

Rates of Return of Broker-Sold and Direct-Sold Mutual Funds

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Advanced Analytical Consulting Group, Inc.

Karthik Padmanabhan, MBA, MS
312-551-9001
karpad@aacg.com

Constantijn Panis, PhD
213-784-6400
stanpanis@aacg.com

Timothy J. Tardiff, PhD
617-827-4043
timtardiff@aacg.com

ABSTRACT

The U.S. Department of Labor (DOL) is analyzing historical mutual fund returns to measure the performance of funds sold directly to investors compared to funds sold via a broker-dealer. Using data from Morningstar, a widely used source of research on mutual funds, the DOL is measuring yearly performance from 1980 to 2015 for two asset types – domestic equities and international equities.

Advanced Analytical Consulting Group (AACG) has independently replicated the results obtained by the DOL. In this report we discuss the effort, the data acquisition, analysis, results and potential data issues that may affect the findings.

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1. INTRODUCTION

The U.S. Department of Labor (DOL) is performing analysis on Morningstar data to measure relative performance between two groups of mutual funds. Advanced Analytical Consulting Group (AACG) provided assistance by independently replicating the results obtained by DOL and highlighting potential data issues that influence the results. This document discusses AACG's work on this task.

2. DESCRIPTION

The DOL is measuring the yearly performance from 1980 to 2015 of mutual funds sold by broker-dealers relative to mutual funds that are directly sold, for two asset types—domestic equities (including sector funds) and international equities. DOL obtained Morningstar data for this effort through the Morningstar Direct product offering. Morningstar is one of the best known sources for research on mutual funds.

3. DATA ANALYSIS

Data Acquisition

The data used by AACG were retrieved using the Morningstar Direct product offering. Morningstar Direct allows a user to retrieve specific data elements for a group of mutual funds and export the results to Microsoft Excel.

The following search criteria were used to retrieve data for the two asset types. The checkbox for “Only Surviving Investment” was left unchecked to include data for funds that are no longer active.

Figure 1. Domestic Equity Open-End Funds (1 of 3)

Morningstar Direct -- Open End Funds

Open Insert Delete Clear All Export PDF Save As Feedback

	Rel	(	Field Name	Operator	Value	)
1	---		Domicile	=	United States	
2	And	(	Global Category	=	US Equity Large Cap Blend	
3	Or		Global Category	=	US Equity Large Cap Growth	
4	Or		Global Category	=	US Equity Large Cap Value	
5	Or		Global Category	=	US Equity Mid Cap	
6	Or		Global Category	=	US Equity Mid/Small Cap	
7	Or		Global Category	=	US Equity Small Cap	)
8						
9						
10						

View Field Name:
☒ By Category
☐ Alphabetically

Include:
☐ Only Surviving Investments
☐ User Defined Primary Class Only

Items Searched: 0
Items Found: -

Run Search

Help OK Cancel

Figure 2. Domestic Equity Open-End Funds (2 of 3)

Morningstar Direct -- Open End Funds

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	Rel	(	Field Name	Operator	Value	)
1	---		Domicile	=	United States	
2	And	(	Global Category	=	Communications Sector Equity	
3	Or		Global Category	=	Consumer Goods & Services Sector	
4	Or		Global Category	=	Energy Sector Equity	
5	Or		Global Category	=	Financials Sector Equity	
6	Or		Global Category	=	Healthcare Sector Equity	
7	Or		Global Category	=	Industrials Sector Equity	
8	Or		Global Category	=	Natural Resources Sector Equity	
9	Or		Global Category	=	Other Sector Equity	
10	Or		Global Category	=	Precious Metals Sector Equity	

View Field Name:
☒ By Category
☐ Alphabetically

Include:
☐ Only Surviving Investments
☐ User Defined Primary Class Only

Items Searched: 0
Items Found: -

Run Search

Help OK Cancel

Figure 3. Domestic Equity Open-End Funds (3 of 3)

	Rel	(	Field Name	Operator	Value	)
11	Or		Global Category	=	Real Estate Sector Equity	
12	Or		Global Category	=	Technology Sector Equity	
13	Or		Global Category	=	Utilities Sector Equity	)
14						
15						
16						
17						
18						
19						
20						

View Field Name:
☒ By Category
☐ Alphabetically

Include:
☐ Only Surviving Investments
☐ User Defined Primary Class Only

Items Searched: 0
Items Found: -

Run Search

Help OK Cancel

Figure 4. International Equity Open-End Funds

	Rel	(	Field Name	Operator	Value	)
1	---		Domicile	=	United States	
2	And	(	Global Category	=	Global Equity	
3	Or		Global Category	=	Global Equity Large Cap	
4	Or		Global Category	=	Global Equity Mid/Small Cap	
5	Or		Global Category	=	Emerging Markets Equity	)
6						
7						
8						
9						
10						

View Field Name:
☒ By Category
☐ Alphabetically

Include:
☐ Only Surviving Investments
☐ User Defined Primary Class Only

Items Searched: 0
Items Found: -

Run Search

Help OK Cancel

The following 16 data fields were retrieved from each search query.

