CHAPTER TWO

The Impact of Political Information on Fundamental Value and Market Value: Evidence from Taiwan's Closed-end Funds

2.1 Introduction

Closed-end funds are valued in two parallel ways: the fundamental value (often called net asset value, or NAV) and the market value (often called fund share price, or FSP). The NAV of a fund reflects the performance of the fund manager, while the FSP of a fund represents investors' subjective evaluation of the fund's performance. Dimson and Minio-Kozerski (1999) find that the difference between the two valuations. They point out that many studies have attempted to explain the prevalence of the discount using the theory of market efficiency. However, none has been able to provide a fully satisfactory explanation. In this chapter, we plan to use a sample of closed-end funds from Taiwan, an emerging market, to examine this anomaly.

Past studies show that there exist anomalous empirical results in financial returns which can be explained by investors' sentiments such as investors' under-reaction or overreaction to news events (Lee and Shleifer, 1990, Lee, Shleifer, and Thaler, 1991). The main problem facing financial economists is that the investors' sentiments are unobservable. As a result, financial economists usually make some assumptions about properties of fundamentals before testing market efficiency (Klibanoff, Lamont, and Wizman, 1998).

There are two ways to explain the behavior of closed-end fund discount. The first one emphasizes market frictions and market segmentation. The second one emphasizes noise traders and investors' sentiment. While the market segmentation hypothesis is usually used to explain the empirical results from closed-end country funds, the investors' sentiment hypothesis is used to explain the empirical results for closed-end country funds as well as for domestic closed-end funds.

Based on the above two ways, some researches study the profit opportunity on open-ending closed-end funds. Because most of closed-end funds are at discount, open-ending that forces a closed-end funds reorganize into an open-end fund is thus a mechanism of exploiting discount. Chen, Johnson, Lin, and Liu (2004) test the foreign investors and profit opportunities for 17 open-ending closed-end funds in Taiwan. They find domestic investors largely ignore the public information of open-ending closed-end funds to gain profit. However, foreign investors seem to know the profit opportunities with discounts when open-ending.

闞河士（民國 90 年）examines the relations between discounts and returns, and trading activity for the closed-end funds listed on the Taiwan Stock Exchange. They find significantly negative relationship between discounts and returns. Their results from VAR model indicate that the change in discounts leads returns positively. 許溪南與呂鴻德(民國 89 年), based on the arbitrage pricing model, develops a new performance-evaluation index to test whether performance of closed-end funds really worsen than that of open-end funds. Their results reveal that most of closed-end funds performed better than open-end funds, although the difference in ranking between their new index and the CAPM-based indices are small.

In this chapter, we use domestic closed-end funds from Taiwan to test the information effects on FSP and NAV. The underlying theories we use to explain the behavior of closed-end funds are market efficiency and investors' sentiment. In juxtaposition to the previous literature, this chapter does not use fund's discount to perform empirical tests. Rather, we use FSP and NAV simultaneously to test the theories. Since the FSP mainly reflects investor's behavior and NAV represents the market's assessment of the performance of fund managers, we use both the FSP and NAV to test for compliance with the assumed effects of market efficiency and investors' sentiment.

Like many other events affecting stock markets, political risk is an important input into market valuations (Gemmill, 1992, Chan, Chui and Kwok, 2001, Kim et al., 2001, Grundy et al., 2002). We invoke unexpected political events across the Taiwan Strait as information events to test the news impact on FSP and NAV. Taiwan's stock market has been affected by salient political events that have a major impact on both the fundamental values and investors' sentiment in the closed-end fund markets. From 1990 onward, Taiwan has been repeatedly threatened by military operation from the PRC (People's Republic of China). We will be using such threats which occurred especially during presidential elections in Taiwan from 1993 to 2000. These political events are of undoubted prominence and are considered to be major public informational events. We expect that they will help us understand the reaction of FSP and NAV to information shocks.

To resolve the possibly conflicting interpretations between the market efficiency and investors' sentiment arguments, we use the data of 21 closed-end funds and four major political events in Taiwan. Our empirical results reveal that, even though the assumption of market efficiency is corroborated by three out of four events, the remaining one event in four induces changes which are inconsistent with market efficiency. This would support the theory of the preponderance of investors' sentiment. The results also show that the return on FSP and the return on NAV move in the same direction. And the impact of information shocks on the return of FSP and return of

NAV have mostly the same sign.

In section 2.2 we review the theory of market efficiency and the theory of investors' sentiment in the literatures. In section 2.3 we develop a theoretical model to show that the elasticity of the NAV to salient information shocks is different to the elasticity of the FSP to the same information shock. Section 2.4 contains a description of the empirical tests.

Our empirical results are in section 2.5. In this section, we also explore some possible explanations for these results. Section 2.6 concludes our study and summarizes the results.

2.2 The Theory of Market Efficiency and Investors' Sentiment

In this section, we discuss the closed-end fund puzzle according to the financial theory of market efficiency and the theory of investors' sentiment.

Closed-end funds are characterized by the puzzle of the discount between NAV and FSP. Dimson and Minio-Kozerski (1999) point out that many studies have attempted to explain the prevalence of the discount using the theory of market efficiency. Invoking biases in the calculation of NAV, agency costs, tax-timing, possible illiquidity, and market segmentation, they attempt to explain why the FSP is typically below the NAV. None has been able to provide a fully satisfactory explanation. As a result, some researchers resort to the theory of irrationality (Zweig, 1973, Weiss, 1989, Lee, Shleifer, and Thaler, 1991).

The discount is the difference between the FSP and NAV. Fund shares are held mostly by individual investors, and the underlying assets are managed by the fund manager. These two different types of investors make their investment in the same markets, under identical conditions. Hence, the valuation and pricing can open a window into the different patterns of investments of individual investors and institutional investors.

A strong, early proponent of the efficient markets was Fama (1970). According to this hypothesis, stock prices should respond instantaneously to news announcements and new information. Intending to test the hypothesis, Pearce and Roley (1985) examine the response of daily stock prices to money supply, inflation, and discount rate announcement. They argue that stock prices should respond only to the unanticipated portion of news announcements. To isolate the unanticipated portion of the announcements, survey data on market participants' expectations for announcements were used for some news. Their results supported the efficient market hypothesis (EMH), showing that stock prices only respond to the surprise and unexpected portions of the announcements. Ciccotello and Grant (1996) examine information pricing using a large sample of equity mutual funds. They show that investors and portfolio managers must evaluate whether the benefit of having the information outweighs the cost of acquiring the information about their stock investments. The article shows that stock funds that charge higher expenses generally have no significant difference in returns from funds charging lower expenses. Their findings are consistent with an efficient market for funds performance under conditions of costly information.

The focus of much of the academic research on closed-end funds has been on explaining their discount. Also, several standard theories of the pricing of closed-end funds try to reconcile the discount puzzle with EMH. The most prevalent approach is to test whether the discount really does exist, or whether the NAV is simply miscalculated. Dimson and Minio-Kozerski (1999) show that the efficient market hypothesis provides an economic explanation for the closed-end fund discount provided one includes biases in NAV, agency costs, tax timing, and market segmentation. However, these possible explanations do not fully explain the anomaly of the closed-end fund discount. Hence, it would seem that the failure of traditional economic theories to explain the anomaly of the closed-end fund discount casts doubt on the rationality of the market.

Given this situation, some researchers have invoked behavioral explanations that rely on investors' sentiment to explain the closed-end fund discount (Zweig, 1973, Weiss, 1989, and Lee et al., 1991). Zweig (1973) was the first to suggest that closed-end fund discount might reflect the expectations of individual investors. Typically, individual investors are considered to be noise traders, as opposed to institutional investors who are seen as rational traders. Weiss (1989) shows that individual investors own a larger portion of closed-end funds, as opposed to institutional investors. Lee, Shleifer, and Thaler (1991) argue that the discount of a closed-end fund reflects mainly the differential sentiments of individual investors. The major reason is that these individual investors hold and trade a large portion of the closed-end fund shares. Their empirical findings using US data support the possible import of investors' sentiment.

De Long et al. (1990) and Lee et al. (1991) explore one possible explanation of the puzzle of the closed-end fund discount, based on a model of noise trading. This argument is inconsistent with the EMH. They suggest that when an information shock occurs, the discount on closed-end funds may change due to changes of investors' sentiment -- whereas the fund's management assessment will not be altered by the same information shock. We accept this reasoning and argue that the discounts on closed-end funds do indeed reflect changes in investors' sentiment. However, given the differential response alluded, an information shock will have a differing impact on the FSP and on the NAV. The asymmetry in information drawn from the event impacts the two statistics differently.

In the typical model of noisy trading, De Long et al. (1990) and Lee et al. (1991) suggest that there exist two types of investors, the rational traders and the irrational traders, or noise traders. The rational traders have unbiased expectations whereas the noise traders make systematic forecasting errors. Two assumptions underlie the behavior of rational traders. One is that they are risk averse, and the other is that they trade with a finite horizon. From the model design, we know that the fluctuations of the sentiments of noise traders are unpredictable.

Lee, Shleifer, and Thaler (1991) suggest that the movements of the closed-end fund discount reflect the sentiments of individual investors. However, closed-end funds may not capture all the market-wide sentiment because the NAV is determined in the same market as the constituent share prices. Bodurtha, Kim, and Lee (1993) use closed-end country funds to investigate an extended model of the investors' sentiment hypothesis. They find that FSP co-moves with US market return, but that the NAV do not have the same co-movement with US market return. They also show that discounts on closed-end country funds tend to move together, but not with discounts on domestic closed-end funds. Their empirical evidence on the behavior of country funds shows that discounts can be used to predict the future prices of funds, but not that of the NAV.

The investor sentiment hypothesis provides an interesting explanation of the discount puzzle of closed-end funds. Dimson and Minio-Kozerski (1999) show that investors' sentiment theory is grounded on the proposition that individual investors own the largest portion of closed-end funds, as they indeed do in the US market. However, in the UK, the investors in closed-end funds are almost entirely institutional investors.

Abraham, Elan, and Marcus (1993) examine the investors' sentiment hypothesis by comparing the performance of bond funds versus stock funds. They find that discounts on bond funds exhibit the beta risk of discount almost as large as discounts on stock funds. This contradicts the fact that bond funds should be holding assets whose values are subject to far less fluctuations of individual investors' sentiment.

The price behavior of US's and UK's closed-end fund markets suggests that we need to use both, the EMH and the investors' sentiment theory to explain the discount puzzle of closed-end funds. From the data of daily trading volume in Taiwan Stock Exchange, we know that about 80% of investors are individual investors and 20% are institutional investors. This feature allows us to test both theories to resolve the closed-end fund puzzle.

