The Influence of Benchmarking on Portfolio Choices: The Effect of Sector Funds*

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Abstract

This study analyzes the portfolio choices of actively-managed Generalist mutual funds vis a vis an institutional landscape that contains Sector Funds, i.e., mutual funds that limit their investment choices to a single industry sector. Consistent with a hypothesis that Generalist fund managers fear specialized competition from Sector funds, we find that Generalists tend to underweight those sectors for which Sector Funds exist, and trade these sectors less, compared with those sectors that do not have specialized funds. These effects are weaker for the sector holdings of Generalist funds that are part of fund families that have a Sector fund representing that sector. Overall, our evidence is consistent with the idea that fund managers exploit their comparative advantages in the selection of their holdings.

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1 Introduction

Whether mutual fund managers exhibit skill or ability has been one of the central questions in investments, with critical links to the debates on market efficiency and the value of active management. Much less work, however, has been done on the competitive landscape of the mutual fund industry itself. The industry exhibits rich variation that could shed light on several questions. In particular, some funds, generally referred to as sector funds, specialize in a particular industry, while others, which we refer to as generalist funds, invest in the overall stock market.

In this paper we analyze how the existence of sector funds influences the portfolio choices of the generalist funds and how the fact that many of the generalist funds are either explicitly or implicitly benchmarked relative to the S&P 500 influences the choice of the sector funds. To understand our argument, note first that a generalist that wants to closely track the index will tend to be overweight, relative to the value-weighted market, those stocks that are included in the index, and underweight those stocks not included in the index. All else equal, this will lead the sector funds to shy away from those stocks in the index, and focus their attention on the non-index stocks. The focus on non-index stocks by the sector funds will, in turn, create an even greater tendency for the generalists to shy away from those stocks not included in the S&P out of fear of competition from specialized managers in a given sector. Given that sector funds exist for some industries (e.g., real estate and technology) but not others (automotives or manufacturing), these hypotheses are testable.

Our sample of Sector funds consists of funds that specialize in *Healthcare*, *Natural Resources*, *Real Estate*, *Science and Technology*, *Telecommunications*, and *Utilities*. While the choice of Sector funds was straightforward, our choice of generalist funds requires some discretion. We are interested in actively-managed generalist funds with broad market-wide portfolios, which are likely to be benchmarked against the S&P 500. To do this we select all actively managed funds with returns that exhibit an R^2 of at least .9 when regressed against the S&P 500 returns.

Our analysis of the holdings of these two samples of mutual funds reveals that sector funds systematically underweight the S&P 500 securities within their sector. We also find that, compared to a market-wide value-weighted benchmark, the generalists tend to *overweight* sector securities.

However, closer examination shows that the S&P 500 overweights most of these sectors, and that, relative to the S&P 500 weightings, the generalists *underweight* the sector, which is consistent with the competition hypothesis.

We next examine how actively Generalist funds trade their securities, vis-a-vis the competition that they face from specialized sector-fund managers. It is generally agreed that actively trading a sector constitutes stronger evidence of active betting, versus holding more or less constant over- or underweights. In this setting, we find that Generalist funds trade *sector* securities significantly less, compared to securities in which no specialized sector funds exist, once again consistent with a competition hypothesis.

In order to isolate the effect of competition on Generalist funds by specialized analysts and managers, we then examine the holding and trading results, separating by whether a Generalist fund has a Sector fund in the same family. If such a Sector fund is in-house, then the specialized analysis generated for the sector fund can be shared with other fund managers in the family. Therefore, in this scenario, we should see a lessened effect associated with fearing specialized managers and their analysis. Consistent with our hypothesis, we find that the holdings effects, as well as the trading effects, are significantly lower for Generalist funds that have the relevant sector funds in their family, versus for those which do not. Consistent with our hypotheses, our results throughout the study are most pronounced for the *Real Estate* sector, in which Sector Funds occupy the largest fraction of the mutual fund market, out of all of our sector industries.

We conduct a few supplemental tests to round off our study. One of these tests reveals that the strategy employed by Sector Funds of underweighting S&P-500 securities in their sector, in and of itself generates alphas with a positive point estimate, but without statistical significance. We surmise, however, that this could contribute to Sector Funds' producing value for investors, when combined with other strategies. Further, we compare tracking errors of Sector Funds with their respective sector benchmarks, to those of Generalist-Fund *sector* sub-funds (i.e. all of a Generalist Fund's holdings in a respective *sector*) with that same benchmark. This comparison reveals that while, unsurprisingly, Sector Funds track their sector benchmarks relatively closely, Generalist Fund sub-funds do not track *sector* benchmarks closely. We propose that, since this tracking error does not seem to be of interest to investors within this institutional framework, such tracking error constitutes a convenient way for Generalist Fund managers to attempt to obtain *alpha*.

While we are first in the literature to systematically investigate the effect of the presence of Sector Funds on the portfolio choices made within the wider mutual fund community, our research is rooted in the mutual fund and sector fund literature. While classic mutual fund and investment studies such as Jensen (1968, 1969), Daniel, Grinblatt, Titman and Wermers (1997), or Carhart (1997) all underlie our study, perhaps the closest previous studies are ones that examine individual sector mutual fund performance. To our knowledge, this has been done primarily for Real Estate Sector Funds in studies such as Kallberg, Liu and Trzcinka (2000) and Hartzell, Mühlhofer and Titman (2010). In the mainstream mutual fund literature, Kacperczyk, Sialm and Zheng (2005) also examines mutual fund industry exposure, but does not treat the specific question of Sector Funds.

The rest of this study proceeds as follows. Section 2 introduces our data; Section 3 outlines our empirical tests and discusses our results; Section 4 concludes.

2 Data

To find our fund universe, we begin by considering the entire sample of mutual funds present in the Center for Research in Security Prices (CRSP) Survivorship-Bias Free Mutual Fund Database from 1990 to the end of 2009. We eliminate index funds and then regress, for each fund, the monthly excess returns over the fund's lifetime on the excess total returns to the S&P 500.[1]

Figure 1 shows the distribution of R^2s from these regressions. The sample also contains non-equity funds (including money-market funds), which explains the large mass at the lower end of the distribution. Outside of this, however, the figure shows increasing distributional mass with rising R^2, with the peak between .9 and .95 and a falloff after that. This is characteristic of the institutional environment for these funds, which pressures fund managers to minimize *tracking error* with their benchmark. This is equivalent to maximizing R^2.

To find our first group of funds from this sample, we identify funds whose regressions with the

[1] The total returns series here includes dividends, which we obtain from Robert Shiller's website.

S&P 500 generate an R^2 of at least 0.9. We identify these as *Generalist Funds*. This is a category of widely-diversified, generalist funds that are actively managed, but which track the S&P 500 index closely. The institutional structure for this group of funds would mandate that the funds exhibit little tracking error with their benchmark (mostly the S&P 500), and trade off such tracking error against abnormal returns in the form of α.

For our second group of funds, we look for specialized *Sector Funds*, by examining the Lipper Objective Codes to find funds that invest in US Equity with strategies that are concentrated in one industry, or sector. Over our time period, the sectors on which funds focus are *Health and Biotechnology* (henceforth *Healthcare*), *Natural Resources*, *Real Estate*, *Science and Technology*, *Telecommunications*, and *Utilities*. A sector *Specialty* also exists, but we do not include these funds in our results, as these do not constitute a group of funds with a homogeneous investment objective, but rather a set of funds in small numbers which invest in single industries which do not fit into any of the aforementioned categories. Because Sector funds did not appear in significant numbers before the year 2000 (roughly), we begin our sample at that point in time.

For both groups of funds described above, we use MFLinks to identify unique fund portfolios among share classes, and then add stock holdings for each portfolio, obtained from the Thomson-Reuters S12 Mutual Fund Holdings database. For each equity position, at each time period, for each fund, we include additional stock information from the CRSP monthly stock database. We also determine S&P 500 membership for each held security at any given time, from CRSP's S&P-500 constituent file.

We further assemble security universes for each of the sectors covered by Sector Funds. For some of our sectors, exogenous specification of sector universes (such as, for example, SIC codes) would not be well-suited because these sector universes might span many such categorizations. As a result, we alternatively elect to define sector universes endogenously. Specifically, we define a sector universe as the set of unique securities held in a given year by at least five percent of Sector Funds within a sector, or two portfolios (whichever is greater). For example the *Real Estate* sector universe for 2005 is the set of all stocks held in at least five percent of Real Estate sector fund portfolios during the year 2005. There exists a natural overlap between Sector-Fund universes, so we allow these to be non-orthogonal.[2] The benchmark portfolio for each sector is the value-weighted portfolio of all stocks within the sector, and the returns to this portfolio constitute our sector index, where necessary. For Generalist Funds, we define the sector universe as the entire CRSP universe and the corresponding benchmark portfolio as the CRSP value-weighted portfolio.

Our condition that to be considered as part of a sector universe, a stock must be held by at least five percent of funds or two portfolios, is designed to avoid including equities that are clearly outside of a fund's natural sector universe but are still held by a small number of managers. For example, at several times in our data set, a small number of Real Estate funds hold Microsoft in their portfolios, in small quantities. When forming a benchmark portfolio with weights that are based on relative market capitalization, Microsoft (a large, non-sector stock) would become the largest holding in this sector's benchmark portfolio. We test our filter by comparing, for each sector, the returns to the benchmark portfolio assembled according to this filter to value-weighted returns of all Sector Funds in the respective sector and find a close match between the two series. We therefore believe that this filter is effective in defining sector universes.

Table 1 shows summary statistics for our data. We begin by showing the number of unique portfolios that we identify in each sector. This number ranges from 20 for Telecommunications to 156 for Science and Technology. We identify 808 unique Generalist Fund portfolios. The table also shows distributional statistics for the number of unique portfolios that exist in a given year. Once again, the Telecommunications sector has the smallest number of these, with only 10.1 (10) portfolios in the mean (median) year, followed by Natural Resources with 22 (23). Health and Biotechnology and Utilities show similar numbers of funds with 33 (28) and 31 (34), respectively. Real Estate is the second most populated sector in this respect, with 43 (60) and Science and Technology the most populated, with 66 (57). Once again, Generalist Funds are much more numerous than any single sector, with an average (median) year featuring 411 (450) portfolios. The median fund's net asset value is comparable across sectors, at around \$ 100 million, except for Utilities, where the median is almost twice as large, at \$180 million. The median Generalist Fund is also about twice as large as the median (non-Utility) sector fund, at \$201 million. While all size distri-

[2] For example, many firms that are classified as *Science and Technology* can also be classified as *Healthcare*, or *Natural Resources*, if these firms develop biotechnology or mineral extraction technology, respectively.

butions show some positive skewness, the upper halves of size distributions differ markedly among sectors as evidenced by the variation in means, ranging from $205 million for Telecommunications, to almost $500 million for Utilities. The upper tail of the Generalist Fund distribution is much larger as shown by the mean of $1.3 billion.

Table 2 shows for each year the number of portfolios in each sector, as well as the fraction of sector market capitalization that is occupied by the funds in that sector. As the table indicates, there is no obvious trend in sector fund numbers across all sectors. Science and Technology shows the largest degree of time-series variation, with a peak of 143 funds in 2002 and only 68 in 2009. The other sectors exhibit more stable numbers of funds.

This table also presents some evidence that sector funds may play a particularly important role in real estate (relative to other sectors). The Real Estate sector funds hold between nine and 10 percent of the market capitalization of the entire sector in a typical year. In contrast, for the other industries, sector funds tend to comprise less than two percent of the total sector market capitalization. This suggests that we might observe differential effects for Real Estate relative to other sectors, which will paint a picture consistent with Real Estate's requiring the highest degree of specialized analysis, compared with other sectors, an issue we return to later in our study.

3 Empirical Tests

We now turn to our central questions regarding the competitive dynamics that exist between sector-fund managers and managers who focus on the broader US stock market. We begin by analyzing funds' security holdings, and then move on to explore their trading activities. Then, we test for differences in our results stemming from fund-family effects (e.g., differences across fund families that do or do not operate sector funds). Some smaller additional results round off our analysis.

3.1 Security Holdings

We begin by examining the patterns of over- or underweighting in S&P-500 securities, and how they differ between Generalist and Sector Funds. For Generalist Funds, which we selected on the basis of their correlation with respect to the S&P 500, their institutional framework implies that these vehicles are concerned with tracking error with respect to the S&P 500. Therefore, we expect to find that these funds tend to be overweight in S&P-500 securities, compared to a market-wide value-weighted portfolio. As a result, these funds would exhibit excess demand for S&P-500 securities (relative to non-S&P 500 securities).

On the other hand, Sector Funds' institutional framework suggests that they will be concerned with tracking error with respect to a sector-specific benchmark, while not concerning themselves with tracking the broader S&P 500. Then, if Generalist Funds' demand for S&P 500 securities affects prices (or is believed to do so), Sector Funds may try to capitalize on this demand and be relative sellers of such securities. Under this scenario, we should see Sector Funds underweight the S&P 500 securities within their sector. As an example, consider the case of the *Science and Technology* sector. In this sector, Generalist Funds, facing the need to track the S&P 500, could create an excess demand for S&P companies such as Microsoft. A Sector Fund could try to capitalize on this excess demand by being underweight Microsoft, and offsetting this by having larger holdings in non-S&P stocks within their sector (such as, for example, Luminex). If exogenous demand for S&P 500 stocks by Generalist Funds affects prices, then such a strategy should be advantageous for Sector Funds, as they would be relative sellers of overpriced assets.