Field Name	Morningstar Description and Calculation Method
Name	The name of the investment.
Ticker	The identifier under which a security trades on an exchange.

Field Name	Morningstar Description and Calculation Method
Morningstar Category	In an effort to distinguish funds by what they own, as well as by their prospectus objectives and styles, Morningstar developed the Morningstar Categories. While the prospectus objective identifies a fund's investment goals based on the wording in the fund prospectus, the Morningstar Category identifies funds based on their actual investment styles as measured by their underlying portfolio holdings (portfolio and other statistics over the past three years). See specific category name for further details (e.g., "Category - Large Value").
Inception Date	Date on which the security is first offered.
Net Assets Date	The as of date for the fund share class' net assets.
Net Assets – Share Class	The net assets of the mutual fund, recorded in unit of base currency. Net-asset figures are useful in gauging a fund's size, agility, and popularity. They help determine whether a small company fund, for example, can remain in its investment-objective category if its asset base reaches an ungainly size.
Fund Size Date	The as of date of fund size (asset under management) of a fund.
Fund Size	The total amount of money managed as a standalone portfolio across share classes/subaccounts. Fund Size is useful in gauging a product's size, agility, and popularity. This can be greater than or equal to the share class/subaccount net assets. (They will be equal if only one share class is offered or the fund only appears in one policy).
Annual Report Net Expense Ratio	The percentage of fund assets used to pay for operating expenses and management fees, including 12b-1 fees, administrative fees, and all other asset-based costs incurred by the fund, except brokerage costs. Fund expenses are reflected in the fund's NAV. Sales charges are not included in the expense ratio. The expense ratio for fund of funds only includes the wrap or sponsor fees, and does not include the underlying fund fees.
Annual Report Gross Expense Ratio	The Gross Expense Ratio represents the total gross expenses (net expenses with waivers added back in) divided by the fund's average net assets. If it is not equal to the net expense ratio, the gross expense ratio portrays the fund's expenses had the fund not waived a portion, or all, of its fees. Thus, to some degree, it is an indication of fee contracts. Some fee waivers have an expiration date; other waivers are in place indefinitely.
12b-1 Fee	The maximum annual charge deducted from fund assets to pay for distribution and marketing costs. Although usually set on a percentage basis, this amount will occasionally be a flat figure. Only active 12b-1 plans are represented here. This information is

Field Name	Morningstar Description and Calculation Method
	taken directly from the fund's prospectus. (Morningstar lists the maximum amount.)
Share Class Type	Indicates the share class for open-end funds. Shares of the same fund that offer different shareholder rights and obligations, such as different fee and load charges. Common share classes are A (front-end load), B (deferred fees), C (no sales charge and a relatively high annual 12b-1 fee, such as 1.00%). Multi-class funds hold the same investment portfolio for all classes, and differ only in their surrounding fee structure.
Return by Month (1980 to 2015) Return by Year (1980 to 2015)	Expressed in percentage terms, Morningstar's calculation of total return is determined each month by taking the change in monthly net asset value, reinvesting all income and capital-gains distributions during that month, and dividing by the starting NAV. Reinvestments are made using the actual reinvestment NAV, and daily payoffs are reinvested monthly. Unless otherwise noted, Morningstar does not adjust total returns for sales charges (such as front-end loads, deferred loads and redemption fees), preferring to give a clearer picture of a fund's performance. The total returns do account for management, administrative, 12b-1 fees and other costs taken out of fund assets. Total returns for periods longer than one year are expressed in terms of compounded average annual returns (also known as geometric total returns), affording a more meaningful picture of fund performance than non-annualized figures.
Net Assets – Share Class by Month (1980-01 to 2015-12)	Monthly share-class level total net assets.
Alpha by Year (1980 to 2015)	A measure of the difference between a portfolio's actual returns and its expected performance, given its level of risk as measured by beta. A positive Alpha figure indicates the portfolio has performed better than its beta would predict. In contrast, a negative Alpha indicates the portfolio has underperformed, given the expectations established by beta. Alpha is calculated by taking the excess average monthly return of the investment over the risk free rate and subtracting beta times the excess average monthly return of the benchmark over the risk free rate. The equation is as follows: $\alpha_M = \bar{R}^e - \beta \bar{B}^e$ where α_M = Monthly measure of alpha $\bar{R}^e$ = Average monthly excess return of the investment

Field Name	Morningstar Description and Calculation Method
	$\bar{B}^e$ = Average monthly excess return of the benchmark β = Beta The resulting alpha is in monthly terms, because the average returns for the portfolio and benchmark were monthly averages. Morningstar then multiplies it by 12 to put it in annual terms. $\alpha_A = 12 \alpha_M$ The same method applies for alpha (non-excess return) except that the raw return is used instead of the excess return.

