

Turnover and Taxable Distributions in Mutual Funds

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Abstract

It is commonly believed that high turnover mutual funds tend to have greater distributions and thus be less tax efficient than low turnover funds. Based on an analysis of about 3,500 fund-years, we find that the relationship between turnover and distributions is not as simple as commonly supposed and depends on, among other things, fund performance. We also find that turnover by itself explains a relatively small portion of mutual fund distributions.

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1. Introduction

Relatively little research exists concerning the impact of turnover on mutual fund distributions. In the popular press, at least, it is generally believed that higher turnover increases a fund's realized and, thus, distributed capital gains, but this belief is not necessarily correct. Dickson and Shoven (1993), for example, show that increasing turnover can actually reduce distributions made by a mutual fund and increase tax efficiency.

Our goal in this study is to examine empirically whether turnover is related to fund distributions and to determine whether high turnover funds are, in general, less tax efficient than low turnover funds. Based on an analysis of about 3,500 fund-years covering the period 1990 - 1997, we find that high turnover funds do tend to have higher distributions when fund returns are positive, but they have lower distributions when fund returns are negative. In other words, the impact of turnover depends on fund performance. Furthermore, turnover *per se* explains a relatively small portion of the variation in fund distributions. The investing style of the fund manager as it relates to the realization of gains and losses appears is a significant determinant of distributions whereas cumulative overhang and net cash inflows have little impact.

The remainder of this paper is organized as follows. The next section examines turnover and the various reasons why turnover might affect distributions. Section 3 presents our data and research methods, with results in Section 4. Section 5 contains a summary and conclusions.

2. Turnover and distributions

At first glance, it might seem almost axiomatic that, all else the same, funds with greater turnover would have greater distributions, but this is not necessarily true. While a fund with little

or no turnover will have little in the way of capital gains to distribute, a high turnover fund may actually be tax efficient if the fund manager tends to sell losers and keep winners. For example, “window dressing” is a phenomenon that has been widely documented (see Jansson (1970), Haugen and Lakonishok (1988) and Porter, Powell and Weaver (1996)). Mutual fund managers show a strong tendency to sell off losers in an effort to present a list of holdings with positive performance for the reporting period. Researchers of this phenomenon have argued that this is not necessarily in the shareholders’ best interest, but, from a tax efficiency perspective, it is virtually an ideal strategy. As discussed in Constantinides (1983), this practice corresponds exercising “tax-timing” options, which amounts to realizing all capital losses when they are economically viable, that is, when the tax savings offset transaction costs, while deferring the realization of capital gains.

Beyond this, Jeffrey and Arnott (1993) argue that the effects of turnover are most dramatic at low levels. Increased turnover increases distributions, but the effect increases at a decreasing rate. Once a 30-40 percent turnover rate has been achieved, most of the negative effects of turnover have already occurred, implying a non-linear relationship between turnover and mutual fund capital gains distribution.

In sum, the relation between turnover and distributions may be a good deal more complicated than is commonly supposed, and the issue is ultimately an empirical question. Before we turn to the data, however, we need to examine a problem with turnover as it is measured and reported by mutual funds.

Turnover as it is used here (and in other research) is more strictly defined as SEC turnover. The SEC requires that mutual funds report turnover on an annual basis, where turnover is calculated as the lesser of either total purchases or total sales divided by average daily assets.

However, the measure of turnover most relevant to distributions is total sales divided by average daily assets. If a fund's purchases are smaller than its sales (i.e., the fund has net redemptions), then SEC reported turnover will understate the fund's sales activities. Fortunately, over the period we study (1990 – 1997), mutual funds in general had net inflows, so this issue is not a great concern, but it does mean that for any individual fund, reported turnover could be significantly smaller than sales-based turnover.

3. Research Methods

We generally focus on mutual fund total annual distributions. The total distributed yield for a fund in year t (TDY_t) is defined as:

$$TDY_t = \frac{\text{Total distributions during year } t}{\text{beginning of year } t \text{ NAV}} \quad (1)$$

Total distributions include dividends, short-term capital gains, and long-term capital gains. We also disaggregate total distributions into long-term capital gains and short-term distributions and examine these separately. However, our data source (discussed in the next section) does not separately report dividends and short-term capital gains, so we cannot analyze these two components individually.

Our basic approach is to regress distributed yields, such as TDY_t , on turnover and other variables. In the regressions, the actual SEC reported turnover ($TURN$) is used. The squared turnover ($TURN^2$) is also included, permitting an examination of the Jeffrey and Arnott (1993) argument that the effects of turnover increase at a decreasing rate.