In this chapter, we examine the closed-end funds in Taiwan and try to contribute to the resolution of the puzzle of the closed-end funds pricing. We use identifiable information shocks to test the effects on FSP and on NAV. This differs from previous papers which used the discounts on closed-end funds. Following Klibanoff et al. (1998) and Frankel and Schmukler (2000), we develop in the next section a theoretical model to show how the information shock affects the FSP and the NAV.

2.3 Theoretical Model: The Effect of Information Shocks

We assume that the information shocks to the NAV and the FSP will be different for given the same information set, consistent with the characteristic of closed-end domestic funds. This assumption follows De Long, Shleifer, Summers, and Waldman (1990), Gehrig (1993), Klibanoff, Lamont, and Wizman (1996), and Frankel and Schmukler (2000).

Our model is similar to the model by Frankel and Schmukler (2000). But the differences are we use the domestic funds as the objective, differing from country fund used by Frankel and Schmukler, and the theory of Martingale is applied in deriving the expectation process. Besides, we further assume that there are covariance between uncertainty of stock market and uncertainty of the quality of fund managers. Finally, our model is suitable in general form, whereas their model is limited in discounted form.

We set a two-period model for fund managers and individual investors. Their utility functions are respectively described as negative exponential functions:

$$\begin{aligned} &U^f = -e^{-2\gamma W^f} \quad \text{for fund managers,} \\ &\text{and} \\ &U^i = -e^{-2\gamma W^i} \quad \text{for individual investors,} \end{aligned} \tag{1}$$

in which γ represents the coefficient of absolute risk aversion. The W in W^f and W^i represents the wealth, and the superscript *f* stands for fund managers and the superscript *i* stands for individual investors respectively. There are two assets available in this economy, a risk-free asset and a risky asset. The fund managers and the individual investors choose their respective portfolios in period one to maximize their expected utility functions, and they consume all their wealth in period two, leaving no bequest to their heirs. The risky assets for fund managers are a basket of securities from the stock market and the risky assets for individual investors are the fund shares.

The wealth functions at the end of the process for the fund managers and the individual investors are described as follows:

$$W_{t+1}^{f} = W_{t}^{f}(1+r) + \theta_{t}^{f}(NAV_{t+1} + y_{t+1}^{f} - NAV_{t}(1+r)) \ ,$$
$$W_{t+1}^{i} = W_{t}^{i}(1+r) + \theta_{t}^{i}(P_{t+1} + y_{t+1}^{i} - P_{t}(1+r)) \ . \quad (2)$$

NAV represents for the Net Asset Value of the fund, *P* represents the market-price of the fund share, θ stands for the demand function, *r* is the risk-free rate, and *y* is the dividend, payable in the second period. In the wealth functions in equation (2), we express the fact that the wealth of fund managers and individual investors consist of the return on a risk-free asset and the return on a risky asset.

We further assume that there exists an information set, I_t, which is perceived as being the same for fund managers and individual investors. For example, the salient political news about the relations between Taiwan and the PRC (People's Republic of China) can be viewed as the information set. Given this information, fund managers perceive the dividend of the underlying asset to be

$$y_{t+1}^{f} = y_{t}^{f} + \varepsilon_{t+1} \ , \quad (3)$$

and given the same information set, the individual investors perceive the dividend of the fund share to be

$$y_{t+1}^{i} = y_{t}^{f} + \varepsilon_{t+1} + \nu_{t+1} . \tag{4}$$

Here, ε means the uncertainty of the stock market, maybe caused by an information shock, and ν means the uncertainty about the quality of the fund manager, as perceived by individual investors. We assume that the uncertainty elements of the dividend changes have the following distributions:

$$\begin{bmatrix} \varepsilon \\ \nu \end{bmatrix} \sim N\left(\begin{bmatrix} 0 \\ 0 \end{bmatrix} , \begin{bmatrix} \sigma_{\varepsilon}^{2} & \sigma_{\varepsilon\nu} \\ \sigma_{\varepsilon\nu} & \sigma_{\nu}^{2} \end{bmatrix} \right) . \tag{5}$$

The covariance of market and fund manager is to reveal the latent relationship between fund manager and stock market in real world.

Until now in this chapter, we have the result that the conditional expected values of dividend do not vary with the type of investor,

$$E(y_{t+1}^{f} \mid I_{t}) = E(y_{t+1}^{i} \mid I_{t}) = y_{t}^{f} . \tag{6}$$

Because of our differing definition of the expected dividends, the conditional variance of dividend for individual investors is different to that for fund managers,

$$\begin{aligned} Var(y_{t+1}^{f} \mid I_{t}) &= \sigma_{\varepsilon}^{2} , \\ Var(y_{t+1}^{i} \mid I_{t}) &= \sigma_{\varepsilon}^{2} + \sigma_{\nu}^{2} + 2\sigma_{\varepsilon\nu} . \end{aligned} \tag{7}$$

Proposition 1

Assuming that the supply of underlying assets and fund shares is fixed, the elasticity of the underlying asset to an information shock is not equal to the elasticity of the fund share to the same information shock. In other words, $\frac{dNAV}{d\sigma_\varepsilon^2} \neq \frac{dP}{d\sigma_\varepsilon^2}$.

Proof:

According to De Long, Shleifer, Summers and Waldman (1990), if the returns to holding one unit of the risky asset are normally distributed, then maximizing the conditional expected utility functions is equivalent to maximizing the following functions:

$$\begin{aligned} &E(U_{t+1}^f \mid I_t) = E^f(W_{t+1}^f \mid I_t) - \gamma \; Var^f(W_{t+1}^f \mid I_t) \;, \\ &E(U_{t+1}^i \mid I_t) = E^i(W_{t+1}^i \mid I_t) - \gamma \; Var^i(W_{t+1}^i \mid I_t) \;. \end{aligned} \tag{8}$$

Under the assumption that, in equilibrium, fund managers buy the underlying assets whereas individual investors buy fund shares, and using equations of (2) and (8), we will maximize the following conditional expected utility functions:

$$\begin{aligned} &E^f(U_{t+1}^f \mid I_t) = W_t^f(1+r) + \theta_t^f(E^f(NAV_{t+1} + y_{t+1}^f \mid I_t) - NAV_t(1+r)) - \gamma(\theta_t^f)^2 Var^f(NAV_{t+1} + y_{t+1}^f \mid I_t) \\ &E^i(U_{t+1}^i \mid I_t) = W_t^i(1+r) + \theta_t^i(E^i(P_{t+1} + y_{t+1}^i \mid I_t) - P_t(1+r)) - \gamma(\theta_t^i)^2 Var^i(P_{t+1} + y_{t+1}^i \mid I_t) \cdot \end{aligned} \tag{9}$$

Imposing value maximization as the objective, we obtain the following demand functions for the underlying asset and for the fund share:

$$\theta_t^f = \frac{E^f(NAV_{t+1} + y_{t+1}^f \mid I_t) - NAV_t(1+r)}{2\gamma Var^f(NAV_{t+1} + y_{t+1}^f \mid I_t)},$$

$$\theta_t^i = \frac{E^i(P_{t+1} + y_{t+1}^i \mid I_t) - P_t(1+r)}{2\gamma Var^i(P_{t+1} + y_{t+1}^i \mid I_t)} \quad . \tag{10}$$

In equilibrium, we assume that there is a fixed and same supply for the underlying asset and fund share.[1] This means that:

$$\theta_t^f = S = \theta_t^i, \tag{11}$$

where S is the fixed and equal supply for the underlying assets and the fund shares.

The conditional variances for the NAV and the FSP (including dividends) have the following forms:

$$Var^f(NAV_{t+1} + y_{t+1}^f \mid I_t) = E^f[(NAV_{t+1} + y_{t+1}^f - E(NAV_{t+1} + y_{t+1}^f))^2 \mid I_t] = \sigma_\varepsilon^2,$$

$$Var^i(P_{t+1} + y_{t+1}^i \mid I_t) = E^i[(P_{t+1} + y_{t+1}^i - E(P_{t+1} + y_{t+1}^i))^2 \mid I_t] = \sigma_\varepsilon^2 + \sigma_v^2 + 2\sigma_{\varepsilon v}. \tag{12}$$

To derive the *NAV* and *P* functions, we also need to apply the characteristic of a Martingale and use equations (10), (11) and (12). Applying them, we find the following results for *NAV* and *P*:

$$NAV_t = \frac{1}{r}(y_t^f - 2\gamma S\sigma_\varepsilon^2),$$

$$P_t = \frac{1}{r}\{y_t^f - 2\gamma S[\sigma_\varepsilon^2 + \sigma_v^2 + 2\rho_{\varepsilon v}\sigma_v(\sigma_\varepsilon^2)^{1/2}]\}. \tag{13}$$

[1] Closed-end funds are so called because their funds sizes are fixed, or "closed", which implies that the supply of closed-end fund shares is inelastic (Dimson and Minio-kozerski, 1999).

From the results of equation (13), they reveal that closed-end funds could be with discount or premium, which means that *P* might be larger than *NAV*, or vice versa. The results are different from the results by Frankel and Schmukler (2000). Their results show that closed-end funds are always in discount, with *P* always larger than *NAV*, which does not fully represent the real world.

In order to reveal the effects for an information shock on the *NAV* and *P*, we must differentiate the response of the *NAV* and *P* to an information shock, σ_{ε}^{2}. Through the process, we derive the coefficients of elasticity to a shock and find them to be as follows:

$$\frac{dNAV_t}{d\sigma_{\varepsilon}^2} = -\frac{1}{r}2\gamma S \neq -\frac{1}{r}2\gamma S(1+\rho_{\varepsilon v}\frac{\sigma_v}{\sigma_{\varepsilon}}) = \frac{dP_t}{d\sigma_{\varepsilon}^2} \quad (14)$$

Equation (14) reveals that if there is an information shock, its effect on the *NAV* and *P* is expected to be different.

The above result is contradictory to the theory of market efficiency. However, if the empirical results do comply with the condition, we need to employ the theory of investors' sentiment to explain the empirical results. From the theory of noise trading, we know that, because the rational traders are risk averse, they are willing to buy closed-end fund shares only if they are compensated for the impact of the noise traders' risk, which means that they must buy the fund at a discount. As a result, assets subject to the noise traders' risk should earn a higher expected return than assets that are less subjected to such a risk. Therefore, the former assets will be under-priced relative to their fundamental values, NAV. Specifically, under the theory of investors' sentiment, the fund price (*P*) and net asset value (*NAV*) will react differently even to the same information shock.

