

# The Impact of Capping Commissions: Evidence from a Natural Experiment in the Indian Mutual Funds Market

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## Abstract

Regulators around the world are currently pursuing two broad types of policies to increase consumer financial protection after the recent financial crisis. One type of protection involves “empowering” consumers through greater disclosure regulation and financial literacy training. A second approach, which has received less empirical attention, is direct regulation of sales practices such as commissions. We exploit a natural experiment in India that greatly reduced the ability of mutual fund firms to pay distributors commissions to study how commissions affected household participation in financial markets. Using a difference-in-difference specification where we compare mutual fund investments with direct stock investments, we find that the exogenous commissions ceiling reduced the proportion of households investing in mutual funds by 2.7 percentage points; this is a large effect given that only 3 percent of sample households make new mutual fund investments per quarter. Using fund level data on flows, we also find that the sensitivity of fund flows to past performance is substantially lower when commissions were capped.

# 1 Introduction

The financial crisis of 2008 spurred an active policy debate on the optimal way to pursue consumer financial protection (Campbell et. al. (2010)). Two basic policy options have received attention (Ko and Yoon-Ho (2011)). One approach is to empower consumers to make better financial decisions through financial literacy training and disclosure regulation. A small but growing literature evaluates financial literacy training programs, with mixed results. Lusardi and Mitchell (2007a), Lusardi and Mitchell (2007b), Carlin and Robinson (2011) ) find positive correlations of financial literacy on financial decision making. A number of studies, however, find that financial literacy training does not appear to have substantial effects (Cole and Zia (2011), Hastings and Mitchell (2011), Cole and Shastry (2010)). Studies in the context of fee disclosure on mutual funds in the U.S. find limited impacts of such policies (Beshears et. al. (2009), Choi et. al. (2009)), but field evidence from the U.S. (Bertrand and Morse (2011)), India (Anagol and Kim (2011)) and Mexico (Hastings and Duarte (2011)) find strong evidence that un-shrouding fees increases the elasticity of demand with respect to those fees.

A second regulatory option is direct intervention in how financial products are sold, such as capping or banning commissions to financial product distributors. A number of significant reforms have already been made.<sup>1</sup> The U.K. Financial Services Authority announced in June of 2009 that starting in 2012 there would be a ban on commissions paid to independent financial advisors by financial product providers.<sup>2</sup> A similar policy banning commissions for the sale of financial products will take effect in July 2012.<sup>3</sup> The scope of these bans on commissions is large, encompassing savings products such as mutual funds as well as insurance products. To date, little academic research has studied the impact of such bans on commissions on the distribution and operation of household financial markets. The purpose of this paper is present one of the first pieces of evidence on how regulation of commissions levels affects the distribution of mutual funds.

On August 1, 2009 the Securities Exchange Board of India (SEBI) banned entry loads charged

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<sup>1</sup>A related literature studies the impacts of commissions on real estate broker behavior, although none of these studies evaluate the impacts of law changes on the level of commissions that agents can charge (Jia and Pathak (2010), Levitt and Syverson (2008)).

<sup>2</sup>Independent Financial Advisors received commissions to sell mutual funds and life insurance products. See Reuters (2009), Vincent (2009) and Dunkley (2009) for more information on the U.K. ban on commissions.

<sup>3</sup>See "Australia Proposes Ban on Commission" in the Financial Times, September 4, 2011.

by all mutual fund firms operating in India.<sup>4</sup> Previously, mutual fund firms used entry loads primarily to pay commissions to distributors who sold their products.<sup>5</sup> This law greatly reduced the ability of mutual funds to pay distributor commissions, as mutual funds now had to use separate funds to pay commissions to distributors.<sup>6</sup> We exploit this law change as a natural experiment to study how commissions affect household decisions to invest in mutual funds and how commissions play a role in determining the relationship between the prior performance of mutual funds and fund flows.

To study how important commissions are in driving investment decisions, we conduct a difference-in-difference analysis exploiting the fact that the entry load ban affected mutual fund investments but did not affect direct investments in stock. Using data from a newly-available nationally representative household survey on Indian household financial behavior over the period March 2009 through March 2011, we find that the proportion of high-income urban households investing in mutual funds in a given quarter declined by 2.7 percentage points due to the ban on entry loads. This is a substantial effect relative to the fact that 3 percent of households invested in mutual funds each quarter prior to the law change. Approximately 234,000 fewer high income households invested in mutual funds due to the reduction in commissions associated with this policy. When we look at the impacts across all urban households, we find that approximately three million fewer households invested in mutual funds per quarter due to the lower commission regime.

We then estimate how the commission ban influenced the relationship between fund flows and prior performance. Using data on U.S. mutual funds, Sirri and Tufano (2000) provide interesting evidence that costly search is an important factor in this relationship but are unable to exploit exogenous variable in commissions to establish this fact; we corroborate their evidence using the exogenous variation in commissions induced by the ban on entry loads. Using a monthly fund

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<sup>4</sup>An entry load, typically called a “front-end load” in the U.S., is a fee that is calculated as a percentage of the total investment made in the mutual fund.

<sup>5</sup>For newspaper accounts of the importance of entry loads as the primary source of commissions see (1) “MFs Look For Life Beyond Entry Load Ban,” Times of India, July 19, 2010 (2) “Mutual Fund Industry Struggling to Woo Retail Investors,” Business Today, February 2011 Edition. Ottaviani (2011) presents a model where using that a financial product provider, such as a mutual fund, will optimally use any up-front charges to compensate salesmen for selling their products.

