OWNERSHIP STRUCTURE, CORPORATE PERFORMANCE AND FAILURE: EVIDENCE FROM PANEL DATA OF EMERGING MARKET THE CASE OF JORDAN

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Abstract

This study investigates the impact of ownership structure (mix and concentrate) on a company's performance and failure in a panel estimation using 167 Jordanian companies during 1989-2006. The empirical evidence in this paper shows that ownership structure and ownership concentration play an important role in the performance and value of Jordanian firms. It shows that inefficiency is related to ownership concentration and to institutional ownership. A negative correlation between ownership concentration and firm's performance both, ROA and Tobin's Q, is found, while there is a positive impact on firm performance MBVR. The research also found that there is a significant negative relationship between government ownership and a firm's accounting performance, while the other ownership structure mixes have significant coefficients only in Tobin's Q using the matched sample. Firm's profitability ROA was negatively and significantly correlated with the fraction of institutional ownership, and positively and significantly related to the market performance measure, MBVR. The result is robust when indicators of both concentration and ownership mix are included in the regressions. The results of this study are, to some extent, inconsistent with previous findings. This paper also used ownership structure to predict the corporate failure. The results suggest that government ownership is negatively related to the likelihood of default. Government ownership decreases the likelihood of default, but has a negative impact on a firm's performance. The results suggest that, in order to increase a firm's performance and decrease the likelihood of default, it is reasonable to reduce government ownership to some extent. Furthermore, a certain degree of ownership concentration is needed to increase the firm's performance and to decrease the firm's chance of default.

Keywords: Ownership Structure, Ownership Concentration, Corporate Performance, Failure, Jordan

1. Introduction

The literature includes the hypotheses that ownership concentration may improve performance by decreasing monitoring costs (Shleifer and Vishny, 1986). 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 shareholders and 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.

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

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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[98].

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[99]. 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. One of the main reasons for low performance and distress or bankruptcy might be bad management, which drives the firm out of the market as a consequence of unsolved problems in corporate governance. The inefficiency that might lead firms to default is as a result of the agency problem that could arise from a conflict of interest between managers and shareholders (see, for example, Jensen and Meckling (1976); Shleifer and Vishny (1997)).

This paper investigates the effect of ownership structure on a firm's performance and its failure in Jordan. In this paper I argue that if ownership structure variables are relevant to corporate performance, then they will have a significant effect in determining and predicting corporate failure. Therefore, they could be used to determine and predict corporate failure. To the best of the author's knowledge, this is the first study that utilises real figures about ownership structure (mix and concentration) to investigate the effect of ownership structure on corporate performance for Jordanian companies. Furthermore, it could be considered as the first effort to utilise ownership structure variables (mix and concentration) to determine corporate failure as there is a lack of empirical evidence about the effect of ownership structure on corporate failure.

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 paper 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 about ownership concentration and ownership mix for

the Jordanian companies used in the study. Section 3 introduces the estimation method. Section 4 introduces the empirical results and the hypotheses test. Section 5 concludes the paper.

2. Ownership Structure and Firm Performance: a Descriptive Discussion

2.1 Ownership Structure (Mix) and Firm Performance

Since the establishment of the ASE in the 1970s, the number of listed companies, trading volume, and total market capitalisation have increased drastically. Table 1 reports the ownership structure of listed companies by sectors[100]. 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. Institutional ownership is very high in transportation, real estate, and trade and commercial services and rental, and communication (44.80%, 44.00%, and 36.89%, respectively). Individual citizens as a group are the largest shareholder of Educational Services, Medical Pharmacies, Textiles and Clothing, and Construction and Engineering. The largest foreign ownership stakes are in Steel, Mining and Heavy Engineering, followed by Tobacco (16.05% and 13.41%, respectively); foreign ownership is also high in the Insurance sector.

Table 2 presents the basic statistics of the ownership structure for defaulted and non-defaulted firms. The individual (citizen) owns an average of 51.42 percent of defaulted firms, a figure which is larger than 45.36 percent in non-defaulted firms. The fractions of government and foreigner ownership have their lowest median in the defaulted firms, 0.58 and 1.21 percent respectively, compared with 2.37 and 4.20 percent in non-defaulted firms for government and foreigner respectively.

There are several notable differences. First of all, defaulted firms have a lower median of government ownership. Also, the median of institutional ownership is lower, as is the median of foreigner ownership. Table 2 suggests that Jordanian firms with government, institutional, and foreign ownership have a lower risk of failure (default) (in this analysis, we will concentrate on the joint factor of Arab and foreign ownership rather than taking each one separately as both of them are considered foreign owners). The next section discusses the characteristics of defaulted firms in terms of ownership concentration.

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

[99] 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.

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[100] The classification of these sectors is based on the Amman Stock Exchange (ASE) classification for firms based on their activities. The author got this classification from the ASE management.

Table 1. Ownership Structure by Sector*

Sector	No. of Firms	Government	Companies	Citizen (Individual)	Foreign
Foods	19	10.67	29.08	47.83	8.79
		(21.25)	(19.91)	(26.50)	(16.76)
Paper, Glass, and Packaging	12	7.58	23.72	54.80	11.22
		(13.15)	(12.29)	(19.92)	(10.03)
Steel, Mining and Heavy Engineering	20	21.04	20.10	36.42	16.05
		(25.15)	(17.98)	(26.25)	(17.11)
Medical Pharmacy	11	7.45	16.07	65.27	11.36
		(14.89)	(12.56)	(19.01)	(14.60)
Chemical and Petroleum	11	2.78	25.22	51.63	12.06
		(3.76)	(13.09)	(16.06)	(21.27)
Textiles and Clothing	8	14.95	19.37	59.31	3.17
		(12.81)	(14.93)	(21.54)	(4.24)
Utilities and Energy	11	33.70	18.60	34.11	7.40
		(39.33)	(19.53)	(31.45)	(13.42)
Tobacco	3	7.21	23.28	53.24	13.41
		(10.67)	(14.64)	(17.44)	(26.89)
Construction and Engineering	10	8.06	23.82	56.83	10.20
		(12.61)	(10.14)	(19.45)	(9.43)
Hotels and Tourism	11	18.02	32.87	34.71	10.89
		(28.36)	(22.65)	(24.41)	(17.54)
Transportation	10	15.96	44.80	30.85	6.43
		(21.24)	(17.17)	(22.11)	(12.45)
Real Estate	10	2.57	44.00	39.44	7.01
		(4.36)	(20.50)	(21.03)	(5.55)
Media	5	43.20	18.62	33.21	0.60
		(20.22)	(13.19)	(14.40)	(0.74)
Medical Services	5	0.00	21.39	56.19	12.58
		(0.00)	(33.25)	(37.24)	(19.59)
Trade and Commercial Services and Rental, Communication	15	8.73	36.89	45.83	7.46
		(17.94)	(26.03)	(27.41)	(10.89)
Educational Services	3	1.36	9.40	81.30	5.09
		(1.77)	(7.32)	(10.58)	(3.40)

*Firms averages with standard deviations in parentheses. Calculated from ASE Annual Reports

Table 2. Ownership Concentration for Defaulted and Non-Defaulted Firms

	Non-Defaulted Firms (120)					Defaulted Firms (47)				
	Mean	Median	Std.Dev	Maximum	Minimum	Mean	Median	Std.Dev	Maximum	Minimum
Government	13.88	2.37	22.84	100	0	10.17	0.58	19.18	96.48	0
Companies	26.23	23.44	18.72	84.264	0	26.42	17.79	24.67	99	0
Individual (Citizen)	45.36	46.73	25.59	98.776	0	51.42	53.94	27.05	99.87	0
Foreign	9.93	4.20	14.04	99.017	0	7.54	1.21	14.62	81.02	0

2.2 Ownership Concentration

It was established in that 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)[101]. Table 3 sheds more light on the ownership concentration for Jordanian companies by

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[101] For more detail about the ownership concentration in the ASE, see Zeitun (2006).

sectors using five measures of ownership concentration across all firm-years[102]. The largest shareholder (C1) owns the highest percentage in the Hotel and Tourism sector and Media sector (35.32 percent and 35.50 percent respectively). The largest shareholder C1 owns the lowest percentage in the Educational sector (7.86 percent). The data also reveals that there is a substantial variation across firms and sectors in ownership concentration.