By executing the search queries described above, AACG obtained records for the following numbers of funds.¹

	<i>Domestic Equity Funds</i>	<i>International Equity Funds</i>
Date extracted	Feb 5, 2016	Feb 5, 2016
Number of funds retrieved	22,316	7,160

In addition to the alpha performance metric computed and published by Morningstar, we calculated two additional performance metrics – the one-factor alpha and the three-factor alpha for each fund and each calendar year with complete data (12 monthly returns). Like the Morningstar alpha, both metrics measure the difference between the fund's return and its expected performance given its level of risk.

We estimated one-factor alphas through a regression analysis of excess market returns on excess fund returns. Similarly, we estimated three-factor alphas through a regression analysis of three independent variables—the excess market returns, the Small minus Big (SMB) factor and the High minus Low (HML) factor. We used market returns, risk-free rates, SMB factors, and HML factors developed by Eugene Fama and Kenneth French.² The SMB factor is the return of a portfolio of small stocks in excess of the return of a portfolio of large stocks. The HML factor is the return of a portfolio of stocks with high ratios of book value to market value in excess of the return on a portfolio of stocks with low book-to-market ratios.³

¹ Domestic equity funds as extracted from Morningstar Direct included approximately 10 funds with “EAA” investment categories, which suggested their investment focus and portfolio holdings are concentrated in Europe, Asia and Africa. We reclassified these funds as International.

² http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html. Factors for Domestic Equity funds were obtained from “U.S. Research Returns Data” and Factors for International Equity Funds were obtained from “Developed Market Factors and Returns: Fama/French Global ex US Factors.”

³ Zvi Bodie, Alex Kane, and Alan J. Marcus. 2001. *Investments*. 5th edition, McGraw-Hill Education.

The resulting estimate of alpha is in monthly terms, because the returns for the fund and benchmark were monthly returns. An annual alpha was calculated using the following equation.⁴

$$\alpha_A = (1 + r_m)^{12} - (1 + r_m - \alpha_m)^{12}$$

where

r_m = Average monthly fund return

α_m = Monthly measure of alpha

⁴ For intuition: α_m is the average monthly amount by which a fund's risk-adjusted return exceeds the benchmark return, and $r_m - \alpha_m$ may thus be interpreted as the benchmark average monthly return. Both the fund's average monthly return and the benchmark average monthly return are compounded into annual values; their difference represents a fund's annual alpha.

Data Analysis

For each asset type and year, we aggregated estimated alphas by distribution channel, weighted by fund assets.

- i. For each fund, an average asset size for each year was determined by calculating a simple average of 12 monthly values of “Net Assets – Share Class by Month”.⁵
- ii. Using the “Share Class Type” field and convention described below, each fund was classified as sold by a broker-dealer, directly, or neither. (“Neither” is not used in subsequent analysis.)

Share Class Type	Classification
A Adv B C D T	Broker-Dealer Sold
Inv No Load S	Direct-Sold
(BLANK) Inst Load Waived M N Other Retirement	Neither

For a detailed description of the share class type, see the Appendix.

- iii. For pooled broker-dealer funds and pooled direct-sold funds, a weighted average annual return and weighted-average alpha was calculated by calendar year. The weighting used the average asset size described above.
- iv. A small number of funds did not have asset size data for some or all years. An average asset size for the year could not be calculated. These funds were removed from the weighted average calculations. (Also see below.)
- v. Some funds did not have return and/or alpha information for some or all years. In such cases, these funds were not included in the calculation of the weighted average returns and alphas respectively.

⁵ At the beginning and end of a fund's life cycle, fewer than 12 monthly asset values were typically available. For such partial years, the Morningstar data did not contain information on alpha. We similarly excluded partial years from our analysis.

Table 1 shows the number of funds that were used to calculate average returns and average alphas.

Table 1. Number of Funds Used in the Analysis

	Domestic		International	
	Raw	Used	Raw	Used
Broker-sold	8,597	7,150	2,661	2,189
Direct-sold	1,880	1,710	456	409
Neither	11,839		4,043	
Total	22,316	8,860	7,160	2,598

Results

Tables 2, 3, and 4 show average returns and average risk-adjusted returns for domestic funds, international funds, and pooled domestic/international funds.

For each measure of rates of (risk-adjusted) returns, the tables list asset-weighted average returns for broker-sold funds, for direct-sold funds, and their difference ("overperformance"). This difference captures the extent to which broker-sold funds outperformed direct-sold funds. Negative numbers indicate underperformance of broker-sold funds.

