THE Privatization Effect on the Stock Returns: In case of Taiwan Shipping Firms

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Abstract: This paper undertakes an analysis of the privatization effect of Taiwan Shipping Firm: Yang-Ming (YM) for the past years. Firstly, an extend CAPM model build by Fama-MacBeth methodology which can be used to determine the predicted returns for any company. We find that the stock return depends on its sensitivity to a set of indicates that include the return on the market but also include variables of D/E ratio, M/B ratio, and the firm size (lnA). Then, the rates of return of YM are predicted by this equation and the residuals which are the differences of the actual rate of return and the predicted rate of return of YM is used to test the privatization effect. Our results indicate that the privatization effect of YM is insignificant. Expect the privatization effect.

Key Words: privatization, CAPM model, stock return

1.INTRODUCTION

Privatization is a process of combination adjustment of stock shares that will have the proportion of private stock share over 50% in a government owned company. Yang-Ming (YM) and Tai-Hang (TH) went through privatization. In YM's case, in order to get rid of the regulations to compete with other shipping companies in the worldwide they triggered the privatization process actively, and the proportion of private stock share increased to 51% in February 1996. In TH's case, while the company was also listed in the first group to be privatized proposed by government, due to the resistance in some quarrel in the employees, the proceeding was finally completed in 1997. It was not traded in the Taiwan Stock Exchange market until June 1998. So, in this study we just focus on YM Shipping Company. Because TH Shipping Company's financial reports is not enough to analysis.

It is believed that, through this process, the management of the privatized company could throw off the regulations that is bounded the activities of government business and might improve the operations performance increase the stock rate of return. On the other hand, the goal of private investors is to pursue the investment excess return, which is defined as the deviation of realized return from the required (expected) rate of return, as higher as possible.

The objective of this paper is to develop a CAPM to estimate the privatization effect on the stock returns of Yang-Ming Shipping Company and to test whether or not the excess return of stockholders will increase accompanying with the increasing the proportion of private stock shares.

2.LITERATURE REVIEW

A plethora of research aiming to discover a stable and meaningful factor structure for share price returns performance has been reported during the past several years. Sharpe [2] started with the hypothesis that returns should be affected by the following characteristics: a stock's beta with the S&P index, its dividend yield, the size of the firms (market value of equity), its beta with long–term bonds, its past value of alpha (the intercept of the regression of past excess returns on the S&P index), and eight sector membership variables. Sharpe does not attempt to give an elaborate economic rationale for these variables but rather states that he has selected them more or less 'ex cathedra'.

The market beta's popularity among both academics and practitioners stems from the face that the theory behind it is straightforward. The earlier results of Black, Jensen

and Scholes [1] and Fama and MacBeth [3], cited that there is a positive simple relation between average return and market beta. Fama and French [4] looked at all non-financial shares traded on the NYSE, AMEX and NASDAQ return files between 1963-1990. The regressions, when the author allowed beta variation to be unrelated to size showed that betas could not explain the differences in cross-sectional returns. Similarly, when Jegadeesh [5] controlled for the firm size effect, betas explained virtually none of the cross-sectional differences in portfolio returns.

A number of papers have been published over the years dealing with the relationship of dividend yield and stock returns. It has been argued that dividends affect stock returns because of tax effects (Litzenberger and Ramaswamy [6]), information signaling effects (Aharony and Swary [7]), and agency costs (Rozeff [8]). Litzenberger and Ramaswamy [9] included in the traditional capital asset pricing model dividend yield as an additional explanatory variable. They found the coefficient of the dividend yield variable to be positive, less than one, and statistically significant thus suggesting that the dividend yield is positively related to stock returns. However, it should be noted that not all of the dividend yield coefficients reported by Litzenberger and Ramaswamy are significantly different from zero (e.g. Black and Scholes[10],and Miller and Scholes[11]).Black and Scholes, for examples, conclude that their findings are important for a corporation's dividend policy because they argue that increases in dividends are not expected to have a definite effect on its stock price. In another study, Elton, Gruber, and Rentzler[12] performed a purely empirical examination of whether and to what extent deviations from the CAPM are explained by dividend yield. They found the dividend yield to have a significant positive relationship with returns.

Fama and French [4] used the Fama and MacBeth [3] methodology to determine the relationship between several variables including leverage and stock returns. They use two leverage variables, the ratio of the book assets to market equity, and the ratio of book assets to book equity. The regressions they performed use the natural logs of the leverage ratios to enable the interpretation of the role of the two ratios to become simpler.

