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# The Impact of Shrouded Fees: Evidence from a Natural Experiment

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## **Disciplines**

Economics

# **The Impact of Shrouded Fees: Evidence from a Natural Experiment**

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# The Impact of Shrouded Fees: Evidence from a Natural Experiment\*

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May 16, 2010

## Abstract

We study a natural experiment in the Indian mutual funds sector that created a 22 month period in which closed-end funds were allowed to charge an arguably shrouded amortized fee whereas open-end funds were forced to charge standard entry loads. We find that allowing closed-end funds to charge the shrouded type of fee led to a proliferation of closed-end funds in the market; 45 new closed-end funds were started over this 22 month period collecting 9.1 billion \$U.S, whereas only two closed-ended funds were started in the 66 months prior to this period collecting .42 billion \$U.S., and no closed-ended funds were started in the 20 months after this period. We argue that other theoretical determinants of the closed versus open ended organizational form did not change discretely around the natural experiment and thus are unlikely to explain the sudden emergence and disappearance of closed-end funds. We find closed-end funds did not perform better in terms of raw or risk-adjusted returns. If all the investors in closed-end funds during this period had invested in the lower fee open fund variety instead they would have paid 4.25 percent less in fees over this 22 month period, equal to approximately 500 million dollars in extra fees.

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# 1 Introduction

An important puzzle in investor behavior is the prevalence of high-fee investment vehicles that provide no benefits in terms of return performance. This puzzle applies to the popularity of actively managed mutual funds as described in Gruber (1996) and the popularity of high-fee index mutual funds (Choi et al., 2009). Two possible explanations exist. One is that high-fee funds offer some other unobservable benefits that investors find worth paying for. Possible benefits include compensation for brokers who lower investor search costs as in Hortacsu and Syverson (2004), or "financial advice, customer service, and discounted access to complementary investment instruments" (Choi et al., 2009). Another explanation is that investors ignore fees, and thus competition amongst mutual fund providers does not reduce prices to competitive levels (Gabaix and Laibson (2006), Carlin (2009)). Identifying which explanation is correct has important implications for financial regulatory policy. Under the explanation that high fee funds offer other benefits, regulation will not improve welfare. Under the explanation that investors ignore fees, however, policies to improve disclosure and educate investors could have important effects on investor welfare.

To what extent can public policy hasten the rate of investor learning regarding shrouded fees? Two recent studies have experimentally varied the presentation of investment fees while holding all other fund characteristics constant to test whether making fees less shrouded changes fund choice, and both find little evidence to suggest that changing the framing of fees has large impacts on investor decisions. Beshears et al. (2009) conducts an experiment with Harvard staff to determine whether investors respond differentially to statutory fund prospectuses versus the SEC's "Summary Prospectus." The SEC intended the Summary Prospectus to make salient the characteristics of each fund, including fees, as a result of its much shorter length than the statutory prospectus. Interestingly, Beshears et al. (2009) find that whether subjects are presented with the Statutory Prospectus or the Summary Prospectus has no economically or statistically significant effect on fund choices. They also find that receiving the Summary Prospectus does not change how subjects respond to sales loads. Choi et al. (2009) conduct a laboratory experiment to understand why investors do not minimize fees when choosing S&P 500 index funds. They also find that providing additional information on funds, such as a cheat sheet that summarizes fees or an explanation about what an index fund is, did not have a large effect on investors' choices.

This paper is the first to use actual observational data on mutual fund flows, in conjunction with a natural experiment on a fee disclosure policy, to test whether shrouding and un-shrouding

fee structures can have an impact on investor mutual fund choices. We study two law changes imposed by the Securities and Exchange Board of India (SEBI), India's financial market regulator (analogous to the SEC in the United States). The first law change occurred on April 4, 2006. SEBI mandated that closed-ended funds could only charge "initial issue expenses" and that open-ended funds could only charge entry loads.<sup>1</sup> The only difference between initial issue expenses and entry loads was that initial issue expenses could be amortized. To illustrate what amortization means in this context, suppose an investor subscribed to 100 rupees in a closed-end fund with a six percent amortized initial issue expense. Over the tenure of the closed-end fund (typically three years in the Indian context after which the fund would automatically convert to an open-ended fund), six rupees would be extracted from the net asset value of the fund. In practice, .0055 rupees would be extracted per day which is equal to six rupees divided by 1095 days (the number of days in three years). Throughout the paper I refer to the period before this law change, i.e. the period before April 4, 2006 as Regime 1.

Because initial issue expenses were to be taken out of the net asset value gradually, investors were unlikely to be able to distinguish changes in the net asset value of the fund versus removal of the initial issue expenses. By contrast, investors are more likely to be aware of entry loads because these are deducted in a lump sum fashion from the initial investment.<sup>2</sup> Furthermore, mutual fund advertisements for closed-end funds typically advertised a zero entry load and only described the initial issue expenses in the later pages of the offer document.

The second law change occurred on January 31, 2008; throughout the paper we refer to the period between the first and second law changes as Regime 2. SEBI announced that any closed-end fund started after that date would no longer be allowed to charge the amortized initial issuance expenses; instead they would have to charge entry loads. I refer to the period after the second law change, i.e. the period after January 31, 2008 as Regime 3.<sup>3</sup> We hypothesize that disallowing

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<sup>1</sup>Throughout this paper we use the term "closed-end funds" for a type of limited liquidity fund that became popular in the Indian market in the last 5 years. These closed-end funds are quite different from the closed-end funds typically studied in the finance literature as all of them did allow investors to retrieve their money at net-asset value at specific times throughout the year. Of the 21 closed-end funds I have liquidity period data on 5 offered daily redemption, 2 offered weekly redemption, 9 offered monthly redemption, 2 offered quarterly redemption, and 3 offered half-yearly redemption. The Indian closed-end funds were also not listed on secondary exchanges. This is in contrast to standard closed-end funds where funds can only be extracted by selling shares on the secondary market. Similar to standard closed-end funds, however, these funds did not allow any new money to enter the fund after the initial corpus was raised.

<sup>2</sup>My argument regarding the difference in salience between initial issue expenses and entry loads is similar to Barber et al. (2005) who contend operating expenses are less salient than entry loads.

<sup>3</sup>To summarize, Regime 1 is the period before April 4, 2006 before the first law change. Regime 2 is the period from April 4, 2006 through January 31, 2008 between the two law changes as Regime 2. Regime 3 refers to the period after the second law change up until the present.

closed-end funds to charge the less salient initial issue expenses would reduce the incentive for mutual fund companies to create new closed-end funds. Because the law change did not forbid new closed-end funds from charging high entry loads, this hypothesis is not driven by a price-cap being imposed on closed-end funds, but only a change in the type of fee that could be charged.

Consistent with this hypothesis, we find that allowing closed-end funds to charge amortizable initial issue expenses led to a proliferation of closed-end funds in the market; 45 new closed-end funds were started during Regime 2, whereas only two closed-ended funds were started during Regime 1, and no closed-ended funds were started during Regime 3. The proportion of fund flow amounts to new closed versus open funds during Regime 2 was 43 percentage points higher compared to Regimes 1 and 3. Further, we find that, on average, closed-end funds charged 6 percent in initial issue expenses, whereas open-ended funds charged only 1.75 percent in entry loads. The fact that no closed-ended funds were started after closed-end funds were forced to charge entry loads rather than amortizable initial issue expenses suggests that investors were not cognizant of the high initial issue expenses they were paying; otherwise fund companies could have charged six percent entry loads and gotten some investors to pay for them during Regime 3.<sup>4</sup> It appears that mutual fund companies realized that investors would not be willing to pay 6 percent entry loads for closed-end funds and thus stopped creating closed-end funds. We estimate investors paid an additional 4.25 percent in fees over this 22 month period. Closed end funds perform slightly worse in terms of raw or risk-adjusted returns, thus we find no evidence that investors received better performance for the higher fees that closed-end funds charged. If investors had directed their money towards open-ended funds instead of closed-ended funds during this period they would have saved approximately 500 million U.S. dollars in fees<sup>5</sup>.

