

ESSAYS ON CLOSED-END FUNDS:  
INTERNAL VERSUS EXTERNAL MANAGEMENT AND  
INSIDER TRADING

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by

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INTERNAL VS EXTERNAL MANAGEMENT AND INSIDER TRADING

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Christopher K. Wikle

To my parents, Walker and Doris,

Your continued support throughout my academic quest is immeasurable.

To my wife, Mellodie,

Your love, support, and sage wisdom made everything worth it.

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ESSAYS ON CLOSED-END FUNDS:  
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ABSTRACT

This dissertation examines two aspects of closed-end funds (CEF). First, a limited number of these funds maintain the historical management structure of internally allocating resources to investments as opposed to hiring an advisor external to the fund to position and administer the fund. Many in the managed fund universe, such as George Clark, claim shareholders are paying an onerous performance burden by investing in funds with the external management model. While I do find the internally managed funds exhibit significantly lower expense ratios than their externally managed peers, I do not find that these lower expenses translate to lesser discounts from NAV nor do they result in any superior performance except in the longest of horizons. I conclude that claims of an onerous tax inherent in the external management model to be erroneous.

Second, a portion of trading profit from insider trading has been ascribed to an omniscience of firm prospects. Due to a known portfolio of assets and little proprietary knowledge, closed-end funds provide a very stable environment in which to examine insider trading. While I do find significant insider trading relative to the fund's discount, I do not find this to be evidence of any omniscience, but merely a trading strategy based on the mean-reverting nature of the fund discount. This is a trading strategy available to all investors, not merely the insiders. I conclude that some aspects of insider trading regulation and governance reform in the managed fund arena may be overly onerous.

# Chapter 1

## An Introduction to Closed-end Funds

### 1.1 Description

A closed-end fund (CEF) is a pooled investment corporation whose equity shares are listed on an exchange or traded OTC. As with most publicly traded equities, the market price of these shares is a function of supply and demand in the marketplace. The pool of fund assets is invested in financial instruments in compliance with the fund's stated investment goals. As of the end of 2003, CEF assets totaled \$214 B with 45% of this amount in domestic municipal bonds, 26% in domestic taxable bonds, 20% in domestic equity, and the balance deployed globally. The number of managed investment companies (closed- and open-end) in the United States currently exceeds the number of securities listed on the New York Stock Exchange.

I observe a number of differences and similarities between closed- and open-end funds. The major similarity is that both are pooled investment vehicles which offer liquidity and diversification to an investor at a relatively low cost. The net asset value (NAV) of a fund share is the market value of the entire fund's portfolio of securities, minus expenses and liabilities, divided by the total number of outstanding shares. The NAV changes as the total value of the underlying portfolio of securities rises or falls. The major difference between the fund types is that a CEF has a fixed pool of funds for investment while an open-end fund has a pool that varies with investor contributions and withdrawals. While there is a correlation between the value of the CEF shares and the value of the underlying pool of investments, closed-end funds are not "marked to market" as is typical of open-end mutual funds. The amount available for investment by a CEF does not depend on redemptions or

purchases by investors, because the fund does not issue redeemable securities and typically does not offer its securities for sale on an ongoing basis. Therefore, the supply of fund shares for closed-end funds is inelastic and the link of NAV to price is only indirect.<sup>1</sup>

A closed-end fund neither needs to liquidate securities to meet investor demands for cash nor purchase securities to invest the proceeds of investor purchases. For open-end funds these events can frequently trigger additional transactions costs and tax events for investors. A closed-end fund manager can remain fully invested, minimizing cash drag on fund performance. Closed-end funds have other operational differences when compared to open-ended funds. For example, CEFs can utilize leverage in their portfolio structure and can hold a much higher percentage of their fund in illiquid assets. Since CEFs seldom issue or redeem shares at NAV and share prices are not firmly tied to the NAV, CEFs are free to trade and in fact do often trade at prices different from their NAVs. Since these shares trade in the stock market based on investor demand, the fund may trade at a price higher or lower than its NAV. For example, based on a less favorable perception of its underlying portfolio or of the market in which it trades, or a lack of investor knowledge or market recognition, a fund may trade at a share price lower than its NAV. Such a fund's shares are said to be selling at a "discount" to the NAV. A closed-end fund may attempt to increase the demand for its shares by offering a dividend reinvestment plan, engaging in tender offers or instituting a stock repurchase program. The fact that CEFs trade at prices other than NAV while investors freely buy and sell open-end funds at the NAV has been labeled the "closed-end fund puzzle."

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<sup>1</sup> Significant inspiration for the fund description section is adapted from the Investment Company Institute website. [www.ici.org/funds/inv/bro\\_g2\\_ce.html](http://www.ici.org/funds/inv/bro_g2_ce.html).

## 1.2 The History and Life-cycle of Closed-end Funds

Pooled investments have been in existence throughout time, but Abraham van Ketwich is credited with forming the first closed-end investment company, the *Eendragt Maakt Magt* established in Holland in 1774. His aim was to provide small investors an opportunity to diversify<sup>2</sup>. Once fully subscribed, open market purchase of the shares would be the only way an investor could participate. Investors were promised a dividend of four percent, with adjustments depending on the investment income of the portfolio. In addition to this “target distribution policy”, the fund also had the equivalent of a prospectus, a statement of investment policy, a board of directors, and a custodian. Historians cite either the New York Stock Trust (1889) or the Boston Personal Property Trust (1893) as the first U.S. closed-end fund. The Massachusetts Investors Trust (1924) is usually credited as the first open-end, continuous issue and redemption, U.S. fund. Subsequently, this open-end style of capitalization became the dominant form of investment company organization.

CEF shares have a life and structure similar to traditional corporate equity. An IPO raises the funds for investment, shares are traded in the secondary market, additional funds may be raised through additional equity or rights offerings, and “delisting” can occur through open-ending or liquidation of the assets. A fund is structured with a board of directors whose major function is to contract with and monitor an investment advisor selected to manage the investments of the fund.

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<sup>2</sup> See Rouwenhorst (2004).

### 1.2.1 Birth of a Fund

Closed-end funds are offered to the public through a traditional initial public offering (IPO) process. While IPOs of industrial firms are often significantly underpriced at offering relative to subsequent open-market trading, CEF IPOs are usually issued at a premium of up to 10% above asset values, reflecting underwriting fees and start-up costs. This premium above net asset value declines only modestly for a short period of time, most likely due to underwriter support. Subsequently, the premium declines substantially until the “traditional” closed-end fund discount remains. Weiss Hanley, Lee and Seguin (1996) find an average five-month CEF IPO return of -12.6% as opposed to +18% for a typical industrial IPO. For diversified equity funds, Peavy (1990) finds an insignificant initial return (days 2-20) of -3% and a highly significant follow-on return (days 21-100) of -20%. The discount/premium is volatile over time and across funds. At liquidation, or open ending, prices converge to NAV<sup>3</sup>. Hot and cold markets typify the issuance of shares. For example, in the eighteen months after January 1986 (and prior to the market crash of October 1987), forty-six domestic closed-end funds raised \$11 billion through IPOs, more than doubling the total market value of all closed-end funds in existence prior to that time.

Upon initial organization, the fund provides to its investors a statement of investment policies and objectives. This statement contractually outlines the kinds of assets in which the fund will invest, the risks to be taken, and the fund’s planned use of leverage. Essentially, this document outlines the rules of the game.

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<sup>3</sup> See Brauer (1984) or Brickley and Schallheim (1985).

### 1.2.2 The Mid-life

Similar to most any other corporation, CEF shareholders elect a board of directors which provides oversight of the fund operations. In order to offer some assurance that board members are financially independent of the fund, a majority of the board must be non-officers or non-advisors to the fund. Additionally, brokers may not constitute a majority of the board. The major function of the board is to contract with an investment advisor to manage the day-to-day operation of the funds assets. Some funds are managed internally (one of the topics of this effort), but most CEF advisors are external to the fund.

Return on an investment in a closed-end fund contains three components:

1. Share price change, which is a function of the change in the fund's underlying portfolio and any change in the discount (or premium) of the price from the NAV,
2. cash dividends paid by the fund, and
3. any capital gains distributed to fund shareholders.

A CEF can avoid paying U.S. income taxes by distributing substantially all of its dividend income (90%) and all net capital gain income to its shareholders. This avoids triple taxation (taxation of the firms held in the CEF's portfolio, taxation of the fund, and taxation of the shareholder). In effect, the CEF exists as a financial intermediary allowing investors to pool their investments without having to pay an extra layer of taxes on the pool.

A closed-end fund incurs operating expenses which are paid from the corpus of the fund. These expenses would include costs associated with fund portfolio management, fund business operations, custody of the fund's assets, and shareholder services. These operating expenses are paid from fund assets before making any distributions to investors.

With open-end funds poised to redeem or issue shares at the request of shareholders, these funds maintain a non-insignificant level of cash. This cash offers a considerably lesser expected return than the balance of portfolio investments and leads to open-end funds suffering a higher level of cash “drag” than closed-end funds. Additionally, open-end funds typically have a mandate to grow the fund and often exhibit a shorter investment horizon to attract new investment. On the other hand, closed-end funds, with a fixed investment pool, claim to take advantage of longer term inefficiencies that an open-end fund might not consider available. Some managers claim open-ending may lead to a higher expense ratio. Open-end funds can neither utilize leverage nor hold a significant portion of their portfolio in illiquid assets, denying the manager the ability to capitalize on potential market inefficiencies.<sup>4</sup>

### 1.2.3 Termination

Funds may cease to exist as a closed-end entity in one of several ways:

1. liquidation of the fund assets and return of cash to shareholders,
2. conversion of the fund to open end mutual organization, or
3. merger of the fund into another fund (usually an open-end fund).

Some funds have even written into their guidelines a trigger event which can force termination. While this process can allow an investor access to almost full value of the NAV, it is not necessarily a universally positive event. Frequently managers and even some shareholders resist this process for self-serving reasons.

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<sup>4</sup> For a more complete description of closed-end versus open-end fund characteristics please refer to Anderson and Born (1992) or Anderson and Born (2002).

Some closed-end funds may periodically consider conversion to open-end status, which would permit shareholders to redeem their shares at close to the NAV. Most of what we know of open-ending is based on the work of Brauer (1984) and Brickley and Schallheim (1985)<sup>5</sup>. They demonstrate open-ending eliminates most of the discount and the positive abnormal return of from 10% to 15% is captured by shareholders.

Since these two early efforts, there has been further speculation as to the characteristics of the share price to NAV convergence. Brauer (1988) models the probability of open ending and believes a profitable trading strategy may be the result of open-ending incentives not being instantly reflected in prices. De Long, Shleifer, Summers and Waldman (1990) believe conversion of the fund will negate the noise-trader-sentiment component of the discount. Barclay, Holderness and Pontiff (1993) speculate that blockholders might align with management to resist open-ending. A deeper discount might induce shareholders to take a stronger position on open-ending, but this could be thwarted by management and other shareholders. Deaves and Krinsky (1994) model the discount and find the incentive for open-ending increases as future performance worsens. They posit that this is a function of the negative relationship between managerial contribution and discounts.

More recently there have been two attempts to reexamine the findings of Brauer (1984) and Brickley and Schallheim (1985). Kadapakkam, Misra and Yildirim (2005) find the discount does not just disappear after the announcement of open-ending. The announcement returns reduce the discount from an average of 10% down to 6%. The existence of a discount remaining after the announcement seems inconsistent with market efficiency. One week before the liquidating event, even though open-ending is a virtual

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<sup>5</sup> See Draper (1989) for similar research on U.K. CEFs.

certainty, they still find discounts of about 3%.<sup>6</sup> Akhigbe, Madura and Tucker (2005) examine the characteristics of funds that open-end and find larger, more highly discounted, more volatile funds are more likely to become open-ended. They also find that valuation effects for the period leading to the announcement are insignificant.

#### 1.2.4 Regulation

CEFs are generally regulated by The Securities Exchange Act of 1934, the Investment Advisors Act of 1940, and the Investment Company Act of 1940 as amended in 1950. The SEC is the enforcement agency. The Acts require the fund to distribute 90% of income, dividends, and interest plus 100% of the capital gains as a limit on non-investment activity. For tax purposes, this maintains the fund's status as a "passive conduit." The Acts limit any one holding in the portfolio to 5% of fund assets, restrict ownership of any firm to less than 10% of the shares of the firm, and include other holding thresholds to prevent a fund from becoming merely a vehicle to control other firms.

Prior to The Investment Company Act of 1940, closed-end funds outnumbered the open-end variety. Many of the closed-end funds during the depression of the 1930s were highly leveraged and experienced severe losses. Following the Act, open-ended funds became more common.

### 1.3 The CEF Puzzle

The fact that two valuation metrics of the same portfolio, NAV and share price, often differ appears to be a violation of the law of one price. Our current financial models fail to

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<sup>6</sup> I find only one example of an open-ending process not being completed. In this case the fund abandoned the open end process to be absorbed into another open-end fund.

completely explain many of the observations made of closed-end funds. Lee, Shleifer and Thaler (1990) (henceforth LST) outline four distinct anomalies:

1. New funds appear on the market at a premium and move rapidly to a discount.
2. Closed-end funds usually trade at discounts relative to their net asset values.
3. Discounts are subject to wide variation, both over time and across funds.
4. When closed-end funds are terminated prices converge to net asset value.

The discipline of finance has collectively labeled these apparent anomalies the “closed-end fund puzzle.”

Closed-end funds routinely trade at a discount to the market value of their portfolio (NAV). For example, the average equity fund as of February 2001 traded at a nearly 11% discount to net asset value<sup>7</sup>. This discount does not remain stable over time. During the 1970s the average discount was from 30% to 40% (including the now-defunct dual-purpose funds). Yet by the mid 1980s this discount had almost disappeared, precipitating the aforementioned 1986 “hot” issue period. For the period 1953-1959 two of the funds I examine, Tri Continental and General American, had ranges for their discounts of 17% to 48% and 3% to 20% respectively<sup>8</sup>. While these figures are nearly fifty years old, they are not atypical of any period of more recent history. Not only does the discount vary, but it also is mean reverting. Pontiff (1995) reports that the primary source of returns to fund trading strategies is the mean-reverting nature of discounts.

What can explain this apparent disconnect between price and value? Early researchers such as Pratt (1966) and Thompson (1978) believe a lack of transparency to be the primary cause of this discount. More recently many researchers have attempted to

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<sup>7</sup> See Anderson and Born (2002)

<sup>8</sup> See Anderson and Born (1992)

explain the discount within a rational expectations framework. Led by the work of Lee, Shleifer and Thaler (1991), still other theorists pose limited rationality and inefficient market models. However, none of the researchers can totally explain the persistent CEF discount.

While many of the apparent closed-end fund anomalies can be found in similar funds in markets of other countries, one aspect appears somewhat unique to the U.S. market. Here, discounts tend to narrow as markets rise and widen with declines giving rise to researcher speculation that investor sentiment plays a role in the discount. However, this relationship between the discount and bull or bear markets is not evident in the U.K. where market capitalization of closed-end funds is 25% that of open-ended (versus 3% in the U.S.) and institutional share ownership, not individual, dominates. The following sections summarize possible explanations for fund shares trading at less than their intrinsic value and the volatility of this discount.

### 1.3.1 Tax Liability on Unrealized Capital Appreciation

Investors may discount CEF shares because the shares contain an embedded tax liability equal to the unrealized appreciation of the portfolio. Managed funds deny taxable investors the tax timing option that would be available to holders of the underlying assets<sup>9</sup>. If the discount reflects this option loss, then the higher the potential tax liability, the less an investor should be willing to pay for the shares. Malkiel (1977), updated in Malkiel (1995), finds a weak negative correlation between the potential tax liability and the price investors are willing to pay<sup>10</sup>. At most, his results can explain only half of the average 10% discount and the relationship is not strong because the tax liability appears tied to the holding period. Brickley, Manaster and Schallheim (1991) observe the value of the tax timing option declines

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<sup>9</sup> See Cuny (1997) for an exposition with respect to open-end funds.

<sup>10</sup> See Noronha and Rubin (1995) for conflicting results.

with the variability of the underlying assets. Kim (1994) agrees and values the option at 7% of the portfolio value<sup>11</sup>, yet Mendelson (1978) does not find even a weak relationship. Additionally, tax theory would imply that upon open-ending, the NAV should decline to meet share price, but Lee, Shleifer and Thaler (1991) (henceforth LST) find share price rises to meet NAV. During bull markets when CEF unrealized gains increase, the discount should widen, but LST find a zero correlation between changes in the market and changes in CEF discounts. Pontiff (1995) finds NAV returns net of the market are more strongly related to discounts than simple NAV returns which is inconsistent with a capital gains argument. Starks, Yong and Zheng (2004) examine municipal bond CEFs, almost exclusively held by tax sensitive individuals, and find direct support for the tax loss selling hypothesis (January effect). Also consistent with the unrealized gains argument is the increase in the number of funds after the Tax Reform Act of 1986 which differentiated capital gains from ordinary income, but De Long, Shleifer, Summers and Waldman (1992) find the discount widens over the period 1985-90 ( a period where UK CEF discounts narrowed).

A possible deterrent to the tax on unrealized gains explaining a significant portion of the CEF discount is a clientele argument. Seyhun and Skinner (1994) find only 5% of investors are tax motivated and the balance are buy and hold. Since the typical investor takes a buy-and-hold strategy and does not continually make portfolio adjustments to minimize net tax payments, tax timing may not be at the forefront of explaining the discount.