<sup>6</sup>For example, suppose an investor invested 100 rupees in an Indian mutual fund prior to the law change. Typically a mutual fund would take 2.25 rupees out of that as an entry load and pay it to the distributor who sold the product. The law change prevents mutual fund companies from taking any of the investor’s initial investment and paying it out as a commission. Thus, if the mutual fund company wanted to pay the distributor a commission they would have to use other sources of funds to do so.

level data-set of 296 mutual fund schemes, for the period August 2006 to July 2011, we find that fund flows are substantially less responsive to prior fund performance after the entry-load ban was imposed. This suggests that one mechanism that distributors used to sell funds was to encourage their clients to invest in funds that did well in the past. We also show that these effects are strongest for funds having high entry loads prior to the law change. This suggests that the effects we find are primarily due to the cap on commissions, as opposed to other time-varying factors.

The paper proceeds as follows. Section 2 presents background information on the Indian mutual funds industry. Section 3 describes the data sources and presents the trends in household participation and aggregate fund flows. Section 4 presents results from the household data. Section 5 presents empirical results from aggregate data on mutual fund flows. Section 6 concludes.

## 2 Background on the Indian Mutual Funds Industry

The first government-run mutual funds were established in India in 1963, but the sector was not opened to private fund management firms until 1993. Indian mutual fund assets in 2009 amounted 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 in India comprised 7.7 percent of gross household financial savings in the year 2008. 55 percent of household savings are bank deposits, 18 percent in insurance and 10 percent in currency. There are approximately 10 million mutual fund investors in India, about one-fifth the number of investors in the United States (Halan, 2010). As of 2010 there were 40 asset management companies in India that offered individual mutual funds to investors. Assets in Indian equity-oriented mutual funds constitute approximately seven percent of the market capitalization of the Bombay Stock Exchange.

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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). We 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.

As in the United States, a large fraction of mutual fund sales comes through a network of thousands of mutual fund brokers known as Individual Financial Advisors (IFAs) and distributors (Kamiyama, 2007).<sup>10</sup> There are approximately 92,000 IFAs in India, and in 2007 they mobilized 57 percent of new assets under management to mutual funds. There are also approximately 2.5 million insurance agents in India who also sell mutual fund products. Prior to the ban on entry loads, the sales process worked as follows. An individual investor would pay the amount they wanted to invest, say 100 rupees, to the IFA. The IFA would transfer this whole amount to the mutual fund company, which would then deduct the entry load (typically 2.25 percent) and invest the remaining 97.75 rupees in the mutual fund. The 2.25 rupee entry load would then typically be sent back to the distributor as compensation.

After the entry load ban, mutual fund companies were no longer allowed to collect an entry load. In practice, what this meant is that the amount that the IFA transfers to the mutual fund company must be fully invested in the fund. IFAs and distributors in this new regime can be compensated in several ways. First, investors could directly pay the IFA or distributor using a separate check for the advice they received. Anecdotal evidence suggests that investors have typically not been willing to pay separately for financial advice. Second, mutual fund companies have a small amount of money collected from exit loads that can be used to pay distributors. Exit loads are less remunerative for distributors because the timing of their payment is uncertain and exit loads are typically much lower than entry loads (on the order of 0.5 percent as opposed to entry loads of 2.25 percent). Shah et al. (2010) report estimates that the average commissions paid to distributors equaled to 1.78 percent in 2008, 1.39 percent in 2009, and .94 percent in the first quarter of 2010.

## 3 Data

### 3.1 Data on Households and Mutual Fund Investments

We use data from Consumer Pyramids, a newly available representative household survey of all households in India conducted by the Centre for Monitoring Indian Economy (CMIE) on a quarterly

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<sup>10</sup>Bergstresser et. al (2005) 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.

basis. This is a panel data set where each survey household is contacted quarterly, by telephone, to answer questions on income, consumption, saving and borrowing. This survey began in March of 2009 with 120,000 households. In March 2011, new households were added to the panel and the sample size was increased to 150,000 households.

A household in the Consumer Pyramids data includes persons who share a “common kitchen”. Households are selected through multiple stages of stratification and then are randomly selected from the ultimate strata. Multiple levels of geographical stratification were followed by the random selection of villages and Census Enumeration Blocks (CEBs)<sup>11</sup> from cities.

CMIE categorizes households based on total annual income of all members in the household. Surveying was not stratified by income levels; the income levels we use were created after the survey was completed. The classification is done after the sampling and execution of the survey. All households are classified into one of the following groups: Rich, Higher Middle Income, Middle Income, Lower Middle Income, and Poor. At this point in time, CMIE has only released participation rates of households in asset classes at the household type level, we do not have individual micro-data on households.<sup>12</sup>

There are three primary outcome variables we use from the CMIE data to study how the entry load ban, and resultant lower commissions, has changed participation by households in mutual funds. First, starting with the quarter of September 2009, the survey asked households whether the household had any outstanding investments in mutual funds. Because we only have data after the policy change, we only use this data to provide summary statistics on overall participation rates in mutual funds in India. Second, starting in March 2009, the survey asked households whether they had made an investment in a mutual fund during the past quarter. This is the primary outcome variable we use to assess the impact of the entry load ban on the propensity of households to invest in mutual funds, as we observe it before and after the policy change of August 2009.

