THE NON-LINEAR EFFECTS OF OWNERSHIP STRUCTURE ON CORPORATE PERFORMANCE: EVIDENCE FROM EMERGING MARKET

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Abstract

This paper examines the non-linear effects of ownership structure (variables) on corporate performance. The data used in this study are derived from 167 publicly traded companies quoted on the Amman Stock Exchange (ASE), over the period 1989-2006. The ownership structure is measured by the percentage of shares held by each type of owner (state, institution, foreign concentrated owners, and individuals). Results in this study confirm earlier findings of a curvilinear relationship reported for larger markets. The results also show that the relationship between government ownership and ROA and MBVR is a hump-shaped curve. The value of a firm increases when government ownership is low, but the value of a firm decreases when it is high. As the government reduces its stake in a privatised company to below a specific point, perhaps market monitoring become ineffective and this increases the agency costs. The results also document that the relation between institutional ownership and ROA and Tobin's Q is a hump-shaped curve. When institutional ownership increases above a specific point, institutional shareholders negatively influence a firm's activities. Findings in this study contribute to the growing body of international evidence that the non-linear cubic relationship between ownership structure and corporate performance is robust to differences in governance structures across markets.

Keywords: Ownership Structure, Corporate Performance, Failure, Jordan

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1. Introduction

The relationship between ownership structure and firm performance has been an important research topic during the last three decades, and has produced ongoing debate in the literature of corporate finance. Theoretical and empirical research on the relationship between ownership structure and firm performance was originally motivated by the separation of ownership and control identified by Berle and Means (1932). Berle and Means (1932) suggested that an inverse correlation should be observed between the diffuseness (concentration) of shareholdings and firm performance, in which ownership structure affects firm performance. The financial literature assumes that managers are imperfect agents for investors, as managers may attempt to pursue their own goals rather than shareholders' wealth maximisation. Also, it has been stated that there may be a conflict of interest between outsiders (shareholders) and insiders (managers), as managers may have incentives which serve their own benefit rather than maximising shareholders wealth (Jensen and Meckling, 1976).

One approach that may control this conflict, suggested by Jensen and Meckling (1976), is to increase the equity ownership of managers in the firms, therefore encouraging managers to work more efficiently to maximise shareholders' wealth and carry out less activities of self-interest (see Jensen and Meckling (1976); Fama and Jensen (1983); Shleifer and Vishny, (1986)). However, it may also work in the opposite direction, as large shareholders may use their control rights to achieve private benefits.

Nevertheless, this view has been challenged by Demsetz (1983), who argued that the ownership structure of a company should be thought of as an endogenous outcome of decisions that reflect the influence of shareholders on a firm's performance. According to Demsetz (1983) there should be no systematic relationship between ownership structure and firm performance. For instance, even if a manager owns only a small stake, market control, including the managerial market, and the market for corporate control, may force him toward the firm's value

maximisation, as a manager wants to guarantee his employment. On the contrary, a manager with a high ownership percentage may have enough votes to guarantee his employment without any market control (see Fama, 1980; Jensen and Ruback, 1983). A firm's ownership structure is affected by the firm-specific risk, as firms have different characteristics and operate in different environments, so the optimal ownership structure varies across firms.

Himmelberg, Hubbard and Palia (1999) extend the Demsetz and Lehn (1985) study by adding new variables to explain the variation in ownership structure. In order to control for various possible unobserved heterogeneities, a fixed effects panel data model and instrumental variables are used. Ownership structure is measured by the shareholdings of insiders. Their results showed that insider ownership is negatively related to the capital-to sales ratio, but positively related to the advertising-to-sales ratio and operating income to sales ratio. After controlling for these variables and fixed firm effects, changes in ownership holdings were found to not have a significant impact on firm performance. However, a quadratic relationship between ownership and firm performance was found when they controlled for the endogeneity of ownership.

More recently, the focus of literature has shifted and several theories have been proposed to show the ambiguity of the effect of ownership concentration. La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) argued that the agency problem in many emerging markets is relatively severe due to the absence of strong legal protection and other governance mechanisms. The monitoring manager is not the main problem of corporate governance but the main problem is the expropriation of minority shareholders. In this case, the legal protection of the minority is the main issue.

The relationship between ownership structure and corporate value could be non-linear. Morck, Shleifer and Vishny (1988) point out that a manager responds to two opposing forces. At a lower level of managerial ownership share, managers tend to allocate a firm's resources for their own benefit and at the expense of the outside shareholders. However, when the level of managerial ownership increases, a manager's interests become more associated with the outside shareholders. Morck, Shleifer and Vishny (1988) ignore the endogeneity issue altogether and re-examine the relationship between corporate ownership structure and performance. A cross section of 371 Fortune 500 firms was taken in 1980. They measured performance by Tobin's Q, and managerial ownership as the combined shareholdings of all board members who have a minimum share of 0.2% of ownership. They find a positive relationship between management ownership and firm value in the 0% to 5% ownership range and beyond the 25% ownership range. But at moderate levels of management ownership, between 5% and 25%, firm performance decreased. A study by Cho (1998), using cross-sectional data and ownership information from value line replicates the Morck, Shleifer and Vishny (1988) study and finds a similar nonmonotonic relationship between Tobin's Q and management share holdings.