We also examine alternative explanations for the rise and fall of closed-end funds over this period. I find no evidence that these law changes imposed a price ceiling on closed or open-ended funds. It is important to note that both initial issue expenses and entry loads had a price-cap of six percent during Regime 2. I discuss the alternative explanation that initial issue expenses were not shrouded, but that Indian investors have discount rates that make them prefer paying

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<sup>4</sup>A number of newspaper articles and policy reports written at this time noted the increase in popularity of closed-end funds after the imposition of Regime 2, and argued that fund companies did this with the intention of hiding fees. For examples, see the following articles: (1) "Should You Buy Closed-End Mutual Funds?" published in Rediff on December 1, 2006 (2) "The Closed-Ended Comeback" published in Money Today on November 16, 2006. (3) The Consultation Paper on Minimum Common Standards for Financial Advisers and Financial Education by India's Committee on Investor Awareness and Protection (The Committee on Investor Awareness and Protection, 2009).

<sup>5</sup>For comparison purposes, Choi et al. (2009) calculate that U.S. investors who invested in the lowest fee S&P 500 index fund versus other higher cost S&P 500 index funds would have saved \$206 million dollars in expenses.

fees over time instead of as a one-time entry load. In order for this to explain the proliferation of closed-end funds during the period between these law changes investors would have to have discount rates of approximately 790 percent per year. Finally, I show that other theoretical determinants of the open versus closed form, as described in Stein (2005), did not change discretely around the natural experiment and thus are unlikely to explain the sudden emergence and disappearance of closed-ended funds.

An important advantage of the natural experiment we study here is that we are able to observe how firms respond to a regulation that attempts to make their fees more transparent. This paper is unique in that it evaluates an “unshrouding” policy and finds that the policy had a large effect in reducing the demand for the formerly shrouded product.<sup>6</sup> Based on this evidence alone it is not possible to determine whether this policy was welfare improving, because some of the consumers who paid high shrouded fees for closed-end funds may have switched to non-mutual fund products with similarly high shrouded fees such as endowment life insurance policies. Nonetheless, this evidence does suggest that a broad based program of regulating shrouded fees could have large effects on consumer behavior as theorized by Gabaix and Laibson (2006).

This paper complements the experimental work described previously because it allows us to observe how firms and consumers will respond to a real change in regulation. Prior experimental work is partial equilibrium in the sense that it shows only how consumers respond to new disclosure norms; outside the laboratory, however, firms may change their products to find other ways of shrouding fees. In addition, the natural experiment studied here has the advantage of involving substantial amounts of money and actual investor decisions. I find that the particular transparency initiative of forcing all funds to charge entry loads rather than amortized fees had large effects on the investment decisions of Indian individual investors. While prior experimental studies found that providing more transparent information did not cause investors to invest in lower fee alternatives, here I conclude that the second regulation imposed by the Indian regulator essentially eliminated higher-fee closed-end equity funds from the market. This paper also builds on Barber et al. (2005), which argues that entry-loads are less shrouded than operating expenses by presenting evidence that U.S. investors learned to avoid entry-loads more quickly than operating expenses. The authors are not able to take advantage of any exogenous changes in entry-load or operating expenses, however, and thus one weakness of their results is that they cannot rule out alternative explanations regarding

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<sup>6</sup>Ausubel (1991) and Woodward (2003) study disclosure regulations for credit cards in the United States and find small effects.



other services associated with these specific types of fees.

The paper proceeds as follows. Section 2 presents background information on the Indian mutual fund industry. Section 3 describes the language and implementation of the law changes studied here. Section 4 describes the data sources used in the paper. Section 5 presents the empirical results. Section 6 discusses other important alternative explanations such as whether the law changes imposed any explicit price ceilings and other theoretical determinants of the closed versus open fund organizational form as suggested in Stein (2005). Section 7 concludes.

## 2 The Indian Mutual Fund Industry

The first government-run mutual funds were established in India in 1963, but the sector was not opened to private firms until 1993. Indian mutual fund assets under management in 2009 were equal to approximately U.S. \$ 90 billion.<sup>7</sup> Though only 1/100th the size of the U.S. mutual fund industry (which as of 2008 had U.S. \$ 9.6 trillion in assets),<sup>8</sup> Indian assets under management have a real growth rate more than double that of the growth rate of assets under management in the United States (12 % average annual real growth in assets under management in the Indian mutual fund industry since 1997, versus 5.3% real average annual growth in the U.S.).<sup>9</sup> Mutual funds comprised 3.7 percent of household assets in 2005-2006 and 7.8 percent in 2007-2008 (The Committee on Investor Awareness and Protection, 2009). There are approximately 10 million mutual fund investors in India, about one-fifth the number of investors in the United States (Halan, 2010).

As in the United States, a large portion of mutual fund sales comes through a network of thousands of mutual fund brokers throughout the country known as Individual Financial Advisors (IFAs) and distributors (Kamiyama, 2007).<sup>10</sup> IFAs and distributors typically sell funds to investors that live close to them. A retail investor in India would typically invest in a mutual fund by approaching a distributor and choosing a fund in which to invest. If the investor chose to purchase 10 shares of XYZ fund, the distributor would collect one payment from the investor that included the cost of the shares, the entry load, and any issue expenses due upon initial purchase. The

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<sup>7</sup>The India Rupee / U.S. dollar exchange rate taken from finance.yahoo.com on Monday, October 26, 2009.

<sup>8</sup>These data come from the 2009 Investment Company Fact Book which is produced by the Investment Company Institute (the trade association of mutual funds and other asset management companies in the United States). I include mutual funds and closed-end funds for comparability with the Indian data.

<sup>9</sup>Growth rates of assets under management calculated from monthly reports of the Association Mutual Funds in India monthly reports.

<sup>10</sup>Bergstresser et al. (2009) estimate that U.S. investors paid 15.2 billion dollars in distribution fees in 2002, which are not much less than the 23.8 billion dollars spent on management fees in that same year.

distributor would transfer this full amount to the mutual fund company that issued the shares, and the mutual fund company would then pay a commission to the IFA/distributor for selling the shares. As of June 2006, 27 percent of sales of mutual funds came through IFAs, 30 percent came through Distributors, 12 percent came through direct sales, and 31 percent came through banks (Kamiyama, 2007). The Committee on Investor Awareness and Protection (2009) reported that 72.2 percent of inflows into mutual funds came through agents. The number of IFAs and distributors is large; there are an estimated 40,000 IFAs in the country and 3000 distributors. Because IFAs and distributors are said to be compensated through entry loads and initial issue expenses, many industry followers believe that IFAs and distributors push investors into high fee funds to increase their incomes.

When new funds, either closed or open, are started in India there is a one to two month offer period where the fund collects an initial corpus of money for investment. For a closed-end fund, after this “offer” period is completed, no new money is accepted into the fund. In an open-end fund, there is a one-month window after the new period when no new money is accepted. After this one-month period is over, the open-end fund begins to accept new money for investment at the end of the day net-asset value (as in the United States). During the new offer period, the fund company spends substantial amounts on advertising the fund, and IFAs and distributors try to interest investors in the fund.

One important difference between the “closed” funds discussed in this paper and the closed-end funds described in the large literature on closed-end funds in developed countries is that closed-end funds in India over this period did not trade on a secondary market. The Indian closed-end funds allowed initial investors the ability to withdraw their money at net asset value, usually at a monthly frequency, but no new money could enter the fund after the initial offer period. Because of this limited liquidity feature provided to initial investors mutual fund companies typically did not list their closed end funds on the stock-exchange. Furthermore, all of the closed-end funds studied here state in their initial prospectus that after three years they would automatically be converted into open-ended funds.

### **3 Mutual Fund Fee Regulation**

In this section, I describe the key mutual fund fee regulation changes that comprise the natural experiment. I refer to the period before April 4, 2006 as Regime 1, the period from April 4, 2006

through January 31, 2008 as Regime 2, and the period after January 31, 2008 as Regime 3.

### **3.1 Regime 1: Six Percent Price Ceiling on Initial Expenses of Creating a Mutual Fund Scheme**

The baseline regulations of the mutual fund sector in India were set out in the document Securities and Exchange Board of India (2009). “SEBI (Mutual Funds Regulations), 1996.” This document indicated that mutual funds could charge special fees during the new offer period provided that initial expenses of floating the scheme shall not exceed six percent of the initial resources raised under that scheme and such expenses shall be accounted in the books of account of the scheme as specified in the Tenth Schedule.”