### **3.2 Aggregate Data on Fund Flows**

We obtained data from the Association of Mutual Funds of India (AMFI) on the aggregate level of flows into and out of open-ended equity mutual funds. These data are valuable in that they

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<sup>11</sup>A CEB usually consists of 120-150 households or 600-800 persons.

<sup>12</sup>A detailed breakdown of the households by income classes is provided in Table 5.

represent actual flows; the fund level data we use later calculates flows as the change in the net asset value of the fund beyond growth in assets due to returns (as is done in Sirri and Tufano (2006)). The aggregate data on flows are useful to confirm the patterns we observed at the fund level.

We focus our study on equity mutual funds because this is the only set of funds where commissions motivated sales agents are likely to be important. In the Indian market debt mutual funds are primarily invested in by corporations. Due to tax reasons, corporations park short term funds debt mutual funds. For example, as of March 2011 only 5.01 percent of the assets under management in debt type schemes was owned by retail investors.<sup>13</sup> However, for equity oriented schemes the percentage owned by retail investors is 64.2 percent.<sup>14</sup>

We use data on individual mutual funds from the ACE Mutual Fund (ACE) database provided by Accord Fintech Pvt Ltd as well as the website of the Association of Mutual Funds of India (AMFI). The ACE database provides information on entry loads, exit loads, and management fees.<sup>15</sup> The AMFI data provides information on average assets under management and net asset values per fund. We combine these data sources to create a monthly panel data set of funds for the time period April 2006 through July 2011.

## 4 Household Responses to the Lower Commission Regime

In this section we study the impact of the entry load ban on the propensity of households to invest in mutual funds. We use a difference in difference approach, where the treatment group is household investments in mutual funds, and the comparison group is household investment in individual stocks. We use investments in individual stocks as the comparison group in our difference in difference specifications for the following reasons. First, Indian households primarily invest in equity mutual funds, and the return performance of mutual funds and equities are broadly similar. Second, there was no corresponding policy change that limited the commissions that stock brokers

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<sup>13</sup>Statistics calculated from Table 1 Asset Under Management and Folios - Category Wise - Aggregate - As on March 31, 2011 on the AMFI website ([www.amfiindia.com](http://www.amfiindia.com)). Debt type funds include liquid/money market funds, gilt (government bond) funds, and debt-oriented schemes.

<sup>14</sup>Equity type funds include equity oriented mutual funds, balanced mutual funds, Gold ETFs, and ETFs other than gold.

<sup>15</sup>We also use the Alpha database from the Centre for Monitoring Indian Economy (CMIE) for cross verification of ACE MF database. AMC's official websites are used for verifying fund characteristics.

could charge for individual trading.

Figure 6 presents the proportion of “rich” urban households that invested in mutual funds and individual stocks over our sample period. The dashed vertical line indicates the last quarter where commissions were still being paid to mutual fund distributors. This figure illustrates two points. First, prior to the policy reform, both investments in shares and mutual funds were slightly declining over time. Second, after the policy reform, there is a substantial divergence in the propensity of households to invest in stocks versus mutual funds. Between quarter four of 2009 and quarter four of 2010 the proportion of households investing in mutual funds decreases in each quarter. Over the same set of quarters, the proportion of households investing directly in stocks increases from approximately one percent of households to almost five percent of households.

Note that “rich” here is defined relative to the whole Indian population. These households have incomes from approximately \$15,600 dollars per year and above. We focus on this sub-group within the data because less than one percent of middle income households invest in mutual funds in any given quarter; and less than .2 percent of poor households invest in mutual funds in any given quarter. Given this low rate of investment, there is little room for the policy change to decrease investment rates even further for middle and poor income households. Based on this income categorization there are approximately 8.7 million rich urban households in India. Thus, these results do pertain to a substantial number of households.

There appears to be a large jump in the fraction of households that invest in mutual funds in the first quarter of 2011. Given that this jump happens in only one month in the post policy change period, we do not think it is representative of the overall policy effect. We are currently collecting more data to determine the potential causes of this increase.

We estimate the impact of the commissions ban using the following difference in difference specification:

$$I_{ijt} = \beta_0 + \beta_1 \text{Mutual Fund}_j + \beta_2 \text{Post Commission}_t + \beta_3 \text{Mutual Fund}_j * \text{Post Commission}_t + \epsilon_{ijt}$$

where  $i$  represents household types,  $j$  represents asset classes, and  $t$  represents the quarter.  $I_{ijt}$  is the fraction of household type  $i$  that invested in asset type  $j$  (either mutual fund or stock)

in quarter  $t$ . The variable  $\text{Mutual Fund}_j$  takes on the value of one for investments in mutual funds (the treatment group) and zero for investments in stocks (control group). The variable  $\text{Post Commission}_t$  takes a value of zero for any quarter where commissions were allowed (March 2009, June 2009, and September 2009).<sup>16</sup>

Table 1 presents these results. The first column only includes the two categories of rich households, as these were the only set of households that had appreciable investments in mutual funds prior to the policy change. The coefficient on the interaction between  $\text{Treat}$  and  $\text{Post}$  variables is -2.7 percentage points. For rich households, we estimate the policy had the impact of reducing the propensity to invest in a mutual fund by 2.7 percentage points each quarter. This is a large effect relative to the fact that on average only 3.0 percent of these households invest in mutual funds in each quarter. Column (2) estimates the same model but also includes quarter fixed effects and asset type fixed effects. The point estimate on the impact of the policy is similar. Given that there are approximately 8.7 million households that are classified as rich in this data, we estimate that the policy change leads to approximately 234,000 fewer households making investments in mutual funds as a result of this policy.

