Churning Revisited: Trading Costs and Control [1]

Craig J. McCann, PhD, CFA
and
Dengpan Luo, PhD

In a previous paper we outlined the portfolio approach to assessing the excessiveness of trading in broker-customer disputes involving allegations of churning. In this paper we demonstrate that cost-to-equity ratios of more than 4 or 5% or commission to equity ratios of 2 or 3% in accounts with turnover ratios of 2 indicate excessive trading in common stock portfolios. These results are based on published finance and investment management research and stand in stark contrast to extant ad hoc suggestions for a 12% cost-to-equity guideline.

We illustrate the argument using 2001 stock returns. The analysis is completely general, applying to rising and falling markets alike. Our results depend on the variation in returns across securities, not on average returns. The same general framework can also be applied to bond portfolios and to mixed stock-bond portfolios but would yield lower cost-to-equity thresholds for those portfolios than the thresholds reported herein.

The resolution of churning cases often ultimately turns on a determination of whether the customer or the broker controlled the investment management observed in the customer's account. Traditional criteria for determining control focuses on only one aspect of investment management – the decision to buy or sell particular securities. The primary determinant of investment performance in heavily traded accounts is trading cost. Control of trading costs, not security selection, is the most critical facet of investment management in churning cases. As with their self-interest, brokers' control of customers' accounts should be presumed once the excessiveness of the trading costs is established if the broker set the level of commissions charged on the trades in the account.

Introduction

Broker-customer disputes often involve allegations that a brokerage firm and its registered representative "churned" or excessively traded a customer's portfolio in

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order to generate income for the firm and the broker without regard for the customer's best interests. At the root of churning cases is the question "Was there a reasonable probability that the securities trading would be profitable enough to cover its cost?" Proof of churning involves three elements: excessive trading, effective control by the representative, and self-interest of a registered representative.[2]

In *churning* cases, customers typically allege that the accounts were traded excessively, resulting in excessive trading costs. Brokerage firms defend high trading costs by noting that even high trading costs can be overcome in rapidly rising markets. This defense ignores the fact that once a customer is invested in securities the costs of any further trading must be covered by returns in excess of the returns that would have been earned on the securities held prior to the trading. For most accounts, trading costs greater than 5% of the average account equity per year are excessive.

Brokerage firms also defend churning cases by claiming that the customer controlled the investment management observed in an account by directing the trading activity. The traditional criteria for determining control in churning cases focuses on who controlled the *trading*, rather than on who controlled the *trading costs*. Often the only objective evidence addressing control offered are: (1) tabulations of solicited versus unsolicited trades and (2) the presence or absence of similar trading and securities in the broker's other customers' accounts. This focus on who initiated investment ideas is relevant if market timing, security selection or even trading per se determined net returns to security portfolios, but is wholly misplaced because these items do not systematically affect investment performance.[3]

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[2] See Louis Loss & Joel Seligman, *Securities Regulation* 3875 (3d ed. 1991); see also id. at 3877 ("Churning, in essence, involves a conflict of interest in which a broker seeks to maximize his or her remuneration in disregard of the interests of the customer.").

[3] Most of the variation in investment returns earned on different portfolios is explained by differences in the diversification of the portfolios across different asset classes (i.e. stocks versus bonds) and the

Brokers directly control the trading costs incurred by customers in churned accounts and these trading costs are independent of who initiated the trading idea. Brokers can frequently choose whether to charge a $100 or $1,000 commission (or markup or markdown) on a trade. Since the gross return to a trade is unaffected by the level of commission charged, the broker is equivalently choosing whether to reduce the customer's net return as a result of the trade by $100 or $1,000. The broker in these cases controls the trading process and the investment performance of the account more effectively than if he or she exercised complete discretionary control over the choice of which securities were bought and sold in the account.

Churning

Retail securities trading generates income for brokerage firms which charge explicit commissions, markups and markdowns and undisclosed commissions called "bid-ask spread" when brokerage firms buy stock from customers at "bid" prices that are lower than the "ask" prices at which the stock is simultaneously sold to other public customers.[4] These revenues to the brokerage industry are trading costs incurred by customers.

The excessiveness of trading in an account is assessed by reviewing the volume of trading using turnover ratios and the costliness of the trading using cost-to-equity ratios.

