

DOES SIZE MATTER IN DETERMINING FIRMS' PERFORMANCE? A COMPARATIVE ANALYSIS OF LISTED COMPANIES

Said Shah*, Safdar Husain Tahir**, Jamil Anwar***, and Manzoor Ahmad****

ABSTRACT

Depending upon the size, different firms possess different capabilities of utilizing their short term resources, adopt different working capital policies and follow different corporate governance practices resulting variations in their financial performances. Proper investigation into the level of production therefore justifies a lot of attention. This study examines the impact of firms' size on their financial performances using ratio and regression analyses. Results show that size has a crucial role in determining firms' performance whereas it has no significant impact on working capital management efficiency; small firms follow aggressive working capital policy whereas large firms follow conservative working capital policy and that firms' size negatively affects quality of corporate governance. It is further found that working capital and corporate governance practices of small firms are better than those of large firms and that the performance of large firms is better than small and medium firms primarily because of their (large firms) size.

Keywords: Corporate Governance, Firms' Performance, Large Firms, Size, Working Capital Policy

INTRODUCTION

On one hand, firms welcome the benefits brought about by economies of scale and on the other hand an increase in a firm's size exposes it to higher agency costs which are expected to further increase in extensively held companies because of agency conflicts and differences in interests among contracting parties (Jensen and Meckling 1976). Thus size holds considerable for firms as there is always a tradeoff between scale economies and agency problems. Furthermore, organizational size also influences a firm's performance as smaller firms are more likely to benefit from the spirit of corporate entrepreneurship for growth while larger firms use their financial and market power to enhance their productivity and profitability. There are many ways; the size of a firm affects its performance. The characteristics like diverse capabilities, the ability to make use of scale economies and formalization of procedures make a larger firm superior than smaller firms in terms of financial performance (Penrose 1959).

Pakistani corporate sector is a diversified composition of small, medium and large firms. Large firms enjoy a substantial edge over small and medium firms in terms of financial performance due to their sound resource base, economy of production costs, better quality of product due to division of labor and research and development. But at the same time, these large scale organizations are also facing some problems as

*Assistant Professor, University of Swabi, KPK

**Assistant Professor, Government College University, Faisalabad

***Assistant Professor, COMSATS Institute of Information Technology, Abbottabad

****Lecturer, University of Swabi, KPK

compared to small firms such as loopholes in supervision, agency problem and lesser adaptability (conversion from one type of production to another type of production). Similarly, small firms enjoy some benefits over large firms such as close supervision, low requirement of capital to commence business and close relation with their customers hence can produce goods according to the taste and fashion of each individual customer. However, at the same time, these firms face problems like high cost of production per unit, difficulty in getting loans, lack of research and use of old techniques and obsolete machines.

There are many reasons why firm size is a key determinant of its financial performance. Firstly; a firm's size itself is an important indicator of its financial performance. Assuming balance sheet's size as a proxy of firms' size, an increase in it indicates growth in earnings.

For instance Rajan and Zingales (1998) found that two-thirds of the growth in industries over the 1980s comes from the growth in the size of existing establishments, and only the remaining one-third from the creation of new ones. Secondly; selecting a firm's size will answer certain questions from the owner(s) such as how much funds are available to establish a business concern? What is the quality and quantity of available human capital? What is the accessibility of raw material and what is the capability of the firm to obtain that? Which working capital (WC) policy to use? What type of capital structure is going to adopt and so on; and thirdly; number of firms having the same size will provide a driving force for a country's regulatory and institutional system. For example if there are more large firms operating in a country, Securities and Exchange authorities will be more active and vice versa. Selecting and implementation of corporate policies including WC management practices, capital structure, dividend policy and corporate governance (CG) practices centered around firms' size. Diversified sizes of firms lead to diversification in these corporate policies and ultimately to variations in financial performance.

The purpose of this study is to determine whether firms' size bring some changes in their financial performance or not? Once a company (small, medium or large) is able to create a harmony between its size and WC/CG practices, it will be able to reap the benefits at the operational levels with visible impact on the bottom line and share price. The results of the study, if implemented by all sizes of firms across the globe, will have far reaching effects on their respective national economies.