In order to test this set of hypotheses, we examine the Thomson Holdings data described above. This data consists of a three-way panel, listing at every point in time, t, for every fund, f, information about each security holding, s. Given that this panel consists of one observation for each time-fund-security (t, f, s), this creates a panel which is unbalanced in all dimensions. As shown in Table 1 (and is generally well known), funds tend to hold a much smaller number of securities than exist in their respective universes. It is important to note that a zero holding in a security constitutes not a neutral bet in the stock, but rather a negative one, as standard benchmark portfolios (e.g., the value-weighted market portfolio) contain positive holdings in all securities in the market (or investible universe). Therefore, it is important to balance the panel of holding data at each time t, such that for each fund f, there exists a holding entry for each security s found in the security universe at that time.

For all tests in this study, we therefore create zero-entry holdings for each fund at each point in time for securities that exist in its universe at that time (see Section 2 for definitions of universes), but which are not held by a certain fund. For each holding entry (whether zero or positive), we then calculate the market weight that this security has in the benchmark portfolio. These weights are defined as fractional market capitalizations (i.e., value weights) in the portfolio comprising the entire CRSP stock set for Generalist Funds, and value-weights in a sector-universe value-weighted portfolio for Sector Funds. We then compare these benchmark-portfolio weights to the fund's actual holding for each security to find the differential weight (i.e., the degree of over- or underweight) in that stock, which we use to test the hypothesis formulated above. We use end-of-year holdings for each year in our data sample.

The statistics we show throughout this section are cross-sectional sums of differential weights for each fund f at a certain time t, for all securities s in a certain security set S, or:

$$dw_{t,f,S} = \sum_{s \in S} (w_{t,f,s} - w_{t,b,s}) . \tag{1}$$

In this notation, $w_{t,f,s}$ is the fund's weight in security s, while $w_{t,b,s}$ is the weight of security s in the benchmark portfolio for the fund's security universe. We use this construct throughout this group of tests, where the set S takes on various definitions, depending on the test being conducted.

Tables 3 and 4 show the results for the tests of the hypothesis regarding S&P holdings. Both tables first present the fraction of total market cap in the respective security universe that is made up of S&P securities for each year. Next, we show the cross-sectional average of fund dws, with security set S consisting of S&P 500 securities. Lastly, we show the fraction of funds that are underweight in the S&P (i.e., that have $dw < 0$). If fund portfolio choices were randomly scattered around the value-weighted universe portfolio, we should see half the funds being underweight the S&P (and half being overweight). We therefore show the statistical significance for binomial tests of the null hypothesis that the fraction underweight is 0.5, against the two-sided alternative. At the bottom of each panel, we present distributional statistics across the entire panel of fund-years.

Table 3 presents results for our sample of Generalist Funds. As the table indicates, the S&P 500 constituted between 61% and 73% of the entire CRSP market cap during our sample. In a typical year, Generalist Funds tended to be overweight the S&P 500 stocks by six to 10 percent, implying that S&P 500 stocks made up approximately 70% to 80% of their portfolios. The far right column shows that one can easily reject the null hypothesis that half of the Generalist Funds are underweight the S&P 500 stocks. Perhaps these are not surprising results given that these funds were selected due to the similarity in their returns to those of the S&P 500 index, but it does provide the first step in confirming our hypotheses.

Table 4 presents similar calculations for each sector. For five out of the six sectors we examine, S&P 500 stocks make up roughly 75% or more of the value-weighted benchmark portfolio. For these five sectors, we also observe that the sector funds tend to be underweight S&P 500 securities by roughly 20 percentage points. In all but two sector-years, we can reject the null that half of the sector funds underweight S&P 500 stocks, providing further confirmation that sector funds tend to shy away from S&P 500 stocks compared to what market-value weights would predict (again, for five out of six sectors). Interestingly, real estate appears to be an anomaly – S&P 500 stocks make up a much smaller percentage of the sector universe (15% to 46%, depending on the year) and real estate sector funds present a consistent pattern of under-weighting S&P 500 stocks only for the first half of the sample.

Next, we ask how Generalist Funds treat securities that are in the universes of Sector Funds. Because Sector Funds specialize in a certain industry, one might expect that they will be able to produce better analysis in the securities of that sector relative to Generalist Funds, whose holdings span across many industries. If this is true, then Generalist Funds should fear competition from Sector Funds when trading in Sector Fund universes, where Sector Funds could profit from their superior analysis at the expense of Generalist Funds. Knowing that they operate at a disadvantage, we may see Generalist Funds exhibit underweights in securities that are found in Sector-Fund universes. For example, given the existence of *Science and Technology* funds, we would expect to see Generalist Funds underweight securities like Microsoft and, in exchange, overweight securities like Ford, because there are no auto-industry Sector Funds to fear.

To test this, we first compute differential weights, according to Equation (1), in several different ways. Initially, we simply define the security set S as the union of the security universes of all Sector Funds at time t (which we call *sector securities*). The benchmark weights are computed for the entire security universe of Generalist Funds, i.e., the CRSP Value-Weighted portfolio. Once again, we define sector universes as previously specified and use annual end-of-year holdings snapshots. We report distributional statistics for funds' $dw_{t,f,S}$ across the entire panel of fund-years. For each fund, the differential weight in non-sector securities will simply be minus one times the statistic we calculate, as the two securities sets make up the entire universe and zero holdings are accounted for. We also perform a t-test, testing the null of zero-mean holding difference for sector securities against the two-sided alternative, and a Kolmogorov-Smirnov (KS) test of the null hypothesis that the cumulative distribution function (CDF) of sector-security fund differential weights is identical to the CDF of non-sector security differential weights. Given that the test statistic for a KS test against the two-sided alternative does not allow an inference on which alternative is likely to hold, we use for these tests the one-sided alternative suggested by the sign of the t-statistic (from the t-test). That means, if the t-statistic has a positive sign, we test against the alternative that the CDF of *non-sector* differential weights *lies above* that of *sector* differential weights, implying that funds tend to be *overweight sector securities*. If the t-statistic has a negative sign, we test against the alternative that the CDF of *sector* differential weights *lies above* that of *non-sector* differential weights which means that funds tend to be *underweight sector securities*. The additional information that can be inferred from a KS test over a t-test of means has to do with statistical differences in two distributions, in areas other than near the mean; correspondingly, this test is largely non-parametric in terms of distributional assumptions (i.e., it performs better with non-normal distributions). For this reason, we believe that this test yields important additional inferences beyond a t-test of means. To account for possible serially correlated decisions across time by individual fund managers, and to overcome the fact that in a panel data set longer-lived funds are weighted more heavily than shorter-lived funds due to their number of observations, we also compute fund-lifetime means of dw and then run the same tests as described above on only the cross-section of fund-lifetime means[3].

Next, given the different ways in which Generalist Funds treat S&P-500 and non-S&P-500 securities, we conduct the same tests, splitting the holdings sample along this dimension. In other words, we compute dws, by using as S the set of S&P-500 securities that are also sector securities

[3] Of course, by doing this, we equally weight each fund.

(we refer to these as *sector-S&P* securities) and compare these figures to dws computed by using as S the set of S&P-500 securities that are not sector securities (*non-sector-S&P* securities). In both cases, the benchmark portfolio remains the CRSP value-weighted portfolio. We apply the same test as before, which in this case becomes a difference-in-difference test. As previously documented, Generalist Funds tend to be overweight in S&P securities in general, and therefore we test whether they are *more* overweight in non-sectors than in sectors. Once again, we show distributions of dws,[4] and then test whether the distributions differ, through t tests of means and KS tests, analogous to the ones described above. We again report results for the entire panel and for the cross-section of fund lifetime means. Then, we conduct the same test only for securities *outside* the S&P-500, using for S the security sets of *sector non-S&P* and *non-sector non-S&P*.[5] Once again, we use the CRSP value-weighted portfolio as a benchmark and conduct a difference-in-differences test. Given that, as shown above, Generalist Funds are overweight in the S&P, they will consequently be underweight in non-S&P securities. Therefore, this test asks whether Generalist Funds are *more* underweight in *sector non-S&P* securities than in *non-sector non-S&P* securities.

We then ask the same questions as above, but measure dw, not with respect to the CRSP value-weighted portfolio as a benchmark, but with respect to the S&P 500. Economically, this alteration accounts for the fact that the S&P 500 itself is not selected in a completely passive way according to firm size, but rather conscious decisions are made about which firms to include. A deviation from the CRSP value-weighted portfolio by a Generalist Fund may thus not constitute an active bet per se, but rather be driven simply out of the desire to track the S&P. In the same vein, deviations from the S&P 500 benchmark portfolio can then be viewed as active bets of sorts by a Generalist Fund. We construct this benchmark portfolio by constructing a value-weighted portfolio of securities that are listed as S&P-500 constituents at time t in CRSP's constituent file. We compute a new set of values for dw for each Generalist Fund at each time, using as S the set of *sector-S&P* securities and then the set of *non-sector S&P* securities. Given that differential weights are now constructed with respect to the S&P portfolio, it should be clear that Generalist Fund dws will be negative, because the S&P portfolio, of course, has 100% of its value in S&P securities, while funds will

[4]Since the securities universes are not full complements of each other we show both distributions now.
[5]The nomenclature is analogous to the one described above.

have some weight outside the S&P. Therefore, once again, this is a difference-in-differences test, asking whether Generalist Funds are *more* underweight in sector- than in non-sector securities. The structure of the tests and statistics we present is analogous to that of the other panels of Table 5.

Table 5 presents the results of these tests. Panel A indicates that Generalist Funds tend to be more overweight in sector securities relative to non-sector securities (i.e., stocks from non-sector-fund industries). Panel B provides evidence that these overweights stem from S&P 500 securities. Put another way, it appears as if Generalist Funds are investing more in S&P 500 stocks in industries where Sector Funds compete, relative to the CRSP benchmark. On the other hand, when looking at Panel C, which considers stocks that are outside the S&P 500 (and in which Generalist funds are correspondingly underweight overall) we find some evidence that in non-S&P-500 stocks tracker funds underweight *sector* securities more than *non-sector* securities, although the significance of this result is contingent upon the approach used.

While Panels A and B are generally consistent with the idea that Generalist Funds tend to be more overweight in *sector* securities than *non-sector* securities, at least within the S&P 500 universe, relative to the CRSP benchmark, Panel D suggests that the picture is more subtle. In Panel D, we see that Generalist Funds tend to be clearly and significantly more *underweight* in S&P-500-*sector* securities than *non-sector* securities when those weights are calculated with respect to the S&P index itself. In fact, the margin here is quite large, with the mean (median) fund underweighting *sector* stocks by about $18-19$ ($11-12$) percentage points, while underweighting *non-sector* stocks by 3 (3) percentage points. All significance tests strongly reject a null hypothesis of no difference in underweights, in favor of the alternative that Generalist Funds are more underweight in *sector* securities. Of note here is also the much larger dispersion (i.e. standard deviation) on *sector* stock underweights, versus *non-sector* stock underweights (21% versus $6-7\%$). This difference is consistent with the Fund-Family effects we discuss in Section 3.3, which would cause this *sector*-stock underweight to be different between Generalist Funds according to whether they have a Sector Fund in the family.

The overall implication here, of course, is that the S&P-500 itself is overweight in *sector* securities and that the overweights we find for Generalist funds are due to this, and are in fact weaker than those of the S&P-500. In other words, these results show that in sectors such as Healthcare or Technology, Generalist Funds tend to be underweight S&P-500 stocks compared to their bets on, for example, manufacturing (or other *non-sector-fund* industries), when these active bets are measured with respect to the S&P-500 benchmark portfolio. Using this benchmark should be warranted as these funds' tracking error is also managed with respect to the S&P-500. In other words, the *price* (in terms of tracking error) for which a fund manager attempts to *buy* alpha (as well as the alpha itself) for S&P-500 stocks comes from deviations from the S&P-500 benchmark portfolio. Therefore, it makes sense to conduct this measurement with respect to this benchmark. Outside the universe of S&P-500 stocks, on the other hand, the relevant benchmark remains a market-wide value-weighted portfolio. Thus, overall, when conducting our tests relative to the correct benchmark, we find evidence consistent with the competition-related hypothesis of Generalist Funds' shying away from *sector* securities, strongly inside the S&P-500 universe, and more weakly outside it. Further, this evidence suggests that Generalist Fund managers tend to hold weights on S&P-500-*sector* securities that are higher than a value-weighted portfolio, but lower than the S&P-500. This suggests that these managers may be attempting to generate alpha with respect to the S&P-500, by following a "textbook" strategy of getting closer to a value-weighted portfolio than their benchmark. Ex-ante, such a portfolio should be more efficient than the S&P-500 and therefore appear to generate alpha with respect to that index. We further explore this issue below.

