The Impact of Shrouded Fees: Evidence from a Natural Experiment in the Indian Mutual Funds Market

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INTRODUCTION

This paper replicates the study of Anagol et. al.[1] where they study the two law changes imposed by the *Securities and Exchange Board of India (SEBI)*. These law changes impacted the way the mututal funds could charge the initial expenses to the investors. Specifically, the initial expenses can be charged either in the form of the *Entry Loads* or the *Initial Issue Expenses*. The key difference between the two ways of charging the inital expenses is that the *Initial Issue Expenses* can be amortized, i.e., they can be taken out of the net asset value gradually (usually over a period of three years). Hence, these expenses are shrouded from the investors, as the investors are unlikely to observe a decline in the net asset value due to these expenses. However *Entry Loads* are deducted in a lump sum fashion from the initial investment. Hence investors are more likely to be aware of the *Entry Loads*. When the investor receives his first statement he can immediately realize that the entry load money has been taken out. The paper shows how mandatory unshrouding of fees affects investor choices, holding all other characteristics of the fund constant. Specifically, the paper shows that the investors ignore shrouded fees while making an investment. Hence policies to improve disclosure and educate investors can have important effects on investor welfare. The python code for this replication exercise is available at https://github.com/shivankgoel/mutualfundsindia.

THE TWO LAW CHANGES

There exists two kinds of mutual funds in the Indian mutual fund market, i.e., the closed-end funds and the open-end funds. The main difference between the two funds is that, when the new funds are started there is an offer period which lasts usually 1-2 months during which the new funds collect an initial corpus of money. Closed end funds do not accept any money into the fund after this offer period. While the open-end funds again start collecting the money after a 1-month window period since the offer period. The paper uses the two law changes by the Securities and Exchange Board of India (SEBI) as a natural experiment.

The first law change occurred on *April 4, 2006*. From this date, SEBI mandated that the *Closed-End Funds* could only charge *Initial Issue Expenses* and *Open-End-Funds* could only charge *Entry Loads*. Allowing closed-end funds to charge amortizable initial expenses led to a proliferation of the closed-end funds because initial expenses are more shrouded from the investors.

The second law change took place on *January 31, 2008*. From this date, SEBI mandated that any *Closed-End Funds* which were started after this date could no longer charge any amortized *Initial Issue Expenses* and could only charge *Entry Loads*.

We refer to the period before first law change as Regime 1, the period between the first and the second law change as Regime 2 and the period after the second law change as Regime 3. In Regime 1 and Regime 3, since the SEBI laws are same for both types of fund, determinants which are orthogonal to the type of initial issue fees would determine whether the open-end fund is started or the closed-end fund is started. However, in Regime 2 proportion of closed-end funds increase substantially because only they can charge the shrouded fees. Hence, in this analysis closed-end funds are the treated group of funds and the open-end funds are the control group of funds, where the treatment period is Regime 2. In India, the initial expenses, i.e., either the *Initial Issue Expenses* or the *Entry Loads* can not exceed six percent of the initial resources raised. All this information has been summarized in the Table 1.

DIFF-IN-DIFF ETIQUETTE

The paper estimates the impact of mandating the shrouded fees on increase in the *Starts*, i.e., the start of the new funds into market, and the increase in the *Net Cash Flow* for the open-end funds during the period of Regime 2 using a Diff-in-Diff model. In this section, I would evaluate the paper based on the various components of the Diff-in-Diff etiquette discussed in the class.