Table 2. Average Rates of Return and Alphas of Domestic Equity Open-End Funds

Year	Raw Returns			Morningstar's Alpha			One-Factor Alpha			Three-Factor Alpha		
	Broker-sold	Direct-sold	Overperformance	Broker-sold	Direct-sold	Overperformance	Broker-sold	Direct-sold	Overperformance	Broker-sold	Direct-sold	Overperformance
1980	33.75%	33.93%	-0.18%	-0.31%	-0.62%	0.32%	1.54%	1.11%	0.42%	-0.30%	-0.48%	0.18%
1981	-3.24%	-2.30%	-0.94%	3.17%	5.02%	-1.85%	-0.21%	1.57%	-1.78%	0.31%	1.08%	-0.77%
1982	27.01%	21.45%	5.56%	4.67%	0.12%	4.55%	5.93%	0.94%	4.99%	5.01%	0.29%	4.72%
1983	20.07%	24.65%	-4.58%	-0.29%	1.59%	-1.87%	-1.40%	1.40%	-2.80%	-0.16%	1.88%	-2.05%
1984	-0.94%	-0.58%	-0.36%	-6.48%	-5.77%	-0.70%	-4.06%	-3.25%	-0.81%	-1.90%	-1.95%	0.05%
1985	27.44%	29.08%	-1.64%	-3.75%	-1.35%	-2.41%	-3.85%	-1.87%	-1.99%	-2.65%	-1.35%	-1.29%
1986	17.11%	17.16%	-0.05%	-0.63%	-0.03%	-0.61%	2.11%	2.08%	0.03%	1.36%	2.56%	-1.20%
1987	3.57%	3.31%	0.26%	-2.66%	-2.30%	-0.36%	1.81%	1.99%	-0.18%	2.76%	3.59%	-0.83%
1988	14.04%	18.18%	-4.14%	-0.65%	2.75%	-3.41%	-2.16%	1.08%	-3.25%	0.25%	1.12%	-0.87%
1989	27.30%	26.65%	0.65%	-1.37%	-1.72%	0.35%	0.27%	-0.85%	1.12%	0.62%	0.22%	0.40%
1990	-4.85%	-6.72%	1.86%	-2.01%	-3.84%	1.83%	-0.03%	-0.95%	0.92%	0.89%	1.30%	-0.41%
1991	31.92%	38.27%	-6.35%	2.35%	4.83%	-2.48%	-0.39%	2.15%	-2.55%	-0.57%	-0.89%	0.31%
1992	7.51%	8.65%	-1.14%	0.69%	1.77%	-1.09%	-1.74%	-0.73%	-1.01%	-1.95%	-2.38%	0.44%
1993	13.94%	17.65%	-3.71%	3.45%	6.38%	-2.93%	3.54%	6.81%	-3.27%	2.25%	4.14%	-1.89%
1994	-1.46%	-0.32%	-1.13%	-2.66%	-1.69%	-0.97%	-1.20%	0.06%	-1.26%	-1.04%	0.36%	-1.40%
1995	32.78%	33.48%	-0.69%	-1.97%	-1.78%	-0.18%	-4.76%	-7.63%	2.87%	-0.63%	0.99%	-1.61%
1996	18.05%	19.04%	-0.98%	-2.55%	-1.77%	-0.77%	-2.30%	-0.57%	-1.73%	-1.39%	-1.06%	-0.33%
1997	25.37%	26.17%	-0.80%	-3.12%	-2.31%	-0.80%	-4.00%	-3.34%	-0.66%	-5.66%	-5.38%	-0.28%
1998	20.65%	21.86%	-1.21%	-7.27%	-6.33%	-0.94%	-2.80%	-1.57%	-1.23%	-1.61%	-2.67%	1.06%
1999	29.68%	24.90%	4.78%	4.75%	1.96%	2.80%	5.44%	1.94%	3.50%	1.81%	1.30%	0.51%
2000	-7.14%	-4.59%	-2.55%	3.26%	6.18%	-2.92%	6.46%	7.67%	-1.21%	5.60%	7.11%	-1.50%
2001	-14.32%	-10.62%	-3.71%	-0.32%	2.89%	-3.21%	-1.81%	0.88%	-2.69%	-3.04%	-0.82%	-2.22%
2002	-22.30%	-20.10%	-2.20%	-2.95%	-0.03%	-2.91%	-2.06%	0.22%	-2.28%	-2.68%	-0.37%	-2.31%
2003	30.80%	31.44%	-0.64%	1.65%	2.54%	-0.88%	-0.62%	0.64%	-1.25%	-2.81%	-1.43%	-1.38%
2004	11.73%	12.74%	-1.01%	-0.83%	0.09%	-0.92%	-0.67%	0.38%	-1.06%	-0.22%	0.88%	-1.09%
2005	7.94%	8.18%	-0.24%	2.42%	2.46%	-0.04%	1.90%	2.10%	-0.20%	1.20%	1.35%	-0.15%
2006	13.67%	14.08%	-0.41%	-4.07%	-4.24%	0.17%	-2.75%	-2.88%	0.13%	-4.32%	-3.79%	-0.54%
2007	7.62%	8.13%	-0.51%	1.38%	1.70%	-0.33%	1.97%	2.46%	-0.50%	1.45%	1.88%	-0.43%
2008	-38.88%	-39.35%	0.47%	1.99%	4.15%	-2.16%	-0.14%	1.14%	-1.28%	0.32%	0.98%	-0.67%
2009	32.60%	34.22%	-1.62%	5.81%	5.89%	-0.07%	6.00%	6.01%	-0.01%	4.81%	5.26%	-0.45%
2010	16.20%	18.33%	-2.13%	1.24%	2.75%	-1.51%	-0.67%	0.88%	-1.55%	-0.73%	-0.49%	-0.24%
2011	-2.88%	-1.77%	-1.11%	-4.17%	-3.05%	-1.13%	-3.08%	-1.96%	-1.11%	-3.42%	-2.34%	-1.07%
2012	14.99%	16.13%	-1.13%	-0.95%	-0.47%	-0.47%	-1.30%	-0.84%	-0.46%	-1.50%	-0.66%	-0.84%
2013	32.11%	33.89%	-1.78%	1.72%	2.35%	-0.63%	-0.28%	0.03%	-0.31%	-3.36%	-2.39%	-0.98%
2014	9.75%	10.72%	-0.97%	-3.23%	-2.31%	-0.92%	-1.64%	-0.76%	-0.88%	-1.06%	0.45%	-1.51%
2015	-0.54%	0.59%	-1.13%	-1.64%	-0.43%	-1.21%	-0.49%	0.65%	-1.15%	-1.33%	-0.58%	-0.75%

