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台灣上市公司之大陸投資決策與其股票報酬率
決定因素之關係之研究
The Determinants of Returns on China-concept Stocks
Listed in Taiwan Stock Market

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中文摘要

台灣上市公司之大陸投資決策與其股票報酬率決定因素之關係之研究

關鍵字: 大陸概念股, 股票報酬率, 基本面變數, 本益比, Ordered Probit Selection Model

最進幾年, 著名的財務期刊常登載有關股票報酬率之基本面決定因素之探討, 如 Basu(1983), Fama & French (1988, 1992, 1995), Chan, Hamao & Lakonishok (1991), Lakonishok, Shleifer and Vishny(1994), Kothari, Shanken and Sloan(1995), Haugen and Baker(1996) 與 Danil and Titman(1997) 等。其中最常被提到的公司基本面變數包括本益比、淨值市價比、現金流量比率與公司規模。國內相關研究也不少, 但大部份在探討有無此類效應(effects), 如本益比效應、規模效應或淨值市價比效應等, 最近有許和鈞、沈榮華與顧廣平(1998)探討台灣上市股票淨值市價比、成交量週轉率與股票報酬率之間的橫斷面關係; Yang(1995)則用二階段的計量模式 Multinomial Logit Selection Model, 探討公司在不同的融資決策下, 其股票報酬率與其基本面決定因素間之關係是否有結構性的改變。

本文主要目的, 除探討台灣上市公司投資大陸之決策與其相關之融資決策之關係外, 再延續作者(Yang)有關上述之研究, 探討其股票報酬率與其基本面決定因素間之關係是否受到投資大陸之決策影響, 而有結構性的改變。主要之理由是, 最近幾年台灣廠商赴大陸投資者越來越多, 至 2000 年底累積投資金額也將近四百億美元之多, 而其投資成果也陸續顯現, 對台商母公司盈餘多所貢獻, 因此所謂的大陸概念股也成為國內外法人與散戶爭相投資之標的。因此中國概念股, 或投資大陸與否, 便成了影響股票報酬率之因素。傳統的研究也許將大陸投資與否用虛擬變數放在程式右手邊, 與本益比等上述基本面變數一起作迴歸分析, 看此變數是否顯著。但是, 這樣的研究方法忽視了事實, 即大陸投資決策並不是外界給與(外生的, exogenous)的, 而是一種公司可以自行採行的決策; 也就是說, 它是一種內生的決策。

因此, 本文採取兩階段的模式來研究, 第一階段探討影響台商到大陸投資之因素為何, 並估計此決策之機率; 然後在第二階段的模式, 在條件機率下探討股票報酬率與其基本面決定因素間之關係。我們將台商分成三種, 即重度投資、中度投資與不投資大陸, 可用 Ordered Probit Selection Model 來作研究。

本文之重要性將在於利用嚴謹的計量方法, 研究大陸概念股與非大陸概念股之股票報酬率與其基本面因素間之關係是否有所差異。

ABSTRACT

Key words: Stock returns, Market fundamentals, Ordered Probit Selection Model, Mainland-China-concept stocks.

Abstract

The relation between stock returns and market fundamentals becomes an important issue. Many research papers tried to find the proper fundamental variables that affect stock returns, while others tried to explain or had alternative explanation to the results found. Among these papers are Basu(1983) , Fama & French (1988, 1992, 1995) , Chan, Hamao & Lakonishok (1991), Lakonishok, Shleifer and Vishny(1994), Kothari, Shanken and Sloan(1995), Haugen and Baker(1996) and Danil and Titman(1997) . These market fundamentals usually include PE ratio, market to book ratio, size and cash flow ratio.

As we know, there are many other factors that may affect firms' stock returns. The relation between stock returns and market fundamentals may have a structural change by some policies implemented by firms. Yang (1995) used Taiwan listed firms to examine how this relation differs when firms adopt different external finance. This paper continues to investigate how this relation may change by firms' decision to place **real investments in the Mainland China.**

Cheap labor, similar language and other intriguing factors allured tens of thousands Taiwan firms' to have real investments in the Mainland China. These investments in turn contributed to year-end net profits of these firms. Hence, the so-called Mainland-China-concept stocks have been some of the most favored stocks in both Taiwan and Hong Kong stock markets in recent years.

This paper is to use a two-stage Ordered Probit Selection Model to investigate how firms' decisions to invest in the Mainland China may have an impact on the relation between stock returns and market fundamentals. Financial data of these Taiwanese China-concept stocks from 1993 to 1998, as provided by TEJ, are used to do this empirical analysis. This paper will have both academic and practical contribution to the real investments in Mainland China.