Given that the holding of the largest shareholder (C1) is so large, the other shareholders are small. As shown in Table 3, the cumulative percentage of ownership tapers rapidly [103], and there is little difference between C3 and C5 in all sectors. The average of C3 is highest in the Media sector followed by the Transportation sector with 49.53 percent and 45.94 percent in each sector respectively.

The Educational, Medical Pharmacy, Tobacco, and Paper, Glass, and Packaging sectors have the lowest ownership concentration in terms of the largest five shareholders (C5), compared with highest stake in Transportation, Media, and Trade, Commercial Services, Rental and Communication. The variation could relate to the capital required in these sectors, and also the importance of the sector; often there is high state ownership in sectors regarded as strategic.

Table 4 presents the basic statistics of ownership concentration for defaulted and non-defaulted firms. Considering the median, the largest shareholder (C1) owns 20 percent in the defaulted firms, a figure which is larger than the 18.86 percent in the non-defaulted firms. The largest two shareholders (C2) own 29.09 percent in the defaulted firms, a figure which is only marginally larger than 28.60 percent in the non-defaulted firms. The other measures of concentration C3, C5, and HERF are all larger in defaulted than non-defaulted firms. The data also reveals that there is a substantial variation across firms in ownership concentration: despite the high average, the largest owner's value varies between 0 and 100 percent. In this study, we used C5 and HERF indexes as indictors of ownership concentration to investigate whether ownership concentration increased the firm's performance and contributed to the firm's default.

3. 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[104]. 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.

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[102] The results provided are for 167 firms and over the period of 1989 to 2006. These ownership concentration statistics were collected and computed by the author.

[103] The second largest shareholder (C2) does, in fact, tend to have a substantially smaller stake, although the largest (C1) still quite large compared with the second largest shareholder.

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

Table 3. Ownership Concentration by Sector*: Cumulative percentage of shares controlled by different types of shareholders

Sector	Definition	C1	C2	C3	C5	HERF
Sector1	Foods	27.77	38.06	40.41	41.91	13.28
		(1359.69)	(535.21)	(559.61)	(819.71)	(1599.66)
sector2	Paper, Glass, and Packaging	18.53	25.38	27.09	28.24	7.11
		(14.53)	(20.35)	(21.36)	(22.55)	(11.03)
Sector3	Steel, Mining and Heavy Engineering	28.05	37.43	41.95	44.57	14.09
		(18.72)	(24.90)	(27.95)	(29.85)	(12.95)
Sector4	Medical Pharmacy	11.08	14.74	15.64	15.90	3.01
		(11.18)	(14.56)	(15.47)	(15.89)	(4.01)
Sector5	Chemical and Petroleum	17.97	25.91	28.96	29.48	6.91
		(15.02)	(17.39)	(20.14)	(20.54)	(11.76)
Sector6	Textiles and Clothing	15.83	24.38	29.89	32.08	5.39
		(10.05)	(14.27)	(17.96)	(20.35)	(4.91)
Sector7	Utilities and Energy	34.22	41.89	43.21	43.49	23.22
		(31.53)	(37.34)	(37.06)	(37.36)	(31.01)
Sector8	Tobacco	12.41	18.06	20.39	21.44	2.92
		(6.15)	(10.15)	(13.39)	(15.72)	(2.27)
Sector9	Construction and Engineering	16.93	24.90	28.95	31.48	6.14
		(12.60)	(16.41)	(17.90)	(20.64)	(7.50)
Sector10	Hotels and Tourism	35.32	40.91	43.11	45.24	19.66
		(24.47)	(25.98)	(26.38)	(27.09)	(22.79)
Sector11	Transportation	24.01	37.20	45.94	53.59	12.49
		(16.18)	(19.95)	(22.58)	(26.24)	(13.79)
Sector12	Real Estate	30.94	38.92	42.71	45.98	15.68
		(21.47)	(20.36)	(20.45)	(19.84)	(19.66)
Sector13	Media	35.50	44.87	49.53	50.61	15.50
		(13.57)	(16.29)	(19.73)	(20.91)	(8.72)
Sector14	Medical Services	21.18	23.20	23.57	23.57	13.89
		(30.85)	(30.55)	(30.59)	(30.59)	(32.93)
Sector15	Trade and Commercial Services	31.04	40.21	42.37	44.72	16.25
	and Rental, Communication	(21.05)	(24.54)	(25.56)	(26.13)	(16.83)
Sector16	Educational Services	7.86	11.28	11.71	11.71	1.93
		(9.45)	(13.60)	(14.49)	(14.49)	(2.90)

Notes: *Firms averages with standard deviations in parentheses. Calculated from ASX Annual Reports; C1- percentage holding of largest shareholders, C2- combined percentage holdings of 2 largest shareholders, C3- combined percentage holdings of 3 largest shareholders, C5- combined percentage holdings of 5 largest shareholders, and HERF-Herfindahl index of ownership concentration, the sum of squared percentage of shares controlled by the largest 5 shareholders.

Table 4. Ownership Concentration for Defaulted and Non-Defaulted Firms

	Non-Defaulted Firms (120)					Defaulted Firms (47)				
	Mean	Median	Std.Dev	Maximum	Minimum	Mean	Median	Std.Dev	Maximum	Minimum
C1	24.03	18.86	19.73	100	0	25.94	20.00	21.92	99	0
C2	32.17	28.60	24.21	100	0	33.84	29.09	23.33	99	0
C3	35.23	33.38	25.76	100	0	36.99	36.00	24.72	99	0
C5	37.55	35.70	27.53	100	0	37.67	36.00	25.31	99	0
HERF	11.62	5.46	16.18	100	0	13.10	6.56	19.04	98.01	0

Notes: C1- percentage holding of largest shareholders, C2- combined percentage holdings of 2 largest shareholders, C3- combined percentage holdings of 3 largest shareholders, C5- combined percentage holdings of 5 largest shareholders, and HERF- Herfindahl index of ownership concentration

For data analysis, a clear and consistent definition of failure or default is required. While default is usually defined as a corporation not being able to meet its obligations on a due date, different researchers have used different criteria to define default. For example, Beaver (1968) used a wider

definition of default, which includes default on a loan, an overdrawn bank account, and non-payment of a preferred stock dividend. Alternatively, default may be defined in a stricter legal sense as in Deakin (1972), who defined default to include only those firms which experienced bankruptcy or liquidation and faced legal action. In the case of Jordan, we define default as a firm that had a receiver or liquidator appointed, was delisted from the Amman Stock Exchange (ASE) in the period 1989 to 2006[105], or that stopped issuing financial statements for two years or more, since firms are obliged by law to submit their annual financial statements. The date of failure is the date the liquidator was appointed, or the date of delisting from the formal market[106], or the date of the first failure to submit returns.

The first 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. The second sample is a matched sample which reduces the number of defaulted firms to 29 (from the 47) that meet our definition and requirement. Therefore, the initial sample in this study consisted of 59 industrial and services firms with 29 failed and 30 non-failed firms. The non-failed sample was matched to the failed sample from the same industry and the same year of data collection. No financial companies such as banks or insurance firms are included, since the characteristics of these firms are substantially different to manufacturing and service firms.

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 measures of concentration are the cumulative percentage of shares held by the largest five shareholders (C5), and the Herfindahl index of ownership concentration (the sum of squared percentage of shares controlled by each top 5 shareholders). The ownership fraction (mix) is divided into the fraction owned by government (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 3 for sector definitions). Also, firm size (SIZE)[107], firm's age (AGE), capital structure variable (DEBT), which is defined as total debt to total assets (TDTA) or total debt to total equity (TDTE), long-term debt to total assets (LTDTA). Growth opportunity (GROW) is defined as growth in sales (GROW1), or net income to capitalisation (NICAP)[108].

