

Journal of Financial Management and Analysis, 19(1):2006:14-25
© Om Sai Ram Centre for Financial Management Research

DO INFORMATIVENESS OF CO-INTEGRATED FINANCIAL FUNDAMENTALS CONTRIBUTE TO SHAREHOLDER VALUE IN A TRANSITIONAL MARKET ? EVIDENCE FROM EGYPT

TAREK IBRAHIM ELDOMIATY, Ph.D.

*Associate Professor of Finance
College of Business and Economics
UAE University, Al-Ain
United Arab Emirates*

Professor CHONG JU CHOI, Ph.D.

and

Professor PHILIP CHENG, Ph.D.

*National Graduate School of Management
Australian National University
Canberra, ACT 0200, AUSTRALIA*

Abstract

This study examines the informativeness of fundamental financial information to three levels of market-to-book(MB) ratio: high MB firms, medium MB firms, and low MB firms. In general, the results indicate that the financial ratios (as co-integrated financial information) are relatively quite informative to the three shareholder value classes. This is considered a merit of this study since it is the first study in a transitional market that addresses how to support shareholder value, which is one of the fundamental targets of the investment in financial information. The results regarding the fundamental analysis indicate that (a) in the low MB firms, the investors are concerned with the long-term horizon, (b) in the medium MB firms, the operating and total expenses are regarded as a capital investment, (c) in the high MB firms, the trend is to finance operations using equity rather than debt financing, (d) profitability affects low MB firms only rather than high and medium firms, (e) in the high and medium MB firms, investors do not regard the elements related to firm's operations, (f) in the low MB firms, investors are concerned with the effects of capital structure although the results show that dividends have a reverse effect on firm's market value.

*Key Words: Financial ratios; Informativeness; Shareholder value; Egypt
JEL Classification: G30; M41; N27; P34*

Introduction

The fundamental financial information has been considered the basic information to release to firms' stockholders. This requires corporate managers be aware of the type of financial information of interest to their stockholders. The literature on fundamental analysis utilized many aspects of financial information. The most common form is to use financial ratios that date back to over a century ago. Financial ratios have been providing

the basic information to various decision makers. Many studies assumed a close association between certain fundamentals and stock market characteristics such as stock returns and on stock risk. This association implies a degree of informativeness to some extent. That is, firms' investors are influenced, with varying degrees, by the revealed fundamentals. In this study, the extent of financial fundamental's informativeness is examined for three cases : firms with high, medium and low market-to-book ratio. What has been realized in the other studies

The authors own full responsibility for the contents of the paper.

that they examined certain financial fundamentals that are quite sophisticated to the typical investors reach, and to be influenced by. In this study, the true meaning of the informativeness is examined using the most usable form of fundamental financial information which is financial ratios being considered as co-integrated financial information : The co-integration is addressed as long as financial ratios are able to reflect many aspects of firm's activities (liquidity, assets' efficiency, expense control, leverage, and profitability).

Why Co-Integrated Financial Fundamentals in Transition Market?

The study of financial fundamentals is significant to transitional markets for two reasons. First, transitional markets are generally characterized as less efficient than developed markets. This requires an examination of the extent to which fundamental financial information is influential and informative in these markets. Second, transitional markets are characterized by a relatively high degree of information asymmetry. This requires an examination of the extent to which the fundamentals can play this role if this type of information is informative enough to the stockholders for which the shareholder value is considered as the dependent variable. Accordingly, the major objective of this study is to explore the extent to which the co-integrated financial fundamentals affect the shareholder value measured by the market-to-book ratio. The methodology is to test the hypothesis that **a positive relationship exists between co-integrated financial fundamentals and shareholder value**. The importance of this study can be shown that the informativeness of financial fundamentals is a determining factor to transitional markets where the extent and content of financial information are expected to affect shareholders expectations, which ultimately affect the development progress of the stock market.

The contribution of the paper can be outlined as follows. First, this study is the first to address the issue of shareholder value in Egypt as a transition economy. Second, contrary to other related studies that address the shareholder value as a single level, this study differentiates between the shareholder value classes to show the extent to which financial fundamentals are

informative. Third, differently from other related studies, this study examines to the fundamental informativeness in a dynamic manner utilizing the properties of the partial adjustment model.

Fundamental Analysis, Stock Market Characteristics and Shareholders Value

The literature on corporate financial fundamental analysis is one of the well-established fields of study in the finance theory. The literature has been trying to examine the interdisciplinary aspects of three fields of study : financial management, corporate finance and investment. These fields of study and research have always been related to each other through the two valuation systems : the public accounting reports and security market (Zellner, Ostermark and Aaltonen²). The common form of fundamental information is the financial ratios that have been used based on the assumption that they reflect events that have affected the firm's operations. These events include (a) those that occurred within the factor input markets and (b) those that occurred within the output markets of the firm. These events may be specific to a particular industry or may be economy-wide events (Gonedes³).

As financial ratios have been used extensively for corporate financial reporting, it is now a common understanding that if corporate financial reporting is to be adequately supportive of investment decision making, then clearly it must provide information useful to the formation of risk and return assessment (Farely, et al.,⁴). On the use of fundamental information, Li⁵ used financial statement information to develop a model of firm's long-term earnings growth that provides reliable signals that distinguish between high- and low-growth firms.

This study extends the relationship between the fundamental analysis and stock market characteristics to address one more dimension, which is shareholder value being commonly measured by the market-to-book ratio. The BM (or alternatively MB) ratio is one of the fundamentals that has been exposed to an extensive empirical examination. The BM ratio is the relationship between the book value of common equity to the market value of common equity*.