LITERATURE REVIEW

There is no consensus in the literature about how to measure firm size (Dalbor et al, 2004). Previous studies show many bases for determining the size of firm. Vithessonthi and Tongurai (2015) used median of total assets as proxy of firms' size and found that the magnitude of the leverage effect on operating performance is non-monotonic rather it is linked with firm size as such it is positive in small firms and negative in large firms. Nason et al (2015), provided greater identity to the literature on corporate entrepreneurship incorporating the role of organizational size and suggested that small firms are more likely to utilize corporate entrepreneurship for growth to overcome liabilities of smallness, while large firms are more likely to utilize corporate entrepreneurship for learning to overcome liabilities of inactivity. Examining size-wise corporate bankruptcy and using number of employees as firms' size, Mueller and

Stegmaier (2015) concluded that approximately 83 % of all bankruptcies occur in plants with not more than 10 employees, 61 % of all bankrupt plants are not older than 5 years and substantial negative age dependence with respect to bankruptcy risk but confirm negative size dependence for mature plants only.

Al-Mwalla (2012) calculated firm size using natural log of sales and found that profitability of a firm is positively related with its size. Using natural log of assets as a measure of firm size, Hansen & Wernerfelt (1989) found positive relationship between firm's size and its performance. Dalbor et al (2004) used total assets, total sales, number of owners, and number of employees as proxies of firms' size however found number of owners and total assets as the most influential variables with maximum explanatory power. On the basis of number of owners and total assets, they examined the impact of size on use of debt by restaurant firms and found that owners often use debt as a mechanism to minimize agency costs in large firms. Using data of non-financial firms, covering a period from 1987 to 2000 for market oriented economies (such as United Kingdom and the United States) and bank oriented economies (like France, Germany and Japan) and measuring firms' size on the basis of total sales,

Using number of employees as firms' size, Du & Girma (2009) found that financing source influences growth more in small firms as compared to large firms and that internally generated funds are more effective for promoting small firms whereas external finance is effective for large firms. Fama and French (1992) calculated firms' size (portfolio size) on the basis of market equity and found that size and book-to-market equity explain the cross-sectional variation in average stock returns related to size, earning/price ratio, book-to-market equity and leverage. Mirza and Shahid, (2008) sorted six portfolios, determining their size on the basis of market capitalization (MC) as price times number of shares for five years (2003-2007), using median of the sample to split the stocks into small, medium and large and got findings in support of the Fama and French three factor-approach.

Driver (2006) used number of employees as proxy of firm's size and found similarities in all the sizes except medium size to have been unusually affected by real interest rates and that medium and large firms invest less as compared to small firms. Majumdar (1997) investigated the impact of size (measured by natural log of sales) and age of firms on their productivity and profitability using 1,020 Indian firms and found that larger firms are more profitable and less productive. Penrose, (1959), found that the performance of large firms is superior than small firms. On the basis of regression analysis, and using natural log of sales as proxy of firms' size, Padachi (2006) found that with the growth in size of a firm, its agency problem increases leading to inefficient management of WC. The studies on the firms' size referred are in agreement on a positive relationship between firms' size and profitability. The study tests the following hypotheses:

Hypothesis 1: Size of the firm is positively related with profitability

Hypothesis 2: WC policies of small firms are better than those of large firms

METHODOLOGY

The study measures firms' performance using ROA and investigates the impact of all independent variables namely MC, CCC, CR, ATR, CAR and CGI on firms'

performance, controlling the effect of SG.

Data

Data set includes 153 firms listed on Pakistan Stock Exchange (formerly Karachi Stock Exchange) covering a period of ten years (2004-2013) for ten economic groups excluding financial and those firms the industrial average (IA) of which is not available. The study uses variables as detailed in table 1.

