unchanged? **Yes**

R^2 large? **No**

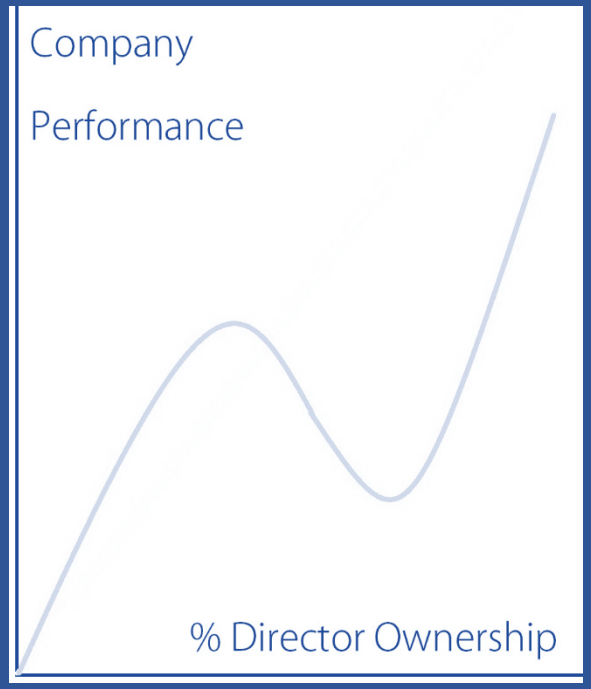
Inflection Points: **Close**



	2016	Panel Data
DIR^3	+120.03	+2.05E-5
DIR^2	-103.12	-1.53E-3
DIR	+16.61	+0.0258
k	0.707	-1.09+err
R^2	**0.43%**	**24.5%**
Inf 1	**9%**	**10.8%**
Inf 2	**48%**	**38.9%**

Short & Keasey (1999)

Cubic relation

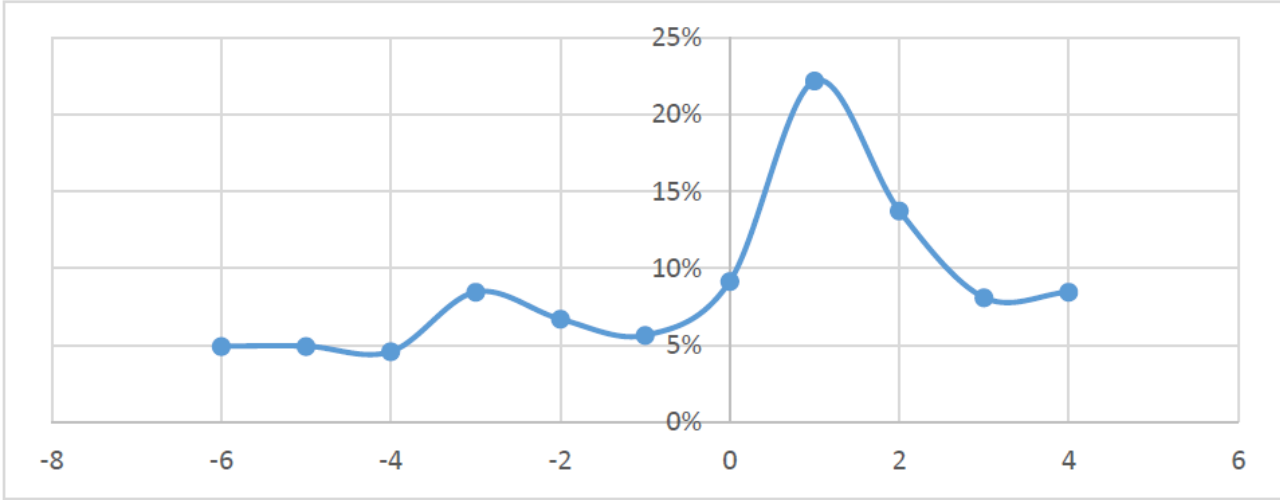


$P/TB=a+b_1*DIR+b_2*DIR^2+b_3*DIR^3+c*Ctrl\ Varia$

Soundness Test:

Distribution of P/TB centralised or dispersed?