Given the evidence in Table 5, that the choice of benchmark portfolio between CRSP value-weighted and the S&P 500 makes for different inferences with regards to under- or overweights by Generalist Funds, we explore this issue in more depth. In Table 6 we show, for each Sector and each year, the fraction of market capitalization in the CRSP universe made up of securities in this sector universe. We then show overall sector under- or overweight for the S&P-500 itself, computed analogously to fund dw, using the value-weighted portfolio of S&P constituent stocks described above as the set of $w_{t,f,s}$, with S as the respective overall sector universe. Lastly, for each year, we show the average dw for Generalist Funds, again with respect to the CRSP value-weighted portfolio, over the respective Sector. We also present p-values for t-tests of the null that the average Generalist Fund's differential weight from CRSP in the sector is the same as the S&P portfolio's differential weight, against the two-sided alternative. We then present these values for the portfolio of Non-Sector securities, i.e. the securities that are not in the joint sector-fund universes.

The size of the *Utilities* universe, in the latter part of the sample, becomes very large. Closer investigation into the individual holdings of Sector Funds in this industry reveals a widespread problem of straying beyond the set of utilities stocks in choosing holdings. In fact, a large number of funds in this industry have holdings of, for example, Microsoft, Walmart, or Bank of America. Given the large number of portfolios that contain such stocks, our filter does not manage to exclude them, which leads to a somewhat contaminated securities universe for this sector. We therefore also present numbers for the universe of Non-Sector securities, with those securities that appear only in the *Utilities* universe added back. Besides presenting both sets of *Non-Sector* specifications in Table 6, we test all other results with sector-versus-non-sector splits with this alternative *Non-Sector* specification and find that all inferences presented are robust to this alteration.

Examining S&P-500 overweights for each sector individually in Table 6 reveals consistent overweights of the S&P-500 compared to a market-wide value-weighted portfolio in the sectors Healthcare, Science and Technology, Telecom, and Utilities. For example, for Science and Technology in the year 2004, the table indicates that this sector universe constitutes 25.7% of the CRSP universe, with the S&P-500 5.1 percentage points overweight (i.e. with the S&P-500 placing a 30.8% portfolio weight on this sector). In this same year, Generalist funds only showed a 2.7-percentage-point overweight (i.e. only placing a 28.4% weight on this sector). This situation constitutes an example of the *textbook* strategy that was discussed for Table 5 of Generalist funds' active bets with respect to the S&P-500 being in the direction of the market-wide value weighted portfolio, which should be ex-ante more efficient and therefore produce an alpha with respect to the S&P-500.

While the previous Table shows that on an industry-wide value-weighted basis this strategy seems to prevail, the current table allows a sector-by-sector and year-by-year look. For the Utilities sector, this is consistently the case, as well as for Telecom after 2001. Similarly, for Science and Technology, after 2001, all point estimates exhibit this pattern, although for two years this difference is not statistically significant. For Healthcare, we find significant deviations in five years and in all of these, once again, Generalist-Fund portfolio weights lie between the S&P-500 and the CRSP-

Value-Weighted weights. For Natural Resources, the S&P-500 alternates between periods of small overweight and small underweight. Correspondingly, directions of Generalist-Fund bets are also more mixed.

Out of all *sector* universes in the S&P-500, Real Estate is the only one with a consistent underweight. Correspondingly, Generalist Funds also show consistent underweights in this sector throughout the sample. However, the direction of the active bet of Generalist Funds varies here. For the first six years, we see significant evidence of the *textbook* strategy of placing bets that lie between the S&P-500 and CRSP-value-weighted. In the latter part of the sample, we see significant underweights even with respect to the S&P, which in 2009 then revert to zero statistical difference with the S&P. The underweights on this sector by S&P are consistent with the hypothesis of Real Estate requiring more specialized analysis than other industries and therefore showing less institutional interest by generalist funds (and S&P's trying to mirror this). The pattern of active bets would be consistent with improved analysis by this group of funds in this sector over time, causing less algorithmic bets to be taken.

For *non-sector* stocks in Panel D we find, as expected, fairly consistent underweights by the S&P-500. For 2003 and later, here too we find evidence of the *textbook* strategy, when all *non-sector* stocks are considered. When adding back Utility-Only stocks, the direction of the bets is less clear. Overall, this table shows a picture of widespread S&P-500 overweights in *sector* securities and underweights in *non-sector* securities, as well as widespread use of the *textbook* strategy by Generalist Funds, although these results show some variation by sector, with the patterns for Real Estate in line with the picture we paint in regard to this sector throughout the study.

3.2 Security Trades

While holdings (and especially holdings differences from a benchmark portfolio) constitute one way of defining active bets taken by a fund manager, another distinct way to identify such bets consists of examining trading behavior. Since basic finance theory dictates that a manager without superior information should be following a passive, value-weighted portfolio strategy, a manager who believes he has superior information will have to alter holdings away from such a strategy whenever such information dictates. Therefore, it makes sense to examine trading frequency (i.e. the frequency with which managers alter their holdings from a passive value-weighted strategy) in order to infer the amount of information the manager believes he has about a security or group of securities, and thus to define the size of the bet that is being taken. In fact, in recent literature (see for example Chen, Jegadeesh and Wermers (2000)) trading behavior is shown to be a more effective proxy for manager information than holdings alone.

We therefore examine trading activity by managers of Generalist Funds in light of the potential perceived competition from Sector Funds which they might fear. The economic argument here is analogous to what we have formulated above: Generalist Fund managers should fear the potentially superior information that Sector Fund managers have within their respective sector universes and therefore not only hold sector securities less, but also trade them less actively. We define a measure for fractional trading activity (or turnover) by fund f at time t in a security set S as:

$$trade_{t,f,S} = \frac{\sum_{s \in S} |(w_{t,f,s} - w_{t,b,s}) - (w_{t-1,f,s} - w_{t-1,b,s})|}{\sum_{s \in S} w_{t,f,s}} \tag{2}$$

This measure therefore examines the absolute value of the change in deviations from the benchmark portfolio over time. In line with basic finance theory (which states that a passive strategy consists of holding and tracking the benchmark portfolio), this measure therefore examines changes in deviation from this benchmark, which in the same view must be dictated by changes in information. Larger, more credible signals should cause larger changes in deviation[6]. The above can also be rewritten as the absolute value of the change in the weight differentials used in the computation of dw used in Equation 1 from one period to the next. As before, these are then summed through the cross-section of the fund's security subset. Then we scale this sum by the fund's terminal weight in that security subset, to produce a relative fraction turned over. If at the end of period t the fund has no holdings in security set S, we also set the *trade* measure to zero. For this measure, we use changes in quarterly holdings as reported in Thomson-Reuters' database[7].

[6]The economics of this definition are also in line with measures such as *Active Share* used in Cremers and Petajisto (2009) to define the magnitude of active bets taken by fund managers.

[7]It has been recognized that the use of this data in this way leads to missing intra-quarter trades, which manifests

We examine trading behavior of Generalist Funds in and outside of Sector-Fund universes in a manner analogous to our examination of Generalist Fund holdings in this respect. Once again, if Generalist Fund managers fear the competition of better-informed sector fund managers, we should see them trade non-sector securities more than sector securities. In Table 7, we first present distributional statistics for the entire panel of fund-wide *trade* measures for each fund each quarter (i.e. using each fund's entire portfolio as S). Then we proceed to presenting trading activity, first using as S the set of sector securities and then the set of non-sector securities and testing whether these two distributions are different from each other. The distributions and hypothesis tests presented are analogous to those in Table 5. The benchmark portfolio is the CRSP value-weighted portfolio.

As before, we then split the sample into securities that are in the S&P 500 and those that are not. This means, in Panel B we use for S, first *S&P Sector* securities and compare these to *S&P Non-Sector* securities. In Panel C, we compare trading behavior for *Non-S&P Sector* securities and *Non-S&P Non-Sector* securities. In this case, the numbers presented are normalized to the sub-sample in question, and therefore these tests present simple differences, rather than differences in differences. Lastly, for reference, in Panel D, we show panel statistics for fund-time *trade* measures, using each sector universe as S.

The first line of Panel A of Table 7 shows, for reference, that the mean (median) fund turns over 28.2% (25%) in each quarter. Subsequently, we show that for the universe of *sector* stocks, the mean quarterly turnover is 28.3% while for *non-sector stocks* this number is 30.4%, or about two percentage points higher. The difference in means is significant, for either estimation approach, and KS-tests also show that the CDF of trades on *sector* stocks lies significantly above that for trades of *non-sector* stocks, indicating that across the entire distribution the trading of *non-sector* stocks by Generalist Funds exceeds the trading of *sector* stocks. These results support our hypothesis that Generalist Funds should fear the competition from Sector Funds and therefore take less active bets in *sector* securities than in *non-sector* securities.

itself in phenomena such as the *return gap*, as argued in Kacperczyk, Sialm and Zheng (2008); in lack of more high-frequency holdings data we have no choice but to recognize this and present our results under this caveat. These results, therefore, constitute lower bounds for the trading activity conducted by funds in the respective security sets.

Panel B confirms this situation for the universe of S&P-500 securities. Within this set, for both types of estimation method we find that trading activity within the set of *non-sector* securities significantly exceeds trading activity within the set of *sector* securities with both means and medians differing by two to four percentage points, depending on the method of estimation. Outside the S&P-500 universe, the evidence becomes more mixed or inconclusive, with mean trading activity (in Panel-Wide Statistics) for *sector* stocks, actually slightly exceeding that for *non-sector* stocks, while at the same time, for Panel-Wide Statistics the KS-test rejecting the null of no difference, in favor of the opposite alternative (i.e. that *non-sector* trading exceeds *sector* trading). The pattern here is that the lower portion of the turnover distribution (i.e. lower-turnover fund-quarters, or lower turnover funds) shows trading activity in *sector* stocks exceeding that in *non-sector* stocks, while for the third quartile this gap vanishes, with the top quartile of fund-quarters driving the KS-test result. Examining quartile statistics throughout Panels A, B, and C is consistent with the idea of this gap widening as one moves up in the trades distribution. This indicates that especially funds that take a large number of active bets (by trading a lot) tend to shy away from *sector* securities.

Panel D shows turnovers split up by sector. The striking result here is the much lower trading activity for the Real Estate sector. While the mean turnover for Real Estate is lower than for other sectors (23% versus $26 - 30\%$), this is especially apparent in the medians and first quartiles, with the median for Real Estate at 7%, compared with the other sectors at $22 - 26\%$, and first-quartile trading activity at zero for Real Estate compared with $13 - 17\%$ for the other sectors. This, once again, is consistent with the hypothesis of Real Estate's requiring the highest degree of specialization in analysis out of all these sectors, which causes more generalist funds to refrain from taking active bets in this set of securities, especially in the face of the much higher fraction of sector market capitalization occupied by Sector Funds in this sector.

Overall in this test, we find that Generalist Funds trade *sector* securities (where they face the competition of specialized managers) significantly less than *non-sector* securities. This result is driven primarily by S&P-500 stocks and higher-turnover funds.

3.3 Fund-Family Effects

We further expand the investigation of portfolio-selection and trading effects by Generalist Fund managers, that are induced by the fear of competition from Sector Funds. We argue that this fear is predicated upon Sector Fund managers' presumed informational advantage about securities in their sector, stemming from their specialization. Such informational advantage would, in large part, be caused by the ability to employ dedicated analysts devoted to only a single sector of securities, which Generalist Fund management might not be able to do. However, if a Generalist Fund is part of a family which, at the same time, operates a Sector Fund, any information uncovered by a dedicated sector analyst would likely be shared across all funds in the family. For example, if Fidelity operates a Real Estate fund (for example the *Fidelity Real Estate Income Fund*) at a certain period in time, any information uncovered by Real-Estate analysts would probably be available not only to management of this Sector Fund, but also to management of a generalized fund, such as *Magellan*. Therefore, the fear by *Magellan* management of having inferior information about real estate securities should be alleviated in this way and portfolio-selection and trading behavior altered accordingly.

To test this, we merge fund-family data from CRSP's Mutual Fund database into our holdings dataset. We match each fund f (both Generalist and Sector) as belonging to family F, and test for each holding entry t, f, s belonging to Sector-Fund universe S, whether fund family F operates a Sector Fund in sector S at time t (in the same year). We then create a variable $HSF_{t,f \in F,s \in S}$ (*Has Sector Fund*) for each holding entry which we set to one if a sector fund exists in the family and to zero otherwise. It should be noted that we match by exact sector: this means that for a *Healthcare* holding at time t, for example, we only set HSF to one if a *Healthcare* fund exists in the family at the time. If only, say, a *Real Estate* fund existed, this should not create informational advantages for *Healthcare* stocks, and so we classify the fund as non-HSF (i.e. not having a sector fund or $HSF = 0$) for that holding at that time. However, it should be noted that for that same fund's *Real Estate* holdings, we set HSF to one at that time.