Table-1: Variables

Type of variable	Variable	Calculations
Dependent	Return on assets (ROA), representing firms' performance.	Net profit divided by total assets
Independent	MC representing firms' size	Number of outstanding shares multiplied by market price per share
	CCC, used as a comprehensive measure of WC management efficiency (Deloof, 2003)	(ITDs + RTDs) – PTDs
	CR, a proxy of WC Policy	Current assets divided by current liabilities
	ATR, a proxy of WC Policy	Quick assets (current assets minus inventory) divided by current liabilities
	CAR, a proxy of WC Policy	Cash and cash equivalents divided by current liabilities.
	CGI, representing CG quality	Likert scale (Likert, 1932: 5-55) is used to numerically value each CG practice. Equation 1 is used to calculate CGI
Control	SG	(current year's sales - previous year's sales)/ previous year's sales

In order to measure the quality of CG, the study uses CGI. After determining the numerical value of each CG practice, the following formula is used to calculate CGI:

$$CGI = \frac{\text{Sum of weightage given to all CG practices (2004-20013)}}{\text{Data period (in years)}} \quad (1)$$

Following previous studies (Luo & Tan 1998; Connor & Sehgal 2001; Deloof 2003) and as suggested by Hausman (1978) specification test, the study uses FE model for estimating the results of medium firms and RE model for small and large firms. The following is the model with fixed and random effect specifications:

$$ROA_{it} = \beta_0 + \beta_1(MC) + \beta_2(CCC) + \beta_3(CR) + \beta_4(ATR) + \beta_5(CAR) + \beta_6(CGI) + \beta_7(SG) + e \quad (2)$$

RESULTS AND DISCUSSION

Statistical, accounting and regression techniques are used for analysis. Statistical techniques include descriptive and correlation analyses presented in sections 4.1 and 4.2 respectively. Ratio analysis is used as accounting technique and explained in section 4.3. Regression results are presented in section 4.4.

Descriptive Analysis:

Size-wise descriptive statistics are presented in table 2. Comparing means and SDs of ROA, financial performance of large firms is better, stable and consistent as compared to small and medium firms. Based on the gap between means and SDs, WC management efficiencies of all firms are volatile. However on the basis of CCC size, larger firms are more efficient in managing their WC (mean CCC of 31.65 days) as compared to small firms (51.35 days) and medium firms (50.75 days). Means of WC Policy variables ranges from 0.16 to 1.70 whereas SDs varies from 0.47 to 1.28 indicating stability and reliability among firms in terms of WC policies adopted.

Table-2: Size-Wise Descriptive Statistics

Variable	Size	Mean	Standard Error	Median	Standard Deviation
RoA	Small	2.76	0.76	1.43	16.39
	Medium	7.43	0.50	6.17	12.39
	Large	16.91	0.73	13.82	15.70
MC	Small	46.54	16.85	0.00	361.07
	Medium	23.87	3.75	3.55	92.62
	Large	31.01	5.82	11.50	124.85
CCC	Small	51.35	8.93	64.91	191.54
	Medium	50.75	5.93	65.97	146.56
	Large	31.65	4.98	17.65	106.91
CR	Small	1.13	0.05	0.95	1.00
	Medium	1.48	0.05	1.08	1.28
	Large	1.70	0.06	1.31	1.19
ATR	Small	0.61	0.04	0.41	0.88
	Medium	0.86	0.04	0.54	0.95
	Large	1.22	0.05	0.96	1.10
CAR	Small	0.16	0.04	0.02	0.92
	Medium	0.25	0.03	0.04	0.87
	Large	0.33	0.02	0.14	0.47
CGI	Small	2.27	0.02	2.17	0.39
	Medium	2.27	0.02	2.17	0.46
	Large	2.44	0.02	2.33	0.47
SG	Small	0.24	0.04	0.13	0.85
	Medium	0.20	0.03	0.14	0.77
	Large	0.20	0.03	0.16	0.54

CORRELATION ANALYSIS

Size-wise correlations among dependent, independent and control variables indicate a very weak and insignificant but positive relationship between MC and ROA showing less important role of size in determining firms' performance. CCC has a weak positive and insignificant relationship with ROA in small and large firms but strong and positive relationship significant at 1% in medium firms. The significant and positive relationship of CCC with firms' performance indicates that longer the length of CCC, the lower would be the percentage of long term funds used for financing current assets. CR, ATR and CAR representing WC Policy are positively correlated with firms' performance significant at 1% in medium and large firms. CGI has a weak positive and insignificant

relationship with ROA in small firms but strong and positive relationship significant at 1% in medium and large firms indicating an effective role of CG in determining financial performance of these firms.