Explaining and defending the experiment

The paper claims that the treated, i.e., the closed-end funds and the controlled, i.e., the open end funds are similar in terms of the maximum percentage they can charge as part of the various expenses. Regime 2 allowed open-end funds to charge upto a six percent entry load and closed-end fund to charge upto six percent in initial issue expenses. The only meaningful difference between these two types of fees is that initial issue expenses can be amortized over three years, whereas entry loads are collected upfront. Besides that they found no major differences in the level of other expenses, such as, operating expenses charged by the open-end and the closed-end funds. Moreover, the upper limit of 2.5 percent on operating expenses stayed same during Regime 2 and 3 for both kinds of funds. Although, the authors find some difference in the exit loads charged by the two types of fund. Exit loads are the fees that are payable when money is withdrawn from the fund before a specific investment term is met. Most of the closed-end funds charged zero exit loads, while the open-end funds typically charged less than one percent for exits before the first year. But, the authors claim that the level of exit loads charged by the open-funds are not enough to offset the much higher initial issue expenses charged by closed-end funds. Hence the closed-end and the open-end funds form a comparable treatment and control group in terms of their fee structure. The comparison has been displayed in Table 1.

Maximum Percentage of Expenses	Regime1 Until April 2006		Regime2 May 2006 - Jan 2008		Regime3 February 2008 Onwards	
	Open	Closed—	Open	Closed	Open	Closed
Initial Issue Expenses	6	6	0	6	0	0
Entry Loads	6	6	6	0	6	6
Operating Expense Ratios	2.5	2.5	2.5	2.5	2.5	2.5

Table 1. Comparison of the maximum expenses open-end and closed-end funds could charge during the three regimes

Presenting raw data in terms of a graph [1]

The Figure 1 shows the number of the open-end and the closed-end funds that were started during the three regimes. The dotted red lines mark the start and the end of the Regime 2 period. We can clearly see a significant rise in the number of closed-end fund starts during Regime 2. Infact, we can observe the sudden emergence and disappearance of the closed-end funds during Regime 2. We can also see that there are more closed-end funds opened in comparison to the open-end funds during Regime 2. Similarly, Figure 2 shows a significant increase in the amount of cash flows (in million US dollars) into the closed-end funds during this period. We note that in both of these figures, the values for the open-ended funds have been reversed in the sign for display purposes. The authors also observed the actual amount of initial expenses charged by the closed-end and the open-end funds. They observed that on an average closed-end funds charged 4.84 percent as initial issue expenses and open-end funds charged only 1.80 percent as the entry loads. Thus they claim if investors had invested their money towards the open-end funds instead of the closed-end funds during Regime 2 period, they would had saved approximately $350 million US in initial expense fees.

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[1]Python code to obtain these figures : https://github.com/shivankgoel/mutualfundsindia/blob/master/graphs.ipynb
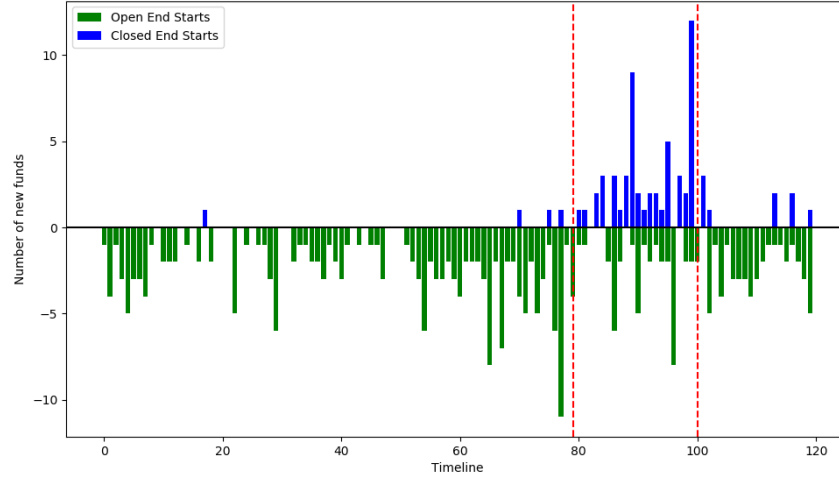
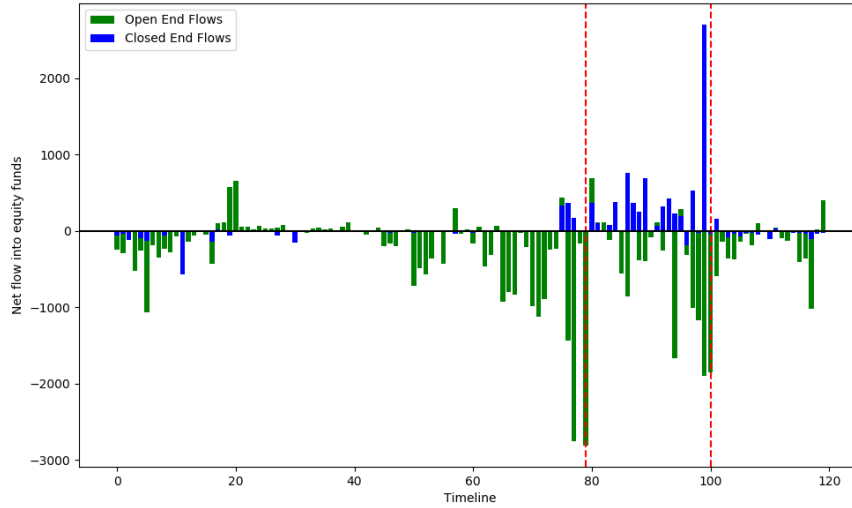**Figure 1.** The number open-end and closed-end fund starts