2.4 Data and Methodology

2.4.1 The sample of funds

Our sample of funds consists of 21 closed-end funds that are traded and listed in the Taiwan Stock Exchange for the period from June 26, 1993 to April 12, 2000. Our data source is the TEJ (Taiwan Economic Journal). All funds are stock funds, which mean that the investment strategies for these funds require them to invest in publicly listed stocks of the Taiwan Stock Exchange. We divide the sample period into two sub-periods, Jan 3, 1994 to May 31, 1997, and Nov 27, 1998 to Apr 12, 2000. This sub-division is triggered by the fact that some of these funds were trading as open-end funds for some of the time, as explained below, and with the arrival of new information. The full names of the funds are listed on Table A in the Appendix A.

As Table A shows, for the first sub-period we include the funds labeled F1 through F16, and for the second sub-period we include the funds coded as F1, F4, F9, F11, and F17 through F21. Only the four funds F1, F4, F9, and F11 are in both sub-periods because only they, out of all 16 funds, did not switch to being an open-end fund before Nov 27, 1998.

We define the return of the fund price as $R_t^P = \frac{P_t + d_t - P_{t-1}}{P_{t-1}}$ for the individual fund and the return of the NAV as $R_t^{NAV} = \frac{NAV_t + d_t - NAV_{t-1}}{NAV_{t-1}}$ for the individual fund, where P is the fund share price, NAV is the net asset value, and d is the distribution paid by the fund or by the NAV. The return of the market is defined as $R_t^M = \frac{NDX_t - NDX_{t-1}}{NDX_{t-1}}$, where NDX is Taiwan Stock Exchange capitalization weighted index (TAIEX). We calculate these returns on a weekly basis. An index of the discounts of all sample funds is employed as a proxy as the whole sample. It is named the Value-Weighted Discount

(VWDISC), as did Lee, Shleifer and Thaler (1991). VWDISC takes the following form: $VWDISC_t = \sum_{i=1}^{n} W_{i,t} \times DISC_{i,t}$. In this equation, W_i means the value weight of fund *i,* and is computed as $W_{i,t} = \frac{NAV_{i,t}}{\sum_{i=1}^{n} NAV_{i,t}}$ for fund *i* at time *t*. DISC is discount and $DISC_{i,t} = \ln(\frac{P_{i,t}}{NAV_{i,t}})$. If *DISC* is less than zero, it means the FSP is below the NAV. If *DISC* is larger than zero, it means that there is a premium, i.e. the FSP is above the NAV.

2.4.2 The news events

Our goal in this study is to help understand how the return of the FSP and return of the NAV will change, and possibly interact with each other when there are prominent, dramatic and public news events. The information set we selected consists of important political news in Taiwan. From 1990 onward, Taiwan has been repeatedly threatened by military operations from the PRC (People's Republic of China) during its presidential elections. These political events are undoubtedly prominent, and as public informational events, they can help us understand the reaction of the FSP and the NAV to information shocks.

The reason we use political news as our information shocks is that political news are prominent public information to market participants. Fair (2000), Kim et al. (2001), Lee et al. (2001), Grundy et al. (2002), and Johnson (2002) show that information arrivals affect the stock markets. We find that the political news events that we use in this study indeed have a strong impact on the returns of the market in Taiwan. We are interested in how these information events affect the returns of the FSP and the return of the NAV. Especially we want to know whether they have the same information effects. From the result of the model shown in section 2.3, we conclude that the effect of information shock to FSP and NAV should be the same under the assumption of rational expectation. Attempting to test this contending, we use the empirical results to examine the impact of major political events on closed-end fund price and NAV in Taiwan.

To test the information effect, we select salient political news in Taiwan. The data source for news events comes from United Daily's database. Chan and Wei (1996) investigate the news effect on Hong Kong's stock markets concerning political issues of Sino-British negotiations on the handover of Hong Kong, which appeared on the *South China Morning Post.* Their results show that political news events have a positive impact on return volatility.

As stated earlier, we divide the period into two sub-periods. We identify two important political news events in sub-period one. The first event is the PRC military operations which lasted from March 8, 1996 to March 25, 1996, ahead of the 1996 Presidential election in Taiwan. The second event is the 1996 Presidential election in Taiwan on March 23, 1996. There are also two important political news events in sub-period two. Event three are the warnings issued by Mr. Zhu Rongji, the PRC's prime minister, to Taiwan's voters in the week of March 10 to March 17, 2000, ahead of the 2000 Presidential election in Taiwan. The fourth and last event is the 2000's Presidential election in Taiwan on March 18, 2000. It is noteworthy that since the first direct election by the citizens of Taiwan, the PRC has always found it necessary to aim some actions and/or threats at Taiwan. These are the events included in our sample.

2.4.3 Setting up testable hypotheses

Hypothesis I: The returns of the FSPs are not affected by the returns of the NAVs.

Pontiff (1995) uses domestic closed-end fund to test the lead-lag relation between NAV and FSP. Hardouvelis et al. (1994), Bennett (2002), and Lee and Hong (2002) use country funds to test the lead-lag relation. In the cases, the evidence shows that the adjustment of the discount or the premium tends to be followed by the adjustment of the FSP toward the NAV, rather than the adjustment of the NAV toward the adjustment of the FSP. Their conclusions are consistent with the economic interpretation which implies that a fund's NAV is a more accurate measure of the fund's fundamental value than is its price.

To test hypothesis I, we employ the Granger Causality (Granger, 1969) to explore the lead-lag relation for our closed-end fund sample. We test whether the time series are stationary using a unit root test. If the series are non-stationary, we need to test co-integration and use ECM (Error Correction Model) to capture the dynamics between FSP and NAV. If the time series of the data are stationary, we do not need to do co-integration test and can use the VAR- model, Vector Auto-Regression model (Enders, 1995). Furthermore, we use regression analysis to examine how many lengths of lags of R^{NAV} affect R^{P}, and add the return of the market as a control variable.

Hypothesis II: The returns of the FSPs and the returns of the NAVs symmetrically reflect the same information shock, and the directions of the impact on the both have the same sign.

We use regression analysis with information dummies and T-statistics to test hypothesis II. The dependent variables for the regressions are *VWDISC* in absolute value, R^P and R^{NAV}, separately. We use two dummy variables for two events and drop the constant term when attempting to clearly explain the effect of the variables presented in the dummies (Greene, 2000). Hence we do not include constant terms in these regressions. The regressions are as follows:

$$|VWDISC_t| = d_0 * D1_t + d_1 * D2_t + \sum_{l=0}^{2} b_l * R_{t-l}^{M} + \varepsilon_t \tag{15}$$

$$R_{i,t}^{P} = d_{i0}^{'} * D1_t + d^{'}_{i1} * D2_t + \sum_{l=0}^{2} b^{'}_{i,l} * R_{t-l}^{M} + \sum_{n=1}^{2} c_{i,n}^{'} * R_{i,t-n}^{P} + e^{'}_{i} * R_{i,t-1}^{NAV} + g_t^{'} * (R_t^M * R_{i,t}^{NAV}) + \varepsilon_{i,t}^{'} \tag{16}$$

$$R_{i,t}^{NAV} = d_{i0}^{''} * D1_t + d^{''}_{i1} * D2_t + \sum_{l=0}^{2} b^{''}_{i,l} * R_{t-l}^{M} + \sum_{n=1}^{2} c_{i,n}^{''} * R_{i,t-n}^{NAV} + g_t^{''} * (R_t^M * R_{i,t}^{NAV}) + \varepsilon_{i,t}^{''} \tag{17}$$

The dependent variable of equation (15) is the absolute value of *VWDISC* since we are only interested in the magnitude of the effect. We are interested in the magnitude of the information impact, and not its direction because all the funds in our sample traded at a discount. The information dummy variables denoted by D1 and D2 represent Event one and Event two for sub-period one and, respectively, Event three and Event four in sub-period two. All three models have the return of the market as a control variable. When estimating Equations (16) and (17), we add the lags of their dependent variables as control variables. Also, in equation (16), we add the return of the NAV to account for the effects of hypothesis I. To reflect the consideration of the covariance between market and fund manager as in the theoretical model in section 2.3, we also adjoin the interaction items of R^M and R^{NAV} as control variables for equation (16) and (17).

The coefficients of the dummy variables can be interpreted as the elasticity of dependent variables to the news information (Greene, 2000). The effect of the information, as reflected in the coefficients in equations (16) and (17), may be different.

If the effects are the same, they would support our model, as presented in section 2.3, which is in turn consistent with the assumption of market efficiency. If the coefficients are different, we would conclude that there exists an effect akin to investors' sentiment, and that it has an effect. Furthermore, were they to be different, we would want to know whether the information effects on the return of the FSP are larger or smaller than those on the returns of the NAV. We use T-statistics to test the comparability of the coefficients of the dummy variables in equations (16) and (17).

2.5 Empirical Results and Discussions

2.5.1 Summary statistics

We start by examining the characteristics of the funds in the sample period. Table 2.1 provides some summary statistics for the return of the FSP, R^P, and the return of the NAV, R^{NAV}, to individual funds. Panel A shows results for sub-period one while panel B contains results for sub-period two. We obtain a total of 203 observations for each fund in panel A and 72 observations for each fund in panel B. The last row of each panel, denoted by R^M in the column labeled Returns, shows the summary statistics of the return of the Taiwan Stock Exchange (TAIEX).

We find that in panel A, the fund labeled F15 shows the largest mean return and F2 shows the largest standard deviation. In panel B, fund F20 shows the largest mean return as well as the largest risk, as measured by the standard deviation.

[Insert Table 2.1 around here]

2.5.2 Preliminary results of the information effect to NAV and FSP

In Table 2.2, we want to detect the effect on the R^{NAV} and R^{P} of different political news unfolding between Taiwan and the PRC. All our events center around two Presidential elections in Taiwan. As presented in panels A and B in Table 2.2, we know that the PRC threatened Taiwan either by military operation or by verbal warning before both Presidential elections in Taiwan. To study the impact of these events on the funds, we divide the two Presidential events into four events. In sub-period one, Event one is the PRC's military operations from March 8, 1996 to March 25, 1996 and Event two is the 1996 Presidential election in Taiwan. In sub-period two, we categorize Zhu's warning to Taiwan voters before the 2000 Presidential election as Event three and the 2000 Presidential election itself in Taiwan as Event four.