We include several other variables, motivated by either the popular literature or previous empirical research. For example, cumulative overhang ($CHANG$) is examined, where cumulative overhang is the net unrealized capital gains of the mutual fund since inception as a percentage of

fund assets. Because the NAV reported in our dataset is split-adjusted, we calculate cumulative overhang at a point in time using the current NAV divided by the first NAV of the fund.¹ It is often suggested that the distributions of a fund with a large cumulative overhang are potentially more sensitive to turnover because the asset sales are more likely to involve realized capital gains. However, it may also be true that funds with larger cumulative overhangs are the ones that have avoid realizing gains, and a relatively large cumulative overhang may be indicative of a tax-efficient fund.

We also include the incremental overhang (*HANG*), which is the increase in overhang measured as the percentage increase in NAV during the year. This variable is intended to capture the management style of the mutual fund with regard to the realization of gains. All else the same, an increase in the NAV of the mutual fund during the year indicates that the fund manager has not realized short-term capital gains made during the year, a tax-efficient strategy.

It might seem that there must be a negative relationship between *HANG* and capital gains distributions. It is true that if we hold the total return on a particular fund constant, then any increase in distributions necessarily decreases *HANG*, and vice versa. However, across funds (and through time for a particular fund), this is not necessarily the case. For example, suppose Fund A has a larger return than Fund B. In this case, Fund A could have both larger distributions and a larger increase in NAV. More generally, if both distributed capital gain yields and NAVs rise when funds do well, as seems plausible, then there will be a positive relationship between *HANG* and capital gains distributions. Thus, a primary determinant of the relation between capital gains distributions and the change in NAV is the way in which the fund manager's investing style impacts the realization of gains and losses.

¹ Our NAV data begins in 1970. A relatively small number of funds in our sample are older than this, so, for these funds, cumulative overhang is measured relative to 1970 rather than inception.

Cash inflows may influence mutual fund distributions. First, inflows can be used to meet shareholder redemptions without selling assets. If a fund is forced to sell appreciated assets to pay shareholders who are redeeming shares, the remaining shareholders are forced to bear increased capital gains distributions at the end of the year. Second, with net cash inflows, a fund buys new positions, which, all else the same, reduces unrealized capital gains as a percentage of fund assets (i.e., the cumulative overhang as defined previously). Net inflows are not available in our data, so we estimate them as follows:

$$\text{Inflows}_t = \text{End of year } t \text{ assets} - \text{Beginning of year } t \text{ assets} - (\text{beginning of year } t \text{ assets} \times \% \text{ increase in NAV during year } t) \quad (3)$$

The effect of inflows depends on fund size, so standardized cash inflows (*INFLOW*) are measured as the fund inflow divided by the beginning of year total assets.

Fund type strongly impacts distributions, particularly for equity income funds. It would certainly be possible to use dummy variables in our regressions to represent the different types. However, this specification implies that only the intercept is affected by fund type, but it is possible the fund type also affects the slope coefficients. Not wishing to prejudge the issue, we estimate separate regressions for each of the four main types of fund in our data.

4. Data and Descriptive Statistics

Our data are from *CDA/Wiesenberger*. To be included in the dataset, a mutual fund must have at least 50 percent of its assets invested in the U.S. and more than 75 percent of its assets invested in equity. The funds are classified in four groups: growth, growth and income, equity income, and aggressive growth. The dataset reports monthly NAVs, short-term distributions, and long-term distributions. Fund NAVs are available from Dec. 1970; however, *CDA/Wiesenberger*

does not have turnover information available before 1990, so we study an eight-year period, 1990 - 1997.

Table 1, Panel A displays descriptive statistics for turnover, reported by year and fund category. As shown, mean turnover is relatively stable over this period, but considerable variability exists within each year. The average turnover for all funds was 78.07 percent, however the median fund turnover was only 57.00 percent, indicating the highly skewed nature of turnover. In any year, 10 percent of funds had less than a 12.90 percent turnover, while 10 percent of funds had turnover greater than 214.59 percent.

<< INSERT TABLE 1 ABOUT HERE >>

The mean turnover for each fund category is shown in Panel B. The numbers confirm anecdotal evidence that aggressive growth funds have a greater turnover than other fund types; however, the standard deviation of turnover for the aggressive growth category indicates a very wide dispersion of turnover in this category, and many aggressive growth funds exhibit relatively low turnover. Turnover for equity income funds is the lowest for any fund category and the standard deviation is less than half of standard deviation of other funds categories.