Figure 2. The net flows in million US dollars into the open-end and closed-end funds

Summary Statistics [2]

Table 2 shows the monthly average of the net fund flows in million US dollars into the different type of the open-end and the closed-end funds.[3] In this paper the authors only focus on the equity funds for their analysis. We can see that traditionally the open-end funds are more popular. However, during Regime 2 closed end funds started having more net fund flows into them. As an additional insight authors could have also provided such a summary table for the average monthly starts of the open-end and the closed-end equity funds, which I am presenting in the Table 3. On an average for the equity funds, closed-end funds are much less likely (typically no starts at all) to start than the open-end funds. However, in the year *2007*, i.e., during the treatment phase there are equal number of the open-end and the closed-end new funds emerging into the market.

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[2]The summary table presented in this section is slightly different from the table in the paper because I found a mistake in their calculation of the inflation prices. I also obtained the same summary table as theirs by repeating the mistake and this table has been provided in the Appendix, Table 8.

[3]Python code for obtaining Table 2 and 8 : https://github.com/shivankgoel/mutualfundsindia/blob/master/summarystats.ipynb

Year	Equity Funds		ELSS Funds		Balanced Funds		Sensex return
	Closed	Open	Closed	Open	Closed	Open	
1999	0	17.12823	0	0.598889	0	73.06449	0.038186
2000	0	80.26171	0	0.057993	0	17.80372	-0.017259
2001	1.352943	0.730589	0	0.027059	0	0.622354	-0.019125
2002	0	8.576398	0	0	0	0	-0.003994
2003	0	13.13381	0	0	0	2.753048	0.046586
2004	0	104.9954	0	0	0	16.18998	0.011615
2005	0	567.2587	0	17.51812	0.089952	0	0.034304
2006	156.9418	634.4662	2.972546	12.57947	14.49655	0	0.027159
2007	301.5626	296.9031	8.808179	5.456575	13.05899	0	0.019491
2008	222.9075	188.7749	18.34606	0.039076	0	0	-0.052449
2009	0	100.0204	2.331086	0.072095	0.600795	0	0.069562
Average	62.070	182.932	2.951	3.304	2.568	10.039	0.014

Table 2. Summary statistics on amount of fund flows to equity funds

Year	Equity Funds		ELSS Funds		Balanced Funds	
	Closed	Open	Closed	Open	Closed	Open
1999	0.000	0.333	0.000	1.000	0.000	0.667
2000	0.000	1.250	0.000	0.667	0.000	0.250
2001	0.083	0.583	0.000	0.250	0.000	0.083
2002	0.000	1.750	0.000	0.083	0.000	0.000
2003	0.000	0.833	0.000	0.167	0.000	0.000
2004	0.000	2.417	0.000	0.333	0.000	0.000
2005	0.000	3.583	0.083	0.000	0.000	0.200
2006	0.833	2.417	0.083	0.000	0.083	0.333
2007	2.000	2.000	0.250	0.000	0.333	0.167
2008	1.000	2.417	0.000	0.000	0.333	0.167
2009	0.000	1.778	0.222	0.000	0.333	0.222
Average	0.356	1.760	0.058	0.227	0.098	0.190