*This relationship is typically expressed in the form of B/M ratio, rather than M/B ratio, for some practical reasons. As Beaver and Ryan (1993) indicate, the book-to-market form is used because the book value of common equity can take on small values or negative values. If book value is in the denominator of the ratio, problems of interpretation arise, while no particular problems arise if book values appear in the numerator. Therefore, the indications of B/M ratio, or M/B ratio, are the same when the book values are not discrete.

It is established in the theory of finance that the BM ratio reflects the relationship between firm's historical value of its assets and the economic value, or market assessment, of common equity. This ratio has long been recognized as an indicator to many financial characteristics such as :

- (a) an indicator to expected return on equity being taken as an association between price to book value (Preinreich⁶, Edwards and Bell⁷, Graham, et al⁸, Peasnell⁹).
- (b) a growth indicator (Preinreich, Kay¹⁰, Brief and Lawson¹¹).
- (c) is determined by leverage (Graham, et al.).
- (d) an indicator to the mispriced stocks (Rosenberg, et al¹²).
- (e) explains mean stock returns (Chan, et al¹³, Fama and French¹⁴)
- (f) a tool used in a contrarian investment strategy, e.g., a 'value investment strategy or value stocks' versus a 'glamour investment strategy or glamour stock' (Lakonishok, et. al.¹⁵).
- (g) a measure of the value created to the shareholder* (Shapiro and Balbirer¹⁷).
- (h) a 'margin of safety' (Bodie, et. al.).

Methodology Used

Dependent Variable

The dependent variable is the firm's

market-to-book ratio. This ratio is recognized as a measure of shareholder value. In this study, the MB (rather than B/M) ratio is used as the dependent variable for two reasons: (1) it is a common measure of the value created to shareholders, and (2) the data used in this study does not contain negative values that can cause any interpretation problems.

Independent Variables

Primarily, the independent variables include the financial information that reflects firm's fundamentals. The literature on the use of financial fundamentals is

extensive and does not include a consensus of the number, type and measurement of the financial ratios to be used. Therefore, through considerably surveying the relevant literature this study is examining a total of eighty-nine financial ratios.

The financial ratios examined in this study are chosen on the basis of :

- 1- **Popularity** : the ratios that are commonly examined in previous studies in the literature. This also includes the ratios discussed in the 'Corporate Finance,' 'Financial Management' and 'Investment' textbooks that include financial ratio analysis as one of the main topics (Foulke¹⁸; Myer¹⁹; Johnson²⁰; Soldofsky and Olive²¹; Bellemore and Ritchie²²; Lev²³; Van Horne and Wachowicz²⁴; Radcliffe²⁵; Emery and Finnerty²⁶; Besley and Brigham²⁷; Shapiro and Balbirer; Strong²⁸; Corrado and Jordan²⁹; Bodie et. al; Fraser and Ormiston³⁰).

This is not an exclusive list rather than a list of the most common and recent texts in the literature. The relevant references are extensive. For example, Beaver (1966), when choosing the ratios, examined nineteen financial statement analysis texts. Beaver (1968) examined up to thirty-six sources including ten financial statement analysis texts, six general finance texts, five security analysis texts, eight journal articles dealing with ratio analysis, four accounting texts, and three government studies of the use of the ratios. Courtis (1978) examined ten textbooks in accounting and finance. In this study, the author has added eight textbooks in corporate finance and financial management.

- 2- **Convenience** : the ratios that are commonly mentioned in (or easily calculated using) corporate reports and/or financial analysts reports. This criterion allows examining the extent to which the on-reach financial ratios reflect corporate fundamentals and, therefore, affect investors behavior.
- 3- **Scope** : the financial ratios are basically corporate rather than industry ratios.
- 4- **Availability** : the financial ratios are available for all firms included in the study for seven years.

* Bodie, et al.,¹⁶ indicate that analysts sometimes consider the stock of a firm with a low MB ratio to be a "safer" investment, seeing the book value as a "floor" supporting the market price because the firm always has the option to liquidate its assets for their book values. However, this view is questionable because some firms do sometimes sell for less than book value.

The data used in this study is extracted from many sources. The data is obtained from *Kompass Egypt Financial Year Book* (Fiani & Partners) and the stock market publications in Egypt. The data covers the seven years 1997-2003. The total number of firms included in the study is 99 non-financial firms. Firms were selected based on two criteria. First, the non-financial firms amongst the 100 actively trading firms in Egypt stock market. Second, the non-financial firms amongst the 100 firms with the highest market value.

The firms included in the study were then divided into three groups : firms with high, medium, and low MB ratios respectively. For each firm, the average MB for seven years was considered. Firms' average MBs (scaled by the growth rate of MB for seven years) were arranged in a descending order, then, the sum of all was divided by three. Starting from the first firm with the highest MB, the first group of firms was chosen whose sum of MB equal to the sum of MB divided by three. So were the second and the third groups chosen. As a result, the first group with the highest MB includes twenty-one firms, the second group with the medium MB includes twenty-two firms, and the third group includes fifty-six firms. The descriptive statistics of the ratios included in this study are shown in **Appendix**.