3.3 Empirical Model and Proxies Variables
3.3.1 Ownership Structure and Firm Performance

Let *Y* and *CR* represent performance and concentration ratio variables respectively. If ownership structure does not affect firm's performance, it would be found that there is no correlation between *Y* and *CR*. Thus, the first hypothesis can be stated as follow:

H_1 : *Ownership concentration does not affect a firm's performance.*

Equation (1) is estimated to test the first hypothesis using panel data and a random effects model[109]:

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[105] This definition is very similar to the one used by Izan (1984).

[106] According to Ohlson (1980), the timing issue is a crucial problem in data collection. It arises as firms' financial statements are not always released to the public on a timely basis.

[107] 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 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.

[108] 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.

[109] The random effect model is preferred more than the fixed effect model in this estimation as a dummy variable for industrial sectors is included in the analysis to control for the effect of the industrial sectors on corporate performance.

$$Y_{it} = \beta_0 + \beta_1 SIZE_{it} - \beta_2 DEBT_{it} + \beta_3 GROW_{it} + \beta_4 CR_{it} + \varepsilon_{it} \quad (1)$$

After testing the hypothesis of the irrelevance ownership concentration on firm performance, this study further addresses the effect of ownership structure on a firm's performance by studying the effects of ownership mix on a firm's performance. If ownership mix is irrelevant, there will be no correlation between firm performance and firm value and ownership mix. Thus, to test the irrelevance of ownership mix on firm performance, the second hypothesis is stated as:

H_2 *: Ownership mix does not affect firm performance.*

If this hypothesis is rejected, the government ownership, GOV, is hypothesised to be negatively related to a firm's performance as its main focus is social benefit rather than profit. It is hypothesised that firms with both foreign (FORG) and institutional (INSTIT) ownership will have a higher performance.

Equation (2) is estimated to test the second hypothesis using the panel data model:

$$Y_{it} = \beta_0 + \beta_1 SIZE_{it} - \beta_2 DEBT_{it} + \beta_3 GROW_{it} + \beta_4 F_{it} + \varepsilon_{it} \quad (2)$$

If ownership mix and concentration are relevant to firm performance, this study will investigate whether there is any effect of ownership concentration on the significance of ownership mix. This study explores the effect of both ownership concentration and mix on firm performance by estimating the following equation:

$$Y_{it} = \beta_0 + \beta_1 SIZE_{it} - \beta_2 DEBT_{it} + \beta_3 GROW_{it} + \beta_4 CR_{it} + \beta_5 F_{it} + \varepsilon_{it} (3)$$

Finally the matched sample[110] is used to test the irrelevance of ownership structure by estimating the following equation:

$$Y = \beta_0 + \beta_1 SIZE + \beta_2 AGE - \beta_3 DEBT + \beta_4 LTDTA + \beta_5 GROW + \beta_6 CR + \beta_7 F + \varepsilon \quad (4)$$

where Y is alternatively ROA, ROE, Tobin's Q, and MBVR for firm i as a measure of performance. The independent variables are represented by concentration ratio (CR), ownership fraction (F), SIZE, AGE, DEBT (TDTA[111] or TDTE), LTDTA[112],

and GROW. Only C5 and the HERF are used as concentration ratios[113] in the estimation to investigate the effect ownership concentrations on a firm's performance. F is alternately GOV, FORG, INSTIT, and CITIZEN. ε is a error term. The government ownership, GOV, is hypothesised to be negatively related to a firm's performance, while both foreign (FORG) and institutional (INSTIT) ownership are hypothesised to have a positive impact on corporate performance. The next section will introduce the empirical model that investigates the impact of ownership structure on a firm's likelihood of default.

3.3.2 Ownership Structure and Corporate Failure

To further examine the issue of ownership structure and its effect on a firm's likelihood of default, a test estimating the likelihood of default was conducted using both mix and concentration ownership structure variables. Many studies used Logit models, such as Martin (1977), Ohlson (1980), Zavgren (1985), Johnsen and Melicher (1994), Lennox (1999), Westgaard and Wijst (2001), and Ginoglou, Agorastos and Hatzigagios (2002), among others. The Logit model is formulated for Jordanian companies' conditions, and contains two state dependent variables: state 1 for default firms, otherwise 0 for non-default.

To investigate whether ownership concentration and mix contributes to a firm's default, two hypotheses are developed. If ownership structure (mix and concentration) is irrelevant to default probability, the ownership concentration and fraction will produce an insignificant correlation between ownership structure and corporate failure. Thus, the two hypotheses can be stated as follows:

H_3 *: Ownership concentration does not affect a firm's default.*

H_4 *: Ownership mix does not affect firm default.*

The basic estimating equation for the matched sample is as follows:

$$Y_i^* = \beta_0 - \beta_1 SIZE - \beta_2 AGE + \beta_3 TDTA - \beta_4 NICAP + \beta_5 CR + \beta_6 F + \varepsilon \quad (5)$$

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[110] The purpose of including the matched sample model estimation is to provide evidence of how ownership structure could have an impact on defaulted and non-defaulted firms from the same industry and having the same year of data. Furthermore, the pooled data model is used in this study and is found to give better results than the panel data model. An example of this is the result from the matched sample.

[111] It is worth noting that I re-estimated these equations by introducing instrumental variables in order to investigate the endogeneity problem; however, the results remain almost the same without changing the estimated parameters

significantly. In order to save space, these results are not reported in this research.

[112] The purpose of including the LTDTA and the DEBT ratios in the matched sample is to control for the effect of debt structure as this sample focused more on the defaulted and the non-defaulted firms, and as DEBT is defined in the matched sample as TDTE.

[113] It is worth noting that the ownership concentration C1, C2, and C3 are tried in this study, but C5 is found to have more predictive power.

Equation (6) is estimated to test hypotheses three and four (H_3 and H_4) using panel data and the random effects model:

$$Y_{it}{}^* = \beta_0 - \beta_1 SIZE_{it} - \beta_2 AGE_{it} + \beta_3 TDTA_{it} - \beta_4 NICAP_{it} + \beta_5 CR_{it} + \beta_6 F_{it} + \varepsilon_{it} \quad (6)$$

where Y^* represents the firm's status with Y_{it} =1 if firm i defaults at period t and y_{it} =0 otherwise, CR represents ownership concentration ratios, C5 and HERF. F represents ownership fractions, GOV, FORG, and INSTIT. ε is the stochastic disturbance term corresponding to the *ith* (estimated error).

Government ownership, GOV, is hypothesised to be negatively related to a firm's default, as their main focus is social benefit rather than profit. Priorities of government do not necessarily coincide with a firm's performance maximisation. For instance, the government may care more about unemployment or control over certain strategic industries than the value of state assets. So, the government will support distressed firms even until they default. Therefore, government ownership could affect a firm's performance negatively and, at the same time, decrease the likelihood of default. Institutional shareholders (INSTIT) are more profit-oriented and may have more incentive to monitor the firm. It is hypothesised that firms with institutional ownership, INSTIT, will have a lower risk of failure as they monitor the firm more closely and their goal is profit maximisation.

Foreign shareholders (FORG) are also more profit-oriented than government and may have more incentive to monitor the firm. It is hypothesised that firms with foreign ownership, FORG, will have a lower risk of default (failure). Furthermore, ownership concentration, C5, is expected to have a negative effect on the likelihood of default. Four control variables are used in this study: the firm's size, the firm's age, TDTA[114], and the growth ratio NICAP. These variables are expected to contribute to a firm's default. It is expected that firms with high debt ratio will have a high corporate failure and firms with a high profit ratio will have a lower corporate failure. Furthermore, it is argued that larger and older firms will have a lower corporate failure.

4. Empirical Results

The analysis of the results is presented here in separate subsections. It begins with an analysis of the

effect of ownership structure on corporate performance, where ownership concentration and mix are used in the analysis. The analysis then moves to examining the effect of ownership structure (mix and concentration) on corporate failure. This includes an analysis of the statistical significance of each variable. The random-effects model is used to examine the effect of ownership structure and control for the effect of industrial sectors on corporate performance.