Table 3. Summary statistics of the new starts of the equity funds

Baseline Estimates[4]

Table 4 shows the preliminary analysis of the impact on the opening of new closed end funds during Regime 2, without including all the controls. The Panel OLS specification for the bodel is, $S_{it} = \beta_0 + \beta_1(Closed*Regime2_{it}) + \gamma X_{it} + \epsilon_{it}$. Here S_{it} is the outcome variable, i.e., either the number of new equity mutual fund starts or the amount of net fund flows in US million dollars into the equity mutual funds and X_{it} is a matrix of control variables. Originally, the matrix of control variables used by the authors include a month-year time trend, one-month and three-month lagged returns of the Bombay Sensex index, dummy for Regime 2, dummy for Regime 3, dummy for closed-end funds and an interaction term between closed-end dummy and Regime 3 dummy. However, the authors could had presented the results by gradually adding the control variables and showing that the treatment effect survives. I present the results by adding these controls gradually into the Tables 4 and 5. I note that the coefficient of the interaction term *closed_regime*2 remains significantly positive in all of the specifications. Results shows that the number of the closed-end funds statistically increased during the Regime 2 as compared to the open-end funds.

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[4]Python Code for Table 4: https://github.com/shivankgoel/mutualfundsindia/blob/master/Main-otherspecifications.ipynb

Panel Data OLS : Starts	(1)	(2)	(3)
Intercept	1.8776***	1.8077***	0.9262***
	(0.1154)	(0.2279)	(0.2315)
time_trend			0.0229***
			0.0059
regime2	-0.0594	0.0105	-1.1343*
	(0.47)	(0.4867)	(0.5939)
regime3		0.3423	-1.2832**
		0.4076	0.6410
closed	-1.8571***	-1.7821***	-1.7821***
	(0.1943)	(0.2286)	(0.2162)
closed_regime2	2.0844***	2.0093***	2.0093***
	0.7134	0.7262	0.7093
closed_regime3		-0.3679	-0.3679
		(0.408)	(0.4039)
N	240	240	240

Table 4. Impact of shrouded fees on opening of new funds. The clustered standard errors are shown in parenthesis.

Main Results[5]

Table 5 shows the regressions for studying the impact of shrouded fees on the *Mutual Fund Starts* and the *Net Fund Flows* in million US dollars, during Regime 2.

	OLS Starts		Poisson Starts		Net Flows	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.8294***	-2.7638	-0.68*	-2.53**	32.904	-812.74
	(0.2590)	(1.8012)	(0.37)	(1.19)	(67.557)	(504.54)
time_trend	0.0262***	0.0951***	0.03***	0.06***	4.3158***	19.435**
	(0.0068)	(0.0271)	(0.01)	(0.02)	(1.4098)	(7.5785)
sensex_return1	-0.4498	-0.1358	-0.31	0.14	-1299.7***	-2016.0***
	(1.6013)	(2.3062)	(1.29)	(1.51)	(390.10)	(645.96)
sensex_return3	-0.8744	-2.0489*	-0.88	-1.40**	324.69	245.60
	(0.6540)	(1.2160)	(0.58)	(0.67)	(206.82)	(340.61)
regime2	-1.2495**	-3.6667***	-1.25***	-1.91***	-97.533	-569.46**
	(0.6222)	(0.7914)	(0.37)	(0.53)	(112.92)	(221.68)
regime3	-1.5567**	-5.5232***	-1.78***	-3.05***	-309.75**	-1120.2***
	(0.6896)	(1.3202)	(0.48)	(0.89)	(139.12)	(369.78)
closed	-1.7821***	-3.3182***	-4.26***	-4.30***	-198.26***	-386.07**
	(0.2170)	(0.5163)	(0.70)	(0.98)	(59.897)	(144.61)
closed_regime2	2.0093***	3.5455***	4.37***	4.42***	194.49	382.30*
	(0.7046)	(0.7301)	(0.78)	(1.02)	(127.70)	(204.51)
closed_regime3	-0.3679	1.1682	-20.07***	-19.66***	-27.071	160.74
	(0.4053)	(0.7482)	(0.76)	(1.02)	(132.59)	(209.56)
N	240	128	240	128	240	128