Source: AACG calculations based on Morningstar data.

Table 3. Average Rates of Return and Alphas of International Equity Open-End Funds

Year	Raw Returns			Morningstar's Alpha			One-Factor Alpha			Three-Factor Alpha		
	Broker-sold	Direct-sold	Overperformance	Broker-sold	Direct-sold	Overperformance	Broker-sold	Direct-sold	Overperformance	Broker-sold	Direct-sold	Overperformance
1980	28.75%	23.72%	5.03%	The international benchmark returns from Fama-French start in July 1990								
1981	1.16%	-3.10%	4.26%									
1982	18.08%	8.29%	9.78%									
1983	31.94%	31.64%	0.30%									
1984	0.78%	-0.66%	1.44%									
1985	30.30%	44.36%	-14.07%									
1986	22.74%	59.25%	-36.51%									
1987	5.11%	11.59%	-6.49%									
1988	19.09%	14.19%	4.91%									
1989	23.12%	23.44%	-0.32%									
1990	-9.88%	-8.90%	-0.98%									
1991	26.96%	11.94%	15.02%	13.13%			18.15%	3.21%	14.93%	17.01%	2.77%	14.24%
1992	3.03%	-3.49%	6.51%	3.66%			3.80%	2.03%	1.77%	6.39%	4.94%	1.46%
1993	30.41%	38.97%	-8.56%	10.64%			18.54%	21.68%	-3.14%	18.36%	16.86%	1.50%
1994	-1.06%	-1.79%	0.73%	-5.10%			-7.97%	-9.18%	1.21%	0.24%	-0.40%	0.64%
1995	17.08%	11.71%	5.37%	3.18%			9.79%	3.89%	5.89%	9.54%	3.90%	5.64%
1996	17.75%	16.56%	1.19%	5.92%			11.56%	10.26%	1.31%	9.98%	8.23%	1.74%
1997	11.57%	7.96%	3.61%	-0.42%			10.89%	8.31%	2.59%	6.04%	0.69%	5.36%
1998	8.53%	15.62%	-7.09%	-14.64%			-7.28%	-0.93%	-6.35%	-3.93%	0.73%	-4.66%
1999	39.74%	47.12%	-7.39%	7.19%	8.92%	-1.73%	-2.95%	-0.65%	-2.29%	-11.32%	-7.96%	-3.35%
2000	-9.72%	-14.47%	4.76%	5.13%	4.17%	0.96%	7.36%	6.29%	1.07%	9.39%	12.67%	-3.28%
2001	-11.84%	-19.42%	7.57%	8.38%	2.07%	6.31%	8.45%	3.23%	5.22%	9.54%	4.88%	4.66%
2002	-14.54%	-17.60%	3.06%	-0.22%	-3.74%	3.52%	-2.46%	-5.09%	2.63%	6.20%	1.70%	4.49%
2003	35.72%	36.39%	-0.67%	-1.88%	-4.09%	2.21%	-7.89%	-11.01%	3.12%	-13.03%	-13.43%	0.40%
2004	17.92%	18.09%	-0.18%	-1.66%	-2.64%	0.98%	-3.60%	-5.11%	1.51%	-4.88%	-6.83%	1.95%
2005	14.43%	17.14%	-2.70%	0.42%	1.05%	-0.63%	-0.96%	-0.35%	-0.61%	0.61%	0.63%	-0.02%
2006	22.41%	25.40%	-2.99%	-2.03%	-1.91%	-0.12%	-2.02%	-2.74%	0.72%	-5.69%	-5.37%	-0.32%
2007	14.65%	15.76%	-1.11%	-0.17%	-0.70%	0.53%	2.17%	2.69%	-0.52%	0.30%	2.16%	-1.86%
2008	-41.97%	-45.76%	3.79%	-1.51%	-0.62%	-0.90%	-2.48%	-1.74%	-0.74%	-3.25%	-2.30%	-0.95%
2009	38.93%	40.63%	-1.69%	2.79%	-1.74%	4.53%	9.99%	6.27%	3.72%	15.16%	10.44%	4.73%
2010	12.57%	12.98%	-0.41%	1.66%	1.35%	0.30%	1.83%	1.29%	0.54%	2.45%	2.91%	-0.46%
2011	-10.84%	-14.25%	3.41%	1.16%	-0.40%	1.56%	1.35%	-0.76%	2.11%	-2.66%	-4.34%	1.68%
2012	18.12%	19.84%	-1.72%	3.55%	3.33%	0.22%	3.28%	2.76%	0.53%	4.02%	3.17%	0.84%
2013	22.18%	20.66%	1.52%	7.02%	5.44%	1.58%	4.05%	-0.27%	4.32%	5.55%	1.06%	4.49%
2014	-0.07%	-2.13%	2.05%	2.10%	1.65%	0.44%	4.46%	2.82%	1.63%	2.73%	1.50%	1.23%
2015	-2.08%	-4.05%	1.97%	2.17%	1.09%	1.08%	-1.31%	-3.15%	1.84%	-3.42%	-3.64%	0.22%