4.1 Ownership Structure and Corporate Performance

In order to explore the appropriateness of a random-effects model, a Breusch-Pagan Lagrange Multiplier test is conducted to determine the overall significance of these effects. According to the Breusch-Pagan test the null hypothesis is that random components are equal to zero. This test also provided support for the Generalized Least Squares (GLS) over a pooled Ordinary Least Squares (OLS) regression. In all models, the Breusch-Pagan Lagrange Multiplier test supported the use of the random-effects model. Also, the Hausman test failed to reject the null hypothesis of no difference between the coefficients of the random- and the fixed-effects models. For example, the Chi^2 (4) = 0.36, P=0.98 and Chi^2 (4) = 3.4, P=0.49 for Tobin's Q and MBVR, respectively. Our model also contains time-invariant variables which cannot be estimated using the fixed-effects model.

The overall goodness of fit (R^2) for the random-effects model, using both ownership mix and concentration and industrial sector variables, is greater than the goodness of fit for the random-effects model using only ownership concentration. A general test for serial autocorrelation in panel data has been conducted using the test developed by Wooldridge (2002) (see Drukker, 2003). The null hypothesis is that there is no serial autocorrelation for the data examined. The hypothesis is strongly accepted as ((F1, 134) =0.847, P=0.3591). Therefore, our models do not have a serial autocorrelation. The overall significance of the models was tested using the Wald test, which has a Chi-square (χ^2) distribution under the null hypothesis that all the exogenous variables are equal to zero. For all models, the value of the χ^2 statistic is significant at least at the 1 % level of significance using ROA.

The estimation results of Equation (1) are presented in Table 5 and Table 6 using the random-effects model. Table 7 and Table 8 report the results for the estimation of Equation 2. To examine the robustness of our results, the model included dummy variables to control for industry effects, and the results are reported in Appendix 1. Appendix 2 and Appendix 3 report the result of the cross-sectional analysis for the matched sample to provide more

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[114] I re-estimated these equations by introducing instrumental variables in order to investigate the endogeneity problem; however, the results remain almost the same without changing the estimated parameters significantly. In order to save space, these results are not reported in this research.

evidence on the effect of ownership structure on corporate performance. The regression model using price per share to earnings per share, ROE[115], is not significant and, hence, is not reported using the panel data analysis.

4.1.1 Ownership Concentration Results

From Hypothesis 1, the variables representing ownership concentration are expected not to have any significant impact on corporate performance. Two variables are used, C5 and HERF. From the regression results in Table 5, the variable C5 was found to have a negative and significant impact on ROA at the 10% level of significance, while it has a positive and significant impact on MBVR. The estimated coefficient of the HERF indicates that it does not have a significant impact on any measure of firm performance or value. Neither the HERF nor the C5 have any significant impact on Tobin's Q (although the sign of the coefficient was positive in both equations). The result for Tobin's Q and MBVR are more robust as proved by the R-square and Waled test. Hypothesis 1 is thus rejected as C5 is significantly different from zero in regressions of ROA and MBVR. As concentration is immensely different from industry to industry, this gives rise to the potential for industry effects of ownership concentration on a firm's value (see Table 4). It can be argued that the effect of ownership concentration may be different from one industry to another (see Wei, Xie and Zhang, 2005).

To control for potential industry effects, 15 industrial dummy variables [116] were taken and Equation (1) was re-estimated. The results, reported in Table 6, almost changed the significance of C5. The largest five shareholders, C5, became insignificant in ROA, while the significance of C5 increased in MBVR. Furthermore, of the 15 industrial dummy variables, only that for sector 8 was found to have a positive impact on a firm's performance ROA. Also, all the coefficients of the industrial variables were found to have a negative and significant impact on a firm's value measured by Tobin's Q. It should be noted that the significance of these industrial sectors may imply presence of industry sector.

The significant impact of concentration ratios on MBVR supports the Shleifer and Vishny hypothesis (1986) that large shareholders may reduce the problem of small investors and, hence, increase the firm's performance. The finding of a positive and significant relationship between ownership concentration and corporate performance is consistent with prior research based on advanced capital markets including Hill and Snell (1988, 1989), Kaplan and Minton (1994), and Morck, Nakamura and Shivdasani (2000), among others.

However, this finding is inconsistent with the result of Wu and Cui (2002) that there is a positive relationship between ownership concentration and accounting profits (indicated by ROA), but consistent with the result of Leech and Leahy (1991) and Mudambi and Nicosia (1998). The insignificant results for concentration variables in the Tobin's Q equation could suggest that the Jordanian equity market is inefficient (or there could be other factors that affect the market performance measure, which were missed in our models). These results are consistent with Abdel Shahid (2003), that ROA is the most important factor used by investors rather than the market measure of performance.

4.1.2 Ownership Mix and Corporate Performance

This section presents the results of ownership mix. The hypothesis is that if ownership mix is irrelevant to firm performance (Hypothesis 2), then the ownership fractions will be expected to be insignificant in Equation 2. Hypothesis 2 is rejected decisively as GOV, INSTIT and CITIZEN are significantly different from zero in regressions of ROA and Tobin's Q. The results of the panel regression are reported in Table 7. The results in Table 7 indicate that the fraction of equity owned by government, GOV, has a positive coefficient in ROA performance equations, and it is statistically significant at the 10% level. However, GOV is found to have a negative but insignificant impact on both Tobin's Q and MBVR. The fraction owned by institutions, INSIT, has a negative coefficient on both ROA and Tobin's Q measure of performance, and these coefficients are highly significant. The fraction of equity owned by foreign shareholders, FORG, does not seem to have any significant impact on the profitability of firms as measured by ROA, Tobin's Q, and MBR.

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[115] The only variable that is found to be significant is DEBT.

[116] The analysis included 16 dummy variables but one dummy variable (sector 16) is dropped due to collinearity.

Table 5. Ownership Concentration and Firm's Performance

	SIZE	DEBT	GROW1	C5	HERF	Constant	Adj. R^2	Wald test	Breusch and Pagan
ROA	0.0595	-0.1606	0.0007	-0.0310		-0.3418		152.85	337.65
	(6.10)***	(-10.87)***	(2.39)**	(-1.91)*		(-5.10)***	0.1978	(0.00)***	(0.00)***
ROA	0.0557	-0.1600	0.0007		0.0151	-0.3292		149.89	333.57
	(5.70)***	(-10.84)***	(2.40)**		(0.58)	(-4.89)***	0.1944	(0.00)***	(0.00)***
								2.82	28.22
	-0.6661	-2.1318	-0.00992	-2.92159		8.633798	0.0036	(0.7280)	(0.00)
Tobin's Q	(-0.5)	(-0.95)	(-0.18)	(-1.13)		(0.93)			
								1.63	28.08
	-0.756	-2.0572	-0.01016		-2.0744	8.358025	0.0024	(0.8026)	(0.00)
Tobin's Q	(-0.56)	(-0.92)	(-0.19)		(-0.48)	(0.9)			
								26.20	324.75
MBVR	0.3688	-0.3089	-0.00708	0.41736		-1.06873	0.0266	(0.00)	(0.00)
	(2.49)***	(-1.18)	(-0.38)	(1.64)*		(-1.05)			
								9.06	314.63
MBVR	0.3872	-0.3284	-0.00817		0.39192	-1.07434	0.0156	(0.06)	(0.00)
	(2.62)***	(-1.25)	(-0.44)		(0.90)	(-1.06)			

Note: ***, **, * indicate significant at a 1%, 5%, and 10% level, respectively. t statistics are in parentheses.