In contrast to findings in Morck et al. (1988), McConnell and Servaes (1990) reported a quadratic functional form and do not detect any inverse relationship especially over the 5–25% ownership range. McConnell and Servaes (1990) used the US data for more than 1000 firms from the Compustat database to investigate the relationship between Tobin's Q and managerial share ownership. They found a positive relationship between management ownership and firm performance in the 0% to 40% - 50% ownership range. McConnell and Servaes (1995) replicated and extended their earlier study but over a later time period and obtain similar results to McConnell and Servaes (1990)[42]. Hermalin and Weisbach (1991) estimated the effect of managerial ownership and board composition on Tobin's Q using panel data for five years. They found no relationship between board composition and performance, but found a significant non-monotonic relation between managerial ownership and corporate performance, a positive relationship between 0% and 1%, a decreasing relationship between 1% and 5%, an increasing relationship between 5% and 20%, and decreasing beyond 20%.

Furthermore, recent findings in Davies et al. (2005) for UK firms are even more disturbing. Using a simultaneous equations framework in the presence of conflicting managerial incentives, Davies et al. (2005) report that the relationship between managerial ownership and firm value is essentially quintic (double-humped) and not just cubic as reported in Short and Keasey (1999). Collectively, these conflicting findings suggest that the debate over the precise functional form of the insider ownership–firm value relationship is far from conclusive.

In Australia, Craswell, Taylor and Saywell (1997) investigated the relationship between the distribution of equity ownership and a firm's

[42] Steiner (1996), and Han and Suk (1998) obtained a similar conclusion. Their results confirm the existence of managerial entrenchment when insider ownership is beyond 36.6% and 41.8%, respectively.

performance using 349 publicly traded firms in 1986 and 1989. Their results are weakly supportive of a curvilinear relationship between insider ownership and corporate performance. Also, institutional ownership was not found to be an important determinant of Australian corporate performance. Short and Keasey (1999) provided evidence for the curvilinear effects (non-linear relationship) between insider ownership and firm performance in UK firms, but that insider ownership becomes entrenched at higher levels of ownership (the breakpoints were 12% and 41%) than their US counterparts (see Morck et al., 1988).

Aldamen (2002) provided evidence from the Jordanian market. He investigated the impact of foreign ownership on firm value for a sample consisting of 46 industrial and service companies listed on the Amman Stock Exchange (ASE) covering the period between 1990 and 2000. In order to investigate the impact of foreign ownership on a firm's performance he used a cross-sectional, time-series ordinary least squares (OLS) piecewise regression. Four variables were used in his study to represent ownership on the basis of the proportion of foreign held shares. Aldamen (2002) found that the relationship between firm value and foreign ownership in the Jordanian case is non-linear. His results reveal that the value of Jordanian firms rises as foreign ownership increases from 0% to 1%, firm's value decreases as foreign ownership rises from 5% to 20%, and firm's vale increases as foreign ownership moves beyond 20%.

Zeitun and Tian (2007) examined the impact of ownership structure on Jordanian firm's performance and the default risk using a matched sample of 59 publicly listed firms in Jordan for the period 1989-2002. This paper investigates the effect of ownership structure on a firm's performance and its failure in Jordan using panel data of 167 firms.

A number of reasons make the choice of Jordan interesting. First, Jordan is a much smaller market than the US, UK, China, or Australia, which were the subjects of prior studies, and hence it is likely that managerial actions will be more translucent that may lead to a less conflict of interest between insiders and outsiders. Second, since 1990 privatisation of publicly held shares is an ongoing program in Jordan. Managing state holdings in Jordanian listed companies has become a top government priority, with the government supporting the private sector to takeover and participate more in economic growth[43] (see, for example, CBJ (2003, 2006)); World Bank (2000)). So, it could be anticipated that privatisation in Jordan would affect a firm's performance and failure as it changed the ownership structure of firms and ownership concentration.

Third, the Jordanian Government undertook major reforms of the legislation that governs securities the law 22 of 1997, which is most recently amended in the law 76 of 2002, provides basic Company Law or Securities Law. This reform was intended to strengthen internal control, shareholders rights, and the protection of minority shareholders and, therefore, potentially could have an impact on the relationship between insider ownership and firm value. For example, shareholders have the right to take part in discussing matters presented thereto, and in voting on the resolutions adopted by assembly regarding this matter (see, for example, JSC (2001, 2004). In the event of bankruptcy or liquidation65, "if the company's assets are insufficient to meet its obligations as a result of the negligence of its Chairman, members of the Board, the General Manager, or its auditors, the court may charge those responsible for the deficit jointly and severally" (JSC, 2001, p.23). Furthermore, "shareholders representing not less than 15% of the subscribed share capital can require the Controller of Companies to inspect the company for possible violations" (JSC, 2001).