Table 8 shows time trends for all sectors, for Generalist Funds. The table shows for each year the number of securities in a sector held by the median fund (in this case only, conditional on being active in the sector at all), second the number of Generalist Fund portfolios that have non-zero holdings in the sector, and then the fraction of all portfolios that have non-zero holdings in the sector. We then show the number of Generalist Funds active in the sector whose family also operates a sector fund in the same sector at the time (i.e. whose holdings in the sector are classified as $HSF = 1$), and last the fraction of Generalist Fund portfolios with a Sector Fund in the family, out of the funds active in the sector.

For all sectors except Real Estate, Table 8 shows that 95% or more of Generalist Funds are active in that particular sector. Conditional on being active in a particular sector, the median Generalist Fund tends to hold numbers of securities in that sector that range from 10 to 17 for Healthcare and Natural Resources, 22 to 32 in Science and Technology, 6 to 22 in Telecom, and 26 to 47 in Utilities. No well-defined time trends are visible in these sectors, except for a steady decline in the number of Telecom securities held. We find that for Healthcare, between 20% and 39% of Generalist Funds active in this sector have a corresponding Sector Fund in the family; for Natural Resources this ranges from 17% to 21%; for Science and Technology this fraction is higher, ranging from 36% to 50%; Telecom shows the lowest fractions in this respect, with 8% to 17%, while for Utilities the range is 23% to 31%.

As in several cases before, with Real Estate a starker picture emerges. While nearly all Generalist Funds are active in each of the other sectors, in this sector we observe that only 46% to 70% (with the most common values between 50% and 60%) of Generalist Funds have any holdings whatsoever. Furthermore, conditional on being active in this sector at all, the median Generalist Fund holds only two to three Real Estate securities. The fraction of Generalist Funds active in this sector that have a Real Estate Sector Fund in the family is near the top of the pack, between 29% and 49%, and is exceeded only by Science and Technology in some years. Once again, this picture is consistent with Real Estate requiring even more specialized analysis, and with a higher fraction of market capital occupied by Sector Funds, both of which drive generalists away from taking bets here.

We now directly test the effect of HSF (i.e. whether a Sector Fund exists in the family at the same time, for a Generalist Fund's particular holding) on the major results regarding portfolio selection and trading for Generalist Funds established so far. Once again, any effects due to Generalist Fund managers' fear of competition from Sector Fund managers should be alleviated for holdings with $HSF = 1$. We first test whether HSF eliminates the underweights of Generalist Funds on sector securities. To do this, for each fund's holdings at each point in time, we compute a figure of total fractional weight $w_{t,f,S}$, by summing weights over each of the Sector-Fund sectors for S. We refer to a Generalist-Fund's set of holdings in a certain sector as a *sub-fund*. That means, for example, for *Magellan* in 2005, we compute one w for the sum of *Healthcare* holdings (*Magellan*'s *Healthcare sub-fund*), one for *Natural Resources*, and so forth, computing six w figures (one for each sector) for each fund at each time.[8] Note that in this case zero-holding sub-funds will exist, which is important as we want to account for the choice of not being in a sector. For each w we compute, we also note the value of HSF with respect to that fund's family and that specific sector at that time.

While, in principle, we could now conduct univariate comparisons of holdings distributions between HSF sub-funds and non-HSF sub-funds and test whether in each sector these differ from each other, the results from these tests would become rather cumbersome to read and interpret. Therefore, for the sake of parsimoniousness, we combine these univariate tests into a dummy-variable regression model as follows. We stack the time series of $w_{t,f,S}$ (i.e. the time series for fund f's six sub-funds) on top of each other and concatenate them with the ws for all other funds' sub-funds. This panel of sub-fund ws becomes the dependent variable. For the independent variables, we define five dummy variables, one for each sector, to mark the sector sub-funds (except *Healthcare* which becomes the base case), and add to this regression model the dummy HSF. To illustrate this, assume we have a fund whose *Natural-Resources* holdings are classified as $HSF = 1$ during its entire lifetime and all other sub-funds are $HSF = 0$ during its entire lifetime[9]. The model we estimate for the time series of ws of this fund's first three sub-funds ($\vec{w}_{t,f,HC}, \vec{w}_{t,f,NR}, \vec{w}_{t,f,RE}$) would look as follows:

[8]Note that HSF for non-sector holdings is not well defined, and therefore we do not consider non-sector holdings for this test.

[9]It should be noted that HSF could, of course, change in value during a sub-fund time series, if a Sector Fund started to operate at a certain time in the Generalist Fund's life.

$$\begin{bmatrix} \vec{w}_{t,f,HC} \\ \vec{w}_{t,f,NR} \\ \vec{w}_{t,f,RE} \\ \ldots \end{bmatrix} = \alpha + \beta_1 \vec{NR} + \beta_2 \vec{RE} + \ldots + \beta_6 H\vec{S}F + \beta_7 \vec{NR} \times H\vec{S}F + \ldots + \vec{\epsilon} \tag{3}$$

or

$$\begin{bmatrix} \vec{w}_{t,f,HC} \\ \vec{w}_{t,f,NR} \\ \vec{w}_{t,f,RE} \\ \ldots \end{bmatrix} = \alpha + \beta_1 \begin{bmatrix} \vec{0} \\ \vec{1} \\ \vec{0} \\ \ldots \end{bmatrix} + \beta_2 \begin{bmatrix} \vec{0} \\ \vec{0} \\ \vec{1} \\ \ldots \end{bmatrix} + \ldots + \beta_6 \begin{bmatrix} \vec{0} \\ \vec{1} \\ \vec{0} \\ \ldots \end{bmatrix} + \ldots + \vec{\epsilon} \tag{4}$$

In this case $\vec{1}$ and $\vec{0}$ are one- and zero-vectors respectively, with the same length as the time series of observations for the fund. We include dummy variables for all five sectors other than *Healthcare* and interaction effects between all sector dummies and HSF. Once again, this is only a parsimonious way to summarize a large set of univariate statistics and comparisons of univariate distributions. The coefficients of primary interest in this case are those on HSF and on the interaction effects of HSF and the sector dummies, which indicate whether fund managers behave differently whether or not a Sector Fund exists in the family to help with the analysis of a certain set of holdings. We cluster standard errors by fund.[10] For robustness, we also ran all dummy-variables regression models presented here with year dummies added and found no difference in the inferences produced.

In the same way as before, we also conduct a sample split by S&P-500 membership for this test. To do this, we proceed analogously to the way described above, except that for each fund we create twelve sub-fund portfolios, one for securities in each sector within the S&P and one for securities in the same sector, outside the S&P. Zero-holding sub-funds are still used. In addition

[10]The same analysis could be done with the differential weights dw which we have been using so far. The results would be equivalent, as the same benchmark weight would be subtracted from both the HSF and the non-HSF subfunds in a particular sector.

to the dummy variables above, we define a dummy $S\&P$ which is one for any sub-fund consisting of S&P holdings and zero for any sub-fund consisting of non-S&P holdings. In addition to the model described above, here we also examine the coefficient on the $S\&P$ dummy, as well as its interactions and double interactions. Once again, of primary interest here are the coefficients on HSF, its interactions, and its double interactions.

Table 9 shows these results. In Panel A, the Intercept indicates that the mean Healthcare holding is 14.6% and each of the sector dummies indicates the difference between the mean holding in Health Care and the respective sector. The evidence on the effects of HSF with respect to holdings proves inconclusive. The point estimate on HSF itself is positive, but the coefficient is insignificant, implying that there is no significant unified tendency for Generalist Funds to hold higher weights in a sector if they have a corresponding Sector Fund in the family. For individual sectors, we do find a positive significant coefficient of .0082 on $Util \times HSF$, which indicates that a Generalist Fund with a Utilities fund in the family holds weights on Utilities stocks that are 82 basis points higher than one which does not have a Utilities fund. On the other hand, we find a *negative* significant coefficient of $-.017$ on $Tech \times HSF$, indicating that a Generalist Fund will hold a *lower* weight on Science and Technology stocks if it has the appropriate Sector Fund in the family. In the case of Tech, however, this could be a function of the timing of our sample, given that a substantial portion of this occurs during the burst of the Tech bubble. In this period, an *informed* trade might actually have been to have lower weights in Tech companies, which HSF funds might have been in a better position to make.

Panel B of Table 9 shows results for Generalist-Fund sub-funds split by sector and S&P-500 membership. The interpretation of the coefficients in the first section is analogous to the previous panel, with the Intercept indicating that the average holding on Healthcare *outside the S&P* is 2.6% and the sector dummies showing differences with the respective sector *outside the S&P*. The HSF dummy and its single interactions with sector dummies then show the marginal effect of having a respective sector fund in the family, once again for holdings outside the S&P. In this case, while HSF itself is small and insignificant, we do find positive significant coefficients for $Telecom \times HSF$ and $Util \times HSF$ of .015 and .0044, respectively, indicating that an $HSF = 1$ Generalist Fund in those sectors, had a significant tendency to hold Telecom Non-S&P stocks in a 1.5% higher weight and Utility Non-S&P stocks in a .44% higher weight than a fund which does not have those sector funds in the family.

The next section of Panel B shows single interaction effects of sector dummies with $S\&P$; the interpretation of these is the amount by which holdings differ for each sector between S&P and non-S&P securities, which is not of primary interest to our investigation. We therefore direct our attention to the next section of the table, which shows double interactions with HSF and $S\&P$. These coefficients show marginal effects of HSF within the set of S&P securities. Here, the only significant coefficients are negative effects on the double interactions with $Tech$ and with $Telecom$, indicating that within the set of S&P-500 securities, a Generalist Fund with a respective Sector Fund will hold *less* of these securities than one without. For $Tech$ this is the same negative effect which we observe in Panel A, and which may be due to our sample period. For $Telecom$ seen in conjunction with the positive single-interaction effect on $Telecom \times HSF$, this negative coefficient constitutes mostly an undoing of the positive effect of HSF we observe for this sector outside the S&P, indicating that the positive effect of HSF exists only for non-S&P securities and not for S&P securities. Though, at first glance, seemingly irrelevant, the insignificant coefficient on the double interaction with $Util$ does actually indicate that the positive effect of HSF observed outside the S&P universe (positive coefficient on $Util \times HSF$) carries over into the set of S&P securities.

Overall, these results show a positive effect of HSF for all Utilities stocks, a positive effect of HSF for Telecom stocks outside the S&P and a negative effect for Tech stocks, primarily driven by stocks within the S&P. It is important to note that, while these results are not very conclusive, steady holdings are not as good an indicator for active bets as trades are, and so we now direct our attention to this measure within the context of family effects.

We test the effect of HSF on the sector-security trading behavior found previously. Once again, if Generalist Fund managers fear Sector Fund competition, they should trade sector securities less actively. However, the ability to share analysis with a Sector Fund in the family should alleviate this fear to a large extent.

To test this idea, we proceed analogously to the previous test. For each Generalist Fund, we first construct six measures of $trade_{t,f,S}$, using each of the six sectors as security sets S (i.e. we construct *sub-funds* by sector as before). For each measure at time t, we note whether in that year, the holdings in that sector were classified as HSF and we record this value. As before, we could now simply run comparisons of univariate distributions. However, this would present the same problems of a lack of interpretability, and so once again we stack the sub-fund $trade$ time series and run the same dummy-variable regression model as above, except with sub-fund trades rather than holdings on the lefthand side. Analogously, we then create, for each fund at each time, twelve sub-fund $trade$ measures, dividing holdings along the line of Sector and S&P-500 membership, and run the analogous dummy-variable regression with Sectors, HSF, $S\&P$, as well as all interactions. Once again, we cluster standard errors by fund.

Table 10 shows these results. The interpretation is analogous to the previous table, with the Intercept in Panel A indicating that Health Care stocks (the base case) for funds that are $HSF = 0$ show a 28.9% turnover each quarter. The coefficients for each of the sector dummies then shows deviations from this for stocks in the respective sectors. Of most note, perhaps, is the large negative and strongly significant coefficient for $Real.Est$, indicating that, on average, Real Estate securities show a lower turnover by 6.6 percentage points, the largest marginal effect out of all sectors. Once again, this is consistent with the idea of Real Estate's requiring an especially specialized analysis, and the large presence of sector funds in this universe.

The coefficient for HSF in Panel A is positive, but not significant, indicating no difference in trading behavior for Healthcare stocks, when using this approach. This view changes, however, when considering the interaction effects between the sector dummies and HSF, where we find significant positive effects for Real Estate (turnover is higher by 3.7 percentage points for Generalist Funds that have Real Estate sector funds in the family), Tech (1 percentage point), and Utilities (1.4 percentage points). Once again, the fact that Real Estate shows the strongest effect for HSF is consistent with our overall story about competition within sectors. Thus, overall, in this approach we find significantly positive effects for HSF in three out of six sectors (including the two with the highest number of sector funds), and no negative effects of HSF on trading.

These results are strengthened in Panel B, where we consider splits by S&P-500 membership of securities. Once again, the sector dummies here show the difference in trading activity from the baseline of Healthcare for each of the sectors, and once again Real Estate shows a strongly negative difference of nearly 15 percentage points. Thus, the severe effects associated with Real Estate are especially strong outside the S&P-500 universe, where it is likely even more difficult to obtain good-quality analysis about companies without specialization.