(a) **Estimation** : The methodology examines the effects of the co-integrated financial information (financial ratios) on the firm's MB ratios that are classified into three levels: High, medium and low MB. The properties of the partial adjustment models capture the effects under consideration. The estimating equation of the partial adjustment autoregressive model takes the form that follows⁶.

$$y_{ik} = \alpha_k + \beta_k y_{i-1,k} + \sum_{i=1}^k \beta_{ik} X_{ik} + \varepsilon_{ik}$$

where $t = 1, \dots, n$

k = number of firms in each group

y = Market-to-book ratio

X = Financial ratios

The usefulness of studying the effects of fundamental financial information is met by the properties of the partial adjustment model. That is, in general, the economic theory specifies that the desired rather than the actual value of the dependent variable is determined by the independent variables(s). But, this relationship cannot be estimated

directly because the desired level of the dependent variable is unknown. This dilemma is usually resolved by specifying that the actual value of the dependent variable adjusts or is adjusted to the desired level according to some simple rule. In the partial adjustment models, the actual value adjusts by some constant fraction of the difference between the actual and desired values (Kennedy³¹). The partial adjustment formulation offers a number of significant practical advantages³² that,

- it is intrinsically linear in the parameters (unrestricted); and
- its disturbance is nonautocorrelated if the error term ε_t was to begin with. As such, the parameters of this model can be estimated consistently and efficiently by ordinary least squares in regression equations.

(b) **Sensitivity Analysis (Robustness of the Estimates):**

In the literature of fundamental analysis, selective reporting is highly likely given the very large number of potential regressors. For this, Extreme Bound Analysis (EBA) avoids the pitfalls of selective reporting by directly incorporating prior information and following a systematic approach to testing the fragility of coefficient estimates. As indicated by Leamer³³, Leamer and Leonard³⁴ and Levine and Renelt³⁵, the EBA uses equation that takes the form

$$Y = \beta_I I + \beta_M M + \beta_Z Z + u$$

where

Y = the proxy for shareholder value (MB ratio).

I = set of variables always included in the regression. These refer to the financial ratios included in this study.

M = the variables of interest. In this study, these variables refer to the speed of adjusting shareholder value to a target level in the partial adjustment model.

Z = subset of variables chosen from a pool of variables identified by past studies as potentially important explanatory variables that affect the dependent variable. In this study, these variables refer to the common classification of financial ratios as liquidity, assets efficiency, expense control, debt levels and profitability.

APPENDIX
SUMMARY STATISTICS OF FUNDAMENTAL FINANCIAL RATIOS : 1997 : 2003
(Sample Consists of 99 Non-Financial Firms)

Financial Ratios	Transformation	Mean	Median	SD	Min	Max
Solvency or Liquidity, Ratios						
Cash/Current Assets	Standardized	0.504	0.14	6.35	0	166.89
Inventory/Current Assets	Standardized	0.428	0.39	0.774	0	19.1
Accounts Receivables/Current Assets	Standardized	0.397	0.38	0.25	0	1.86
Quick Ratio	Standardized	0.804	0.79	1.21	-19.67	19.88
Current Ratio	Standardized	1.451	1.21	1.34	0	19.88
Current Liabilities/Net worth	Standardized	2.605	1.43	3.9	0	61.4
Current Liabilities/Inventory	Standardized	7.51	2.09	37.81	0	575.56
Total Liabilities/Net Worth	Standardized	3.6	1.84	4.47	0	61.4
Fixed Assets/Net Worth	Standardized	0.749	0.53	1.02	0	16.14
Cash Ratio	Standardized	0.773	0.18	10.83	0	285.12
Net working capital/Total Assets	Standardized	0.161	0.13	0.39	-0.53	8.66
Interval Measure (Cash + Receivables)/Expenditure for Operations	Standardized	3128.49	1922.96	45406.24	-572616	720778.9
	Standardized	-0.467	0.69	44.44	-812.8	285.83
Assets Efficiency Ratios						
Total Assets Turnover	Standardized	0.847	0.64	1.18	0.02	23.45
Fixed Assets Turnover	Standardized	9.71	4.73	19.14	0.03	231.02
Inventory Turnover on Sales	Standardized	8.41	2.78	47.99	0	1089.57
Inventory Turnover on CGS	Standardized	6.18	2.03	37.57	0	872.74
Inventory Ratio	Standardized	0.289	0.22	0.436	0	7.73
Days in Period/Inventory Turnover	Standardized	297.88	126.51	1160.7	-	17976.93
Accounts Receivables Turnover	Standardized	6.6	2.64	12.69	0	183.6
Accounts Payables Turnover	Standardized	24.12	1.69	532.03	0	13978.67
Common Equity Turnover (Efficiency measure)	Standardized	3.20	1.76	5.01	0.02	80.07
Day's Sales in inventory	Standardized	938.67	170.69	12136.01	0	315704.5
Day's Sales in Accounts Receivables	Standardized	23.55	134.24	577.23	0	7793.89
Day's Purchases in Accounts Payables	Standardized	526.87	208.1	1039.52	0	13412.15
Collection Period	Standardized	263.55	134.24	577.23	0	7793.89
Total Assets/Net Sales	Standardized	2.57	1.57	4.17	0.04	54.23
Working Capital/Net Sales	Standardized	1.81	0.96	3.91	0.05	54.01
Net Working Capital Turnover	Standardized	0.436	2.65	111.59	-14841.1	1392.53
Working Capital/Cash Flow	Standardized	170.35	6.73	5408.91	-32160.2	138663
Accounts Payables/Annual Net Sales	Standardized	0.752	0.46	0.93	0	8.36
Net worth/Fixed Assets	Standardized	6.98	1.88	24.66	0.06	313.61
Sales/Net worth	Standardized	3.206	1.76	5.01	0.02	80.07
Assets Annual Growth	Standardized	0.191	0.02	1.12	-0.19	15.06
Sales Annual Growth	Standardized	0.134	0	0.779	-0.92	8.58
Net Worth/Total Assets	Standardized	0.371	0.36	0.209	0.01	2.71
Expense Control						
Gross Profit margin	Standardized	0.291	0.22	0.28	0	3.76
Operating Profit Margin	Standardized	0.224	0.15	0.29	-0.67	4.06
Net Profit margin	Standardized	0.191	0.12	0.25	-0.67	3.88
Cost of Sales/Net Sales	Standardized	0.774	0.79	0.431	0	6.77
(Operating Expense+Cost of Sales)/ Net Sales	Standardized	0.924	0.91	0.51	0.07	8.06
Operating Expenses/Gross Margin	Standardized	0.493	05	12.59	-301.26	107.11
Operating Expenses/Total Assets	Standardized	0.086	0.07	0.08	0	1.21