The Determinants of Returns on China-concept Stocks Listed in Taiwan Stock Market”*

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Due to the discrepancy between economic condition of Taiwan and that of China, shareholders of China-concept stocks¹ are subjected to higher level of uncertainty and risks. Academic research has a long history of finding the relation between fundamental factors and stock returns. However, there is limited research focusing on the China-concept stocks listed in Taiwan stock exchange market. Can the same fundamentals that help explain U.S. stock prices affect stock prices of China-concept stocks in Taiwan with the very different environment? The objective of this study is to investigate the impact of China-investment policy on the relation between stock returns and market fundamentals. It differs from the previous studies in that China-investment decision is considered as an endogenous variable in a two-stage financial model. The Two-Stage Selection Model² is employed in this study. The results provide much valuable information for the decision making of corporate and

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¹ In this study, the term "China-concept stock" refers to those listed companies in Taiwan which have been approved by the Investment Commission in Ministry of Economic Affairs to invest in China.

² For a detailed description of an Ordered Probit Model, see Greene (1992).

investor.

1. Introduction

For both academics and practitioners, how to identify factors that best capture the systematic components of stock return variation is deemed as the most crucial issue. As a result, it has been a long history of exploring variation in stock returns by fundamental analysis³. In U.S., the cross-sectional relationship between stock returns and fundamental variables has attracted a considerable amount of research attention and been extensively studied. In contrast, there is limited evidence for the Taiwan stock market. Stattman (1980) and Rosenberg, Reid, and Lanstein (1985) provide earlier evidence of an important book-to-market value (B/M) effect by showing that average returns on U.S. stocks are positively related to the ratio of a firm's book value of common equity to its market value. Chan Hamao, and Lakonishok (1991) find that book-to-market ratio B/M, also has a strong role in explaining the cross-section of average returns on Japanese stocks. Fama and French (1992) report that stocks with high book-to-market ratios have reliably higher returns than lower book-to-market stocks of the same size. Capapl, Rowley, and Sharpe (1993) find evidence of a B/M effect in each of the major stock markets (United States, Japan, Germany, the United Kingdom, France, and Switzerland). They conclude that, during their study period (January 1981 through June 1992), portfolios of high-B/M stocks provided

³ Different sets of factors have been suggested for empirical test in the literature.

risk-adjusted returns superior to those from low-B/M stocks. They point out that the merit of B/M as a single variable to distinguish between value and growth stock. Ball (1978) argues that E/P is a catchall proxy for unnamed factors in expected returns; E/P is likely to be higher for stocks with higher risks and expected returns, whatever the unnamed sources of risk. Basu (1983) shows that earnings-price ratio helps to explain the cross-section of average returns on US stocks in tests that also include size and market β . Keim (1990) concludes that two easily measured variables, size and book-to-market equity provide a simple and powerful characterization of the cross-section of average stock returns for the 1963-1990 period. Also, all types of portfolios except small-company portfolios were observed to have E/P ratio effect, which implies that investment portfolios containing high E/P stocks do generate much greater abnormal returns than portfolios with low E/P stocks.

Chen, Hamao, and Lakonishok (1991) design a modified Seemingly Unrelated Regression Model to find out that cash flow has a significant forecast power for expected returns on Japanese stocks. Moreover, before model adjustment, cash flow and B/M ratio have positive relation with stock returns; after model adjustment, these two variables still have most powerful explanatory power on the stock returns. Chen, Karceski and Lakonishok (1998) evaluate the performance of various proposed factors in capturing return co-movements. The empirical results of this most updated

study show that factors associated with the market, size, past return, book-to-market and dividend yield help explain return co-movement on an out-of-sample basis.

According to the statistics released from Investment Commission in Ministry of Economic Affairs of Taiwan (ICMEA), from 1991 till now, the most intense region of overseas investment from Taiwan is China. Due to the tight connection of economic within Taiwan, China and Hong Kong, the heavy investment activities between those regions are remarkable, hence the term “China-concept stock” has been emerged and noticed. Nevertheless, previous studies have not quite kept pace with the rising of the aforementioned events; there is very limited and comparable evidence of the impact on Taiwan stock market by the China-investment behavior of corporate. Hence, this paper intends to investigate if the investment in China of a listed company will cause any change in the relation between stock returns and common risk factors. Ever since the relaxation of Taiwan legislation that permits people to visit relatives in China, the investment and business opportunities have been uncovered and explored. Meanwhile, due to the increase of labor costs and land price, plus social awareness of environmental concerns, the investment condition in Taiwan has become less attractive and profitable for those so-called “sunset industries”. Hence they were forced to look for other countries where competitiveness could be restored and profit margin could be widened. The geographical and cultural advantages of China, its

abundant natural resource and the economic policy that designed to attract overseas capital and technology provide irresistible attraction to companies facing down sizing crisis in Taiwan. As shown from statistics (Table 1) released by ICMEA, the annual amounts for Taiwan companies invest in China are very huge although deviate a lot in size from the beginning till now. The change of investment behavior might due to the apparent economic policy changes from China and the enactment of corresponding legislation from Taiwan.