An important feature of Regime 1 was that funds could amortize the fees collected as initial issue expenses. Suppose a fund raised 1000 rupees during the new fund offer period and charged six percent as initial issue expenses. The fund company would then have the right to take 60 rupees out of the fund as initial issue expenses over the first three years of the fund. Note that this was true for both open and closed-ended funds, i.e. the initial issue expense percentage rate only applied to the amount of money raised during this initial offer period. It did not apply to money that later entered an open-ended fund after the initial offering period. Typically funds would take these initial issue expenses out of the fund spread over the first three years of the fund as a way to artificially inflate the net asset value that was reported to investors. During Regime 1, there was also an important re-distributional feature of the amortization policy. Suppose after 1 year an investor took 500 rupees out of the fund. In Regime 1, this investor would only pay 20 rupees in initial issue expenses. If a second investor purchased shares from that initial investor and waited two more years until the fund was automatically converted to an open-end fund he would have to pay the remaining 40 rupees in initial issue expenses. Thus the amortization policy in Regime 1 allowed mutual funds to charge initial issue fees in a way that made long-term investors cross-subsidize short-term investors. Nevertheless, for this paper, the key thing to note is that, in Regime 1, both closed-end and open-end funds were allowed to amortize in this manner. I show later that given this level playing field between how fees could be charged and transparency, the open-end organization form dominated the closed-end form.

### 3.2 Regime 2: Framing Closed-End Versus Open-End Fund Fees Separately

To increase transparency on the total fees investors were being charged during the new offer period to enter closed versus open-ended funds, SEBI issued a circular on April 4, 2006 forcing closed-end funds to charge only initial issue expenses and not entry loads, and open-ended funds to charge only entry loads and zero initial issue expenses. The relevant part of the circular read as follows:

#### I. Rationalisation of Initial Issue Expenses

- a. The initial issue expenses will be permitted for closed-ended schemes only.
- b. Open ended scheme should meet the sales, marketing and other such expenses connected with sales and distribution of schemes from the entry load and not through initial issue expenses.
- c. Since closed-ended schemes are allowed to charge initial issue expenses, they shall not charge entry load.
- d. In close-ended schemes where initial issue expenses are amortised, for an investor exiting the scheme before amortisation is completed, AMC [Asset Management Company] shall redeem the units only after recovering the balance proportionate unamortised issue expenses.
- e. Conversion of a closed-ended scheme or interval scheme to open-ended scheme/ or issuance of new units should be done only after the balance unamortised amount has been fully recovered from the scheme.

It is important to note that Part (d) eliminated the ability of closed-end funds to amortize initial issue expenses in such a way as to harm longer term investors. As described above, during Regime 1, both open and closed end funds could allow investors who exited their funds early to avoid paying their full proportion of the initial issue expenses. During Regime 2, a typical closed-end fund would charge 6 percent as initial issue expenses and amortize them daily over the term of the closed end-fund (usually 3 years). Suppose again that a closed-end fund raised 1000 rupees by selling 100 shares and therefore had the right to collect .6 rupees in initial issue expenses per share. By amortizing the expenses, the closed-end fund would collect .2 rupees per each year in expenses, for a total of .6 rupees per share for the life of the closed-end fund. If an investor withdrew 500 rupees from the fund in the first year, this law change states that this investor would still be

responsible for paying the full amount of initial issue expenses (30 rupees) that were owed on the shares that they owned.

### **3.3 Regime 3: Forcing Closed End Funds to Call Their Expenses Entry Loads**

On January 31, 2008, the Indian stock market regulator SEBI announced that all closed-end mutual funds would no longer be allowed to charge up to 6 percent of money invested to cover issue expenses (SEBI Circular No. 11/115723/08). Closed-end funds would now have to call their initial expenses "entry loads" instead. The announcement stated:

Currently closed-ended schemes are permitted to charge initial issue expenses and not charge entry load. In order to bring more transparency and clarity to the investors in terms of the expenses charged to them in closed-ended schemes, SEBI Board in a recent meeting decided as under:

- (1) Henceforth, there will be no provision of charging initial issue expense and amortization of the same.
- (2) All mutual fund schemes shall now meet sales, marketing and other expenses connected with sales and distribution schemes from the entry load.

This circular would be applicable to all mutual fund schemes launched after the date of the circular.

### **3.4 Summary of Three Fund Pricing Regimes and Predictions**

Table 1 summarizes the three regimes of open versus closed-end fee regulation. The numbers in each cell are the maximum fees that closed-end and open-end funds could charge to investors buying funds during the new offer period. In moving from Regime 1 to Regime 2, the key change was to force open-ended funds to collect initial fees only through entry loads, and to force closed-end funds to collect entry fees only through amortizable initial issue expenses. In moving from Regime 2 to Regime 3, the only change was to force closed-end funds to charge entry loads instead of amortizable initial issue expenses.

I wish to test whether the initial issue expenses were shrouded relative to entry fees. There are two reasons why entry-loads may be more transparent to investors than amortizable initial issue expenses. First, entry loads are deducted right at the time of the initial investment. When the investor receives his first statement, he will immediately realize that money has been taken out

for the entry load. Because initial issue expenses were typically amortized over three years, the amounts removed for these costs are likely to have been hidden amongst market movements over time (Barber et al., 2005). The second reason, which is likely a result of the first, is that Indian mutual fund companies show the entry load on the front page of the mutual fund offer document that distributors give to potential investors. If initial issue expenses are more shrouded than entry loads we expect the following:

- Regime 1: Because both open-end and closed-end funds could shroud initial issue expenses in this period, we expect determinants orthogonal to the types of fees charged to determine whether open versus closed-end funds are started.
- Regime 2: In this regime, closed-ended funds could charge the shrouded fees, whereas open-ended funds could not. Under the shrouding hypothesis, we expect the proportion of closed-ended funds issued to increase substantially during this period.
- Regime 3: In this regime, neither closed or open ended funds could charge the shrouded fees, so we expect the proportion of new funds started of this type to revert to levels seen during Regime 1.

## 4 Data

The Association of Mutual Funds in India (AMFI) issues monthly reports on mutual fund flows into nine major types of funds: (1) Income (2) Equity (3) Balanced (4) Liquid/Money Market (5) Gilt (Government Bonds) (6) Equity Linked Savings Schemes (ELSS) - Equity (7) Gold ETFs (8) Other ETFs (9) Fund of Funds Investing Overseas. Each monthly report includes the number of new open and closed funds started and the total assets raised for each type of these funds. In this paper I only focus on equity, ELSS, and Balanced funds because these are the only classes of funds where retail investors make up a large proportion of asset holdings. ELSS funds are funds that have a mandatory three year lock-in period. Dividends on ELSS funds are not taxed and when the ELSS fund position is exited the investor pays long-term capital gains taxes. Balanced funds are funds that invest in both equities and debt. Approximately 65 percent of the assets under management in equity, ELSS, and Balanced funds come from retail investors, whereas only 4 percent of assets under management in income funds come from retail investors.<sup>11</sup> This is primarily because many

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<sup>11</sup>Statistics taken from Table 1 of the Assets Under Management and Folios - Category Wise - Aggregate - As On March 31, 2009 document available at <http://www.amfiindia.com/spages/AUMFolioData.pdf>.

of these income funds are owned by corporations that use them for cash management purposes.<sup>12</sup>

Table 2 presents summary statistics on the data used to formally test the shrouding hypothesis. Here I present the average monthly flows into closed and open ended funds, by year, for three types of funds: (1) Equity, (2) ELSS, (3) Balanced. The numbers are in hundreds of millions of 2009 U.S. dollars.<sup>13</sup> The last column presents the average monthly return on the Bombay Sensex stock index in each year, which I will use as a control variable. As no centralized database of mutual fund fees exists in the Indian mutual fund sector, I collected this data by first creating a list of all the mutual funds created since 1993 from the “Scheme Details” section of the Association of Mutual Funds of India website. For each of the equity funds issued I searched online for their offer documents and copied the available fee information from there; if the offer document was not available, information from a variety of websites was used to track the characteristics of new fund offers.<sup>14</sup> I concentrate on funds that were started during Regimes 2 and 3 because the highest proportion of information for these funds is available on the internet. There were a total of 45 closed-end funds started during Regimes 2 and 3 and I was able to find the initial issue expenses charged for 29 of these. There were a total of 53 open-end funds started during Regimes 2 and 3, and I was able to find the entry loads charged for 52 of them.