Financial Ratios	Transformation	Mean	Median	SD	Min	Max
Ratio of Investment to Earnings	Standardized	380.67	0	9788.54	-3846.08	257582.5
Operating Leverage	Standardized	-7.67	0.15	217.25	-5717.38	111.09
Debt Levels and Capacity, or Leverage Ratios						
Financial Leverage=Debt/Assets	Standardized	0.665	0.65	0.406	0	7.48
Financial Leverage=Debt/Equity	Standardized	3.12	1.84	4.26	0	61.4
Total Debt/Working Capital	Standardized	1.1	0.95	0.81	0	9.51
Current Liabilities/Working Capital	Standardized	0.851	0.82	0.39	0	6.18
Assets/Equity	Standardized	4.27	2.79	5.55	0.37	74.85
Short term Debt/Total Debt	Standardized	0.563	0.54	0.38	0	6.87
Financial Leverage=Times Interest Earned	Standardized	8.85	1.53	175.04	-4167.5	737.74
EBIT/Fixed Charges	Standardized	-2.08	1.24	115.96	-3044.23	144.4
Financial Leverage=Times Interest Covered by Cash Flow	Standardized	32.26	1.86	316.96	-2.02	8081.5
Coverage of Fixed Obligations (Net Income+Interest)/Interest	Standardized	0.333	0.16	1.60	-0.07	31.9
Equity Multiplier	Standardized	20.66	2.6	96.48	-1.02	1851
Net worth/Total debt	Standardized	4.12	2.84	4.26	1	62.4
Net worth/Long term debt	Standardized	0.736	0.54	0.78	0	7.13
(Total liability/Net worth)	Standardized	23.04	1.83	121.77	0	2006.63
Long Term Debt/Total Assets	Standardized	3.16	1.84	4.47	0	61.4
Long Term Debt/Net Worth	Standardized	0.11	0.04	0.177	0	2.08
Market Value of Common Stock/Long Term Debt	Standardized	0.563	0.13	1.62	0	25.93
Fixed Assets/Total Debt	Standardized	49.35	1.87	190.16	0	1935.48
	Standardized	0.227	0.19	0.186	0	1.08
Profitability Ratios						
Gross Profits/Total Assets	Standardized	0.198	0.15	0.54	0	12.55
Return on Net Worth	Standardized	0.37	0.27	0.94	-1.02	20.97
Net Operating Profits/Total Assets	Standardized	0.153	0.1	0.546	-0.14	12.72
Return on Assets	Standardized	0.133	0.09	0.54	-0.08	12.65
Book Value Per Share (BVPS)	Standardized	38.65	16.49	97.34	1.04	1264.32
Earnings Per Share (EPS)	Standardized	10.25	4.9	24.47	-5.13	279.72
Earnings Annual Growth	Standardized	2.19	0.04	42.71	-43.12	1104.5
Earnings Yield	Standardized	298.89	0.15	5020.12	-87.97	124056.3
Cash Flow Per Share (CFPS)	Standardized	12.98	5.51	33.66	-5.13	279.72
Cash Flow/Long Term Debt	Standardized	53.67	0.46	1198.35	-0.26	31527.73
Price-Earnings Ratio (PE)	Standardized	47.63	6.35	939.86	-696.08	24675.33
Price-Cash Flow Ratio (P/CF)	Standardized	43.68	5.09	989.31	-593.01	21602.6
Tax Burden=Net profit/Pretax profit	Standardized	4.82	0.9	103.44	-1	2724.06
Interest Burden=Pretax profit/EBIT=(EBIT-Interest expense)/EBIT	Standardized	1.02	0.75	8.96	-91.42	195.19
Margin=EBIT/Sales	Standardized	0.291	0.22	0.28	0	3.76
Market Value Added	Standardized	234797.8	19796.5	736852.1	-870707	8905087
Retained Earnings per share/EPS	Standardized	231.99	1.75	6125.13	-9161.67	160849.8
Net Income/Earnings Before Taxes	Standardized	4.82	0.0	103.44	-1	2724.06
Annual Growth of EBIT per share	Standardized	0.095	0.01	1.8	-3.17	66.14
Retained Earnings/Total Assets	Standardized	0.208	0.15	0.27	0	5.42
Retention Ratio	Standardized	231.99	1.75	6125.13	-9161.6	160849.8
Market Price percentage change (stock annual return)	Standardized	14.15	0.07	113.77	-0.99	2333.51
Net Income percentage change	Standardized	0.611	0.01	7.89	-43.12	130.67
Dividend Information						
Divident Payout Ratio	Standardized	0.359	0	0.677	-2.94	9.73
Dividend Yield	Standardized	84.51	0	1727.2	0	44951.9

Source: Fiani & Partners, Kompass Egypt, Financial Year Book (Cairo)