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level of diversification within asset classes across individual securities; security selection and market timing hardly matter at all. For diversified portfolios, asset allocation is all that systematically affects gross returns and asset allocation and trading costs are all that systematically affect net returns. *See* Roger Ibbotson and Paul Kaplan, *Financial Analysts Journal*, Jan-Feb,vol 56, no. 1, 2000 p.26-33, Gary Brinson, Randolph Hood and Gilbert Beebower, *Financial Analysts Journal*, July-Aug, vol 42, no 4, 1986, p.39-48, and Gary Brinson, Brian Singer, and Gilbert Beebower, *Financial Analysts Journal*, May-June, vol 47, no 3, 1991, p. 40-48.

[4] *See* Zvi Bodie, Alex Kane and Alan J. Marcus, *Investments 4th Edition* (1999) at p. 16 ("The dealer's profit margin is the "bid-asked" spread – the difference between the price at which the dealer buys for and sells from inventory") and at p. 86 ("In addition to the explicit part of the trading costs – the broker's commission - there is an implicit part – the dealer's **bid-ask spread**." (emphasis in original)).

Turnover Ratios

Turnover ratios have been used for more than 40 years.[5] They can be calculated a number of ways. The simplest turnover ratio divides total security purchases by the average equity balance or by the average value of the securities in the account, and then annualizes the turnover ratio by dividing it by the number of years covered in the analysis.

Turnover ratios have traditionally been evaluated using crude rules of thumb. One such rule is the so-called "2-4-6 test" which holds that as the turnover ratio observed in the account increases from 2 to 6 the inference of churning grows from an indication to a presumption. There is no scientific rationale for this simple rule of thumb.

More recently the turnover ratios observed in retail accounts have been assessed by reference to the distribution of turnover ratios observed in mutual funds.[6] New investment cash flows to mutual funds with good performance. Mutual fund managers who are compensated directly or indirectly based on performance have incentives to only trade and incur trading costs that they believe will increase the net performance of managed portfolios. The incentives in the mutual fund industry therefore are such that the observed turnover ratios should be about right to achieve the funds' stated objectives. If the turnover ratio in an account is not significantly different from the average turnover ratio for mutual funds with similar investment objectives, then the observed turnover ratio does not provide evidence that the account was churned.[7]

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[5] *See* R.H. Johnson Co., 36 S.E.C. 467 (1956), R.H. Johnson v. S.E.C. 231 F.2d 528 (1956), and *In re* Looper and Co., 38 S.E.C. 294 (1958).

[6] *See* Winslow, Donald A. and Seth C. Anderson, "A Model for Determining the Excessive Trading Element in Churning Claims," *N. C. L. Rev.* 327 (1990) and McCann, Craig J., "Economic Analysis in Broker Customer Disputes Involving Allegations of Churning," *Journal of Legal Economics* 9:1 Spring/Summer 1999.

[7] This approach may be biased against finding excessive trading. The optimal level of trading to achieve any given investment objective should be higher in mutual funds than in retail brokerage accounts, because institutional investors pay much lower trading costs than retail customers. In

Respondents typically calculate turnover ratios in an account with a margin balance based on the average value of the securities rather than on the average equity in the account. Since the total value of the securities will exceed the equity in a margin account, turnover ratios calculated based on total securities value will usually be less than turnover ratios calculated based on account equity.

Neither the total value of the securities in a margin account nor the account equity is the clearly correct choice for the denominator in the turnover calculation. Theoretically, turnover should be calculated based on the average value of the securities *traded* not based on the average value of the securities *held* or on the *average equity.* For accounts with significant cash holdings or in which individual holding periods vary greatly, turnover ratios should be calculated based on the part of the portfolio actually traded.

For example, imagine an account has twenty-five securities and that twenty-four are held while the twenty-fifth security is switched out every two weeks for a year. The account would have been excessively traded even though a conventional turnover calculation would yield a turnover ratio of 1. Calculating a turnover ratio based on the value of the securities traded - that is, excluding the twenty-four securities held throughout the year - yields a turnover in this example of 26, which more accurately reflects the standardized level of trading.[8]

Table 1 provides descriptive statistics for mutual fund turnover ratios. Ignoring additional fund classes or feeder funds, there were 4,581 distinct mutual fund portfolios reported by Morningstar as of December 31, 1998. The average turnover ratio for all funds was 0.94 or 94% and the standard deviation across mutual

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addition, while the potential conflict of interest over commissions is much less evident in the mutual fund industry, some institutional investors trade clients' portfolios to generate soft dollars.

[8] Even this improved turnover ratio has theoretical problems. A full exploration of turnover ratios and other indications of trading activity is beyond the scope of this paper but will be offered at some later date.

fund turnover ratios was 1.12 or 112%.[9] The distribution of turnover ratios across equity and bond funds is plotted in Figure 1. Almost all turnover ratios are less than 2 or 200%.