Source: AACG calculations based on Morningstar data.

Table 4. Average Rates of Return and Alphas of Domestic and International Equity Open-End Funds

Year	Raw Returns			Morningstar's Alpha			One-Factor Alpha			Three-Factor Alpha		
	Broker-sold	Direct-sold	Overperformance	Broker-sold	Direct-sold	Overperformance	Broker-sold	Direct-sold	Overperformance	Broker-sold	Direct-sold	Overperformance
1980	33.14%	33.85%	-0.71%	-0.35%	-0.62%	0.27%	1.54%	1.11%	0.42%	-0.30%	-0.48%	0.18%
1981	-2.67%	-2.32%	-0.35%	3.05%	5.02%	-1.97%	-0.21%	1.57%	-1.78%	0.31%	1.08%	-0.77%
1982	25.68%	21.18%	4.50%	4.77%	0.12%	4.65%	5.93%	0.94%	4.99%	5.01%	0.29%	4.72%
1983	21.92%	24.78%	-2.86%	0.32%	1.59%	-1.26%	-1.40%	1.40%	-2.80%	-0.16%	1.88%	-2.05%
1984	-0.65%	-0.58%	-0.07%	-6.15%	-5.77%	-0.38%	-4.06%	-3.25%	-0.81%	-1.90%	-1.95%	0.05%
1985	27.97%	29.78%	-1.81%	-4.42%	-1.35%	-3.08%	-3.85%	-1.87%	-1.99%	-2.65%	-1.35%	-1.29%
1986	18.12%	21.08%	-2.96%	-1.05%	-0.03%	-1.02%	2.11%	2.08%	0.03%	1.36%	2.56%	-1.20%
1987	3.85%	4.09%	-0.25%	-3.47%	-2.30%	-1.17%	1.81%	1.99%	-0.18%	2.76%	3.59%	-0.83%
1988	15.02%	17.94%	-2.92%	-0.03%	2.75%	-2.79%	-2.16%	1.08%	-3.25%	0.25%	1.12%	-0.87%
1989	26.41%	26.48%	-0.06%	-0.64%	-1.72%	1.08%	0.27%	-0.85%	1.12%	0.62%	0.22%	0.40%
1990	-5.95%	-6.86%	0.91%	-2.10%	-3.84%	1.73%	-0.03%	-0.95%	0.92%	0.89%	1.30%	-0.41%
1991	30.86%	36.72%	-5.85%	3.23%	4.83%	-1.60%	3.56%	2.21%	1.35%	3.18%	-0.67%	3.85%
1992	6.61%	8.02%	-1.41%	0.90%	1.77%	-0.88%	-0.63%	-0.59%	-0.04%	-0.27%	-2.00%	1.73%
1993	17.23%	19.08%	-1.85%	3.90%	6.38%	-2.48%	6.53%	7.81%	-1.28%	5.47%	5.00%	0.47%
1994	-1.36%	-0.48%	-0.88%	-2.83%	-1.69%	-1.14%	-2.89%	-0.92%	-1.96%	-0.72%	0.28%	-1.00%
1995	28.95%	31.61%	-2.66%	-1.58%	-1.78%	0.21%	-1.21%	-6.65%	5.43%	1.85%	1.24%	0.62%
1996	17.98%	18.83%	-0.85%	-1.97%	-1.77%	-0.20%	1.01%	0.34%	0.67%	1.33%	-0.28%	1.60%
1997	22.10%	24.57%	-2.47%	-2.94%	-2.31%	-0.63%	-0.48%	-2.32%	1.84%	-2.89%	-4.85%	1.96%
1998	17.96%	21.34%	-3.38%	-7.66%	-6.33%	-1.33%	-3.79%	-1.51%	-2.28%	-2.12%	-2.39%	0.27%
1999	31.61%	26.69%	4.92%	5.22%	2.52%	2.70%	3.83%	1.73%	2.10%	-0.71%	0.55%	-1.27%
2000	-7.62%	-5.54%	-2.08%	3.61%	5.99%	-2.38%	6.63%	7.54%	-0.91%	6.31%	7.64%	-1.33%
2001	-13.87%	-11.39%	-2.47%	1.28%	2.82%	-1.54%	0.08%	1.09%	-1.01%	-0.73%	-0.32%	-0.41%
2002	-20.85%	-19.88%	-0.96%	-2.44%	-0.35%	-2.08%	-2.13%	-0.24%	-1.89%	-1.02%	-0.19%	-0.83%
2003	31.75%	31.87%	-0.12%	0.97%	1.96%	-0.99%	-2.03%	-0.38%	-1.65%	-4.80%	-2.48%	-2.32%
2004	13.04%	13.25%	-0.21%	-1.00%	-0.17%	-0.83%	-1.29%	-0.14%	-1.15%	-1.20%	0.14%	-1.35%
2005	9.49%	9.22%	0.27%	1.94%	2.30%	-0.35%	1.21%	1.81%	-0.60%	1.06%	1.26%	-0.20%
2006	16.06%	15.84%	0.22%	-3.51%	-3.88%	0.37%	-2.55%	-2.86%	0.31%	-4.70%	-4.03%	-0.67%
2007	9.73%	9.58%	0.15%	0.91%	1.24%	-0.33%	2.03%	2.51%	-0.48%	1.10%	1.94%	-0.83%
2008	-39.83%	-40.64%	0.81%	0.91%	3.18%	-2.27%	-0.86%	0.56%	-1.42%	-0.78%	0.32%	-1.10%
2009	34.50%	35.48%	-0.97%	4.90%	4.39%	0.51%	7.20%	6.06%	1.14%	7.92%	6.27%	1.65%
2010	15.09%	17.26%	-2.17%	1.37%	2.47%	-1.10%	0.09%	0.96%	-0.87%	0.24%	0.20%	0.04%
2011	-5.27%	-4.27%	-1.00%	-2.57%	-2.51%	-0.05%	-1.75%	-1.72%	-0.02%	-3.19%	-2.74%	-0.45%
2012	15.88%	16.83%	-0.95%	0.33%	0.25%	0.08%	0.01%	-0.15%	0.16%	0.07%	0.07%	0.00%
2013	29.32%	31.21%	-1.89%	3.21%	2.97%	0.23%	0.93%	-0.03%	0.97%	-0.86%	-1.69%	0.83%
2014	7.07%	8.01%	-0.94%	-1.78%	-1.48%	-0.31%	0.02%	-0.01%	0.03%	-0.03%	0.67%	-0.70%
2015	-0.95%	-0.41%	-0.54%	-0.63%	-0.10%	-0.52%	-0.71%	-0.16%	-0.55%	-1.89%	-1.24%	-0.65%