<Inset Table 1 here>

Due to the good performance for investment in China in terms of financial figures, e.g. EPS, the China-concept stocks have become more popular in Taiwan Stock Market. Moreover, investment activities in China for Taiwan companies are expanding in a remarkable scale in recent years. The fact that the average performance for China-concept stocks is much better than the Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX) leads China-concept stocks to become new focus in Taiwan stock market these years. For those China-concept stocks, investors are subject to unpredicted nature and higher level of uncertainty⁴. All these uncertainty factors exert great influential power on the operation and profitability of China-concept stock, hence they may have impacts on the sources of return

⁴ Those unpredictable factors are the change of political relation between Taiwan and China, the change of economic and trading policy from China and the change of demand/supply of market.

co-movement for China-concept stock. The enormous size of factories and availability of manpower for China-investment are usually multiples of those of their parent companies (China-concept stocks), hence the scale of China-investment made by Taiwan company is usually beyond one can imagine by only reading its financial reports. To ensure a better performance and profitability, prior to the investment decision in China, the aforementioned should be considered. An improper investment decision in China will not be a “profit-boosting strategy” but a “profit-kill decision” for company. This study postulates the need of a thorough investigation of the risk and returns for China-concept stocks and using econometrics model to test. This issue motivates what we do in this paper.

In recent years, money managers in U.S., as well as in other countries, have substantially increased their exposure to the Taiwan market. In spite of the rapid growth of investment in China from Taiwan company and the increasing significance of impact to the parent company and Taiwan stock market, only little researchers turned their attention to this. Moreover, the available evidence suffers from methodological problems and a limited database. The risk differences between China-concept stocks and Non-China-concept stocks arise from the differences in their time series responses to changes in the risk premium. However, previous study in Taiwan usually deemed China-investment decision as a “RHS dummy variable”

together with other fundamental factors to find out the determinants of expected returns. It neglects the fact that China-investment decision is to be made internally by the firm and should not be treated as an *exogenous* variable, but an *endogenous* one. Hence an econometrics analysis is required to disentangle the impact of China-investment on the relation between fundamental variables and stock return. In this study, a two-stage model is designed to incorporate China-investment decision as an endogenous variable. In the first stage, firms are split into groups then in the second stage, we examine the different types of companies separately to explore whether there is any difference existing in the relation between stock returns and fundamentals.

This paper remedies the lack of substantive evidence on the relation between stock return and fundamental variables for China-concept stocks in Taiwan. The results provide some insights into much needed information on which fundamental factors (if any) are at work in the Taiwan stock market, especially for China-concept stocks. The selection of fundamental variables has been guided more by intuition and by their popularity among practitioners. Evidence from this paper is expected to be helpful to shed further light on whether one fundamental variable subsumes another and on whether the results are robust to time period and sample composition. The accounting ratios reported here are suggestive but not exhaustive indicators for

finding the differences between China-concept stocks and Non-Chin-concept stocks. It suggests that there are other indicators that can better capture the market and management's expectation of the uncertainty faced by China-concept stocks. On the other hand, finding that different factors are at work in the different categories of company would suggest further research exploring institutional or behavioral differences between them. The remainder of this paper is structured as follows. In section 2, we describe our data. The methodology for testing the difference between China-concept stock and Non-China-concept stock regarding the relationship within stock returns and fundamental variables is in section 3. In section 4, the empirical result is analyzed. This paper concludes in section 5 with a summary of the findings.

2. Data

Our sample selection procedure was similar to that used by Fama and French (1992). In contrast to earlier papers, we use a comprehensive, high-quality data set of Taiwan stock market and the relevant information for investment in China extending over a relatively long period of time. Our sample data are from the database of Taiwan Economic Journal (TEJ), with sampling period from 1993 to 1998⁵. All financial institutions and financial distress firms are removed from the sample. All companies must be listed in Taiwan Stock Exchange before 1993 and has robust operation before

⁵ Due to the fact that the majority of investments in China were made by small or medium size companies before 1993, we decides to discard the data before 1993 in order to avoid selection bias.

entering the sample, besides complete financial reports and related information for each sample company is a must. The information of Investment in China is obtained from the company's offering circular, annual report and annual financial statement. Besides, to complete the possible missing information, a direct inquiry is made to investment department of company if necessary. This ensures that our tests are predictive in nature. To ensure that the explanatory variables are known before the independent variable that they are used to explain, we match the accounting data for all fiscal year ends in calendar year $t-1$ with the independent variable for year t . During period t , observations are classified according to the total China-investment amount accumulated till period $t-1$. Sample size of each period is shown in Table 2 and Table 3.