Mean turnover as well as the standard deviation and median turnover for the growth and growth & income categories are similar. This is somewhat unexpected since the two income categories would appear more similar on the surface since their objectives both include an income component. We would expect that fund shareholders in the income categories would be less sensitive to fund distributions and this would impart similar results with turnover and distributions. The regression results presented later confirm that growth & income funds are more similar to growth funds than to equity income funds with regards to turnover.

Figure 1 shows a graphical representation of turnover for different bands for the entire dataset. As indicated from Table 1, this figure indicates that mean turnover is a meaningless number because of the skewness. Slightly over 18 percent of fund-years had turnover less than 20 percent in any given year, while 65 percent of fund-years had turnover less than 80 percent. The number of fund-years in each band is relatively constant and a large drop in the percentage of fund-years does not occur until 60 to 80 percent turnover is reached. Turnover does not appear to impart any information on the macro level regarding mutual fund distributions since it is so concentrated in the lower bands.

Perhaps as surprising are the number of fund-years with large levels of turnover. Almost 25 percent of fund-years had a SEC reported turnover of 100 percent. Under the basic definition this implies that these funds sold all of their beginning of year assets by the end of the year. Again, it is important to note that the bias in SEC turnover means that the funds could have sold the same assets 100 times during the year.

Table 2 shows the mean turnover for funds by management fee quintile and return quintile. Turnover increases as management fees rise, supporting the mutual fund industry argument that higher management fees are associated with a higher level of management action in the fund. Fund turnover by performance quintile indicates that funds with the poorest performance tend to turn over assets a higher pace. Such funds may have decreased performance due to poor stock picking or extra transaction costs, or both. Even so, funds with the largest relative return have the second largest average turnover for the period studied, so high turnover is not necessarily associated with poor performance.

<< INSERT TABLE 2 ABOUT HERE >>

Table 3 reports turnover by cumulative overhang. This table may present initial evidence of tax efficiency in mutual funds. For most fund-years, cumulative overhang is concentrated in the 0 to +. 60 range, and a typical fund-year has a cumulative overhang of about 50 percent. In other words, for a typical fund, unrealized gains (net of unrealized losses) represent 50 percent of the value of the fund, consistent with an appreciation in assets. The pattern that emerges from this table is that mutual funds with a higher cumulative overhang tend to have lower turnover than funds with a lower cumulative overhang. If turnover is related to mutual funds distributions, then it appears that mutual funds with the most potential for capital gains distributions tend to turn assets over less frequently. What is not apparent from this table is a cause and effect pattern. In other words, do funds with low turnover (a management choice) have higher cumulative overhang because of the low turnover, or do funds with a higher cumulative overhang have lower turnover because of the tax consequences? Overall, there is a distinct negative relationship between cumulative overhang and turnover.

<< INSERT TABLE 3 ABOUT HERE >>

Table 4 shows that the summary statistics for standardized inflow for the period we study. The average standardized inflow of 9.14 percent implies that total assets for a typical fund increased by 9.14 percent per year after accounting for investment gains or losses. Standardized inflows are heavily skewed with a mean standardized inflow of 55 percent. The lower 10 percent of funds decreased in size by 19.93 percent and the upper 10 percent of funds increased by 256.91 percent over this time period. Aggressive growth funds experiences the largest standardized inflows with a median growth of 16.97 percent, but this is not surprising since these funds tend to be smaller in size. The same dollar amount of inflows has a larger impact on fund size for these funds when standardized by initial size. Equity income, growth & income and

growth funds all experienced a median growth of 8.17 to 8.91 percent, a number more consistent with expectations.

<< INSERT TABLE 4 ABOUT HERE >>

Table 5 shows total distributed yield. The mean total distributed yield for the sample is 7.75 percent. The lowest decile fund-years had a total distributed yield of less than 1.84 percent while the highest decile had a total distributed yield of over 16.92 percentile. The lowest percentile of fund-years had no distributions. Total distributions have generally increased over the time period, consistent with a rising market. Somewhat surprising is the maximum distributions in each year. The smallest maximum distribution is 26.37 percent, which means that the fund distributed almost 27 percent of its assets. Other funds have distributed larger amounts. The reason for these large distributions is unclear. The large distributions are composed primarily of long-term capital gains distributions, which may indicate that the fund is reducing its cumulative capital gains overhang.

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Table 6 presents the mean distributed capital gains yield. The mean distributed capital gain yield for this period was 7.12 percent. Over 10 percent of fund-years had no long-term capital gains distributions, while the largest decile of fund-years had distributed capital gains of over 18.88 percent. When comparing the total distributed yield with Table 5, capital gains distributions represent a large percentage of the total distributions indicating a low dividend yield. Long-term capital gains distributions are the smallest on average for equity income, which is consistent with these funds holding stocks with larger dividends and not pursuing capital gains. Surprisingly growth and growth & income funds have larger capital gains distributions than aggressive growth funds. There are two possible explanations for this phenomenon:

aggressive growth funds have a lower return and therefore less capital gains distributions or aggressive growth funds are more tax efficient and retain more of their capital gains in the form of cumulative overhang. The second explanation implies at least some level of tax efficiency in Aggressive Growth funds.