Finally, the ownership of ASE listed firms is highly concentrated. It is feasible that this significant concentration may help to increase the firm's performance, as the large shareholders may help reduce the free-rider problem of small investors. For example, the fraction held by companies seems to be on the rise; for instance, it increased from 26.4 percent in 1996 to 30.5 percent in 2006 (See Zeitun 2009).

This paper examines the non-linear effects of ownership structure (variables) on corporate performance. To the best of the author's knowledge, this is the first study that real figures about ownership structure (mix and concentration) to investigate the non-linear effects of ownership structure (variables) on corporate performance for Jordanian companies using a large sample. It is worth noting that collecting the data on ownership structure (mix and concentration) for each firm and for each year over the period 1989-2006 constituted a large part of the research for this thesis as the data were collected manually. This vast effort made this research possible.

The remainder of this paper is organized as follows. Section 2 provides a descriptive discussion

[43] Privatisation is part of the overall economic package that the government has adopted since the economic adjustment program of the early nineties, and self-reliance in the aftermath of the economic crisis in 1989 that befell the country.

about ownership concentration and ownership mix for the Jordanian companies used in the study. Section 3 introduces the estimation method. Section 6.4 introduces the empirical results. Section 5 concludes the paper

2. Ownership Structure and Firm Performance: a Descriptive Discussion

The corporate governance mechanisms vary around the world which could affect the relationship between ownership structure and corporate performance (Shleifer and Vishny, 1997). For example, in Europe and Japan, there is less reliance on elaborate legal protection, and more reliance on large investors while, in the US, firms rely on legal protection. So, due to the differences between US corporate governance and other systems, a different relationship between ownership and firm value could be expected. Also, recent studies of corporate governance suggest that geographical position, the tax system, industrial development, and cultural characteristics, along with other factors, affect ownership structure which in turn impacts on a firm's performance and its failure (Pedersen and Thompson, 1997). Therefore, this study is important as it provides evidence from the emerging markets and, more specifically, from Middle Eastern countries using Jordan as a case study[44].

The Amman Stock Exchange (ASE) provides some evidence about the ownership structure of the companies traded on the ASE. There are five types of shares. First, government shares are those held by the central government. Government shares are not available for trading on the ASE, but government ownership has fallen during the last ten years as a result of privatization. Second, government agency shares are shares owned by the government agencies. Third, company shares are shares owned by domestic institutions. The company is defined as a legal person or a non-individual legal entity or institution. Fourth, individual shares are held and traded by individuals. Fifth, foreign and Arab shares are those held by Arabs and foreign owners. All these shares entitle shareholders and have the same voting rights and dividend payment.

Table 1 shows the average ownership mix of stock companies listed on the ASE. The fraction of government shares appears to have declined from 1994 to 2006. The fraction of Arab ownership appears to have increased from 10.20 percent in 1994 to 13.5 percent in 2006. The fraction of foreign owned shares appears to have been unstable as it both increased and decreased over this time period. However, it appears to have increased to 15 percent in 2006. The fraction held by companies seems to be on the rise; for instance, it increased from 26.4 percent in 1996 to 30.5 percent in 2006.

Foreign ownership has been on the rise since the beginning of the 1990's. The ASE has categorized the foreign (Non-Jordanian) ownership as Arab and non-Arab investors. Foreign investors can trade (buy and sell) on the ASE without any restriction. Furthermore, non-Jordanian investors are also allowed to invest in any project within any sector according to regulation No. 54 of the year 2000 (Non-Jordanian Investment Regulation). This regulation allowed foreigners to own up to 100% of any investment project in any sector, with the exception of the mining sector, trade and industry sector, transport sector, and clearance services, and allowed foreign investors to own a high percentage of the traded companies on the ASE (World Bank, 2003).

Table 2 shows the percentage of foreign ownership in the shareholding listed companies by sector as a percentage of capital market capitalisation for the period 1999-2008. According to Table 2, the year 1999 recorded the highest foreign ownership percentage in the financial sector at 56.65 percent; while the year 2008 recorded the highest foreign ownership percentage in the industrial sector at 53.35 percent of the total market capitalisation (MC). The foreign ownership increased by more than 20 percent in both industrial and services sectors during the period 1999-2008. For example, the highest foreign ownership percentage in the service sector reached 36.55 percent in 2006 compared with 13.98 percent in 1999.

[44] For more details about the effect of corporate governance on the incentives for the private sector to invest, see Stone, Hurly and Khumani (1998).