Source: AACG calculations based on Morningstar data.

4. POTENTIAL DATA ISSUES

There are some data-related observations that may affect the results shown above.

Incomplete Data in Morningstar

Some funds in the Morningstar data appear to be missing asset size or returns/alphas and were hence excluded from the analysis.

Alphas appear to be available only for full calendar years from January to December. Funds that started during 2014 or 2015 or that dissolved before a full calendar year elapsed are therefore missing data. But we have identified a number of funds that lacked data despite existing for at least one calendar year.

In order to gain a complete picture of relative performance of broker-dealer sold funds, it is important to access and analyze data for mutual funds that are no longer active. If the missing data are concentrated among obsolete funds and/or among one classification of funds (broker-sold or direct-sold), this can affect the results shown above and the conclusions derived from them.

The impact of these missing data cannot be measured until the net asset size of the missing funds and their performance can be established.

Using Share Class Type to Determine Sales Channel

In order to measure relative performance of broker-dealer sold funds to direct-sold funds, this analysis uses the share class type field to classify and analyze the data. The analysis assumes that share classes A, B, C, D, T and Adv use the broker-dealer sales channel.

Many load funds may waive load fees in order to gain access to investors served in a fiduciary setting such as Defined Benefit plan or fee-based advisory account. Some of the assets, returns and alpha for a fund with share class type A currently classified as a broker-dealer sold should therefore be instead classified as direct-sold or neither direct nor broker-sold.⁶

⁶ A recent filing by UBS Financial Services Inc., an investment advisory firm subject to a fiduciary standard, shows that some of its clients were invested in load-funds such a class type A funds. (Form ADV Disclosure Brochure, UBS Financial Services Inc. March 31, 2015 available at http://www.adviserinfo.sec.gov/lapd/Content/Common/crd_iapd_Brochure.aspx?BRCHR_VRSN_ID=308745.)

APPENDIX. SHARE CLASS TYPE DESCRIPTIONS

This appendix is based on Morningstar Direct.

Shares of a fund may be offered in different classes, corresponding to different shareholder rights and obligations, such as different fee and load charges. Common share classes are A (front-end load), B (deferred fees), C (no sales charge and a relatively high annual 12b-1 fee, such as 1.00%). Multi-class funds hold the same investment portfolio for all classes, and differ only in their surrounding fee structure.