### 1.3.2 Realized Gains and Distribution Policy

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<sup>11</sup> Using a state-preference framework, Kim's model predicts that high correlations among assets will result in low discounts. The higher the correlation, the lower the discount because the value of the "option on the portfolio" (CEF) more closely approximates the actual portfolio.

The actual distribution of gains could minimize the above tax effect. However, similar to unrealized gains, actual distributions represent another form of option loss which also could precipitate a discount. Anderson and Born (1992) speculate that the discount could contain a portion of time-value of distributions due to the lag between realization and actual distribution.

Because an element of uncertainty is removed, Wang (2003) claims that a CEF which adopts a “target distribution policy” should exhibit a reduction of its discount. Such a target distribution policy dictates that a fund will pay a certain cash dividend even if doing so requires payment in excess of realized portfolio gains. In particular for funds experiencing large and persistent discounts or outside takeover threats, a target policy could function to reduce the risk premium required by rational investors. Wang finds a positive and significant relationship between average total net asset growth and the level of discount. Further, he claims that funds with higher sentiment sensitivities (larger potential discounts) have a greater incentive to adopt a target distribution policy.

### 1.3.3 Agency Costs

A basic starting point for the agency argument for CEF discounts is the Jensen and Meckling (1976) depiction of the principal/agent relationship. Agency costs may arise in circumstances where decisions made by an agent (in this case, the external advisor) can impact both the performance of the firm and the agent’s wealth. The agent may have a conflict between two alternative choices: one that maximizes the benefit to the firm and the other that yields more benefit to the agent. External advisor and management relationships can affect the performance of an investment fund via two different types of costs arising from agency conflicts: costs related to self dealing and advisory and management expenses.

Another agency argument for discounts relates to distribution policy (which as previously noted also has implications for the tax timing option). Distributions reduce the amount of discretionary funds available to a fund manager and hence could reduce the discount. Many researchers in the 1970s (see, for example, Malkiel (1977), Mendelson (1978), or Thompson (1978)) find discounts are lower if there are large distributions of capital gains. However, Anderson and Born (1987a) do not find support for this view.

Another agency explanation relates to the compensation structure of the managers of the fund. Coles, Suay and Woodbury (2000) examine the relationship between advisor fees and the premium or discount. They find the premium is larger when advisor compensation is performance sensitive, the assets are concentrated, the advisor manages other less sensitive funds, and the advisor is benchmarked.

Khorana, Wahal and Zenner (2002) explore the agency conflicts in CEFs by examining rights offerings. They find that rights offerings usually harm existing shareholders. Additionally, they find premiums decline most steeply in funds that have large increases in investment advisory fees.

In the managed funds universe, 96% of assets and 93% of funds are open-ended. Stein (2004) proposes an explanation for the preponderance of open-ended funds<sup>12</sup>. Stein notes that open-end funds must be poised to redeem shares at NAV, and shareholders can discipline these funds through redemption (blockholders have minimal impact). Market discipline for a CEF is only through liquidation or open ending. Open ending could be a response to the agency relationship and asymmetric information. Investors worry about the manager being incompetent or unethical. Under such conditions, investors in a closed-end

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<sup>12</sup> See also Close (1952), the first academic effort centering on CEFs. He supports marketing as the reason for growth of open-end funds.

fund have no recourse but to sell at a discount to NAV or watch their investment deteriorate. An open-end fund can be disinvested through liquidation at NAV. Stein believes that because open-end, no load, funds exist, economic Darwinism has reduced the relative number of CEFs in the population. He argues this current level of open ending may be socially excessive. There are neither incentives to maintain existence of a closed-end fund nor reasons to create one: the market for corporate control seems not to work. So now virtually all funds are open ended and competition to steal each other's customers leads to net losses<sup>13</sup>. Additionally, hot money from redemptions will not allow managers to aggressively attack certain types of mispricing.

Stiglitz (1985) argued that one of the most important ways to ensure that managers pursue value maximizing strategies is through concentrated ownership. Similarly, Shleifer and Vishny (1986b) have essentially a Holmstrom (1982)-type exposition on the atomistic investor not being economically able to monitor the firm. A large investor may have sufficient economic interest to provide this monitoring. In the case of a CEF, management is difficult to oust, hence shareholders bear the costs and discount the investment appropriately. Barclay, Holderness and Pontiff (1993) find a stable and significant relationship between discounts and concentration of ownership. When managerial ownership is high, there are larger discounts to NAV. They posit this is more consistent with managerial entrenchment than incentive (convergence of interest) effects. Somewhat puzzling is their discovery that funds with external blockholders are discounted an average of 14%, yet the discount on funds without blockholders is only 4%. They speculate there exists a private benefit to

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<sup>13</sup> See also Brauer (1988) for theory of open-ending. He models open-ending and the discount as contributing to this potential, but claims this is only one of the factors.

blockholders that aligns them with management to expropriate value, such as the ability to veto open ending.

#### 1.3.4 Commissions and Management Fees

Could discounts just reflect the market frictions inherent in the instrument? Investors pay commissions twice, once on the assemblage of portfolio components and again on the fund shares themselves. Additionally, the commissions paid from the fund assets increase as portfolio turnover increases. Management fees are also paid from the assets, reducing fund performance and possibly justifying a discount from NAV. Economies of scale might reduce the discount, but turnover could offset this effect. Although open-end funds are subject to this same set of costs, the share price reflects daily adjustment to NAV, Ross (2005) theorizes “the total discount is the sum of the fee-based discount and the information-based premium or discount,” and that this “accounts for both the magnitude of the closed-end fund discount as well as a variety of other phenomena associated with closed-end funds.”

No consensus exists within the current literature. Anderson and Born (1987b) and Kumar and Noronha (1992) find a positive relationship between discounts and expenses. However, Malkiel (1977) finds no fee-to-discount relationship and Vives (1975) recommends to investors that fees should be the least important decision criterion . Heffeman (2001) examines UK funds and finds there is no relationship between fees, measured in different ways, and performance. In the rare case where he finds a relationship, the results appear to be “perverse” or fees and annual returns are negatively related. Malhotra and McLeod (2000) do not find a relationship between the expense ratio and returns.

Turnover is a “dead weight” expense and might be reflected in the discount, but neither Malkiel nor Anderson and Born find any such relationship. Anderson (1984) shows that subsequent to commission reductions beginning with the eliminations of fixed commissions in 1975, discounts did not narrow but actually increased. On the other hand, in examining UK data, Ammer (1990) claims management expenses account for a substantial portion of the average discount, but most of the abnormal return comes from an apparent long run tendency of discounts to revert to fundamentals.

McInish (1980) posits that not only are current expenses of the fund important, but also the present value of all future expenses. Baur, Coelho and Santoni (1996) agree that CEFs functionally bundle the present value of all future management expenses into the share price as opposed to open-end funds which are more like “leasing” management services. The discount persists because investors cannot escape these future costs. Therefore, higher fees should precipitate larger discounts. In turn, the present value of fund expenses should be affected by the level of interest rates. Interest rates rising should increase the present value of fees, and discounts should widen. McInish does find higher interest rates lead to higher discounts, but neither LST (1991) nor Gasbarro, Johnson and Zumwalt (2003) find any such correlation.

### 1.3.5 Restricted or Illiquid Holdings

In keeping with Fama and Jensen (1983a), Deli and Varma (2002) find funds that hold less liquid securities with less transparent prices are more likely to be closed-end. For open-end funds, the SEC allows a maximum of 15% of fund assets to be invested in “illiquid” assets; closed-end funds are not subject to this restriction. A portfolio of hard-to-value or non-tradable securities could lead some investors to believe a closed-end fund is a

“dumping ground” for assets not desired by the general market. These investors would then discount these funds accordingly. Conversely, a fund manager may not only claim the market has overly discounted these assets and a CEF is well positioned to take advantage of this inefficiency but also may cite this as defense for not open-ending the fund. These hard-to-value assets may overstate NAV, hence a deeper discount. Grullon and Wang (2001) find the discount is positively related to the quality of private information in the underlying assets. However, LST (1990) claim this view explains little since most funds have less than five percent illiquid asset exposure. If a fund overstates the NAV due to misevaluation of illiquid assets, upon open-ending we should observe NAV price declining to meet share price, but the opposite is usually observed. Chandar (2003) examines restricted securities and valuation discretion. She finds some use of discretionary valuation to decrease fund returns when fund performance is extreme relative to a benchmark, but claims this is not smoothing.

### 1.3.6 Liquidity, the Bid/Ask Penalty, Limits to Arbitrage, and Trading Explanations

One implication of the efficient markets hypothesis, assets should sell for their fundamental value, cannot be directly measured. Although closed-end funds should be comparatively easy to value, many funds are small and thinly traded which may lead to a persistent discount. Both Malkiel (1977) and Anderson and Born (1987a) support the idea that lesser liquidity correlates with larger discounts. Pontiff (1997) begins with a Fama-French 3-factor model, adds a fourth factor for investor sentiment (see Lee, Shleifer and Thaler (1991)), and finds closed-end funds are 64% more volatile than their assets. Hence, some portion of the discount must be attributable to liquidity.

Since NAV is reported frequently, there should not be a large bid/ask spread. Yet Neal and Wheatley (1998) find the adverse selection component of spread is large for CEFs

paired with common stocks. However, Clarke and Shastri (2002) found the component lower than for control firms.

Several studies have shown that simple trading strategies based on CEF variables can earn abnormal returns. However, doubt remains as to whether the behavior of discounts is evidence of mispricing due to inefficiency or merely a joint test of efficiency and the asset pricing model used. Weiss Hanley and Seyhun (1994) find short sellers could earn CAR of 21% after 150 days post- IPO, but anecdotally LST (1990) report shorting is difficult to execute and available only sporadically. Levis and Thomas (1995) find that the long run underperformance in the UK is smaller, but again the practitioners imply arbitrage is difficult to implement. There also are the usual problems experienced in arbitrage. Because full proceeds from a short sale cannot be realized and management fees, commissions, and expenses cannot be shorted, an arbitrage position could be expensive to maintain for an extended period. Since the discount can persist for an extended period of time and holdings are not continuously known, mimicking portfolios make the shorting hedging process clumsy, potentially costly, and susceptible to fundamental risk.

De Long, Shleifer, Summers and Waldman (1990) model noise trader risk in financial markets. In their model, noise traders can earn higher returns because arbitrageurs fear the noise traders' irrationality. Essentially, this argument claims that the irrational investors arbitrage away efficient pricing. Their model helps explain excess volatility, mean reversion, and the underpricing of CEFs. Thompson (1978) for the period 1940-75 and Pontiff (1995) for a later period show long/short strategies yield a 4% excess return. Within the closed-end fund universe, Anderson (1986) finds profit in a hedged trading strategy of going long funds with wider discounts and short those with narrower discounts or premiums. In a later

examination, Pontiff (1996) examines some of the evidence of arbitrage and finds a discount is more likely if the fund 1) is difficult to replicate, 2) pays out smaller dividends, 3) has lower market values, and 4) is in a high interest rate environment. This is consistent with a noise trader model, yet at best still explains only one fourth of the cross sectional discount.

Takeover is not much of an option for discipline. Fund managers resist being dethroned and a tender offer would have to be made at close to NAV leaving little profit. Essentially, investigators have found trading explanations incomplete.

### 1.3.7 Marketing

In one of the first academic efforts examining closed-end funds, Close (1952) attributes the growth in open-end funds over closed-end funds to the continuous and well-compensated sales efforts made by the open-end funds. Malkiel and Firstenberg (1978) argue that the lack of support for closed-end funds through an active marketing campaign is the most reasonable explanation for the discount. As Stein (2004) observed, brokers may have more incentive to “push” open-end funds or single stocks than closed-end funds. Fishbein (1970) recognized this shortcoming of closed-end funds, and his recommendations led to the creation of the Closed End Fund Association to increase awareness of this product. Pratt (1966) believes that capital gains and fee explanations are illusory and that past performance does not affect discounts, but he does support a marketing discount. Malkiel (1977) speculates broker effort must be reflected in discounts, but Mendelson (1978) finds that neither selling effort nor market level makes any difference. Anderson and Born (1989) utilize event-study methodology to examine CEF IPOs and posit that observed adverse performance is likely due to the cessation of marketing activities by the underwriters. The marketing argument also fails to explain any meaningful portion of the CEF discount.

### 1.3.8 Herding, Sentiment, and The Law of Small Numbers

The market is not unitary, but reflects a consensus of separate constituencies such as individuals and institutions. Kumar and Lee (2003) find a link between investor sentiment and small stock returns which they use to explain the January effect, small stock outperformance, and lower institutional ownership of CEFs. Since small stocks are held disproportionately by individuals, the small stock premium could be an indicator of investor sentiment. If true, we should observe exaggerated characteristics in CEFs because ownership of CEFs is virtually all by individuals. Pontiff (1997) in the US and Silas, Starks and Tinic (2001) in the UK find the average CEF is 64% more volatile than its underlying assets. They also find 15% of the average fund's excess risk is market risk, small firm risk, and risk that affects other CEFs. Brauer and Chang (1990) observe that US CEF share prices display a typical January effect, while the NAVs do not. Qui and Welch (2004) examine investor sentiment measures. They find that survey-based measures and the CEF discount cannot validate each other. The correlations are inconsistent or close to zero and with some measures estimates are perverse. They claim that the relationship between the small-firm spread and survey-based sentiment "feels" more solid and stable than the small firm/CEF discount measure. Sentiment plays a role in financial markets, but the CEF discount may be the wrong measure.

Market level may influence individual investor sentiment. Pessimism could translate to deeper discounts. Zweig (1973) develops a theory of investor expectations based on CEF discounts and finds them predictive of overall stock prices. In their later effort, LST (1991) find superior small stock performance parallels a narrowing of the CEF discount, but Chen, Kan and Miller (1993) dispute these findings and claim their results are time period sensitive.

Chopra, Lee, Shleifer and Thaler (1993) counter with robustness tests which reconfirm the LST results. Still others object that the R-squared is too low to be meaningful. Swaminathan (1996) revisits the issue and confirms that CEF discounts forecast small firm returns better than large firm returns. Malkiel (1977) and LST (1991) also claim CEFs reflect individual returns by showing discounts tend to increase with increases in net redemptions in open-end funds. Brickley, Manaster and Schallheim (1991) observe that the widening or narrowing of discounts in individual funds possess a high degree of co-movement.

Can profit be realized from a sentiment strategy? Wang (2004) buys stocks with highest exposure to CEF discount and sells stocks with the lowest exposure for a rolling 36-month period and claims 11% excess return. This cannot be explained by market risk or momentum. He modifies the traditional 4-factor model by including a sentiment factor implying that there exists pricing of investor sentiment risk. Overall, there exists the possibility that sentiment plays a role in the discount, but research has yet to determine how it is incorporated.

### 1.3.9 Fund Performance

There exists some evidence that investors tend to follow performance by seeking out funds whose past performance was superior (see Boudreaux (1973) or Mendelson (1978)). Roenfeldt and Tuttle (1973) dismiss most of the previous explanations for closed-end fund discounts as failing when applied to premiums, as opposed to discounts. They posit that the discount reflects investor expectations and inferior portfolio management. Chay and Trzcinka (1999) concur that premia predict future NAV returns. Bleaney and Smith (2003) propose past performance is priced in stock funds but NAV returns are persistent only for

bond funds. Berk and Stanton (2004) propose a rational model of the CEF discount<sup>14</sup>. To them discounts are rational under only one condition: managers must have skill to earn excess returns. Investors anticipate that the skilled manager will leave for a better job yielding a short lived premium. Berk and Stanton better explain the UK versus US comparisons and refute most of the traditional arguments for the discount.

Pontiff (1995) finds evidence that discounts have a strong ability to predict returns and attributes this to mean reversion, not a prediction of future NAV. Share price returns with higher discounts exceed returns on funds with lower discounts. He observes negative correlation between premia and past performance plus first order autocorrelations of NAV returns relative to the market. Funds with a discount of 20% have one year returns 6% greater than non-discounted funds. In a similar study, Swaminathan (1996) finds CEF discounts forecast future excess returns on small firms. This relationship is independent of dividend yield, yield on the market, default spread, or term spread. The time variation in discounts may be related to changing rational expectations or risk aversion of individual investors. Gasbarro, Johnson and Zumwalt (2003) examine mean reversion and determine that it occurs due to both share price and NAV change. They observe that equity funds trade more universally at discount than bond funds, but just like LST (1991) find no relation to interest rates levels.

#### 1.3.10 Perception and Behavior

Graham (1985) claims, “Discounts on CEFs are an expensive monument erected to the inertia and stupidity of stockholders.” The inability of standard economic theories to explain the entire CEF discount casts doubt on the rationality of the market. For example,

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<sup>14</sup> For an additional positive theory on CEFs see Cherkes (2003). He believes he is able to explain discounts in an EMH-world, but many refute it.

The German Fund in 1989 (at the fall of the wall) went from 10% discount to 100% premium<sup>15</sup>. Maybe this is rational, but why did there exist a cross-border contagion that lifted all country funds?

LST (1990) pose a limited rationality model which might explain individual investors' (predominant in US funds) behavior. However, this explanation suffers when applied to the UK with similar discount behavior but almost inverse of ownership demographics. Institutional investors are assumed to be considerably more "rational". CEFs in the UK are dominated by institutional owners (2/3 of ownership overall) as opposed to the US institutional ownership of five percent (Weiss (1989)). The economic logic claimed for such a low level of institutional ownership is essentially one of a "double management fee." Clients would pay first at the institution level and again when the institution invests in the CEF.