[Insert Table 2.2 around here]

As shown in panel A of Table 2.2, R^{NAV}, R^{P} and R^{M} have small positive figures for Event one. The figures are 0.0027, 0.0028 and 0.0080 respectively. However, we find that there are negative figures for Event two except for R^{P}. By contrast, in panel B, we find that the figures of Event three are all negative, and the figures of Event four are all positive. Comparing sub-period one with sub-period two, we see the followings. First of all, the figures of R^{NAV} and R^{P} have opposite directions when comparing Event one with Event three. Also, the absolute of the numbers for event three are larger than the corresponding numbers for Event one. Secondly, the R^{NAV} also shows opposite directions for Event two and Event four but R^{P} shows the same direction for Event two and Event four. The absolute numbers of Event four are also larger than those of Event two.

The absolute values of R^{NAV} and R^{P} in sub-period two are all larger than those in sub-period one. To explain why, we invoke the theory of investor sentiment as proposed by DeLong, Shleifer, Summers, and Waldmann (1990). In their article, they show that the expected return of assets subject to noise-trader risk will be higher than the return on such assets unencumbered by such risk. The competitiveness of the race leading up to the Presidential election in Taiwan in 1996 was less intense than that for 2000. Hence, it is not surprising that the absolute returns of the events for sub-period two are all larger than the absolute returns of events for sub-period one.

We also calculate the absolute value of the closed-end fund discount which is the difference between the return of the underlying asset value and return of fund price. All four events are shown to be smaller than 0.01. These results are consistent with the propositions of the theoretical model presented in section 2.3.

The last four rows for each panel in Table 2.2 document the mean (median) return including and excluding event samples. In panel A, the results show that the mean return excluding the event samples for R^{NAV} (R^{P}) is larger than (or equal to) the mean return including the event samples. In panel B, the mean return excluding the event samples for R^{NAV} is smaller than mean return including the event samples while the mean return excluding the event samples for R^{P} is larger than the mean return including the event samples.

In summary, we find the information shocks of these political events impacts the NAV and the FSP, but they seem to respond differently. To explore the interaction between NAV and FSP, we provide below empirical evidence with regression analyses. We also use the regressions to test how these news events affect the return of the NAV and return of the FSP respectively. The results are provided in Table 2.6 and Table 2.7.

2.5.3 The relation between NAV and FSP

2.5.3.1 A proxy

Following Lee et al., (1991), we use a value-weighted discount as a proxy of the whole sample of funds, denoted by VWDISC, to test the correlation of the discount of individual fund and this proxy. We calculate VWDISC for panel A or panel B by the data of the sample funds for sub-period one or sub-period two and adopt VWDISC to represent all funds for sub-period one or sub-period two according to which panel it emanates from. The results of Table 2.3 show that VWDISC is significantly correlated with all sample funds except for F18 (Reliance Dahfa Fund) and F20 (Truswell Fund) in panel B.

The correlations between the discounts of individual funds are not reported in Table 2.3. Of all possible 136 correlations for sub-period one, 126 are significant. For sub-period two, 36 correlations out of 45 correlations are significant. The significance level is at 5%. All other correlations are insignificant.

[Insert Table 2.3 around here]

2.5.3.2 The Granger Causality of NAV and FSP

Based on economic reasoning, we may assume that, for closed-end funds, the NAV affects FSP*,* but not vice versa. NAV is the result of the fund manager's performance whereas FSP is the individual investor's[2] valuation of the fund. We can restate this relation also as follows: the NAV represents the fundamental value (or underlying asset value) and FSP represents the market price. According to Klibanoff, Lamont, and Wizman (1998), a fund's NAV is a more accurate measure of the fundamental value

[2] Previous evidence supports the proposition that closed-end funds are owned and traded primarily by individual investors in US market. Refer to Weiss (1989), Lee, Shleifer, and Thaler (1991) and Gemmill and Thomas (2002).

than is its price, so the movement of the FSP should follow the movement of the fund's NAV, not vice-versa.

Pontiff (1995) uses domestic closed-end fund and Hardouvelis et al. (1994), Bennett (2002) and Lee and Hong (2002) use country funds to test the lead-lag relation between NAV and FSP. All their results show that changes to the discount or premium tend to be dominated by the adjustment of the FSP toward the NAV rather than the adjustment of the NAV toward the FSP. These conclusions are consistent with the economic propositions that a fund's NAV is a more accurate measure of its fundamental value than the fund's price.

We replicate the Granger causality test (Granger, 1969) to explore the lead-lag relationships in our closed-end fund data. We use a unit root test to examine whether the time series are stationary. For reasons of parsimony, we do not display the table of results of the unit root test. When our sample data are inputted in return form, the results reveal that no sample funds have unit roots.[3] This means that the time series are all stationary. Because the time series of the data are stationary, we do not need use a co-integration test before proceeding to explore the Granger causality.

Table 2.4 presents the results of the Granger causality. We run a VAR (vector auto-regression) model for the individual funds. The lengths of the lags shown in the column of Lags in Table 2.4 are chosen by the AIC (Akaike Information Criterion) and SBC (Schwartz Bayesian Criterion) before running the VAR model.

[Insert Table 2.4 around here]

As stated earlier, we can invoke economic reasoning to suggest that the NAV will affect the FSP, and it is less meaningful for the FSP to affect the NAV. The reason is

[3] The results are available upon request.

that, because the NAV is the fundamental value of the fund, investors in such funds usually refer to the past NAV, especially the NAV of the last preceding trading day, to value the fund share. Conversely, the NAV is the reflection of the performance of the fund manager, and it is assumed that she/he does not need to refer to the fund price to arrange or rebalance the portfolio.

The results shown for sub-period one of Table 2.4 reveal that there are uni-directional relationships from the NAV to the FSP for five funds, while no fund is shown to have uni-directional influences from the FSP to the NAV. For fund F12, the data show bi-directional influences from the NAV to the FSP and vice versa.

For sub-period two, F4, F9 and F21 show uni-directional impact from NAV to the FSP while F18 shows a uni-directional influence from the FSP to the NAV. F11 and F19 show bi-directional influences. In sum, we find that where a significant Granger causality is established, its direction is from the NAV to the FSP, as expected. There is only one fund in the sample showing a significant Granger causality from the FSP to the NAV, in violation of our expectations.

2.5.3.3 How NAV affect FSP

From the last sub-section, we know that changes in the FSP are driven by the changes in the NAV. We run the regression model shown in Table 2.5 for each individual fund to test for the lagged effects of the NAV on the FSP. The dependent variable is defined as the return of the FSP and the explanatory variables are the lagged returns of the NAV. The lagged returns of the FSP and the contemporaneous and lagged return of the market are also included, and are thought of as control variables. The results are shown on Table 2.5.

[Insert Table 2.5 around here]

As shown in Table 2.5, all the first lagged returns of the NAV for all funds are positively significant at the 5% level for both sub-periods one and two. We add the first lagged return of the NAV as a control variable to the regression of return of the FSP, regressed on the information dummy variables in Table 2.6 because the empirical results show that the first lagged NAV will affect the fund price.

2.5.4. The information effects on return of NAV and Return of FSP

2.5.4.1 Regression analysis

In Table 2.6, we show the results of estimating the index model with the value-weighted discount as a dependent variable for each sub-period. We also estimate two models with the return of the FSP and the return of the NAV as dependent variables for each fund for the different sub-periods. The first row of Table 2.6 shows that Event one has a positive significant effect (at the 5% confidence level) on the value-weighted discount in sub-period one, whereas Event two in sub-period one and Event three and four in sub-period two do not show any significant effects.

[Insert Table 2.6 around here]

For sub-period one, the coefficients for the impact of Event one and Event two are all insignificant. Event one has negative coefficients for the returns of the FSP and the NAV in all but three funds out of sixteen. Event two has positive coefficients for both returns for eleven out of sixteen funds. In sub-period two, the coefficients of Event three are all negatively significant to both returns for four out of nine funds. Furthermore, there are significant effects to the R^{NAV} for one fund and to the R^{P} for one fund. The coefficients for Event four show all positive figures, and the effects are significant effects for both returns for five funds out of nine. Furthermore, the effects to the R^{NAV} are significant in only three funds. The results in Table 2.6 reflect the condition of general form in the theoretical model, in section 2.3, which means using the theory of investors' sentiment to explain empirical phenomena might be necessary.

We apply the concept of the *basis* between the spot price and the futures price to analyze the relation between the R^{NAV} and the R^P. The value-weighted discount can be seen as analogous to the basis in futures. The fact that all coefficients for the effect of events on the value-weighted discount were positive means that the magnitude of the discounts engendered by the events becomes larger. We want to present the meaning of the positive effect of the information on the value-weighted discount by invoking the concept of the basis from futures contracts. We shall try to use the basis to explain the empirical results of the discounts extant in our sample funds.

The discount is calculated as $Ln(\frac{P}{NAV})$. In the presence of a discount, i.e. if *P* is smaller than *NAV*, then, the ratio $Ln(\frac{P}{NAV})$ is negative. When *P* is larger than *NAV*, i.e., in the presence of a premium, the measure $Ln(\frac{P}{NAV})$ is positive. When the discount (*P* less than *NAV*) becomes larger, we can use three possible explanations.

First possibility: The *P* and the *NAV* move inversely

Second possibility: They both move in the same direction, down, but the speed of the down-movement of the *P* is larger than that of the *NAV*.

Third possibility: They both move in the same direction, namely up, but the up-speed of the *P* is lower than the speed of the *NAV*.

These three possible reasons are graphed on Panel A through C, Figure 2.1, which reveal the market efficiency. The three panels in Figure 2.1 show the three possibilities in the order listed above. However from Table 2.6, we already have some relevant results, and they may shed some light on the second and third possibility. Table 2.6 shows the effect of the information shocks on the VWDISC. We found all coefficients to be positive. This means that, when there are information shocks, the discounts become larger.

[Insert Figure 2.1 around here]

Inspecting these results on a fund-by-fund basis, we found that the PRC's movements, denoted by Event one and Event three, have negative coefficients to both R^{NAV} and R^{P}, except for three funds in sub-period one. Of these three funds, one fund shows positive effects for both returns, and two funds move in the opposite direction for both returns. As to those negative coefficients, the down speeds of the R^{P} are larger than the speeds for the R^{NAV} for each fund, except for F6 in sub-period one.

When focusing on the Presidential elections in Taiwan, denoted as Event two and Event four in our study, we find that they all have positive coefficients to both returns, except for four funds in sub-period one. As to those positive coefficients for Event two and Event four: In most funds the magnitude of the R^{P} is smaller than the magnitude of the R^{NAV} except for seven funds in sub-period one and three funds in sub-period two.