<< INSERT TABLE 6 ABOUT HERE >>

5. Regression Results

Table 7 presents the regression results (with *t*-statistics in parentheses) from our base model for each of the four fund types. In Panel A, the total distributed yield (*TDY*) is the dependent variable. In Panel B, the long-term distributed yields (*LTDY*) are examined. The independent variables are as defined earlier, namely SEC turnover (*TURN*), squared turnover ($TURN^2$), standardized cash inflow (*CINFLOW*), cumulative overhang (*CUMHANG*), and incremental overhang (*HANG*).

<< INSERT TABLE 7 ABOUT HERE >>

Examining Panel A of Table 7, the results are broadly similar across the four types of funds. The coefficient on turnover is positive and highly significant in every case. For funds other than equity income, the coefficients are very similar in magnitude as well, suggesting a consistent effect. For equity income funds, the coefficient on turnover is noticeably larger, suggesting that turnover has a bigger impact on distributions for these funds. Thus, as is commonly supposed, funds with greater turnover do tend to have greater total distributions. Furthermore, squared turnover is negative and significant in every case, supporting Jeffrey and Arnott's (1993) argument that the effects of turnover increase at a decreasing rate.

In contrast, cumulative overhang is inconsistently signed and generally not significant at the five percent level, so the existence of embedded capital gains or losses does not seem to reliably affect total distributions. Further, cash inflows have a negative effect in all cases, but the impact is significant only for equity income and aggressive growth funds. Thus, contrary to what is often suggested, neither cash inflows nor embedded capital gains seem to have much impact on fund distributions, at least not in the two groups for which we have the greatest number of observations.

Although the total cumulative overhang does not seem to matter a great deal, incremental overhang has a negative effect in each case, and it is highly significant for the three groups other than equity income. This result indicates that, all else the same, funds with larger percentage changes in NAV have lower distributions. In such cases, the fund manager has delayed the realization of short-term gains, a tax efficient strategy. More generally, the results indicate that recent changes in overhang seem to matter much more than the total overhang.

In Panel B, only long-term distributions are examined, but the results and implications are similar to those in Panel A. We have also examined short-term distributions, but the analysis adds little, so we do not report them. Another conclusion we draw is that the type of distribution evaluated—total, short-term, or long-term—doesn't appear to affect the results. In other words, the variables we examine appear to have a similar impact on all types of distributions.

Overall, the regression results in Table 7 are fairly consistent across the fund types, particularly for the three more growth-oriented groups. Increasing turnover acts to increase distributions, but at a diminishing rate. Cumulative overhang and cash inflows have relatively little impact, but incremental overhang has a significantly negative effect, particularly for the two larger groups. Table 7 also shows that the adjusted R^2 values hover around .10, so turnover,

along with the other variables considered, does not explain a particularly large percentage of the variation in distributed yields.

A potential drawback to the analysis in Table 7 is the implicit assumption that turnover has the same effect regardless of fund performance. Conceivably, however, a high turnover fund may distribute gains in years when the fund does well, but such a fund may realize significant losses in down years, thereby reducing distributions. In other words, turnover may have an asymmetric effect.

To investigate this possibility, we partition turnover into two continuous dummy variables. The first is *POSTURN*, which takes on a value equal to turnover if the fund's return for the year is positive and zero otherwise. Similarly, *NEGTURN* is equal to turnover in down years, and zero otherwise. We partition squared turnover in the same way to create *POSTURN*² and *NEGTURN*². Incremental overhang is similarly divided to create *POSHANG* and *NEGHANG*.

Using the partitioned variables, we re-estimate the regressions in Table 7. We also include lagged values of *POSHANG* and *NEGHANG* in the regressions. Our goal is to further investigate the impact of recent changes in overhang. Table 8 contains the results for total distributions in Panel A and long-term distributions in Panel B.

<< INSERT TABLE 8 ABOUT HERE >>

Focusing on the partitioned turnover variables in Panel A of Table 8, *POSTURN* and *NEGTURN*, the results clearly indicate an asymmetric effect. Examining the first group (growth funds), the coefficient on *POSTURN* is significantly positive ($t = 13.669$), whereas the coefficient on *NEGTURN* is significantly negative ($t = -11.886$). The results for the other three groups are similar. Thus, keeping in mind that turnover is a strictly positive number, high

turnover funds have higher distributions when returns are positive, but lower distributions when they are negative. The coefficients on the two squared turnover measures also have opposite signs, but, in this case, the indication is the same, namely, a diminishing marginal effect.