Table 6. Ownership Concentration and Firm's Performance Including Industrial Dummy Variables

	ROA	ROA	Tobin's Q	Tobin's Q	MBVR	MBVR
Constant	-0.4095	-0.3874	87.2243	87.4586	-2.0809	-2.1917
	(-4.72)***	(-4.47)***	(9.9)***	(9.89)***	(-1.52)	(-1.59)
SIZE	0.0606	0.0564	-0.5307	-0.5939	0.4176	0.4469
	(5.6)***	(5.23)***	(-0.52)	(-0.58)	(2.53)**	(2.72)***
DEBT	-0.1615	-0.1609	-0.6956	-0.7273	-0.3586	-0.3685
	(-10.61)***	(-10.58)***	(-0.38)	(-0.39)	(-1.35)	(-1.38)
GROW1	0.0007	0.0008	-0.0476	-0.0476	-0.0016	-0.0027
	(2.43)**	(2.46)**	(-0.93)	(-0.93)	(-0.08)	(-0.15)
C5	-0.0271		-0.8105		0.4740	
	(-1.62)		(-0.39)		(1.78)*	
HERF		0.0299		0.2707		0.4401
		(1.1)		(0.08)		(0.98)
No. of Observation	1265	1265	1163	1163	1113	1113
Wald test	166.21	164.99	229.39	228.98	33.09	30.93
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.0234)**	(0.0411)**
R-square	0.2184	0.2155	0.1876	0.1876	0.0952	0.0936
	238.16	238.27	16.97	17.03	128.17	126.14
Breusch and Pagan test	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***

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

Table 7. Ownership Structure and Firm's Performance

	SIZE	DEBT	GROW1	GOV	INSTIT	CITIZEN	FORG	Constant	Wal test	Adju R^2
ROA	0.0541	-0.1622	0.0007	0.0410				-0.3211	150.84	
	(5.53)***	(-10.9)***	(2.4)**	(1.66)*				(-4.75)***	(0.00)***	0.19
		-0.1675								
ROA	0.0619	(-11.14)**	0.0007		-0.0447			-0.3557	158.7	
	(6.3)***	*	(2.38)**		(-2.04)**			(-5.22)***	(0.00)***	0.20

Table 7 continued

ROA	0.0612 (6.19)***	-0.1594 (-10.81)***	0.0007 (2.41)**			0.0379 (1.84)*		-0.3830 (-5.34)***	153.93 (0.00)***	0.20
ROA	0.0554 (5.7)***	-0.1591 (-10.75)***	0.0007 (2.42)**				0.0320 (1.1)	-0.3289 (-4.89)***	149.35 (0.00)***	0.19
Tobin's Q	-0.7927 (-0.58)	-2.0466 (-0.9)	-0.0104 (-0.19)	-0.6047 (-0.17)				8.4473 (0.89)	1.42 (0.84)	0.002
Tobin's Q	-1.0316 (-0.75)	-2.8212 (-1.24)	-0.0145 (-0.27)		-10.012 (-2.95)***			13.0078 (1.35)	10.11 (0.034)*	0.0052
Tobin's Q	-2.4531 (-1.75)*	-2.6991 (-1.2)	-0.0070 (-0.13)			-12.7624 (-4.14)***		26.0185 (2.54)**	18.51 (0.00)***	0.0107
Tobin's Q	-0.6041 (-0.44)	-2.2295 (-0.99)	-0.0112 (-0.21)				-4.8781 (-1.06)	7.6135 (0.81)	2.52 (0.6410)	0.0025
MBVR	0.4026 (2.7)***	-0.3236 (-1.23)	-0.0090 (-0.49)	-0.0164 (-0.04)				-1.1322 (-1.11)	8.34 (0.08)*	0.0135
MBVR	0.3603 (2.38)**	-0.3161 (-1.21)	-0.0088 (-0.48)		-0.2877 (-0.92)			-0.7090 (-0.65)	9.06 (0.06)*	0.0166
MBVR	0.3728 (2.48)**	-0.2427 (-0.91)	-0.0070 (-0.38)			0.5036 (1.51)		-1.0919 (-1.05)	9.23 (0.06)*	0.0184
MBVR	0.4189 (2.8)***	-0.3343 (-1.27)	-0.0101 (-0.55)				-0.3280 (-0.75)	-1.2091 (-1.18)	8.89 (0.06)*	0.0157

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.

However, the significance of the ownership structure (Mix) variables changed as 15 industrial dummy variables were included in the model to control for potential industry effects (see Table 8). The significance of both government ownership (GOV) and institutional ownership (INSTIT) increased, while individual citizen ownership (CITIZEN) becomes insignificant. Also, foreign ownership, FORG, becomes significantly negatively related to firm value, as proxied by Tobin's Q. This finding is inconsistent with the previous finding of Wei, Xie, and Zhang (2005). This result indicates that foreign investors negatively influence management of the firm. The sign of the institutional ownership in MBVR is changed and becomes significant. The changes indicate that the effect of the same proportion of state, institutional, or foreign ownership could be different in one industry from others.

The estimation of Equation (3) that investigates the effects of both ownership concentration and mix on corporate performance and value is reported in Appendix 1. The indicator of concentration C5 is included and it shows a negative and significant effect on ROA, and Tobin's Q, while it has a positive effect on MBVR. The impact of ownership mix did not go away. Instead, the government (GOV), institutional (INSTIT), and foreign (FORG) ownership become stronger in ROA regression. The fraction of government ownership shares (GOV) has a positive coefficient in the two regressions, ROA and Tobin's Q, but has a significant impact in all ROA regressions. The fraction of institutional shares (INSTIT) is found to have a negative and significant impact on both ROA and Tobin's Q, while institutional ownership is found to have a positive and significant impact on MBVR regressions. The fraction owned by the foreigners (FORG) is found to have a negative and significant impact in all Tobin's Q regressions, while it has a positive, but insignificant, impact in all ROA regressions.

We further investigate the effect of ownership structure on corporate performance using a cross-sectional analysis for a matched sample of defaulted and non-defaulted firms. The results of pooled regressions for the matched sample of defaulted and non-defaulted firms (Equation 4) are reported in Appendix 2 and Appendix 3. The results show that ownership concentration has a positive and significant impact on both ROE and ROA, but neither the HERF nor the C5 have any explanatory power for both Tobin's Q and MBVR (although the sign of the coefficient was positive in both equations). The fraction of equity owned by government, GOV, has a negative coefficient in ROE performance equations, and it is statistically significant at the 10% level. The FORG also has a negative coefficient in both ROE and ROA measure of performance, but none of these coefficients are significant.

Table 8. Ownership Structure and Firm's Performance Including Industrial Dummy Variables

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	ROA			
Constant	-0.3854	-0.4447	-0.4364	-0.3950
	(-4.45)***	(-5.11)***	(-4.84)***	(-4.56)***
SIZE	0.0562	0.0665	0.0618	0.0564
	(5.25)***	(6.09)	(5.63)***	(5.24)
DEBT	-0.1633	-0.1692	-0.1607	-0.1605
	(-10.71)***	-(10.98)***	(-10.57)***	(-10.54)***
GROW1	0.0007	0.0007	0.0007	0.0008
	(2.45)**	(2.42)**	(2.44)**	(2.47)**
GOV	0.0552			
	(2.14)**			
INSTIT		-0.0470		
		(-2.07)**		
CITIZEN			0.0313	
			(1.46)	
FORG				0.0343
				(1.16)
No. of Observation	1263	1263	1263	1263
Wald test	168.40	177.02	166.83	164.46
	(0.00)***	(0.00)***	(0.00)***	(0.00)***
R-square	0.2134	0.23	0.22	0.21
Breusch and Pagan test	241.33	224.57	241.83	223.05
	(0.00)***	(0.00)***	0.00)***	(0.00)***