In sub-period one, although two funds show both returns in a direction which is contrary to expectations, they are in line with Panel A in Figure 2.1. Fund F9 has negative coefficients, and it exhibits a magnitude of the R^{P} which is larger than that of the R^{NAV}. This result can be explained by Panel B in Figure 2.1. However the opposite coefficients of both returns for F11 and F12 are inconsistent with the positive coefficients of the value-weighted discount. This means that the magnitude of the discount should be greater by events shocks.

Under the condition of discount, if the information shock to R^P is positive and the information shock to R^{NAV} is negative, the discount will be smaller or become premium. This phenomenon is graphed in Panel D, Figure 2.1. Hence, Panel D reveals the investors' sentiment.

In summary, Table 2.6 shows that, with a few exceptions, the effect of the information shocks to R^P and R^{NAV} are of a sign which is consistent with the expectations. It is noteworthy that for the same information shock, (e.g. Event two) the dummy coefficients of both returns show opposite effects for four funds. We have situations in which the event shock affects negatively the R^P and positively the R^{NAV}, or the event shock negatively affecting the R^{NAV} and positively affecting the R^P. Except for the asymmetrical effects of event shocks for some funds, the results of Table 2.6 are also consistent with the reasoning about value-weighted discount we discussed above.

2.5.4.2 Do FSP and NAV respond to same information with same magnitude?

As results shown in section 2.3, the derivation of the theoretical model in section 2.3 shows that under the same information shock the elasticity of FSP to event and the elasticity of NAV to event should be the same. De Long et al. (1990) and Lee et al. (1991) have explored one possible explanation of the closed-end fund puzzle based on a model of noise trading, an argument that is inconsistent with the efficient markets hypothesis (Dimson and Minio-Kozerski, 1999). Zweig (1973) is the first one to suggest that fund price might reflect the expectations of individual investors, while NAV is the results of portfolio managed by fund managers (Boudreaux, 1973; Lee et al., 1990). We suspect the information effect to fund price and NAV might be different because of different investors, which include individual investors and institutional investors. The noise trading theory, asymmetrical effect of information shock to FSP and NAV, is inconsistent with the market efficiency model, symmetrical information effect to FSP and NAV. To provide more evidence between the two theories, we further do a T-test for both coefficients of FSP and NAV form the results of Table 2.7 according to events.

[Insert Table 2.7 around here]

The null hypothesizes in Table 2.7 are that the information coefficients between R^P and R^{NAV} are the same according to different events. As the results reveal, the information coefficients of $\mathrm{R}^{\mathrm{NAV}}$ and R^{P} have significant deviate information effect under Event one (PRC military operation), which is consistent with the investors' sentiment hypothesis (De Long et al., 1990 and Lee et al., 1991). The results from other three events show insignificant deviate information effect, which are in line with the theory of market efficiency. One possible conjecture to the insignificant deviate information effect between R^{NAV} and R^P is that the information shocks for Event two, Event three and Event four first affect Taiwan stock market and the changes of R^{NAV} and R^P are symmetrically followed by the changes of the market.

Ignoring the assumption of the normal distribution for the data, we also employ nonparametric statistics to test the symmetrical information effects on FSP and NAV. The results, shown on Table B in the APPENDIX B, are consistent with the results from T-test. In Table B, the results from either Sign Test or Test of Wilcoxon Sign-rank all show that Event one show significantly deviate information effect, and the other three events show insignificantly deviate information effect.

2.6 Summary Remark

In this study, we try to resolve the puzzle between the theory of market efficiency and the theory of investors' sentiment using the merit of closed-end fund data in emerging market, Taiwan stock market. First, we develop a theoretical model to show that given the supplies of underlying assets and fund shares being fixed and equal, the elasticity of underlying asset to the salient information shock is different to the elasticity of fund price to the same information shock. The theoretical model do not support to the theory of market efficiency. Secondly, we try to test two major hypothesizes. Hypothesis I is that return of FSP does not be affected by return of NAV. Hypothesis II assume that the directions affected by information shock have the same sign and return of FSP and return of NAV have symmetrical information effect (same magnitude) under the same information shock.

As to hypothesis I, we observe that from the results of Granger causality there reveal not strong but with some evidences to support return of NAV affecting to return of FSP. The results of Granger causality reveal that in sub-period one there are five funds with uni-direction from the return of NAV Granger causing to the return of FSP in 16 sample funds. No funds are shown return of FSP Granger causing to return of NAV, however, one fund is shown bi-directional Granger causality in sub-period one. In sub-period two, we observe three funds showing return of NAV Granger causing to return of FSP, one fund showing return of fund price Granger causing to return of NAV, and two funds showing bi-directional Granger causality. According to the regression analysis, we have the results to support that the one lagged return of NAV has significant effect to return of FSP for all funds either in sub-period one or in sub-period two.

For hypothesis I, we observe that return of FSP and return of NAV go along with the same direction and the lagged one return of NAV significantly affect the return of FSP. As for hypothesis II, the information shocks to return of FSP and return of NAV mostly have the same sign effect with some exceptions. The exceptions include four funds have the opposite effect for Event two, either information shock negatively affecting to return of FSP and positively affecting to return of NAV, or information shock negatively affecting to return of NAV and positively affecting to return of FSP. Furthermore, we find that the information coefficients of R^{NAV} and R^{P} have significantly deviate information effect under Event one, which is consistent with the theory of investors' sentiment (De Long et al., 1990 and Lee et al., 1991). However, the results from other three events show insignificantly deviate information effects, which are consistent with the theory of market efficiency. One possible explanation to the insignificant deviate information effect between R^{NAV} and R^{P} is that the information shocks for Event two through Event four affect Taiwan stock market and then the market also affects return of FSP and return of NAV symmetrically. Hence, the changes of R^{NAV} and R^{P} are followed by the changes of the market.

In summary, we employ the merits of dual pricing characteristics of closed-end funds and use the data from Taiwan market, an emerging market, trying to resolve the puzzle of the theory of market efficiency and the theory of investors' sentiment. We have the results that one event supports the theory of investors' sentiment and three events support the theory of market efficiency. The results also show that the return on FSP and the return on NAV move in the same direction and the impact of information shocks to the return of FSP and return of NAV have mostly the same sign.

From the above, we have the results of information effect on the closed-end domestic funds from Taiwan. Under the identical market for NAV and FSP, the results show that even though the market efficiency is corroborated by three out of four events, the remaining one event out of four is consistent with investors' sentiment. Furthermore, in the next chapter we try to resolve what the information effects are on the valuation of closed-end country funds, which NAV and FSP are valued in two different entities/markets.

Figure 2.1: The Information Effect on Closed-end Fund Discount.

All four panels show the conditions of discounts, which means P is less than NAV. The positive information effect of discount means the magnitude of discount becoming larger by information shock. The negative information effect of discount means P and NAV moving in the opposite directions. Panel A represents P going oppositely with NAV, the magnitude of discount becoming larger. Panel B represents P and NAV go along with the same direction of downside and the down speed of P is larger than that of NAV, the magnitude of discount becoming larger. Panel C represents P and NAV go along with the same direction of upside and the up speed of P is less than that of NAV, the magnitude of discount becoming larger. Panel D represents P and NAV move in the opposite direction under discount.

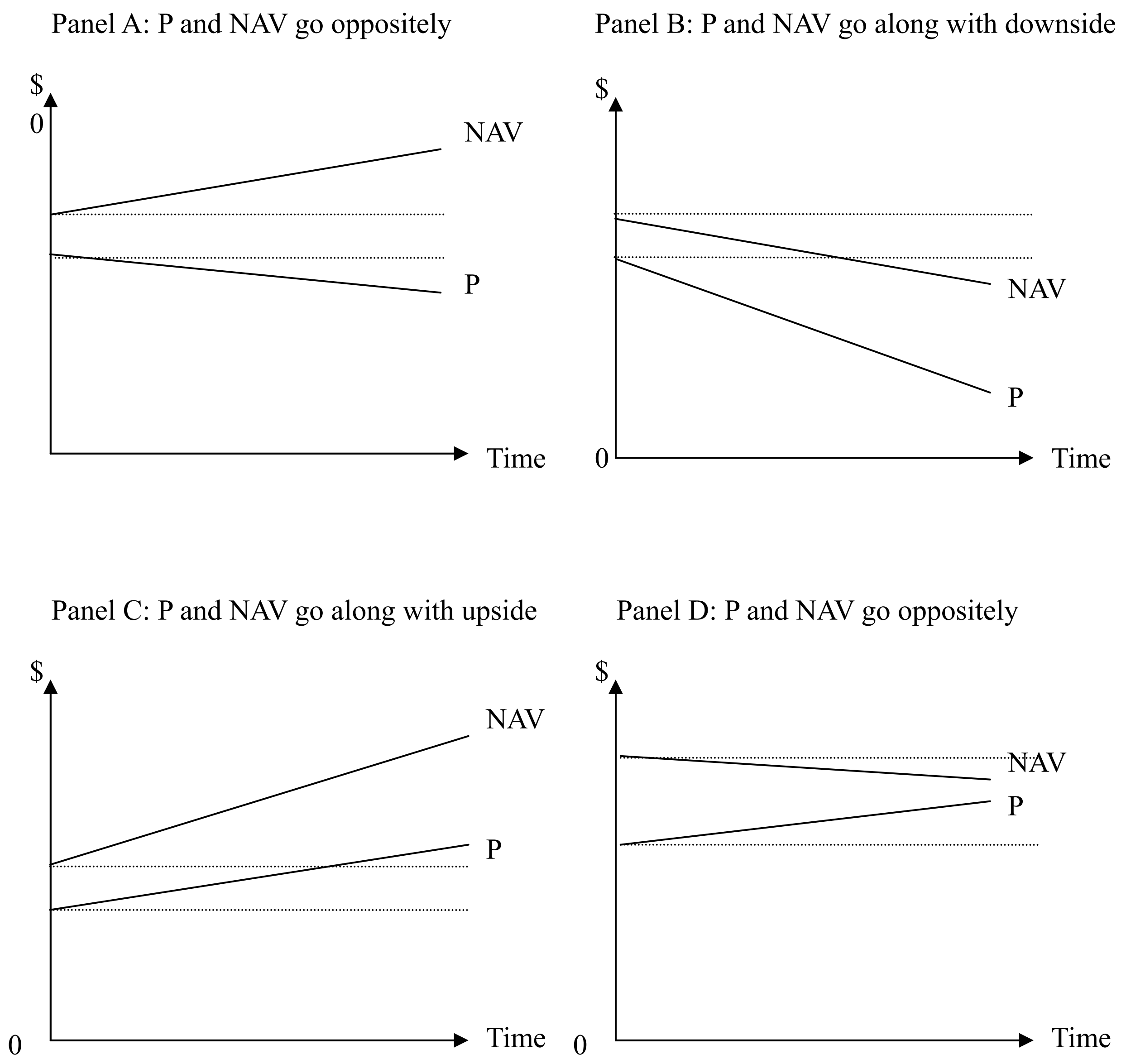

Table 2.1
Summary Statistics

This table is consisted of two panels. Panel A is for fund samples from 1994/01/03 to 1997/05/31 and Panel B is for fund samples from 1998/11/27 to 2000/04/12. For each fund code, the first row is the summary statistics of return of fund price, R^P, and the second row is the summary statistics of return of net asset value, R^{NAV}. The last row for every panel is summary statistics of return of Taiwan Stock Exchange, R^M. Fund codes are defined in the Appendix A.