Table 1. Ownership Structure of ASE Listed Companies at the End of the Year (%)*

Year	Gov. Agency	Government	Companies	Individual	Arab	Foreigners
	4.5	6.3	30.5	47	13.5	15
2006	-14.8	-12.8	-19.4	-25.3	-11.4	-10.8
	5.5	6.4	30.2	46.3	13.1	14.2
2005	-21.4	-22.1	-21.3	-25.3	-12.3	-13.7
	7.5	10.2	28.2	46.5	13.3	13.2
2004	16.3	18.5	27.4	55	9.5	11.3
	9.5	12	27.9	46.7	12.8	7.5
2003	-12.3	-16.1	-22.1	-26.1	-18.7	-15.1
	8.3	18	28	46	10.8	11.9
2002	-12.4	-24.3	-22.2	-25.3	-15.6	19.2
	7.6	16.4	28.4	46.3	13.8	7.4
2001	-8	-22.2	-22.1	-25.1	-17.9	-13.1
	10.6	16.6	27.4	50.7	7.9	9.3
1997	-11.4	-23.1	-20.3	-25.1	-11	-13.5
	15.2	16.2	26.8	51.9	7.1	9.6
1996	-14.4	-22.2	-18.9	-25.1	-10.2	-14.4
	15.3	16.5	26.4	53	8.5	7.3
1995	-14.8	-23.8	-19.1	-25	-11.4	-11.8
	22	15.6	24.6	52.8	10.2	7.4
1994	-20.7	-22.7	-19.3	-25.3	-13.6	-13

*Cross-firm average with standard deviations in parentheses. Calculated by the author based on data from ASE Statistics and Annual Reports.
Sources: Annul reports of listed companies

Table 2. Percentage of Foreign Ownership in the Shareholding Companies by new sectoral specification (1999-2008) *

Period	Financial	Services	Industrial	General
1999	56.647	13.977	30.483	43.099
2000	55.181	21.257	30.213	41.672
2001	47.426	19.676	27.872	38.507
2002	47.564	26.792	26.093	37.43
2003	46.275	24.285	30.098	38.844
2004	47.441	25.593	36.791	41.264
2005	49.77	26.185	38.088	45.043
2006	47.733	36.553	43.709	45.531
2007	50.733	36.152	51.881	48.947
2008	52.102	33.811	53.347	49.247

*As a percentage of market capitalization
Sources: Amman Stock Exchange

However as reported by Zeitun (2009), despite its privatisation program, the government still holds a large stake in Media, Utility and Energy, and Steel, Mining and Heavy Engineering companies (43.20%, 33.70 %, and 22.04 %, respectively) because they are considered strategic industries. Table 3 shows the trading activity of foreign investors for the period 2001-2008. For example, the value of shares

purchased by foreign investors amounted to USD 5943.4 million in 2008, representing 20.8 percent of total trading volume, with a 2.29 percent decrease from 2007. The percentage of total buying to the total trading reached its highest percentage in 2007, at about 22.88 percent. Net foreign investment showed negative balances of USD 151.4 million in 2001. The net foreign investment reached the highest in 2007 amounted USD 656.6 million.

Table 3. Trading of Non-Jordanian (Foreign) Investment during 2001-2008

Year	Foreign Ownership of Market Capitalisation. (%)	Total Buying (USD million)	Total Selling (USD million)	Net Investment (USD million)	Market Capitalization / GDP (%)
2001	38.5	147.2	298.6	-151.4	75.7
2002	37.4	328.7	327.5	1.3	80.4
2003	38.8	395.9	280.7	115.2	116.8
2004	41.3	535.6	438.6	97.2	184.7
2005	45	3031.3	2449.6	581.7	326.6
2006	45.5	2810.0	2555.6	254.4	233.9
2007	48.9	3979.3	3322.7	656.6	289
2008	49.2	5943.4	5507.0	436.3	226.3

Source: Amman Stock Exchange

The ownership structure in the ASE is highly concentrated (the median largest shareholder in Jordan is large by Anglo-American standards but within the range of those in France and Spain, 20 and 34 percent respectively (see e.g. Becht and RÖell, 1999)[45]. In theory, the concentration of control in the hands of a few shareholders can reduce the agency problem. Shleifer and Vishny (1997) argued that the agency problem comes from the conflict between controlling owners and minority shareholders, instead of between managers and diffuse shareholders, which reflects the legal protection of minority investors. Corporate governance systems are affected by several institutional factors such as the legal protection of investors, the level of ownership concentration, the level of capital market development, the role of the market for corporate control, and the effectiveness of boards (La Porta et al., 1997, 1998, 2000).

Table 4 reports the ownership structure of listed companies in 2006 by sectors, namely the Industrial, Services, Insurance, and Banking sectors. Table 4 shows that the government holds a large stake in the Industrial and Services sectors, while it holds a small stake in both Insurance and Banking sectors. This is because the government participates in utility companies such as electricity companies and mining industries. For instance, in 2006, the government shares in the electricity were about 30 percent of the total shares in this sector. The average proportion of institutional shares is greater in Services and Industrial than in the Banking and Insurance sectors. Arab investors have their largest stake in the Banking sector and then the Insurance sector. The average proportion of foreign shares is greatest in the insurance sector, while it is still very low in all sectors.