Table 1
1998 Mutual Fund Turnover Ratios
Select Categories

| | Number of Funds | Turnover Ratios | | Probability of Turnover as High as | | |
		Average	Standard Deviation	2	4	6
Overall	4581	0.94	1.12	11.7%	3.2%	1.2%
Asset Class						
Equity	1927	0.84	0.99	10.2%	2.5%	0.9%
Bond	2277	1.03	1.13	13.1%	4.1%	1.8%
Mix	377	0.97	0.94	11.9%	2.8%	0.9%
Select Categories						
Growth	656	0.91	0.87	11.3%	2.7%	1.0%
Growth and Income	338	0.65	0.70	8.5%	2.5%	1.1%
Small Company	307	0.86	0.73	7.1%	0.9%	0.2%
Balanced	195	0.89	0.76	9.7%	1.8%	0.5%

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[9] Standard deviation is a measure of how much the observed values deviate from the average value of a distribution. 70% of the observed values lie within one standard deviation of the average value, 95% lie within two standard deviations, and 99.7% lie within three standard deviations of the average value. *Weinstein's Evidence Reference Manual on Scientific Evidence Special Supplement* 1995, The Federal Judicial Center provides accessible introductions to statistical analysis. For our purposes, the chapter entitled "Reference Guide on Statistics" by David H. Kaye and David A. Freedman at p. 331 is especially helpful.

Figure 1
Distributions of 1998 Mutual Fund Turnover Ratios
(Stock Funds and Bond Funds)
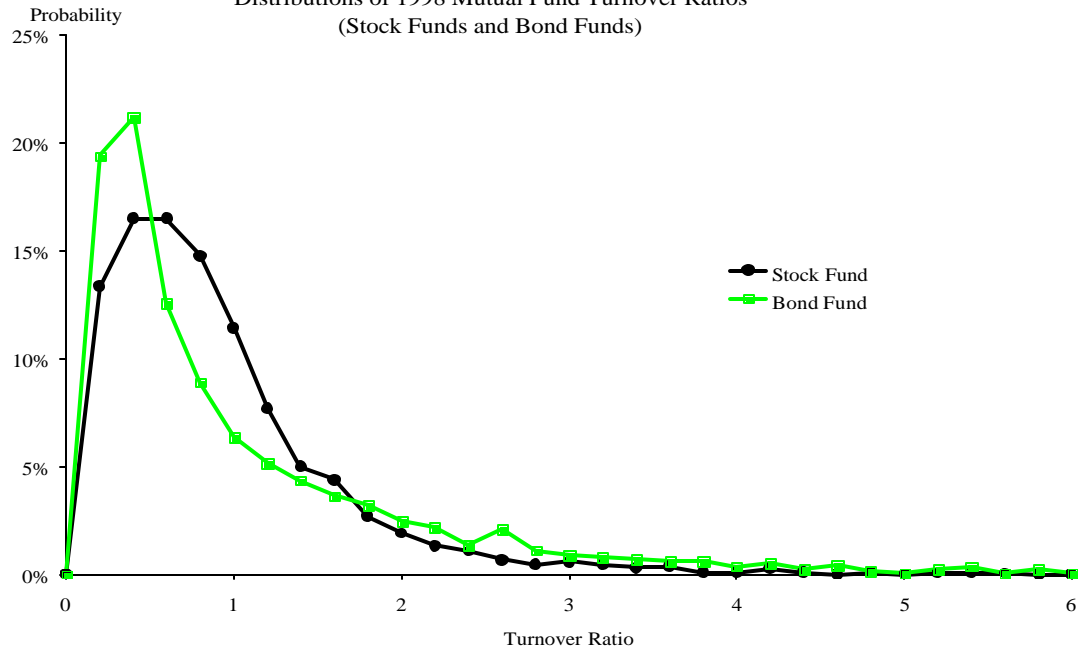
Courts have generally held that an observed value of more than two standard deviations different from the average value of a distribution is evidence that the observed value was not generated by the same factors generating the distribution.[10] In our context, if the turnover ratio observed in a retail account is more than two standard deviations greater than the average mutual fund turnover ratio we can conclude that different considerations motivated the trading observed in the retail account than motivates trading by professional investment managers in the mutual fund industry.