The EBA involves varying the subset of Z variables to find the widest range of coefficient estimates on the variable of interest M that standard hypothesis tests do not reject. The implementation goes that the first step is to choose the first M variable and run a base regression that includes only the I variables and the first M variable. Then, each Z variable is to be included in the regression equation on at a time and for all possible linear combinations of the Z variables, and identify the highest and the lowest values for the coefficient on each variable of interest β_m that cannot be rejected at the 0.05 significance level. Thus, the extreme upper bound is defined by the group of Z variables that produces the maximum value of β_m plus two standard deviations. The degree of confidence that one can have in the partial correlation between the Y and M variables can be inferred from the extreme bounds on the coefficient β_m . If, β_m remains significant and of the same sign at the extreme

bounds, then one can maintain a fair amount of confidence in that partial correlation. In such a case, we refer to the coefficient estimate as "Robust," otherwise, it is "Fragile."

Research Findings

Table 1 shows the results of regressing the fundamental financial ratios against MB ratios as a proxy for the shareholder value. The results are divided into two parts, the first discusses the estimates of the regression coefficients and the second discusses the robustness (sensitivity analysis) of the estimates.

(a) Estimates of the Regression Coefficients :

Table 1 shows the effects of the information content of the financial ratios on the three classes of MB ratio.

TABLE 1
CONTENT OF FINANCIAL RATIOS INFORMATION SHAREHOLDER VALUE*

Variables	Abbreviations	Firms Market-to-Book Ratio		
		High	Medium	Low
Dependent: (Market-to-Book)t	MBt			
Independents: (Market-to-Book)t-1	Constant	-3.51	5.43	0.59
	MBt-1	0.25 (4.42)****	0.18 (2.07)***	0.62 (14.45)****
Inventory/Current Assets	INVCA	0.69 (0.22)		
Accounts Receivables/Current Assets	ARCA			-0.13 (-0.92)
Quick Ratio	QR		-3.68 (-2.35)***	0.12 (1.12)
Current Ratio	CR			0.03 (0.72)
Total Liabilities/Net Worth	TLNW			0.005 (0.46)
Cash Ratio	CASHR	2.08 (2.07)***		0.16 (1.89)**
Net Working Capital/Total Assets	NWCTA	-0.73 (-0.12)	8.99 (2.92)****	
Interval Measure (Cash+Receivables)/Expenditure for Operations	IM	-0.0002 (-0.004)		-0.0004 (-1.17)****
	CRTE	-0.002 (-0.33)	-0.05 (-1.73)**	0.002 (1.86)**
Total Assets Turnover	TAT	-2.21 (-1.42)		0.08 (1.87)**
Fixed Assets Turnover	FAT			0.002 (3.13)****
Inventory Turnover on Cost of Goods Sold	INVC			0.004 (0.88)
Inventory Ratio	INVR	-1.41 (-0.27)	-6.8 (-2.08)***	0.04 (0.21)
Days in Period/Inventory Turnover	DINV		-0.001 (-0.48)	
Accounts Receivables Turnover	ART		0.01 (0.77)	

Variables	Abbreviations	Firms Market-to-Book Ratio		
		High	Medium	Low
Accounts Payables Turnover	APT			-0.0003 (-0.31)
Net Working Capital Turnover	NWCT	0.0002 (0.4)	-0.004 (-0.02)	-0.0003 (-1.37)
Working Capital/Cash Flow	WCCF	-0.06 (-3.17)****		-0.001 (-3.37)****
Accounts Payables/Annual Net Sales	APS			0.008 (0.21)
Net Worth/Fixed Assets	NWFA	0.004 (0.06)		
Assets Annual Growth	AG		0.59 (1.35)	0.11 (7.34)****
Sales Annual Growth	SG	-0.15 (-0.33)	-0.12 (-0.99)	0.07 (2.81)****
Cost of Sales/Net Sales	COGSS		-4.39 (1.47)	
(Operating Expenses+Cost of Sales)/Net Sales	ES	2.97 (1.19)**		
Operating Expenses/Gross Margin	OEGM		-1.11 (1.11)	0.01 (1.93)***
Operating Expenses/Total Assets	OEA	10.11 (1.09)	9.36 (1.33)	
Ratio of Investment/Earnings	IE	0.04 (2.07)***	-0.01 (-0.43)	
Current Liabilities/Working Capital	CLWC	-0.51 (-0.6)		
Assets/Equity	AE	0.20 (4.24)****		
Short-Term Debt/Total Debt	STDTD	4.93 (1.96)***	4.17 (1.18)	0.002 (0.03)
Times Interest Earned	TIE	0.04 (1.91)**		
Earning Before Interest & Taxes/Fixed Charges	EBITFC	0.14 (1.41)	0.01 (0.35)	
Times Interest Covered by Cash Flow	CFI	-0.05 (-2.26)***		
(Net Income+Interest)/Interest	NII		0.003 (2.48)****	0.0001 (0.45)
Net Worth/Total Debt	NWD		-0.51 (-0.45)	-0.15 (-1.76)**
Operating Leverage	OL			-0.02 (-0.76)
Long-Term Debt/Net Worth	LTDNW	0.18 (0.9)	0.83 (0.97)	-0.004 (-0.08)
Fixed Assets/Total Assets	FATA	-1.95 (-0.97)	-1.28 (-0.81)	0.17 (0.7)
Return On Net Worth	RONW	-1.07 (-1.66)**		
Return On Assets	ROA		5.15 (1.59)	
Cash Flow Per Share	CFPS	0.07 (8.41)****	0.02 (1.74)**	0.001 (1.29)
Cash Flow/Long-Term Debt	CFLTD	0.006 (0.32)		-0.0004 (-0.04)
Price-Earnings Ratio	PE	0.16 (8.52)****		
Price-Cash Flow Ratio	PCF		0.11 (3.67)****	0.003 (1.14)
Net Profit/Pretax Profit	TB		1.18 (0.57)	
Pretax Profit/Earnings Before Interest & Taxes	IB	0.43 (0.63)		0.01 (1.85)**
Earnings Before Interest & Taxes/Net Sales	EBITS	-3.85 (-1.69)**	-5.52 (-1.91)**	-0.24 (-1.84)**