	Tobin's Q				MBVR			
Constant	87.6015	88.2722	95.9267	85.9313	-2.34069	-2.0455	-1.7423	-2.3026
	(9.68)***	(9.65)***	(9.95) ***	(9.79)***	(-1.7)*	(-1.49)	(-1.24)	(-1.67)*
SIZE	-0.6523	-0.6286	-1.6544	-0.1285	0.4706	0.4076	0.3985	0.4754
	(-0.61)	(-0.58)	(-1.47)	(-0.12)	(2.85)***	(2.45)**	(2.38)**	(2.87)***
DEBT	-0.7732	-0.9421	-1.2407	-0.8736	-0.3354	-0.2728	-0.3568	-0.3609
	(-0.41)	(-0.5)	(-0.66)	(-0.47)	(-1.25)	(-1.01)	(-1.35)	(-1.35)
GROW1	-0.0469	-0.0511	-0.0394	-0.0488	-0.0037	-0.0006	-0.0028	-0.0046
	(-0.91)	(-0.99)	(-0.77)	(-0.95)	(-0.2)	(-0.030)	(-0.15)	(-0.24)
GOV	0.6459				-0.2098			
	(0.24)				(-0.53)			
INSTIT		-4.6848				0.7090		
		(-1.65)*				(2.05)**		
CITIZEN			-6.9564				-0.3898	
			(-2.79)***				(-1.2)	
FORG				-7.3521				-0.2539
				(-2.03)**				(-0.57)
No. of Observation	1163	1163	1163	1163	1113	1113	1113	1113
Wald test	223.69	225.31	222.99	235.87	30.25	33.55	33.06	30.28
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.05)**	(0.02)**	(0.02)**	(0.04)**
R-square	0.19	0.19	0.1917	0.19	0.0906	0.1035	0.0987	0.0929
Breusch and Pagan test	16.97	15.61	14.60	16.67	126.73	117.55	121.68	125.51
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***

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.

The fraction of equity owned by institution shareholders (INSTIT) does not seem to have any significant impact on the profitability of firms as measured by ROE, ROA, Tobin's Q, and MBVR. However, we would argue that the explanatory power for both ROE and ROA regressions is fairly high with the adjusted R-squared value ranging from 50 to 73 percent, while the adjusted R-squared is merely 5 to 15 percent for both MBVR and Tobin's Q equations. Furthermore, the F statistics are significant and very

high for the two measures of performance, ROE and ROA, but very low though still significant for Tobin's Q. In all of the regression, five industrial dummy variables were included as control variables and their coefficients were not significant at any level of significance. The results from the cross-sectional regression confirm our finding that ownership structure (mix and concentration) has a significant effect on corporate performance.

In all regressions, the controlling variable firm's size (SIZE) has a positive impact on the firm's performance measures, ROA and MBVR, and they are significant, at least at a 1% and 5% level, in both ROA and MBVR, respectively. The controlling variable growth, GROW, has a positive and significant impact on firm performance measure ROA only. The controlling variable for capital structure, DEBT, is found to have a negative and significant impact on ROA and ROE, while DEBT does not have any significant impact on Tobin's Q and MBVR. There are some conflicting results regarding the coefficient's sign between ROA, Tobin's Q and MBVR equations indicating that ownership structure (mix and concentration) affects corporate performance measures differently.

The findings of a significant impact of ownership structure (mix) on corporate performance and value are consistent with prior research including Agrawal and Mandelker (1990), Xu and Wang (1997), Miguel and Pindado (2001), Lizal (2002), Abed Shahid (2003), Wei, Xie, and Zhang (2005), among others. Therefore, the results provide support for Shleifer and Vishny (1986) and for the agency theory (Jensen and Meckling, 1976).

4.2 Ownership Structure and Corporate Failure

The estimation results of Equation (5) for the matched sample of defaulted and non defaulted firms using Logit estimation are presented in Table 9. The fraction of equity owned by government, GOV, is found to have a negative coefficient on the likelihood of default, and it is statistically significant at a 5% level of significance in Table 9 panel A. The variable GOV is found to have a negative but statistically insignificant coefficient using the panel data (Equation 6) in Table 9 panel B. This indicates that government ownership decreases the likelihood of default as the government has objectives other than profit. This result is consistent with other studies, such as Lizal (2002), who finds that government ownership reduces corporate failure. The fraction of foreign owned equity, FORG, has a positive but insignificant coefficient. The fraction of equity owned by institution shareholders, INSTIT, does not seem to have any significant impact on the likelihood of default, while the coefficient of the institutional

ownership is negative.

From the results of the estimation in Table 9 panel A, we find that the ownership concentration measure C5 has a positive and significant impact on the likelihood of default, and the effect is statistically significant at the 5% level in Models 1 and 3. In Model 2, we find that the ownership concentration C5 is not significant in combination with the fraction of foreign owners, but it still has a negative effect on corporate failure. Our finding also supports the findings in the previous section that ownership concentration affects corporate performance and participates in corporate failure. This finding can be explained by the fact that only a few firms are family-controlled in Jordan as supported by Al-Malkawi (2005). Therefore, the managers (insiders) may have incentives to pursue activities for their own benefits. The agency conflict between insiders (mangers) and outsiders (shareholders) results in the managers' tendency to appropriate perquisites out of the firm's resources for their own benefit which leads to corporate failure.

The estimated coefficient of the HERF is not significant using the matched sample data. However, HERF is found to have a positive and significant impact on Jordanian corporate failure using the pooled cross-sectional and time-series data. The impact of ownership mix with ownership concentration measure HERF does not affect the significance of government ownership GOV. Government ownership is still significant at the 5% level in the matched sample. Neither FORG nor INSTIT has any significant impact on the likelihood of default in both panels. Controlling variables such as the firm's size, SIZE, and the firm's age, AGE, do not have any explanatory power in predicting the corporate failure in panel A, while both SIZE and AGE are found to decrease the likelihood of default for Jordanian companies. The firm's growth, NICAP, has a significant effect on the likelihood of default in both estimations. This result is consistent with the theory that firms with high growth rates have a low risk of default. The results also provide support for agency theory.

For the Logit models, the Pseudo R^2 ranges from 47 to 60 percent, while the LR ranges from 38 to 49 percent, and is statistically highly significant in the corresponding asymptotic Chi-squared distribution for the cross-sectional data in panel A. For the cross-sectional and time-series data, the Pseudo R^2 ranges from 18 to 19 percent, while the Wald test ranges from 62.85 to 63.30 and is statistically significant at the 1% level. To sum up, results from cross-sectional and panel data analysis provide evidence of the effect of ownership structure on corporate failure. The result shows that ownership concentration affects corporate performance negatively and participates in corporate failure. The

results also, show that government ownership decreases a firm's likelihood of default.

Table 9. Ownerships Concentration and Mix and Firm's Likelihood of Default using The Logit Model

Panel A: Using Cross-Sectional data

	Constant	SIZE	AGE	TDTA	NICAP	C5	HERF	GOV	FRGO	INSTIT	Pseudo (R^2)	Wald test	P-value
Model 1	5.02 (0.70)	-1.23 (-1.08)	-0.58 (-0.37)	5.26 (1.70)c	-14.96 (-2.28)b	5.00 (2.34)b		-7.76 (-2.43)b			0.60	49.20	0.00
Model 2	9.12 (1.31)	-1.55 (-1.46)	-1.65 (-1.20)	3.71 (1.53)	-8.43 (-1.94)b	2.43 (1.59)			0.58 (0.24)		0.49	40.32	0.00
Model 3	9.72 (1.36)	-1.61 (-1.49)	-1.62 (-1.20)	3.65 (1.50)	- 8.26 (-1.93)b	2.57 (1.64)c				-0.58 (-0.38)	0.49	40.41	0.00
Model 4	7.43 (1.04)	-1.40 (1.26)	-0.54 (-0.36)	5.11 (1.71)c	-9.99 (-2.07)b		5.38 (1.49)	-5.93 (-2.27)b			0.56	45.47	0.00
Model 5	9.79 (1.41)	- 1.56 (-1.50)	-1.52 (-1.14)	3.70 (1.57)	- 7.16 (-1.83)c		1.96 (1.07)		0.86 (0.36)		0.47	38.74	0.00
Model 6	10.69 (1.48)	-1.66 (-1.55)	- 1.50 (-1.16)	3.67 (1.56)	- 6.85 (-1.80)c		2.32 (1.14)			-0.77 (-0.47)	0.48	38.83	0.00