< Insert Table 2 & 3 here >

3. The Model

Probit Model and Ordered Probit Model are employed in this paper. In the first stage, observations are classified into categories according to some specific criteria. Usually, Z is used to denote the category, here $Z=0,1$ or $Z=0,1,2$ ⁶. In the second stage, for each category, the corresponding probabilities derived from the first stage are applied for

⁶ In the Probit Model, the dependent variable is assumed to be "binary" or "dichotomous", that is $Z = 0,1$; but in the Ordered Probit Mode, the independent variable is assumed to be orderly classified, for example, $Z = 0,1,2,3$.

further regression analysis. In the first stage, what factors can identify which listed company in Taiwan has more incentive to invest in China is the focus. In the second stage, analysis of the impact of fundamentals on stock returns are conducted by transforming the probability derived from the first stage into the variables in the second stage regression model. The empirical result will be analyzed to find out whether there is any difference existing for the relation between stock returns and fundamental across company. In the $Z = 0,1$ category, company that has no approved China-investment by ICMEA is set to be “0” and named as Non-China-concept stock. On the other hand, company with approved China-investment is set to be “1” and named as China-concept stock. In order to explore the China-investment effect more clearly, we further split the China-concept stocks into two groups based on the intensity of investment in China by Ordered Probit selection model. Thus in Ordered Probit model, for China-concept stock, company with approved China-investment amount less or large than the average of total China-investment amount is set to be “1” or “2” and named as Moderate Level China-concept stock or Heavy Level China-concept stock respectively.

Greene (1992) describes a two-step estimation technique for the Ordered Probit Selection Model as follows:

1. Estimate the Ordered Probit Model by maximum likelihood using all observations.

2. Select the observations for the regression.

3. Estimate the primary equation by OLS including the correction term $E(e|z=j)$ For

selection on $z=j$, $E(e|z=j) = \rho \sigma \lambda$, where: $\lambda = \frac{[\phi(\mu_{j-1} - \alpha'v) - \phi(\mu_j - \alpha'v)]}{[\Phi(\mu_j - \alpha'v) - \Phi(\mu_{j-1} - \alpha'v)]}$

4. Correct the asymptotic covariance matrix of the estimates. The asymptotic

covariance matrix C is $C = s^2 (W'W)^{-1} s[W'(I - \rho^2 D)W + \rho^2 (W'G) \Sigma (G'W)](W'W)^{-1}$

Where: $s^2 = e'e / N(j) - c^2 \delta^*$

e is the residual of y regressing on x and λ ; c is the regression coefficient of λ ; δ^* is the mean of δ , $N(j)$ is the sample size of J choice.

$$\frac{[(\mu_{j-1} - \alpha'v)\phi(\mu_{j-1} - \alpha'v) - (\mu_j - \alpha'v)\phi(\mu_j - \alpha'v)]\delta}{[\Phi(\mu_j - \alpha'v) - \Phi(\mu_{j-1} - \alpha'v)]} - \lambda^2 =$$

W includes x and λ

D is a diagonal matrix of δ

G is a matrix whose columns are the derivatives of the λ variables with respect to the parameters (α, μ)

The financial model applied in this study is as follows:

First Stage: $Z_i = a_0 + a_1 \text{EXP}_{t-1} + a_2 \text{LABOR}_{t-1} + a_3 \text{AGE}_{t-1} + a_4 \text{DEBT}_{t-1} + a_5 \text{RE}_{t-1} + a_6 \text{SALE}_{t-1} + a_7 \text{PRO}_{t-1} + a_8 \text{NW}_{t-1} + u_t$;

Where Z means with China-investment or not; if the answer is yes then $Z = 1$ or 2 ,

else $Z = 0$;

EXP = Export ratio;

LABOR = Degree of labor concentration (Total number of labor employed / Total Asset);

AGE = Company age;

DEBT = Debt ratio (Long Term Debt / Equity);

RE = Retained earning ratio (Retained Earning / Total Asset);

SALE = Sales growth rate;

PRO = Profit ratio;

NW = Net worth (Net worth per share / 10);

Second Stage:

$$R_{it} = b_{0i} + b_{1i} \text{BETA}_{t-1} + b_{2i} \text{EP}_{t-1} + b_{3i} \text{BM}_{t-1} + b_{4i} \text{CP}_{t-1} + b_{5i} \text{SIZE}_{t-1} + e_t$$

Where: R_{it} = Annual stock returns in period t ;

BETA = Beta calculated by running a regression of stock returns on market returns;

EP = The ratio of earnings to market value of equity;

BM = the ratio of book value to market value of common equity;

CP = the ratio of cash flow (earnings + depreciation) to market value of equity;

SIZE = the market value of equity.

4. Empirical Results

<Insert Table 4 to Table12 here>

Table 4 and 5 are empirical results in the first stage. In the first stage, results derived from Probit Model and that from Ordered Probit Model are very similar. RE is found to have significant positive impact on company's decisions for investment in China. According to the Pecking Order Hypothesis⁷, when a company requires capital for specific purpose, internal financing would be the first choice for funding the required capital, external financing is considered only if internal financing is insufficient. EXP, AGE and NW have partial explanation power and the positive coefficient implies that the higher export ratio, company age or net worth, the more likely the firm will invest in China. If a company oriented in export business, the abundant export and overseas market experience would increase the possibility for investing in China. In reality, the observation that the majority of Taiwan listed companies with investment in China are export-oriented companies corroborates our empirical results. The variable LABOR, although with positive coefficient during the observation period, it is not significant during the observation period⁸. For DEBT, SALE and PRO, their coefficients have inconsistent signs in different observation periods, hence they are insignificant factors for firms making China-investment decision. Moreover, we can not conclude whether

⁷ Donaldson (1961) and Myers (1984) suggest that a firm's financing may have a pecking order. When a firm needs to finance its investment, it will use internal source of funds first, then issue secured debts, risky debts, hybrid securities, and lastly new common shares.