Furthermore, Table 4 shows that the largest five shareholders[46] own more than 50 percent in the four sectors. This indicates that ownership of ASE listed firms is highly concentrated. It is feasible that this significant concentration may help to increase the firm's performance, as the large shareholders may help reduce the free-rider problem of small investors and therefore decrease the likelihood of default.

[45] For more detail about the ownership concentration in the ASE, see Zeitun (2009).

[46] The threshold of ownership used by the ASE in 2002 was 5%.

Table 4. Ownership Structure and Concentration of Listed Companies in 2006 by Sector* as a (%)

	Government**	Companies	Individual	Arab	Foreigners	Largest 5 Shareholders
	9.2	30.3	45	12.2	10.3	53.9
Industrial	-33.1	-22.3	-26.4	-14.9	-13.6	-25.6
	15	35.5	40.4	12.1	12.3	63.2
Services	-27.3	-22.3	-27.2	-15.1	-11.4	-22.2
	3	21.9	49.7	14.7	20.2	59.9
Insurance	-4.5	-19.7	-22.3	-18.2	-17.3	-24.7
	4.7	16.8	40.1	30.5	13.9	56.9
Banking	-3.7	-22.6	-23.9	-26.5	-7.2	-22.5

*Cross-firm average with standard deviations in parentheses. Calculated by the author based on data from ASE Statistics and Annual Reports of listed companies, 2006. ** includes government and government agencies. Government includes both government shares and government agency shares.

3. Data and Estimation Method

3.1 Data

The data used in this study is derived from publicly traded companies quoted on the Amman Stock Exchange (ASE), over the period 1989-2006**.** The data set contains detailed information about each enterprise. The major items of interest are: balance sheets, income statements, ownership structure, and the percentage holdings of all direct shareholders[47]. The full balance sheets and income statements are usually available from firms as the law requires disclosure.

The ownership data was collected manually, as it is not available for all firms and for all years from the Amman Stock Exchange (ASE) reports. Collecting this data on ownership structure and concentration for each firm and for each year constituted a large part of the research for this thesis. This vast effort made this research possible, since the analysis uses real figures rather than dummy variables for ownership structure. Furthermore, the changes in real figures over years are more valuable, as they shed light on the effect of changes in ownership structure on both the firm's health and failure. It is worth noting that the unavailability of data for the managerial ownership and ownership held by outside block holders prevented the researcher from further investigation for the effect of these variables.

The sample includes pooled cross-sectional and time-series data for 167 firms (47 defaulted and 120 non-defaulted) over the period 1989-2006. These firms ranged from old to newly established ones.

3.2 Variables Selection

Four ratios to measure firms' performance were calculated for both the panel data sample and matched sample, namely return on equity (ROE), return on assets (ROA), Tobin's Q, and MBVR. Tobin's Q and MBVR are used to measure the market performance of firms, while the ROE and ROA are employed as measures representing accounting performance measures. The explanatory variables are ownership fractions, concentration ratios, and other control variables.

The ownership fraction (mix) is divided into the fraction owned by government (GOV), GOV the fraction owned by the foreigner (FORG), the fraction owned by companies (INSTIT), and the fraction owned by individuals (CITIZEN). By controlling for both ownership concentration and mix, we hope to be able to distinguish which factors are more significant in poorly performing enterprises.

Factors other than ownership structure may also affect a firm's performance and health. To take them into account, we introduce a set of control variables. Dummy variables for industries are used to control the difference between sectors, *DUMi, i= 1, 2,...,5*, for Manufacturing, Trade, Steel and Mining, Utility, and Real Estate in the matched sample, and 16 industrial dummy variables in the panel data regressions (see Table 6-2 for sector definitions). To control for other factors with potential to affect firm value, I include the following variables that proxy for these factors. Firm size (SIZE)[48], according to Short and Keasey (1999)

[47] The ownership concentration is defined as any owner possessing more than 5% and 10% of the company's shares.

[48] In the previous work, the value of total assets is used to control size effect (see e.g. Morck et al., 1988 and McConnell and Servaes, 1990). Other studies used sales to control for size (see e.g. Xu and Wang, 1997). The logarithm

size has a significantly positive effect on firm performance, since larger firms have access to the external sources of funds. firm's age (AGE), capital structure variable (DEBT), which is defined as total debt to total assets (TDTA), following McConnell and Servaes (1990) and Morck et al. (1988), Short and Keasey (1999) includes a control variable to proxy for the level of indebtedness.. Growth opportunity (GROW) is defined as growth in sales (GROW1), or net income to capitalisation (NICAP) [49].

Table 5 and Table 6 presented the descriptive statistics of firm-specific variables used in the analysis.