We estimate how likely a turnover ratio is to be observed if an account is being managed to achieve the investor's stated objectives by determining how likely

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[10] For instance, in employment discrimination cases, if the representation of members of a protected class is not at least two standard deviations different than the representation of members of the population as a whole, courts have not found evidence of discrimination. *See* Paul Meier, Jerome Sacks and Sandy L. Zabell, "What Happened in *Hazelwood:* Statistics, Employment Discrimination and the 80% Rule," in *Statistics and the Law* eds. Morris H. DeGroot, Stephen E. Fienberg and Joseph B. Kadane, Wiley Classics Edition 1994.

it is to observe a turnover ratio as high in mutual funds with similar stated objectives.[11] We then apply the general legal standard for statistical reliability to churning cases as follows. If the likelihood of observing a turnover ratio in a population of well managed portfolios as high as the observed turnover ratio in the retail account is less than 2.5% we conclude that the retail account was not managed in the customer's best interests.[12]

Based on the distribution of turnover ratios reported in Table 1, there is only a 2.5% chance of observing a turnover ratio greater than 4 in a stock portfolio that was managed in the best interests of clients in 1998. Turnover ratios of 4 or greater are thus sufficiently rare in the distribution of stock mutual fund turnover ratios that they constitute strong evidence that the account was traded excessively.

While turnover ratios are simple, they do not directly measure trading costs or likely trading profits – which determine the likelihood that trading will benefit the customer. A turnover ratio of three or four times per year for a mutual fund involves lower total trading costs, and therefore is more reasonable, than a turnover ratio of only two times per year in a retail account.

Cost ratios

Cost ratios are better than turnover ratios as indicators of churning because they directly measure the costliness of trading. Properly interpreted, they provide sound guidance as to whether the trading could reasonably have been expected to benefit the customer. Cost ratios measure the fraction of an investment consumed by

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[11] While we use two standard deviations as the cutoff for finding excessive trading, statistical significance is a relative concept. The greater the difference between (1) the observed turnover ratio and (2) the average turnover ratio of well managed accounts expressed in standard deviations, the greater the likelihood that the account was not managed in the best interests of the customer.

[12] Turnover ratios are not "normally" distributed because they cannot take on values below zero and because there are a few large ratios. The normal distribution is a symmetrical distribution and can be completely described by its average value and its standard deviation. Turnover ratios are approximately *lognormally* distributed and the probabilities reported in Table 1 are calculated using the average and standard deviation of the natural logarithm of the mutual funds' turnover ratios. *See* Mark Kritzman, "What Practitioners Need to Know … … About Lognormality," *Financial Analysts Journal* 10 July-August (1992).

trading costs. Roughly speaking, annualized cost ratios yield the portfolio securities' breakeven rate of return; the account will show a profit if, and only if, the securities' gross returns exceed the cost ratio.

Cost ratios are calculated by dividing the total fees, commissions, markups and markdowns, bid-ask spread and margin interest in an account by the average equity or the average value of the securities. As with turnover ratios, claimants typically use the average equity and respondents typically use the average value of the securities held in the account.[13]

Since cost ratios are traditionally evaluated in light of the range of likely returns to securities held in an account, the average value of the securities in the account is a better choice for the denominator than the average equity. Imagine that a margin account holds securities worth $1,000,000, exactly twice the accountholder's $500,000 equity in the account, and that $50,000 in trading costs are incurred. Since investment returns are earned on $1,000,000 worth of securities - not just on the $500,000 in equity - the breakeven rate of return on the securities is 5%. Calculating a cost ratio based on the equity yields a ratio of 10%, which is clearly not the rate of return the $1,000,000 worth of securities need to earn in order for the account to break even.

Unfortunately, the simplistic break-even interpretation discussed above and the focus on average returns have led to the widespread misuse of cost ratios. For example, citing the long run return to stocks one commentator proposed a 12% cost to equity threshold for determining excessiveness.

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[13] Also, as with turnover ratios, neither the total value of the securities in a margin account nor the account equity is the clearly correct choice for the denominator. Theoretically, cost ratios should be calculated based on the average value of the securities *traded* not based on the average value of the securities *held* or on the *average equity*.

> … A reasonable guideline or benchmark would thus be useful to the courts, as well as to academics and practitioners who deal with individual investor issues.
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> One approach to the solution of this problem is to relate the maximum allowable [cost to equity] ratio to the average market rate of return on securities. … It is well known that the long run average annual rate of return on common stocks is about 12% (Ibbotson Associates, 1996). … If an account can be generally labeled an investment account, and if trading costs are imposed in excess of about 12%, then there is no reasonable expectation that the account will consistently earn a positive rate of return. In such instances, trading costs are excessive, and a broker in control of such an account should be viewed as having traded the account excessively.[14]

The misguided focus on gross returns to security portfolios when assessing trading costs is a function of the confusion between market gains and trading gains described eloquently over 30 years ago.