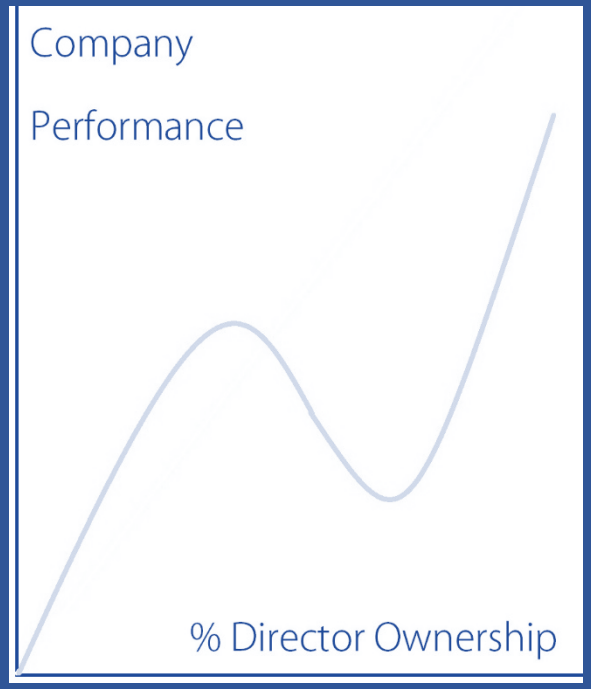
Dispersed



SD	2.916613
Mean	0.565306
CV	5.159356

Short & Keasey (1999)