A comparison of CEFs to small stocks may not be valid since the smallest decile of equity has 27% institutional ownership. LST (1990) speculate individuals are not an important ownership group in individual stocks but are important to CEFs. Sias (1997) examines transaction data and finds buyers (sellers) of CEFs face upward-(downward-) sloping supply (demand) curves. Further, although ownership is low, institutional investors play a much larger role in trading CEFs (32% of trade volume).

Even if institutions and individuals have identical valuation paradigms, there still could be systematic differences between behavior of the fund's portfolio and fund shares. De Long, Shleifer, Summers and Waldman (1990) and LST (1990) speculate that rational traders fear noise traders and do not attempt arbitrage. To reflect this noise trader risk, shares must trade at a discount that is sufficient to encourage participation by rational arbitrageurs. Like

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<sup>15</sup> See Hardouvelis, La Porta and Wizman (1993).

fundamental risk, noise trader risk is priced and will be reflected in higher expected return (underpricing). LST (1991) observe that true arbitrage opportunities are infrequent and difficult to execute and thereby exacerbate the discount. Again, these arguments are at best inconclusive.

### 1.3.11 Diversification

Another argument for CEF discounts is that ownership of a fund that is not diversified imposes additional transaction charges for an investor wishing to diversify. Miller (1977) hypothesizes that conglomerates and closed-end funds would sell at discounts to their “true” value when short selling constraints make it difficult for investors to unwind diversification. Many funds specialize in countries or sectors and others hold very concentrated portfolios. In order to diversify, an investor would need to purchase additional assets incurring added commission charges. Hence, the discount should grow as diversification falls. However, Anderson and Born (1987a) find the more diversified funds have lower discounts. There has been little recent effort in this area and the claim remains basically unsubstantiated.

## 1.4 Conclusions

Many attempts have been made to offer a complete and comprehensive explanation for the closed-end fund discount.<sup>16</sup> However, as a discipline, finance researchers and academics have yet to arrive at any consensus.

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<sup>16</sup> For example, see Arora, Ju and Ou-Yang (2003) or Cherkes (2003) or Berk and Stanton (2004).

## Chapter 2

### Internal Fund Management

“Fund shareholders are paying an onerous tax to compensate for the conflict of interest inherent in the fund industry’s near-universal embrace of the external management model.” – George Clark<sup>17</sup>

#### 2.1 Introduction

As previously discussed, a closed-end fund is an investment company whose shares are listed on an exchange or traded OTC. By contrast, an open-end fund directly markets its shares to investors and the market price of their securities is determined by a daily mark-to-market process based on the constituent assets’ value. Most funds of both types contract with an external investment advisory firm for portfolio selection and management. Management often is outsourced to a firm external to the fund. In other cases, this advisory firm can be a “captive” organization that is not independent of the fund distributor (e.g. Fidelity Advisors to Fidelity Funds). However, a very limited number of funds are internally managed, paying salaries to a professional portfolio management staff instead of contracting for the services. For example, the above quote by George Clark refers to Vanguard open-end mutual funds. Ten of the closed-end funds examined in this study are, or were, similarly internally managed. Both types of funds are structured with a board of directors whose major function is to contract with and monitor an investment advisor (if externally managed) or to oversee the operations of the fund if internally managed.

Most closed-end funds (CEFs) are not managed in-house but contract out their management to groups of specialists. Their management fees are paid out of the net assets every year, regardless of fund performance, making fund returns, and potentially discounts

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<sup>17</sup> From Vanguard Funds with respect to their internally managed open-end funds.

from NAV, highly sensitive to these fees. These potentially lucrative contracts for fund management can act as an incentive for managers to self-serve at the expense of the best interest of fund shareholders. Because of the difficulty of displacing management, shareholders may continually bear substantial costs. Baur, Coelho and Santoni (1996) find evidence for the period 1970-1990 that the discount arises almost entirely from the capitalized cost of future management fees. The discount persists because investors cannot escape these future management costs. Economies of scale could reduce the discount, but asset turnover could offset this effect.

Internally managed funds hire their own staff of investment analysts and portfolio managers to select securities and manage the portfolio. They compensate their employees with a salary and possibly a bonus. Investment expenses of the internally managed funds are therefore not based on a percent of net assets under management but are the sum of employee salaries plus other operating expenses.

In the early 1960's, in response to what has become known as "The Wharton Report" to the SEC (see Friend, Brown, Herman and Vickers (1962)), management fees appeared to significantly decline. The report indicated that the external advisers' practical control of the mutual funds under their management tends to weaken the role of competition and arms-length bargaining in the fixing of advisory fees. Further the report indicated internally managed companies which employ their own advisory staffs have significantly lower management costs than the externally managed funds, whose investment advisors are usually compensated by fees based on a fixed percentage of the fund's net assets. At the time of the study there were only five internally managed CEFs: Tri-Continental (TY), Adams Express (ADX), General American Investors (GAM), Central Securities (CET), and Madison Fund

(MAD). Subsequently, Tri-Continental externally contracted advisory services in 1980 and Madison ceased operations in 1985. When funds were examined in 1965<sup>18</sup>, the SEC found expense ratios and estimated management cost ratios of internally managed funds to be substantially lower ( $\approx 50\%$ ) than their externally managed peers. However, the report also conceded that some portion of the savings could be merely a function of the size of assets under management and self-imposed caps on trustee compensation. “The expense and estimated management cost ratios of the internally managed companies appear to reflect the economies of size inherent in the operation of investment companies. Five of the six largest internally managed companies belong to two of the largest investment company complexes.” These complexes exhibit costs that are significantly lower than each of the fifty-seven largest externally managed funds. Additionally, for both of these complexes internal salaries and trustee compensation are contractually restrained from increasing in direct proportion to assets under management. This is in direct contrast to external management contracts that are almost universally based on a percentage of net asset value.

A real estate investment trust (REIT) offers a parallel structure and a similar function to a CEF that may offer insight into CEF organization. Early in their history, REITs were considered to be passive investment vehicles similar to closed-end funds. By law, they had to contract with external advisors to make investment decisions and with property managers to manage their properties. Advisors and managers were often the same firm. Advisors influenced important decisions such as the timing of property purchase and sale, lease terms, property management contracts, and financing. Advisors were not normally excluded from self-dealing, and advisors or their related parties often received favorable terms on

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<sup>18</sup> See the 1966 report of the Securities and Exchange Commission on the Implications of Investment Company Growth.

transactions. The Tax Reform Act of 1986 allowed REITs to begin to internally advise their own investment decisions and manage properties, and today, the vast majority of REITs internally advises and manages their own portfolios.

Schulkin (1971) first described the conflicts inherent in the external management structure in REITs. Chan, Erickson and Wang (2003) speculate that this external advisor merely would add to the agency problems of the organization and provide no tangible benefit. Linneman (1997) claims that internally advised REITs should have a long-term competitive advantage. Golec (1994) claims, “The use of an internal advisor can reduce the agency problems prevailing in the REIT market.” While many other potential agency problems still remain, these researchers believe that internal management could diminish one aspect of the agency costs and enhance performance. Yet, after Congress relaxed the tax codes and REITs were allowed internal management, REITs did not universally convert to this structure.<sup>19</sup>

After compensating for risk, Howe and Shilling (1990) find externally advised REITs, performed worse than their internally managed peers and worse than the general stock market. More recently, Cannon and Vogt (1995) and Capozza and Seguin (2000) report a 7% higher return and lower financing expenses for internally managed REITs. However, they claim the operating efficiency results are not strong and a portion of the advantage has been disappearing in recent years. As with most issues in finance there are differing opinions. Thornburg Mortgage claims, “We have found that when mortgage REITs move from external to internal management, operating costs rise significantly...An advisor creates a discipline that many internal management groups aren’t required to maintain.”<sup>20</sup>

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<sup>19</sup> Chan, Erickson and Wang (2003)

<sup>20</sup> However, there may be a slight bias inherent with this mortgage lender. See [www.Thornburgmortgage.com](http://www.Thornburgmortgage.com).

To a great extent, the evidence from REITs appears to support a performance benefit to internal management. Closed-end funds, however, are different from REITs. The investments they select and manage are for the most part publicly traded. Transparent pricing and liquidity existing in the securities markets means that self-dealing on the asset level should not be a problem. Should an investment advisor choose to purchase shares of Intel for a fund's portfolio, the transaction should occur at the publicly quoted price even if the advisor were to sell the shares to the fund (a very unlikely event). The exception is the pricing of restricted or non-publicly traded stock. While funds do often carry some such shares in their portfolio, they represent a very small portion of the total portfolio and are unlikely to significantly influence total portfolio returns. Therefore, the agency problem of self dealing is not likely to be an issue for closed-end funds. Explicit costs of advising and managing the portfolio remain as the one type of cost that may have an impact on closed-end funds.

As previously noted, because open-end, no load, funds exist, economic Darwinism has essentially minimized the number of CEFs in existence. Within the small universe of closed-end funds, very few are internally managed. Do these internally managed CEFs offer superior performance to their shareholders as do internally managed REITs or do the externally managed funds exercise discipline allowing them to excel? Basically, the overriding question is: Do internally managed closed-end funds have lower expenses that lead to superior performance and a lesser discount? In the sections that follow I will examine these internally managed funds relative to their peers and other benchmarks.

## 2.2 Internally Managed Funds and Their Claims

At the present, a very limited number of closed-end funds still remain that do not contract with an external fund advisor. Since external advisory fees constitute by far the most substantial part of a fund's operating expenses, it should be informative to validate George Clark's claim. I have identified a universe of ten funds that have been or are internally managed. With a single exception (PEO), all of the funds are classified as "General Equity" by Lipper, Herzfeld, Moodys, Standard and Poor, and The Wall Street Journal. Cursory examination of the funds' holdings reveals a predominance of large capitalization equities. What do the internally managed CEFs claim that sets them apart from their peers? I examine the claims for each of the funds of interest in my examination and summarize the funds in Table 2.1.

*General American (GAM)* – General American was founded prior to the crash of October 1929 and remains internally managed today. "This [internal management] means that we incur directly all costs and expenses associated with the management of our portfolio and the operation of our company. There is no outside investment advisory company which typically provides these services under a fee-based advisory agreement or management contract."<sup>21</sup> Interestingly, there have been only six portfolio managers during GAM's entire eighty year history.

*Adams Express (ADX)* – Like GAM, Adams Express was founded prior to the crash of October 1929, has a market capitalization of over \$1.2 billion, and has been managed internally throughout its life. "Adams Express is internally managed, which means that additional expenses are not incurred to pay an outside investment adviser. This helps to keep our expenses low. Over time, such low expenses have served to increase investment returns

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<sup>21</sup> [www.generalamericaninvestors.com](http://www.generalamericaninvestors.com) website.

for our shareholders. As an internally managed fund, we are able to keep a very tight rein on our expenses and operate with a very lean staff.”<sup>22</sup>

*Petroleum & Resource Corporation (PEO)* – Petroleum & Resource Corporation, sister fund to ADX, was founded shortly after the crash of 1929 and remains internally managed today. Doug Ober, the current CEO, claims, “We are internally managed and don’t have an outside manager focused on 15 or 30 funds within a fund family like mutual funds. Secondly, we only have two funds and two groups of people within our organization doing the day-to day work for them. Those connected with ADX or PEO only work for one of these funds and no one else. They are all employees of the particular fund, not of a management company that has a contract to manage the fund.”<sup>23</sup> When compared with all other internally managed, general equity funds I examine, PEO differs by focusing on the energy sector.

*Tri-Continental (TY)* – Tri-Continental is one of the largest publicly traded closed-end funds with net assets in excess of \$2 billion. Like many of the surviving CEFs, TY was also founded prior to the great depression. Since 1981 TY has no longer been internally managed. I will examine the period prior to 1981 in which they were internally managed, as well as include their fund specifics in my examination of externally managed funds subsequent to that date.

*Sterling Capital (SPR)* – Sterling Capital began life as Value Line Development Capital Corporation and has operated as an internally managed, closed-end fund since 1972. From SEC filings I observe that 79.1% of the outstanding shares are currently owned by officers and directors. An additional 4.0% of the shares are “owned by certain associates of

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<sup>22</sup> [www.adamsexpress.com](http://www.adamsexpress.com) website.

<sup>23</sup> Refer to Scott (2003).

officers and directors.”<sup>24</sup> On 5/23/05 Sterling announced, pending shareholder approval, it will be absorbed into Gabelli Equity Trust, an externally managed CEF. With over 80% of the shares internally held, I would anticipate the approval process to be merely a formality.

*Central Securities (CET)* – Central Securities has been operating as a CEF since 1962. CET offered some anecdotal insight into why so few internally managed CEFs exist. “Yes, our fund is internal, but a lot of other funds have found it easier to spin off management if there is more than a single fund in the family. The allocation of fund expenses across multiple funds becomes rather contentious.”<sup>25</sup>

*Madison Fund (MAD)* – Founded in 1955, Madison Fund survived until the mid 1980s as an internally managed, general equity fund. In June 1984, shareholders approved a name change to Madison Resources in order to reflect the change in focus to natural resources. At the same time, MAD ceased to qualify as a registered investment company and became a natural resources holding company.

*Baker Fentress (BKF)* – Incorporated in 1954, Baker Fentress was not considered a closed-end investment company until the 1972 merger with Consolidated Financial Corporation. Baker Fentress operated as an internally managed fund until it ceased to qualify as a registered investment company and paid a liquidating dividend to investors in 1999. Late in the life of this fund an external advisor was brought on-board.

*Niagara Shares (NGS)* – Similar to TY and GAM, Niagara Shares was founded just prior to the great depression. It did not receive classification as a regulated investment company until 1955, the beginning date of our performance history. In July 1991 NGS

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<sup>24</sup> Refer to EDGAR filings on [www.sec.gov](http://www.sec.gov).

<sup>25</sup> Conversation with fund management December 2003.

announced liquidation, but subsequently was merged into an open-end mutual fund (Scudder Growth and Income Fund).

*Overseas Securities (OVU)* – OVU operated as an internally managed, general equity, regulated closed-end investment company from 1962 through 1985. Over most of its life, OVU traded at substantial discounts averaging 30 percent. In 1975, Gault Malleable Iron Ltd. acquired 48 percent of the outstanding shares.

The implication of the internally managed funds' claims is that they provide the same management services as externally managed funds but at a lower cost and that these cost savings are passed through to investors in the form of superior returns. As a cursory investigation into this claim I compare return on investment between these two groups. Figure 2.1 shows that an investor in internally managed funds would have done quite well over the long run. The figure reflects the accumulated wealth from investing one dollar initially in each of two portfolios for the period 1941 through 2004. The first portfolio is constituted of equal weighting of returns on all internally managed funds in existence at the end of each month during the period.<sup>26</sup> The second portfolio is similarly constructed of all general equity, externally managed funds. The terminal value of the dollar invested in externally managed funds is \$2,324, representing a 1.12 percent monthly return. The terminal value of the internally managed portfolio is nearly treble the other portfolio with a terminal value of \$6,679 and an average monthly return of 1.25 percent. While the difference between these two returns does not appear large, the power of compounding over the lengthy 64-year period yields the striking difference in terminal value.

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<sup>26</sup> Monthly returns are from the CRSP database. The data and other methodological specifics are described in greater detail in Section 3.5.

Whether internal management provides a beneficial organizational form that minimizes costs and yields superior risk-adjusted investment performance compared to external management is an issue for empirical study. One purpose of this study is to provide a comprehensive analysis of internally managed closed-end funds with the goal of ascertaining whether or not they provide investors with superior returns.

### 2.3 The External Funds

Can the internally managed funds' claim of superior performance over their externally managed peers be validated? Since virtually all of the internally managed funds are classified as general equity, I construct a portfolio of externally managed general equity peers from Lipper, Herzfeld, Moodys, Standard and Poors, and *The Wall Street Journal* listings. If a discrepancy exists in classification between sources, I follow a "majority rules" decision criterion. Since most of the internal funds are very similar and have extended histories of operation, I eliminate from the peer group all funds with less than a two-year history. Similarly, I eliminate sector funds, funds with some fixed income characteristics (or preferred holdings), and dual class shares. This elimination process yields thirty-seven general equity CEFs, inclusive of both currently operating funds and those that have ceased operations.

### 2.4 The Questions

In some manner all the internally managed funds claim to have lower expenses, which may lead to the superior performance I propose to validate. This possible relationship raises a number of questions.

Do lower expenses contribute to superior performance? In the investment business, as in all business, costs adversely affect profitability when viewed on a short-term basis and holding all other effects constant. This relationship implies that greater costs result in reduced financial performance. Applying this notion to investment companies, those with greater expenses would tend to have poorer performance. With regard to both open-end and closed-end funds, a number of researchers have examined this issue. For example, Carhart (1997), using a survivor-free database of mutual funds from 1966 to 1993, finds a negative relationship between expense ratios and fund performance. Peterson, Pietranico, Riepe and Xu (2002) find a negative relationship between expense ratios and after-tax returns for funds during the 1981 to 1998 period. Studying closed-end fund returns from 1976 to 1996, Bers and Madura (2000) find a persistent inverse relation on average between expense ratios and fund performance. Furthermore, as Akhigbe and Madura (2001) show, closed-end funds with high expense ratios placing seasoned equity offerings on the market experience poorer results than those with lower ratios. However, Malhotra and McLeod (2000), breaking down results by year, find that the relationship between expense ratios and closed-end fund return varies by year with half of their sample years showing a positive relationship and half showing negative.