Fund Code	Returns	Obs	Mean	Std Devi.	Maximum	Minimum	Median
Panel A: Sub-period One（1993/6/26-1997/5/31）							
F1	R^P	203	0.0029	0.0435	0.1760	-0.2131	0.0041
	R^{NAV}	203	0.0027	0.0339	0.1200	-0.1396	0.0058
F2	R^P	203	0.0026	0.0522	0.2956	-0.2692	0.0000
	R^{NAV}	203	0.0017	0.0386	0.1467	-0.2061	0.0033
F3	R^P	203	0.0028	0.0397	0.1782	-0.2864	0.0000
	R^{NAV}	203	0.0024	0.0360	0.1174	-0.2626	0.0032
F4	R^P	203	0.0015	0.0403	0.1503	-0.2883	0.0000
	R^{NAV}	203	0.0014	0.0346	0.0919	-0.2614	0.0030
F5	R^P	203	0.0040	0.0475	0.2126	-0.2268	0.0038
	R^{NAV}	203	0.0032	0.0383	0.1396	-0.1709	0.0042
F6	R^P	203	0.0038	0.0431	0.1713	-0.2273	0.0000
	R^{NAV}	203	0.0026	0.0395	0.1345	-0.1792	0.0042
F7	R^P	203	0.0042	0.0427	0.2000	-0.2009	0.0000
	R^{NAV}	203	0.0037	0.0357	0.1344	-0.1715	0.0083
F8	R^P	203	0.0041	0.0413	0.1775	-0.1828	0.0056
	R^{NAV}	203	0.0034	0.0338	0.1230	-0.1267	0.0050
F9	R^P	203	0.0040	0.0436	0.2541	-0.1772	0.0000
	R^{NAV}	203	0.0037	0.0304	0.1001	-0.1026	0.0040
F10	R^P	203	0.0031	0.0452	0.2500	-0.3147	0.0039
	R^{NAV}	203	0.0023	0.0380	0.1025	-0.2826	0.0036
F11	R^P	203	0.0029	0.0389	0.1486	-0.1279	0.0000
	R^{NAV}	203	0.0027	0.0330	0.1227	-0.1147	0.0042
F12	R^P	203	0.0036	0.0506	0.2941	-0.2172	0.0049
	R^{NAV}	203	0.0031	0.0382	0.1078	-0.1792	0.0049
F13	R^P	203	0.0022	0.0391	0.1770	-0.2227	0.0000
	R^{NAV}	203	0.0019	0.0339	0.0915	-0.2016	0.0038
F14	R^P	203	0.0025	0.3943	0.1947	-0.1975	0.0042
	R^{NAV}	203	0.0018	0.0308	0.0961	-0.1440	0.0037
F15	R^P	203	0.0045	0.0355	0.1660	-0.1200	0.0044
	R^{NAV}	203	0.0035	0.0321	0.1468	-0.1134	0.0041
F16	R^P	203	0.0022	0.0370	0.1552	-0.0897	0.0000
	R^{NAV}	203	0.0011	0.0338	0.1411	-0.0853	0.0022
Market	R^M	203	0.0038	0.0338	0.1410	-0.1290	0.0048

Table 2.1
Summary Statistics
(continued)

Fund Code	Returns	Obs	Mean	Std Devi.	Maximum	Minimum	Median
Panel B: Sub-period Two（1998/11/27-2000/4/12）							
F1	R^P	72	0.0059	0.0400	0.0984	-0.1051	0.0070
	R^{NAV}	72	0.0031	0.0407	0.1146	-0.1025	0.0099
F4	R^P	72	0.0084	0.0435	0.1527	-0.1150	0.0071
	R^{NAV}	72	0.0087	0.0430	0.1549	-0.1198	0.0123
F9	R^P	72	0.0092	0.0413	0.1136	-0.1714	0.0088
	R^{NAV}	72	0.0050	0.0374	0.1390	-0.1119	0.0058
F11	R^P	72	0.0009	0.0513	0.1188	-0.2719	0.0000
	R^{NAV}	72	0.0023	0.0551	0.1625	-0.2551	0.0074
F17	R^P	72	0.0045	0.0522	0.1558	-0.2038	0.0096
	R^{NAV}	72	0.0045	0.0465	0.1136	-0.1806	0.0140
F18	R^P	72	0.0004	0.0442	0.1124	-0.1882	0.0000
	R^{NAV}	72	0.0017	0.0405	0.1009	-0.1424	0.0026
F19	R^P	72	0.0044	0.0422	0.1347	-0.1198	0.0072
	R^{NAV}	72	0.0021	0.0426	0.1421	-0.1376	0.0093
F20	R^P	72	0.0097	0.0609	0.2098	-0.2152	0.0096
	R^{NAV}	72	0.0105	0.0521	0.2070	-0.1799	0.0079
F21	R^P	72	0.0071	0.0480	0.1293	-0.1679	0.0060
	R^{NAV}	72	0.0054	0.0365	0.1181	-0.1032	0.0047
Market	R^M	72	0.0049	0.0411	0.0821	-0.1385	0.0077

Table 2.2
Comparison of Returns for Sailent Political Events Between Taiwan and PRC

PRC represents People's Republic of China. We have two kinds of events that are sailent for Taiwan stcok market. The first one is PRC's actions, which are by military operation or by words, to Taiwan. The second one is Taiwan's Presidential elections. This table is arranged by the order of PRC actions followed by Taiwan's election events,which are arranged by Event 1 through Event 4. The second colume reports the return of net asset value (R^{NAV}), the third column reports the return of fund price (R^{P}), the fourth column reports Taiwan stock market return (R^{M}), and the last column reports the absolute value of the difference between return of net asset value and return of fund price ($|R^{NAV}$-$R^{P}|$).

	R^{NAV}	R^{P}	R^{M}	$\lvert R^{NAV}-R^{P}\rvert$
Panel A: Sub-period One（1994/01/03-1997/05/31）				
Event 1: PRC military operations(1996/03/08-03/25)	0.0027	0.0028	0.0080	0.0001
Event 2: Presidential election in Taiwan(1996/03/23)	-0.0034	0.0005	-0.0068	0.0039
Mean Return including event samples	0.0026	0.0032	0.0038	0.0006
Median Return including event samples	0.0045	0.0033	0.0048	0.0012
Mean Return excluding event samples	0.0029	0.0032	0.0034	0.0003
Median Return excluding event samples	0.0048	0.0033	0.0044	0.0015
Numbers of observations	3248	3248	3248	3248
Panel B: Sub-period Two（1998/11/27-2000/04/12）				
Event 3: Zhu, PRC premier, warns Taiwan voters(2000/03/10-03/17)	-0.0974	-0.104	-0.0707	0.0066
Event 4: Presidential election in Taiwan(2000/03/18)	0.1392	0.1323	0.0821	0.0069
Mean Return including event samples	0.0048	0.0056	0.0036	0.0008
Median Return including event samples	0.0079	0.0089	0.0077	0.0010
Mean Return excluding event samples	0.0044	0.0069	0.0048	0.0025
Median Return excluding event samples	0.0079	0.0089	0.0087	0.0010
Numbers of observations	648	648	648	648

Table 2.3

Correlation of Discount Between Individual Fund and Value-weighted Discounts (VWDISC)

This table includes two panels. Panel A is for subperiod one and Panel B is for subperiod two. The pairwise Pearson correlations of discount between individual fund and VWDISC, Value-weighted Discount, for subperiod one and two are shown in this table. The funds codes are as Table A in the Appendix A. The p-values for a two tailed test of the null hypothesis of zero correlation are shown in the parentheses. The correlations of discount between individual funds are not reported here. Including all correlations, there are 126 correlations are significant among 136 correlations for subperiod one and 36 correlations are significant among 45 correlations. Significant level is at 5%. All others are insignificant. VWDISC takes the form as follows:

$$VWDISC_t = \sum_{i=1}^{n} W_{i,t} \times DISC_{i,t}$$

$$W_{i,t} = \frac{NAV_{i,t}}{\sum_{i=1}^{n} NAV_{i,t}} \qquad DISC_{i,t} = \ln\left(\frac{P_{i,t}}{NAV_{i,t}}\right)$$

W_i means value weight of fund i and is computed as for fund i at time t. DISC is discount.

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16
Panel A: Subperiod One(1994/01/03-1997/05/31)																
VWDISC	0.6226	0.6727	0.7947	0.7329	0.8269	0.6446	0.7898	0.7878	0.4510	0.7246	0.5727	0.6808	0.8757	0.3864	0.7242	0.7417
	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**	(0.0000)**
No. of obs.	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203	203

	F1	F4	F9	F11	F17	F18	F19	F20	F21
Panel B: Subperiod Two(1998/11/27-2000/04/12)									
VWDISC	0.8146	0.2445	0.8147	-0.3005	-0.2491	-0.0557	0.8491	-0.0552	0.8866
	(0.0000)**	(0.0385)**	(0.0000)**	(0.0103)**	(0.0348)**	(0.6421)	(0.0000)**	(0.6452)	(0.0000)**
No. of obs.	72	72	72	72	72	72	72	72	72

Table 2.4
Test of Granger Causality

F-Statistics and P-value for testing of Granger causality are shown in this table. ** means significant at 5% level and * means significant at 10% level. The VAR (Vector Auto-Regression) model for R^P and R^{NAV} is as follow:

$$R^{P}_{i,t} = a_{i1} + \sum_{l=1}^{m} b_{i1,l} * R^{NAV}_{i,t-l} + \sum_{l=1}^{n} c_{i1,l} * R^{P}_{i,t-l} + m_{i1} * R^{M}_{t} + \varepsilon_{i1,t}$$

$$R^{NAV}_{i,t} = a_{i2} + \sum_{l=1}^{m} b_{i2,l} * R^{NAV}_{i,t-l} + \sum_{l=1}^{n} c_{i2,l} * R^{P}_{i,t-l} + m_{i2} * R^{M}_{t} + \varepsilon_{i2,t}$$

R^{NAV} is return of net asset value; R^P is return of fund price; R^M is market return. The lengths of lags for m and n are chosen by AIC and SBC, and they are shown on the columns of Lags.