⁸ In other words, LABOR has positive impact on China-investment decision for Taiwan listed

companies that are doing successful in Taiwan have greater incentive to invest in China or not, similarly for those companies that perform not well in Taiwan, do they have greater tendency to consider investing in China is also of question.

The results for second stage are in Table 6,7 and 8. BETA is insignificant and its coefficient in each year is inconsistent in sign for both China-concept stock and Non-China-concept stock. Thus we cannot concludes that the higher the risk level, the higher the stock returns as most of the previous studies concluded. Under Probit Model, for Non-China-concept stock ($Z = 0$), BM is the most significant factor with positive coefficients. As for China-concept stock ($Z = 1$), the result is generally similar to that of Non-China-concept stock but with a slight difference; BM is still significant although the degree is low down⁹. In order to explore this difference more detail we apply Ordered Probit Model and the results are appealing. For Non-China-concept stock ($Z=0$) and Moderate Level China-concept stock ($Z = 1$), the results are generally like that under Probit Model. However, as for Heavy Level China-concept stock ($Z = 2$), the explanatory power of BM is found to be attenuated. The only difference lies on the fact that the significant impact of BM on stock returns will depend on the underlying risk of that stock. In a nutshell, BM is the most significant variable and the positive coefficient of BM implies that BM has significant

company but with no explanation power.

⁹ Besides by comparing the coefficient, the unit change of BM for Non-China-concept stock has

and positive impact on stock returns consistent with the results by Fama & French (1992). In Non-China-concept stock, BM has reliable explanatory power on the dispersion of returns among company. However, it loses its explanatory power after we introduce the China-investment effect and the explanatory power deteriorates through time.

The explanatory power of EP is vary through the time and across the category of company, besides the sign is also inconsistent. CF is insignificant under Probit Model; however under Ordered Probit Model, CF is significant for Heavy Level China-concept stock. Therefore we postulate that the CF effect is existing for China-concept stock. As for Non-China-concept stock, there is no size effect, however under Ordered Probit Model, for Heavy Level China-concept stock, an opposite size effect is found, that is stocks with larger size perform comparatively better. One possible explanation is that the small China-concept stocks examined in this study tend to be more sensitive to changes in the economy and they are less likely to survive adverse economic conditions. Our economic interpretation of why small China-concept stocks on average are riskier is thus based on the characteristics of the marginal firms that cause them to react differently from the healthy firms to the same piece of macroeconomic news.

greater impact on stock returns than that for China-concept stock.

5. Conclusions

This paper evaluates the performance of fundamental factors in capturing the systematic co-variation in stock returns; we examine the risk differences that lead firms with investment in China or not. Due to the rising popularity of China-concept stocks, this paper studies Taiwan stock market from another angle to find out the impact that China-investment has on the explanation power of fundamentals. The objective is investigating the impact of China investment policy on the stock returns and market fundamentals, the empirical results and main findings achieved by this study can be summarized as follows. First, the higher the retained earning to capital ratio, the higher the export ratio or the longer the years of establishment, the higher the probability a firm will invest in China. Second, the impact that fundamental variables have on stock returns has a slight difference between China-concept stocks and Non-China-concept stocks but the difference will be highlighted more under Ordered Probit Model. Finally, BM is found to capture variations in stock returns in Taiwan stock market for Non-China-concept stocks, for China-concept stock the explanatory power is not so significant and vary through time; besides explanatory power deteriorates through the intensification of investment in China. Therefore, when analyzing the impact of company fundamentals on returns of China-concept stocks, it is worthwhile to apply different proxy and further analysis of the

corresponding results can assure a more accurate result.