In the longer run, industrial firms with certain higher expenses (for example, expenditures on research and development) often have higher profitability. For investment companies, spending on items such as the annual meeting, printing investor reports, and other daily operating expenses would be unlikely to stimulate performance. However, paying a higher fee to retain the services of a better investment manager might yield higher performance. In fact, higher performance would be necessary to justify a greater investment

advisory fee. To study this issue, Malkiel (1995) breaks the expense ratio into two components: the advisory expense ratio and the non-advisory expense ratio. He finds that a greater non-advisory expense ratio leads to significantly lesser performance for open-end funds. On the other hand, the advisory expense ratio, while not resulting in poorer performance, apparently does nothing to contribute to a net benefit for fund holders. Bers and Madura (2000) examine CEFs for persistence during 1976-96. They conclude that low expense ratios and NYSE listing result in stronger performance.

Does an external advisor necessarily cost fund shareholders more? Are internally managed fund expenses truly lower or are explicit fees for externally managed funds merely replaced with salaries for internally managed funds? The Investment Company Act of 1940 declares, “the national public interest and the interest of investors is adversely affected... when investment companies are organized, operated or managed... in the interest of investment advisors.” Payment for advisory services usually is the single largest expense of most funds, and negotiation of these contracts determines the amount of expenses and fees shareholders endure. Freeman and Brown (2001) claim external management fees are 25 basis points higher than necessary in order to furnish fund advisors with fair and reasonable compensation and to provide fund shareholders with the same quality of service. Deli (2002) examines all classes of investment advisory contracts and concludes that, at the margin, equity and foreign advisors receive higher fees when compared to debt or domestic advisors. Additionally, closed-end fund advisors are more highly compensated than open-end advisors.

Are funds rewarded for having lower expenses? A portion of the CEF literature attributes much of the fund discount to the present value of all future fund expenses. Anderson and Born (1987b) and Kumar and Noronha (1992) find a positive relationship

between discounts and expenses. If internally managed funds have consistently lower expenses than externally managed funds, and if fund expenses influence a fund's market price and therefore its discount, then I would expect to find that internally managed funds typically sell at smaller discounts than similar funds whose management is external. Therefore investors in funds with higher expenses might penalize those funds by maintaining a deeper discount.

If the managers of internally managed closed-end funds are just as good as their external-management colleagues, and they also perform their services at a lower cost to the fund, then the long-run investment results of internally managed funds should be superior to those of externally managed funds. To address this issue, I compute several measures of portfolio performance for my sample of internally and externally managed funds.

## 2.5 The Data

For externally managed funds, I identify general equity funds that existed during the 1941 to 2004 period that have at least two years of data. The elimination process described in Section 3.3 yields thirty-seven general equity closed-end funds including both currently operating funds and those that have ceased operations. My sample is therefore free of survivor bias. It contains all funds that entered, exited, and existed in the market during that period.

I obtain total fund expenses and year-end total net assets for the twenty years 1985 to 2004 from various volumes of *Moody's Bank and Finance Manual*. With these data I compute expense ratios for all funds. I obtain month-end fund per share net asset value from 1985 to 2004 from *The Wall Street Journal*. I then merge the expense ratio and per share

NAV data. This process results in a sample of internally managed and externally managed equity funds for which I have both expense ratio and NAV data. The sample represents the vast majority of closed-end equity funds that were in existence over the time period and is free of survivorship bias. Table 2.2 shows the number of funds in the sample each year.

To obtain prices and returns, I extract daily and month-end market prices and monthly returns for all equity funds from the Center for Research in Security Prices (CRSP) database beginning in 1941 and continuing through the end of 2004. I also use monthly returns for the CRSP value-weighted and equally weighted market indexes.

## 2.6 The results

### 2.6.1 Expense ratios

The standard measure of fund expenses is the expense ratio, total fund expenses divided by total net assets. If internally managed funds actually realize the cost savings referred to by fund management, then observed expenses ratios of internally managed funds should be consistently less than their externally managed counterparts.

Table 2.2 presents the mean expense ratios for the internally managed funds and for the externally managed funds for 1984 to 2004. For that time period, internally managed funds have expenses averaging 0.700 percent of net assets, and externally managed funds show expenses of 1.592 percent. The t-statistic for the equality of these two means is 12.73 indicating a significant difference between the two groups of funds. Furthermore, expense ratios of internally managed funds are less than externally managed fund expenses for nineteen of the twenty individual years in the sample, and 16 of the individual years show a significant difference. This evidence appears to support the claims of the management of internally advised funds that they have a cost advantage over the externally advised funds.

However, there are other variables that might impact fund expense ratios. Prior studies indicate that the most influential of these is fund size (see Malhotra and McLeod (2000) for closed-end funds and Ferris and Chance (1987) and Malhotra and McLeod (1997) for open-end funds). Larger funds do seem to have some economies of scale which result in lower expenses per dollar of assets. Table 2.2 also presents the average fund size as measured by mean total net assets for both the internally and externally managed fund groups. In general, the internally managed funds tend to be larger on average than the externally managed funds. To control for fund size, I compute a multiple regression using the following model:

$$Expense\ ratio_{j,t} = \hat{a}_0 + \hat{a}_1 \times Internal_j + \hat{a}_2 \times \ln TNA_{j,t} + e_{j,t} \quad (1)$$

where  $Expense\ ratio_{j,t}$  is the expense ratio of fund  $j$  for the end of year  $t$ ,  $TNA_{j,t}$  is the total net assets of fund  $j$  at the end of year  $t$ ,  $Internal_j$  is a classification variable with value of 1 when fund  $j$  is internally managed and 0 otherwise,  $e_{j,t}$  is the random error term, and coefficients  $\hat{a}$  are parameter estimates. The expected relationship between fund size and expenses should yield a negative parameter estimate for  $\ln TNA$ . If internally managed funds have lower expense ratios, controlling for fund size, I should observe a negative estimate for the *Internal* variable.

Panel A of Table 2.3 presents the results of the regression. The parameter estimate of  $\ln TNA$  is negative and significant at the 0.01 level confirming the inverse relationship between expense ratios and fund size. The estimate for *Internal* is also negative and significant at the 0.01 level indicating that internally managed funds have lower expense ratios even after considering the size of the fund. The adjusted  $R^2$  is 0.3049.

Noting that the mean expense ratios in Table 2.2 do show some variation over time, I also estimate a model that allows the expense ratio to vary by year:

$$Expense\ ratio_{j,t} = \hat{a}_0 + \hat{a}_1 \times Internal_j + \hat{a}_2 \times \ln TNA_{j,t} + \hat{a}_3 \times Year_t + e_{j,t} \quad (2)$$

where  $Year_t$  is a classification variable for year  $t$  (2004 is the omitted year).

Panel B of Table 3.2 shows the results of this regression. The estimates of  $\ln TNA$  and  $Internal$  remain negative and significant (although the p-value for  $Internal$  increases to slightly above the 0.01 threshold to 0.0134). However, none of the estimates of classification variable  $YEAR$  are significant, and the adjusted  $R^2$  improves only marginally to 0.3075. The year-to-year variation in the expense ratio does not appear to exceed normally expected levels, and the conclusion remains valid that expenses of internally managed closed-end funds over the 1985 to 2004 period are significantly less than expenses of their externally managed counterparts.

It is interesting to note that expense ratios of the externally managed funds appear to exhibit an upward trend over the 20-year period while the internally managed funds show no such pattern. This upward trend in expense ratios is not specific to closed-end funds. Using a sample of externally managed open-end equity mutual funds, I verified that expense ratios of these funds show an upward trend over the same 1985 to 2004 period, though not as pronounced as for the closed-end funds.

There are two important implications of reduced expenses of internally managed funds. Other variables constant, the internally managed group should exhibit

1. lower discounts from NAV, and
2. greater investment performance.

## 2.6.2 Premium and Discounts from NAV

Since previous research has consistently identified a fund's expense ratio as being a principal determinant of its premium (or discount) from NAV, I should expect that the lower expense ratios observed with internally managed funds would lead to lower discounts for funds with internal management. Ingersoll (1976) presents a theoretical model that results in discounts from NAV for closed-end funds when they pay expenses to anyone other than shareholders. Studies providing evidence that fund discounts are associated with expense ratios include Crawford and Harper (1985), Kumar and Noronha (1992), Baur, Coelho and Santoni (1996), and Malhotra and McLeod (2000)).

I compute the premium from NAV for funds in my sample as follows:

$$premium = \frac{price - net\ asset\ value}{net\ asset\ value}. \quad (3)$$

A negative premium signifies a discount from net asset value.

Table 2.4 presents mean premiums of internally managed and externally managed funds in the sample by year from 1985 to 2004. Inspection of the premiums in Table 2.4 indicates that while all funds typically sell at a discount, internally managed funds' discounts are on average greater than those of externally managed funds. In 18 of the 20 years, externally managed funds exhibit greater premiums (or lower discounts) than the internally managed funds, and 6 of these years are significant at the 0.05 level or better. Over the 20-year period, internally managed funds show a premium of -0.114 compared to -0.074 for externally managed funds. The difference between these two means is significant at the 0.01 level. While the lower average expense ratios of the internally managed funds would lead us

to expect them to have lower discounts, I conclude that internally managed funds consistently exhibit greater discounts than externally managed funds.

It is interesting to note that in the Baur, Coelho and Santoni (1996) study claiming fees are the aspect of closed-end funds that generate the discount, there are two internally managed funds (Adams Express and Baker Fentress). In their analysis, the authors control for heterogeneous intercepts for individual funds (a fixed-effects model). While they make no interpretation of the results of any individual fund in their study, their Table 2 implies that the discount for both of the internally managed funds is greater than the average discount of the other funds.

To ascertain that the greater discounts of the internally managed funds are not attributable to other factors that influence fund discounts, I use the following multiple regression model:

$$Premium_{j,t} = \hat{a}_0 + \hat{a}_1 \times Internal_j + \hat{a}_2 \times Expense\ ratio_{j,t} + \hat{a}_3 \times R_{j,t} + e_{j,t} \quad (4)$$

where  $R_{j,t}$  is the return on the fund for year  $t$ . The variable  $R_{j,t}$  is a proxy for anticipated fund performance which has been shown to be a determinant of fund premiums and discounts (see Chay and Trzcinka (1999)). Greater fund performance should be associated with a greater premium, so I expect a positive sign for the coefficient of  $R$ . The influence of expenses on the discount should yield a negative coefficient on *Expense ratio*. If internally managed funds have greater discounts (lower premiums) than externally managed funds after controlling for expenses and fund performance, as the results in Table 2.4 imply, then the estimate for *Internal* will be negative.

Panel A of Table 2.5 presents the results of the regression procedure using the model in (4). The model provides a relatively good fit with an adjusted  $R^2$  of 0.19 and  $F$  of 40.18

which is significant at the 0.001 level. Both of the control variables (*Expense ratio* and *R*) are of the expected sign and significant at the 0.01 level. Of prime importance to my analysis, the estimate for *Internal* is -3.06 and significant at the 0.01 level. This supports the conclusion that internally managed funds have greater discounts than their externally managed counterparts.

Premiums and discounts in Table 2.4 vary from year to year. To verify that my analysis has considered time varying premiums, so I also estimate the regression allowing the premium to vary by year with the use of a classification variable for the year.

$$Premium_{j,t} = \hat{a}_0 + \hat{a}_1 \times Internal_j + \hat{a}_2 \times Expense\ ratio_{j,t} + \hat{a}_3 \times R_{j,t} + \hat{a}_4 \times Year_t + e_{j,t} \quad (5)$$

Panel B of Table 2.5 gives results from the regression in (5). As with the regression in panel A, the control variables are significant and of the expected sign. The model fit is somewhat better with an adjusted  $R^2$  of 0.31. The t-statistics of the estimates of *Year* indicate that there is significant variation among discounts that is not accounted for by the other control variables. Importantly, the sign of the estimate of *Internal* remains negative at -3.01 significant at the 0.01 level.

My results are fairly conclusive; discounts of internally managed funds are consistently greater than those of their externally managed counterparts. Because it is known that internally managed funds have lower expense ratios and that lower expense ratios are associated with reduced discounts, it is a puzzle that internally managed funds do not have lower discounts. Perhaps the externally managed funds' managers have superior skills, a you-get-what-you-pay-for argument. However, that is somewhat difficult to accept across all funds.

### 2.6.3 Performance

The second implication of internally managed funds' lower expense ratios is increased performance. Referring again to Figure 1, the long-run accumulated wealth to a portfolio of internally managed funds is dramatically greater than that of an externally managed portfolio. However, differences in risk characteristics of the portfolios might fully explain the apparent superior performance of the internally managed funds. The following examinations use conventional models to adjust the portfolios for risk and to address two separate questions regarding performance:

1. Do either the internally managed or the externally managed funds exhibit above-normal risk-adjusted returns?
2. Do the internally managed funds yield superior risk-adjusted returns than the externally managed group?

My first method for measuring fund performance is the procedure developed by Jensen (1968). Based on the Capital Asset Pricing Model (CAPM), this measure estimates the over or underperformance of a portfolio compared to a single benchmark market index. The method estimates the CAPM relationship

$$RP = \hat{a} + \hat{b} \times RV_t + e_t \quad (6)$$

where  $RP_t$  is the excess return on the portfolio of funds for period  $t$  (portfolio return less the risk-free return),  $RV_t$  is the excess return on a market index for period  $t$ ,  $e_t$  is the period  $t$  residual term, and  $\hat{a}$  and  $\hat{b}$  are estimates provided by ordinary least-squares regression. The measure of performance is  $\hat{a}$ , and  $\hat{b}$  estimates the systematic risk of the portfolio.

I apply this method to my closed-end fund monthly returns, using the monthly 30-day Treasury bill return as the risk-free rate and the value-weighted CRSP index as the

benchmark index portfolio. Table 2.6 presents the estimates for the entire 64-year sample period in Panel A and for 4 16-year sub-periods in Panels B through E. As Panel A shows, internally managed funds over the entire period display 27 basis points per month in positive excess return, which is significant at the 0.05 level. Externally managed funds also exhibit positive and significant (at the 0.10 level) performance at a level of 20 basis points per month. These results show that both internally managed and externally managed closed-end funds show the ability to outperform the market over a very long investment horizon. This 64-year horizon is longer than the investment life of virtually any individual investor. Would an investor expect positive performance over a shorter but still reasonable long-term period? To address this, I divide the sample periods into four equal 16-year sub-periods. Neither internally managed nor externally managed funds outperform the market on a statistically significant basis over any of the 16-year sub-periods. This result is consistent with studies of open-end and closed-end funds that show no exceptional performance over similar investment periods.

The single-index CAPM may not capture all of the risk characteristics that the market prices in securities, so I also apply the Carhart (1997) four-factor model, which is an extension of the Fama and French (1993) three-factor model for performance evaluation. The model is

$$RP_t = \hat{a} + \hat{b} \times RV_t + V \times S_t + h \times H_t + q \times M_t + e_t \quad (7)$$

where  $RP_t$  is the excess return on the portfolio for period  $t$  (portfolio return less the return on U.S. Treasury bills),  $RV_t$  is the excess return on a market index,  $S_t$  is the return on a factor-mimicking portfolio representing size,  $H_t$  is the return on a factor-mimicking portfolio for book to market equity,  $M_t$  is the factor-mimicking portfolio for momentum in common stock

returns,  $e_t$  is the month  $t$  residual term, and  $\hat{a}$ ,  $\hat{b}$ ,  $\hat{V}$ ,  $\hat{h}$ , and  $\hat{q}$  are estimated with ordinary least-squares regression.

Table 2.7 presents estimates for the Carhart model for the entire sample and for the four 16-year sub-periods. None of the estimates of  $\hat{a}$  are significant, and two of the four sub-periods produce negative values. The model yields significant values for all variables for all periods except for the estimate on momentum. There are five non-significant estimates for the momentum coefficient while the remaining five are negative and significant.

As with most any time-series data, the possibility of autocorrelation of error terms exists. For the regression results displayed in both Tables 2.6 and 2.7, I execute a Durbin-Watson test on the residuals. The D statistic is reported in the final column of each table.

$$D = \frac{\sum_{t=2}^n (e_t - e_{t-1})^2}{\sum_{t=1}^n e_t^2}$$

This value, which exceeds a  $d_u$  critical value of 1.59 in all cases, leads me to conclude significant first-order autocorrelation is not present.

My conclusion is that both internally and externally managed funds show positive and significant abnormal returns when adjusting risk with the single-index model over very long periods but not over periods that represent reasonable investment horizons for individual investors. However, when adjusting for multiple risk factors with the four-factor model, even very long periods do not produce positive abnormal returns for either internally managed or externally managed closed-end funds.

Table 2.6 shows internally managed funds to have a greater  $\hat{a}$  than the externally managed counterparts over the entire sample period and three of the four sub-periods. Table 2.7 provides mixed evidence. However, to compare the performance of two portfolios, it is not sufficient to simply compare the estimates of  $\hat{a}$  (see Smith and Tito (1969)). In other words, while  $\hat{a}$  is a useful measure for identifying whether or not a portfolio has outperformed an index, it does not provide a sufficient statistic for the ranking of portfolios.

While there are a number of valid measures for ranking portfolios by investment results, the first and probably the most widely used among investment professionals is the Sharpe (1966) reward-to-variability ratio. It adjusts mean portfolio returns by the total observed risk (standard deviation) of the portfolio. The Sharpe measure is

$$S = \frac{\bar{R}}{s} \quad (8)$$

Where  $\bar{R}$  is the mean return on a portfolio less the mean return on U.S. Treasury bills and  $s$  is the standard deviation of  $\bar{R}$ .