Columns three and four present estimates from the same model, but including all five income classes. In this broader sample we find that the results are smaller, but still statistically significant. The results are likely attenuated by the fact that middle and low income households have very low rates of mutual fund purchases on average; thus the potential impact of the policy for these groups is relatively small. Given that there are a total of approximately 360 million households represented by this urban sample, we estimate that approximately 3 million fewer households invested in mutual funds per quarter due to this policy change.

Columns (5) through (8) classify households based on their education status as opposed to their income status. Columns (5) and (6) use a sample of urban highly educated households; in particular, households in this sample live in an urban area and have at least one member of the household who is above the age of 25 and has a college degree. Columns (7) and (8) include all educational categories in both rural and urban areas. The results are qualitatively quite similar to those presented in Columns (1) through (4). It is not surprising that these results are similar, as

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<sup>16</sup>We include data from the quarter of September 2009 as data from that quarter includes investments in June - September of 2009. Given that the policy change did not occur until August of 2009, we consider this quarter to primarily be unaffected by the policy change.

there is likely a strong correlation between education and income so the high income households presented in Columns (1) and (2) are similar to the high education households presented in Columns (5) and (6). Nonetheless, this does provide some sense that our results are not simply due to the classifications of households into different income or education bins.<sup>17</sup>

#### 4.0.1 Illustrative Results: Aggregate Fund Flows

In this section we provide descriptive plots that show the time series of mutual fund flows into existing and new funds, as well as a few examples of specific mutual funds that were strongly impacted by the commissions ban. Figures 1 and 2 show the levels of net-flows, inflows, and outflows to existing open-ended mutual funds around the policy change studied here. The vertical dashed line indicates August 2009, the date of the ban on entry loads. Overall, the pattern of net flows in the pre-period follows the level of the Sensex stock exchange more closely than in the post-reform period. This suggests that the ban on commissions reduced the ability of agents to sell mutual funds during the stock market rise of 2010 relative to the stock market rise in 2008. Later we test this hypothesis formally by studying how flows respond to the prior performance of individual funds.

This pattern of net-flows is consistent with a variety of underlying patterns in inflows and outflows, so Figure 2 separately plots inflows and outflows. The plot of inflows shows that there are still substantial inflows into mutual funds in the post-policy reform period, however the inflows do not seem to follow the market closely relative to how inflows followed the market in the pre-reform period. However, outflows continue to follow the market closely in the post-reform period. One explanation for this is that in the pre-reform period market upturns were times of substantial churn across different mutual funds; in the pre-reform period, the substantial market up-turn led to funds exiting mutual funds and entering another asset class.

The above figures address flows into existing equity mutual funds; there were also substantial flows into newly created equity mutual funds. The left plot in Figure 3 shows the number of new equity mutual funds started in each month before and after the policy change. Again, relative to the market's movements, it appears that the number of new funds declines after commissions were

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<sup>17</sup>Although Columns (3) and (4) and (7) and (8) include all households, the results differ because the households are grouped in different ways into income or education bins.

banned. This is consistent with the idea that new financial products and commissions motivated distributors are complements in producing sales of new mutual funds. The plot on the right hand side of Figure 3 shows the amount of money raised in the new offerings of equity mutual funds.

In the empirical analysis of this paper we use comprehensive data on fund flows to measure in the impact of the commissions ban on mutual fund investments. Here we present a few examples of particular funds where the impact is clearly demonstrated in simple plots of assets under management over time.

Figure 4 plots on the left hand y-axis the net asset value of the Reliance Diversified Power Sector Fund, and on the right hand y-axis the assets under management. The dashed vertical line indicates the month where commissions were banned. The plot shows that after the ban the net-asset-value of this fund continued to rise but assets under management actually begin to fall. The plot on the left side show a more dramatic example of the impact of the policy; the HDFC Arbitrage Fund (retail plan) shows strong net asset value and assets under management growth prior to the policy change, but after the policy change assets under management begin to fall substantially despite continued positive performance in terms of net asset value. We test whether such effects are statistically important across the universe of Indian mutual funds in the next section.

The left panel in Figure 5 presents the number of new registrations to become mutual funds distributors through the online (internet based) and offline channels. It is interesting to note that the number of individuals registering to become new mutual fund distributors peaked approximately one year before the ban on entry loads. This peak is substantially after the stock market peak in January of 2008, so is unlikely to be driven by general trends in the market. One plausible explanation for this pattern is that in the year prior to the entry load ban there was strong market speculation that a ban on commissions was likely to come in the near future. This reduced the expected benefit from becoming a mutual fund distributor. A similar pattern is shown in the right hand panel of Figure 5 which plots the number of individuals who successfully passed the exam to become a distributor.