Cubic relation



$P/TB=a+b_1*DIR+b_2*DIR^2+b_3*DIR^3+c*Ctrl\ Varia$

Relevance Test: Yes (signs & inflection pc

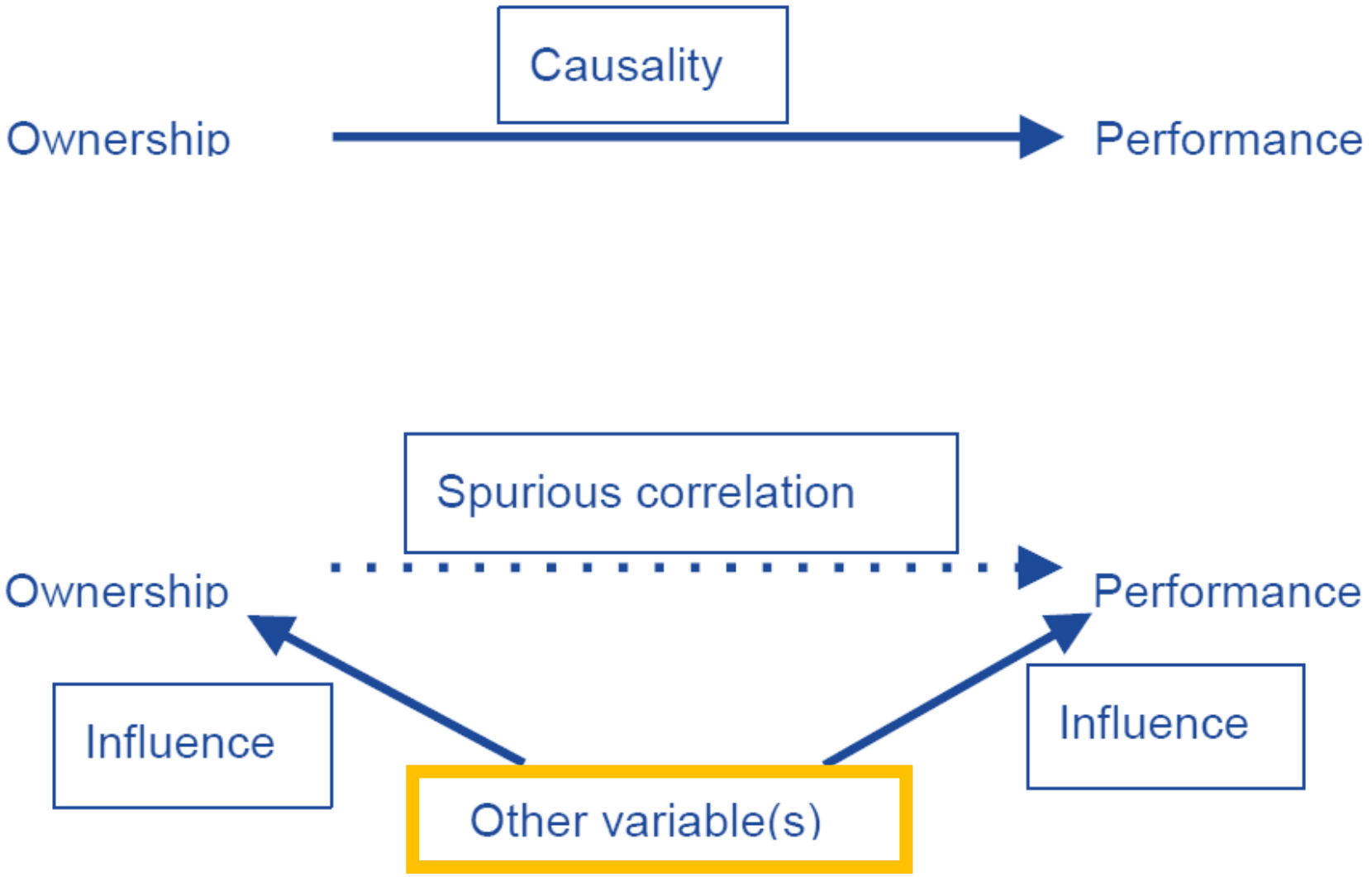
Soundness Test: Other factors

Conclusion:

Relevant + Other factors

Himmelberg et al (1999)

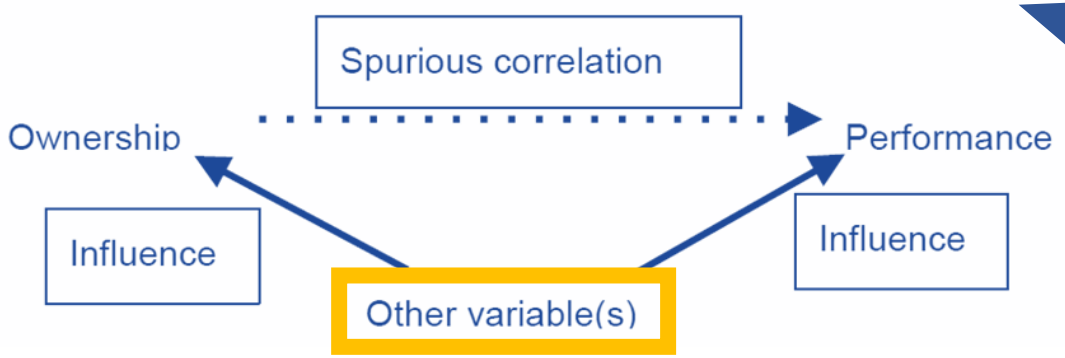
No relation



Himmelberg et al (1999)

No relation

Himmelberg et al (1999)



Certain variables result in spurious correlation

-Monitoring technology
-Intangible assets
-Degree of market power

Even controlling these variables, causality still exists.

McConnell & Servaes (1990)

Controlling variables:

-Financial leverage
-R&D intensity
-Replacement value of assets

Himmelberg et al (1999)

No relation

Never conclusive and exhaustive to exemplify all possible sources of endogeneity or heterogeneity.