Table 5. Regressions to study impact of shrouded fees on opening of new funds and net flows

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[5]Python code to obtain these results: https://github.com/shivankgoel/mutualfundsindia/blob/master/Main.ipynb

The OLS Starts uses a simple panel regression while Poisson Starts uses the poisson regression, using the number of new mutual funds started as the dependent variable. Net Flows shows regressions using the net flows into the funds, defined as the inflow minus the redemption, as the dependent variable. Columns 1, 3, and 5 include all the 120 month-years for each of the open-end and the closed-end funds. Columns 2, 4 and 6 include only 22 month-years preceding Regime 2, the 22 month-years during Regime 2 and 20 month-years following Regime 2, to provide a more similar comparison group. Note that the regression coefficients obtained for the Net Flows are different from the paper due to two reasons. Firstly, I found the mistake in the original paper where they include *sensex_return* as the dependent variable, instead of the one month lagged *sensex_return*. Further, it is not clear how they are calculating the three month lagged *sensex_return*. However, the qualitative results stays the same and we can see significant increase in net flows into the closed-end funds during Regime 2 when we use the restricted comparison group. Further, as mentioned previously I found an error in their calculation of inflation rate and hence I present these results with the inflation rates that they use in the Appendix, Table 9. I do not find any difference in the qualitative implication between both these cases.

Investigating Pre and Post Treatment Patterns[6]
The authors missed the analyses of whether the treatment effect trend already exists before the treatment period and how long does it survive after the treatment. To inspect the pre and post treatment trends on the number of equity closed-end fund starts, I obtained the dummy variables for five months before the Regime 2 period and five months after the Regime 2 period, and included the interaction of these dummy variables with the closed dummy variable in the Panel OLS regression. The results of this regression is displayed in Table 6.

OLS Starts	Coefficients	Std Err	Tstat	Pvalues
Intercept	0.7615	0.2773	2.7463	0.0065
time_trend	0.028	0.0075	3.7508	0.0002
sensex_return1	-0.3564	1.7186	-0.2074	0.8359
sensex_return3	-0.912	0.6785	-1.3441	0.1803
regime2	-1.3369	0.65	-2.0566	0.0409
regime3	-1.6829	0.733	-2.296	0.0226
closed	-1.7334	0.2159	-8.0269	0
closed_regime2	1.9606	0.7173	2.7333	0.0068
closed_regime3	-0.4473	0.4098	-1.0915	0.2762
closed_November2005	-0.9363	0.2828	-3.3112	0.0011
closed_December2005	-1.0111	0.2822	-3.5823	0.0004
closed_January2006	0.1078	0.2573	0.4189	0.6757
closed_February2006	-0.9844	0.269	-3.6589	0.0003
closed_March2006	-0.9741	0.2825	-3.4481	0.0007
closed_February2008	0.1972	0.1065	1.852	0.0654
closed_March2008	0.0403	0.2	0.2017	0.8404
closed_April2008	0.2678	0.1739	1.5399	0.125
closed_May2008	0.1355	0.1457	0.9302	0.3533
closed_June2008	-0.0268	0.3351	-0.0801	0.9362

Table 6. Pre and Post Treatment Effects

I did not find any significant post treatment impact after the first month of the treatment period. However I find some level of significance in the survival of the treatment one month post to the Regime 2. Furthermore, I did not find any treatment effect on the increase in the number of new closed-end funds prior to the treatment. Infact, I