Ratio Analysis:

Table 3 summarizes good and weak performing firms comparing average ROA for each firm with its respective IA. Firms with return on assets equal to or more than IA are considered as good performing firms and less than IA or negative (even if it is more than IA), as weak performing firms. The performance of 30% small firms is good as compared to 49% in medium and 67% in large firms. An increase in the percentage of good performing firms with an increase in size indicates a positive relationship between firms' size and performance. This supports our hypothesis 1 that 'Size of the firm is positively related with profitability'.

Table-3: Firms' Performance

Data Segment	Good Performing firms		Weak Performing firms		Total	
	Number	%	Number	%	Number	%
Small firms	14	30	32	70	46	100
Medium firms	30	49	31	51	61	100
Large firms	31	67	15	33	46	100

Average CCC of each firm for the sample period is compared with IA. All firms maintaining average CCCs less than IA are considered to be managing their WC efficiently. Firms having average CCCs equal to or more than IA are considered to be managing their WC inefficiently. Comparing profitability and CCC with IA is in line with that used by Singh (2011). Table 4 reports, classification of efficient and non efficient firms on the basis of WC utilization.

Table-4: Efficiency-wise Distribution of Firms

Segmentation	Efficient firms		Non efficient firms		Total	
	Number	%	Number	%	Number	%
Small firms	17	37	29	63	46	100
Medium firms	13	21	48	79	61	100
Large firms	9	20	37	80	46	100

As is evident from the data provided in table 4, 37% of the small firms are managing their WC more efficiently as compared to medium and large firms where this percentage is 21% and 20% respectively. This shows that size does play a key role in determining the WC management efficiency of firms; and that small firms are more efficient in managing their WC as compared to medium and large firms. Table 5 presents firms' distribution based on WC policy they use.

Table-5: Distribution of Firms According to WC Policy

Data segment	Ratio	Aggressive		Hedging		Conservative		Total	
		No.	%	No.	%	No.	%	No.	%
Small firms	CR	25	54	0	0	21	46	46	100
	ATR	36	78	0	0	10	22	46	100
	CAR	32	70	0	0	14	30	46	100
Medium firms	CR	26	43	2	3	33	54	61	100
	ATR	42	69	0	0	19	31	61	100
	CAR	39	64	0	0	22	36	61	100
Large firms	CR	15	33	0	0	31	67	46	100
	ATR	17	37	0	0	29	63	46	100
	CAR	18	39	0	0	28	61	46	100

As presented in table 5, small firms purely (based on all the WC Policy proxies) follow aggressive and large firms follow conservative WC policies whereas medium firms follow conservative policy on the basis of CR and aggressive policy on the basis of ATR and CAR. Quality of CG is measured using CGI. The results on CG are reported in table 6.

Table-6: Distribution of Firms According to the Quality of CG

Data segment	Good Governance		Weak Governance		Total	
	Number	%	Number	%	Number	%
Small firms	20	43	26	57	46	100
Medium firms	13	21	48	79	61	100
Large firms	9	20	37	80	46	100

Firms' size plays an imperative role in determining the quality of governance. Results show that 43% out of small, 21% out of medium and 20% out of large firms follow good governance practices.