> … If the market moves up then investors in general will benefit from the market movement whether they are trading securities or merely holding what they have. But if they are trading while the market moves up, they are very likely to attribute the increase in their wealth to their trading activity rather than to the fact that the market has moved up. This is what I mean by the confusion of trading gains with market gains.[15]

A correct assessment of cost ratios requires recognition that the expected return to trading is equal to the difference between the expected return to the portfolio

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[14] Stewart L. Brown, "Churning: Excessive Trading in Retail Securities Accounts," Financial Services Review, 1996 5(1): 43-56 at p. 54.

[15] Bagehot, Walter (pseudonym), "The Only Game in Town," *Financial Analysts Journal* March-April (1971) is one of the best papers ever written in the investment management literature. Bagehot goes on to explain that the continuing confusion between market gains and trading gains is the reason the investing public consistently and continuously loses to industry professionals and informed traders. The confusion - and the losses - have continued for another thirty years.

after the suspect trading and the expected return on the securities held before the suspect trading.[16]

To demonstrate how quickly even small trading costs eliminate the chance of making money from trading, we formed market capitalization weighted portfolios of 1, 2, 5, 10, 20, 30 and 40 securities drawn randomly from NASDAQ, NYSE and AMEX securities with price and volume data available on December 29, 2000.[17] For each portfolio size, we generated 5,000 portfolios and calculated the returns to each portfolio for 2001. Table 2 reports the average return as well as the standard deviation in the cross section of returns for the 5,000 portfolios in each category during 2001.

Table 2
Average and Standard Deviation of Portfolio Returns

	1 Stock	2 Stocks	5 Stocks	10 Stocks	20 Stocks	30 Stocks	40 Stocks
Average	-11.1%	-11.1%	-11.3%	-11.4%	-11.5%	-11.5%	-11.5%
Standard Deviation	33.5%	24.4%	15.4%	11.1%	7.9%	6.4%	5.6%

Consistent with portfolio theory, the standard deviation across the portfolios decreases dramatically with the number of securities included in the portfolios. When portfolio size increases from 1 security to 5 securities, the standard deviation drops

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[16] This point is developed more fully in McCann, Craig J., "Economic Analysis in Broker Customer Disputes Involving Allegations of Churning," *Journal of Legal Economics* 9:1 Spring/Summer 1999 (reprinted in Securities Arbitration 1999 Handbook PLI and available at www.investmentdisputes.com).

[17] December 29, 2001 was the last trading day in 2000. In order to make the portfolios of different sizes track the market, we draw securities according to the probabilities weighted by their market capitalizations, i.e. securities with higher market capitalizations will have higher probabilities to be drawn from the sample. The securities in the portfolio then are equally weighted.

more than 50%. When portfolio size increases to 20 securities, the standard deviation drops almost another 50%.[18]

Table 2 demonstrates that the more diversified a portfolio is the more similar its returns are to similarly diversified portfolios. That is, the returns to a diversified 20-stock portfolio are unlikely to be very different from the average return to all diversified 20-stock portfolios. In fact, the returns to roughly 70% of all 20-stock portfolios were within 8% of the average return to 20-stock portfolios.

We use these results and similar results below to estimate the probability of overcoming different levels of trading costs as follows. In Table 2 we note that the standard deviation of returns to 20-stock portfolios in 2001 was 7.9%. Approximately 15% of the portfolios had returns more than 7.9% greater than the average return (and 15% of the portfolios had returns more than 7.9% less than the average return). Therefore, there was only a 15% chance that trading costs of 8% per year could have been overcome in a 20-stock portfolio. The probability distributions for each sized portfolio relative to the average return are plotted in Figure 2.

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[18] This observation is related to, but slightly different than, the oft-cited fact that the standard deviation of a portfolio's time series return declines as the number of securities included increases.