In short, our tests do not support the central prediction of the Sharp-Lintner-Blank model, that average stock returns are positive related to market BETA. The unit change of coefficient of BM for Non China-concept stock has greater impact on stock returns than that for China-concept stock. The difference between China-concept stock and Non-China-concept stock, may be due to differences in the patterns of their underlying cash flows. In our context, if we were to restrict attention to the normal model without introducing the China-investment effect, we would be led to conclude, as earlier studies have, that BM has significant and positive impact on stock returns, hence is the most important factor. Yet this inference would be attenuated when China-investment effect is introduced. Our findings suggest that, in general, such statistical inferences should be made with caution since the correct specification is unknown. Our results imply that the list of fundamental variables employed in this paper is not exhaustive for China-concept stock. For example, the results indicate that large companies significantly outperform small companies for China-concept stock. Examining the relations between the returns and economic variables that measure variation in business conditions might help expose the nature of the economic risks faced by China-concept stock. Although BM has been shown to be a measure of the return prospects of stocks, there is evidence that its explanatory

power deteriorated through the increase of investment intensity in China. The performance of SIZE is more dependent on the particular type of company and time period used. While previous studies document earnings effect, we find no evidence of a strong positive effect. The noise in reported earnings related to Taiwan accounting standards may also help to explain why BM has such a strong influence. Firms with large capital investments accordingly tend to have substantially understated earnings. As a result, a variable such as earnings yield might be of limited use in cross-company (China-concept vs. Non-China-concept stocks) evaluations compared with broader measures such as cash flow yield. It is also understandable that the cash flow yield variable has higher predictive power than earnings yield, in light of the distortions in the earnings of China-concept stocks.

Our finding raises the possibility that earlier studies linking stock return in Taiwan to fundamental variables should be interpreted with caution; potentially important explanatory variables may have been omitted. The mis-assessment of risk has the potential to explain why small firms, high Book to Market ratio firms do not display large returns for China-concept stock. Possibly the poor showing of the fundamental factors may be due to measurement errors in the estimated sensitivities. We argue that there are important economic reasons why China-concept stock and Non-China-concept stock have different risk and return characteristics. The risk of

China-concept stocks are not likely to be captured by a market index heavily weighted toward Non-China-concept stocks. The implication of this study might be that some particular types of stock have abnormal market behavior, therefore leading changes to the impact of fundamentals on stock returns. Therefore the contribution of this paper lies on the separation of observation in accordance with specified clarification standards. Results of this study also point the importance of further research on the impact of fundamentals on stock returns. If our results are more than chance, they have practical implications for portfolio formation and performance evaluation by investors whose primary concern is long-term return or focusing-group performance.

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Table 1 Overall investment situation in china for Taiwan listed company unit:US\$

Year	No. of Cases	Investment Amount	Average Investment Amount
1991	16	125,730,813	7,858,176
1992	30	187,014,837	6,233,828
1993	107	851,979,343	7,962,424
1994	57	383,566,631	6,729,239
1995	57	530,085,824	9,299,751
1996	77	637,880,850	8,284,167
1997	119	1,000,973,135	8,411,539
1998	93	787,910,378	8,472,155
1999	57	167,149,268	3,932,442

SOURCE: Investment Commission under Ministry of Economic Affair

Table 2 2-Groups-Classification

	1993	1994	1995	1996	1997	1998
0	141	155	169	180	188	212
1	40	62	76	92	110	127
TOTAL	181	217	245	272	298	339

Table 3 3-Groups-Classification

	1993	1994	1995	1996	1997	1998
0	141	155	169	180	188	212
1	28	40	48	60	72	82
2	12	22	28	32	38	45
TOTAL	181	217	245	272	298	339

Table 4 First stage result (Z = 0,1)- Probit Model

$$Z_i = a_0 + a_1 \text{EXP}_{t-1} + a_2 \text{LABOR}_{t-1} + a_3 \text{AGE}_{t-1} + a_4 \text{DEBT}_{t-1} + a_5 \text{RE}_{t-1} + a_6 \text{SALE}_{t-1} + a_7 \text{PRO}_{t-1} + a_8 \text{NW}_{t-1} + u_t$$

<i>Period</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>
Constant	-0.764 (-0.879)	-0.676 (-1.044)	-0.912 (-1.169)	-0.837 (-1.765)**	-0.781 (-1.212)	-0.873 (-0.976)
EXP	0.672 (1.906)**	0.443 (1.529)	0.311 (1.869)**	0.607 (1.771)**	0.721 (1.731)**	0.539 (1.965)*
LABOR	0.08 (0.841)	0.059 (0.721)	0.052 (0.765)	0.051 (0.614)	0.072 (0.663)	0.083 (0.792)
AGE	0.016 (1.303)	0.018 (1.610)	0.021 (1.776)**	0.026 (1.764)**	0.023 (1.492)	0.019 (1.231)
DEBT	0.376 (0.512)	-0.335 (-0.361)	-0.189 (-0.112)	0.119 (0.126)	0.314 (0.412)	0.216 (0.391)
RE	2.036 (1.784)**	3.146 (2.178)*	4.812 (3.163)*	3.678 (2.119)*	3.791 (1.987)*	4.912 (2.107)*
SALE	0.316 (0.697)	0.218 (0.612)	-0.037 (-0.217)	0.255 (0.378)	-0.214 (-0.576)	0.368 (0.701)
PRO	0.615 (0.512)	0.397 (0.598)	-0.752 (-0.841)	-0.216 (-0.319)	0.718 (0.581)	-0.398 (-0.412)
NW	0.497 (1.912)**	0.513 (1.121)	0.368 (1.027)	0.412 (0.978)	0.435 (1.798)**	0.301 (1.969)*

t-value in the parenthesis

* significance level = 0.05

** significance level = 0.10

Table 5 First stage result (Z = 0,1,2)- Ordered Probit Model

$$Z_i = a_0 + a_1 \text{EXP}_{t-1} + a_2 \text{LABOR}_{t-1} + a_3 \text{AGE}_{t-1} + a_4 \text{DEBT}_{t-1} + a_5 \text{RE}_{t-1} + a_6 \text{SALE}_{t-1} + a_7 \text{PRO}_{t-1} + a_8 \text{NW}_{t-1} + u_i$$