Multivariate Analysis:

Multicollinearity is checked using variance inflation factor (VIF). Previous studies (for example Robert, 2007) indicate that data having VIF of less than 10 have no problems of multicollinearity. VIFs for the data used in this study are well below the required level for all variables; as such no multicollinearity problem exists. F-Statistics for small, medium and large firms is 3.69, 23.46 and 18.49 respectively whereas p value is 0.00 for all firms indicates that the model used in the study is best fit to estimate the results. Heteroscedasticity is checked using Breusch Pagan Godfrey (Breusch & Pagan 1979) and Park (1966) tests in all the regressions and there found to be no heteroscedasticity. As per the results of Cumulative Sum (CUSUM) recursive coefficients test (test used to check model stability), the model used for estimating the results is stable.

Regression Results:

Regression results showing the impact of explanatory variables used in the study on profitability and variation in firms' performances because of their size are reported in table 7.

Table-7: Size-Wise Regression results

Variable	Size	Coefficient	SE	t-Statistic	Probability
C	Small	-6.975	7.085	-0.985	0.325
	Medium	-7.472	2.550	-2.930	0.004
	Large	-6.641	5.063	-1.312	0.190
MC	Small	0.001	0.000	1.686	0.093
	Medium	0.001	0.000	4.394	0.000
	Large	0.001	0.000	-0.288	0.774
CCC	Small	-0.007	0.004	-1.643	0.101
	Medium	0.003	0.003	0.850	0.396
	Large	0.003	0.005	0.687	0.492
CR	Small	5.425	2.217	2.447	0.015
	Medium	3.599	0.906	3.973	0.000
	Large	2.285	1.745	1.309	0.191
ATR	Small	-5.259	2.361	-2.227	0.026
	Medium	-0.789	1.173	-0.672	0.502
	Large	-2.090	1.925	-1.085	0.278
CAR	Small	0.952	0.799	1.192	0.234
	Medium	-0.532	0.495	-1.075	0.283
	Large	7.561	1.398	5.409	0.000
CGI	Small	-1.998	2.788	-0.717	0.474
	Medium	-0.134	1.018	-0.132	0.895
	Large	-3.377	1.791	-1.885	0.060
SG	Small	1.605	0.803	1.998	0.046
	Medium	0.691	0.527	1.311	0.190
	Large	0.738	0.818	0.902	0.368

MC representing firms' size has a positive relationship with firms' performance significant at 1% in medium firms. In small and large firms, the relationship is positive but insignificant. CR has a positive relationship with firms' performance significant at 1% in medium firms and 5% in small firms. ATR has a strong negative relationship with firms' performance at a significant level of 5% in small firms whereas the CAR has a strong positive relationship with firms' performance significant at 1% in large firms.

CONCLUSION

Results show that small firms are more efficient in managing their WC and their governance practices are better than those of medium and large firms while small firms generally follow an aggressive WC Policy whereas large firms generally follow conservative WC Policy. But the financial performance of large firms is better than that of small firms. Analyzing and comparing the results of small, medium and large firms separately, it is evident that size has a decisive role in determining firms' performance however no significant impact on WC management efficiency, WC Policy influences the financial performance of all sizes of firms and firms' size negatively affects quality of CG. Considering the results on the basis of ratio as well as size-wise regression analyses, it is found that the performance of large firms is better primarily because of their size having the benefits of scale economies such as low cost of production, low cost of management, research and development opportunities and economies in buying and selling. Future research is recommended to find out the ways to get the benefits of corporate policies related to WC and CG practices (in addition to scale benefits) by large firms.