There is also an important difference in the way funds reported initial issue expenses versus entry loads. For entry loads, the offer documents and websites clearly state what the entry load charged will be. For closed-end funds, however, 12 of the funds provide data on the initial issue expenses. The remaining 17 funds state “Initial Issue Expenses not exceeding 6% incurred by the Mutual Fund will be charged to the Scheme and will be amortised over a period of three years.” Thus, for these 17 funds, it is possible that they eventually charged less than six percent in initial issue expenses. Of course, if the firm intended to charge less than six percent it would seem in its interest to state that they would charge a lower initial expense to gain a competitive advantage. For clarity, I report summary statistics of fee levels charged for both those that estimated their initial issue expenses, and those that just gave an upper-bound on expenses.

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<sup>12</sup>In 1999 tax rates for corporations on holding mutual funds were lowered below tax rates for directly holding securities, so corporations began using short term closed-end mutual funds for cash management purposes (Kamiyama, 2007).

<sup>13</sup>I adjusted the raw data for inflation in India using the All Commodities Wholesale Price inflation rate taken from [www.indiastat.com](http://www.indiastat.com) (Source: Ministry of Commerce & Industry, Govt. of India.) I then converted the 2009 rupees into 2009 U.S. dollars using the exchange rate of 46.235 rupees/dollar taken from [finance.yahoo.in](http://finance.yahoo.in) on November 17, 2009.

<sup>14</sup>These websites are typically blogs run by mutual fund distributors used to advertise new mutual funds.

## 5 Results

### 5.1 Illustrative Figures

Before presenting regression based evidence, I present graphs which illustrate the main results. Figures 1 and 2 plot the number of equity mutual funds started monthly over the period October 1999 through August 2009. The pattern closely matches the predictions of the shrouding hypothesis. In Regime 1, the part of the x-axis before the first dashed vertical bar, we see that the open-ended organizational form dominated amongst equity funds. In Regime 2, we see a relatively large number of closed-end funds being started. Before Regime 2 there were only two closed-end equity fund started, one in February of 2001 and one in January of 2001. The rightmost dashed vertical bar indicates the end of Regime 2 and the beginning of Regime 3. The second law change produced a dramatic drop-off in the number of new closed-end funds started. All of the funds started in 2008 in this figure were able to charge the amortizable initial issue expenses because the opening date of their new period occurred before January 31, 2008.<sup>15</sup>

The hand-collected data on initial issue expenses and entry loads shows that closed-end funds estimated their initial issue expenses at 6 percent, whereas open-ended funds charged an average of 1.75 percent in entry loads. The remaining closed-end funds did not precisely indicate their initial issue expenses, instead stating they would charge up to 6 percent in initial issue expenses. Figure 5 plots the fee charged for all of the funds with data and shows that open-ended funds charged between 0 and 3 percent entry loads during Regimes 2 and 3, with the majority of funds charging 2.25 percent. No closed-end fund estimated it would charge less than 6 percent in initial issue expenses.

If investors were truly willing to pay extra expenses for access to closed-end equity funds during Regime 2 then they would have been willing to pay extra to access closed-end funds during Regime 3. Yet based on the results here it appears that mutual fund investors would not have paid the higher “issue expenses” of closed-end funds once mutual fund companies were forced to disclose them as entry-loads. In other words, by re-framing those issue expenses as entry loads it appears that closed-end equity funds were forced to compete with open-ended equity funds, and in the investors’ eyes they were not a good enough product to warrant the extra expense.

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<sup>15</sup>In the case of one fund, the “Sundaram BNP Paribas Select Thematic Funds - Entertainment Opportunities” I found an initial offer document stating that the fund would be a closed end fund. However, the fund actually debuted as an open-ended fund on May 24, 2008. Interestingly, it appears that the fund company changed this specific fund from closed to open-ended when it was no longer possible to charge the amortized issue expenses.



## 5.2 Regression Evidence on Mutual Fund Starts and Flows

To identify the effect of the law change 1 and law change 2 I use a difference-in-difference approach. I test whether the number of closed-end funds started and the amount of flows into closed-end funds was statistically different during Regime 2 relative to fund starts and flows to open-ended funds. I use the regression specification:

$$S_{it} = \beta_0 + \beta_1 \text{Return}_{t-1} + \beta_2 R2_{it} + \beta_3 \text{Closed}_i + \beta_4 R2_{it} * \text{Closed}_i + \epsilon_{it}$$

Each observation represents describes a type of fund  $i \in \{\text{Closed}, \text{Open}\}$  in month\*year  $t$ .  $S_{it}$  is the number of funds started or the amount of money (in 2009 millions US\$) of fund type  $i$  in month\*year  $t$ . For example in June 2007 two open-ended funds were started.  $\text{Return}_{t-1}$  is return on the Bombay Sensex index for one month prior to  $t$ .<sup>16</sup>  $R2_{it}$  is a dummy variable that takes the value of 1 for months during Regime 2 and 0 for all other months.  $\text{Closed}_i$  is a dummy that takes the value of one for observations that represents starts or amounts for closed end funds, and takes the value 0 for observations that represent starts or amounts for open-ended funds. Our main prediction is that  $\beta_4 > 0$ . If investors are not cognizant of the higher initial issue expenses charged by closed-end funds then we should expect mutual fund companies to start more closed-end funds during this period and for money to flow into them, and for this increase to be larger than the increase that occurs for open-ended funds during Regime 2.

Table 3 presents these results. Columns (1) and (2) focus on the number of funds started as the dependent variable. Column (1) includes all month\*years available on the AMFI website for a total of 120 month\*years for closed-end funds and 120 month\*years for open-end funds (for a total sample size of 240). The coefficient on the Regime 2 dummy shows that for open-ended funds there was no significant difference in the number of funds started during Regime 2. The coefficient on the Closed dummy shows that overall closed-end funds are less likely to be started than open-ended funds. The coefficient on the Regime2\*Closed variable shows that during Regime 2 closed-end funds were significantly more likely to be started. In terms of magnitudes, the intercept term implies that throughout the sample period on average 1.9 new open-ended funds were started per month. Outside of Regime 2, there was an average of .05 closed-end fund started per month. During Regime 2, however, there was an average of 2.1 closed-end funds started per month. Thus, the fee structure imposed during Regime 2 essentially equalized the number of closed-end and open-ended

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<sup>16</sup>6 plots the level of the Bombay Sensex index over the study period for reference.

funds started while outside of Regime 2 new open-ended funds dominated. This data confirms the earlier illustrative figures to show that the Regime 2 period was not generally a period of greater increase in new funds, but a focused expansion in closed-end funds.

Column (2) restricts the sample to only include the periods 22 months before Regime 2 began and 20 months after Regime 2 ended. There are 64 observations of closed-end starts and flows (22 before Regime 2, 22 during Regime 2, and 20 after Regime 2<sup>17</sup>). I report these results because it is likely that using a shorter window around Regime 2 yields better comparison groups than including all of the observations in Column (1). The results in Column (2) are consistent with those in Column (1).

Columns (3) and (4) report the same specifications as Columns (1) and (2) however the dependent variable is the amount of funds flowing into fund type  $i$  in month\*year  $t$ . These results confirm that the amounts flowing into closed-end funds during Regime 2 were significantly higher than the commensurate increase in funds flowing to open-ended funds during Regime 2. In Column (3) the coefficient on the Regime2\*Closed dummy is not statistically significant at the 10 percent level; however, the p-value is .148 which is close to the 10 percent significant level. When I restrict the sample to the shorter event window in Column (4) the coefficient on the Regime2\*Closed variable becomes larger and significant at the 5 percent level. The results change strongly because in Column (3) the comparison group includes months before 2006 when both open-end and closed-end funds took in substantially smaller amounts per month. Relative to the comparison group prior to 2005 both open-end and closed-end funds took in more funds during Regime 2. In terms of magnitudes in specification (4), the results are similar to those for fund starts. Throughout the sample period there was an average of 1,943 million 2009 \$US flowing into open-ended funds per month versus approximately zero flowing into closed-ended funds. During Regime 2, however, there was an average of 1,943 million \$US flowing into open-ended funds and 2,201 million \$US flowing into closed-end funds per month. The free structure allowed during Regime 2 equalized the flows into open and closed funds relative to the periods outside of Regime 2 when open-ended funds dominated. Overall the results on both the number of funds started and amount inflows confirm that closed-end funds experienced a strong surge during Regime 2 when compared to new open-ended funds as a control group.