<i>Period</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>
Constant	-0.416 (-0.598)	-0.661 (-0.872)	-0.714 (-1.126)	-0.812 (-1.768)**	-0.762 (-1.421)	-0.896 (-0.981)
EXP	0.619 (1.745)**	0.597 (1.598)	0.586 (1.962)**	0.814 (2.013)*	0.793 (1.936)**	0.678 (1.971)*
LABOR	0.079 (0.712)	0.066 (0.519)	0.041 (0.611)	0.042 (0.317)	0.068 (0.615)	0.078 (1.403)
AGE	0.019 (1.219)	0.014 (1.015)	0.016 (1.765)**	0.021 (1.792)**	0.025 (1.231)	0.017 (1.403)
DEBT	0.405 (0.553)	-0.223 (-0.387)	-0.187 (-0.164)	0.206 (0.317)	0.298 (0.395)	0.261 (0.318)
RE	2.768 (1.765)**	3.126 (2.146)*	4.891 (3.912)*	3.601 (2.126)*	3.584 (1.972)*	4.365 (2.001)*
SALE	0.416 (0.602)	0.311 (0.572)	-0.161 (0.318)	0.266 (0.334)	-0.314 (-0.651)	0.372 (0.698)
PRO	0.368 (0.219)	0.419 (0.410)	-0.846 (-0.912)	-0.196 (-0.315)	0.726 (0.612)	-0.314 (-0.393)
NW	0.661 (1.124)	0.349 (0.912)	0.394 (1.016)	0.357 (0.947)	0.408 (2.12)*	0.412 (1.768)**

t-value in the parenthesis

* significance level = 0.05

** significance level = 0.10

Table 6 Second stage result 2-Groups-Classification (Z = 0)

$$R_{it} = b_{0i} + b_{1i} \text{BETA}_{t-1} + b_{2i} \text{EP}_{t-1} + b_{3i} \text{BM}_{t-1} + b_{4i} \text{CP}_{t-1} + b_{5i} \text{SIZE}_{t-1} + e_t$$

<i>Period</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>
Constant	0.316	-0.706	-0.079	0.018	0.312	0.098
	(0.364)	(-1.184)	(-0.361)	(0.046)	(0.344)	(0.113)
BETA	0.051	0.138	0.011	-0.116	0.212	0.198
	(0.367)	(0.916)	(0.116)	(-1.489)	(0.317)	(0.167)
EP	-1.312	-1.712	-0.418	1.098	0.081	-0.117
	(-1.216)	(-1.531)	(-0.736)	(1.312)	(0.172)	(-0.341)
BM	0.516	0.712	0.098	0.346	0.196	0.218
	(4.161)*	(5.126)*	(1.765)**	(3.136)*	(2.316)*	(3.148)*
CF	1.121	0.316	0.942	-0.031	1.372	0.914
	(1.314)	(0.912)	(0.812)	(-0.394)	(1.412)	(0.736)
SIZE	-0.123	0.042	-0.012	-0.011	0.057	0.011
	(-0.391)	(0.172)	(-0.031)	(-0.059)	(0.131)	(0.016)

t-value in the parenthesis

* significance level = 0.05

** significance level = 0.10

Table 7 of Second stage result 2-Groups-Classification (Z = 1)

$$R_{it} = b_{0i} + b_{1i} \text{BETA}_{t-1} + b_{2i} \text{EP}_{t-1} + b_{3i} \text{BM}_{t-1} + b_{4i} \text{CP}_{t-1} + b_{5i} \text{SIZE}_{t-1} + e_t$$