Figure 2
Distributions of Portfolios' 2001 Annual Returns
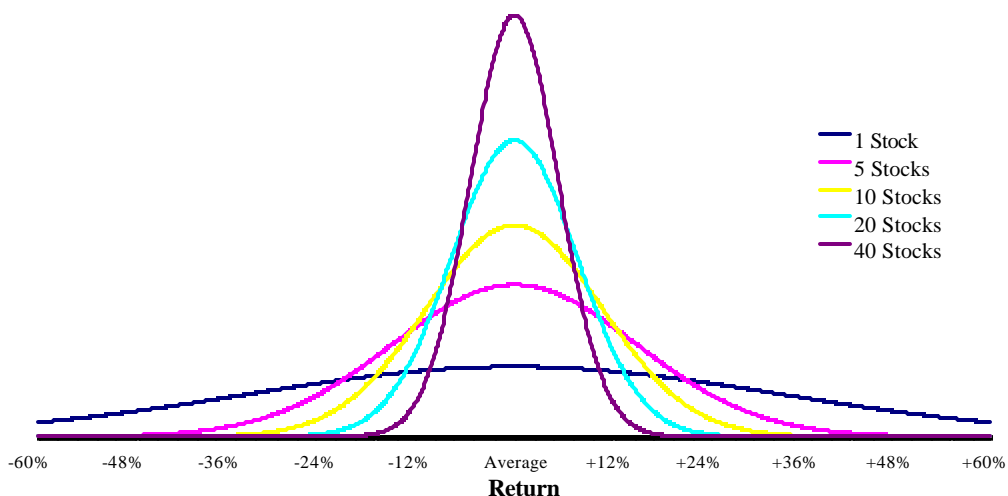
The frequency with which portfolios of varying sizes outperformed the average portfolio during 2001 by enough to cover various levels of trading costs are presented in Table 3. Only 32.6% of diversified 10-stock portfolios outperformed the average 10-stock portfolio by 5%, and only 18.3% outperformed the average by 10%.

Table 3
Probability of Covering Trading Cost

Trading Cost	1 Stock	2 Stocks	5 Stocks	10 Stocks	20 Stocks	30 Stocks	40 Stocks
5%	44.1%	41.9%	37.3%	32.6%	26.3%	21.8%	18.4%
10%	38.3%	34.1%	25.8%	18.3%	10.3%	6.0%	3.6%
15%	32.7%	27.0%	16.5%	8.8%	2.9%	1.0%	0.3%
20%	27.5%	20.7%	9.7%	3.5%	0.6%	0.1%	0.0%

The chances of covering any given level of trading costs declines as the number of securities in the portfolio increases because, as we saw earlier, more diversified portfolios have more similar returns than less diversified portfolios. While 32.6% of 10-stock portfolios had returns that were 5% greater than the average return, only 21.8% of the 30-stock portfolios had returns that were 5% greater than the average portfolio.

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Our analysis demonstrates that it is unlikely that trading costs of 5% can be covered in diversified portfolios but still overstates the true likelihood of overcoming each level of trading costs, because our analysis assumed that the entire portfolio is turned over on January 1, 2001 and then is held for the entire year. In reality, portfolios are turned over gradually over time. Since gradually traded portfolios have many common securities at different points in time, the returns to a traded portfolio will be more similar to the returns to the original portfolio than we modeled above.

To demonstrate how the gradual turnover in an account reduces the chance of covering trading costs, we assume that the initial portfolios are held for the first six months of 2001 and are then completely turned over and held for the second six months. The results for portfolios of 1, 2, 5, 10, 20, 30 and 40 stocks and the corresponding probabilities of covering trading costs are presented in Table 4 and Table 5.

Table 4
Average and Standard Deviation of Portfolio Returns – Turned Over Mid-year

	1 Stock	2 Stocks	5 Stocks	10 Stocks	20 Stocks	30 Stocks	40 Stocks
Average	-11.7%	-11.8%	-12.1%	-12.3%	-12.4%	-12.4%	-12.4%
Standard Deviation	18.7%	13.6%	8.7%	6.2%	4.4%	3.6%	3.1%

Table 5
Probability of Covering Trading Cost – Turned Over Mid-year

Trading Cost	1 Stock	2 Stocks	5 Stocks	10 Stocks	20 Stocks	30 Stocks	40 Stocks
5%	39.5%	35.7%	28.4%	21.1%	12.7%	8.0%	5.3%
10%	29.7%	23.2%	12.6%	5.4%	1.1%	0.3%	0.1%
15%	21.1%	13.6%	4.3%	0.8%	0.0%	0.0%	0.0%
20%	14.3%	7.1%	1.1%	0.1%	0.0%	0.0%	0.0%

These scenarios approximate the gradual turnover observed in retail accounts. Comparing results in Table 5 with those in Table 3, we find that the chance of covering any given level of trading costs is dramatically smaller if the initial portfolio

is turned over gradually over time. The most striking result is that there is only a 1-in-5 chance that trading in a 10-stock portfolio could cover annual trading costs of 5% and only a 1-in-20 chance that trading in a 10-stock portfolio could cover annual trading costs of 10%.

The trading cost thresholds suggested above include bid-ask spread costs, so an estimate of bid-ask spread costs should be included in the cost-to-equity ratio calculated for a retail account. Bid-ask spread costs for a purchase and matched sale average more than 1% of the average value of the purchase and sale.[19] A good estimate of the bid-ask spread cost therefore is 1% multiplied by the turnover ratio observed in the account.[20] The correct assessment of trading costs incorporates bid-ask spread into cost to equity ratio, based either on costly original empirical work as in equation 1) or based on the vast published empirical work as in equation 2).