## 5 Empirical Results: Fund Level Data

In our first set results we test how fund flows to individual mutual funds change under the new policy regime. We estimate the following empirical model as suggested in Sirri and Tufano (1998):

$$\text{Flow}_{i,t} = \beta_0 + \beta_1 R_{i,t-1} + \beta_2 \text{Post}_t * R_{i,t-1} + \beta_3 \text{Post}_t + \epsilon_{i,t}$$

$\text{Flow}_{i,t}$  is defined in the same way as it is defined in Sirri and Tufano (1998):

$$\text{Flow}_{i,t} = \frac{\text{TNA}_{i,t+1} - (1 + R_{i,t})\text{TNA}_{i,t}}{\text{TNA}_{i,t}}$$

where  $\text{TNA}_{i,t}$  is the total net assets of fund  $i$  at time  $t$ . This measures the percentage growth in fund  $i$  between period  $t$  and period  $t + 1$  beyond the growth that would occur just to the price appreciation of the fund. In the empirical results we estimate equations for flows at monthly, quarterly, and annual frequencies.  $R_{i,t-1}$  is the growth rate in the net asset value of the fund between period  $t - 1$  and  $t$ . The  $\text{Post}_t$  dummy takes the value of one for periods after the entry load ban of August 2009, and zero for periods before that.

Note that we include the lagged previous performance of the fund, as opposed to a relative performance rank as in Sirri and Tufano (1998), because we believe that flows are driven by absolute levels of performance and we want to test whether the entry load ban affected how flows respond to absolute levels of performance.<sup>18</sup> In Sirri and Tufano (1998) the authors removed aggregate trends in flows by controlling for industry level trends; however, it is possible that the main effect of the policy was to reduce flows to mutual funds overall, and thus controlling for industry trends may remove much of the aggregate effect of the policy change.

Table 2 presents the results of these regressions using the fund level data. The first two columns present the results from monthly regressions (i.e. the monthly percentage flow rate is explained by the previous month's returns). The coefficient on the  $R_{i,t-1}$  variable of .39 means that a 1 percent increase in return in the past month leads to a .39 percentage point increase in the assets of the fund. The estimate on the second independent variable,  $R_{i,t-1} * \text{Post}$ , of -.14 shows that after the entry load ban the response of fund flows to prior performance is .14 percentage

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<sup>18</sup>Later we augment this model to include relative performance ranks.

points lower; this is a 36 percent decline in how fund flows respond to last month's performance. The estimates in the first column, which do not include fund fixed effects, are significant at the 5 percent level. In the second column, where fund level fixed effects are included, the estimated coefficient is smaller at -.11. However, this still implies approximately a 30 percent decrease in the responsiveness of fund flows to prior performance. However, this estimate is not significant at the ten percent level (although the p-value is .16 which is close to the 10 percent significance level.)

Columns 3 - 6 present similar results except the period over which flows are calculated are changed to quarterly and annual frequencies. For example, Columns 3 and 4 would estimate how percentage flows in January through March respond to return performance in October through December. The results on quarterly flows, when fixed effects are included, do not show a decline in the responsiveness to prior return performance.

A year in the annual results is defined as the period from September to September. This allows us to have two full years of data post the policy change (i.e. September 2009 - August 2010, and September 2010 - August 2011), and three full years of data prior to the reform. Column 6, which includes fund fixed effects, shows that at an annual frequency an increase of 1 percent in performance in the prior year is correlated with an increase of 3.87 percentage points in fund flows. However, in the post period, this response to prior performance is reduced by 2.7 percentage points. This is an approximately 70 percent decrease in the sensitivity of fund flows to prior returns. The coefficient on this estimate is not significant at the 10 percent level, but the p-value is .2. When fixed effects are excluded (Column 5), this result is significant at the 5 percent level. Overall, the results from the monthly, quarterly, and annual regressions suggest that under the entry load ban fund flows are significantly less responsive to prior performance.

To corroborate our interpretation that the ban on commissions is the true cause of the results above, we re-estimate our results on separate samples of funds that had low entry loads prior to the reform and funds that had higher entry loads prior to the reform.<sup>19</sup> We define the set of funds with "low" entry loads as funds that charged entry loads less than or equal to one percent prior to the reform. We define the set of funds "high" entry loads as funds that charged loads greater than one percent.

Table 3 presents these results. The first two columns have annual percentage flows as the

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<sup>19</sup>After the reform all funds had zero entry loads.

dependent variable; the third and fourth columns have monthly flows. Columns (1) and (3) report results for funds where entry loads were high prior to the reform, and Columns (2) and (4) report results for funds where entry loads were low before the reform. In both annual and monthly data we find that for funds that had high entry loads before the reform, that the policy significantly reduced the response of flows to prior performance. However, for the sample of funds where entry loads were relatively low, the coefficient on the interaction between prior returns and the post-reform dummy are insignificant. This is consistent with the idea that the reform primarily affected funds that charge high entry loads which were used to pay distributors commissions.

## 6 Conclusion

We study the impact of a ban on entry loads which reduce the ability of Indian mutual funds to pay commissions to financial product distributors. Using a difference in difference specification with investments in individual stocks as the comparison group, we find that new mutual fund investments have dropped 2.7 percentage points per quarter. This is a large effect relative to the fact that only 3 percent of sample households invest in mutual funds in the average quarter in our sample. We also find that the fund flow / performance relationship is substantially smaller after the ban on commissions.