Of primary note here, however, is the large and positively significant coefficient for HSF with value .047. While this primarily indicates that for Healthcare stocks outside the S&P-500, a Generalist Fund will have 4.7 percentage points more turnover if it has a relevant sector fund in the family, it also forms a baseline effect to which the other interactions with HSF must be added in order to find overall effects. Thus, when examining the single interaction effects between sectors and HSF, these can be thought of as marginal sector effects, over the overall positive HSF effects. For Real Estate, this effect is positive and significant, indicating that for Real Estate securities outside the S&P, the HSF effect is even stronger than the baseline. For $Nat.Res$, $Tech$, and $Telecom$, the interaction effects are negative and significant. However, comparing the coefficient sizes for each of these sector interactions with that for HSF (and adding them with HSF) reveals that the overall HSF effect still remains positive for each of these sectors. For Utilities, the single interaction effect with HSF is not significant, indicating that the overall positive effect of HSF does not change for this sector. Thus, overall, we find that for non-S&P securities a positive HSF effect exists in all sectors, meaning that Generalist Funds show higher security turnover (and are therefore willing to take more active bets) in sector securities outside the S&P when they have an appropriate sector fund in the family.

The next section of the table shows sector interactions with the $S\&P$ dummy which, once again are not of primary interest to our study. We thus turn our attention to the final section, showing double interactions with $S\&P$ and HSF, and therefore indicating whether our HSF effects identified outside of the S&P universe are maintained within this set as well. The coefficient on $HSF \times S\&P$ of $-.036$ indicates that the positive baseline effect of HSF observed outside the S&P-500 is diminished within this set. However, the coefficient size is such that the overall effect remains positive. The triple interaction effects are all positive and significant, with the exception of the one with $Nat.Res$ which is statistically zero. This means that the positive effect of HSF is either maintained or strengthened for all sectors within the S&P-500 universe. This supports out hypothesis of managers' fearing sector fund competition, and relevant sector funds in the same family alleviating this effect, consistent with a sharing of analysis. The fact that the evidence on trades (which constitute a stronger indication of active bets) is stronger than that on holdings should also fall in line with our paradigm.

3.4 Other Tests

We now return to the result presented in Table 4, which illustrates holding patterns for Sector Funds. Once again, Generalist Funds, from their necessity to track the S&P 500, create excess demand for S&P securities in the various sectors, which should cause these securities to be overpriced. Therefore, Sector Funds, which are more or less indifferent to tracking the S&P 500, but rather should track a sector benchmark, should act as sellers of these stocks, and therefore exhibit underweights in them. We now ask the question, whether Sector Funds can realize excess returns by engaging in this strategy.

We test this, by constructing a set of simulated portfolio returns. The first set of returns we construct is, for each sector, the return to the total value-weighted sector portfolio (i.e. the value-weighted portfolio of all securities in that sector fund universe). Next, we compute portfolio returns for a *Sector-Ex-S&P* portfolio, or the portfolio of all securities in the sector universe, excluding S&P stocks. We then run, for each sector, a market-model regression of monthly excess returns to the *Sector-Ex-S&P* portfolio on the left, on monthly excess returns to the total sector portfolio on the right. Excess returns are computed over a 30-day TBill rate, obtained from the St. Louis Fed.

Table 11 presents these results. The table shows Betas that are relatively close to one, and, for all sectors except Healthcare, a relatively high R-squared. While all alphas show positive point estimates, there are no statistically significant alphas in any sector, indicating that this strategy in and of itself seems to not yield reliable positive profits. However, the positive point estimate suggests that it may contribute to value creation for Sector Funds, as part of their overall approach, when combined with other strategies these funds may pursue.

Lastly, we investigate indexing behavior of both Sector Funds and Generalist Funds with respect to sectors. Specifically, we ask whether a Generalist Fund's Sector sub-fund, consisting of the portfolio of all securities by a Generalist Fund in a Sector-Fund sector (for example *Magellan*'s holdings in *Science and Technology*) tracks its respective sector index as closely as that of a Sector Fund. Here, the institutional structure related to benchmarking could work in the Generalist Fund's favor; if investors are indifferent whether a Generalist Fund's sector sub-fund tracks its sector benchmark, Generalist Fund managers could trade off a large amount of tracking error for Alpha in this way.

To test this we run two sets of time-series regressions. First, we regress imputed quarterly holding-based excess returns (i.e. returns constructed by taking quarterly holdings snapshots and associating CRSP stock returns for that quarter to each holding, minus the risk-free rate) for each Sector Fund over its lifetime, on its respective sector benchmark and record the cross-sectional distribution of R-squareds for each sector[11]. Next, we compute quarterly holdings-based excess returns for each Generalist Fund's Sector sub-fund, regress these on their respective sector benchmarks, and record the distribution of R-squareds[12]. We then report, for each sector, distributional statistics for the two sets of R-squareds as well as the usual tests whether the two distributions differ (i.e. a t-test and a K-S test). Since all t-tests show that the mean R-squared of Sector Funds is greater than that of Generalist Sub-Funds, for K-S tests we always use the alternative that $CDF_{Generalist-Sub} > CDF_{Sec}$, i.e. that R-squareds of Generalist Sub-Funds tend to be *lower* than those of Sector Funds.

Table 12 shows these results. The table shows that consistently, across all sectors, the distribution of R-squareds of Sector Funds with their respective sector benchmark statistically significantly exceeds the distribution of Generalist-Fund sector sub-fund R-squareds with the same benchmark. The mean Sector Funds shows an R-squared range of $.83 - .94$, dependent on the sector, while the mean Generalist-Fund subfunds shows an R-squared range of $.55 - .79$. Distributional statistics and K-S tests show that this difference exists throughout the respective R-squared distributions.

[11] If we use actual fund returns instead of imputed holdings returns, the distribution of R-squareds remains largely unchanged, indicating that for the purposes of this test, the imputed holdings returns are a good proxy for actual realized returns.

[12] For both sets of regressions, we only use funds for which we have 20 or more data points.

In untabulated results, we find that R-squared distributions of returns to random portfolios within each sector that contain the same number of securities as Generalist-Fund subfunds resemble those actually obtained by Generalist-Fund subfunds. This should indicate that no conscious effort is made by Generalist-Fund managers to track these *sector* benchmarks, implying that doing so is not required by their institutional framework.

The greatest gap exists once again for Real Estate, where Sector Funds show the highest R-squareds and Generalist-Fund subfunds the lowest. The latter result is likely related to the evidence presented in Table 8, that Generalist Funds that are active in this sector only hold two to three securities, compared with generally 15 to 40 in other sectors. Generally, the evidence presented here is consistent with an institutional structure in which investors do not examine sector-by-sector tracking error, and in which such tracking error therefore constitutes a relatively *cheap* way to attempt to buy alpha.

4 Conclusion

We examine the investment behavior of generalist diversified funds vis a vis their competition from specialized sector funds. We find that generally, fund managers act within the competitive advantages that their institutional structure yields them. Managers' willingness to take active bets through deviations from the classically-mandated portfolio holdings and especially through more frequent trading can therefore be explained through the incentive structure under which these funds act, which combines an attempt to minimize tracking error, and seek alpha where it is most likely to be found (i.e. where there is less competition from other managers with possibly better analysis).

We find that managers of generalist funds take significantly smaller bets in market sectors where specialized sector funds (which might produce better analysis through specialization) exist. This behavior manifests itself in part through lower holdings in such sectors, but especially through less active trading. We further find that when a generalist fund has a relevant sector fund in the family (from which the generalist might be able to obtain specialized analysis), these effects are significantly weaker. This finding supports the hypothesis that a fear of competition from Sector Funds and their more specialized analysis on a particular set of stocks might be the driving force behind the patterns we observe. To our knowledge, we are first in the literature to examine institutional portfolio choice and trading behavior from this angle.

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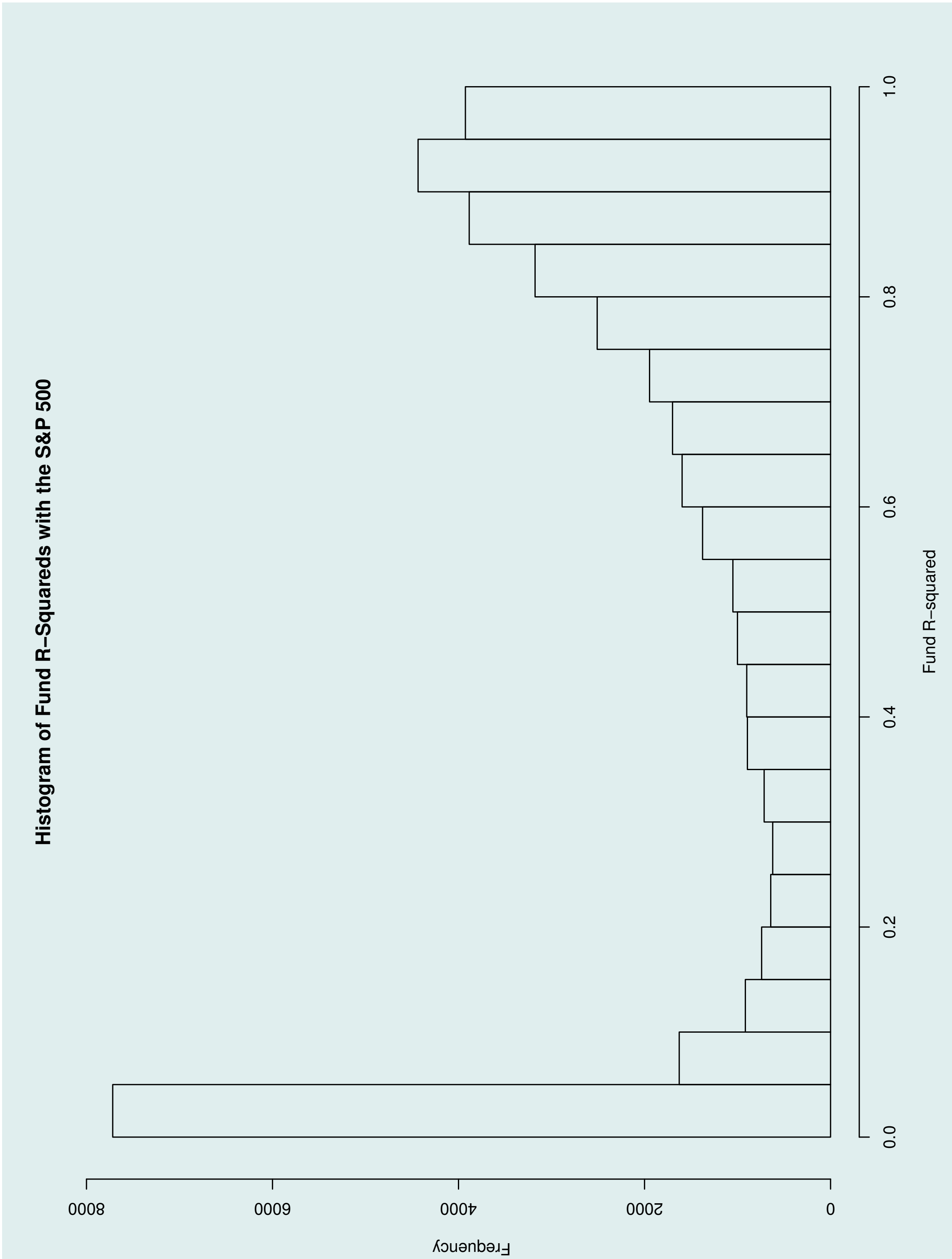

Figure 1: This figure shows the distribution of R^2s obtained by regressing the excess returns of each fund in CRSP on excess returns to the S&P 500.

Table 1: Summary Statistics for Funds by Sector

The table reports summary statistics for all fund-years by sector. For each sector, we list distributional statistics for the number of funds (defined as distinct portfolios, thus combing share classes) active each year, the total value of all equity positions for each fund, the number of unique securities in each portfolio, the number of S&P 500 securities in each portfolio, as well as the number of unique securities and unique S&P 500 securities in each sector universe.