Variables	Abbreviations	Firms Market-to-Book Ratio		
		High	Medium	Low
Market Value Added	MVa	4.39 (1.41)	0.0001 (3.82)****	0.0005 (3.4)****
Net Income/Earnings Before Taxes	NIEBT	0.57 (2.52)****		-0.18 (-1.43)
Annual Growth of EBIT Per Share	GEBIT	-0.58 (-1.23)	0.005 (0.02)	0.02 (3.14)****
Retained Earnings/Total Assets	RETA	7.64 (1.93)**	-0.12 (-0.11)	0.56 (2.08)***
Retention Ratio	RET	-0.92 (-3.73)****		0.001 (3.24)****
Market Price Percentage Change	SR			-0.006 (-0.95)
Net Income Percentage Change	NID	-1.08 (-1.63)**	-0.18 (-2.26)***	-0.001 (-0.55)
Dividend Payout Ratio	DPR	-0.18 (-0.33)	-0.24 (-0.97)	-0.03 (-1.14)
Dividend Yield	DY	-0.01 (-0.53)	0.25 (-1.47)	-0.001 (-3.98)****
	<i>N</i>	116	132	318
	F statistics	24.93****	10.56****	26.62****
	(Sig F)			
	R-2	0.88	0.70	0.76
	D-W test	1.95*****	2.02*****	1.73*****
	Theil Inequality Coefficient	0.10	0.14	0.13

* Regression coefficients for the information content of the financial ratios. The dependent variable is the market-to-book ratio. The t-statistics are shown in brackets. The multicollinearity was examined before carrying out the regression analysis, and variables associated with $r \geq 0.50$ are excluded. Outliers are detected and excluded as well. The heteroskedastic effects are corrected using the White HCSEC, which improves the significance of the OLS estimates; * Significant at the level 10%; *** Significant at the level 5%; **** Significant at the level 1%; ***** D - W test significant at 2% two - sided level of significance.

Regarding the speed of adjustment, the results show that the financial ratios help adjust the MB ratio to a target level, where all coefficients of $(MB)_{t-1}$ are positive and statistically significant. The financial ratios help the low MB firms the most since this class is associated with the highest speed of adjustment (0.62), followed by the high MB firms (0.25), then the medium MB firms (0.18). This result shows that financial ratios (as co-integrated financial information) are quite informative since the high MB implies a less dependence on extensive financial information to support MB values. That is, the low MB firms are the most firms that need extensive financial information to support MB values.

As for the high MB firms, the statistically significant ratios present five ratio categories (Solvency, Assets Efficiency, Expense Control, Leverage, and Profitability). The number of profitability-related ratios is more than those ratios of the other categories. What is noticeable here is the negative coefficient of number of profitability variables, e.g., RONW, EBITs, EBITG, RET, and NID. This indicates that firm's profitability is not regarded by investors as a determinant of MB. The

positive and statistically significant profitability-related variables are the CFPS and PE ratios. The positive relationship with MB ratio is expected since they are price-related. The coefficient of CASHR as a solvency measure is positive and statistically significant. This is another evidence on the investors' short-term orientation. What comes against expectations are the negative and statistically significant coefficients of assets efficiency-related ratios, e.g., INVR and WCCF. This indicates that, for the high MB firms, the investors do not regard the elements related to firm's operations. Nevertheless, the general concern about the relationship between assets and returns is shown by the positive and statistically significant coefficient of the IE.

The positive and statistically significant coefficient of TES indicates what is stated in the literature of marketing that regards the expenses/sales ratio as a capital investment. The two ratios of AE and STDTD are positive and statistically significant showing the investors' orientations toward short-term debt financing. The investors concern toward the firm's debt service capacity is shown by the positive and statistically

significant TIE. Nevertheless, the negative coefficient of the same ratio using the cash flow measure CFI is not expected and could be due to data discrepancies.

As for the medium MB firms, the statistically significant ratios present four ratio categories (Solvency, Assets Efficiency, Leverage, and Profitability). As noted in the case of the high MB firms, the number of profitability-related ratios is more than those ratios of the other categories. In this MB level, investors do not regard firm's profitability as a determinant of MB. This is shown by the negative and statistically significant coefficients of EBITs and NID. The other statistically significant profitability-related ratios are positive. These are CFPS, PCF, and MVA. This is an expected result since these ratios are price-related. The solvency-related ratios present somewhat contradictory results. The coefficients of QR and CRTE are negative and statistically significant, while the coefficient of NWCTA is positive and statistically significant. Taking into account the possibility of data discrepancies, the positive relationship could be dominating, thus indicating that the investors regard liquidity as a determinant of MB. The only statistically significant asset efficiency-related ratio is INVAR. As noted in the case of high MB firms, the

negative relationship indicates that the investors do not regard the elements related to firm's operations. As for the leverage category, the coefficient of NII is positive and statistically significant, which indicates the investors concern about firm's debt service ability.

