Do Blue Chip Stocks Blue in Taiwan?

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Abstract

Recent issue of Newsweek reported that the blue chip stocks are becoming blue in the U.S. Blue chip stocks generate returns decreasing. This study intends to explore if the blue chip stocks in Taiwan also blue. We use three ways to analyze Taiwan stocks in the past 10 years. The empirical analysis shows that the larger the market value, the higher the return rate. From the empirical results, we conclude the blue chip stocks do not blue in Taiwan.

摘要

近來有些報導指出，美國藍籌股的報酬變得越來越不理想。這篇研究主要目的在調查，台灣的藍籌股是否跟美國一樣變的越來越差，報酬越來越不理想。本篇使用三種方法來分析台灣在過去十年來的股票。根據實證分析發現市值愈大的的公司，報酬率也愈大。因此，我們可以得知台灣的藍籌股並沒有比其他的股票差。

Keywords: annual return rates, blue chip stocks, K-means

1. Introduction

Just a few years ago, U.S. blue chip stocks were the most respected asset class in the world (Farzed, Roben, 2006). Not long ago, the $22 billion Fidelity Blue Chip Growth fund, which holds shares of giant U.S. companies such as Microsoft, Johnson & Wal-Mart Stores, asked shareholders to approve a switch in its benchmark from the Standard & Poor's 500-stock index, a traditional blue-chip barometer, to Russell 1000 Growth Index, a broader gauge that includes many smaller companies (Farzed, Roben, 2006). The S&P 500 has returned just 4.3% annually in the past five years, far less than its long-term average of 10%. And the S&P 100 stock index, the bluest of the blue chips barometer, has returned just 2.03% annually in the past five years (Farzed, Roben, 2006). Moreover, the legendary value investor Warren Buffett, who made a fortune with big investments in blue chips such as Coca-Cola Co. and Gillette, recently disclosed that he had made big bets on four major stock indexes, three of which were outside the U.S. For those reasons, we can know that the blue chips are becoming blue in the U.S.

However, do the blue chip stocks really blue in some other countries? This study intends to figure out if the blue chip stocks in Taiwan also blue. Empirical analysis is conducted to analyze the returns for the past ten 10 years.

2. Literature Review

2.1 K-means

Clustering techniques are important for knowledge acquisition, and the K–means clustering algorithm is one of the most commonly used algorithms for clustering analysis (Ralambondrainy, 1995). The K-means method is very popular because of its capability to cluster huge amounts of numerical data quickly and efficiently.

Clustering is the process of grouping data into clusters so that objects in the same cluster have high similarity in comparison to each other, but are very dissimilar to objects in other clusters (Tian, Zhu, Zhang, Liu, 2005). We can apply clustering to group and to simplify the data efficiently so as to get the useful information.

2.2 Blue Chip

The word "blue chip" originated from gambling, where it is used to refer to the highest value gambling chip (Pennant-Rea and Emmot, 1990). There are several different definitions of "blue chip". Stafford (1987) stated that "blue chips are shares in very sound, well-established and usually large companies". Chen (2004) defined that "blue chip companies are those that have high share price, large market value and good reputation and quality of management".

However, recent reports may have various observations for blue chip. Farzad and Roben (2006) said that blue chip stocks are performing worse than those of smaller companies. Diversification by investors is creating more competition for blue chip stocks. In addition, mutual funds are increasing the value of their holdings by dumping the larger companies.

3. Research Methodology

We use the annual data of market value and return rate of all stocks in Taiwan for analysis. The definition of daily return rate function is as below:

$$R_t = Ln\left(\left(P_t * (1+\alpha+\beta)+D\right)/\left(P_{t-1}+\alpha * C\right)\right) * 100(\%)$$

Where R_t is the daily return in day t, P_t is the closing price in day t, and α is the current ex-right subscriptions rate, and β is the current ex-right non-reward dividend payout rate, and C is the current ex-right cash subscription price, and D is the current cash dividend.

The definition of annual return rate function is as below:

$$\text{Annual return rate} = \sum R_t$$

We use three different ways to conduct the empirical analysis: 3 groups by average, 3 groups by k-means, and 4 groups by k-means.

The K-means algorithm is an algorithm to cluster objects based on attributes into k partitions. It is a variant of the expectation-maximization algorithm in which the goal is to determine the k means of data generated from Gaussian distributions. It assumes that the object attributes form a vector space. The objective is to minimize total intra-cluster variance, which can be expressed by the following function:

$$V = \sum_{i=1}^{k} \sum_{j \in S_i} \left| x_j - \mu_i \right|^2$$

Where there are k clusters S_i, i=1,2,….k and μ_i is the centroid or mean point of all the points $x_j \in S_i$.

4. Empirical analysis

We use the annual data of market value and return rate of all stocks in Taiwan from 1996 to 2005. The data are collected from the TEJ database. The empirical results are analyzed.