To statistically compare the internally managed and externally managed funds' Sharpe ratios, I use the test statistic developed by Jobson and Korkie (1981) which approximates the sampling distribution of the Sharpe ratios. The test statistic is

$$t = \frac{s_e \bar{R}_i - s_i \bar{R}_e}{\sqrt{\frac{1}{N} \left( \frac{s_e^2 \bar{R}_i^2 + s_i^2 \bar{R}_e^2 - 2s_e s_i \bar{R}_i \bar{R}_e + .5\bar{R}_i^2 s_e^2 + .5\bar{R}_e^2 s_i^2 - \frac{.5\bar{R}_i \bar{R}_e}{s_e s_i} (s_e^2 + s_i^2) \right)}} \quad (9)$$

Where subscripts  $e$  and  $i$  represent externally and internally managed funds respectively.

Table 2.8 reports the Sharpe ratios for the entire sample and for the four 16-year sub-periods. For the entire period and all four sub-periods, the mean excess return on the internally managed funds exceeds the externally managed mean return. However, the risk

(standard deviation of returns) for the internally managed funds is also greater in every case. After adjusting for this greater risk via the Sharpe ratio, one of the sub-periods (1941 to 1956) yields a Sharpe ratio that is greater for the externally managed funds. While all other sub-periods and the entire period have internally managed funds with Sharpe ratios exceeding the ratios of the externally managed funds, the t-statistics indicate that none of these is significant.

I therefore conclude that the apparent over-performance of internally-managed closed-end funds is a result of the greater risk levels inherent in the funds and the portfolios of securities they carry. Note that not only the total risk of the internally managed funds is greater, but their systematic risk measures are also greater. Table 2.6 presents the systematic risk (betas) of the internally managed portfolios when using the CRSP value-weighted index. The estimates of  $\hat{b}$  for the entire period and for all sub-periods for the internally managed funds are greater than the estimates for the externally managed funds, and the difference is significant at the one percent level.

## 2.7 Conclusions

In this study, I analyze the internally managed closed-end investment companies that have existed during the period following passage of the Investment Company Act of 1940. I compare their expense ratios, discounts from net asset value, and performance to a sample of general-equity externally managed closed-end funds.

Managers of internally managed funds often contend that they are able to deliver investment advisory and management services at a lower cost to their fund than the externally contracted advisors of the externally managed funds. I find that the internally

managed funds do exhibit expense ratios that are significantly lower than the externally managed funds. However, I do not find that these lower expenses translate into lower discounts from net asset value as I might expect, nor do they result in superior performance for internally managed funds. While the long-run accumulated wealth on internally managed funds is much greater than the wealth accruing to externally managed funds, the apparent performance of the internally managed funds appears to be a result of greater risks inherent in their underlying portfolios of stocks than the cost savings observed for the internal form of management. Apparently, the “onerous tax” of external management to which George Clark refers does not exist.

## Chapter 3

### Insider Trading in Closed-End Funds

“Anyone in possession of material inside information must disclose it, or, if he is disabled from disclosing it in order to protect corporate confidence, or he chooses not to do so, must abstain from trading in or recommending the securities concerned while such information remains undisclosed.”

SEC v. Texas Gulf Sulphur

#### 3.1 Introduction

The opening quote, which has become known as the “Disclose or Abstain Rule”, requires virtually anyone who possesses material nonpublic information either to disclose it before trading or abstain from trading in the affected company’s securities. Generally speaking, insider trading refers to the trading of securities on the basis of nonpublic information in breach of a fiduciary duty owed another party. French and Roll (1986) show that most stock return volatility is caused by private information and that this information only affects prices through trading. If popular opinion were to hold sway, we would believe two “universal truths” with regard to insider trading. However, this is not the case.

The first “truth” is that some form of insider trading regulation has been in force since the inception of formal markets. While some verbiage from the SEC Act of 1934<sup>27</sup> has been interpreted as restricting insider trading, this interpretation was not made until 1980.<sup>28</sup> That

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<sup>27</sup> “It shall be unlawful...to engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person, in connection with the purchase or sale of any security.” As codified 1951.

<sup>28</sup> See *Chiarella v. United States* (445 U.S. 222 (1980)). A shift in regulatory attitudes toward insider trading is perhaps best exemplified by John Shad’s widely quoted statement upon taking the position of SEC Chairman in 1981 that he would “come down on insider trading with hobnail boots.” Some scholars attribute inception of insider trading litigation and precedence setting to the Texas Gulf case in 1968, but many more see Texas Gulf as an issue of fraud with insider trading a secondary issue.

insider trading constitutes fraud is not an obvious conclusion. Historically common law certainly did not treat insider trading as fraud.<sup>29</sup>

The second “truth” is that strict regulation of insider trading somehow yields a “fair” and less volatile market. People like Martha Stewart and Ivan Boesky briefly capture the attention of the world through actions that appear to be not “playing fair.” There is general agreement that firms and society benefit from accurate pricing of securities, but market fairness and volatility due to insider trading has been far from theoretically or empirically decided. In efficient markets, information is immediately incorporated and withholding information serves to disrupt this orderly process. Manne (1966a) is the foremost advocate against regulating insider trading. He argues that insider trading forces the price of a security to move toward the market-clearing price that would exist if the information were available. In addition, generally not applicable to CEFs, he argues that insider trading is an efficient way to compensate managers for having produced the information on which they subsequently trade. Ke, Huddart and Petroni (2003) find “evidence that insider transactions improve flow of firm-specific information.” An example of how this functions is detailed in Cornell and Sirri (1992). They examine insider trading related to the Anheuser-Busch takeover of Campbell Taggart and found the Busch insiders received excess returns and Campbell Taggart shareholders received improved liquidity.

Bainbridge (1986) posits that insider trading does not harm investors (e.g., no one made the uninformed sell), investor confidence does not suffer (although pride might), nor do firms suffer (trading on information does not destroy any of the value of that information). Macey (1991) concurs through evidence from countries that have no such trading restrictions, e.g., Japan, Hong Kong, and India. He states, “absolutely no evidence indicates

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<sup>29</sup> See Carlton and Fischel (1983).

a crisis in confidence despite the fact that insider trading is rampant.” The only argument in favor of insider trading regulation that legal scholars universally support is assuring that the value of the information accrues to the proper owner of the rights associated with that information<sup>30</sup>.

In the sections that follow, I will examine the implications of insider ownership, insider trading, closed-end fund trading strategies, and finally the intersection of these three through insider trading in closed-end funds.

## 3.2 Insiders

### 3.2.1 Insider Ownership

With respect to the previously discussed agency problems,<sup>31</sup> the discipline of finance has examined director and management ownership extensively. At lower levels of ownership there exists an incentive effect; at intermediate levels there exists an entrenchment effect; and finally at high levels of ownership is a true alignment of ownership/management interests.<sup>32</sup> Over time, Holderness, Kroszner and Sheehan (1999) observe that the level of managerial ownership has increased virtually monotonically from 13% in 1935 to 21% by 1995.

Prior investigations concentrate on the importance of insider ownership for industrial firms, but how does this translate for funds? Chen, Goldstein and Wei (2005) observe that the SEC writes in a Statement of Staff Opinion that “fund directors who own shares in the funds that they oversee have a clear economic incentive to protect the interest of fund shareholders.” Chen, Goldstein and Wei (2005) examine director ownership in mutual funds

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<sup>30</sup> See Wang and Steinberg (1996) for an excellent analysis of the legal aspects of insider trading philosophy, societal impacts, the case law, and the statutes.

<sup>31</sup> See section 2 of this effort.

<sup>32</sup> Refer to Demsetz and Lehn (1985), Morck, Shleifer and Vishny (1988), or McConnell and Servaes (1990) for some classic efforts on this topic.

from a governance perspective and find most mutual fund directors hold shares in the fund they serve, but of low value (\$13,000), insiders hold more than outsiders, and outsiders' holdings have no relation to expenses of the funds. However, they do find insider ownership has a positive relationship with the expense ratio. Cremers, Driessen, Maenhout and Weinbaum (2005) examine performance relative to director ownership. They find ownership stakes of both classes of directors relative to mutual fund performance have sizeable positive statistical significance and this relationship is economically important. Additionally, funds with high director ownership continue to perform better than funds with low director ownership.

Do the implications of either of these studies hold any meaning within a closed-end fund environment? Cremers et. al. point out that, "because of redemptions, one might expect governance to matter less in open-end mutual funds than in industrial corporations and closed-end funds." Edelen (1999) agrees with the expectation that, "in the case of an open-end fund, with investors able to exit at will if they detect misbehavior, agency problems are not onerous." From this I conclude that insider ownership in CEFs might be more important to performance than in other types of investment companies.

### 3.2.2 Insider Trading

Current interpretation of Rule 10b-5 of the Securities Exchange Act of 1934 prohibits the exploitation of inside information by corporate officers, directors, and large shareholders. However, insiders do trade on private information and apparently profit from some form of foresight with respect to the firm's performance. Since not only their job, but also their own money is on the line, insider trades should truly reflect manager opinions.

In an early event-study, Jaffe (1974) examines 200 large firms and reports that insiders tended to buy before abnormal share price increases and sell before abnormal share price decreases. Finnerty (1976) concludes that “trading on inside information is widespread” and finds support for positive returns following insider buying.<sup>33</sup> Lin and Howe (1990) examine insider trades in OTC firms and find insiders consistently make the right own-wealth maximizing decisions. They find intensive selling months follow periods of positive abnormal returns and conversely. Rozeff and Zaman (1988) reflect that nearly all studies have documented that insiders earn abnormal returns and outsiders can possibly capitalize on this information by merely reading the SEC’s *Official Summary of Security Transactions and Holdings*.

Generally, I can place most of the research on the profitability of insider trading into one of three categories. First is a contrarian/overreaction view of insiders, such as Givoly and Palmon (1985) finding a consistent insider ability to buy low and sell high. The second category is insider omniscience of firm prospects as suggested by Ke, Huddart and Petroni (2003). Finally, many researchers doubt insiders possess the skill or special information needed to overcome market efficiencies. While the divisions are not mutually exclusive, I will briefly explore some of the findings.

Seyhun (1986), supportive of the Givoly and Palmon view, finds insiders increase their sales after the stocks experience high returns in anticipation of some form of mean reversion of value. Insiders recognize pricing errors made by outsiders’ inferior valuation models or biased judgment. Rozeff and Zaman (1988, Rozeff and Zaman (1998) find insiders profit from their trades but claim any outsider attempt to profit from replication disappears when adjusted for size, book-to-market, and transaction cost effects. Malmendier and Tate (2004)

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<sup>33</sup> For other early efforts with similar conclusions see Lorie and Niederhoffer (1968) and Jaffe (1974b).

conclude manager confidence exceeds any actual skill and managers are merely contrarians on their own stock. Kolasinski and Li (2005) find insiders capitalize on post-earnings announcement drift. The managers are aware of mispricing and will capitalize on it for their own account or in issuance of an SEO. Piotroski and Roulstone (2004) find buys(sells) related to contemporaneous bad(good) news and future good(bad) news.

The sentimental and legal favorite reason for insider trading profits is the insiders' proprietary knowledge of the firm. Researchers have examined most corporate events where the insiders have firm knowledge prior to general dissemination. Most find excess return to the insiders and attribute the profit to their informational advantage. Seyhun (1990a) examines pending takeovers and finds insiders profit from the prior knowledge of the transaction. John and Lang (1991) claim insider trades prior to dividend announcements have signaling explanatory power. For firms with insider sales prior to dividend announcements, they subsequently find significant negative excess returns. Karpoff and Lee (1991) find SEOs significantly preceded by insider transactions. Damodaran and Liu (1993) conclude that REITs' potential excess returns are incorporated into prices by insiders prior to an announcement of portfolio revaluation. Seyhun and Bradley (1997) find insiders sell prior to bankruptcy filing and profit (lose less) from these trades.

Piotroski and Roulstone (2005) link insider trades to future outcomes. They believe there is significant information about a firm's future potential contained in earnings announcements. Insiders should be privy to this information long before the general market. Seyhun (1992) examines the relationship between insider sales and earnings prereleases. For his period of study, the relationship began as weak and even further diminished with time. Ke, Huddart and Petroni (2003) find sales prior to a break in earnings "strings" but with a

longer lag (up to one year) than is usually observed with this type of event study. “It appears that insider trading restrictions lead to a substitution of the firm specific information of insider trades with industry level information of analysts.” They speculate that their longer lag’s significance could be the result of insider’s fear of SEC violations. Sawicki (2005) speculates that there is a relationship between insider trades and earnings management. She attributes some of the performance improvement after insider purchases as merely earnings management.

Much of the previous research has only indirect implications for the study of closed-end funds. Since portfolio holdings are known, dividends or earnings can be reasonably forecasted and takeovers, mergers and SEOs would be very rare. However, Betzer and Theissen (2005) find German insider trading very similar to the U.S. and offer an additional insight: a more diverse ownership structure exhibits even stronger results. I observe highly diverse ownership in much of my closed-end fund sample.

While insider trading may be pervasive and the profitability of those trades may seem a given, there is not universal consensus on the issue of trading profitability. Lakonishok and Lee (2001) find insider trades in most firms do not predict subsequent returns once adjusted for size and book-to-market. Chan, Ikenberry and Lee (2003) examine firm repurchases versus insider trades. While they find an increase in insider activity during the repurchase event, the insiders do not appear to be able to utilize the information content for personal gain. In fact, they find abnormal returns tend to be higher when insiders are selling stocks following repurchase announcements. Seyhun (1988) differentiates sector returns from firm specific returns in aggregate insider trading. He concludes that some trades are merely a leading indicator of general economic conditions rather than a marginal improvement in a

firm's competitive advantage. Seyhun (1992) reexamines aggregate insider trading and finds both business conditions and movement away from fundamentals contribute to excess returns. Jenter (2004) posits that the perceived mispricing of firm shares is a motivator to trade and suggests that managers try to actively time the market both in private trades and firm-level decisions. However, there is "little evidence that managers use valid inside information in their trades. The excess returns to insider trades after controlling for size and book-to-market effects are indistinguishable from zero."

Can outsiders profit from mimicking insider trades? Even Givoly and Palmon (1985) admit a major portion of insider abnormal performance may be outsiders chasing the insider announcements. That is, the information is incorporated through the insider trades themselves. Similar to Seyhun (1986), Brick, Statman and Weaver (1989) concede that insiders may be able to profit, but the magnitude is small and they question the existence of such profits for any outsider.

### 3.2.3 Trading Strategies

Closed-end funds routinely trade at a discount to the underlying portfolio value. Additionally, this discount has been shown to be mean reverting.<sup>34</sup> Early researchers such as Thompson (1978), Richards, Fraser and Groth (1980), and Anderson (1986) design a number of trading strategies to capture some of the discount. They all find significant excess returns to investing in funds with larger discounts in approximately equal weighting, but they adjust for neither risk nor transactions costs. Brauer (1988) overweights the funds with larger discounts and finds even stronger results. Finally, Sias (1997) overweights the higher

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<sup>34</sup>Refer to Gasbarro, Johnson and Zumwalt (2003) or Pontiff (1995) for mean reversion of discounts. Ammer (1990) finds most of the abnormal return in CEFs comes from mean reversion. For industrial firms, Moreck, Shleifer and Vishny (1988) claim selling growth and buying value works because of an element of mean reversion in valuations.

discounts even more to achieve a 21% annual discount return in excess of the underlying portfolio.

As I previously observed, some researchers attribute a portion of the CEF puzzle to the preponderance of individual investors' noise trading. This should not be the case with funds in the UK where institutional investors are dominant. However, Cheng, Copeland and O'Hanlon (1994) find positive abnormal returns on UK funds with a portfolio strategy of long the higher discounted and short the lower discounted funds. Agyei-Ampomah and Davies (2005) find a positive relationship between excess volatility and fund returns and suggest a trading rule based on the relative volatilities of UK fund returns versus NAV returns could be similarly be profitable. Adams (2003) further refines these two strategies by considering the positive covariance between discount returns and NAV returns in addition to the discount level. He speculates that "this would mean less dealing activity , but should also result in higher excess returns."

Cakici, Tessitore and Usmen (2000) incorporate trading costs and risk into their strategy and find significant abnormal returns if the portfolio is rebalanced frequently and transaction costs are low. These results endure with less frequent rebalancing if transaction costs are high. Anderson, Coleman and Born (2001) examine a number of different trading strategies and find that most strategies will yield excess returns as long as trading costs are reasonably low (1-2%). However, the results are highly sensitive to the rebalancing triggers utilized. Cakici, Tessitore and Usmen (2002) updated their 2000 effort by adding a weighting scheme and limited portfolio rebalancing to come to similar conclusions.

Other types of strategies have been tested. Carhart (1997) is the origin of momentum trading strategy for mutual funds. Cremers, Driessen, Maenhout and Weinbaum (2005) also

examine mutual funds and find a portfolio that buys in fund families in which ownership by independent directors is high and sells funds in families in which ownership is low, generates average annual abnormal returns of 2.3%. Gentry, Jones and Mayer (2004) propose a REIT trading strategy based on a long/short portfolio of high/low discounts and find alphas of about 1.5% per month “with little risk.” Huguen, Mathew and Ragan (2005) utilize large changes in the discount based on daily NAV to trigger short term trading. They find short term trading succeeds even after transaction costs. Wang (2004) utilizes the CEF discount as an indicator of investor sentiment to buy/sell stocks with highest /lowest exposure to CEF discount and finds 11% abnormal profit.