	Mean	**Stdev**	**1st Quartile**	**Median**	**3rd Quartile**
Sector Health and Biotechnology: 71 unique portfolios.					
Number of Funds	32.85	22.6	12.75	27.5	55
Equity Net Asset Value ($ Millions)	600.4	1,821	23.31	137.4	482.2
Number of Unique Securities Held	62.89	37.3	41	54	74
Number of Unique S&P 500 Securities Held	19.44	11.39	11	19	26
Number of Securities in Sector Universe	220.3	67.9	165.5	243	257
Number of S&P 500 Securities in Sector Universe	39.42	12.4	25.5	41	50.5
Sector Natural Resources: 38 unique portfolios.					
Number of Funds	21.7	7.901	15.75	22.5	28.25
Equity Net Asset Value ($ Millions)	401.7	1,027	33.59	96.83	330.6
Number of Unique Securities Held	54.68	28.19	36	49	71
Number of Unique S&P 500 Securities Held	19.81	11.94	10	19	27
Number of Securities in Sector Universe	199.7	73.48	163.5	201	240.5
Number of S&P 500 Securities in Sector Universe	58.37	9.305	52	60	65
Sector Real Estate: 94 unique portfolios.					
Number of Funds	43.3	28.38	13.75	59.5	67
Equity Net Asset Value ($ Millions)	373.8	877	28.87	97.88	366.3
Number of Unique Securities Held	45.81	24.54	32	40	51.25
Number of Unique S&P 500 Securities Held	6.536	4.098	3	6	10
Number of Securities in Sector Universe	120.4	53.21	106	144	157.5
Number of S&P 500 Securities in Sector Universe	6.625	4.717	2	5	10.25
Sector Science and Technology: 156 unique portfolios.					
Number of Funds	65.5	48.37	17.75	56.5	106.5
Equity Net Asset Value ($ Millions)	446.2	1,083	17.6	84.4	342.5
Number of Unique Securities Held	62.71	40.61	40	54	73
Number of Unique S&P 500 Securities Held	23.67	16.06	12	20	31
Number of Securities in Sector Universe	263.5	84.19	215	270	320.5
Number of S&P 500 Securities in Sector Universe	72.68	23.49	55	70	95
Sector Telecommunications: 20 unique portfolios.					
Number of Funds	10.11	5.943	6	10	13.5
Equity Net Asset Value ($ Millions)	205.9	338.3	12.75	71.14	266.7
Number of Unique Securities Held	51.7	40.78	29	42	59
Number of Unique S&P 500 Securities Held	16.83	10.81	10	16	21
Number of Securities in Sector Universe	83.26	51.34	46	80	113
Number of S&P 500 Securities in Sector Universe	29.11	14.76	19	27	35
Sector Utilities: 46 unique portfolios.					
Number of Funds	31.3	8.591	31.5	34	37
Equity Net Asset Value ($ Millions)	494.5	760.3	51.28	182.5	581.5
Number of Unique Securities Held	56.05	27.17	38	49	70
Number of Unique S&P 500 Securities Held	28.05	14.97	19	25	33
Number of Securities in Sector Universe	218	49.85	183	227	241
Number of S&P 500 Securities in Sector Universe	91.53	42.97	63	68	137.5
Generalist Funds: 808 unique portfolios.					
Number of Funds	410.6	163.4	302.2	450	554
Equity Net Asset Value ($ Millions)	1,329	5,037	60.45	201.8	760.7
Number of Unique Securities Held	142.4	195.7	57	85	141
Number of Unique S&P 500 Securities Held	93.86	96.44	43	64	101
Number of Securities in Sector Universe	3,784	829.3	3,633	3,980	4,294
Number of S&P 500 Securities in Sector Universe	519.2	12.1	510.8	518	524.5

Table 2: Time Trends and Statistics for Sector- and Generalist Funds

This table shows, for each sector, a time trend of the number of sector-fund portfolios, as well as the amount of sector market capitalization occupied by sector funds. For Generalist Funds, the "sector" is defined as the entire CRSP universe.

Year	**Healthcare**	**Natural Resources**	**Real Estate**	**Science and Technology**	**Telecom**	**Utilities**	**Generalist Funds**
Number of Portfolios							
2000	47	27	67	122	15	37	515
2001	58	27	63	141	19	35	546
2002	62	27	63	143	20	34	557
2003	63	28	64	128	19	34	580
2004	61	29	67	111	14	35	574
2005	58	30	73	105	13	34	567
2006	54	30	72	99	13	34	542
2007	51	31	73	89	13	32	568
2008	50	31	73	83	13	32	553
2009	40	31	62	68	7	27	657
Mean	56	29	68	113	15	34	555.78
Standard Dev.	6	2	4	22	3	2	19.85
25th percentile	51	27	64	99	13	34	546
Median	58	29	67	111	14	34	557
75th percentile	61	30	73	128	19	35	568
Fraction of Sector Market Cap Held by Sector Funds							
2000	0.0283	0.0044	0.0576	0.0156	0.0012	0.0061	0.0488
2001	0.0168	0.0035	0.0681	0.0121	0.0008	0.0044	0.0512
2002	0.0140	0.0041	0.0698	0.0079	0.0005	0.0023	0.0507
2003	0.0200	0.0055	0.1172	0.0190	0.0011	0.0025	0.0501
2004	0.0178	0.0073	0.1292	0.0124	0.0009	0.0022	0.0492
2005	0.0196	0.0125	0.1201	0.0097	0.0012	0.0021	0.0519
2006	0.0173	0.0116	0.1679	0.0086	0.0019	0.0024	0.0509
2007	0.0175	0.0138	0.0915	0.0088	0.0018	0.0028	0.0500
2008	0.0113	0.0050	0.0667	0.0034	0.0006	0.0017	0.0489
2009	0.0146	0.0135	0.1460	0.0075	0.0026	0.0026	0.0635
Mean	0.0181	0.0075	0.0987	0.0108	0.0011	0.0029	0.0502
Standard Dev.	0.0047	0.0040	0.0372	0.0046	0.0005	0.0014	0.0011
25th percentile	0.0168	0.0044	0.0681	0.0086	0.0008	0.0022	0.0492
Median	0.0175	0.0055	0.0915	0.0097	0.0011	0.0024	0.0501
75th percentile	0.0196	0.0116	0.1201	0.0124	0.0012	0.0028	0.0509

Table 3: Generalist-Fund Overweights in S&P Securities

This table shows holding results for Generalist funds. The table shows, first the fraction of total-universe market capitalization that is made up of S&P 500 securities each year. Second, the table shows the total overweight (compared to a value-weighted sector portfolio) by funds for their S&P securities in a given year. Positive values indicate overweights. Third, the table shows the fraction of funds that have a total underweight in S&P securities, as well as significance values for a binomial test, testing the hypothesis that 50% of funds are underweight in S&P securities, against the two-sided alternative. Below each set of annual values, there is a set of distributional statistics for S&P underweights by fund-years across the entire panel.

Year	**Fraction of Total Market Cap in S&P**	**Generalist Fund S&P Under/Overweight**	**Fraction of Funds Underweight S&P**
2000	0.7179	0.0645	0.2041***
2001	0.7281	0.0611	0.1782***
2002	0.7075	0.0609	0.1720***
2003	0.6772	0.0624	0.1800***
2004	0.6590	0.0783	0.1657***
2005	0.6406	0.0806	0.1833***
2006	0.6387	0.0972	0.1772***
2007	0.6235	0.0864	0.1953***
2008	0.6397	0.0993	0.1992***
2009	0.6163	0.0841	0.2286***
Mean		0.0475	
Standard Dev.		0.2326	
25th percentile		−0.0033	
Median		0.1236	
75th percentile		0.1924	

Table 4: Sector-Fund Underweights in S&P Securities

This table shows holding results for sector funds. Each panel shows, for two sectors, first the fraction of total sector market capitalization that is made up of S&P 500 securities each year. Second, the table shows the total underweight (compared to a value-weighted sector portfolio) by funds for their S&P securities in a given year. Negative values indicate underweights. Third, the table shows the fraction of funds that have a total underweight in S&P securities, as well as significance values for a binomial test, testing the hypothesis that 50% of funds are underweight in S&P securities, against the two-sided alternative. Below each set of annual values, there is a set of distributional statistics for S&P underweights by fund-years across the entire panel.

Year	Fraction of Total Market Cap in S&P	Sector Fund S&P Underweight	Fraction of Funds Underweight S&P	Fraction of Total Market Cap in S&P	Sector Fund S&P Underweight	Fraction of Funds Underweight S&P
Panel A		**Healthcare**			**Natural Resources**	
2000	0.7814	−0.2672	0.8605***	0.8038	−0.2485	0.9200***
2001	0.8078	−0.2584	0.8571***	0.7826	−0.2307	0.8519***
2002	0.8073	−0.2080	0.8333***	0.7809	−0.3447	0.9259***
2003	0.8440	−0.3046	0.9492***	0.6906	−0.2587	0.9600***
2004	0.7963	−0.2136	0.7797***	0.7320	−0.2153	0.8621***
2005	0.7669	−0.1896	0.8182***	0.6815	−0.1888	0.8333***
2006	0.7483	−0.1379	0.7736***	0.6332	−0.0790	0.7931**
2007	0.7543	−0.1663	0.8000***	0.6472	−0.0507	0.6452
2008	0.7703	−0.0781	0.6977*	0.6493	−0.0266	0.5172
2009	0.8006	−0.1391	0.7931**	0.6960	−0.1391	0.7931**
Mean		−0.2022			−0.1800	
Standard Dev.		0.2031			0.2162	
25th percentile		−0.3328			−0.3018	
Median		−0.1904			−0.1537	
75th percentile		−0.0504			−0.0333	
Panel B		**Real Estate**			**Science and Technology**	
2000	0.1865	−0.1566	0.9649***	0.7335	−0.2729	0.8559***
2001	0.1515	−0.1018	0.9492***	0.7988	−0.2356	0.8712***
2002	0.2730	−0.1609	0.9828***	0.8238	−0.2134	0.8626***
2003	0.2362	−0.0845	0.9355***	0.8260	−0.2718	0.9174***
2004	0.2549	−0.0514	0.8030***	0.8228	−0.2351	0.8868***
2005	0.2687	−0.0139	0.5072	0.7965	−0.2735	0.9278***
2006	0.3309	0.0001	0.3382*	0.7522	−0.2210	0.9000***
2007	0.3588	0.0013	0.3562*	0.8036	−0.2158	0.8929***
2008	0.4601	−0.0482	0.5139	0.7806	−0.1689	0.7733***
2009	0.4210	0.0160	0.2545***	0.8120	−0.1945	0.9038***
Mean		−0.0569			−0.2345	
Standard Dev.		0.1170			0.2083	
25th percentile		−0.1425			−0.3436	
Median		−0.0476			−0.2074	
75th percentile		0.0363			−0.0834	

Year	Fraction of Total Market Cap in S&P	Sector Fund S&P Underweight	Fraction of Funds Underweight S&P	Fraction of Total Market Cap in S&P	Sector Fund S&P Underweight	Fraction of Funds Underweight S&P
Panel C		**Telecom**			**Utilities**	
2000	0.7563	−0.2538	0.8667**	0.8123	−0.0618	0.7143*
2001	0.7997	−0.2189	0.9474***	0.8890	−0.0956	0.8824***
2002	0.8362	−0.1951	0.8421**	0.9176	−0.1683	0.9375***
2003	0.8410	−0.2637	0.8571*	0.9245	−0.2008	0.9688***
2004	0.8530	−0.2588	0.9231**	0.9464	−0.1864	0.9118***
2005	0.8041	−0.3348	0.8462*	0.9134	−0.1961	0.8529***
2006	0.7342	−0.2872	0.8462*	0.8942	−0.1751	0.8438***
2007	0.7622	−0.3746	0.9231**	0.9167	−0.1915	0.9375***
2008	0.7468	−0.3150	0.9091*	0.8966	−0.1288	0.9000***
2009	0.8050	−0.3199	1.0000°	0.8967	−0.1519	0.9583***
Mean		−0.2716			−0.1573	
Standard Dev.		0.2124			0.1436	
25th percentile		−0.4305			−0.2389	
Median		−0.2627			−0.1266	
75th percentile		−0.1442			−0.0590	

Table 5: Over- or Underweights by Generalist Funds

This table shows holdings differences (i.e. over- or underweights) between Generalist fund portfolios and teh CRSP-value-weighted portfolio (Panels A through C) and the S&P 500 (Panel D). Each panel compares distributions of holdings in securities which are in the joint universes of all sector funds, compared with securities that are outside this set. In Panel A, these holdings differences are inverses of each other, and so we only show the first subset; everywhere else we show both. We also show hypothesis tests, testing the null that the over- or underweights between these two categories does not differ, first a t-test (negative t statistics indicate that the mean holding outside of sector universes is greater than inside), and then a K-S test, with the one-sided alternative in the direction indicated by the t test. Panel B shows the same information for S&P 500 securities, while Panel C shows this for Non-S&P 500 securities.