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[6]Python code : https://github.com/shivankgoel/mutualfundsindia/blob/master/Main-otherspecifications.ipynb

found a statistically significant opposite trend, i.e., closed-end funds were less likely to open prior to the treatment. These observations are also presented graphically in the Figure 3.
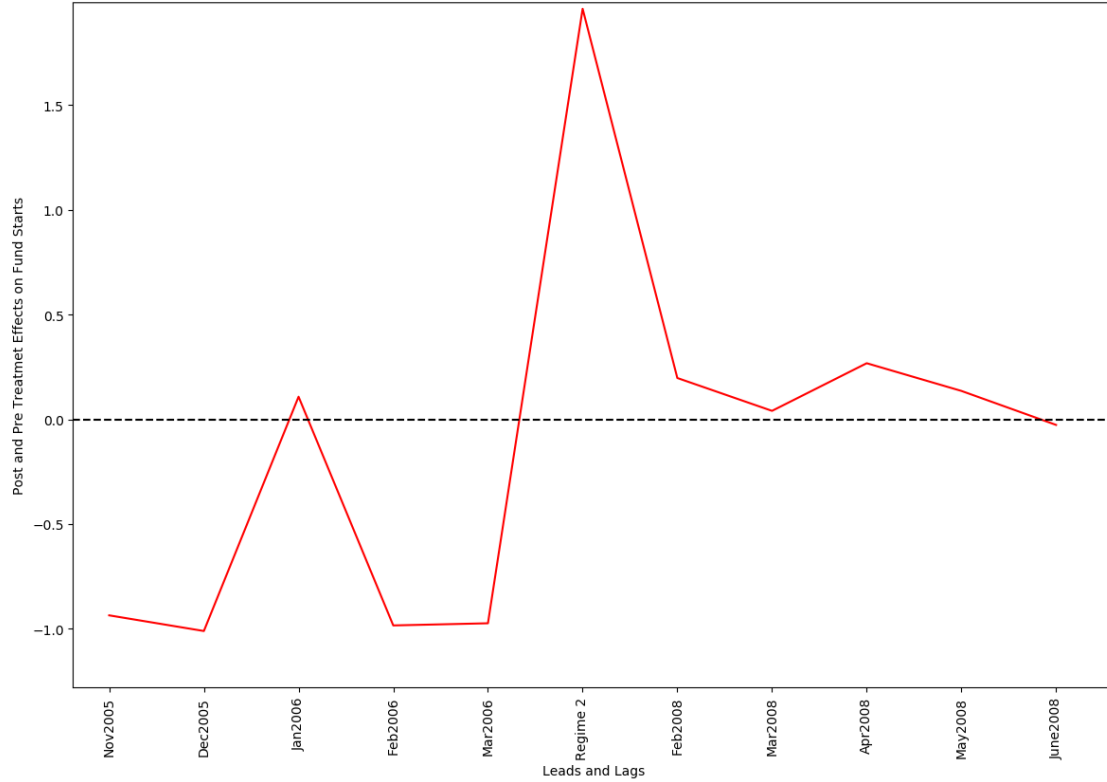

Figure 3. The figure shows the coefficients on the interaction of the closed dummy with the lead and lag month dummy variables.

Robustness Checks[7]

To rule out the possibility that the more closed-end funds emerged during Regime 2 because they provided higher returns than the open-end funds, authors conducted a paired t-test to check the difference in the monthly raw and BSE adjusted returns for the closed-end and the open-end funds. On the contrary, we find that the open-end funds performed slightly better than the closed-end funds in terms of the raw returns and does not give statistically different BSE adjusted returns. These results have been provided in the Table 7.