After 1977, research on the CAPM generally followed one or more of eight basic paths; (1) *mainstream* empirical tests (and theoretical extensions) retained the model's basic structure and used existing test methodology, but changed estimation periods or employed new data sets for testing; (2)*multivariate* tests of the model's pricing implications tested the CAPM indirectly by econometrically examining whether logical restrictions on returns data implied by the model were in fact observed; (3) tests of the *consumption CAPM*; (4) empirical and theoretical tests of the CAPM that allowed for *time-varying betas and market risk premiums*; (5)tests for *nonnormality of returns* data and the relationship between conditional variance and expected return; (6) empirical documentation and assessment of various *seasonal and size "anomalies"* documented in returns series that could not be explained by the basic asset pricing model; (7) tests of the *after-tax CAPM*, and; (8) empirical tests of the *international asset pricing* model and tests of the degree of international capital market integration. The key recent articles in each of these areas are cited and briefly discussed.

The mainstream assessment of the CAPM is not, however, completely bleak. Handa, Kothari, and Wasley[13] (1989) show that estimated beta is very sensitive to the return interval increases to one year, the CAPM cannot be rejected using annual betas-and this result is not solely due to the smaller number of estimation periods used to calculate standard errors for the test statistics. Finally, bailey and Chan[14] show that the basis in futures contracts (the spread between commodity spot [cash] and futures prices) reflects the macroeconomic risks common to all asset markets. While this examines futures rather than common stocks, it at least documents the importance of systematic factors in pricing financial assets.

To conclude this section then, it is appropriate to note that factors used to empirically analysis share price performance can be divided two broad categories: exogenous and endogenous. Exogenous factors are those factors while influence the performance of a company at a macroeconomic level, e.g. the stock market index, while endogenous factors are those factors which influence the performance of the company at a microeconomic level, e.g. dividend, leverage.

3.METHODOLOGY

3.1 Data

We use a random sample of 30 companies whose share have been activity traded in the period June 1992 to June 2000. We collected their financial data of half-year reports published by each company. The half-year continuously compounded returns is calculated by the formula $\ln\{(P_t + d_t)/P_{t-1}\}$, where P_t is the half year share price, d_t is this half year dividend paid by company, and P_{t-1} is the previous half year share price.

A plethora of research aiming to discover a factor structure for stock price returns performance has been reported during the past years. After reviewing some literatures, we propose the following variable as the control variable in this paper:

1. Market beta (β)
2. debt /equity ratio (D/E)
3. Leverage measured by (Market value/Book value; M/B)
4. Firm size measured by natural logs of total assets (lnA)

3.2 Model

Our tests use the cross-sectional regressions approach of Fama and MacBeth[3]. Each half year the cross-sectional of returns on stocks is regressed on the following variables which are hypothesized to explain stock returns : the stock's beta with the stock market ; the debt/equity ratio (D/E) ; the company's leverage measured by (Market values/Book values) ; and the firm size measured by natural logs of total asset (lnA) . The following equation representing actural returns of stock i for half year t forms the basis of our tests :

$$R_{it} = \alpha_{1t} + \gamma_{1t}\beta_i + \gamma_{2t}\left(D/E\right)_i + \gamma_{3t}\left(B/M\right)_i + \gamma_{4t}(\ln A)_i, i=1,2,3,\cdots,30 \quad \cdots\cdots(1)$$

where i=1,2, $\cdots$,30. This equation is estimated cross- sectionally for every half year in the period June 1992 to June 2000. The coefficient estimates is then extracted and used to perform standard t-tests to establish whether any of the above explanatory factors are on the average statistically significant during the period analysed. The debt/equity ratio (D/E) , the company's leverage (D/E) and the lnA are precisely measured for each half year for each company so they can be included in the cross-sectional regressions straight away. However, this is not the case regarding each company beta with the stock market. Betas have to be estimated from time-series regressions of individual company stock returns on stock market return, where stock market returns are represented by Taiwan Stock Exchange index. These betas have been estimated over the entire time period analysed, June 1992 to June 2000. Once the betas are estimated they can be included in the half year cross-sectional regressions. Table 1 shows the estimates of market betas for 30 companies included in this study. Table2 shows the time-series estimated coefficients of equation (1) . We can obtain 17 regression functions for each half year in the test period.

We then average these estimates to obtain a single predicted regression as follows :

$$\hat{R}_{it} = \overline{\alpha_{1t}} + \overline{\gamma_{1t}}\beta_i + \overline{\gamma_{2t}}\left(D/E\right)_i + \overline{\gamma_{3t}}\left(B/M\right)_i + \overline{\gamma_{4t}}(\ln A)_i \quad \cdots\cdots(2)$$

Let

R_t = YM realized stock return for period t

$\hat{R}_t$ = YM predicted stock return for period t

$$ExR_t = R_t - \hat{R}_t = \text{YM excess stock return for period t} \quad \cdots\cdots(3)$$

These data are shown in Table3. The main purpose of this paper is to estimate the coefficient of the following equations:

$$ExR_t = \gamma_0 + \gamma_1 t + \varepsilon_t, t = 1,2,\cdots,17 \quad \cdots\cdots(4)$$

If the privatization effect do improve the performance of the firms, then the ExR will increase gradually. Hence, to test the privatization effect on the stock returns significantly is equivalent to test $\gamma_{i1}>0$ significantly. Finally, the coefficient (γ_1) of ExR measure is

insignificant at the 1% level.