Funds Code	Dependent Variables	Independent Variables											
		Subperiod One (1994/01/03-1997/5/31)						Subperiod Two （1998/11/27-2000/4/12）					
				R^P		R^{NAV}				R^P		R^{NAV}	
		Lags	Obs.	F-statistic	P-value	F-statistic	P-value	Lags	Obs.	F-statistic	P-value	F-statistic	P-value
F1	R^P	8	203	0.6145	0.7649	0.3021	0.9644	1	72	0.1514	0.6984	0.0459	0.8310
	R^{NAV}		203	0.5627	0.8073	0.4414	0.8949		72	0.0043	0.9452	0.0156	0.9010
F2	R^P	8	203	171.4684	0.0000 **	5.2572	0.0000 **						
	R^{NAV}		203	0.7787	0.6220	1.7386	0.0924 *						
F3	R^P	4	203	1.0989	0.3585	0.7398	0.5659						
	R^{NAV}		203	1.0849	0.3653	1.1374	0.3402						
F4	R^P	8	203	1.0878	0.3737	0.7455	0.6512	4	72	2.9679	0.0267 **	3.1923	0.0194 **
	R^{NAV}		203	1.2854	0.2537	0.6726	0.7152		72	1.7547	0.1504	1.0855	0.3722
F5	R^P	4	203	1.1661	0.3272	0.5523	0.6976						
	R^{NAV}		203	0.2483	0.9104	0.2516	0.9084						
F6	R^P	4	203	0.2752	0.8937	0.0666	0.9918						
	R^{NAV}		203	0.5400	0.7065	1.5585	0.1871						
F7	R^P	1	203	10.6191	0.0013 **	5.9535	0.0157 **						
	R^{NAV}		203	1.4624	0.2280	0.0785	0.7796						
F8	R^P	1	203	8.7998	0.0034 **	5.1947	0.0237 **						
	R^{NAV}		203	0.3744	0.5413	0.1063	0.7448						
F9	R^P	1	203	1.8594	0.1742	1.1319	0.2887	4	72	3.1162	0.0217 **	4.4876	0.0032 **
	R^{NAV}		203	0.0167	0.8974	2.4698	0.1177		72	1.8890	0.1246	3.0526	0.0237 **

Table 2.4
Test of Granger Causality
(continued)

Funds Code	Dependent Variables	Independent Variables											
		Subperiod One（1994/01/03-1997/5/31）						Subperiod Two （1998/11/27-2000/4/12）					
				R^P		R^{NAV}				R^P		R^{NAV}	
		Lags	Obs.	F-statistic	P-value	F-statistic	P-value	Lags	Obs.	F-statistic	P-value	F-statistic	P-value
F10	R^P	1	203	10.2649	0.0016 **	8.2513	0.0045 **						
	R^{NAV}		203	2.9585	0.0870	0.5142	0.4742						
F11	R^P	4	203	2.4577	0.0471	1.8442	0.1221	2	72	4.3334	0.0172 **	5.7687	0.0050 **
	R^{NAV}		203	0.7459	0.5619	0.4015	0.8074		72	3.8309	0.0268 **	4.8046	0.0113 **
F12	R^P	8	203	2.3462	0.0202 **	2.5390	0.0122 **						
	R^{NAV}		203	2.2773	0.0242 **	1.3809	0.2077						
F13	R^P	1	203	0.4033	0.5261	0.1004	0.7517						
	R^{NAV}		203	0.8850	0.3480	2.1082	0.1480						
F14	R^P	8	203	6.4850	0.0000 **	4.7959	0.0000 **						
	R^{NAV}		203	2.3340	0.2087	1.7941	0.0809 *						
F15	R^P	1	203	2.9022	0.0900 *	2.3769	0.1247						
	R^{NAV}		203	0.0254	0.8735	1.9933	0.1596						
F16	R^P	1	203	3.8887	0.0500 **	2.4585	0.1185						
	R^{NAV}		203	0.2726	0.6022	0.0826	0.7741						
F17	R^P							1	72	0.8658	0.3555	0.4643	0.4980
	R^{NAV}								72	0.4201	0.5191	0.5610	0.4565
F18	R^P							1	72	5.0011	0.0287 **	1.5281	0.2207
	R^{NAV}								72	7.6589	0.0073 **	4.4560	0.0385 **
F19	R^P							1	72	4.0262	0.0488 **	3.4283	0.0685 *
	R^{NAV}								72	5.0465	0.0280 **	2.9907	0.0883 *
F20	R^P							1	72	0.0531	0.8185	0.0250	0.8748
	R^{NAV}								72	0.5582	0.4576	0.0371	0.8478
F21	R^P							4	72	1.9810	0.1094	6.7918	0.0001 **
	R^{NAV}								72	0.3201	0.8634	1.3524	0.2617

Table 2.5
The Relation Between Fund Sahre Price and NAV

This table shows coefficients of regressions for each sample fund in panel A and panel B. The results of constant term are not shown. Dependent variable is $R^{P}{}_{t}$, return of fund price, and independent varialbes are $R^{NAV}{}_{t-1}$, $R^{NAV}{}_{t-2}$ and $R^{NAV}{}_{t-3}$. The control variables are $R^{P}{}_{t-1}$, $R^{M}{}_{t}$ and $R^{M}{}_{t-1}$. R^{NAV} is return of net asset value and R^{M} is market return. P-values are in the parentheses. **is siginificant at 5% level and * is siginificant at 10% level. The regression models are as follow for each fund and each subperiod:

$$R_{i,t}^{P} = a_{i0} + \sum_{l=1}^{3} b_{i,l} \times R_{i,t-l}^{NAV} + c_i \times R_{i,t-1}^{P} + m_{i1} \times R_{t}^{M} + m_{i2} \times R_{t-1}^{M} + \varepsilon_{i,t}$$

	Panel A: Subperiod One （1994/01/03-1997/5/31）								Panel B: Subperiod Two （1998/11/27-2000/4/12）							
Fund code	R^{NAV}_{t-1}	R^{NAV}_{t-2}	R^{NAV}_{t-3}	R^{P}_{t-1}	R^{M}_{t}	R^{M}_{t-1}	R^2	Obs.	R^{NAV}_{t-1}	R^{NAV}_{t-2}	R^{NAV}_{t-3}	R^{P}_{t-1}	R^{M}_{t}	R^{M}_{t-1}	R^2	Obs.
F1	1.0654	0.0365	0.0373	-0.2297	0.0507	0.0202	0.7796	203	0.8739	0.0197	0.0332	-0.1372	0.0774	0.0994	0.9084	72
	(0.0000)**	(0.0096)**	(0.3940)	(0.0012)**	(0.5918)	(0.8287)			(0.0000)**	(0.8760)	(0.4017)	(0.2783)	(0.2141)	(0.1588)		
F2	1.1222	0.1013	0.0134	-0.0155	0.1394	0.0644	0.7904	203								
	(0.0000)**	(0.3051)	(0.7720)	(0.8310)	(0.0305)**	(0.3201)										
F3	0.9926	0.3518	0.0317	-0.3473	0.0491	0.0260	0.8623	203								
	(0.0000)**	(0.0000)**	(0.2834)	(0.0000)**	(0.3036)	(0.5847)										
F4	1.0505	0.1715	0.0092	-0.1467	-0.0202	0.0148	0.7866	203	0.9146	0.3303	0.0560	-0.1735	0.0429	-0.1424	0.8708	72
	(0.0000)**	(0.0840)*	(0.8143)	(0.0432)**	(0.7571)	(0.8176)			(0.0000)**	(0.0223)*	(0.2377)	(0.1616)	(0.5782)	(0.1133)		
F5	1.0562	0.3249	0.0480	-0.2171	0.0698	-0.0520	0.8032	203	0.8709	0.2650	-0.0223	-0.2498	0.0577	0.0140	0.7424	72
	(0.0000)**	(0.0007)**	(0.2344)	(0.0021)**	(0.2952)	(0.4353)			(0.0000)**	(0.1456)	(0.7548)	(0.0476)**	(0.6052)	(0.9163)		
F6	0.9850	0.2569	0.0038	-0.2101	-0.0115	-0.0064	0.7820	203								
	(0.0000)**	(0.0048)**	(0.9187)	(0.0033)**	(0.8656)	(0.9247)										
F7	1.0993	0.4235	0.0371	-0.2454	-0.0392	-0.1760	0.8133	203								
	(0.0000)**	(0.0001)**	(0.3242)	(0.0005)**	(0.6166)	(0.0252)**										
F8	0.9535	0.3071	0.0547	-0.2428	0.0955	-0.0137	0.7504	203								
	(0.0000)**	(0.0025)**	(0.2185)	(0.0006)**	(0.2019)	(0.8552)										
F9	0.6024	0.1289	0.0336	-0.1132	0.5485	0.0579	0.6711	203								
	(0.0000)**	(0.2826)	(0.5759)	(0.1140)	(0.0000)**	(0.5962)										
F10	0.9502	0.3314	0.0416	-0.2077	0.1264	-0.0494	0.7800	203								
	(0.0000)**	(0.0003)**	(0.3084)	(0.0037)**	(0.0595)*	(0.4570)										
F11	0.8889	0.1223	-0.0187	-0.1106	0.1281	0.0363	0.7352	203	0.8836	0.1775	0.0099	-0.0661	-0.0149	-0.0321	0.8806	72
	(0.0000)**	(0.2915)	(0.6692)	(0.1213)	(0.1837)	(0.7047)			(0.0000)**	(0.1768)	(0.8225)	(0.6055)	(0.8477)	(0.7043)		
F12	1.0907	0.0593	0.0617	-0.0632	0.1131	0.0176	0.7796	203								
	(0.0000)**	(0.5592)	(0.1725)	(0.3805)	(0.1207)	(0.8076)										

Table 2.5
The Relation Between Fund Share Price and NAV
(continued)