Equation 1)
$$\text{Cost}-\text{to}-\text{Equity} = \frac{\text{Commissions, Markups, Bid - Ask Spread, Margin Interest}}{\text{Average Equity}} \div \frac{\text{Months in Period}}{12}$$

Equation 2)
$$\text{Cost}-\text{to}-\text{Equity} = \left(\frac{\text{Commissions, Markups, Margin Interest}}{\text{Average Equity}} \div \frac{\text{Months in Period}}{12}\right) + AnnualTurnover \times 1\%$$

Whichever of these formulations is used, an account with a turnover of 2 and a commission to equity ratio of as little as 2 or 3% should be considered excessively traded. These results are consistent with observed trading costs in the mutual fund

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[19] *See* Hendrik Bessembinder and Herbert M. Kaufman, "A Comparison of Trade Execution Costs for NYSE and NASDAQ-Listed Stocks," *Journal of Financial and Quantitative Analysis*, September 1997, vol. 32, no. 3 esp. p. 296 ("For the full sample, quoted half spreads are 0.575% [ie. 1.15% for a round-trip] on the NYSE compared to 0.820% [ie. 1.64%] on NASDAQ."). *See* also Brad M. Barber and Terrence Odean, "Trading is Hazardous to Your Wealth: The Common Stock Investment Performance of Individual Investors," *The Journal of Finance* April 2000 vol. LV, no. 2 pp. 773-803 esp. at p. 780 ("The average purchase costs an investor 0.31 percent, and the average sale costs an investor 0.69 per cent in bid-ask spread."). *See* also "Report on the Comparison of Order Executions Across Equity Market Structures," Office of Economic Analysis, *United States Securities and Exchange Commission* January 8, 2001 and the literature cited therein.

[20] The bid-ask spread can be estimated more precisely by applying the average spread within appropriate market capitalization deciles. It can also be calculated quite accurately using trade and quote data available from the NYSE http://www.nyse.com/marketinfo/marketinfo.html

industry where stock mutual funds incur average commission-to-equity ratios of less than 0.30% per year.[21] These full time professional money managers know that they cannot cover a tiny fraction of the trading costs incurred in retail brokerage accounts.

Extensions

Our results depend on the volatility of individual stock returns and on the covariance of returns across stocks and portfolios of stocks but not at all on the general direction of the market.[22] All that matters to our results is the variation in returns across portfolios. This fundamental point suggests two further considerations.

The trading in most retail accounts will be concentrated in a particular investment style. For instance, the securities passing through an account may be mostly technology stocks, value stocks or growth stocks. The stocks observed in retail accounts will be small in number relative to the universe of stocks we analyzed and the variation in returns across these stocks will be small relative to variation in returns across all stocks.[23] Applying our general framework to the stocks traded in a typical account will therefore lead to even lower estimated chances of overcoming trading costs.

Our analysis has focused on the returns to common stock. There is much less cross-sectional variation in the returns to bonds than in the returns to stock because stock holders receive the residual cash flows after bondholders received their fixed payments. Our theoretical framework and empirical analysis can be readily applied to bonds and would yield cost-to-equity thresholds of at most 1%.

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[21] *See* M. Livingston and E. S. O'Neal, "Mutual Fund Brokerage Commissions," *Journal of Financial Research*, vol. 19, no. 2, Summer 1996, 273-292. *See* also Chalmers, John M.R., Roger M. Edelen and Gregory B. Kadlec, "An Analysis of Mutual Fund Trading Costs," working paper, 1999.

[22] There is some evidence that individual stocks have become more volatile and that covariances have declined slightly during the 1990s. *See* John Y. Campbell, Martin Lettau, Burton G. Malkiel and Yexiao Xu, "Have Individual Stocks Become More Volatile? An Empirical Exploration of Idiosyncratic Risk," *The Journal of Finance* vol. 56, no. 1, February 2001.

[23] Mutual fund returns are more similar within prospectus objective categories than across categories as a result of this clustering.

Traditional Control Analysis

Traditional analysis of control focuses on whether the broker or customer selected the securities to buy and sell and which to hold.

There are several factors that indicate differing levels of control. Brokers with written discretionary trading authority from the client and who exercise that discretion are usually found to control the account. A broker may not have explicit written trading authorization but may nonetheless exercise discretion if the customer allows the broker to place trades without consulting with the customer. Evidence of such control includes trades in the customer's account when the customer is out of the country or during periods when the broker and the customer communicated with less frequency than the trades in the account.