As an alternative specification I test whether the fraction of monies that flows into closed-ended equity funds responded significantly to the new framing of fund fees in Regime 2 relative to

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<sup>17</sup>I include all periods after Regime 2 that I have data for.

Regimes 1 and Regime 3. I test this using the following regression specification:

$$FC_{jt} = \beta_0 + \beta_1 R2_{jt} + \epsilon_{jt}$$

where  $j$  indexes a type of fund  $\in \{\text{Equity, ELSS, Balanced}\}$  and  $t$  indexes a month-year (e.g. June 2006).  $FC_{jt}$  is the fraction of money going into new fund offers of closed-end equity funds versus open-ended equity funds. I include a dummy variable to signify Regime 2,  $R2_{jt}$ , which is equal to 1 during Regime 2 when closed end funds were allowed to charge the separate "shrouded" initial issue expenses. The unit of observation is a month. The analysis includes only months where there was a positive flow of money to closed or open equity funds over the period October 1999 through September 2009 (120 months total), i.e. 24 months were dropped over this period because no money flowed into new closed or open funds during these months.

Table 4 presents these regression results. Column (1) shows that the proportion of funds flowing into closed-ended equity funds is 43 percentage points higher during Regime 2, and that this difference is significant at the 1 percent level. Column (2) includes a control for the lagged 1 period return on the Sensex index, which is a value-weighted index of the largest 30 firms (by market-capitalization) on the Bombay Stock Exchange. Columns (3) and (4) replicate these results including additional fund classes that are overall much smaller than the income and equity classes. I include balanced funds which primarily hold equities and ELSSequity funds that are primarily tax-savings vehicles and also primarily hold equities. I categorize all of these as "equity" funds because they have similar levels of retail participation as the main equity funds. The results in Columns (3) and (4) are very similar to those in Columns (1) and (2).

## 6 Alternative Explanations: Theoretical Determinants of Closed vs. Open Ended Fund Proportions

### 6.1 Price Ceilings

An alternative explanation is that the transition from Regime 1 to Regime 2 instituted a price ceiling on open-ended funds (therefore leading to more closed-ended funds), while the transition from Regime 2 to Regime 3 instituted a price-cap on closed-ended funds (leading to the demise of closed-ended funds).

I first discuss why the transition from Regime 1 to Regime 2 did not impose a lower price-cap

on open-ended funds versus closed-ended funds. Regime 2 allowed open-ended funds to charge up to a six percent entry load and allowed closed-end funds to charge up to six percent in initial issue expenses. The only meaningful difference between these two types of fees is that initial issue expenses could be amortized over three years, whereas entry loads were required to be collected up-front. Given that amortizing fees makes it possible to collect lower fees (in terms of present value), there is no reason to believe that open-ended funds were prohibited from charging higher fees than closed-ended funds. Thus the transition from Regime 1 to Regime 2 did not involve the imposition of lower price ceilings for open-ended funds. In the transition from Regime 2 to Regime 3, closed-ended funds were forced to charge entry loads instead of initial issue expenses. Again, this change did not impose a price-cap on closed-ended funds because being allowed to charge six percent in entry loads (Regime 3) was at least as generous as charging six percent in initial issue expenses in Regime 2.

There is also no evidence to suggest that the price ceiling on operating expenses that closed versus open ended funds could charge changed around the same time that law changes studied here changed.

## **6.2 Demand for Amortization vs. Entry Loads**

Another possible explanation for the growth in closed-ended funds over this period is that investors may have a strong preference to amortize their entry fees over a period of time. The only difference between between initial issue expenses where amortization is allowed and entry loads where amortization is not allowed is that, under amortization, the present value of fees is lower because fees are paid in the future. If investors' discount rates were high enough, then forcing open-ended funds to charge entry loads instead of initial issue expenses could have made closed-end funds very attractive during Regime 2.

One way to determine whether this story is plausible is to calculate how high the discount rates of the people who purchased closed-end funds would have to have been to justify paying 6 percent fees over time versus 2.25 percent fees up front. Typically closed-end funds during Regime 2 were either three or five year terms. For a three year closed-end fund, I calculate that an individual would have to have a discount rate of 790 percent per year to prefer a closed-end fund with initial issue expenses of six percent amortized over three years, versus an open-ended fund with an entry load of 2.25 percent. For a five year closed-end fund, Column 2 shows that an individual would have to have a discount rate of 564 percent per year to prefer a closed-end fund that had initial

issue expenses of six percent versus an open-ended fund that had an entry load of 2.25 percent. The main reason discount rates would have to be so large is that the term of the closed-end funds offered was not long enough for any reasonable discount rate to make a difference in the present value of fees. Accordingly it seems extremely unlikely that rational discounting can explain why disallowing closed-end funds to charge initial issue expenses and forcing them to charge entry loads led to the demise of the equity closed-end fund market.

### **6.3 Other Theoretical Determinants of Closed vs. Open Ended Funds**

To organize my discussion of other possible explanations for the rise of importance of closed-end funds during Regime 2 I focus on the model presented in Stein (2005). Stein presents a theoretical model to explain the equilibrium distribution of closed-end versus open-ended funds. To begin, he notes that the key difference between closed and open ended funds is that open-ended funds must worry about client redemptions at all points in time. This makes it fundamentally more difficult for open-ended funds to pursue long-run arbitrage strategies. If an arbitrage position moves against an open-ended fund, in the short run, the fund will be forced to unwind the position if clients make short-run redemptions. A closed-end fund, however, has less obligations to make redemptions and so can maintain the long-run arbitrage position until it pays off. Stein (2005) focuses on the standard variant of closed-end funds where investors can only redeem their money by selling on a secondary market. In the Indian context, closed-end funds have limited liquidity because investors cannot redeem their money except for at specified redemption periods. Given this fundamental weakness of open-ended funds, Stein (2005) points out that the prevalence of open-ended funds in the United States is a puzzle.

A possible explanation for the rise in closed-end funds over the period I study could be an improvement in the ability of investors to monitor what their fund managers are doing. If monitoring improved during this period then investors would have an additional incentive to invest in closed-end funds to take advantage of longer run arbitrage strategies. There are two reasons why this is unlikely to explain the emergence of closed-end funds during Regime 2. Based on the record of regulations issued by SEBI there were no policy changes during this period that were instituted and then un-instituted during Regime 2. It also seems unlikely that investors somehow gained better monitoring technology on their own during Regime 2 and then somehow lost this monitoring technology during Regime 3. Second, the Indian closed-end funds offered substantial liquidity because they had pre-specified periods when investors could redeem at NAV. For the 22

(out of 45) closed-end funds where data was available 5 offered daily redemption, 2 offered weekly redemption, 9 offered monthly redemption, 2 offered quarterly redemption, and 3 offered half-yearly redemption. Given that the majority of closed-end funds during Regime 2 had frequent redemption, it seems unlikely demands for limited liquidity explain the importance of closed-end funds during Regime 2.

#### 6.4 Did Closed-End Fund Investors Get Higher Returns?

Another possible alternative explanation for the emergence of closed-end funds during Regime 2 is that the closed-end funds on the market during this period offered higher returns, and thus investors found it worthwhile to pay higher fees for these funds. In this section I calculate the returns earned by both closed and open ended funds offered during this period before entry and initial expense fees (but including operating expenses which are the same for all funds I study).

From the Association of Mutual Funds of India (AMFI) website I created a comprehensive list of all closed and open-ended equity mutual funds started after April 4, 2006. The AMFI website has online monthly reports that list new mutual fund schemes launched in each month. For each of these funds I collected information from the “Investors Zone” link on the AMFI website. This link allows the user to view all of the NAV data for each fund. There were a total of 125 funds started over this period. For 24 of these, no NAVs were provided on the AMFI website.<sup>18</sup> For an additional 4 funds, the NAV data was truncated, i.e. the NAV data was not consistently reported on the AMFI website. I include the returns on these four funds along with the 97 funds for which I have complete NAV data in my return calculations.