As for the low MB firms, the statistically significant ratios present the six ratio categories (Solvency, Assets Efficiency, Expense Control, Leverage, Profitability and Dividend Information). The dominant ratios are those related to profitability, asset efficiency, and solvency respectively. A general trend of investors' preference toward liquidity is shown by the positive and statistically significant coefficients of CASHR and CRTE. The negative and statistically significant coefficient of the interval measure IM is not expected. Regarding the ratios of assets efficiency, the signs are indicative. Four out of the five assets efficiency-related ratios have positive and statistically significant coefficients. These ratios are TAT, FAT, AG and SG. This is an indication to the investors' concern about long-term rather than the short-term assets. This conclusion is supported by the negative and statistically significant coefficient of WCCF since it is calculated using the components of working capital. The expenses control-related ratio OEGM is

TABLE 2
SENSITIVITY ANALYSIS FOR INFORMATIVENESS OF FINANCIAL RATIOS AND SHAREHOLDER VALUE
(Dependent Variable : MB)

Shareholder Value Classes	M Variables (MB speed of adjustment)	β		SE	t	N	-2 R	Other Variables	Robust/Fragile
		High	Low						
High MB	MB _{t-1}	High	0.627	0.062	8.02	118	0.88	EBITS - WCCF, ES, AE	Robust
		Base	0.486	0.064	7.57	118	0.88		
		Low	0.335	0.065	7.09	118	0.90		
Medium MB	MB _{t-1}	High	0.351	0.081	2.34	132	0.74	WCCF, AE - CashR, WCCF, ES	Fragile
		Base	0.157	0.084	1.85	132	0.71		
		Low	-0.049	0.083	1.4	132	0.72		
Low MB	MB _{t-1}	High	0.549	0.044	10.2	326	0.70	WCCF, ES, AE, EBITS	Robust
		Base	0.415	0.051	8.09	326	0.68		
		Low	0.308	0.051	7.98	326	0.68		

Notes : The base β is the estimate coefficient from the regression with the variables of interest (M variables) and the always-included variables (I variables). When the dependent variable is the short-term debt ratio, the I variables are INVCA, ARCA, OR, CR, TLNW, NWCTA, IM, CRTE, TAT, FAT, INVC, INVR, DINV, ART, APT, NWCT, APS, NWFA, AG, SG, COGSS, OEGM, OEA, IE, CLWC, STDR, TIE, EBITFC, CFI, NII, NWD, OL, LTDNW, FATA, RONW, ROA, CFPS, CFLTD, PE, PCF, TB, IB, MVA, NIEBT, GEBIT, REA, RET, SR, NID, DPR, DY. The high β is the estimate coefficient from the regression with the extreme higher bound ($\beta_m + 2\sigma$). The low β is the coefficient from the regression with the extreme lower bound. The "other variables" are the Z variables included in the base regression that produce the extreme bounds. The "Robust/Fragile" designation indicated whether the variable of interest is robust or fragile.

positive and statistically significant, which gives the same conclusion stated for the high and medium MB firms that the operating expenses are regarded as a capital investment. Regarding leverage-related coefficients, the coefficient of NWTB is negative and statistically significant, which indicates that the investors have a significant concern about the firm's capital structure. It is not possible to reach a conclusive explanation regarding the effects of capital structure since the other leverage-related ratios are not statistically significant.* Nevertheless, the positive and statistically significant two retained earnings-related coefficients (RETA and RET) could help reach an implicit explanation that the investors favor equity financing over debt financing. The other profitability-related coefficients (IB, MVA, EBITG) are positive and statistically significant, thus giving the indication that the investors are quite concerned with the overall profitability. The coefficient of EBIT is an exception to that overall concern, since its sign is negative and statistically significant. It is noticeable that this coefficient is negative and statistically significant for the three levels of MB. While it could be explained as an indication to the investors' general unconcern about profitability in the two cases of high and medium MB firms, it must not be so in the case of the low MB firms where all the other statistically significant coefficients are positive. This could be due to some data discrepancies. The last statistically significant coefficient is the coefficient of dividend yield (DY), where its negative sign is an indication that dividends have a reverse effect on firm's market value. The same negative sign is reported for the high and medium MB levels except that they are not statistically significant.

(b) Robustness of the Estimates (Sensitivity Analysis)

The sensitivity analysis focuses on the variables that refer to the speed of adjusting shareholder value $[MB_t]$ to a target level $[MB_t^*]$ in the partial adjustment model. These variables show the extent to which shareholder value adjusts to a target level according to the content of financial information contained in the financial ratios. Table 2 includes the results of the sensitivity analysis.

The results of the sensitivity analysis show a considerable degree of consistency. The estimates of the speed of adjusting (MB_t) shareholder value are robust at the high and low classes only. That means that the estimates of speed of adjustment will not vary (stable) according to the variations in firms' five categories of financial performance. That is, the financial ratios (as a form of co-integrated financial information) are quite informative to the high and low shareholder value classes, while is not that informative to the medium class. Within these two classes, the shareholder value adjusts in a stable manner to a target value even with changes in the firms' five categories of financial performance.