Share Classes Associated with Broker-Sold Funds

Share Class – A

Funds that have lower investment minimums and carry a front-load to pay the advisors' sales commission. Front-load discounts are usually available if the investor meets a higher minimum initial purchase. Also known as 1, I or One. Typically, the maximum front load is between 4% and 5.75%, the maximum deferred load is zero, the maximum 12b-1 fee is between 0 and 50 bps and the investment minimum is \$2,500 or less.

Share Class – Adv

Funds typically purchased through advisors, but generally requiring a higher minimum investment. Also known as Adv or Advisor. Typically, the maximum front load is 0%, the maximum deferred load is 0%, the maximum 12b-1 fee is between 0 and 50 bps, and the investment minimum is \$2,500 or less.

Share Class – B

Funds that have lower investment minimums and carry a deferred-load sales charge, also called a surrender charge. The sales charge is imposed if shares are redeemed before specified time periods, typically within five years. The sales charge decreases with the time invested such that the surrender charge is higher in year one than it is in year five. Also known as 2, II, or Two. Typically, the maximum front load is 0%, the maximum deferred load is between 4% and 5%, the maximum 12b-1 fee is between 75 and 100 bps, and the investment minimum is \$2,500 or less.

Share Class – C

Funds that have lower investment minimums and carry a level-load structure. This sales charge is typically a recurring fee of 1% that is used on an annual basis to compensate advisors. Investment minimums for C- shares tend to be lower than for D-shares. Also known as 3, III, or Three. Typically, the maximum front load is 0% and occasionally 1%, the maximum deferred load is 1% and occasionally 0%, the maximum 12b-1 fees is between 75 and 100 bps, and the investment minimum is \$2,500 or less.

Share Class – D

Funds that have lower investment minimums and carry a level-load structure. This sales charge is typically a recurring fee of 1% that is used on an annual

basis to compensate advisors. Investment minimums for C- shares tend to be lower than for D-shares. Typically, the maximum front load is 0%, the maximum deferred load is 0% and occasionally 1%, the maximum 12b-1 fee is 0% and occasionally between 1 and 50 bps, and the investment minimum is \$2,000 or more.

Share Class – T

Typically, T shares carry lower front-end loads than A shares and are available to investors with larger initial investments. Typically, the maximum front load is 0% and sometimes between 3% and 4.75%, the maximum deferred load is 0%, the maximum 12b-1 fee is sometimes 0% and sometimes between 25 bps and 50 bps, and the investment minimum is \$2,000 or more.

Share Classes Associated with Direct-Sold Funds

Share Class – Inv

Investor share classes can be purchased by individual investors, so there is usually no front or deferred load charged. However, investment minimums may be slightly higher. Also known as Investor or Investment. Typically, the maximum front load is 0%, the maximum deferred load is 0%, the maximum 12b-1 fee is sometimes 0% and sometimes between 1bp and 25 bps, and the investment minimum is \$10,000 or less.

Share Class – No Load

Funds without front- or back-end sales charges. Purchased directly by investors or through advisors. Typically, the maximum front load is 0%, the maximum deferred load is 0%, the maximum 12b-1 fee is between 0 and 100 bps, and the investment minimum is \$2,500 or less.

Share Class – S

S share classes are similar to no-load funds in that there is usually no front or deferred load charged. However, investment minimums may be slightly higher. Typically, the maximum front load is 0%, the maximum deferred load is 0%, the maximum 12b-1 fee is 0%, and the investment minimum is \$2,000 or more.

Share Classes Associated with Neither Broker- Nor Direct-Sold Funds

Share Class – Inst.

Funds typically purchased by large institutional buyers, such as pension plans. Also known as Y, I, Z, X, Inst, Instl. Typically, the maximum front load is 0%, the maximum deferred load is 0%, the maximum 12b-1 fee is 0%, and the investment minimum is \$25,000 or more.

Share Class – Load Waived

Load Waived share classes don't require its investors to pay loads (but 12b-1 fee may still be required). In most cases, mutual fund companies will limit the number of load-waived funds available to only certain investors.

Share Class – M

Typically, M shares carry lower front-end loads than A shares and are available to investors with larger initial investments. Typically, the maximum front load is sometimes 0% and sometimes between 1% and 3.5%, the maximum deferred load is 0%, the maximum 12b-1 fee is sometimes 0% and sometimes between 25 bps and 100 bps, and the investment minimum is \$50,000 or more.

Share Class – N

Typically, N shares are available to investors with larger initial investments. Many also charge a 12b-1 fee. Typically, the maximum front load is 0%, the maximum deferred load is 0%, the maximum 12b-1 fee is between 25 and 50 bps, and the investment minimum is \$50,000 or more.

Share Class – Other

Funds not elsewhere classified. This category contains fewer than 5% of all funds. Also know as most other share class letters. The maximum front load varies, the maximum deferred load varies, the maximum 12b-1 fee varies, and the investment minimum varies.

Share Class – Retirement

Funds available through retirement plans. Purchased by retirement plan participants, usually without any sales loads. Also known as Ret, R, K, and J. Typically, the maximum front load is 0%, the maximum deferred load is 0%, the maximum 12-b1 fee is between 25 and 50 bps, and the investment minimum varies.

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