4.1 Average (Three Groups)

First, we sort all the stocks into three groups from large market value to small. Then, we divide these stocks into three groups evenly. We calculate the average return rate of each group. The results are reported in Table 4-1, and depicted in Figure 4-1. We find that the average of Group 1 (10.907) > the average of Group 2 (-0.732) > the average of Group 3 (-14.466). It means that the larger the market value, the higher the return rate.

4.2 K-means (Three Groups)

First, we separate the stocks into three groups by k-means. We calculate the average return rate of each group. The result are reported in Table 4-2, and depicted in Figure 4-2. We find that the average of Group 1 (23.387) > the average of Group 2 (20.548) > the average of Group 3 (-1.758). It means that the larger the market value, the higher the return rate.

4.3 K-means (Four Groups)

First, we separate the stocks into four groups by k-means. We calculate the average return rate of each group. The result are reported in Table 4-3, and depicted in Figure 4-3. We find that the average of Group 1 (25.717) > the average of Group 2 (23.119) > the average of Group 3 (14.639) > the average of group 4 (-2.563). It means that the larger the market value, the higher the return rate.

4.4 Comparing With TAIEX

We also examine the relationships between the return rates and TAIEX (The Taiwan Stock Exchange Capitalization Weighted Stock Index). The results for different methods with the TAIEX are depicted in Figure 4-4, Figure 4-5 and Figure 4-6, respectively. To that end, we calculate the correlation coefficients between average return rate and TAIEX as in Table 4-4.

According to the correlation coefficients, we know that the trend of average return rates was positively related to TAIEX. Among them, the correlation coefficient of Group 1 was the largest. It means that when TAIEX changed, the average of Group 1 followed much more than the other groups.

For this reason, the average return rate of Group 1 in 2002 fell very much lower than that of the smallest group. This situation became even obvious for the K-means (Three groups) and the K-means (Four groups).

4.5 Summary

The return rates of group 1 from 1997 to 2004 in Tables 2 and 3 are the same, because there is only one company, Taiwan Semiconductor Manufacturing Company (TSMC). The market value of TSMC is much larger than other companies every year.

Table 1 reports that the return rate of Group 1 is larger than Groups 2 and 3 every year except in 2002. Tables 2 and 3 show various results. However, concerning the total average, the three methods show that the larger the market value, the higher the return rate.

According to the analysis above, we can know that blue chip stocks do not blue in Taiwan.

5. Conclusion

People always think that blue chip stocks are the most profitable, and the funds also like to include those stocks in their component. But in the recent year, blue chip stocks return worse and worse in the U.S, and some funds remove those stocks from the component. It means that the blue chip stocks are not the best and the most profitable in the U.S. In this paper, we use the annual data to analysis that if blue chip stocks are better than the small ones in Taiwan.

We take three ways to analysis the Taiwan's data, and get some result. First, the group of the larger

market value returns more than the others. Second, the group of the smaller market value returns less even negative. Third, the component of first group of the K-means three groups and four groups have only one company, TSMC, from 1997 to 2004. It means that TSMC is much far larger among those years.

We also examine the correlation coefficients between average return rate of each group with TAIEX. It is predictable to see that the correlation coefficient of Group 1 was the largest, which means it follows closely with the TAIEX. And this also explains why there was a sharp drop in return rate in 2002.

According to these results, we conclude that the larger the market value, the higher the return rate. Therefore, on the contrary to what was reported for the US stock market, the blue chip stocks do not blue in Taiwan.

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Table 4-1. Average (Three Groups)

	Average return rate (%)		
Year	Group 1	Group 2	Group 3
1996	36.478	26.351	21.190
1997	24.168	16.415	10.311
1998	-12.869	-28.702	-28.841
1999	24.180	-15.068	-42.301
2000	-45.107	-59.871	-71.411
2001	25.796	21.227	-7.011
2002	1.976	5.203	2.328
2003	29.604	27.867	13.763
2004	10.142	-5.130	-22.757
2005	14.706	4.386	-19.929
Total average	10.907	-0.732	-14.466

Table 4-2. K-means (Three groups)

	Average return rate (%)		
Year	Group 1	Group 2	Group 3
1996	41.708	28.481	27.837
1997	108.970	32.636	16.414
1998	-8.430	0.406	-24.471
1999	106.230	116.190	-11.494
2000	-50.800	-50.755	-58.837
2001	44.500	22.077	13.249
2002	-62.450	-11.515	3.674
2003	47.610	36.474	23.377
2004	-8.510	16.742	-6.385
2005	15.044	14.747	-0.941
Total average	23.387	20.548	-1.758

Table 4-3. K-means (Four groups)