	Closed-End Funds	Open-End Funds	Difference	P-value
Monthly Raw Return	0.005315	0.011685	-0.006369*	0.079975
Monthly BSE Adjusted Return	-0.003857	0.000043	-0.0039	0.2369

Table 7. Performance comparison of closed end and open end firms

CONCLUSION

The authors did a great job in convincing that allowing closed-end funds to charge amortizable initial expenses led to a proliferation of the closed-end funds. They argued that these changes in number of closed-end funds were observed even when on an average closed-end funds charged 4.84 percent as initial issue expenses and open-end funds charge only 1.80 percent as entry loads. They rule out various possibilities for the increase in closed-end funds other than because of the the shrouded fees charged by closed-end funds as part of the initial issue expenses. They

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[7]Python code for performance comparison: https://github.com/shivankgoel/mutualfundsindia/blob/master/performancecomparison.ipynb

argued that since the closed end funds performed worse in terms of the returns, investors were not cognizant of the high initial issue expenses they were paying. The closed-end funds proliferated because the *Individual Financial Advisors (IFAs)* are compensated through the *Initial Issue Expenses* and the *Entry Loads*, and hence they push investors into high-fee funds to increase their incomes. Further, they state that the investors were forced to pay the full initial issue fees even if they leave the closed-end fund early. Hence it is unlikely that closed-end funds became popular because investors could avoid fees by making very short term investments in the funds. Further, there is a possibility that the investors may have a strong preference to amortize their entry fees over a period of time. But authors show that it would require a discount rate of 224 percent per year to prefer a closed-end fund with initial issue expenses of 6 percent over three years, versus an open-end fund with an entry load of 2.25 percent, which is unlikely. Finally, authors apologize that they could not extrapolate the analysis to longer time horizons to know whether investors eventually learned about the shrouded fees.

REFERENCES

1. S. Anagol and H. H. Kim, "The impact of shrouded fees: Evidence from a natural experiment in the indian mutual funds market," *American Economic Review*, vol. 102, no. 1, pp. 576–93, 2012.

Appendix

A MODIFIED SUMMARY TABLE USING INFLATION VALUES USED BY AUTHORS

| Year | Equity Funds | | ELSS Funds | | Balanced Funds | | Sensex return |
	Closed	Open	Closed	Open	Closed	Open	
1999	0.000	15.913	0.000	0.556	0.000	67.879	0.038
2000	0.000	74.566	0.000	0.054	0.000	16.540	-0.017
2001	1.257	0.679	0.000	0.025	0.000	0.578	-0.019
2002	0.000	7.968	0.000	0.000	0.000	0.000	-0.004
2003	0.000	12.202	0.000	0.000	0.000	2.558	0.047
2004	0.000	97.544	0.000	0.000	0.000	15.041	0.012
2005	0.000	527.003	0.000	16.275	0.084	0.000	0.034
2006	145.804	589.441	2.762	11.687	13.468	0.000	0.027
2007	280.162	275.833	8.183	5.069	12.132	0.000	0.019
2008	207.089	175.378	17.044	0.036	0.000	0.000	-0.052
2009	0.000	100.020	2.331	0.072	0.601	0.000	0.070
Average	57.665	170.595	2.756	3.070	2.389	9.327	0.014

Table 8. Summary statistics on amount of fund flows to equity funds

B MODIFIED REGRESSION TABLE USING INFLATION VALUES USED BY AUTHORS

| | Net Flows | |
	(1)	(2)
Intercept	31.125	-752.64
	(62.933)	(470.27)
time_trend	3.989***	18.002**
	(1.3133)	(7.0639)
sensex_return1	-1212.9***	-1880.9***
	(363.39)	(602.1)
sensex_return3	311.66	243.26
	(192.67)	(317.48)
regime2	-90.05	-527.84**
	(105.19)	(206.62)
regime3	-281.26**	-1032.5***
	(129.59)	(344.67)
closed	-184.19***	-358.67**
	(55.796)	(134.79)
closed_regime2	180.69	355.17*
	(118.96)	(190.63)
closed_regime3	-30.692	143.79
	(123.51)	(195.33)
N	240	128

Table 9. Effect of fee shrouding on net flows