### 3.3 Insider Trading of Closed-end Funds

The profitability of insider trading most likely exists for industrial firms that possess considerable proprietary knowledge. But how does this translate for funds? Are insiders aware of this potential profit and do they take advantage of it?

Closed-end funds provide an interesting laboratory in which to study insider trading. On the surface there appears to be little nonpublic information available to insiders. Virtually all of the funds’ portfolios I examine are populated with large capitalization, widely covered, common stock about which little private information is held.<sup>35</sup>

In response to recent fund arbitrage scandals, Bullard (2005) looks at insider trading in mutual funds. These funds are only priced at the end of day. Therefore, profiting from trades in mutual funds becomes more difficult since true informed insider trades would have to be executed prior to the close in violation of law. Wermers (2000) finds that mutual fund managers who hold their own stock beat the market portfolio by 1.3% per year, or functionally

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<sup>35</sup> Finnerty (1976a) implies that relatively small companies offer a greater opportunity for exploitation of inside information.

the equivalent of expenses and transactions costs. For closed-end funds, merely knowing the holdings of a fund and its NAV is not a violation (i.e. just knowing a fund's portfolio is not really inside information).

Due to significant positions in individual firms, a closed-end fund insider could be considered a "constructive" insider with respect to the funds' holdings. Besides an insider's potential informational leverage as a constructive insider over the firms held in its portfolio, fund insiders would be privy to the fund's portfolio changes, distribution policy, and any share repurchase program prior to public dissemination.

For firms with a more dispersed ownership, Betzer and Theissen (2005) find the CARs to insider trading are more pronounced. Since dispersed ownership is highly characteristic of closed-end funds, my results might be accentuated. The alternative is that a CEF insider could be trading on the belief that the discount/premium is wrong, essentially a contrarian position to the outsiders. Is there information contained in the insider trades or is the trading merely buying on the dips? In the sections that follow I examine insider trading in closed-end funds.

## Chapter 4

### Evidence from Insider Trading in Closed-End Funds

#### 4.1 Introduction

Omniscience, or front-running, is the most frequently cited reason for potential insider profiteering. The Insider Trading and Securities Fraud Act of 1988 (ITSFEA) was the legal reaction to the Ivan Boesky and Drexel, Burnham, & Lambert scandals. This act does not hold significant applicability to funds or portfolios. With respect to the legal implications of insider trading in funds, Chen, Goldstein and Wei (2006) observe “no security issued by an investment company shall be sold to insiders or to anyone other than an underwriter or dealer, except on the same terms as are offered to other investors”<sup>36</sup> The only exception to this standard is if the fund distributes shares directly to directors in lieu of cash compensation.

Since closed-end fund portfolio holdings are known, dividends or earnings can be reasonably forecasted. Since takeovers, mergers and SEOs are very rare, a significant portion of research on industrial firms has only indirect implications for our study of closed-end funds. *Barron's* July 18, 2005 suggests that investors should examine insider buying. “Most of the time, it will take the form of small purchases by fund directors. Last year, Nuveen Investments’ chief executive bought 35,000 shares of JTA at about \$17 to \$18 a share – below the \$20 price Nuveen charged the public in the fund’s IPO on Jan 27, 2004. The fund since has climbed back to within pennies of the initial offering price.” This anecdote supports the contrarian view of insider trading.

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<sup>36</sup> Cf. House Hearings, *supra* note 4 at 99 (memorandum of agreement in principle between the Commission and representatives of open-end and closed-end investment companies dated May 13, 1940)

## 4.2 Examination of Insider Trading of Closed-end Funds

Closed-end funds provide an interesting laboratory in which to study insider trading. Only since 2002 were mutual funds required to disclose director and insider ownership and the specifics of their holdings are obscured by broad dollar-value range categories. However, closed-end funds have a much longer history of insider ownership and transaction reports are available through the SEC's *Official Summary of Security Transactions and Holdings*. The profitability of insider trading most likely exists for industrial firms that possess considerable proprietary knowledge. But how does this translate for funds? Are insiders aware of this potential profit and do they take advantage of it?

Upon cursory examination we find little nonpublic information available to CEF insiders. In mutual funds where portfolio concentration exists, Burlacu, Fontaine and Jimenez-Garces (2005) find a positive relationship between performance and the availability of private information. They speculate that the additional knowledge is exactly offset by the cost of acquiring that knowledge. When transaction costs are included, the investment underperforms. However, virtually all of the closed-end funds' portfolios we examine are populated with large capitalization, widely covered, common stock about which little private information can be held.<sup>37</sup>

Betzer and Theissen (2005) find German insider trading very similar to that found in the U.S. and they offer an additional insight: a more diverse ownership structure exhibits even stronger results. They find the cumulative abnormal returns to insider trading are more pronounced for firms with a more dispersed ownership. Due to minimal institutional

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<sup>37</sup> Finnerty (1976a) implies that relatively small companies offer a greater opportunity for exploitation of inside information.

investment in CEFs, I observe highly diverse ownership in much of our closed-end fund sample.

We speculate that there are other opportunities to profit from CEF investment. Blouin and Cloyd (2005) examine price pressure of DRIP plans, very common in closed-end funds. They find upward price pressure on the share price at the time of dividend reinvestment and speculate that the demand curve for CEFs is downward sloping and returns could be improved by altering the timing and size of buy orders. Kolasinski and Li (2005) find insiders capitalize on post-earnings announcement drift. Similarly, do insiders take advantage of the known price pressure of DRIPS?

#### 4.2.1 Measures of Insider Trading

Researchers have used a somewhat narrow array of measures of insider trading. Ke, Huddart and Petroni (2003) utilize net number of open-market purchase transactions and defend this measure as equally weighting the daily decisions of each insider's opinion. Piotroski and Roulstone (2005) and Rozeff and Zaman (1998) utilize a purchase ratio (number of shares purchased / total shares transacted). These current measures are merely iterations of those used in prior research. In the following sections, we examine three of the traditional measures.

##### 4.2.1.1 Seyhun (1986)

Seyhun (1986) examines the profitability of informed insider trading from the viewpoint that profitable trading is a zero-sum game. He claims the excess profit earned by informed insiders is exactly offset by outsiders' losses. From this he infers that higher bid-ask spreads result. He considers an insider to be a buyer if he buys more shares than he sells

during a month. His measure of insider trading at the firm level is binary. Regardless of the level of intensity, Seyhun ascribes a positive one to a given month if the number of buyers exceeds the number of sellers or negative one if sellers exceed buyers. He excludes indeterminate months. He claims this firm-level aggregate measure cancels out idiosyncratic components of specific insider trades and increases the predictive power of his tests.

Seyhun compares this measure to abnormal returns over the period from -200-days from month end to +300-days and finds highly significant relationships. Insiders purchase stock prior to release of favorable information and sell stock prior to the release of unfavorable information. Most of the abnormal stock price adjustment occurs within the +/- 100-day window. In order to validate the robustness of his results, Seyhun breaks down his results by type of insider, dollar volume, proportion of firm traded and value of the firm. These regressions confirm the result that insiders can reliably forecast future abnormal stock price changes. Within the group of insiders, he finds officer-directors trade on more valuable information than officers. He claims the former group is more familiar with the overall operations of the firm yielding more valuable information.

To evaluate the realizable abnormal profits from imitating insiders, Seyhun measures the net-of-trading-cost profits to an outsider based on the release of the SEC's *Official Summary of Security Transactions and Holdings* (henceforth *Official Summary*) and finds the abnormal returns to be non-positive.

#### 4.2.1.2 Rozeff and Zaman (1988)

Rather than the previous majority-rules criterion, Rozeff and Zaman (1988) believe the level of intensity of insider actions more clearly isolates the information content of

insider trades. They define an “intensive” month as one with greater than three trades on either the buy or sell side and no trades on the other side<sup>38</sup>. They defend this measure as eliminating rebalancing effects and non-informational trades. Their 1973-82 sample is further restricted by requiring 60 months of CRSP data as well as Compustat listings to be able to ascribe size and earnings-to-price ratios for the firms. As opposed to Seyhun (1986), who ascribes all insider trades to the last day of the month, Rozeff and Zaman utilize the actual date of the trade as reported in the *Official Summary*. This allows them to estimate trading profits within the month as well as in subsequent months. They also utilize control portfolios of matched firms to determine whether the insider was able to make profitable use of insider information. They conclude strong-form efficiency is rejected and insiders do profit. To determine if outsiders can profit from reading the *Official Summary*, they lag by two months the listed trades to simulate when the insider trades might be generally available. Once transaction costs are considered, any potential outsider profit is non-positive and semi-strong efficiency is validated.

#### 4.2.1.3 Lin and Howe (1990)

Many researchers conclude that abnormal returns are higher for companies of smaller size and higher price-to-earnings ratios<sup>39</sup>. OTC/NASDAQ market issues are more representative of these characteristics than the previously studied NYSE issues. In a method similar to Rozeff and Zaman (1988), Lin and Howe (1990) examine insider trading during “intensive” months and find evidence suggesting insiders have predictive ability in both their purchases and their sales. Even though Seyhun (1986) finds most of the abnormal performance occurs in the +/- 100-day window, Lin and Howe utilize a similarly large

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<sup>38</sup> A similar definition was employed by Lorie and Niederhoffer (1968) and Pratt and DeVere (1968).

<sup>39</sup> See Banz (1981), Basu (1983), Cook and Rozeff (1984), or Rozeff and Zaman (1988).

window of potential abnormal performance of minus six months to plus twelve months. For this abnormal performance they utilize two market-adjusted metrics: CRSP returns and portfolio of size-matched firms. They find positive abnormal returns prior to intensive sales months and negative abnormal returns prior to intensive purchase months. While the results are significant, the average bid-ask spread of seven percent almost eliminates profiteering from the information alone. However, their timing ability can not be denied.

Howe and Lin also find an “information hierarchy” exists within insiders with chairmen of the board’s and other officers’ trades possessing greater information content than the trades of large unaffiliated shareholders. However, Lin and Howe do not find significant results relating to the level of intensity being an indicator of information quality. They find neither the relative number of trades in a month nor the value of those trades to contain additional information.

#### 4.2.1.4 Our measure

Similar to these well established methods, we utilize a similar definition for intensive month and incorporate the usual market models and matched comparisons to determine abnormal performance. Additionally we examine individual fund-month transactions in isolation and in pooled, fund-of-funds, comparisons with various benchmarks.

While we investigate various weighting schemes to our transactions, we do not discover any significant differences. As Hirschey and Zaima (1989) claim, value-weighting might obscure the information content of small trades. Most researchers who do consider the relative size of transactions do so only as an ancillary robustness check and find similar results. For example, Ke, Huddart and Petroni (2003) use net shares scaled by total insider shares traded and finds similar results. One exception to this approach is Jenter (2005).

Jenter utilizes the dollar value of net open market purchases to put forth an argument that managers are merely contrarian investors.

#### 4.3 The data

I identify the thirty-seven general equity closed-end funds with insider transactions in existence 1994 through 2004. I extract the SEC filings from *The Official Summary of Security Transactions and Holdings* to assemble all reported insider and significant stakeholder transactions from 1994 through the termination of hard-copy published records in 2000. After 2000, I add to these observations with more current transactions from the EDGAR database. While the EDGAR database reports more current transactions, those records are only inclusive of late 2003 to 2005. In other words, from 2001 to 2003, many CEF insider transactions are not available. This results in a significant lacuna in data continuity; therefore I will not include these latter transactions but shall restrict my examination to the 1994-2000 period. My extraction results in 3867 transactions.

I believe open-market transactions indicate unencumbered exercise of insider sentiment. For this reason I exclude any transactions over which the insider might not have control of the timing of the transactions such as options, grants or inheritances. In a manner similar to prior efforts, I exclude trades of less than 100 shares<sup>40</sup> as being more likely a function of DRIPs rather than any form of active trading. Even though only a very few of the observed CEFs issue options, I will also exclude grants and options due to the possible inability to ascribe trader motivation. Penman (1982) reports only 13% of transactions reflect exercise of options and inclusion does not alter results. However, due to changes in compensation schemes since 1982, I speculate that this percentage may have significantly

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<sup>40</sup>For example refer to Chan, Ikenberry and Lee (2003).

changed. Karpoff and Lee (1991) ignore option exercise as “consistent with most previous studies.” Similarly, Seyhun (1992) claims grants and options are “less likely to be motivated by information reasons.” More recently, Ke, Huddart and Petroni (2003) exclude grants and options exercise claiming that frequently the timing of grants is not at the discretion of the insider and that frequently the exercising of options results in a “wash” sale. Piotroski and Roulstone (2005) incorporate option grants and options exercised and find very similar results relative to their exclusion.

My process of exclusion results in 1781 open-market common share transactions. I further consolidate multiple trades within a given fund and month and achieve 1497 distinct fund transaction-months. In reviewing the sample I observe six transactions in excess of sixteen million dollars. The largest of which is greater than one-third of a billion dollars. I believe these to be portfolio adjustments and not indicative of trading on any informed basis and therefore exclude them. The results derived based on these six exclusions are not substantively different from their inclusion. I provide a breakdown of the sample exclusions in Table 4.1.

In Table 4.2, I provide further descriptive statistics of the 1,775 insider transactions. Despite the exclusion of six extreme observations, there still remains a significant impact of the larger transactions. In panel A, the mean transaction size is \$178,343, nearly five times the size of the median transaction of \$36,656. Approximately one-third of the transactions are sales. The dollar value of these sales is considerably larger than the purchases. Panel B decomposes the sample by number of shares traded and depicts a similar distribution. As would be expected, a significant portion of the purchases are for less than three thousand shares. As with the larger median sale transaction, the share trade size of sales are somewhat

larger. Although examination of insider type is beyond the scope of this effort, I provide a breakdown of the type of transactor in Panel C. I observe no unexpected abnormalities in this distribution.

In Table 4.3, I describe the chronological characteristics of the sample by year and by month. I observe a reasonably even distribution of purchases. However, the same claim cannot be made for the sales transactions. The years 1997 and 1998 account for fifty-three percent of all open-market sales, yet only twenty-two percent of the purchases. I resort the data based on the month of the transaction. Thirty percent of the purchase transactions occur in the single month of December and a similar portion of the sales occur in November and December combined. While beyond the scope of this examination, I believe this observation might be attributed to a dividend or tax explanation.

For a portion of this examination, I pool the transactions by fund-month and generate an overall “fund of funds” portfolio. Details of this process are included in the appropriate section that follows. Although most fund discounts and general equity fund performance results are highly correlated, I believe pooled data could obscure any relative fund misvaluations and fund-specific opinions of insiders. I examine individual funds to reveal any possible fund specific insider information. I report basic characteristics of this sub-sample in Table 4.4.

The previously cited insider trading literature utilizes some variant of the “intensive month” to examine trades.<sup>41</sup> Due to the dearth of observations, I also include months in which at least 75% of the trades are on either the buy or the sell side or “marginal months.” I report a chronological description of intensive fund-month occurrence in Table 4.5.

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<sup>41</sup> For detail, please refer to Rozeff and Zaman (1988) or Lin and Howe (1990).

I utilize the CRSP data base for market returns, individual fund returns, and share prices. I calculate the fund discounts in the usual manner<sup>42</sup> from the share-price and net asset values reported on a weekly basis in *The Wall Street Journal*. For purposes of establishing a monthly discount, I utilize the last reported price and NAV for each month.

## 4.4 Results

### 4.4.1 Individual Trades as a Fund of Funds

As an initial examination into the degree which insiders might be informed, I pool their individual transactions as if a single investor was replicating each insider's actions. Each individual trade is priced utilizing the prior day's closing price with respect to the reported date of execution. I believe this price and its associated discount is the primary motivation for trading. I then combine all trades for an individual fund for a given month to yield net activity by fund-month. Some of these fund-months are negative indicating sales that are in excess of purchase balances. Because I did not track prior holdings, negative amounts are treated as short sales. Although short sales of closed-end funds are seldom available, I believe the trading sentiment still remains. For purposes of performance, similar to Seyhun (1986), I ascribe all trades to the last day of the month. I then compare the resultant portfolio to a similar investment in each of three indices: equally-weighted CRSP, value-weighted CRSP, and Standard and Poor's 500. As can be observed in Table 4.6, the terminal value of the insider trading fund is in excess of the terminal values of any of the three benchmarks. As a robustness check, I also construct a portfolio as if the trades

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<sup>42</sup> Discount or Premium = (Share Price – NAV) / NAV

occurred at the beginning of the month. Although, I do not report results of this alternative specification, there is no substantive difference in the results.

By pooling the funds I am assuming the inherent risk between all investments is identical, i.e.  $\beta$  equals one. From Section Three of this effort, utilizing a four-factor market model, I find the 1941-2004  $\beta$  to be close to one. For the period 1994-2000, I estimate  $\beta$  using the four-factor model with each of the appropriate benchmarks.  $\beta$  is significantly less than one ( $\approx 0.76$ ). I interpret this lower  $\beta$  as implying the insiders even more strongly outperformed the benchmark on a risk adjusted basis.

In a separate examination, I pool performance returns, as opposed to portfolio values. However, if one fund has insider buys and another has sales, the portfolio behaves similar to a market neutral hedge fund and leverages the returns. Monthly returns such as +400% or -268% result from this process and it fails to identify any overall set of insider skills. I also examine the buys in isolation and the sells in isolation versus the returns or the changes in the discount. I do not report any of these results here, but I find none of the correlations or regressions to be significant.