Insight:

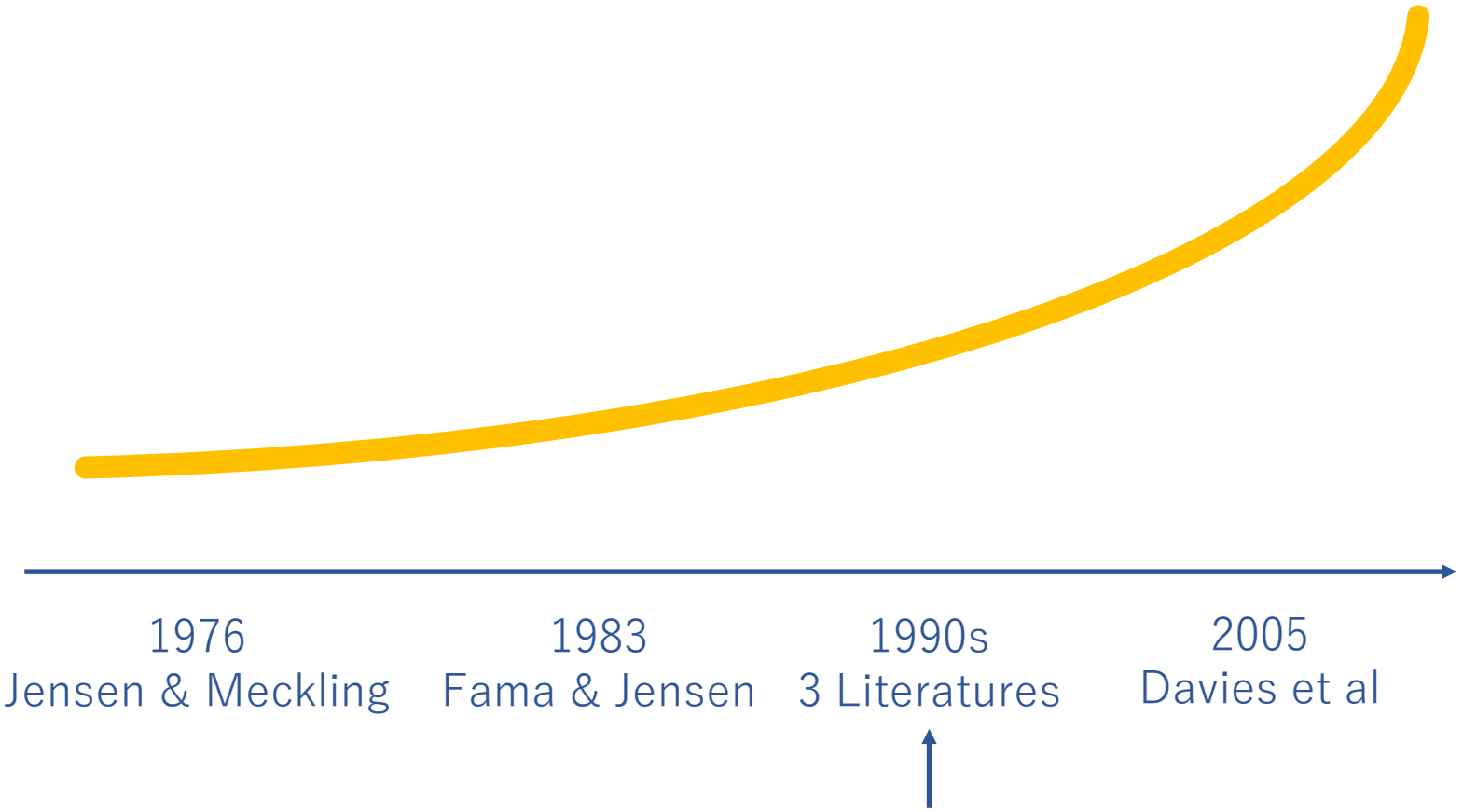
One can only prove the existence of certain “other variables”, but not disprove the existence of them totally and unequivocally.