Examining the partitioned values for incremental overhang, *POSHANG* and *NEGHANG*, the coefficients on *POSHANG* are negative and significant in every case. The same is true for *NEGHANG*, except for an insignificantly negative coefficient for the equity income group. For the three more growth-oriented groups, the coefficient for *NEGHANG* is consistently much larger (in absolute value). Because funds can't distribute net losses, this result is not too surprising. In a year in which fund performance is negative, any distributions will act to automatically depress NAV.

When we examine the lagged values of *POSHANG* and *NEGHANG*, the results are mixed. The coefficients generally have the expected signs, but lagged *POSHANG* is significant in two of the four cases, and lagged *NEGHANG* is significant in only one case. The lack of a strong, consistent relationship between the lagged values and distributions reinforces our earlier conclusion that recent changes in overhang are important whereas previous increments matter much less.

As in Table 7, the cumulative overhang still has a mixed effect. The coefficients are negative for the three growth-oriented funds, and the impact is borderline significant (at the five percent level) for the growth and income and aggressive growth funds, but not for the growth funds. Standardized cash inflows are negatively related to turnover for equity income funds, but otherwise insignificant.

The results in Panel B of Table 8 for long-term distributions are very consistent with those in Panel A. The only notable difference is that cumulative overhang is positive and highly

significant for the equity income and, especially, aggressive growth funds so, for these groups, long-term distributions are influenced by embedded gains. With these exceptions, however, whether total distributions or long-term distributions are examined leads to the same basic conclusions. Turnover again has a clearly asymmetric effect, depending on fund returns. Also, a comparison of Tables 7 and 8 shows that allowing for asymmetric effects substantially increases the explanatory power of the regressions. The adjusted R^2 values increase by a factor of between two and three, rising to about 25 percent.

6. Conclusions

We examine the role turnover plays in mutual fund distributions and tax efficiency. It is commonly supposed that high turnover funds have higher distributions than low turnover funds, but we find evidence that the matter is more complex than this. In particular, we find that high turnover funds tend to have higher distributions when funds returns are positive, but they have lower distributions when fund returns are negative. Furthermore, turnover *per se* explains a relatively small portion of the variation in fund distributions.

In addition to turnover, we examine the role of cash inflows, cumulative overhang, and incremental overhang. Cumulative overhang is the (split-adjusted) percentage change in NAV over the life of the fund and thus measures unrealized gains as a percentage of fund assets. Incremental overhang is the current year percentage increase in NAV. For the most part, contrary to conventional wisdom, neither cash inflows nor cumulative overhang have much explanatory power, but incremental overhang and distributions have a significant negative relationship. The implication is the recent gains and losses influence distributions, but longer-term embedded overhang has a limited effect.

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Table 1
Mutual Fund Turnover

Table 1 shows the mean turnover and other summary statistics by year. N is the number of funds with available data for the year. Panel A shows turnover by year and Panel B shows turnover by fund category.

Panel A: Mutual Fund Turnover by Year

Year	N	Mean(%)	Std. dev.	Min	10%	Median	90%	Max
1990	249	83.48	98.26	0.49	11.37	55.40	189.00	911.00
1991	317	76.06	85.28	0.00	12.46	57.00	159.50	1060.00
1992	362	70.12	87.62	0.00	11.15	47.96	150.00	1258.60
1993	390	69.98	70.68	0.00	10.28	50.00	154.54	668.20
1994	326	73.37	95.21	0.52	13.00	50.30	152.00	1192.50
1995	543	83.75	114.98	0.00	13.50	58.64	163.00	2097.14
1996	654	80.09	87.52	0.00	14.10	59.00	161.00	1267.23
1997	621	82.01	91.13	1.83	14.94	65.00	161.00	1511.04
All	3462	78.07	72.74	0.00	12.90	57.00	214.59	2097.14

Panel B: Mutual Fund Turnover by Fund Category

	N	Mean	Std Dev.	Min	10%	Median	90%	Max
Aggressive growth	326	127.95	139.93	1.78	29.00	76.68	357.00	1258.60
Equity income	332	59.06	43.21	0.73	18.06	45.35	157.51	341.00
Growth & income	1049	71.09	94.19	0.00	11.00	51.00	142.00	1511.04
Growth	1755	76.57	84.41	0.00	12.60	57.92	212.00	2097.14
All	3462	78.07	72.74	0.00	12.90	57.00	214.59	2097.14

Table 2
Mean Turnover by Management Fee and Fund Return

Table 2 shows mean turnover and standard deviation by management fee and total return quintiles.