#### 4.4.2 Intensive months

If some form of foresight with respect to fund performance exists, I would expect insiders to take advantage of this knowledge. I believe this knowledge would be neither universally distributed within the fund nor concentrated with a single individual. A number of insiders could potentially capitalize on it. In the spirit of Rozeff and Zaman (1988) and Lin and Howe (1990) I examine intensive months, where there appears to be a consensus as to a fund's prospects.

From the original 1994-2000 sample I identify twenty-six funds with 116 intensive months as defined by the prior literature. While one sale transaction would eliminate from consideration a month with twenty purchase transactions, I believe such a month is indicative of the overall sentiment of insiders. Therefore, I supplement the original total with seventeen “marginal” intensive months. These are cases where a minimum of seventy-five percent of all trades within a fund-month are either purchases or sales. The seventeen months are distributed in trade-side and date very similarly to the rest of the sample. Three of the funds do not report discounts which results in the loss of seven observations. Further, three funds have nine transactions with which a discount cannot be associated. The final sample of twenty-three funds and 117 intensive months is reported in Table 4.5. As with the individual trades, intensive purchase months exceed sales months by almost three-to-one. Although not reported, calendrical distribution of intensive months is similar to the distribution of trades in Table 4.3, panel B. Sales appear evenly distributed, but almost one-fifth of the intensive purchase months occur in December.

I then associate a change in the discount from  $t-4$  months to  $t+4$  months relative to each month of the sample by fund. With indicator variables assigned for purchases and sales months, I regress the intensive months against the change in the discount. In neither any individual period nor any agglomeration of periods is any significance revealed for either buys or sales. I further examine the sample by executing the regressions for each fund individually. In over two hundred regressions, I find only three funds with transactions relative changes in the discount significant at the five percent level. Since this outcome would be expected with merely random chance, I do not report any of these results.

#### 4.4.3 Individual funds

If an insider is better informed, he should be most informed about the prospects of his own fund. Pontiff (1995) reports that the primary source of returns to fund trading is the mean-reverting nature of discounts. Therefore, I execute regressions of the insider trades against the change in the discount. The trade is considered the “event” and it is matched against the change in the discount for each month  $t-12$  through  $t+12$  months. To achieve a modest level of statistical significance in examining the individual funds, I require each fund to have 10 transaction-months over the seven year period of examination as well as complete discount observations and pricing information. Eighteen funds of the original thirty-seven meet these criteria.

The only regressions with any statistical significance are those two months either side of the event. None of the other regressions exhibit any statistical significance at even the ten percent level. I identify seven of the original eighteen funds with some apparent insight. A positive parameter indicates a narrowing of the discount and a negative parameter indicates a widening of the discount. For all eighteen funds combined, the month prior to the events is negative, but not significant. However the month after the event is positive and significant at the ten percent level. This is consistent with insiders trading prior to a narrowing of the discount and capturing this portion of the return.

In addition to the results for all funds pooled, I delineate the seven significant individual funds in Table 4.4, Panel B. Royce Focus Trust, General American, and Petroleum and Resources each exhibit a significant narrowing of the discount followed by a widening of the discount prior to the trade. The last two of these also exhibit significant post trade narrowing. Blue Chip Value exhibits similar tendencies, but only the post event

narrowing is significant. All of these changes in the discount are consistent with return enhancing trading on the part of insiders. However, insiders at the Zweig Fund appear to follow a “buy-high and sell-low” philosophy. They buy after a narrowing of the discount that subsequently widens. Overall, it appears that some insiders can recognize a good discount when they see one. I interpret these results as consistent with insiders as contrarians, but cannot ascribe any omniscience to their trades.

#### 4.4.4 Inverse Events

Dennis and Strickland (2002) investigate the relationship between the ownership structure and returns of firms on days when the absolute value of the market’s return is two percent or more. Given that a significant portion of the returns from closed-end funds is derived from the mean reverting nature of the discount, I would expect to find significant insider sales when the discount is minimal and purchases when the discount is deep. It is in the spirit of Dennis and Strickland that I examine the absolute level and changes in the discount relative to insider trades. I utilize the extreme observations of the discount as the “events” and examine the insider trades at these times.

First I extract the months with the four highest and four lowest levels of discount (approximately five percent of the observations from either tail) from both the pooled sample and from the reduced sample of individual funds previously utilized. I then associate these with the insider trades.

The average discount across all funds is least harsh during the four months November 1997 through February 1998, with an average discount to NAV of four and one-half percent. This should be a period when investors might decrease their position to take some money “off the table.” As can be observed in Table 4.7, there is a total of about \$25.5 million in

insider sales and only \$5 million in purchases during this period. These sales account for almost over one-fourth of all sales during the entire seven years of insider transactions examined. The purchases represent approximately only five percent of the total dollar value of all purchases. Due to the timing within the month or a delayed reaction to market information, it is possible that some insiders might trade earlier or later than this specific period. If the time frame is expanded by one month on either side to allow for this, the sales for this six-month period encompass virtually one-third of all sales during the 84 months.

The four months with the harshest discount to NAV are contained within the five-month period December 1999 through April 2000. The average discount during this period is fourteen percent of NAV. Again assuming a mean reversion characteristic to discounts, this should be a period of time when investors might be adding to their position. I find this to be true. The results are not as striking as the period of least discount, but are informative nonetheless. The purchases during this period of \$14 million represent about thirteen percent of all purchases. If the period is expanded by one month as with the least discounted period, the results do not significantly change. The sales during this same period are almost nonexistent and represent about two percent of all sales transactions.

Discounts across funds tend to move in tandem. Therefore, I expect the individual funds to exhibit similar patterns. Although not as closely grouped as the composite, most individual funds still display similar periods of concentration. For example, Royce Focus Trust concentrated its deepest discount around the two month period September through October 1994 and its four least discounted months occurred during the five month period July through November 1998. The number of insider transactions for each individual fund becomes very restrictive at this level of examination. For example, Adams Express (ADX)

had only one transaction, a purchase, during the period of harshest discount, February through March 1999. Similarly, ADX insider's had a few sales prior to the period of least discount, but I cannot ascribe any significance to these trades. Very few funds even had insider trades during the period where the discount was at an extreme. Only General American (GAM) has any transactions of merit. The insider purchases of GAM during the harshest discount are as expected, approximately five percent of both number of trades and dollar value of those trades. However, over sixteen percent of the sales transactions, in terms of dollar value, occur during the two month period (June through July 2000) when the discount to NAV was least harsh.

As opposed to the absolute value of the discount, I also examine the trades with respect to *changes* in the discount. The value of the discount follows a cyclical pattern so extreme observations tend to be clustered in time. Changes in the discount are more susceptible to information shocks and tend to be discreet so I do not observe any clustering in time. While I report the extreme observations in Table 4.7, there is no further information to be gleaned. None of the months can be associated with dollar value or number of trades in any meaningful way. Further, when I examine the leading or lagging month's transactions with respect to the changes, not even any market impact can be ascribed. Examination of the individual funds yields a similar lack of information.

In summary, while the pooled results relative to absolute discounts are significant, it does not appear that insiders have any timing ability even with respect to their own funds. I believe the pooled results are merely consistent with a general market movement opinion held by insiders in concert in support of a contrarian viewpoint, not any omniscience.

#### 4.5 Conclusions

I do not find any evidence that insiders of closed-end funds possess any omniscience relative to their own funds. However, at times these insiders appear to take advantage of the significant portion of fund return inherent in the mean-reverting nature of the discount.

While my conclusion is that insiders are merely contrarians, this realization could allow for refinement of current regulatory actions taken in response to recent mutual fund scandals.

Further, the proposed majority voting requirement may sacrifice fund earnings to implement, yet provide no additional security. Some of the insider trading restrictions and governance restrictions may be overly onerous if insiders are merely trading on publicly available information. In the case of closed-end and possibly open-end funds, perhaps Henry Manne is correct and insider trading should not be regulated.

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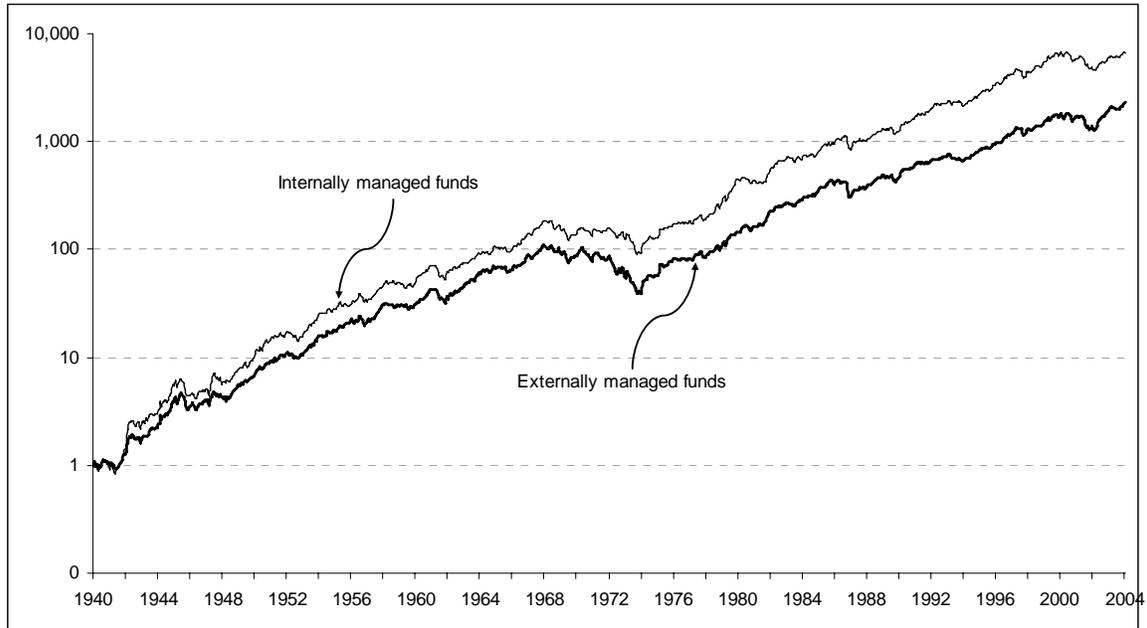
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**Figure 2.1 Growth of \$1 Invested in Portfolio of Internally Managed and Externally Managed Closed-End Funds, 1941 to 2004.** Figure shows the accumulated value of a portfolio with an initial investment of \$1 invested in internally managed and in externally managed closed-end funds. The initial investment occurs on the first day of 1941 and continues through the end of 2004 with all dividends reinvested before tax.



**Table 2.1**  
**Internally Managed Closed-End Funds Since 1941**

Table presents information on closed-end investment companies that were internally managed for any period during 1941 to 2004.

Fund Name	Symbol	Sample Dates	Fund Status
Adams Express	ADX	1941 to 2004	Active, total assets \$1.2 billion year-end 2004, managed with PEO
Baker Fentress	BKF	1972 to 1999	Paid a liquidating dividend in 1999
Central Securities	CET	1962 to 2004	Active, total assets \$529 million year-end 2004
General American Investors	GAM	1941 to 2004	Active, total assets \$1.3 billion year-end 2004
Madison Fund	MAD	1955 to 1984	Became natural resources holding company June 1984
Niagara Shares	NGS	1955 to 1991	Merged into Scudder Growth and Income Fund
Overseas Securities	OVU	1962 to 1985	Dropped investment company status and changed to Interwest Corp. in 1985, changed to Collum Companies in 1986 and subsequently went out of business
Petroleum & Resources Corporation	PEO	1941 to 2004	Active, total assets \$619 million year-end 2004, managed with ADX
Sterling Capital	SPR	1972 to 2004	Merged into Gabelli Equity Trust, and open-end fund, on September 14, 2005
Tri-Continental Corporation	TY	1941 to 1981	Active, but changed to external management in 1981, total assets \$2.5 billion year-end 2004

**Table 2.2**  
**Average Expense Ratios and Total Net Assets for**  
**Internally Managed and Externally Managed Closed-End Funds, 1985 to 2004**

Table contains mean year-end expense ratios (expenses/net assets) and total net assets for internally managed and externally managed closed-end funds. T-statistics test the equality of the means. \* and \*\* indicate statistical significance at the 0.05 and 0.01 levels respectively.

Year	Number of Funds		Expense Ratio (Percent)			Total Net Assets (\$ millions)		
	Internally Managed	Externally Managed	Internally Managed	Externally Managed	t	Internally Managed	Externally Managed	t
1985	6	5	0.718	0.628	-0.60	308	477	0.73
1986	6	7	0.783	0.897	0.72	290	393	0.52
1987	6	12	0.900	1.262	1.38	273	330	0.48
1988	6	16	1.000	1.542	1.28	292	274	-0.17
1989	6	18	0.754	1.559	3.52**	350	296	-0.46
1990	6	20	0.859	1.598	3.33**	319	249	-0.67
1991	5	20	0.724	1.380	3.89**	428	302	-0.59
1992	5	22	0.710	1.616	3.52**	444	297	-1.04
1993	5	23	0.686	1.522	2.86**	497	337	-1.07
1994	5	24	0.693	1.638	3.79**	468	294	-1.28
1995	5	24	0.737	1.552	2.96**	527	342	-1.00
1996	5	27	0.651	2.042	3.06**	664	342	-1.79
1997	5	25	0.612	1.626	3.46**	780	424	-1.56
1998	5	25	0.505	1.937	3.75**	886	477	-1.43
1999	5	25	0.665	1.915	2.57*	1038	505	-1.48
2000	4	24	0.532	1.798	3.91**	1135	476	-1.86
2001	4	24	0.494	1.980	3.71**	921	433	-1.84
2002	4	24	0.670	2.030	3.96**	662	319	-1.88
2003	4	21	0.665	1.691	3.32**	802	436	-1.63
2004	4	19	0.634	1.620	3.43**	870	531	-1.42
All years			0.700	1.592		598	377	

**Table 2.3**  
**Multiple Regression Analysis of Closed-End Fund Expense Ratios, 1985-2004**

This table reports the results from multiple regression analysis of variables influencing closed-end fund expense ratios for the following two models:

$$Expense\ ratio_{j,t} = \hat{a}_0 + \hat{a}_1 \times Internal_j + \hat{a}_2 \times \ln TNA_{j,t} + e_{j,t}$$

$$Expense\ ratio_{j,t} = \hat{a}_0 + \hat{a}_1 \times Internal_j + \hat{a}_2 \times \ln TNA_{j,t} + \hat{a}_3 \times Year_t + e_{j,t}$$

Variables are as follows: *Expense ratio<sub>j,t</sub>* is the expense ratio of fund *j* for year *t*, *Internal<sub>j</sub>* is a classification variable with value of 1 when fund *j* is internally managed and 0 otherwise, *TNA<sub>j,t</sub>* is the total net assets of fund *j* for year *t*, *Year<sub>t</sub>* is a classification variable for year *t* (2004 is the omitted year), *e<sub>j,t</sub>* is the random error term, and coefficients *â* are parameter estimates. \* and \*\* indicate statistical significance at the 0.05 and 0.01 levels respectively.

Variable	Estimate	t
Panel A: $Expense\ ratio_{j,t} = \hat{a}_0 + \hat{a}_1 \times Internal_j + \hat{a}_2 \times \ln TNA_{j,t} + e_{j,t}$		
Intercept	0.0703	16.44**
<i>Internal</i>	-0.0042	-3.28**
<i>ln TNV</i>	-0.0045	-12.60**
Number of Observations	506	
Adjusted <i>R</i> <sup>2</sup>	0.3049	
<i>F</i>	111.75**	
Panel B: $Expense\ ratio_{j,t} = \hat{a}_0 + \hat{a}_1 \times Internal_j + \hat{a}_2 \times \ln TNA_{j,t} + \hat{a}_3 \times Year_t + e_{j,t}$		
Intercept	0.0735	14.68**
<i>Internal</i>	-0.0033	-2.48**
<i>ln TNV</i>		-12.87**
<i>Year</i>		
1985	-0.0069	-1.72
1986	-0.0064	-1.70
1987	-0.0041	-1.21
1988	-0.0030	-0.92
1989	-0.0031	-0.99
1990	-0.0033	-1.07
1991	-0.0051	-1.61
1992	-0.0034	-1.09
1993	-0.0032	-1.04
1994	-0.0028	-0.91
1995	-0.0034	-1.13
1996	0.0006	0.20
1997	-0.0022	-0.72
1998	-0.0004	0.14
1999	-0.0009	0.31
2000	-0.0002	0.07
2001	0.0013	0.41
2002	0.0008	0.25
2003	-0.0005	-0.17
Number of Observations	506	
Adjusted <i>R</i> <sup>2</sup>	0.3075	
<i>F</i>	11.68**	

**Table 2.4**

**Mean Premiums from Net Asset Value for Internally and Externally Managed Closed-End Funds, 1985 to 2004**

This table presents mean premiums from net asset value for internally managed and externally managed closed-end investment companies where

$$\text{premium} = \frac{\text{price} - \text{net asset value}}{\text{net asset value}}$$

A negative premium represents a discount from net asset value. The t-statistic tests the hypothesis of the equality of the mean premium of the two groups of funds.