Comparative Approach

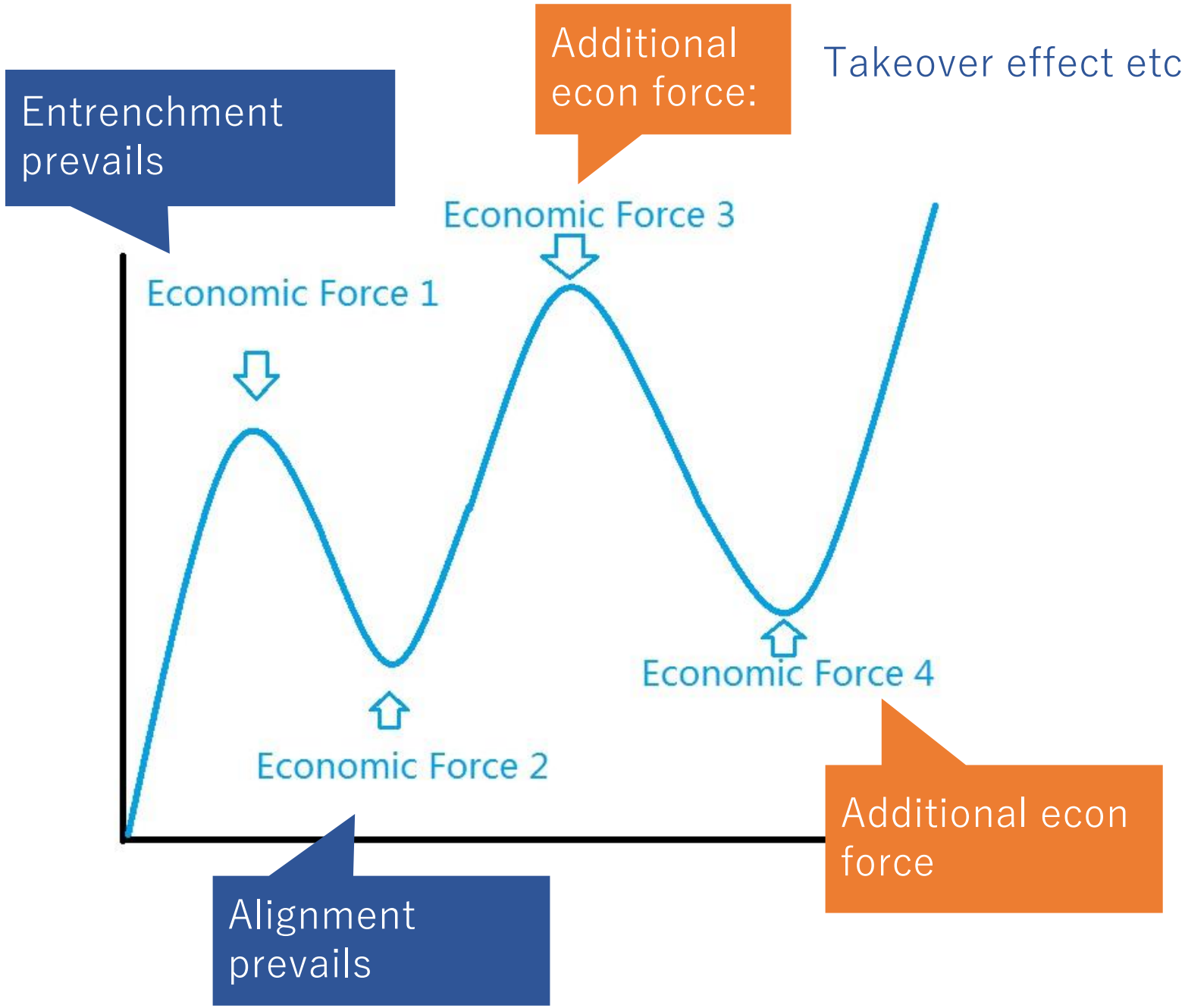
Improving Practice of

Corporate Governance

Alignment of interest
Nexus between mgmt ownership & perf



Hypothesising a Polynomial Model



Conclusion

Relevance:	Yes
Soundness:	No
Inspiration:	Extra economic forces divert the relation away from ideal model. As methodologies and models evolve, they keep relevant and become sounder, better account for more theoretical drives of performance.

Act like an OWNER/MANAGER?

Accountability and responsibility help good corporate governance practice.

Acknowledgements

Dr. Rita Wong Mr. William Ho Mr. Roger Lui

Capstone Committee School of AF …