	Average return rate (%)			
Year	Group 1	Group 2	Group 3	Group 4
1996	45.470	33.442	36.542	27.024
1997	108.970	34.980	29.949	15.117
1998	-8.430	-1.580	-4.663	-25.096
1999	106.230	116.190	72.759	-14.742
2000	-50.800	-32.690	-68.820	-58.837
2001	44.500	-1.645	23.642	12.987
2002	-62.450	5.670	-12.589	3.674
2003	47.610	29.908	35.881	23.333
2004	-8.510	26.665	13.528	-6.668
2005	34.575	20.249	20.158	-2.417
Total average	25.717	23.119	14.639	-2.563

Table 4-4. Correlation coefficient between average return rate and TAIEX

Correlation Coefficient		
Average(Three groups)	Group 1	0.5349
	Group 2	0.2177
	Group 3	0.1451
K-means (Three groups)	Group 1	0.8780
	Group 2	0.7912
	Group 3	0.2911
K-means (Four groups)	Group 1	0.8853
	Group 2	0.7896
	Group 3	0.7535
	Group 4	0.2585

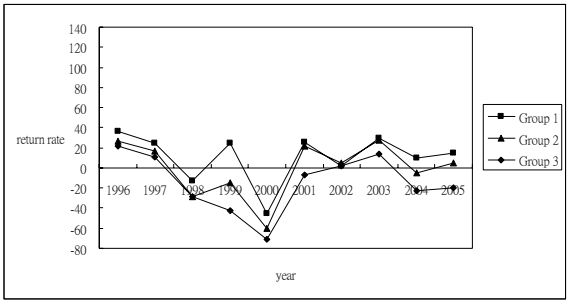

Fig. 4-1. Average (Three groups)

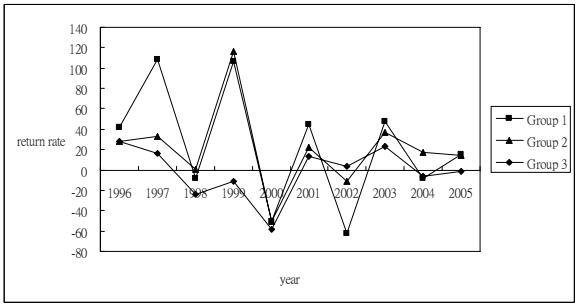

Fig. 4-2. K-means (Three groups)

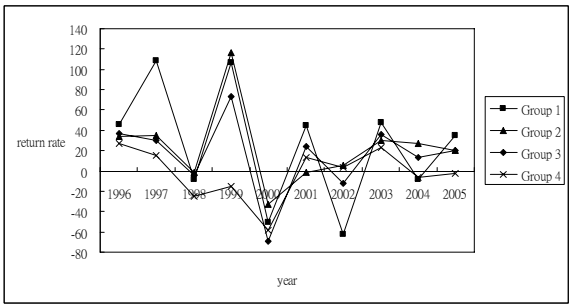

Fig. 4-3. K-means (Four groups)

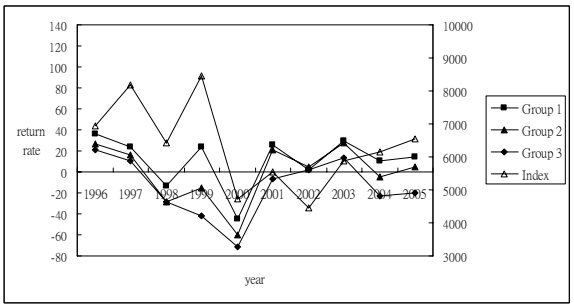

Fig. 4-4. Average (Three groups) VS TAIEX

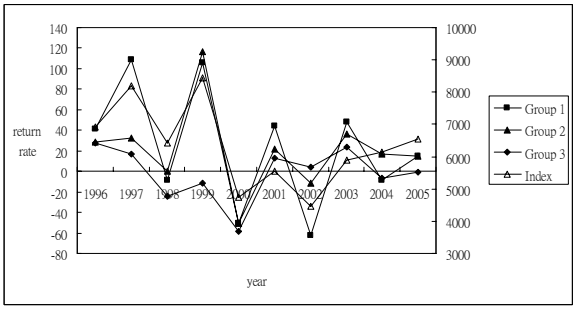

Fig. 4-5. K-means (Three groups) VS TAIEX

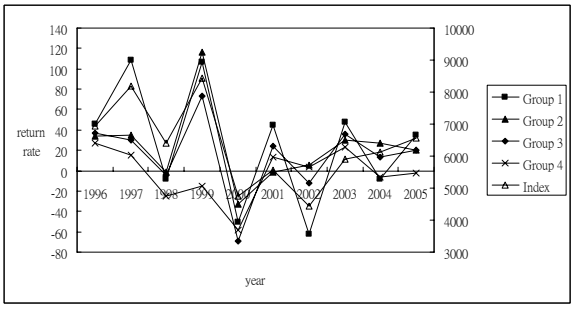

Fig. 4-6. K-means (Four groups) VS TAIEX