Panel B: Using Panel data

	Constant	SIZE	AGE	TDTA	NICAP	C5	HERF	GOV	FRGO	INSTIT	Pseudo (R^2)	Wald test	P-value
Model 1	1.25 (0.57)	--0.82 (-2.47)b	-0.03 (-1.82)c	1.32 (3.46)a	-2.22 (-4.93)a	1.36 (2.11)b		-0.29 -(0.35)			0.18	63.29	0.00
Model 2	1.23 (0.57)	-0.80 (-2.42)b	-0.04 (-1.97)b	1.26 (3.49)a	-2.24 (-5.03)b	1.32 (2.17)c			-0.68 (-0.58)		0.18	63.30	0.00
Model 3	1.59 (0.71)	-0.87 (-2.58)b	-0.03 (-1.72)c	1.29 (3.56)a	-2.21 (-4.99)b	1.21 (1.87)c				0.23 (0.31)	0.18	63.27	0.00
Model 4	1.45 (0.66)	-0.79 (-2.42)b	-0.03 (-1.77)c	1.27 (3.29)a	-2.24 (-4.95)a		1.50 (1.87)	-0.16 (-0.19)			0.19	62.38	0.00
Model 5	1.44 (0.66)	-0.78 (-2.38)b	-0.03 (-1.88)c	1.23 (3.35)a	- 2.25 (-5.92)a		1.47 (1.93)c		- 0.49 (0.66)		0.19	63.27	0.00
Model 6	1.74 (0.77)	-0.85 (-2.52)b	-0.0.3 (-1.63)	1.27 (3.43)a	-2.22 (-4.97)a		1.33 (1.62)			0.31 (0.43)	0.19	62.85	0.00

Note: a, b, c: 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.

To the best of the author's knowledge, this paper provides the first attempt to document that ownership concentration is positively related to corporate failure as shown by the positive and significant coefficient of C5 in most regressions in panel B, and in Model 1 and Model 3 in panel A. In other words, when a firm has a high concentration in its ownership structure it will have a higher risk of failure, no matter what the ownership mix (GOV or FORG or INSTIT) is.

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.

The empirical evidence in this chapter shows that ownership structure and ownership concentration play an important role in the performance and value of Jordanian firms. It shows that inefficiency is related to ownership concentration and to institutional

ownership. A negative correlation between ownership concentration C5 and firm's performance both, ROA and Tobin's Q, is found, while there is a positive impact on firm performance MBVR. The HERF is not significant at any level of significance in any measure of performance. The insignificance of the HERF shows that there could be a non-linear relationship between ownership concentration and a firm's performance.

The research also found that there is a significant negative relationship between government ownership and a firm's accounting performance, while the other ownership structure mixes have significant coefficients only in Tobin's Q using the matched sample. However, government ownership had a positive impact on the firms performance measure ROA only. Firm's profitability ROA was negatively and significantly correlated with the fraction of institutional ownership, and positively and significantly related to the market performance measure, MBVR. The result is robust when indicators of both concentration and ownership mix are included in the regressions. The results of this study are, to some extent, inconsistent with previous findings.

This paper also used ownership structure to predict the corporate failure. The results suggest that government ownership is negatively related to the likelihood of default. Government ownership decreases the likelihood of default, but has a negative impact on a firm's performance. The results suggest that, in order to increase a firm's performance and decrease the likelihood of default, it is reasonable to reduce government ownership to some extent. Individual share holders have no apparent capability to monitor and influence the behaviour of management. Furthermore, a certain degree of ownership concentration is needed to increase the firm's performance and to decrease the firm's chance of default. This paper also provides evidence that the performance of the firms is a non-linear function of ownership structure.

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Appendix 1. Ownership Mix and Concentration and Firm's Performance Including Industrial Dummy Variables

	ROA				ROA			
Constant	-0.3998	-0.3823	-0.4357	-0.4378	-0.3875	-0.4511	-0.4323	-0.4099
	(-4.6)***	(-4.4)***	(-4.98)***	(-4.85)***	(-4.44)***	(-5.15)***	(-4.77)***	(-4.7)***
SIZE	0.0594	0.0557	0.0649	0.0608	0.0554	0.0679	0.0625	0.0591
	(5.48)***	(5.16)***	(5.9)***	(5.53)***	(5.1)***	(6.16)***	(5.66)***	(5.42)***
DEBT	-0.1644	-0.1631	-0.1692	-0.1603	-0.1603	-0.1692	-0.1612	-0.1609
	(-10.78)***	(-10.69)***	(-10.97)***	(-10.55)***	(-10.52)***	(-10.95)***	(-10.58)***	(-10.55)***
GROW1	0.0007	0.0007	0.0007	0.0008	0.0008	0.00073	0.0007	0.0008
	(2.43)**	(2.45)**	(2.43)**	(2.47)**	(2.47)**	(2.41)**	(2.43)**	(2.46)**
C5	-0.0343	0.0122	0.0341	0.0498				
	(-2.02)**	(0.42)	(1.24)	(1.72)*				
HERF					0.0238	-0.0184484	-0.0204	-0.0339
					(0.85)	(-1.09)	(-1.11)	(-1.96)**
GOV	0.0646	0.0514						
	(2.46)**	(1.88)*						
INSTIT			-0.0441			-0.0456		
			(-1.93)*			(-2.00)**		
CITIZEN				0.0451			0.0206	
				(1.97)**			(0.87)	
FORG					0.0282			0.0491
					(0.92)			(1.61)
No. of observation	1265	1265	1265	1265	1265	1265	1265	1265
	172.32	168.39	177.91	169.42	164.54	177.27	167.18	167.44
Wald test	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***

R-square	0.2178	0.2124	0.2234	0.22	0.2115	0.2272	0.2192	0.2107
Breusch and Pagan test	241.55 (0.00)***	240.09 (0.00)***	224.26 (0.00)***	243.94 (0.00)***	223.22 (0.00)***	223.25 (0.00)***	240.05 (0.00)***	224.32 (0.00)***

	Tobin's Q				MBVR			
Constant	87.6192	88.0990	98.3229	85.9391	-2.1715	-1.9225	-1.8485	-2.0974
	(9.63)***	(9.57)***	(10.04)***	(9.75)***	(-1.57)	(-1.39)	(-1.31)	(-1.52)
SIZE	-0.6317	-0.5919	-1.7731	-0.1367	0.4287	0.3761	0.3924	0.4371
	(-0.59)	(-0.54)	(-1.56)	(-0.13)	(2.58)***	(2.24)**	(2.34)**	(2.62)***
DEBT	-0.8027	-0.9463	-1.3224	-0.8784	-0.3237	-0.2836	-0.3559	-0.3708
	(-0.43)	(-0.5)	(-0.7)	(-0.48)	(-1.2)	(-1.05)	(-1.34)	(-1.39)
GROW1	-0.0463	-0.0509	-0.0355	-0.0487	-0.0017	0.0011	-0.0017	-0.0032
	(-0.9)	(-0.99)	(-0.69)	(-0.95)	(-0.09)	(0.06)	(-0.09)	(-0.17)
C5	-1.2306	-0.7316	-5.0872	0.1900	0.5293	0.4366	0.4152	0.5497
	(-0.53)	(-0.34)	(-2.04)**	(0.09)	(1.94)*	(1.63)	(1.41)	(1.99)**
GOV	1.2714				-0.3794			
	(0.43)				(-0.94)			
INSTIT		-4.7444				0.6944		
		(-1.65)*				(2.00)**		
CITIZEN			-9.9565				-0.1738	
			(-3.46)***				(-0.48)	
FORG				-7.4381				-0.4865
				(-1.99)**				(-1.06)
No. of observation	1163	1163	1163	1163	1113	1113	1113	1113
Wald test	221.95 (0.00)***	223.49 (0.00)***	223.57 (0.00)***	234.45 (0.00)***	33.75 (0.03)**	36.14 (0.01)***	34.89 (0.021)**	34.05 (0.03)**
R-square	0.1877	0.19	0.194	0.1904	0.0950	0.1074	0.0981	0.0980
Breusch and Pagan test	16.92 (0.00)***	15.61 (0.00)***	13.82 (0.00)***	16.72 (0.00)***	127.61 (0.00)***	114.27 (0.00)***	121.47 (0.00)***	124.31 (0.00)***