Year	Internally Managed		Externally Managed		t
	Number of Funds	Mean Premium	Number of Funds	Mean Premium	
1985	6	-0.061	5	0.011	2.34*
1986	6	-0.077	7	-0.023	0.96
1987	6	-0.114	12	-0.087	0.79
1988	6	-0.146	16	-0.116	0.83
1989	6	-0.169	18	-0.113	2.72*
1990	6	-0.159	20	-0.084	3.36**
1991	5	-0.137	20	-0.049	2.51*
1992	5	-0.093	22	-0.055	0.59
1993	5	-0.087	23	-0.056	0.95
1994	5	-0.104	24	-0.080	0.50
1995	5	-0.114	24	-0.118	-0.09
1996	5	-0.116	27	-0.116	-0.00
1997	5	-0.107	25	-0.097	0.19
1998	5	-0.122	25	-0.076	1.81
1999	5	-0.148	25	-0.106	1.14
2000	4	-0.132	24	-0.101	0.55
2001	4	-0.074	24	-0.031	1.17
2002	4	-0.091	24	-0.056	0.54
2003	4	-0.104	21	-0.021	2.67*
2004	4	-0.110	19	0.013	3.06**
Average		-0.114		-0.074	

**Table 2.5**

**Multiple Regression Analysis of Closed-End Fund Premiums, 1985-2004**

This table reports the results from multiple regression analysis of variables influencing closed-end fund premiums from per share net asset value for the following two models:

$$Premium_{j,t} = \hat{a}_0 + \hat{a}_1 \times Internal_j + \hat{a}_2 \times Expense\ ratio_{j,t} + \hat{a}_3 \times R_{j,t} + e_{j,t}$$

$$Premium_{j,t} = \hat{a}_0 + \hat{a}_1 \times Internal_j + \hat{a}_2 \times Expense\ ratio_{j,t} + \hat{a}_3 \times R_{j,t} + \hat{a}_4 \times Year_t + e_{j,t}$$

Variables:  $Premium_{j,t}$  is the end of year  $t$  premium from net asset value for fund  $j$  (a negative number is a discount),  $Internal_j$  is a binary variable with value of 1 when fund  $j$  is internally managed and 0 otherwise,  $Expense\ ratio_{j,t}$  is the year-end expense ratio of fund  $j$ ,  $R_{j,t}$  is the return on fund  $j$  for year  $t$ ,  $Year_t$  is a classification variable for year  $t$  (2004 is the omitted year),  $e_{j,t}$  is the error term, and coefficients  $\hat{a}$  are parameter estimates. \* and \*\* indicate statistical significance at the 0.05 and 0.01 levels respectively.

Variable	Estimate	t
Panel A: $Premium_{j,t} = \hat{a}_0 + \hat{a}_1 \times Internal_j + \hat{a}_2 \times Expense\ ratio_{j,t} + \hat{a}_3 \times R_{j,t} + e_{j,t}$		
Intercept	-0.0357	-4.13**
<i>Internal</i>	-0.0821	-6.78**
<i>Expense ratio</i>	-3.0577	-8.19**
<i>R</i>	0.1014	5.16**
Number of Observations	506	
Adjusted $R^2$	0.1888	
<i>F</i>	40.18**	
Panel B: $Premium_{j,t} = \hat{a}_0 + \hat{a}_1 \times Internal_j + \hat{a}_2 \times Expense\ ratio_{j,t} + \hat{a}_3 \times R_{j,t} + \hat{a}_4 \times Year_t + e_{j,t}$		
Intercept	0.0340	1.53
<i>Internal</i>	-0.0821	-6.98**
<i>Expense ratio</i>	-3.0062	-8.32**
<i>R</i>	0.1232	4.71
<i>Year</i>		
1985	-0.0260	-0.70
1986	-0.0288	-0.83
1987	-0.1124	-3.48**
1988	-0.1338	-4.50**
1989	-0.1069	-3.64**
1990	-0.0610	-2.10*
1991	-0.0870	-2.99*
1992	-0.0491	-1.73
1993	-0.0551	-1.96*
1994	-0.0868	-3.03**
1995	-0.1199	-4.30**
1996	-0.0931	-3.42**
1997	-0.0798	-2.88**
1998	-0.0922	-3.33**
1999	-0.1224	-4.43**
2000	-0.0673	-2.39*
2001	-0.0276	-0.97
2002	-0.0337	-1.12
2003	-0.0352	-1.19
Number of Observations	506	
Adjusted $R^2$	0.3075	
<i>F</i>	11.68**	

**Table 2.6**

**CAPM-Based Performance of Internally Managed and Externally Managed Closed-End Funds, 1941 to 2004**

The table presents Jensen's measure of portfolio performance, computed by estimating

$$RP = \hat{a} + \hat{b} \times RV_t + e_t$$

Where  $RP_t$  is the excess return on the portfolio of funds for month  $t$  (portfolio return less the return on U.S. Treasury bills),  $RV_t$  is the excess return on the CRSP value-weighted market index for month  $t$ ,  $e_t$  is the period  $t$  residual term, and  $\hat{a}$  and  $\hat{b}$  are estimated with ordinary least-squares regression. The measure of excess risk-adjusted performance is  $\hat{a}$ . T-statistics for the null hypothesis of a zero coefficient estimate are in parentheses. The Durbin-Watson test statistic for first order autocorrelation is indicated by  $D$ .

	$\hat{a}$	$\hat{b}$	$R^2$	$D$
Panel A: All Years (1941 to 2004)				
Internally managed funds	0.0027 (2.56)**	0.983 (40.02)***	0.676	2.187
Externally managed funds	0.0020 (1.87)*	0.855 (34.18)***	0.603	2.229
Panel B: 1941 to 1956				
Internally managed funds	0.0005 (0.19)	1.615 (25.48)**	0.825	2.284
Externally managed funds	0.0036 (1.53)	1.115 (18.34)***	0.637	2.467
Panel C: 1957 to 1972				
Internally managed funds	0.0012 (0.75)	0.907 (20.81)***	0.693	2.047
Externally managed funds	0.0003 (0.15)	0.840 (14.46)***	0.522	2.170
Panel D: 1973 to 1988				
Internally managed funds	0.0020 (1.15)	0.865 (24.61)***	0.760	2.066
Externally managed funds	0.0003 (0.14)	0.805 (17.32)***	0.610	2.027
Panel E: 1989 to 2004				
Internally managed funds	0.0023 (1.60)	0.700 (21.44)***	0.706	2.146
Externally managed funds	0.0018 (1.26)	0.718 (22.03)***	0.717	2.113

\*, \*\*, and \*\*\* indicate significance levels of 10%, 5%, and 1%, respectively.

**Table 2.7**

**Four-Factor Performance of Internally Managed and Externally Managed Closed-End Funds, 1941 to 2004**

The table presents an analysis of portfolio performance based on Carhart's four factors estimating

$$RP_t = \hat{a} + \hat{b} \times RV_t + \hat{V} \times S_t + \hat{h} \times H_t + \hat{q} \times M_t + e_t$$

where  $RP_t$  is the excess return on the portfolio of funds for month  $t$  (portfolio return less the return on U.S. Treasury bills),  $RV_t$  is the excess return on the CRSP value-weighted market index for month  $t$ ,  $S_t$  is the return on a factor-mimicking portfolio representing size,  $H_t$  is the return on a factor-mimicking value-weighted portfolio for book to market equity,  $M_t$  is the factor-mimicking value-weighted portfolio for the one-year momentum in common stock returns,  $e_t$  is the month  $t$  residual term, and  $\hat{a}$ ,  $\hat{b}$ ,  $\hat{V}$ ,  $\hat{h}$ , and  $\hat{q}$  are estimated with ordinary least-squares regression.

The measure of excess risk-adjusted performance is  $\hat{a}$ . T-statistics for the null hypothesis of a zero coefficient estimate are in parentheses. The Durbin-Watson test statistic for first order autocorrelation is indicated by  $D$ .

	$\hat{a}$	$\hat{b}$	$\hat{V}$	$\hat{h}$	$\hat{q}$	$R^2$	$D$
Panel A: All Years (1941 to 2004)							
Internally managed funds	0.0000 (0.03)	1.0092 (43.85)***	0.2473 (7.41)***	0.4644 (13.58)***	-0.0065 (-0.26)	0.749	2.128
Externally managed funds	0.0010 (1.04)	0.8359 (35.41)***	0.3547 (10.37)***	0.3311 (9.44)***	-0.1269 (-4.85)***	0.689	2.205
Panel B: 1941 to 1956							
Internally managed funds	-0.0014 (-0.61)	1.4236 (22.88)***	0.3918 (3.26)***	0.4968 (5.22)***	0.0587 (0.65)	0.824	2.157
Externally managed funds	0.0033 (1.41)	1.0169 (15.75)***	0.3994 (3.21)***	0.1956 (1.98)**	-0.0249 (-0.27)	0.673	2.471
Panel C: 1957 to 1972							
Internally managed funds	0.0018 (1.09)	0.8413 (18.88)***	0.2379 (3.72)***	0.1911 (2.43)**	-0.1479 (-2.67)**	0.735	2.021
Externally managed funds	0.0007 (0.30)	0.7629 (12.20)***	0.2747 (3.06)***	0.0641 (0.58)	-0.0809 (-1.04)	0.541	2.139
Panel D: 1973 to 1988							
Internally managed funds	0.0001 (0.06)	0.8435 (22.77)***	0.3669 (6.28)***	0.2121 (3.37)***	-0.0317 (-0.74)	0.815	1.995
Externally managed funds	-0.0020 (-1.12)	0.8079 (20.71)***	0.5499 (8.94)***	0.4421 (6.66)***	-0.2561 (-5.70)***	0.809	1.857
Panel E: 1989 to 2004							
Internally managed funds	0.0019 (1.32)	0.7543 (20.19)***	0.1099 (2.78)**	0.1911 (3.89)***	-0.0625 (-2.22)**	0.736	2.255
Externally managed funds	0.0017 (1.36)	0.7517 (22.48)***	0.2515 (7.10)***	0.2221 (5.05)***	-0.1135 (-4.51)***	0.795	2.175

\*, \*\*, and \*\*\* indicate significance levels of 10%, 5%, and 1%, respectively.

**Table 2.8****Sharpe Measures of Performance Comparing Internally Managed to Externally Managed Closed-End Funds, 1941 to 2004**

The table presents the Sharpe reward-to-risk ratios defined as

$$S = \frac{\bar{R}}{s}$$

Where  $\bar{R}$  is the mean return on a portfolio less the mean return on U.S. Treasury bills and  $s$  is the standard deviation of  $\bar{R}$ . The t-statistic tests for the equality of the internally managed and the externally managed fund Sharpe ratios.

	$\overline{RP}$	$s_{RP}$	$S$	$t$
Panel A: All Years (1941 to 2004)				
Internally managed funds	0.0094	0.0503	0.1868	0.20
Externally managed funds	0.0079	0.0467	0.1691	
Panel B: 1941 to 1956				
Internally managed funds	0.0197	0.0687	0.2868	-0.81
Externally managed funds	0.0169	0.0521	0.3242	
Panel C: 1957 to 1972				
Internally managed funds	0.0061	0.0399	0.1530	0.80
Externally managed funds	0.0049	0.0429	0.1142	
Panel D: 1973 to 1988				
Internally managed funds	0.0048	0.0496	0.0967	0.97
Externally managed funds	0.0029	0.0512	0.0566	
Panel E: 1989 to 2004				
Internally managed funds	0.0071	0.0357	0.1990	0.35
Externally managed funds	0.0067	0.0361	0.1856	

Table 4.1

## Insider Transactions

I observe 3867 total insider transactions from *The Official Summary of Security Transactions and Holdings* 1994-2000 and EDGAR filings through 2005. From this I exclude all non open market transactions as detailed in text and below.

Total Observations	3867
Dividend Reinvestment	457
Grants and Awards	325
Miscellaneous Acquisition/Disposal (non open-market)	309
Options and Rights	268
Preferred shares	99
Gifts	91
Transactions <100 shares	87
Inheritance	19
Transfers	14
Out-of-period late reports	10
Edgar Filing exclusions	407
Total Exclusions	2086
Total Open-market Common Share Transactions	1781
	or 1497 fund- months

**Table 4.2**

**Distribution and Characteristics of the Sample Transactions**

The tables below provide further descriptive statistics of the open market transactions executed by insiders. Six extreme observations (see text for detail) are removed from the 1781 trades to yield 1775 trades for my sample of examination.

Panel A: Full Sample Characteristics - Trade Value				
Year	Full Sample	Restricted Sample	Buy Transactions	Sell Transactions
Total Observations	1,781	1,775	1,226	549
Mean	\$446,039	\$178,343	\$150,856	\$239,725
Median	37,200	36,656	22,025	86,760
Maximum	349,710,025	12,880,000	10,079,202	12,880,000
Minimum	503	503	503	795

Panel B: Frequency Distribution of Trade Size			
Shares	Open Market Purchases	Open Market Sales	
100-499	264	41	
500-999	175	47	
1,000-2,999	333	118	
3,000-5,999	160	102	
6,000-14,999	164	116	
15,000-49,999	99	101	
50,000-499,999	28	23	
over 500,000	3	1	
Total	1226	549	

Panel C: Trades by Insider Type			
Shares	Total Number of Trades	Open Market Purchases	Open Market Sales
Directors	728	487	241
Officers	304	255	49
Officers/Directors	318	287	31
Affiliated	265	78	187
10% Owners	160	119	41
All Transactors	1775	1226	549

Table 4.3  
**Chronological Characteristics of the Sample  
Transactions**

The tables below provide chronological descriptive statistics of the 1775 open market transactions executed by insiders.

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Panel A: Number of Transactions by Year

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Year	Open Market Purchases	Open Market Sales
1994	53	25
1995	223	47
1996	247	62
1997	131	155
1998	143	138
1999	267	80
2000	162	42
Total	1226	549

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Panel B: Number of Transactions by Month

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Shares	Open Market Purchases	Open Market Sales
January	92	63
February	67	38
March	144	29
April	97	30
May	83	30
June	68	54
July	66	22
August	93	33
September	57	35
October	60	49
November	38	78
December	361	88
Total	1226	549

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**Table 4.5**  
**Intensive trading months**

I utilize "Intensive Trading Months" as defined by Rozeff and Zaman (1988) or Lin and Howe (1990). I supplement this with marginal intensive months where at least 75% of all trades in a month are either purchases or sales.

Year	All Fund- months	Strictly Purchase Fund-months	Strictly Sale Fund-months	Marginal Fund- months
1994 - 2000	117	76	24	17
1994	4	3	1	0
1995	22	16	2	4
1996	20	14	4	2
1997	18	10	7	1
1998	15	7	4	4
1999	25	17	5	3
2000	13	9	1	3

**Table 4.6**  
**Pooled Transactions**

The following results reflect the terminal values of portfolios constructed utilizing the 1775 insider trades during the seven year period 1994-2000. Each trade is compounded into a balance utilizing the appropriate matching monthly fund return. This flow of funds is then replicated using the three benchmarks specified below.

Year	Portfolio of Combined Insider transactions	Transactions Replicated with Value-Weight CRSP	Transactions Replicated with Equal- Weight CRSP	Transactions Replicated with S&P 500
Terminal Value 12/31/2000	\$126,628,314	\$116,937,180	\$93,619,932	\$117,144,493
Correlation with insider fund		0.9873	0.9924	0.9830
Beta of pooled fund with respect to index		0.7493	0.7618	0.7719

**Table 4.7**  
**Inverse Events**

In the spirit of Dennis and Strickland (2002), I ascribe "event" status to extreme levels of the discount and examine pooled insider trading during these periods. Please refer to the text for results of individual funds.

Panel A: Months of Harshest Discount

Months of Extreme Discount	Discount		
Harshest			
Discount	1/31/2000	-14.88%	
Dec. 99 - Apr.			
00	4/30/2000	-14.75%	Nov. 99 - May 00
	2/29/2000	-13.74%	
	12/31/1999	-13.30%	
Purchases this period	13,680,411	Purchases this period	14,045,371
Total purchases 1994-2000	105,039,798	Total purchases 1994-2000	105,039,798
Purchase As Percent of Total	13.02%	Purchase As Percent of Total	13.37%
Sales this period	-1,303,782	Sales this period	-2,144,452
Total sales 1994-2000	-89,738,283	Total sales 1994-2000	-89,738,283
Purchase As Percent of Total	1.45%	Purchase As Percent of Total	2.39%

Panel B: Months of Least Discount

Months of Extreme Discount	Discount		
Least Discount	11/30/1997	-5.04%	
Nov. 97 - Feb.			
98	12/31/1997	-4.92%	Oct. 97 - Mar. 98
	2/28/1998	-4.49%	
	1/31/1998	-4.02%	
Sales this period	-25,477,903	Sales this period	-29,607,138
Total sales 1994-2000	-89,738,283	Total sales 1994-2000	-89,738,283
Purchase As Percent of Total	28.39%	Purchase As Percent of Total	32.99%
Purchases this period	5,259,297	Purchases this period	5,418,047
Total purchases 1994-2000	105,039,798	Total purchases 1994-2000	105,039,798
Purchase As Percent of Total	5.01%	Purchase As Percent of Total	5.16%

## VITA

William D Allen was born on November 7, 1948, in Marshalltown, Iowa. After attending public schools in Marshalltown, he earned his BSBA degree from the University of Missouri – Columbia (1990). He later returned to the University of Missouri – Columbia in 2000 to receive his Ph.D. in Finance (2006). During interim periods, he was employed as a portfolio manager by the Missouri State Employees Retirement System. William is married to Mellodie Wilson.