4.RESULTS

In this paper, Betas have been estimated over the entire time period analysis, June 1992 to June 2000. Table1 shows the estimates of market betas for each company in this study. As can be seen, the highest beta is Rectron Ltd. company whereas the lowest beta is Lee Chang Yung Chemical company. A low beta value that their returns are not very sensitive to stock market movements.

Table2 presents the time-series estimated value from the cross-sectional returns regression on all the explanatory variables (equation), the individual regressions of cross-sectional returns on each of the explanatory variables. In order to make our results more robust we also ran the equation and regressions of cross-sectional logarithm of assets. And we find that natural logarithms to transform assets variable does not alter our conclusions.

Table3 presented YM's excess returns for June 1991 to June 2000.

Table1: 30 companies' market stock β value

Company Name	β
Taiwan Cement	0.00736
President Enterprise	0.03552
Formosa Plastic	0.00079
China Petrochemical	-0.01321
Far East Textile	-0.02756
Shihlin Elec.& Eng.	0.03096
Teco Electric & Machinery	0.04559
Pacific Electric Wire & cable	0.15374
Lee Chang Yung Chemical	-0.05639
Taiwan Glass	0.08362
Chung Hwa Pulp	0.05623
China Steel	0.02655
Feng Hsin Iron & Steel	0.00258
Cheng Shin Rubber Ltd.	0.05646
Yue Loong Motor	0.11471
Rectron Ltd.	0.16118
United Micro Electronic	0.10711
Delta Electronic	0.04367
A.S.E.	0.12850
Compeq Electronic	0.06871
CMC Magnetics	0.04589
Compal Electronic	0.11153
CIS Technology	0.09331
Cathay Construction	0.01641
Ruentex Construction&Developnment	-0.01331
Evergreen Transport	-0.13006
Wan Hwa Enterprise	0.05191
Far East Dept.	0.03694

Lite-On Electronic	0.06266
First Bank	0.01910

Table2: Time-series estimated coefficients

t	α_1	γ_1	γ_2	γ_3	γ_4
1	5.20085	-15.3307	0.030011	2.195413	-2.90379
2	31.67755	10.01693	-0.19508	4.512776	-1.59733
3	11.84971	-11.795	-0.1067	-7.4674	-0.1828
4	-96.5076	17.87169	0.05492	-2.36	5.44766
5	33.75071	38.38029	0.0376	6.97137	-2.3004
6	-28.9451	27.59875	0.05053	7.73577	0.94314
7	-7.92742	-4.86749	-0.1885	-9.2078	1.05099
8	-1.70683	3.871273	-0.0903	-1.0588	0.67126
9	-190.276	-39.0965	0.0654	7.33735	8.57356
10	-0.53647	-3.5331	0.17018	-1.573	-0.0579
11	13.31897	16.71679	-0.2874	9.04816	-0.5435
12	40.7589	-4.90797	0.19332	-1.7839	-1.5994
13	-29.8505	-34.1954	0.17449	-1.9016	1.38235
14	-23.441	-8.43314	-0.2474	2.20828	0.87067
15	-86.949	2.527339	0.00154	9.32117	3.34981
16	-261.895	-49.77	0.37999	2.66644	11.1503
17	46.38642	20.61209	0.13535	2.45571	-2.9066
Average	-34.39	-1.19	0.09	1.68.	1.16

5.INTERPREATION

5.1 Stock Market Beta (β)

Our results regarding the ability of the stock market beta to explain stock returns very much in line with the current trend of empirical research regarding the matter. In the literature review we cite several recent studies, e.g. Fama and French [4], which conclude that other factors such as financial leverage explain stock returns better than betas. The CAPM suggests that higher market risk, should be earning higher returns. In this study, the market betas have some explanatory power. In this paper, when cross-sectional returns are regressed on beta and anyone other of the explanatory variables, i.e. debt/equity ratio, market value/book value and lnA, β's coefficients remain negative and statistically significant. We can therefore conclude that beta does have some power in explaining the returns of 30 companies for the period June 1991 to June 2000.