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

Appendix 1 (Continued). Ownership Mix and Concentration and Firm's Performance Including Industrial Dummy Variables

	Tobin's Q				MBVR			
Constant	87.5196	88.2157	96.8305	86.2923	-2.2760	-1.9844	-1.7547	-2.2087
	(9.62)***	(9.55)***	(9.96)***	(9.76)***	(-1.64)*	(-1.44)	(-1.26)	(-1.6)
SIZE	-0.6567	-0.6390	-1.7125	-0.1818	0.4581	0.3950	0.3964	0.4653
	(-0.61)	(-0.59)	(-1.52)	(-0.17)	(2.77)***	(2.36)**	(2.39)**	(2.8)***
DEBT	-0.7722	-0.9542	-1.1220	-0.9881	-0.3370	-0.2933	-0.3626	-0.3817
	(-0.41)	(-0.5)	(-0.59)	(-0.53)	(-1.25)	(-1.08)	(-1.37)	(-1.43)
GROW1	-0.0467	-0.0509	-0.0377	-0.0485	-0.0028	0.0005	-0.0026	-0.0042
	(-0.91)	(-0.99)	(-0.74)	(-0.95)	(-0.15)	(0.03)	(-0.14)	(-0.22)
HERF	-0.1120	0.1367	-5.7080	2.1186	0.5869	0.5245	0.2727	0.5619
	(-0.03)	(0.04)	(-1.39)	(0.58)	(1.22)	(1.15)	(0.56)	(1.19)
GOV	0.6834				-0.3830			
	(0.23)				(-0.92)			
INSTIT		-4.7419				0.7550		
		(-1.66)*				(2.16)**		
CITIZEN			-8.8551				-0.3230	
			(-3.14)***				(-0.92)	
FORG				-7.8955				-0.4144
				(-2.11)**				(-0.89)

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No. of Observation	1163	1163	1163	1163	1113	1113	1113	1113
Wald test	221.39	222.72	222.37	234.64	31.61	34.64	34.13	31.52
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.048)**	(0.022)**	(0.025)**	(0.049)**
R-square	0.1876	0.1889	0.1928	0.1906	0.0926	0.1063	0.0988	0.0961
Breusch and Pagan	16.97	15.63	14.16	16.70	125.62	115.46	121.77	122.01
test	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***

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

Appendix 2. Ownerships Concentration (C5) and Mix and Firm's Performance

	Constant	SIZE	AGE	TDTE	LTDTA	NICAP	C5	GOV	FORG	INSTIT	Adj. R^2	F-Stat
ROE	-1.86	0.27	0.039	-0.14	-0.54	0.24	0.28	-2.44			0.73	23.66
	(-5.18)a	(4.80)a	(0.40)	(-8.08)a	(-1.76)C	(2.65)a	(2.44)b	(-1.79)c				
ROE	-1.90	0.28	-0.006	-0.14	-0.77	0.22	0.18		-0.10		0.72	21.99
	(-5.14)a	(5.01)a	(-0.07)	(-7.80)a	(-2.65)a	(2.41)b	(1.78)c		(-0.53)			
ROE	-1.87	0.27	-0.0006	-0.14	-0.70	0.23	0.14			0.18	0.73	23.16
	(-5.17)a	(4.86)a	(-0.01)	(-7.96)a	(-2.44)b	(2.64)a	(1.41)			(1.53)		
ROA	-1.32	0.18	0.02	0.02	-0.30	0.26	0.15	-0.05			0.53	10.20
	(-5.74)a	(5.09)a	(0.24)	(1.68)c	(-1.52)	(4.65)a	(2.07)b	(-0.59)				
ROA	-1.33	0.18	0.005	0.02	-0.35	0.26	0.13		-0.013		0.52	10.08
	(-5.75)a	(5.22a	(0.08)	(1.69)c	(-1.90)c	(4.58)a	(2.05)b		(-0.10)			
ROA	-1.32	0.18	0.008	0.019	-0.33	0.26	0.12			0.052	0.50	10.85
	(-5.75)a	(5.12)a	(0.13)	(1.70)c	(-1.80)c	(4.67)a	(1.87)c			(0.70)		
Q(1)	2.55	-0.31	0.50	-0.09	0.79	-0.10	-0.18	0.90			0.14	2.38
	(2.23)b	(-1.79)c	(1.64)c	(-1.63)	(0.81)	(-0.35)	(-0.49)	(2.08)b				
Q	2.60	-0.36	0.77	-0.09	1.38	0.06	0.28		-1.26		0.14	2.39
	(2.28)b	(-2.08)b	(2.64)a	(-1.69)c	(1.54)	(0.2)	(0.87)		(-2.09)b			
Q	2.71	-0.39	0.72	-0.10	1.71	0.05	0.13			0.39	0.09	1.81
	(2.30)b	(-2.18)b	(2.39)b	(-1.65)c	(1.84)c	(0.16)	(0.40)			(1.02)		

Note: a, b, c: indicate significant at 1%, 5%, and 10% level, respectively. t statistics in parentheses are determined with White (1980) standard errors to correct for heteroskedasticity. Industrial dummy variables are included in the regression. (1) Q refers to Tobin's Q.

Appendix 3. Ownerships Concentration (HERF) and Mix and Firm's Performance

	Constant	SIZE	AGE	TDTE	LTDTA	NICAP	HERF	GOV	FORG	INSTIT	Adj. R^2	F-Stat
ROE	-1.86 (-4.94)a	0.28 (4.81)a	0.03 (0.31)	-0.14 (-7.71)a	-0.67 (-2.14)b	0.22 (2.35)b	0.19 (1.11)	-0.15 (-1.08)			0.71	21.08
ROE	-1.88 (-4.97)a	0.29 (4.97)a	0.007 (0.01)	-0.14 (-7.65)a	-0.79 (-2.65)a	0.20 (2.20)b	0.10 (1.64)c		-0.06 (0.31)		0.71	20.50
ROE	-1.86 (-5.04)a	0.27 (4.83)a	0.01 (0.10)	-0.14 (-7.91)a	-0.70 (-2.39)b	0.23 (2.49)a	0.03 (0.21)			0.21 (1.71)c	0.72	22.04
ROA	-1.32 (-5.55)a	0.19 (5.11)a	0.012 (0.19)	0.017 (1.51)	-0.37 (-1.86)C	0.25 (4.34)a	0.12 (1.07)	-0.008 (-0.09)			0.50	9.20
ROA	-1.32 (-5.56)a	0.19 (5.17)a	0.009 (0.15)	0.018 (1.52)	-0.37 (-1.98)b	0.25 (4.36)a	0.11 (1.19)c		0.02 (0.15)		0.50	9.21
ROA	-1.32 (-5.57)a	0.18 (5.06)a	0.014 (0.24)	0.017 (1.49)	-0.35 (-1.86)c	0.26 (4.49)a	0.09 (0.35)			0.06 (0.42)	0.50	9.41
Q(1)	2.52 (2.21)b	-0.31 (-1.78)c	0.48 (1.59)	-0.09 (-1.70)c	0.84 (0.88)	-0.11 (-0.40)	-0.38 (-0.73)	0.95 (2.20)b			0.15	2.43
Q	2.62 (2.28)b	-0.35 (-2.03)b	0.78 (2.66)a	-0.10 (-1.73)c	1.34 (1.47)	0.04 (0.13)	0.17 (0.38)		-1.19 (-1.98)b		0.13	2.28
Q	2.72 (2.31)b	-0.39 (-2.17)b	0.73 (2.42)a	-0.10 (-1.67)b	1.69 (1.81)c	0.04 (0.13)	0.07 (0.14)			0.40 (1.05)	0.09	1.78

Note: a, b, c: indicate significant at 1%, 5%, and 10% level, respectively. t statistics in parentheses are determined with White (1980) standard errors to correct for heteroskedasticity. Industrial dummy variables are included in the regression. (1) Q refers to Tobin's Q.