The net-asset values reported for open-end funds do not include the entry load paid by the investor. The amortization of fees for closed-end funds is built into the net asset values, so to obtain pre-fee returns I need to add back in the fees the investor is paying through the declining net asset value in a closed-end fund. Suppose a closed-end fund charged six percent in initial issue expenses and an investor purchased one unit at 10 rupees during the new fund offer period. This investor would then owe the fund .06 rupees as initial issue expenses. This .06 rupees would be taken out of the assets of the fund in equal pieces over all of the trading days over the first three years of the fund. In the case where the investor withdrew the money before the end of the first three years, the balance of initial issue expenses owed to the fund company would be withdrawn.

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<sup>18</sup>The fraction of closed-end funds not reporting data is equal to 24 percent. The fraction of open-ended funds not reporting data was equal to approximately 17 percent. Thus, the non-reporting of NAV on the AMFI website does not appear to be strongly related closed or open-ended status.

I assume that there were 750 trading days over the first three years of the closed-end fund. Thus, for each trading day  $.06/750 = .0008$  rupees per day is added to the reported daily NAV of the closed-end funds. This adjusts the data so the returns I calculate do not include the effects of the initial issue expenses.

To control for aggregate market movements, we subtract the returns of the Bombay Sensex index from the raw calculated net returns over the period the particular fund existed. We find that, after adjusting for these aggregate returns, closed-end funds had an average monthly return of  $-.0039$  compared to the average monthly return on open-end funds of  $.0000$  (before fees). Controlling for market risk factors as in Fama and French (1993), we find closed-end funds did not outperform open-end funds in Regime 2 and afterwards. The calculated alpha from the CAPM and 3-factor model suggest closed-end funds provided respectively 76 and 89 basis points per month less than open-ended funds and these performance differences are statistically significant at the 95% confidence level.

Based on these calculations, it does not appear that closed-end funds offered higher returns commensurate with the greater fees they charged; in fact, we find that open-ended funds performed slightly better over this period. In addition, closed-end funds also offered less liquidity in that money could only be withdrawn at set intervals. This evidence suggests that closed-end fund investors did not receive higher returns commensurate with the substantially larger fees.

## 7 Conclusion

We present new evidence on the importance of shrouded fund fees using a natural experiment in the Indian mutual fund industry. When closed-end funds could charge amortized fees, which are plausibly more shrouded than entry loads, many closed-end funds were established in a short time-frame. Forcing closed-end funds to charge entry loads effectively curtailed their growth. We calculate that Indian investors spent approximately 500 million dollars in fees due to this shrouding. In light of the recent experimental literature that finds many framing manipulations to be unsuccessful in changing investor fund choices, the "un-shrouding" reform studied here appears to have had large effects.

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Table 1: Three Regimes of Mutual Fund Pricing

This table shows the maximum allowable fees that could be charged by open and closed-ended funds across the three Regimes studied. The period before April 4, 2006 is Regime 1, the period from April 4, 2006 through January 31, 2008 is Regime 2, and the period after January 31, 2008 is Regime 3. Initial Issue expenses is a fee calculated as a percent of the initial investment withdrawn in small increments over the first three years of the fund's existence. These limits are derived from Securities and Exchange Board of India (2009).

Type of Fund:	Regime 1		Regime 2		Regime 3	
	Open	Closed	Open	Closed	Open	Closed
Initial Issue Expenses (%)	6	6	0	6	0	0
Entry Loads (%)	6	6	6	0	6	6
Expense Ratios (%)	2.5	2.5	2.5	2.5	2.5	2.5

Table 2: Summary Statistics on Fund Flows to Equity Funds

Notes: The Columns labeled Closed and Open are the average amount, in hundreds of millions 2009 U.S. Dollars, of monthly inflows to closed or open funds. Columns (1) and (2) represent equity funds, Columns (4) and (5) represent ELSS Funds, and Columns (7) and (8) represent Balanced Funds. ELSS funds are funds that have a mandatory three year lock-in period. Dividends on ELSS funds are not taxed and when the an ELSS fund position is exited the investor pays long-term capital gains taxes. Balanced funds are funds that invest in both equities and debt. Authoer's

Year	Equity Funds		ELSS Funds		Balanced Funds		Sensex Return
	Closed (1)	Open (2)	Closed (3)	Open (4)	Closed (5)	Open (6)	
1999	0.0	15.9	0.0	0.6	0.0	67.9	0.038
2000	0.0	74.6	0.0	0.1	0.0	16.5	-0.017
2001	1.3	0.7	0.0	0.0	0.0	0.6	-0.019
2002	0.0	8.0	0.0	0.0	0.0	0.0	-0.004
2003	0.0	12.2	0.0	0.0	0.0	2.6	0.047
2004	0.0	97.5	0.0	0.0	0.0	15.0	0.012
2005	0.0	527.0	0.0	16.3	0.1	0.0	0.034
2006	145.8	589.4	2.8	11.7	13.5	0.0	0.027
2007	280.2	275.8	8.2	5.1	12.1	0.0	0.019
2008	207.1	175.4	17.0	0.67	0.0	0.0	-0.052
2009	0.0	100.0	2.3	0.1	0.6	0.0	0.070
Average Across All Years	57.7	170.6	2.8	3.1	2.4	9.3	0.011

Table 3: Effect of Closed-End Fund Shrouding of Fees on Fund Starts and Inflows

This table presents regressions where the unit of observation is a month x type of fund combination. The dependent variable is either the number of new funds started or the amount of inflows into new funds. The Regime 2 dummy takes a value of 1 during the period April 2006 - January 2008 when closed end funds were allowed to charge initial issue expenses in place of entry loads. I argue that because initial issue expenses were allowed to be amortized that they constituted a “shrouded” fee. The variable lagged relevant return is the one month lagged monthly return of the Sensex index, which is a value-weighted index of the 30 largest firms listed on the Bombay Stock Exchange. Columns (1) and (2) focus on the number of funds started as the dependent variable. Columns (3) and (4) focus on the amount of inflows (2009 millions of USD\$) started as the dependent variable. Columns (1) and (3) include all month\*years available on the AMFI website for a total of 120 month\*years for closed-end funds and 120 month\*years for open-end funds (for a total sample size of 240). Columns (2) and (4) restrict the sample to the 22 months before Regime 2 and the 20 months after Regime 2 to provide a more similar comparison group to Regime 2. Robust standard errors in brackets.

	Dep Var = Starts		Dep Var = Amounts (Millions 2009 \$U.S.)	
	(1)	(2)	(3)	(4)
Sensex 1 Month Lagged Return	-1.30	-0.85	40.8	-73.0
	[1.06]	[1.35]	[252.6]	[414.4]
Regime 2 Dummy	-0.05	-0.97	149.1	-71.9
	[0.47]	[0.54]	[104.8]	[144.7]
Closed Dummy	-1.86***	-2.76***	-193.4***	-409.2***
	[0.19]	[0.32]	[52.0]	[112.4]
Regime2*Closed Dummy	2.08***	2.99***	260.2	475.9**
	[0.72]	[0.77]	[179.4]	[206.6]
Constant	1.89***	2.80***	197.3***	420.2***
	[0.19]	[0.32]	[51.5]	[111.9]
Adjusted R-squared	0.25	0.27	0.1	0.081
Number of Observations	240	128	240	128
Mean of Dependent Variable	1.13	1.59	152.2	271.3

\* Significant at the 10% level. \*\* Significant at the 5% level. \*\*\* Significant at the 1% level.

Table 4: Effect of Closed-End Fund Shrouding of Fees on Fraction of Flows to Closed-End Funds

This table presents regressions where the unit of observation is a month x type of fund combination. The dependent variable is the proportion of total flows to new equity mutual funds that went to new closed-ended equity funds. Months where no funds flowed to new open or closed equity funds are dropped (24 months dropped in Columns 1 and 2). The Regime 2 dummy takes a value of 1 during the period April 2006 - January 2008 when closed end funds were allowed to charge initial issue expenses in place of entry loads. I argue that because initial issue expenses were allowed to be amortized that they constituted a “shrouded” fee. The variable lagged relevant return is the one month lagged monthly return of the Sensex index, which is a value-weighted index of the 30 largest firms listed on the Bombay Stock Exchange. Robust standard errors in brackets.