Conclusions

The results of this study provide evidence that the fundamental analysis is informative to firms' shareholders. The information contained in firm's financial ratios explains substantial part of the market-to-book ratio. According to the results of this study, we can conclude that the financial ratios are relatively more informative to the low MB firms than for the medium and high MB firms. In general, the results indicate that :

- 1- As for the low MB firms, the investors are concerned with the long-term horizon as well represented by such items as long-term investments and assets efficiency. Also investors do not appreciate equity financing since those firms are categorized with low or medium MB ratio.
- 2- As for the high and low MB firms, the operating and total expenses are regarded as a capital investment that supports sales activities as stated in the literature of marketing.
- 3- As for the high MB firms, the trend is to finance operations using equity rather than debt financing.
- 4- As the MB is getting lower, the investors become more concerned with the firm's earnings power. Nevertheless, profitability affects low MB firms only.
- 5- As for the high and medium MB firms, investors do not regard the elements related to firm's operations.
- 6- In the low MB firms, investors are concerned with the effects of capital structure although the results show the dividends have a reverse effect on firm's market value.

* NWTB is the ratio of Net Worth/Total Debt. This ratio could be increased in many ways such as (a) increasing equity, (b) decreasing total debt, (c) increasing equity by a percentage greater than the percentage of increasing debt, (d) decreasing equity by a percentage less than the percentage of decreasing total debt. This is the reason why a conclusive answer cannot be reached unless other leverage-related ratios give support.

REFERENCES

1. Zellner, A., Causality and Causal Laws in Economics, *Journal of Econometrics* (82 : 1988)
2. Ostermark, R. and Aaltonen, J., Testing the Relevance of Accounting Numbers in Security Valuation : A Structural Model with Scandinavian Data, *Applied Financial Economics* (4 : 1995)
3. Gonedes, N. J., Evidence on the Information Content of Accounting Numbers : Accounting - based and Market-based Estimates of Systematic Risk, *Journal of Financial and Quantitative Analysis* (3 : 1973)
4. Farrelly, G. E., Ferris, K. R. and Reichstein, R. W., Perceived Risk, Market Risk, and Accounting Determined Risk Measures, *The Accounting Review* (2 : 1985)
5. Li, S., Applying Financial Statement Analysis to Forecast Earnings Growth and Evaluate P/E Ratios, *Working Paper* (Columbia University : 2003)
www.fbe.hku.hk/doc/seminars/multimedia/siyi%20road%20021603.pdf
6. Preinreich, G. A.D., Stock Yields, Stock Dividends and Inflation, *The Accounting Review* (4 : 1932)
7. Edwards, E. O. and Bell, P. W., *The theory and Measurement of Business Income* (Berkeley : 1961)
8. Graham, B., Dodd, D. L. and Cottle, S., *Security Analysis : Principles and Techniques* (New York, 1962)
9. Peasnell, K. V., Some Formal Connections between Economic Values and Yields and Accounting Numbers, *Journal of Business Finance and Accounting* (3 : 1982)
10. Kay, J. A., Accountants, Too, Could be Happy in the Golden Age : The Accountants Rate of Profits and the Internal Rate of Return, *Oxford Economic Papers* (3 : 1976)
11. Brief, R. P. and Lawson, R. A., The Role of the Accounting Rate of Return in Financial Statement Analysis, *The Accounting Review* (2 : 1992)
12. Rosenberg, B., Reid, K. and Lanstein, L., Persuasive Evidence of Market Inefficiency, *Journal of Portfolio Management* (11 : 1985)
13. Chan, L., Hamao, Y. and Lakonishok, J., Fundamentals and Stock Returns in Japan, *Journal of Finance* (5 : 1991)
14. Fatma, E. F. and French, K. R., The Cross-Section of Expected Returns, *Journal of Finance* (2 : 1992)
15. Lakonishok, J., Shleifer, A. and Vishny, R. W., Contrarian Investment, Extrapolation, and Risk, *Journal of Finance* (5 : 1994)
16. Bodie, Z., Kane, A. and Marcus, A. J., *Essentials of Investments* (New York, 2003)
17. Shapiro, A. C. and S. D., Balbirer, *Modern Corporate Finance : A Multidisciplinary Approach to Value Creation* (New Jersey, 2000)
18. Foulke, R. A., *Practical Financial Statement Analysis* (1968)
19. Myer, J. N., *Financial Statement Analysis* (New Jersey, 1969)
20. Johnson, R. W., *Financial Management* (1971)
21. Soldofsky, R. M. and Olive, G. D., *Financial Management* (1974)
22. Bellemore, D. H. and Ritchie, J. C., *Investments* (1974)
23. Lev, B., *Financial Statement Analysis : A New Approach* (New Jersey, 1974)
24. Van Horne, J. C. and Wachowicz, J. M. Jr., *Fundamentals of Financial Management* (1995)
25. Radcliffe, R. C., *Investment : Concepts, Analysis and Strategy* (1997)
26. Emery, D. R. and Finnerty, J. D., *Corporate Financial Management* (1997)
27. Besley, S. and Brigham. E. F., *Essentials of Managerial Finance* (2000)
28. Strong, R. A., *Practical Investment Management* (2001)
29. Corrado, C. J. and B. D. Jordan, *Fundamentals of Investments : Valuation and Management* (New York, 2002)
30. Fraser, L. M., and Ormiston, A., *Understanding Financial Statements* (2004)
31. Kennedy, Peter, *A Guide to Econometrics* (1998)
32. Greene, William, H., *Econometric Analysis* (New Jersey 2000)
33. Leamer, Edward, E.,
(i) Let's Take the Con out of Econometrics, *American Economic Review* (73 : 1983)
(ii) Sensitivity Analysis would Help, *American Economic Review* (75 : 1985)
34. Leamer Edward, E. and Leonard, H., Reporting the Fragility of Regression Estimates, *Review of Economics and Statistics* (65 : 1983)
35. Levine, R. and Renelt, D., A Sensitivity Analysis of Cross-country Growth Regressions, *American Economic Review* (82 : 1992).