REFERENCES

- Abuzayed, B. (2012). Working capital management and firms' performance in emerging markets: the case of Jordan. *International Journal of Managerial Finance*, 8(2), 155-179.
- Al-Mwalla, M. (2012). The Impact of Working Capital Management Policies on Firm's Profitability and Value: The Case of Jordan, *International Research Journal of Finance and Economics*, 85:147-153
- Breusch, T. S. and A.R. Pagan (1979). A Simple Test for Heteroskedasticity and Random Coefficient Variation, *Econometrica*, 47(5): 1288-1290
- Connor G, Sehgal S, (2001): Tests of the Fama and French Model in India, Discussion paper, 379, London UK.
- Dalbor, M.C., A. Kim and A. Upneja (2004). An Initial Investigation of Firm Size and Debt Use by Small Restaurant Firms, *Journal of Hospitality Financial Management*, 12(1): 41-48
- Deloof M, (2003): Does Working Capital Management Affect Profitability of Belgian Firms? *Journal of Business Finance and Accounting*, 30: 573-587
- Driver, C. (2006). Business Optimism for Small, Medium and Large Firms: Does it Explain Investment? Tanaka Business School Discussion Papers: TBS/DP06/43
- Du J. and S. Girma (2009). Source of Finance, Growth and Firm Size Evidence from China, United Nation University Research Paper No. 2009/03: 1-34
- Fama, EF, French KR, (1992): The Cross-Section of Expected Stock Returns, *The Journal of Finance*, 47(2): 427-465
- Gill, A., Biger, N., & Mathur, N. (2010). The relationship between working capital management and profitability: Evidence from the United States. *Business and Economics Journal*, 10(1), 1-9.
- Hansen G.S, Wernerfelt B, (1989): Determinants of Firm Performance: The Relative Importance of Economic and Organizational Factors, *Strategic Management Journal*, 10(5): 399-411
- Hausman, J. A. (1978). Specification Tests in Econometrics, *Econometrica* 46 (6): 1251-1271.
- Jensen, M.C. and W.H. Meckling (1976). Theory of the Firm, Managerial Behavior, Agency Costs and Ownership Structures, *Journal of Financial Economics*, 3(4): 305-360

- Likert, R. (1932). A Technique for the Measurement of Attitudes, *Archives of Psychology*, 140: 1–55.
- Luo Y., Tan J.J (1998): A Comparison of Multinational and Domestic Firms in an Emerging Market: A Strategic Choice Perspective, *Journal of International Management*, 4 (1): 21–40
- Lyroudi, K., & Lazaridis, Y. (2000). The cash conversion cycle and liquidity analysis of the food industry in Greece.
- Majumdar S.K (1997): The Impact of Size and Age on Firm-Level Performance: Some Evidence from India, *Review of Industrial Organization*, (12): 231–241
- Mirza, N., S. Shahid (2008). Size and Value Premium in Karachi Stock Exchange, *The Lahore Journal of Economics*, 13(2): 1-26
- Mueller, S. and J. Stegmaier (2015). Economic Failure and the Role of Plant Age and Size, *Small Business Economics*, 44 (3): 621-638
- Nason, R.S., A. McKelvie and G.T. Lumpkin (2015). The Role of Organizational Size in the Heterogeneous Nature of Corporate Entrepreneurship, *Small Business Economics*, 45 (2): 279-304
- Padachi, K. (2006). Trends in Working Capital Management and its Impact on Firms' Performance: An Analysis of Mauritian Small Manufacturing Firms, *International Review of Business Research Papers*, 2 (2): 45 -58
- Park R.E (1966): Estimation with heteroscedastic error terms, *Econometrica*, (34): 888.
- Penrose E.T (1959): *The Theory of the Growth of the Firm*, 1st edition, Oxford University Press, Oxford
- Rajan, R. and Zingales, L. (1998), Financial Dependence and Growth, *The American Economic Review* 88: 559-586.
- Robert, O'Brien M, (2007): A Caution Regarding Rules of Thumb for Variance Inflation Factors, *Quality & Quantity*, (41): 673-690
- Sharma, A., & Kumar, S. (2011). Effect of working capital management on firm profitability empirical evidence from India. *Global Business Review*, 12(1), 159-173.
- Singh D.P, (2011): Net Working Capital Level and Return on Capital Employed in Firms of Cement Industries in India, *VSRD International Journal of Business & Management Research*, 1(4): 269-280
- Vithessonthia, C. and J. Tongurai (2015). The Effect of Firm Size on the Leverage–Performance Relationship During the Financial Crisis of 2007–2009, *Journal of Multinational Financial Management*, 29: 1-29