	<u>Equity Funds Only</u>		<u>Equity, ELSS, and Balanced Funds</u>	
	(1)	(2)	(3)	(4)
Regime 2 Dummy	0.43**	0.44**	0.46**	0.46**
	[0.09]	[0.08]	[0.08]	[0.08]
Lagged Relevant Return		-0.68		-0.18
		[0.40]		[0.38]
Constant	0.04	0.04	0.07	0.08
	[0.02]	[0.02]	[0.03]	[0.03]
Observations	96	96	140	139
Adjusted R-squared	0.33	0.35	0.28	0.28
Mean Dep Var:	0.15	0.15	0.18	0.19

\* Significant at the 5% level. \*\* Significant at the 1% level.

Table 5: Performance Comparison of Closed-End and Open-End Funds

This table shows that closed-end fund did not outperform open-end fund in regime 2 and afterwards. We calculate raw and market excess returns for both closed-end and open-end fund. In order to compare market risk-adjusted returns, we construct a multi-factor model as of Fama and French(1993). 6 month yield of India Treasury bill was used for risk-free rate and BSE Sensex Index was used as a proxy for wealth return. India market mimicking portfolios are formed in January of year  $t$ , 2004~2010. Size factor  $SMB$  (small minus big) was constructed using market capitalization of January, year  $t$ . Book-to-market factor  $HML$  (high minus low) was constructed using book-value of fiscal year ending in April, year  $t - 1$ . Market value of  $t - 1$  was used to calculate the ratio of book value and market value. At every January, we divide India BSE listed companies into 2 size categories and 3 book-to-market ratio categories. Value-weighted returns of each category are used to calculate size factor  $SMB = \frac{1}{3} ((S/H + S/M + S/L) - (B/H + B/M + B/L))$  and book-to-market factor  $HML = \frac{1}{2} ((H/B + H/S) - (L/B + L/S))$ . 1-factor model is

$$\text{portfolio excess return} = \alpha + \beta \times \text{market excess return}$$

and 3-factor model is

$$\text{portfolio excess return} = \alpha + \beta_1 \times \text{market excess return} + \beta_2 \times SMB + \beta_3 \times HML$$

	Closed-End Funds	Open-End Funds	Difference	p-value
Monthly Raw Returns	0.0053	0.0117	-0.0064	0.0800
Monthly BSE Adjusted Return	-0.0039	0.0000	-0.0039	0.2369
1-Factor Alpha	-0.0048	0.0028	-0.0076	0.0100
3-Factor Alpha	-0.0077	0.0012	-0.0089	0.0030

Figure 1: New Equity Open-Ended Fund Starts

This figure plots the number of new equity open-ended mutual funds started, per month, in the Indian mutual fund market from October 1999 through September 2009. The left most dashed vertical line indicates the end of Regime 1 and the beginning of Regime 2 (May 2006). The right most dashed vertical line indicates the end of Regime 2 and the beginning of Regime 3 (February, 2008).

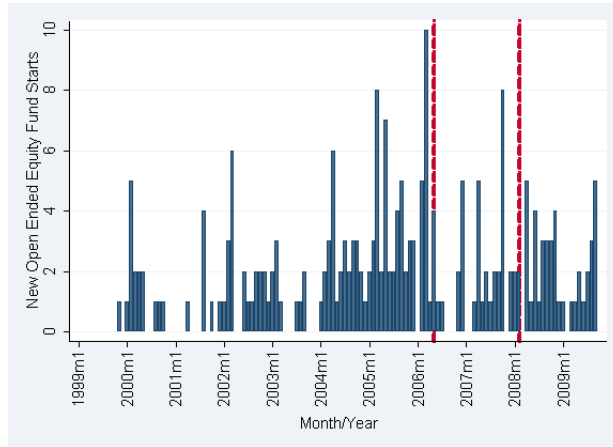


Figure 2: New Equity Closed-Ended Fund Starts

This figure plots the number of new equity closed-end mutual funds started, per month, in the Indian mutual fund market from October 1999 through September 2009. The left most dashed vertical line indicates the end of Regime 1 and the beginning of Regime 2 (May 2006). The right most dashed vertical line indicates the end of Regime 2 and the beginning of Regime 3 (February 2008).

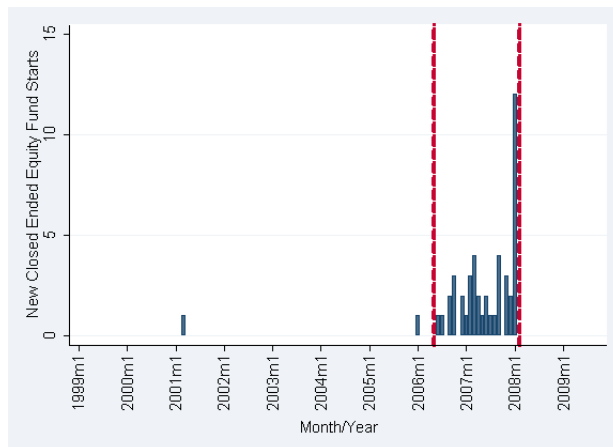


Figure 3: New Equity Open-Ended Fund Amount Inflows

This figure plots the amount of inflows to equity open-ended mutual funds, per month, in the Indian mutual fund market from October 1999 through September 2009. The amounts are reported in 2009 millions of U.S. dollars. The left most dashed vertical line indicates the end of Regime 1 and the beginning of Regime 2 (May 2006). The right most vertical line indicates the end of Regime 2 and the beginning of Regime 3 (February, 2008).

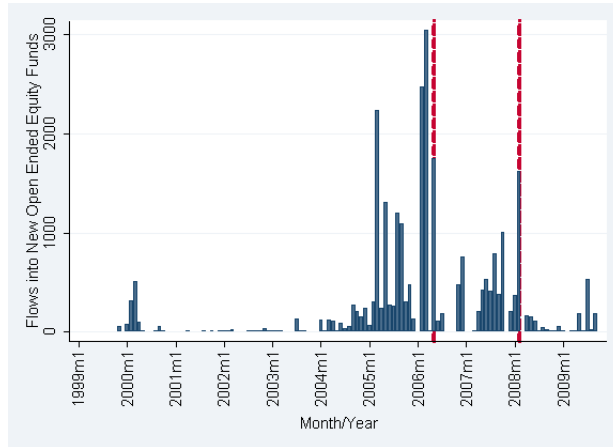


Figure 4: New Equity Closed-Ended Fund Amount Inflows

This figure plots the amount of inflows to equity open-ended mutual funds, per month, in the Indian mutual fund market from October 1999 through September 2009. The amounts are reported in 2009 millions of U.S. dollars. The left most dashed vertical line indicates the end of Regime 1 and the beginning of Regime 2 (May 2006). The right most vertical line indicates the end of Regime 2 and the beginning of Regime 3 (February, 2008).

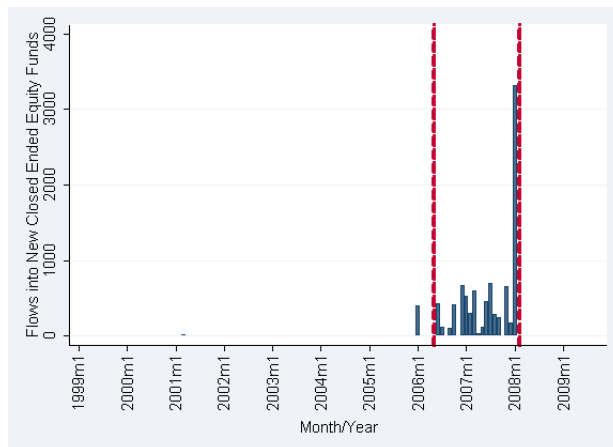




Figure 5: Fees Charged by New Equity Funds Started During Regimes 2 and 3

This figure plots the level of fees charged to investors who made investments newly started mutual funds during the fund's new offer period during Regimes 2 and 3. The triangles are the initial issue expenses charged by closed-end funds that explicitly estimated these expenses in their offer documents. The X's are the upper bound on initial issue expenses that some closed-end funds reported in their offer documents. The +s are the entry loads that open-ended funds stated they would charge new investors during their new fund offer period. The left, most dashed vertical line indicates the end of Regime 1 and the beginning of Regime 2 (May 2006). The right most vertical line indicates the end of Regime 2 and the beginning of Regime 3 (February, 2008). Data are taken from offer documents of individual new fund offers.