We are currently working on trying to understand the welfare impact of the entry load ban. This is in general difficult question to address because it is difficult to know what types of financial products Indian households are now investing in instead of mutual funds. If households are now more likely to invest in high priced whole insurance products than the commissions ban may have had negative impacts. Nonetheless, we argue that the estimates provided here provide the first guidance on the importance of distributors in mutual fund markets.

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Figure 1: Net Flows into Equity Open Ended Mutual Funds

This figure presents the net flows into Equity Open Ended mutual funds on the left hand side y-axis in crores of rupees (1 Crore Rupees equals approximately 200,000 U.S.D). The level of the Bombay Sensex Index (Indian stock market index) is shown as a solid line and is measured on the right hand side y-axis. The dashed vertical line indicates the policy change that eliminated the ability of mutual funds to charge entry loads.

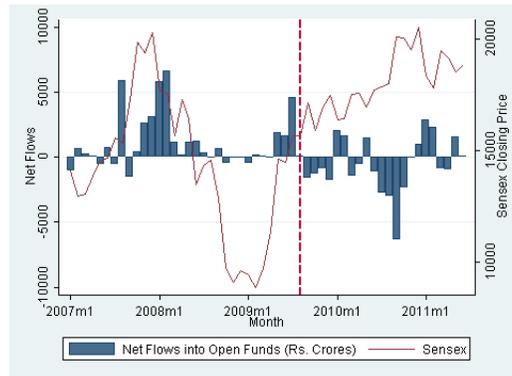


Figure 2: Inflows To and Outflows From Equity Open Ended Mutual Funds

This left panel in this figure presents the gross inflows into Equity Open Ended mutual funds in crores of rupees (1 Crore Rupees equals approximately 200,000 U.S.D). The right panel shows the gross outflows out of Equity Open Ended mutual funds in crores of rupees. The level of the Bombay Sensex Index (Indian stock market index) is shown as a solid line and is measured on the right hand side y-axis in both panels. The dashed vertical line indicates the policy change that eliminated the ability of mutual funds to charge entry loads.

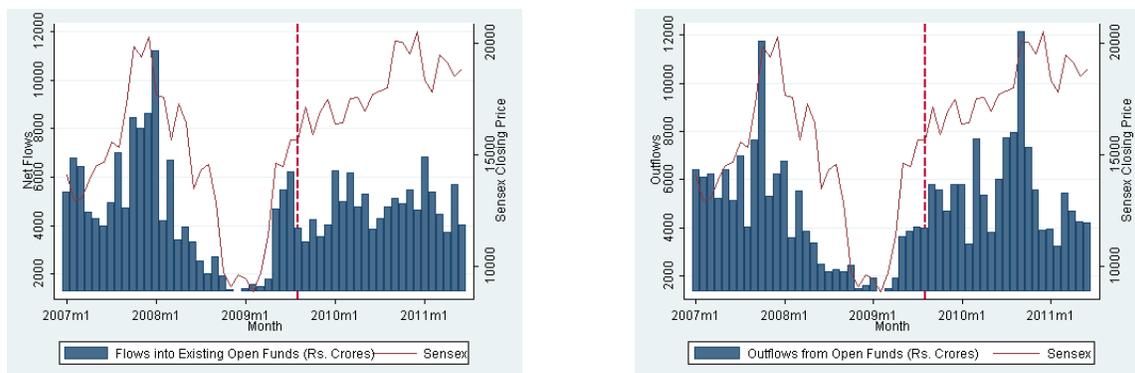


Figure 3: Aggregate Policy Effect on New Mutual Funds Started

The left panel in this figure presents the inflows into newly started Equity Open Ended mutual funds in crores of rupees (1 Crore Rupees equals approximately 200,000 U.S.D). The right panel shows the number of new equity mutual funds started. The level of the Bombay Sensex Index (Indian stock market index) is shown as a solid line and is measured on the right hand side y-axis in both panels. The dashed vertical line indicates the policy change that eliminated the ability of mutual funds to charge entry loads.

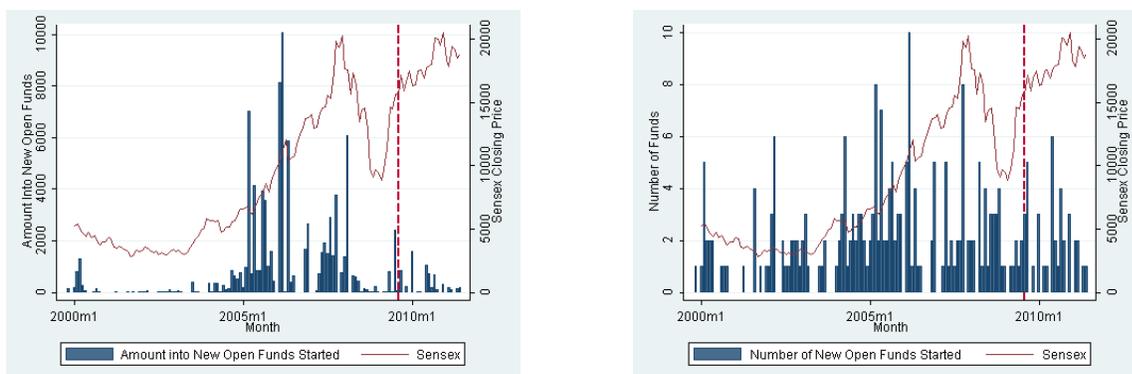


Figure 4: Examples of Policy Effects on Specific Funds

The left hand side y-axis of each figure below represents the net-asset value of the fund. The right hand side y-axis represents the assets under management of each fund. The left panel corresponds to the “Reliance Diversified Power Sector Fund-Growth.” The right panel corresponds to the “HDFC Arbitrage Fund Retail Plan Growth Option.” The dashed vertical line indicates the policy change that eliminated the ability of mutual funds to charge entry loads.