	Panel A: Subperiod One （1994/01/03-1997/5/31）								Panel B: Subperiod Two （1998/11/27-2000/4/12）							
Fund code	R^{NAV}_{t-1}	R^{NAV}_{t-2}	R^{NAV}_{t-3}	R^{P}_{t-1}	R^{M}_{t}	R^{M}_{t-1}	R^2	Obs.	R^{NAV}_{t-1}	R^{NAV}_{t-2}	R^{NAV}_{t-3}	R^{P}_{t-1}	R^{M}_{t}	R^{M}_{t-1}	R^2	Obs.
F13	1.0171	0.0260	0.0766	-0.0233	-0.0234	0.1176	0.7573	203								72
	(0.0000)**	(0.7832)	(0.0653)*	(0.7413)	(0.7191)	(0.0696)*										
F14	0.7899	0.3111	0.0807	-0.2639	0.2768	0.0722	0.7031	203								
	(0.0000)**	(0.0027)**	(0.1152)	(0.0002)**	(0.0007)**	(0.3783)										
F15	0.6492	0.1420	0.0367	-0.1459	0.2782	0.0479	0.6990	203								
	(0.0000)**	(0.2200)	(0.4103)	(0.0413)**	(0.0066)**	(0.6433)										
F16	0.7292	0.1743	0.0426	-0.1339	0.2309	-0.0199	0.7582	203								
	(0.0000)**	(0.0514)*	(0.2668)	(0.0595)*	(0.0018)**	(0.7916)										
F17									1.0930	-0.0153	0.0053	-0.0864	-0.0336	-0.0424	0.9390	72
									(0.0000)**	(0.9166)	(0.8920)	(0.4875)	(0.4933)	(0.4241)		
F18									0.9234	-0.0413	-0.0395	-0.0614	0.0621	0.0039	0.8417	72
									(0.0000)**	(0.8106)	(0.4939)	(0.6456)	(0.5533)	(0.9746)		
F19									0.9448	0.0725	0.0105	0.0202	-0.0216	-0.0268	0.8803	72
									(0.0000)**	(0.6122)	(0.8138)	(0.8815)	(0.7557)	(0.7089)		
F20									1.0442	-0.1188	0.0136	0.0814	0.0826	0.0751	0.8704	72
									(0.0000)**	(0.4574)	(0.8039)	(0.5463)	(0.4212)	(0.5198)		
F21									0.7222	0.0107	-0.0547	0.1263	0.2811	-0.2282	0.7778	72
									(0.0000)**	(0.9539)	(0.4595)	(0.3160)	(0.0280)**	(0.1424)		

Table 2.6
The Information Effect on Fund Share Price and NAV

This table includes the results of regressions according to value-weighted discount and individual funds. Because we focus on the information effect, the coefficients of information dummy variables are reported, while the other control variables are omitted. The information dummy variables are denoted by D1 and D2. The two dummies represent Event one and Event two for subperiod one, and Event three and Event four for subperiod two. VWDISC is value-weighted discount and R^{P} is return of fund price. R^{NAV} is return of net asset value and R^{M} is market return. The regressions are modeled for subperiod one and two as follows:

$$|VWDISC_t| = d_0 * D1_t + d_1 * D2_t + \sum_{l=0}^{2} b_l * R_{t-l}^{M} + \varepsilon_t$$

$$R_{i,t}^{P} = d_{i0}^{'} * D1_t + d_{i1}^{'} * D2_t + \sum_{l=0}^{2} b_{i,l}^{'} * R_{t-l}^{M} + \sum_{n=1}^{2} c_{i,n}^{'} * R_{i,t-n}^{P} + e_i^{'} * R_{i,t-1}^{NAV} + g_i^{'} * (R_t^{M} * R_{i,t}^{NAV}) + \varepsilon_{i,t}^{'}$$

$$R_{i,t}^{NAV} = d_{i0}^{"} * D1_t + d_{i1}^{"} * D2_t + \sum_{l=0}^{2} b_{i,l}^{"} * R_{t-l}^{M} + \sum_{n=1}^{2} c_{i,n}^{"} * R_{i,t-n}^{NAV} + g_i^{"} * (R_t^{M} * R_{i,t}^{NAV}) + \varepsilon_{i,t}^{"}$$

Funds code	Dependent variables	Subperiod One (1994/01/03-1997/5/31)					Subperiod Two (1998/11/27-2000/4/12)				
		Coefficients of D1 (Event 1)	P-value	Coefficients of D2 (Event 2)	P-value	Obs.	Coefficients of D1 (Event 3)	P-value	Coefficients of D2 (Event 4)	P-value	Obs.
VWDISC	VWDISC	0.2061	(0.0632)*	0.1867	(0.3989)	3248	0.1648	(0.3043)	0.1397	(0.3971)	648
F1	R^{P}	-0.0063	(0.5802)	0.0052	(0.6394)	203	-0.0234	(0.3552)	0.0342	(0.3871)	72
	R^{NAV}	-0.0056	(0.6132)	0.0013	(0.9232)	203	-0.0249	(0.2809)	0.0342	(0.0405)**	72
F2	R^{P}	-0.0152	(0.4986)	-0.0052	(0.9108)	203					
	R^{NAV}	-0.0032	(0.6235)	0.0056	(0.6568)	203					
F3	R^{P}	-0.0071	(0.5538)	0.0059	(0.8126)	203					
	R^{NAV}	-0.0061	(0.6539)	0.0036	(0.8966)	203					
F4	R^{P}	-0.0086	(0.6132)	0.0041	(0.8956)	203	-0.0617	(0.0433)**	0.0083	(0.0014)**	72
	R^{NAV}	-0.0066	(0.5537)	0.0000	(0.9973)	203	-0.0702	(0.02138)**	0.0910	(0.0009)**	72
F5	R^{P}	0.0032	(0.8466)	0.0029	(0.9146)	203					
	R^{NAV}	0.0031	(0.8624)	0.0032	(0.9015)	203					
F6	R^{P}	-0.0151	(0.3655)	0.0012	(0.9613)	203					
	R^{NAV}	-0.0201	(0.1721)	0.0123	(0.6752)	203					
F7	R^{P}	-0.0046	(0.7583)	0.0249	(0.2135)	203					
	R^{NAV}	-0.0041	(0.6213)	0.0042	(0.8465)	203					
F8	R^{P}	-0.0062	(0.7956)	0.0206	(0.4325)	203					
	R^{NAV}	-0.0011	(0.9512)	0.0081	(0.7065)	203					

Table 2.6 (continued)

The Information Effect on Fund Share Price and NAV

Funds code	Dependent variables	Subperiod One （1994/01/03-1997/5/31）					Subperiod Two （1998/11/27-2000/4/12）				
		Coefficients of D1 (Event 1)	P-value	Coefficients of D2 (Event 2)	P-value	Obs.	Coefficients of D1 (Event 3)	P-value	Coefficients of D2 (Event 4)	P-value	Obs.
F9	R^P	-0.0210	(0.4123)	-0.0125	(0.6923)	203	-0.0297	(0.1635)	0.0549	(0.0600)*	72
	R^{NAV}	-0.0063	(0.5432)	-0.0020	(0.9103)	203	-0.0356	(0.0731)*	0.0858	(0.0000)**	72
F10	R^P	-0.0123	(0.5362)	0.0012	(0.9345)	203					
	R^{NAV}	-0.0089	(0.5023)	0.0051	(0.8436)	203					
F11	R^P	-0.0062	(0.6340)	0.0069	(0.8021)	203	-0.0758	(0.0897)*	0.0606	(0.1248)	72
	R^{NAV}	-0.0036	(0.7062)	-0.0010	(0.9385)	203	-0.0453	(0.2057)	0.0681	(0.0483)**	72
F12	R^P	-0.0091	(0.6812)	0.0100	(0.7635)	203					
	R^{NAV}	0.0010	(0.9543)	-0.0069	(0.8026)	203					
F13	R^P	-0.0036	(0.9136)	-0.0069	(0.8344)	203					
	R^{NAV}	0.0001	(0.9948)	0.0086	(0.6989)	203					
F14	R^P	-0.1123	(0.4132)	0.0041	(0.9132)	203					
	R^{NAV}	-0.0089	(0.4516)	0.0010	(0.9362)	203					
F15	R^P	-0.0056	(0.6951)	0.0210	(0.3651)	203					
	R^{NAV}	-0.0031	(0.7053)	0.0115	(0.3965)	203					
F16	R^P	-0.0123	(0.3362)	0.0076	(0.7461)	203					
	R^{NAV}	-0.0108	(0.2364)	0.0094	(0.5910)	203					
F17	R^P						-0.1075	(0.0211)**	0.1036	(0.0256)**	72
	R^{NAV}						-0.0751	(0.0312)**	0.0765	(0.0580)*	72
F18	R^P						-0.0112	(0.5859)	0.0330	(0.2183)	72
	R^{NAV}						-0.0209	(0.3858)	0.0310	(0.2534)	72
F19	R^P						-0.0739	(0.0075)**	0.0812	(0.0059)**	72
	R^{NAV}						-0.0742	(0.0311)**	0.0799	(0.0056)**	72
F20	R^P						-0.1072	(0.0051)**	0.1211	(0.0032)**	72
	R^{NAV}						-0.0971	(0.0011)**	0.1413	(0.0000)**	72
F21	R^P						-0.0021	(0.8623)	0.0256	(0.4886)	72
	R^{NAV}						-0.0215	(0.4032)	0.0439	(0.0065)**	72

Table 2.7

Test for Symmetrical Information Effect on Fund Share Price and NAV

This table shows the results of T-statistics for null hypothesis of coefficients of information effects between R^{NAV} and R^{P} being equal. Event one represents PRC military operations (1996/03/08-03/25). Event two reprensents Presidential election in Taiwan (1996/03/23). Event three represents that Zhu, PRC premier, warns Taiwan voters (2000/03/10-03/17). Event four represents Presidential election in Taiwan (2000/03/18). Sub-period One is from 1994/01/03 to 1997/05/31 and Sub-period Two is from 1998/11/27 to 2000/04/12. ** represents significant at 5% level.

	T statistics	P-value	Obs.
Sub-period One （1994/01/03-1997/5/31）			
Event 1: PRC military operations(1996/03/08-03/25)	2.8867	0.0092 **	32
Event 2: Presidential election in Taiwan(1996/03/23)	0.6958	0.4639	32
Sub-period Two （1998/11/27-2000/4/12）			
Event 3: Zhu, PRC premier, warns Taiwan voters(2000/03/10-03/17)	1.4981	0.1516	18
Event 4: Presidential election in Taiwan(2000/03/18)	0.6544	0.4910	18