5.2 D/E Ratio

Creditors prefer low debt ratios because the lower the ratio, the greater the creditors' protection against losses in the event of bankruptcy. Stockholder, on the other hand, like the fact that leverage magnifies expected earnings. And then, creditors may be reluctant to lend the firm more money, and management would probably be subjecting the firm to the risk of bankruptcy if it sought to increase the debt ratio by borrowing additional funds. In this study, this positive relationship may be interpreted in several ways; one might argue that by increasing the D/E ratio of a company the risk to owners of common equity is increased and therefore they require higher returns to compensate for the higher risk. This effect could of course be magnified in YM Shipping Company. Another possible explanation for this positive relation ship may be the existence of what is known in finance theory as a signaling effect. The company, by increasing its long-term debt, sends a signal to the market that it has the capacity to maintain higher debt levels which in turn means that expectation regarding

future cash flows are good.

Table3: YM Shipping Company's Excess Returns

R	$\hat{R}$	ExR=R-$\hat{R}$
-14.35	-5.94460	-8.4054
-1.32	-4.53270	3.2127
-9.13	-5.25354	-3.8765
38.87	-4.30900	43.1790
-2.73	-0.87704	-1.8530
13.35	-4.15702	17.5070
-10.58	-1.96188	-8.6181
9.12	-3.80659	12.9266
9.81	-3.28531	13.0953
-1.09	-2.49319	1.4032
-1.81	-2.89433	1.0843
14.85	-3.37319	18.2232
-0.46	-3.96814	3.5082
-7.14	-4.25415	-2.8859
5.00	-4.15865	9.1587
-9.58	-4.27580	-5.3042
-10.11	-4.89459	-5.2154

5.3 M/B Ratio

The ratio of a stock's market price to its book value gives another indication of how investor regard the company. Companies with relatively high rates of return on equity generally sell at higher multiples of book value than those with low returns. If a company earns a low rate of return on its assets, then its M/B ratio will be relatively low versus an average company. From this case, we can obtain positive and significant coefficient. This means that returns and M/B are positive relationship. There are some especially good investment opportunity come along.

5.4 lnA

The asset, measure how effectively the firm is managing its asset. If a company has excessive investments in assets, then its capital costs will be unduly high, and its stock price will suffer. On the other hand, if a company does not have enough assets, it will lose sales, which will hurt free cash flow and the stock price. Therefore, it is important to have the right amount invested in assets. We use lnA for a control variable and measure a firm size. When we regressed cross-sectional returns on the lnA, we obtain a positive and significant coefficient. This implies that lnA have some explanatory power of cross-sectional returns.

5.5 The Privatization Effect

Figure1 shows that insignificant relationship is obtained between excess returns and time in YM Shipping Company. This implies that the privatization effect will not affect its stock returns performance.

6.CONSLUSION

This paper has attempted to establish the cross-sectional returns performance of 30 companies is related to the following factors: the market betas, D/E ratio, M/B ratio and lnA. These companies were analyzed over a nine-year period. All variables expect the market beta were found to have explanatory power. We found that the cross-sectional returns are positively related to the D/E ratio, M/B ratio and lnA, and is negatively related to the market

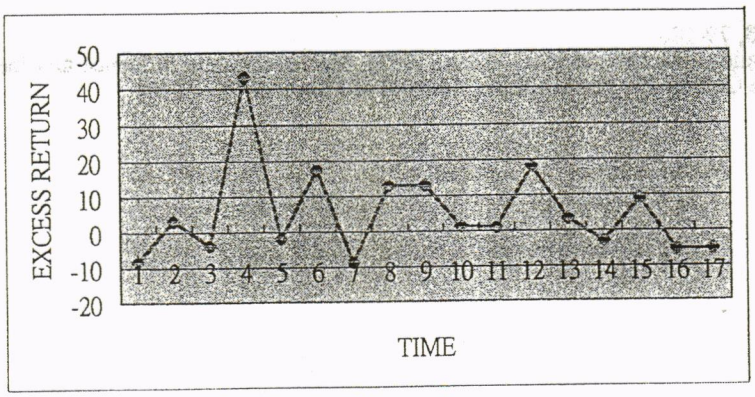

Figure1. Time-Series for YM Shipping Company

beta. The negative sign of the market beta was surprising of the empirical evidence. However, closer examination of our sample reveled that this negative coefficient may come from the sampling bias. And, We use a time-series model to analysis the privatization effect in YM Shipping Company from 1992. The result implies that privatization effect has not significant direct-relationship with time. We believe that the most important conclusion that may be drawn from this is that YM Company's privatization effect on stock returns was insignificant. We believe that apart from the factors examined in this paper there are other factors such as the imagine of companies, their chartering policy, management decision; which may also affect YM company's stock returns.

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