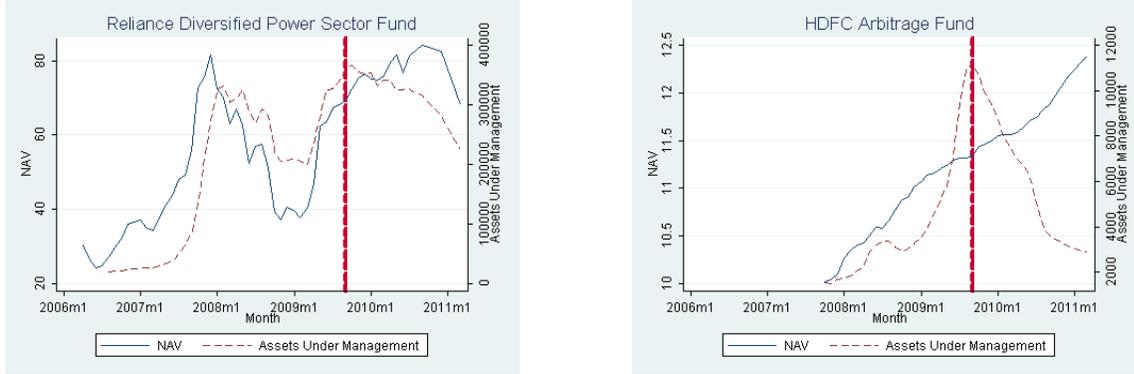


Figure 5: Registrations and Pass Rates of Candidates Taking Mutual Fund Advisor Exam

The left panel of this figure shows the number of individuals who registered to take the Mutual Fund Advisor exam through the online process and the off-line process. The right figure shows the number of individuals to passed the exam through the online process and the off-line process. The dashed vertical line indicates the policy change that eliminated the ability of mutual funds to charge entry loads.

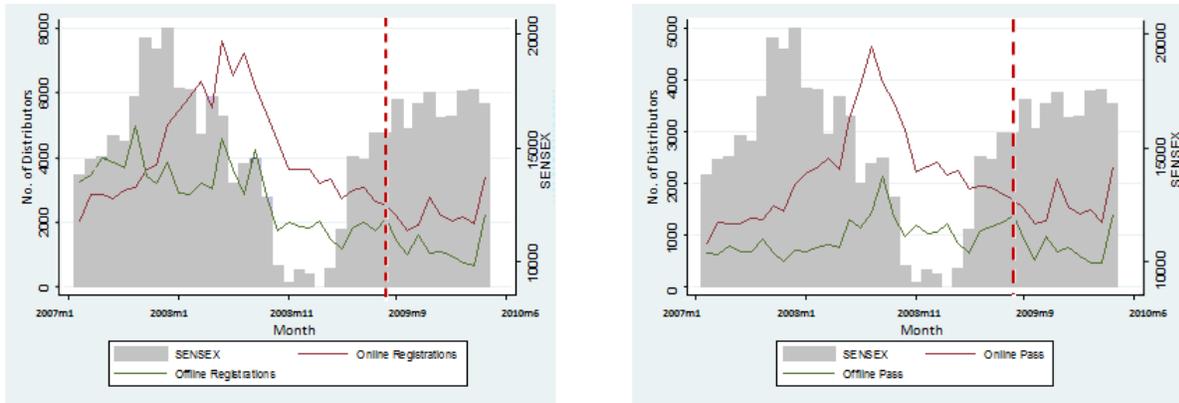


Figure 6: Proportion of Households With Investments in Mutual Funds and Stocks in Current Quarter

This figure shows the proportion of exam through the online process and the off-line process. The right figure shows the number of individuals to passed the exam through the online process and the off-line process. The dashed vertical line indicates the policy change that eliminated the ability of mutual funds to charge entry loads.

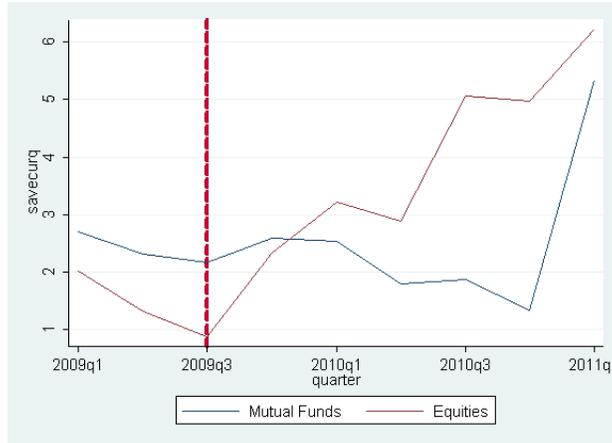


Table 1: Treatment Effect of Commissions Ban on Propensity to Invest in Mutual Funds

This table presents the results of a difference in difference estimation on the effect of the commissions ban on the propensity to invest in mutual funds. The treatment group is mutual investments, and the comparison group is direct investments in equities. The dependent variable is the percentage of households in the income category that invested in mutual funds or equities. The variable Treat takes a value of one for observations representing mutual fund investments and zero otherwise. The variable Post takes a value of one for observations representing quarters after September 2009.