Table 7 presented a correlation matrix for the variables of interest. Consistent with Scott (1976), size is positively correlated with leverage but contrary to intuition I find a positive association between size and the price to earnings ratio. Larger firms also seem to be more profitable, as the correlation between log of sales and return on equity is significantly positive.

3.3 Non-Linearity of Ownership

The primary hypothesis I examined was that the value of Jordanian firms is non-linearly related to the percentage of equity held by government and institutional. A non-linear relation between a firm's value and ownership structure has been theoretically predicted, and empirical evidence has shown the non-linearity of this relationship (Morck, Shleifer, and Vishney (1988), McConnell and Servaes (1990), and Lodered and Martin (1997)). Following Lodered and Martin (1997), and McConnell and Servaes (1990), the squared values of government and institutional ownership are included as independent variables to capture the non-linear relationship between ownership structure and firm performance. Four measures of performance are used: ROA, ROE, Tobin's Q, and MBVR. The logarithm of total assets is used to control for size, growth in sales is used to control for growth, and the debt level is used to control for leverage. In order to investigate if there is a non-linear relationship between ownership structure and firm performance pooled and panel regressions are carried out using the random effects model to estimate the following equations:

$$Y = \beta_0 + \beta_1 Goverment + \beta_2 Goverment^2 + \beta_3 Foreign + \beta_4 SIZE + \beta_5 DEBT + \beta_6 GROW + \varepsilon \quad (1)$$

$$Y = \beta_0 + \beta_1 institutional + \beta_2 institutional^2 + \beta_3 Foreign + \beta_4 SIZE + \beta_5 DEBT + \beta_6 GROW + \varepsilon \quad (2)$$

$$Y_{it} = \beta_0 + \beta_1 Goverment_{it} + \beta_2 Goverment^2_{it} + \beta_3 Foreign_{it} + \beta_4 SIZE_{it} + \beta_5 DEBT_{it} + \beta_6 GROW_{it} + \varepsilon_{it} \quad (3)$$

$$Y_{it} = \beta_0 + \beta_1 institutional_{it} + \beta_2 institutional^2_{it} + \beta_3 Foreign_{it} + \beta_4 SIZE_{it} + \beta_5 DEBT_{it} + \beta_6 GROW_{it} + \varepsilon_{it} \quad (4)$$

Based on theoretical and empirical studies, government ownership is hypothesised to have a negative impact on a firm's performance as government has other objectives rather than firm value maximisation. Previous research, such as Boardman and Vining (1989), Megginson and Netter (2001), and Wei, Xie, and Zhang (2005), found that government ownership has a negative impact on firm performance.

However, other studies, such as Anderson, Lee and Murrell (2000) and Gupta, Ham and Svejnar (2001) found that government ownership has a positive impact on firm performance in a transition economy. Institutional ownership is expected to have a positive impact on firm performance as institutional ownership motivation is to maximise a firm's profit.

of total sales is used in this research. It has lower explanatory power than assets, and its inclusion in regressions of ROA and ROE makes the results not significant.

[49] The growth in total assets and the book value of total assets minus book value of equity plus market value of equity divided by book value of total assets are used in this study. However, while all the measures of growth are found to have a similar result, the growth in sales and NICAP are provide the best results regarding the model explanatory power.

Table 5. Description Statistics for the Variables Used in The Study

Variable	Obs	Mean	Std. Dev.	Min	Max	CV	Skewness	Kurtosis	Shapiro-Wilk	Probability
ROA	1586	0.012	0.152	-4.071	0.681	12.6667	-13.460	343.435	465.132	0.000
ROE	1586	-0.142	4.195	-159.39	1.998	-29.542	-35.248	1317.897	930.45	0.000
Tobin's Q	1408	1.701	15.443	0.000	538.734	9.0788	31.815	1066.859	840.099	0.000
MBVR	1277	1.947	12.636	-2.556	450.000	6.4900	34.959	1239.922	758.284	0.000
TDTA	1586	0.357	0.268	0.0002	2.600	0.7507	2.184	15.356	128.768	0.000
Growth	1270	0.716	8.633	-1.000	292.979	12.0573	30.888	1037.096	736.898	0.000
SIZE	1450	14.81	2.0564	0.000	20.4917	0.1389	-0.5394	5.6287	26.154	0.000
AGE	1575	14.625	12.903	1.00	65	0.8823	1.3301	4.3507	123.389	0.000

Table 6. Ownership Structure for the Sample

	TDTA	SIZE	AGE	GOVE	INSTIT	FOREIG
TDTA	1					
SIZE	0.227	1				
AGE	0.165	0.430	1			
GOVE	0.079	0.053	0.123	1		
INSTIT	-0.095	-0.126	-0.075	0.135	1	
FOREIG	-0.003	0.203	0.005	0.226	-0.236	1

Table 7. Correlation Matrix of the variables used in the study

	Mean	Median	Std.Dev	Maximum	Minimum
Government	14.88	2.40	23.87	100	0
Companies	25.29	25.41	17.72	85.26	0
Individual (Citizen)	44.36	47.50	24.56	97.77	0
Foreign	9.89	5.20	15.04	96.017	0

4. Empirical Results

The empirical results that consider the relationship between government ownership and firm performance are presented in Table 8. From the pooled data sample, it is documented that government ownership is significantly positively related to ROA and MBVR, at the 1% and 5% level, respectively. This finding is not consistent with our hypothesis, or with previous findings such as Wei, Xie, and Zhang (2005).