Quintile	Management fee		Total fund return	
	Mean turnover	Std. deviation	Mean turnover	Std. deviation
1 (Low)	52.00	57.22	93.12	104.42
2	67.72	70.67	73.32	70.49
3	77.63	100.63	71.16	68.91
4	80.57	73.12	74.71	94.72
5 (High)	92.20	117.64	85.01	82.96

Table 3
Turnover by Cumulative Overhang

Table 3 shows mean turnover by cumulative overhang. N is the number of fund-years in each category.

Cumulative overhang	N	Mean	Standard deviation
.80 to 1.00	129	47.32	43.74
.60 to .80	571	69.57	71.43
.40 to .60	909	72.27	77.67
.20 to .40	1010	77.34	103.37
.00 to .20	608	93.27	117.38
-.20 to .00	138	102.28	72.65
-.40 to -.20	37	113.06	90.60
-.60 to -.40	14	103.31	62.14
-.80 to -.60	9	132.96	103.89
-1.00 to -.80	5	81.95	55.33

Table 4
Mutual Fund Standardized Inflows

Table 4 shows the mean standardized inflows and other summary statistics. N is the number of funds with available data for the year. Panel A shows standardized inflows by year and Panel B shows standardized inflows by fund category.

Panel A: Standardized inflows by year

Year	N	Mean(%)	Std. dev.	Min	10%	Median	90%	Max
1990	249	12.34	47.61	-76.45	-18.16	10.17	93.91	418.68
1991	317	13.80	81.42	-57.98	-21.53	-6.35	138.22	912.76
1992	362	48.12	151.04	-78.53	-13.08	11.58	196.21	2117.13
1993	390	42.47	112.58	-63.97	-11.22	14.01	110.05	1361.89
1994	326	46.15	183.13	-37.73	-16.01	7.29	198.38	2542.82
1995	543	40.17	214.77	-92.35	-31.39	-3.36	98.83	2843.10
1996	654	70.10	125.75	-88.52	-11.34	24.27	231.81	937.40
1997	621	88.85	287.38	-88.87	-22.07	18.02	355.31	2662.72
All	3462	54.86	224.75	-92.35	-19.93	9.14	256.91	2843.10

Panel B: Standardized inflows by fund type

	N	Mean	Std Dev.	Min	10%	Median	90%	Max
Aggressive growth	326	71.56	207.57	-64.10	-22.59	16.97	385.15	2501.26
Equity income	332	39.95	120.43	-85.89	-23.62	8.17	240.71	1320.32
Growth & income	1049	56.32	219.30	-92.35	-18.93	8.91	237.67	2695.19
Growth	1755	47.58	161.26	-88.87	-19.26	8.39	252.81	2843.10
All	3462	54.86	224.75	-92.35	-19.93	9.14	256.91	2843.10

Table 5
Mutual Fund Total Distributed Yield

Table 5 shows the mean total distributed yield and other summary statistics by year. N is the number of funds with available data for the year. Panel A shows distribution yield by year and Panel B shows distribution yield by fund category.

Panel A: Total distributed yield by year

Year	N	Mean(%)	Std. dev.	Min	10%	Median	90%	Max
1990	249	5.92	4.45	0.00	1.45	5.47	10.30	34.17
1991	317	7.82	6.26	0.00	1.77	6.74	13.71	60.00
1992	362	6.11	4.78	0.00	0.90	5.42	14.38	44.23
1993	390	8.13	5.41	0.00	0.52	7.42	15.12	31.10
1994	326	5.46	4.00	0.00	0.78	5.17	10.33	26.37
1995	543	8.98	5.60	0.00	2.11	8.30	16.90	36.04
1996	654	10.08	5.92	0.00	2.59	9.55	20.48	36.60
1997	621	12.92	7.79	0.00	4.15	12.31	24.98	51.63
All	3462	8.84	6.36	0.00	1.84	7.75	16.92	60.00

Panel B: Total distributed yield by fund type

	N	Mean	Std Dev.	Min	10%	Median	90%	Max
Aggressive growth	326	7.18	7.14	0.00	0.00	5.26	22.51	35.28
Equity income	332	8.77	4.98	0.00	3.76	7.66	19.86	25.07
Growth & income	1049	9.19	5.74	0.00	2.53	8.29	16.56	49.26
Growth	1755	8.94	6.74	0.00	1.78	7.81	21.01	60.00
All	3462	8.84	6.36	0.00	1.84	7.75	16.92	60.00

Table 6
Long-Term Capital Gains Distributions

Table 5 shows the mean long-term capital gains distribution yield and other summary statistics by year. N is the number of funds with available data for the year. Panel A shows long-term capital gains distribution yield by year and Panel B shows long-term capital gains distribution yield by fund category.