<i>Period</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>
Constant	-0.113 (-0.121)	-0.063 (-0.106)	-0.113 (-0.314)	0.615 (0.768)**	2.131 (1.418)	0.111 (0.097)
BETA	0.067 (0.391)	0.129 (0.897)	0.021 (0.109)	-0.012 (-0.912)	-0.041 (-0.137)	0.211 (0.309)
EP	0.191 (0.211)	-1.312 (-0.513)	-0.369 (-0.212)	1.141 (0.594)	0.076 (0.212)	-0.123 (-0.271)
BM	0.419 (1.754)**	0.694 (2.169)*	0.098 (1.808)**	0.317 (1.745)**	0.182 (1.982)*	0.163 (1.967)*
CF	0.011 (0.113)	0.837 (0.319)	0.779 (0.678)	0.312 (0.912)	0.472 (1.765)**	1.131 (0.721)
SIZE	-0.006 (-0.012)	0.031 (0.168)	0.021 (0.061)	1.212 (1.748)**	0.046 (0.011)	-0.442 (-0.317)

t-value in the parenthesis

* significance level = 0.05

** significance level = 0.10

Table 8 of Second stage result 3-Groups-Classification ($Z = 0$)

$$R_{it} = b_{0i} + b_{1i} \text{BETA}_{t-1} + b_{2i} \text{EP}_{t-1} + b_{3i} \text{BM}_{t-1} + b_{4i} \text{CP}_{t-1} + b_{5i} \text{SIZE}_{t-1} + e_t$$

<i>Period</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>
Constant	0.214 (0.252)	-0.512 (-1.016)	-0.081 (-0.124)	0.029 (0.048)	0.317 (0.402)	-0.126 (-0.014)
BETA	0.081 (0.492)	0.162 (0.763)	0.012 (0.112)	-0.114 (-0.912)	0.132 (0.369)	0.267 (0.148)
EP	-1.212 (-1.316)	-1.634 (-1.394)	-0.346 (-0.921)	1.112 (1.463)	0.026 (0.011)	-0.214 (-0.317)
BM	0.591 (4.916)*	0.816 (5.338)*	0.496 (1.709)**	0.673 (3.481)*	0.841 (2.412)*	0.578 (3.012)*
CF	1.011 (1.062)	0.612 (1.216)	-0.012 (-0.021)	1.126 (1.231)	0.912 (0.721)	0.894 (0.618)
SIZE	-0.036 (-0.312)	0.011 (0.106)	-0.008 (-0.001)	-0.014 (-0.042)	0.021 (0.016)	0.016 (0.011)

t-value in the parenthesis

* significance level = 0.05

** significance level = 0.10

Table 9 Second stage result 3-Groups-Classification (Z = 1)

$$R_{it} = b_{0i} + b_{1i} \text{BETA}_{t-1} + b_{2i} \text{EP}_{t-1} + b_{3i} \text{BM}_{t-1} + b_{4i} \text{CP}_{t-1} + b_{5i} \text{SIZE}_{t-1} + e_t$$

<i>Period</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>
Constant	0.179 (0.218)	-0.469 (-0.912)	-0.012 (-0.097)	0.016 (0.031)	0.712 (1.112)	-0.218 (-0.071)
BETA	0.091 (0.381)	0.112 (0.641)	-0.019 (-0.081)	-0.061 (-0.134)	0.211 (0.309)	0.167 (0.311)
EP	-1.721 (-1.463)	-1.112 (-1.312)	0.019 (0.021)	-1.326 (-1.212)	0.031 (0.024)	-0.198 (-0.207)
BM	0.586 (2.914)*	0.626 (1.514)**	0.396 (1.765)**	0.372 (1.810)**	0.612 (1.761)**	0.501 (2.146)*
CF	0.916 (0.612)	1.272 (0.813)	0.848 (0.612)	1.146 (0.781)	1.362 (1.765)**	0.948 (0.635)
SIZE	-0.012 (-0.126)	0.021 (0.113)	0.016 (0.002)	-0.024 (-0.216)	0.028 (0.021)	-0.017 (-0.019)

t-value in the parenthesis

* significance level = 0.05

** significance level = 0.10

Table 10 Second stage result 3-Groups-Classification (Z = 2)

$$R_{it} = b_{0i} + b_{1i} \text{BETA}_{t-1} + b_{2i} \text{EP}_{t-1} + b_{3i} \text{BM}_{t-1} + b_{4i} \text{CP}_{t-1} + b_{5i} \text{SIZE}_{t-1} + e_t$$

<i>Period</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>
Constant	1.267 (0.481)	-1.471 (-1.021)	-0.091 (-0.113)	2.017 (1.137)	3.412 (1.447)	-1.014 (-0.912)
BETA	-0.167 (-0.316)	0.181 (0.398)	0.141 (1.136)	0.128 (0.216)	-0.137 (-0.281)	-0.212 (-0.461)
EP	-1.214 (-0.311)	-3.126 (-1.213)	-1.107 (-0.523)	2.964 (0.612)	1.364 (0.367)	1.892 (0.646)
BM	0.162 (0.816)	0.216 (1.014)	0.016 (1.751)**	0.192 (0.691)	0.462 (0.491)	0.492 (1.789)**
CF	1.287 (0.319)	4.021 (1.804)**	0.416 (0.316)	2.127 (0.573)	2.416 (1.772)**	0.976 (1.765)**
SIZE	0.031 (0.192)	0.087 (0.312)	0.048 (0.912)	0.212 (1.765)**	0.267 (1.137)	0.092 (1.765)**

t-value in the parenthesis

* significance level = 0.05

** significance level = 0.10