Panel A: Total Holdings, Differences vs. CRSP Value-Weighted

	Mean	Stdev	1st Quartile	Median	3rd Quartile
Panel-Wide Statistics					
Sector Holding Difference	0.004686	0.1417	−0.04076	0.03719	0.09177
T-test, H_0: Sector = Non-Sector, two-sided alternative			3.85***		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern: CDF_{Non-Sec} > CDF_{Sec}$			0.2947***		
Cross-Sections of Fund Lifetime Means					
Sector Holding Difference	−0.003409	0.1525	−0.01676	0.03937	0.07129
T-test, H_0: Sector = Non-Sector, two-sided alternative			−0.94		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern: CDF_{Sec} > CDF_{Non-Sec}$			0.0898***		

Panel B: S&P 500 Securities, Holding Differences vs. CRSP Value-Weighted

	Mean	Stdev	1st Quartile	Median	3rd Quartile
Panel-Wide Statistics					
Sector Holding Difference	0.02993	0.2061	−0.03087	0.08789	0.1622
Non-Sector Holding Difference	0.02309	0.07167	−0.01351	0.02256	0.06028
T-test, H_0: Sector = Non-Sector, two-sided alternative			2.58**		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern: CDF_{Non-Sec} > CDF_{Sec}$			0.356***		
Cross-Sections of Fund Lifetime Means					
Sector Holding Difference	0.0259	0.2023	−0.007212	0.0959	0.1467
Non-Sector Holding Difference	0.02148	0.05588	−0.002642	0.02798	0.05158
T-test, H_0: Sector = Non-Sector, two-sided alternative			0.63		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern: CDF_{Non-Sec} > CDF_{Sec}$			0.486***		

Panel C: Non-S&P 500 Securities, Holding Differences vs. CRSP Value-Weighted

	Mean	Stdev	1st Quartile	Median	3rd Quartile
Panel-Wide Statistics					
Sector Holding Difference	−0.02525	0.1185	−0.09989	−0.05788	0.01145
Non-Sector Holding Difference	−0.02777	0.1529	−0.1063	−0.07582	−0.01752
T-test, H_0: Sector = Non-Sector, two-sided alternative			1.07		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern: CDF_{Non-Sec} > CDF_{Sec}$			0.1088***		
Cross-Sections of Fund Lifetime Means					
Sector Holding Difference	−0.02931	0.1121	−0.09521	−0.05972	−0.003161
Non-Sector Holding Difference	−0.01807	0.1735	−0.09609	−0.07683	−0.03075
T-test, H_0: Sector = Non-Sector, two-sided alternative			−1.62		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern: CDF_{Sec} > CDF_{Non-Sec}$			0.0696*		

° : significance level < 10%. *: significance level < 5%. **: significance level < 1%. *** : significance level < 0.1%.

Panel D: S&P 500 Securities, Holding Differences vs. S&P 500

	Mean	Stdev	1st Quartile	Median	3rd Quartile
Panel-Wide Statistics					
Sector Holding Difference	−0.1836	0.2079	−0.2417	−0.1188	−0.04778
Non-Sector Holding Difference	−0.03102	0.07231	−0.06453	−0.02709	0.005772
T-test, H_0: Sector = Non-Sector, two-sided alternative			−57.09***		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern: CDF_{Sec} > CDF_{Non-Sec}$			0.4586***		
Cross-Sections of Fund Lifetime Means					
Sector Holding Difference	−0.1859	0.2117	−0.2289	−0.1129	−0.05527
Non-Sector Holding Difference	−0.03386	0.05646	−0.05667	−0.02857	−0.003619
T-test, H_0: Sector = Non-Sector, two-sided alternative			−20.72***		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern: CDF_{Sec} > CDF_{Non-Sec}$			0.5185***		

$^{\circ}$: significance level < 10%. *: significance level < 5%. **: significance level < 1%. *** : significance level < 0.1%.

Table 6: Relative Sector Weightings for CRSP Value-Weighted, S&P 500, and Generalist Funds

This table shows, for each Sector, in each year the fraction of the CRSP Value-Weighted portfolio made up of securities in this Sector, the relative over- or underweight of the S&P-500 portfolio in the Sector with respect to CRSP overall, and the cross-sectional-average relative over- or underweight of Generalist Funds in the Sector (still relative to CRSP). Due to the apparent widespread straying beyond the sector universe by Utility Funds in the latter part of the sample, we offer two alternative definitions of the *Non-Sector* universe, one with securities not in any Sector-fund universe and one which also encompasses securities only held by Utility funds. Significance stars are for a t-test testing the hypothesis that the mean sector overweight by Generalist funds in a given year is equal to the sector overweight of the S&P 500 in that year, against the two-sided alternative.

Year	**Fraction of CRSP-VW**	**S&P 500 Overweight**	**Generalist-Fund Overweight**	**Fraction of CRSP-VW**	**S&P 500 Overweight**	**Generalist-Fund Overweight**
Panel A		**Healthcare**			**Natural Resources**	
2000	0.15462	0.02140	0.01058***	0.14496	0.02943	0.02626
2001	0.14379	0.01692	0.01215	0.09629	0.00799	0.01712***
2002	0.13417	0.02379	0.01343***	0.09811	−0.00319	0.01198***
2003	0.11966	0.01779	0.01175*	0.09158	−0.00061	0.01208***
2004	0.12952	0.02447	0.01679**	0.10884	−0.00163	0.01051***
2005	0.12250	0.01902	0.02244	0.14656	−0.00311	0.00477**
2006	0.11364	0.01821	0.02066	0.16057	0.00245	−0.00278*
2007	0.11267	0.02039	0.01901	0.20964	0.01081	−0.00920***
2008	0.13774	0.02874	0.02513	0.18288	0.00931	−0.00983***
2009	0.11396	0.02869	0.02166***	0.18087	−0.00480	−0.00307
Panel B		**Real Estate**			**Science and Technology**	
2000	0.01121	−0.00860	−0.00287***	0.34029	0.02782	−0.02705***
2001	0.01498	−0.00869	−0.00265***	0.33006	0.05118	−0.00300***
2002	0.01882	−0.01084	−0.00430***	0.25970	0.05387	0.01468***
2003	0.02081	−0.01145	−0.00487***	0.26714	0.04804	0.02193***
2004	0.02434	−0.01385	−0.00782***	0.25706	0.05112	0.02718***
2005	0.02562	−0.01131	−0.00959*	0.21926	0.03737	0.03089
2006	0.02856	−0.01055	−0.01219°	0.23448	0.05343	0.04542
2007	0.01960	−0.00582	−0.00760**	0.24056	0.05530	0.04453*
2008	0.01797	−0.00511	−0.00726***	0.25134	0.06571	0.05338*
2009	0.02040	−0.00475	−0.00616	0.25637	0.07652	0.06244*
Panel C		**Telecom**			**Utilities**	
2000	0.23307	0.02026	−0.02333***	0.32958	0.06302	0.01389***
2001	0.21587	0.03080	−0.01378***	0.30147	0.06747	0.00593***
2002	0.19343	0.03733	0.01525***	0.32600	0.09847	0.02094***
2003	0.21277	0.04498	0.02029***	0.42622	0.14896	0.04288***
2004	0.13776	0.02705	0.00540***	0.44942	0.16693	0.05031***
2005	0.12955	0.02558	0.01072***	0.45706	0.18463	0.04783***
2006	0.11788	0.02952	0.00930***	0.48273	0.19188	0.05255***
2007	0.11468	0.01949	0.00724***	0.49178	0.19793	0.06244***
2008	0.10181	0.02367	0.00914***	0.53178	0.21204	0.04739***
2009	0.08485	0.02236	0.01152***	0.50643	0.23075	0.08342***
Panel D		**Non-Sector**			**Non-Sector, plus Utility-Only**	
2000	0.33932	−0.02736	0.00221***	0.40511	−0.01272	0.02001***
2001	0.31533	−0.05523	0.05931***	0.40561	−0.03032	0.06082***
2002	0.36935	−0.05451	0.00433***	0.48015	−0.01890	0.01949***
2003	0.30573	−0.08233	−0.02709***	0.49362	−0.00330	−0.00209
2004	0.28876	−0.08762	−0.04349***	0.48195	−0.00308	0.00754*
2005	0.24868	−0.09862	−0.02381***	0.46829	0.00803	0.00614
2006	0.24301	−0.10542	−0.02301***	0.47202	−0.00251	0.01358***
2007	0.23134	−0.12198	−0.04111***	0.42899	−0.03112	0.00353***
2008	0.23018	−0.14172	−0.03305***	0.45429	−0.03944	−0.01151***
2009	0.25937	−0.13794	−0.07674***	0.44545	−0.04175	−0.02748**

Table 7: Trading Activity in Sector- and Non-Sector Securities, for Generalist Funds

This table shows fractional sector trades. Panel A shows first total trading and then trading in securities which are in the joint universes of all sector funds, compared with securities that are outside this set. We also show hypothesis tests, testing the null that the trading activity between these two categories does not differ, first a t-test (negative t statistics indicate that the mean trading activity outside of sector universes is greater than inside), and then a K-S test, with the one-sided alternative to the same effect. Panel B shows the same information for S&P 500 securities, while Panel C shows this for Non-S&P 500 securities. Panel D shows distributional statistics for trades by Generalist Funds in each separate sector-fund universe.

Panel A: Total Trading

	Mean	**Stdev**	**1st Quartile**	**Median**	**3rd Quartile**
Panel-Wide Statistics					
Total Fractional Turnover	0.282	0.172	0.1624	0.2498	0.3641
Sector Fractional Turnover	0.2832	0.2842	0.1632	0.249	0.3626
Non-Sector Fractional Turnover	0.3037	0.2394	0.1492	0.2587	0.408
T-test, H_0: Sector = Non-Sector, two-sided alternative			-9.32^{***}		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern : CDF_{Sec} > CDF_{Non-Sec}$			0.0685^{***}		
Cross-Sections of Fund Lifetime Means					
Sector Fractional Turnover	0.2813	0.1017	0.2208	0.2696	0.3301
Non-Sector Fractional Turnover	0.3045	0.1848	0.2269	0.2883	0.3659
T-test, H_0: Sector = Non-Sector, two-sided alternative			-3.34^{***}		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern : CDF_{Sec} > CDF_{Non-Sec}$			0.1102^{***}		

Panel B: S&P 500 Securities

	Mean	**Stdev**	**1st Quartile**	**Median**	**3rd Quartile**
Panel-Wide Statistics					
Sector Fractional Turnover	0.2764	0.274	0.1549	0.2378	0.3498
Non-Sector Fractional Turnover	0.2988	0.2637	0.1367	0.2436	0.4023
T-test, H_0: Sector = Non-Sector, two-sided alternative			-9.87^{***}		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern : CDF_{Sec} > CDF_{Non-Sec}$			0.075^{***}		
Cross-Sections of Fund Lifetime Means					
Sector Fractional Turnover	0.2785	0.1285	0.2145	0.2591	0.322
Non-Sector Fractional Turnover	0.3136	0.3952	0.225	0.2841	0.3652
T-test, H_0: Sector = Non-Sector, two-sided alternative			-2.54^{*}		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern : CDF_{Sec} > CDF_{Non-Sec}$			0.1355^{***}		

Panel C: Non-S&P 500 Securities

	Mean	**Stdev**	**1st Quartile**	**Median**	**3rd Quartile**
Panel-Wide Statistics					
Sector Fractional Turnover	0.3699	0.4669	0.1751	0.3114	0.4924
Non-Sector Fractional Turnover	0.3582	0.4396	0.1372	0.2825	0.4923
T-test, H_0: Sector = Non-Sector, two-sided alternative			3.02^{**}		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern : CDF_{Sec} > CDF_{Non-Sec}$			0.0204^{***}		
Cross-Sections of Fund Lifetime Means					
Sector Fractional Turnover	0.3763	0.1872	0.282	0.3534	0.4381
Non-Sector Fractional Turnover	0.3673	0.2114	0.2644	0.3526	0.4365
T-test, H_0: Sector = Non-Sector, two-sided alternative			0.96		
KS-test, H_0: $CDF_{Sec} = CDF_{Non-Sec}, Altern : CDF_{Sec} > CDF_{Non-Sec}$			0.0152		

$^{\circ}$: significance level < 10%. *: significance level < 5%. **: significance level < 1%. *** : significance level < 0.1%.

Panel D: Sector-by-Sector Trading

	Mean	**Stdev**	**1st Quartile**	**Median**	**3rd Quartile**
Panel-Wide Statistics					
Healthcare	0.287	0.2149	0.1387	0.243	0.3823
Natural Resources	0.2807	0.2466	0.1272	0.2283	0.3755
Real Estate	0.232	0.7073	0	0.07247	0.3029
Science and Technology	0.3001	0.2025	0.1655	0.2628	0.3902
Telecommunications	0.3	0.3449	0.1479	0.2523	0.3945
Utilities	0.2624	0.2868	0.1429	0.2247	0.3364

Table 8: Generalist Fund Activity by Sector, Including Information on Sector Funds in the Same Family

This table shows, for each sector and year, first the median number of shares held by Generalist funds in the sector; next, the number of unique portfolios that have any positive holdings in the sector, as well as their fraction of all Generalist fund portfolios; lastly, the number of Generalist funds that have a sector fund in the family for the same sector, and the fraction of funds active in the sector that have this.