Panel A: Long-term capital gains distributions by year

Year	N	Mean(%)	Std. dev.	Min	10%	Median	90%	Max
1990	249	3.07	4.36	0.00	0.00	1.44	11.30	32.65
1991	317	5.04	6.33	0.00	0.00	3.45	11.12	59.67
1992	362	4.33	4.75	0.00	0.00	3.12	10.47	40.47
1993	390	6.47	5.41	0.00	0.00	5.66	16.55	30.67
1994	326	4.01	3.99	0.00	0.00	3.39	10.80	26.37
1995	543	7.02	5.60	0.00	0.10	6.01	18.05	34.19
1996	654	8.78	5.85	0.00	1.16	8.04	19.58	34.06
1997	621	11.84	7.85	0.00	3.02	10.93	20.37	50.26
All	3462	7.12	6.51	0.00	0.00	5.85	18.88	59.67

Panel B: Long-term capital gains distributions by fund type

	N	Mean	Std Dev.	Min	10%	Median	90%	Max
Aggressive growth	326	6.66	7.06	0.00	0.00	4.69	20.76	35.28
Equity income	332	5.18	5.50	0.00	0.00	3.70	17.34	23.98
Growth & income	1049	7.00	5.68	0.00	0.05	5.86	17.80	48.90
Growth	1755	7.65	6.81	0.00	0.00	6.51	19.28	59.67
All	3462	7.12	6.51	0.00	0.00	5.85	18.88	59.67

Table 7
Base model regression results

Regression results for total distributed yield (Panel A) and long-term capital gains yield (Panel B). Independent variables are SEC turnover (*TURN*), cumulative overhang (*CHANG*), standardized cash inflows (*INFLOW*), SEC turnover squared (*TURN*²), and incremental overhang (*HANG*). Values in parenthesis are *t*-statistics.

<i>Panel A: Total distributed yield</i>				
	Fund type			
	Growth	Growth & income	Equity income	Aggressive growth
<i>CONSTANT</i>	0.080713 (21.055)	0.085228 (21.672)	0.058562 (8.871)	0.045328 (4.422)
<i>TURN</i>	0.000286 (10.715)	0.000267 (7.684)	0.000743 (5.434)	0.000269 (4.819)
<i>CHANG</i>	-0.010955 (-1.713)	-0.011737 (-1.562)	0.017315 (1.590)	0.006241 (0.410)
<i>INFLOW</i>	-0.000068 (-0.794)	-0.000235 (-0.301)	-0.005274 (-2.449)	-0.002469 (-2.051)
<i>TURN</i> ²	-1.31 E-7 (6.358)	-2.06 E-7 (-6.419)	-2.29 E-6 (-3.526)	-1.59 E-7 (-2.491)
<i>HANG</i>	-0.074236 (-7.018)	-0.060842 (-4.324)	-0.060186 (-2.580)	-0.026827 (-1.292)
<i>N</i> of obs.	1755	1049	332	326
Adj. R ²	.1067	.0840	.1291	.1108

<i>Panel B: Long-term capital gain yield</i>				
	Fund type			
	Growth	Growth & income	Equity income	Aggressive growth
<i>CONSTANT</i>	0.063455 (16.273)	.058025 (14.205)	0.013875 (1.881)	0.036197 (3.534)
<i>TURN</i>	0.000293 (10.797)	0.000315 (8.733)	0.000800 (5.232)	0.000291 (5.204)
<i>CHANG</i>	-0.001612 (-0.248)	-0.008413 (-1.078)	0.035187 (2.892)	0.013160 (0.865)
<i>INFLOW</i>	-0.000043 (-0.497)	0.000087 (0.108)	-0.003706 (-1.540)	-0.002222 (-1.848)
<i>TURN</i> ²	-1.60 E-7 (-7.654)	-2.42 E-6 (-7.272)	-2.61 E-6 (-3.640)	-2.31 E-7 (-3.630)
<i>HANG</i>	-0.071743 (-6.667)	-0.048634 (-3.327)	-0.037344 (-1.432)	-0.024841 (-1.197)
<i>N</i> of obs.	1755	1049	332	326
Adj. R ²	.0949	.0869	.1084	.0923

Table 8
Extended model regression results

Regression results for total distributed yield (Panel A) and long-term capital gains yield (Panel B). Independent variables are cumulative overhang (*CHANG*), standardized cash inflows (*INFLOW*), continuous dummy variables equal to SEC turnover if the fund's return is positive (negative) for the year (*POSTURN* and *NEGTURN*), squared values of *POSTURN* and *NEGTURN*, continuous dummy variables equal to incremental overhang if the fund's return is positive (negative) for the year (*POSHANG* and *NEGHANG*), and one-year lagged values of *POSHANG* and *NEGHANG*. Values in parenthesis are *t*-statistics.