	Rich HHs		All Income Bins		High Education HHs		All Education Bins	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treat*Post	-2.71***	-2.71***	-0.85***	-0.85***	-1.40***	-1.40***	-0.43***	-0.45***
	[0.92]	[0.75]	[0.29]	[0.19]	[0.31]	[0.21]	[0.13]	[0.08]
Treat	0.98***		0.37**		1.31***		0.41***	
	[0.33]		[0.15]		[0.28]		[0.12]	
Post	2.92***		0.78***		0.53***		0.23***	
	0.78		0.24		[0.12]		[0.06]	
Quarter FE	NO	YES	NO	YES	NO	YES	NO	YES
Household Type FE	NO	YES	NO	YES	NO	YES	NO	YES
Observations	36	36	272	272	90	90	389	389
Adjusted R-squared	0.22	0.54	0.03	0.66	0.26	0.57	0.25	0.69

Table 2: Fund Flows and Prior Returns

This table estimates a model of fund flows (the percentage change in a fund's assets) as a function of the fund's return in the previous period and whether the observation is from the post commissions ban period ( $Post_t = 1$ ) or the pre-commissions ban period ( $Post_t = 0$ ). Robust standard errors, clustered at the mutual fund level, are included in brackets.

Dep. Var: $Flow_{i,t}$	Monthly		Quarterly		Annual	
	(1)	(2)	(3)	(4)	(5)	(6)
Return (t-1)	0.39*** [0.02]	0.36*** [0.03]	0.41*** [0.09]	0.31*** [0.07]	2.52*** [0.71]	3.87* [2.31]
Return (t-1)*Post	-0.14* [0.08]	-0.11 [0.08]	-0.15 [0.09]	-0.01 [0.09]	-1.81** [0.73]	-2.70 [2.10]
Post	-0.12 [0.08]	-0.03*** [0.01]	-0.15** [0.06]	-0.10*** [0.02]	-0.70** [0.32]	-0.80 [0.49]
Constant	0.10 [0.08]	0.08*** [0.00]	0.13** [0.06]	0.12*** [0.01]	0.64** [0.31]	0.62*** [0.18]
Fund Fixed Effects	NO	YES	NO	YES	NO	YES
Observations	11819	11819	3668	3668	883	883
Adjusted R-squared	0.00	0.18	0.00	0.41	0.01	-0.05
Mean of Dep Var	0.08	0.08	0.10	0.10	0.06	0.06

Table 3: Policy Impact on High Entry Vs. Low Entry Load Funds

This table estimates a model of fund flows (the percentage change in a fund's assets) as a function of the fund's return in the previous period and whether the observation is from the post commissions ban period ( $Post_t = 1$ ) or the pre-commissions ban period ( $Post_t = 0$ ). Columns (1) - (2) use annual data and Columns use (3) - (4) use monthly data. Columns (1) and (3) estimate the model on the sample of funds that had entry loads greater than 1% in the pre-period. Columns (2) and (4) estimate the model on the sample of funds that had entry loads less than or equal to 1% in the period before the commissions ban (all funds have zero entry loads after the commissions ban). All specifications include fund level fixed effects. Robust standard errors, clustered at the mutual fund level, are included in brackets.

Dep. Var: $Flow_{i,t}$	Annual		Monthly	
	Entry Load >1%	Entry Load $\leq$ 1%	Entry Load > 1%	Entry Load $\leq$ 1%
	(1)	(2)	(3)	(4)
Return (t-1)	4.31*	0.14	0.38***	0.31***
	[2.53]	[1.37]	[0.02]	[0.09]
Return (t-1)*Post	-3.72*	3.62	-0.13***	-0.07
	[2.02]	[3.23]	[0.05]	[0.30]
Post	-0.53	-1.65	-0.03***	-0.04***
	[0.39]	[1.49]	[0.01]	[0.01]
Constant	0.43***	1.25	0.01***	0.26***
	[0.10]	[0.67]	[0.00]	[0.00]
Fund Fixed Effects	YES	YES	YES	YES
Observations	646	237	8480	3339
Adjusted R-squared	-0.06	-0.06	0.03	0.17
Mean of Dep Var	.30	.58	.01	.25

Table 4: Household Income Groups

Category	Income (Rupees)		% share in population (March 2011)
	Lower limit	Upper limit	
Rich	720,000	infinity	3.64
Rich I	1,000,000	infinity	1.52
Rich II	720,000	1,000,000	2.12
Higher Middle Income	180,000	720,000	36.24
Higher Middle Income I	360,000	720,000	11.65
Higher Middle Income II	240,000	360,000	13.10
Higher Middle Income III	180,000	240,000	11.49
Middle Income	96,000	180,000	26.62
Middle Income I	120,000	180,000	16.98
Middle Income II	96,000	120,000	9.64
Lower Middle Income	36,000	96,000	30.40
Lower Middle Income I	60,000	96,000	17.99
Lower Middle Income II	36,000	60,000	12.41
Poor	0	36,000	3.10
Poor I	24,000	36,000	2.28
Poor II	0	24,000	0.82