Customers who accept virtually all recommendations made by a broker and bring few, if any, trading ideas to the broker may have effectively given control to the broker. For this reason, arbitration panels usually consider the number of trades initiated by the broker (solicited trades) versus the number of trades initiated by the customer (unsolicited trades).[24] Since the broker identifies the trade as solicited or unsolicited, this distinction may not be a reliable indicator of control in cases where the broker is accused of self-interested misconduct. Similar trading and securities in the broker's other customers' accounts may indicate that, however the trades in the claimant-customer's account were designated, the broker initiated the investment ideas. Likewise, the presence of similar trading and securities in the complaining customer's other accounts may indicate that the customer initiated the investment ideas.[25]

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[24] Some brokerage firms require that trades be marked as solicited even if the customer brought the idea to the broker if the broker discusses the merits of the idea before placing the order.

[25] It is possible that the customer not only followed the broker's advice in the subject account but also in the customers' other accounts. It is also possible, although less plausible, that the broker implemented ideas brought to his attention by the customer in other customers' accounts.

Sophistication and investment objectives are also relevant to the traditional approach to assessing control with its focus on suitability. Sophisticated investors are more likely to appreciate the investment risks undertaken than unsophisticated investors and are therefore better able to independently evaluate the advice given and actions taken by the broker. Investors with aggressive objectives are more likely to knowingly invest in leveraged or concentrated portfolios in search of higher returns than investors with more conservative objectives. A leveraged or concentrated portfolio is therefore more likely to have been acquired with the informed consent of an aggressive investor than it is to have been acquired with the informed consent of a conservative investor. Sophisticated or aggressive investors may none the less grant a broker control over an account.

Control of Trading Costs is What Matters

The factors just reviewed – written discretion, frequency of solicited versus unsolicited trades, patterns of similar investing, investor sophistication and objectives – are relevant to control in suitability cases because they focus on the risks and expected returns of various investments. These factors have little to do though with the central issue in churning cases, i.e. the excessiveness of trading costs incurred given the likely financial benefits to the customer. The only consideration in churning cases should be who controlled the *trading costs* incurred in the customer's account.

Prudent Investment Professionals Control Trading Costs

Investors incur research costs to generate investment ideas and trading costs to implement those ideas. Prudent investors control both types of trading costs, incurring only those research costs that are likely to generate positive net returns and minimizing the trading costs incurred to execute chosen ideas.

Churning cases are focused on the trading costs incurred by investors in retail brokerage accounts. The trading costs incurred by these retail investors are all execution costs.[26]

Brokers Subject to Churning Claims Control Costs Incurred by the Customer

In churning cases, brokers charge hundreds or even thousands of dollars on trades on which they had the ability to charge much lower commissions. Brokers defend $1,500 commissions as discounted from "list" rates even though the broker had the ability to charge $50. Clearly the brokerage firm in these cases does not present to the customer the option to execute the trade at $50 rather than $2,000. When the broker decides whether to charge the customer $50, 750 or $1,500 he or she effectively takes out the customer's checkbook and writes the brokerage firm a check. Since the broker represents himself or herself to be a trustworthy professional and has an undisclosed ability to charge commissions within a broad range (and receives a share of the check written) this presents an extraordinary conflict-of-interest. Even in cases of unsolicited trades, the broker and brokerage firm control the trading costs if they exercise discretion over how large a check to write and do not inform the customer of this material fact.

Conclusion

Our research demonstrates that cost-to-equity ratios of 5% in a retail account trading common stock are excessive. This threshold for cost to equity ratios is calculated including bid-ask spread costs. If the bid-ask spread is not directly calculated it should be estimated by multiplying the number of turnovers per year in

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[26] Full-service brokerage firms often claim that they charge high commissions because of the quality of their research ideas. This defense is not supported by the published evidence that research ideas disseminated to retail investors has de minimus investment value although it clearly has enormous marketing value. (Cite and discuss the literature showing that analyst recommendations don't generate positive alphas.)

the account by 1%. Cost to equity ratios of 2 or 3% in accounts with turnover ratios of 2 therefore indicate excessive trading.

Brokers who hold themselves out as financial advisors represent that they are knowledgeable professionals. True investment professionals know that they cannot overcome more than one or two percentage points in trading costs with their trading ideas and never incur trading costs in excess of what is necessary to capitalize on their investment idea.

The broker should be found to have controlled the account in cases where the broker and brokerage firm controlled the commissions and markups and markdowns charged if the trading costs are found to be excessive.