	<i>Panel A: Total distributed yield</i>			
	Fund type			
	Growth	Growth & income	Equity income	Aggressive growth
<i>CONSTANT</i>	0.079195 (18.647)	0.087681 (17.385)	0.085797 (10.793)	0.062028 (11.776)
<i>CHANG</i>	-0.002854 (-0.490)	-0.013615 (-1.927)	0.017229 (1.652)	-0.01344 (-1.822)
<i>INFLOW</i>	-0.000024 (-0.307)	0.000116 (0.160)	-0.004653 (-2.251)	0.000239 (0.318)
<i>POSTURN</i>	0.000342 (13.669)	0.000398 (11.778)	0.000824 (6.434)	0.000445 (12.621)
<i>NEGTURN</i>	-0.001221 (-11.886)	-0.000590 (-8.294)	-0.000732 (-1.943)	-0.000520 (-7.003)
<i>POSTURN</i> ²	-1.58 E-7 (-8.398)	-3.11 E-7 (-10.196)	-2.73 E-6 (-4.477)	-3.46 E-7 (-10.685)
<i>NEGTURN</i> ²	3.05 E-6 (8.113)	7.02 E-7 (6.709)	4.48 E-6 (2.057)	6.44 E-7 (5.898)
<i>POSHANG</i>	-0.079066 (-5.930)	-0.088655 (-4.792)	-0.183200 (-5.284)	-0.077016 (-3.986)
<i>NEGHANG</i>	-0.548536 (-15.183)	-0.305359 (-5.934)	-0.103709 (-1.034)	-0.251663 (-4.683)
<i>POSHANG</i> ₁	-0.053298 (-4.346)	-0.020050 (-1.196)	-0.102096 (-3.357)	-0.006884 (-0.393)
<i>NEGHANG</i> ₁	-0.056906 (-1.824)	0.076564 (1.826)	0.108622 (1.658)	0.132881 (3.034)
<i>N</i> of obs.	1755	1049	332	326
Adj. R ²	.2796	.2282	.2473	.2779

Table 8
Extended model regression results
(continued)

Panel B: Long-term capital gains yield

	Fund type			
	Growth	Growth & income	Equity income	Aggressive growth
<i>CONSTANT</i>	0.060123 (13.751)	0.062028 (11.776)	0.043837 (4.947)	0.046994 (4.185)
<i>CHANG</i>	0.004404 (0.734)	-0.01344 (-1.822)	0.030029 (2.583)	0.029547 (6.498)
<i>INFLOW</i>	-0.000017 (-0.206)	0.000239 (0.318)	-0.004069 (-1.766)	-0.001521 (-1.398)
<i>POSTURN</i>	0.00354 (13.673)	0.000445 (12.621)	0.000886 (6.206)	0.000348 (6.498)
<i>NEGTURN</i>	-0.001185 (-11.201)	-0.000520 (-7.003)	-0.000592 (-1.411)	-0.000549 (-3.521)
<i>POSTURN</i> ²	-1.90 E-7 (-9.837)	-3.46 E-7 (-10.685)	-3.03 E-6 (-4.467)	-2.85 E-7 (-4.815)
<i>NEGTURN</i> ²	2.96 E-6 (7.645)	6.44 E-7 (5.898)	2.68 E-6 (1.103)	8.12 E-7 (2.479)
<i>POSHANG</i>	-0.068286 (-4.975)	-0.077016 (-3.986)	-0.161103 (-4.169)	-0.061831 (-2.443)
<i>NEGHANG</i>	-0.544425 (-14.637)	-0.251663 (-4.683)	-0.033246 (-0.297)	-0.422313 (-5.058)
<i>POSHANG</i> ¹	-0.035789 (-2.835 ¹)	-0.006884 (-0.393)	-0.086651 (-2.556)	-0.112099 (-4.874)
<i>NEGHANG</i> ¹	-0.024888 (-0.775)	0.132881 (3.034)	0.194980 (2.670)	-0.010559 (-0.164)
<i>N of obs.</i>	1755	1049	332	326
<i>Adj. R²</i>	.2524	.2223	.2332	.2779

Figure 1: Percentage of Funds by Turnover