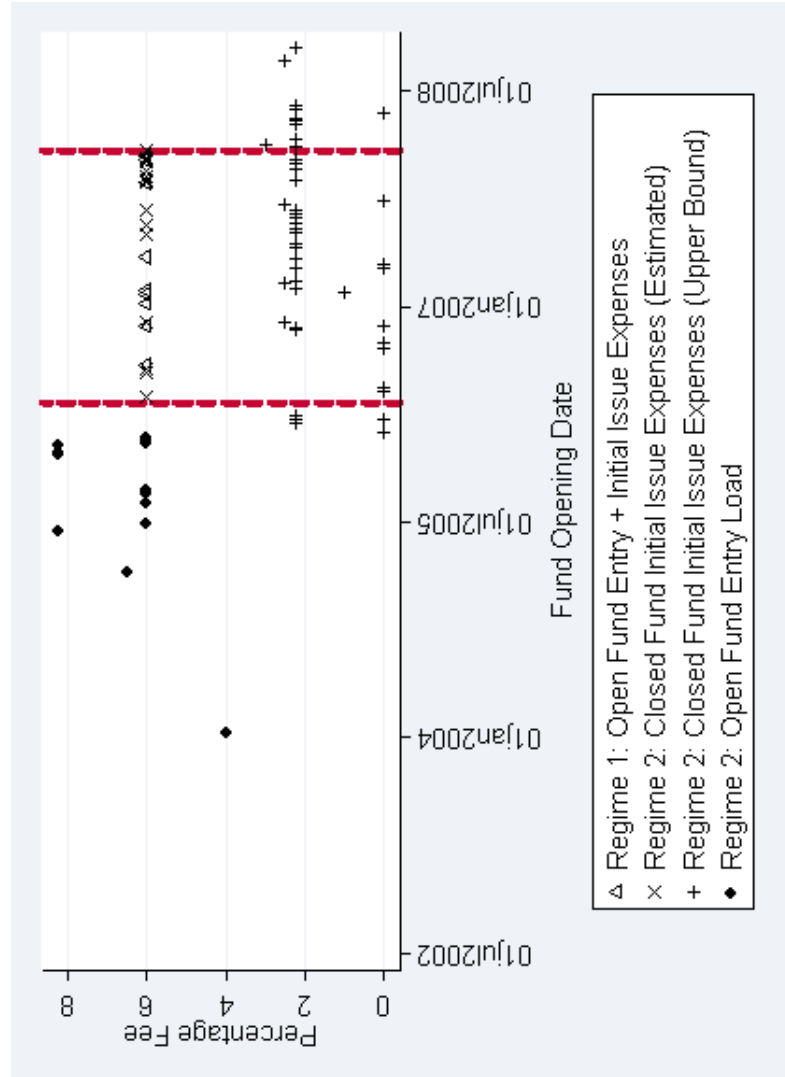
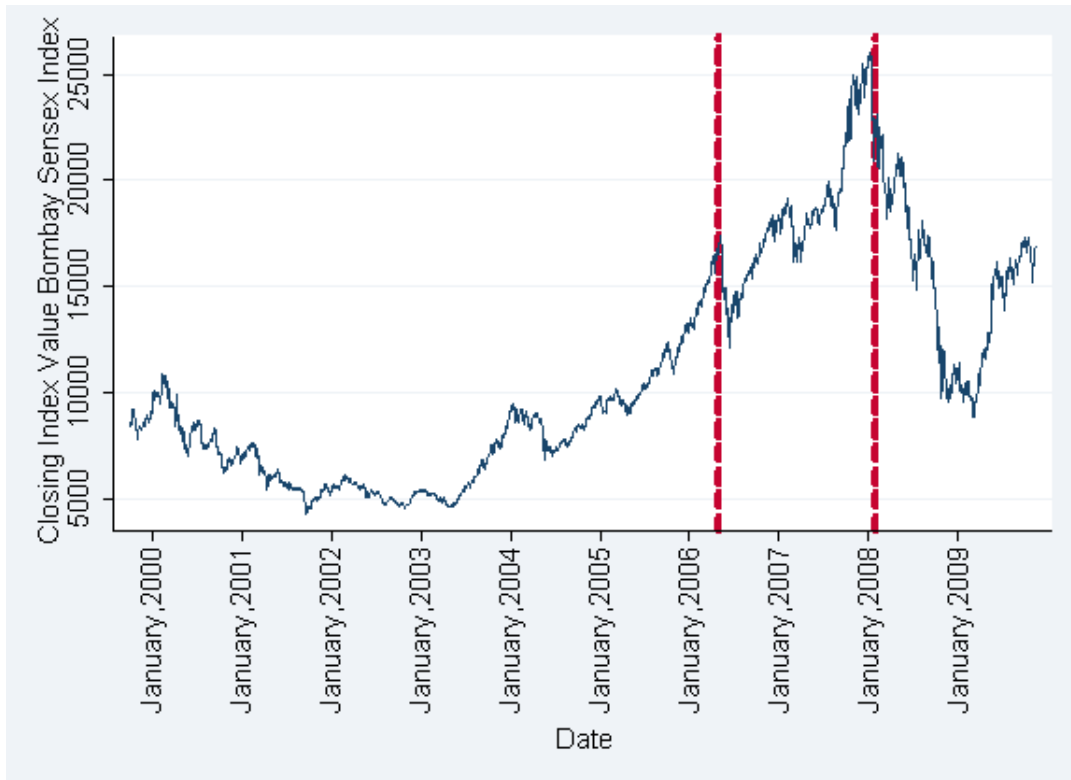


Figure 6: The Bombay Stock Exchange Sensex Index

This figure plots the level of the Bombay Stock Exchange Sensex index adjusted for inflation. The Sensex is a value weighted index of the 30 largest companies traded on the Bombay Stock Exchange. Author's calculations based on index values taken from finance.yahoo.in and price indices taken from www.indiastat.in. The left most dashed vertical line indicates the end of Regime 1 and the beginning of Regime 2 (May 2006). The right most dashed vertical line indicates the end of Regime 2 and the beginning of Regime 3 (February, 2008).



## 8 Appendix

In this appendix, we explain briefly the procedure of constructing the Indian stock market mimicking portfolio as in Fama and French (1992) and Fama and French (1993).

We use nonfinancial firms listed on the Indian Bombay Stock Exchange(BSE) from FactSet Research Systems Inc.<sup>19</sup> Data for stock price, book-value and shares outstanding were retrieved for April 2006 through February 2010. We exclude financial firms from the analysis because leverage for nonfinancial firms may imply a different corporate situation from that of financial firms. For constructing the size factor (*SMB*) and book-to-market ratio factor (*HML*) in India stock market, we follow closely Fama and French (1992, 1993)'s procedure for market-mimicking portfolio construction.

Market-equity (*ME*) is used to measure a firm's size, which is calculated as stock price multiplied by shares outstanding. For assessing a firm's size, we use market-equity at the end of January at year  $t$ . In order to ensure accounting information is reflected in stock price, we match accounting data for fiscal year that ends in calendar year  $t - 1$  with stock price data for calendar year  $t$ . To compute book-to-market ratio, we use firm's market-equity at the end of January at year  $t - 1$ .

At every January, we sort firms into two size categories (Big and Small) and 3 book-to-market categories (High, Median, Low) according to its market equity and book-to-market ratio. Median and 30% /70% percentile are used as break points for size sorting and book-to-market ratio sorting. After assigning one of six categories (B/L, B/M, B/H, S/L, S/M, S/H) to every firm, we calculate monthly return for each firm in each category. Then we calculate value-weighted return of firms' return at each category. Size factor *SMB* is calculated as a weighted sum of small companies' return minus big companies' return.

$$SMB = \frac{1}{3}[(S/L + S/M + S/H) - (B/L + B/M + B/H)]$$

Book-to-market ratio *HML* is calculated as a weighted sum of high book-to-market companies' return minus low book-to-market companies' return.

$$HML = \frac{1}{2}[(H/S + H/B) - (L/S + L/B)]$$

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<sup>19</sup>FactSet covers 97% of the total Indian market capitalization as of June 2009.

Note that the frequency of return data is monthly but a company's category may change annually each January.