The results also show that the relationship between government ownership and ROA and MBVR is a hump-shaped curve. The value of a firm increases when government ownership is low, but the value of a firm decreases when it is high. As the government reduces its stake in a privatised company to below a specific point, perhaps market monitoring become ineffective and this increases the agency costs. Therefore, after some point, firm value will decrease as government ownership declines. However, this effect does not exist for the ROE and Tobin's Q regressions in the panel data. Also, it does not exist for any regression using the panel random effects model. Our finding is consistent with the hypothesis of Morck et al. (1988) about how inside ownership affects a firm's value. However, these results are inconsistent

with previous findings such as Tian (2003) and Wei, Xie and Zhang (2005).

Furthermore, the results show that foreign ownership is negatively significantly related to firm value Tobin's Q, and firm performance ROA, indicating that foreign investors may influence management of the firm negatively. It may also indicate that the presence of foreign ownership forces management to allocate resources for their own benefit as they are not sure about the foreigners' strategies. However, this result is inconsistent with previous findings such as Smith, Cin, and Vodopivec (1997), who find a positive and significant relationship between firm performance and foreign ownership.

Table 8. Ownership Structure and Firm's Performance: Non-linear Specification for Government and Institutional Ownership

	Pooled Data					Panel Data			
Variables	ROA	ROE	Tobin's Q	MBVR	Variables	ROA	ROE	Tobin's Q	MBVR
SIZE	0.057	0.053	-0.057	0.371		0.054	-0.035	-0.136	0.476
	(9.23)***	(0.65)	(-0.06)	(3.62)***	SIZE	(5.00)***	(-0.21)	(-0.13)	(2.87)***
DEBT	-0.192	-0.643	-0.848	-0.385		-0.163	-0.469	-0.851	-0.328
	(-16.65)***	(-4.2)***	(-0.47)	(-1.68)*	DEBT	(-10.69)***	(-2.18)**	(-0.45)	(-1.22)
GROW1	0.001	0.003	-0.051	-0.012		0.001	0.002	-0.048	-0.005
	(2.6)***	(0.56)	(-1.01)	(-0.59)	GROWT	(2.48)**	(0.45)	(-0.94)	(-0.25)
GOV	0.118	0.290	0.620	1.510		0.086	-0.073	0.595	0.377
	(2.68)***	(0.5)	(0.09)	(2.05)**	GOV	(1.17)	(-0.07)	(0.08)	(0.34)
GOV2	-0.148	0.030	-1.000	-2.003		-0.035	0.590	-1.009	-0.853
	(-2.62)***	(0.04)	(-0.11)	(-1.99)**	GOV2	(-0.38)	(0.44	(-0.1)	(-0.59)
FORG	-0.038	0.120	-6.925	-0.355		0.043	0.169	-7.440	-0.290
	(-1.75)*	(0.41)	(-2.00)**	(-1.04)	FORG	(1.45)	(0.41)	(-2.01)**	(-0.65)
Constant	-0.381	-0.332	87.020	-1.572		-0.382	0.198	85.751	-2.300
	(-7.97)***	(-0.52)	(10.42)***	(-1.86)*	Constant	(-4.4)***	(0.13)	(9.46)***	(-1.68)*
F-statistic	19.15	2.17	12.81	5.88		170.12	31.23	230.72	31.83
	(0.00)***	(0.00)**	(0.00)***	(0.00)***	Wald test	(0.00)***	(0.06)*	(0.00)***	(0.06)*
R-square	0.2313	0.019	0.1755	0.0842	R-square	0.2084	0.0249	0.1904	0.0942