Panel A

Year	Securities Held by Generalist Funds	Generalist Funds Active in Sector	Fraction of Total	Sector Fund in Family	Fraction of Funds Active in Sector
		Healthcare			
2000	11	613	0.9777	160	0.2610
2001	12	654	0.9776	216	0.3303
2002	11	685	0.9856	265	0.3869
2003	13	720	0.9823	279	0.3875
2004	11	717	0.9808	276	0.3849
2005	13	730	0.9892	280	0.3836
2006	12	688	0.9801	246	0.3576
2007	12	715	0.9728	246	0.3441
2008	13	686	0.9648	220	0.3207
2009	12	563	0.9895	116	0.2060
		Natural Resources			
2000	12	601	0.9585	102	0.1697
2001	11	639	0.9552	114	0.1784
2002	10	672	0.9669	120	0.1786
2003	11	710	0.9686	128	0.1803
2004	12	717	0.9808	132	0.1841
2005	14	729	0.9878	142	0.1948
2006	15	689	0.9815	137	0.1988
2007	16	714	0.9714	147	0.2059
2008	17	686	0.9648	143	0.2085
2009	17	562	0.9877	116	0.2064
		Real Estate			
2000	2	293	0.4673	84	0.2867
2001	2	390	0.5830	117	0.3000
2002	3	418	0.6014	138	0.3301
2003	3	433	0.5907	150	0.3464
2004	3	452	0.6183	182	0.4027
2005	3	520	0.7046	206	0.3962
2006	3	462	0.6581	196	0.4242
2007	3	411	0.5592	198	0.4818
2008	3	409	0.5752	200	0.4890
2009	3	392	0.6889	182	0.4643

Panel B

Year	Securities Held by Generalist Funds	Generalist Funds Active in Sector	Fraction of Total	Sector Fund in Family	Fraction of Funds Active in Sector
		Science and Technology			
2000	32	618	0.9856	254	0.4110
2001	27	661	0.9880	328	0.4962
2002	24	689	0.9914	345	0.5007
2003	27	722	0.9850	352	0.4875
2004	22	720	0.9850	345	0.4792
2005	26	729	0.9878	350	0.4801
2006	24	690	0.9829	334	0.4841
2007	25	718	0.9769	330	0.4596
2008	26	691	0.9719	307	0.4443
2009	26	565	0.9930	201	0.3558
		Telecommunications			
2000	22.0	609	0.9713	67	0.1100
2001	22.0	656	0.9806	92	0.1402
2002	19.0	689	0.9914	118	0.1713
2003	13.0	716	0.9768	92	0.1285
2004	12.0	709	0.9699	89	0.1255
2005	11.0	719	0.9743	88	0.1224
2006	9.5	676	0.9630	88	0.1302
2007	10.0	702	0.9551	89	0.1268
2008	7.0	666	0.9367	76	0.1141
2009	6.0	542	0.9525	41	0.0756
		Utilities			
2000	26	619	0.9872	144	0.2326
2001	27	661	0.9880	165	0.2496
2002	36	690	0.9928	165	0.2391
2003	42	727	0.9918	200	0.2751
2004	39	727	0.9945	207	0.2847
2005	42	731	0.9905	217	0.2969
2006	43	693	0.9872	210	0.3030
2007	46	720	0.9796	213	0.2958
2008	47	692	0.9733	213	0.3078
2009	39	563	0.9895	163	0.2895

Table 9: Holdings by Sector, with Distinction whether a Sector Fund Exists in the Family, for Generalist Funds

This table shows univariate means and t-tests of differences of means summarized in dummy-variable regression models. The dependent variable is Generalist-fund fractional holding by portfolio sub-sector. In Panel A, sub-sectors are divided by sector-fund universe, and in Panel B they are divided by S&P-500 membership and sector-fund universe. Sub-sector portfolios for each Generalist fund are then stacked. The dummy variable HSF (Has Sector Fund) indicates whether at the time a trade is made in a certain sub-sector, the Generalist fund had a sector fund in that sector within the family.

Panel A: Total Sector Holding

	Coefficient	**t-statistic**
$(Intercept)$	0.146133	146.74***
HSF	0.002559	1.49
$Nat.Res$	0.002738	2.05*
$Real.Est$	−0.127021	−76.22***
$Tech$	0.162989	110.01***
$Telecom$	0.033642	25.55***
$Util$	0.370990	270.18***
$Nat.Res \times HSF$	−0.001353	−0.48
$Real.Est \times HSF$	−0.002374	−0.85
$Tech \times HSF$	−0.017502	−7.39***
$Telecom \times HSF$	0.003217	1.02
$Util \times HSF$	0.008176	3.25**
$\overline{R}^2$:	0.674	
F :	18094.78	
N :	96275	

Panel B: S&P 500 Splits

	Coefficient	**t-statistic**
$(Intercept)$	0.026293	28.87***
HSF	−0.000868	−0.56
$Nat.Res$	0.005596	4.73***
$Real.Est$	−0.009479	−5.89***
$Tech$	0.020276	15.89***
$Telecom$	0.003574	3.06**
$Util$	0.011852	9.92***
$S\&P$	0.103175	87.04***
$Nat.Res \times HSF$	0.001491	0.61
$Real.Est \times HSF$	−0.002108	−0.80
$Tech \times HSF$	0.000028	0.01
$Telecom \times HSF$	0.014962	5.43***
$Util \times HSF$	0.004449	2.07*
$Nat.Res \times S\&P$	−0.010199	−6.53***
$Real.Est \times S\&P$	−0.108219	−51.23***
$Tech \times S\&P$	0.122440	71.85***
$Telecom \times S\&P$	0.024893	16.17***
$Util \times S\&P$	0.347389	218.77***
$HSF \times S\&P$	0.002935	1.44
$Nat.Res \times HSF \times S\&P$	−0.003563	−1.10
$Real.Est \times HSF \times S\&P$	0.000170	0.05
$Tech \times HSF \times S\&P$	−0.017886	−6.55***
$Telecom \times HSF \times S\&P$	−0.021638	−5.91***
$Util \times HSF \times S\&P$	0.001447	0.50
$\overline{R}^2$:	0.7535	
F :	22464.22	
N :	168981	

Table 10: Trading Activity by Sector, with Distinction whether a Sector Fund Exists in the Family, for Generalist Funds

This table shows univariate means and t-tests of differences of means summarized in dummy-variable regression models. The dependent variable is Generalist-fund *trade* by portfolio sub-sector. In Panel A, sub-sectors are divided by sector-fund universe, and in Panel B they are divided by S&P-500 membership and sector-fund universe. Sub-sector portfolios for each Generalist fund are then stacked. The dummy variable HSF (Has Sector Fund) indicates whether at the time a trade is made in a certain sub-sector, the Generalist fund had a sector fund in that sector within the family.

Panel A: Total Sector Trading

	Coefficient	**t-statistic**
$(Intercept)$	0.289288	77.17***
HSF	0.007806	1.31
$Nat.Res$	−0.006263	−2.13*
$Real.Est$	−0.066626	−8.04***
$Tech$	0.006616	2.41*
$Telecom$	0.014505	4.70***
$Util$	−0.030637	−12.34***
$Nat.Res \times HSF$	0.000133	0.02
$Real.Est \times HSF$	0.037417	2.93**
$Tech \times HSF$	0.010124	1.93°
$Telecom \times HSF$	−0.005443	−0.64
$Util \times HSF$	0.014434	2.17*
$\overline{R}^2$:	0.0043	
F :	627.16	
N :	1576644	

Panel B: S&P 500 Splits

	Coefficient	**t-statistic**
$(Intercept)$	0.297063	216.07***
HSF	0.047015	19.91***
$Nat.Res$	0.021273	11.46***
$Real.Est$	−0.149605	−76.65***
$Tech$	0.057908	28.23***
$Telecom$	0.040005	21.91***
$Util$	0.018396	9.63***
$S\&P$	−0.025059	−12.89***
$Nat.Res \times HSF$	−0.008798	−2.39*
$Real.Est \times HSF$	0.021458	6.45***
$Tech \times HSF$	−0.023659	−7.26***
$Telecom \times HSF$	−0.029524	−7.31***
$Util \times HSF$	0.005429	1.59
$Nat.Res \times S\&P$	−0.026586	−10.13***
$Real.Est \times S\&P$	0.058679	21.26***
$Tech \times S\&P$	−0.047772	−16.47***
$Telecom \times S\&P$	−0.025565	−9.90***
$Util \times S\&P$	−0.041051	−15.20***
$HSF \times S\&P$	−0.036176	−10.83***
$Nat.Res \times HSF \times S\&P$	0.006859	1.32
$Real.Est \times HSF \times S\&P$	0.017953	3.81***
$Tech \times HSF \times S\&P$	0.032192	6.99***
$Telecom \times HSF \times S\&P$	0.025353	4.44***
$Util \times HSF \times S\&P$	0.009424	1.95°
$\overline{R}^2$:	0.0098	
F :	1355.62	
N :	3153288	

Table 11: Market Model Regressions of Sector Portfolios with and without S&P Stocks

This table shows, for each sector a market-model regression of excess returns to a value-weighted sector portfolio without S&P 500 stocks on the excess returns to a complete value-weighted sector portfolio. Excess returns are computed over a three-month US Treasury Bill rate, and all data is based on monthly returns.

	Healthcare		**Natural Resources**	
	Coefficient	**t-statistic**	**Coefficient**	**t-statistic**
α	0.005246	1.19	0.002768	1.46
β	1.174353	10.42***	1.199214	37.98***
$\overline{R^2}$:	0.4545		0.9179	
F :	108.48		1442.46	
N :	130		130	

	Real Estate		**Science and Technology**	
	Coefficient	**t-statistic**	**Coefficient**	**t-statistic**
α	0.000655	0.68	0.002428	0.92
β	0.965347	67.61***	1.349520	34.51***
$\overline{R^2}$:	0.9725		0.9022	
F :	4571.45		1190.86	
N :	130		130	

	Telecommunications		**Utilities**	
	Coefficient	**t-statistic**	**Coefficient**	**t-statistic**
α	0.000255	0.09	0.001071	0.42
β	1.150606	31.6***	1.159611	22.15***
$\overline{R^2}$:	0.8855		0.7915	
F :	998.5		490.71	
N :	130		130	

$^\circ$: significance level < 10%. *: significance level < 5%. **: significance level < 1%. *** : significance level < 0.1%.

Table 12: Distributions of Sector R-squareds for Sector Funds and Generalist Funds

This table shows cross-sectional distributions of R-squareds obtained from regressing either excess returns to sector funds on their respective sector indices, or excess returns to Generalist-fund sector sub-funds (i.e. returns to the portfolio of securities within a sector) on their respective sector indices. All fund returns used are imputed returns derived from holdings data.

	Mean	Stdev	1st Quartile	Median	3rd Quartile
Healthcare					
Sector Funds:	0.8422	0.07621	0.7861	0.8436	0.9123
Generalist-Fund Sub Funds:	0.6732	0.1322	0.6027	0.6941	0.7644
T-test, H_0: Sector-Fund R^2 = Generalist Sub-Fund R^2, two-sided alternative			14.27***		
KS-test, H_0: $CDF_{Sec} = CDF_{Generalist-Sub}, Altern : CDF_{Generalist-Sub} > CDF_{Sec}$			0.6232***		
Natural Resources					
Sector Funds:	0.8324	0.1782	0.8366	0.9015	0.9359
Generalist-Fund Sub Funds:	0.7701	0.1254	0.7071	0.7909	0.863
T-test, H_0: Sector-Fund R^2 = Generalist Sub-Fund R^2, two-sided alternative			1.86°		
KS-test, H_0: $CDF_{Sec} = CDF_{Generalist-Sub}, Altern : CDF_{Generalist-Sub} > CDF_{Sec}$			0.4811***		
Real Estate					
Sector Funds:	0.9366	0.1006	0.9505	0.9705	0.9809
Generalist-Fund Sub Funds:	0.5551	0.1889	0.4168	0.548	0.6985
T-test, H_0: Sector-Fund R^2 = Generalist Sub-Fund R^2, two-sided alternative			24.1***		
KS-test, H_0: $CDF_{Sec} = CDF_{Generalist-Sub}, Altern : CDF_{Generalist-Sub} > CDF_{Sec}$			0.8376***		
Science and Technology					
Sector Funds:	0.9064	0.07822	0.8899	0.9324	0.9479
Generalist-Fund Sub Funds:	0.7804	0.1251	0.7344	0.8077	0.8631
T-test, H_0: Sector-Fund R^2 = Generalist Sub-Fund R^2, two-sided alternative			13.68***		
KS-test, H_0: $CDF_{Sec} = CDF_{Generalist-Sub}, Altern : CDF_{Generalist-Sub} > CDF_{Sec}$			0.6052***		
Telecommunications					
Sector Funds:	0.8349	0.0802	0.7879	0.8644	0.8792
Generalist-Fund Sub Funds:	0.791	0.1298	0.7376	0.829	0.8787
T-test, H_0: Sector-Fund R^2 = Generalist Sub-Fund R^2, two-sided alternative			2.05°		
KS-test, H_0: $CDF_{Sec} = CDF_{Generalist-Sub}, Altern : CDF_{Generalist-Sub} > CDF_{Sec}$			0.3151°		
Utilities					
Sector Funds:	0.833	0.06358	0.8013	0.8419	0.8683
Generalist-Fund Sub Funds:	0.7787	0.1166	0.7348	0.8054	0.8595
T-test, H_0: Sector-Fund R^2 = Generalist Sub-Fund R^2, two-sided alternative			4.91***		
KS-test, H_0: $CDF_{Sec} = CDF_{Generalist-Sub}, Altern : CDF_{Generalist-Sub} > CDF_{Sec}$			0.2626**		

° : significance level < 10%. *: significance level < 5%. **: significance level < 1%. *** : significance level < 0.1%.