	Pooled Data					Panel Data			
Variables	ROA	ROE	Tobin's Q	MBVR	Variables	ROA	ROE	Tobin's Q	MBVR
SIZE	0.066	0.102	-0.009	0.407		0.066	-0.003	-0.050	0.410
	(10.71)***	(1.25)	(-0.01)	(3.97)***	SIZE	(6.07)***	(-0.02)	(-0.05)	(2.42)**
DEBT	-0.190	-0.627	-1.534	-0.392		-0.169	-0.479	-1.674	-0.266
	(-16.38)***	(-4.05)***	(-0.85)	(-1.71)*	DEBT	(-10.99)***	(-2.18)**	(-0.88)	(-0.98)
GROW1	0.001	0.002	-0.053	-0.009		0.001	0.002	-0.050	-0.001
	(2.49)**	(0.36)	(-1.03)	(-0.46)	GROWT	(2.41)**	(0.41)	(-0.97)	(-0.03)
INSTIT	0.133	0.039	-16.006	0.708		0.037	0.113	-19.882	1.191
	(2.95)***	(0.06)	(-2.23)**	(0.97)	GOV	(0.58)	(0.13)	(-2.55)**	(1.21)
INSTIT2	-0.189	-1.108	15.775	0.314		-0.115	-0.594	19.755	-0.718
	(-3.11)***	(-1.37)	(1.62)	(0.31)	GOV2	(-1.34)	(-0.5)	(1.88)*	(-0.54)
FORG	-0.036	-0.138	-8.595	-0.121		0.023	0.070	-9.536	-0.051
	(-1.61)	(-0.47)	(-2.44)**	(-0.35)	FORG	(0.78)	(0.17)	(-2.53)**	(-0.11)
Constant	-0.449	-0.554	88.785	-2.021		-0.452	0.029	87.473	-2.081
	(-9.4)***	(-0.87)	(10.56)***	(-2.38)**	Constant	(-5.29)***	(0.02)	(9.5)***	(-1.5)
F-statistic	20.22	2.63	13.090	6.25		185.08	31.96	234.27	33.48
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	Wald test	(0.00)***	(0.06)*	(0.00)***	(0.04)**
R-square	0.2427	0.0265	0.18	0.0905	R-square	0.229	0.0267	0.1945	0.1028

Note: ***, **, * indicate significant at a 1%, 5%, and 10% level, respectively. Statistical significance *t*-statistics is determined with White (1980) standard errors to correct for heteroskedasticity. Industrial dummy variables are included in the regression.

Table 8 presents the empirical results of the regression that investigates the relationship between institutional ownership and firm performance using the pooled and panel data. The results show that institutional ownership is positively related to the firm value and the results for the pooled sample are significant at the 1% and 5% level for the ROA and Tobin's Q, respectively. These results show that government ownership and institutional ownership are positively related to the firm's value. The results also document that the relation between institutional ownership and ROA and Tobin's Q is a hump-shaped curve. When institutional ownership increases above a specific point, institutional shareholders negatively influence a firm's activities. Thus, increasing institutional ownership will decrease the firm's value and firm performance, measured by Tobin's Q and ROA, respectively. The non-linear relationship between firm value and Tobin's Q is documented by using the panel random effects model. Furthermore, foreign ownership is found to have a negative effect on the firm value Tobin's Q.

The adjusted R-squared statistics show that the independent variables combined can explain a substantial amount of the variation in firm value, ranging from 3% in the ROE to 24% in the ROE. Furthermore, as the effect for the same proportion of government or institutional ownership may be different in one industry than in others, 15 industrial dummy variables were used to control for potential industry effects. During the sample period of 1989-2003, Jordanian macroeconomic variables, such as interest rate, GDP, unemployment, and other economic variables, were different from one year to another. Controlling for the effect of time-series, dummy variables for the years were used in both the pooled and panel sample. When the time dummy variables were added to the model, the ownership structure variables became insignificant.

5. Conclusion

The possible impact of ownership structure on a firm's performance has been central to research on corporate governance, but evidence on the nature of this relationship has been decidedly mixed. While some theories and empirical investigations suggest that ownership structure affects firm performance, others suggest the irrelevance of the relationship between ownership structure and firm performance. Furthermore, most of the studies are conducted in developed countries and in some Asian countries where the characteristics of ownership structure are different from Middle Eastern countries. So, implications from the theory may not be applicable to other countries. This study provides evidence from Middle Eastern countries and expands the previous studies by investigating the effect of ownership structure on the firm's failure.

This paper examines the non-linear effects of ownership structure (variables) on corporate performance. The data used in this study are derived from 167 publicly traded companies quoted on the Amman Stock Exchange (ASE), over the period 1989-2003. The ownership structure is measured by the percentage of shares held by each type of owner (state, institution, foreign concentrated owners, and individuals). Results in this study confirm earlier findings of a curvilinear relationship reported for larger markets. The results also show that the relationship between government ownership and ROA and MBVR is a hump-shaped curve. The value of a firm increases when government ownership is low, but the value of a firm decreases when it is high. As the government reduces its stake in a privatised company to below a specific point, perhaps market monitoring become ineffective and this increases the agency costs. Our finding is consistent with the hypothesis of Morck et al. (1988) about how inside ownership affects a firm's value. However, these results are inconsistent with previous findings such as Tian (2003) and Wei, Xie and Zhang (2005).

The results also document that the relation between institutional ownership and ROA and Tobin's Q is a hump-shaped curve. When institutional ownership increases above a specific point, institutional shareholders negatively influence a firm's activities. Findings in this study contribute to the growing body of international evidence that the non-linear cubic relationship between ownership structure and corporate performance is robust to differences in governance structures across markets.

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