

Internet Appendix to
“Indexing and Active Fund Management:
International Evidence”

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Abstract

This internet appendix provides additional results and robustness analyses that are mentioned in the main text.

1. Descriptive Statistics

In Table IA.1, we provide summary statistics for the funds in our LionShares data over the 2002-2010 sample period. We expand on the statistics of the country characteristics in Table IA.2 by showing the time series averages by country. Table IA.3 shows the number of fund share classes by country of sale and country of domicile.

2. Explicit and Closet Indexing by Country and Benchmark Type

A fund's active share may depend on the opportunities and constraints in the investment opportunity set of the fund manager, which will naturally differ across benchmarks. Table IA.4 groups the 88 benchmarks in our analysis into benchmark types: world, regional and country.

Table IA.5 shows the total net assets (TNA) and the market shares of explicit and closet indexing per country as of December 2010 in the three different benchmark types: world, regional, and country funds. We further separate funds with a country benchmark into country - domestic (funds that invest in stocks of the same country where they are domiciled) and country - foreign (funds that invest in stocks of a country different from the one where they are domiciled). Panel A of Table IA.5 shows that the majority of equity mutual fund assets are invested domestically (\$4.4 trillion). The next most prevalent type of fund is regional funds (\$1.8 trillion), followed by world funds (\$1.2 trillion), and foreign country funds (\$0.4 trillion). However, the proportions are not universal across countries. For example, domestic funds are predominant in the U.S, but world and regional funds are relatively more important in European countries. Panel A of Table IA.5 also shows the amount of explicit indexing per country of domicile according to fund benchmark type. The level of explicit indexing is highest for domestic country funds, where 27% of the fund assets are indexed. Explicit indexing is used less frequently in world funds (12%), regional funds (18%), and foreign country funds (18%). In

addition, closet indexing is less common for funds pursuing global investment strategies (11%) than for regional funds (24%), domestic country funds (21%), and foreign country funds (27%). Panel B of Table IA.5 presents similar statistics by country of sale.

To take into account benchmark characteristics, we analyze the prevalence of indexing (as in Table 2) we separate the analysis by the country and benchmark type level (world, regional, country-domestic, and country-foreign). Table IA.6 presents the results by country of domicile (Panel A) and country of sale (Panel B). Consistent with Table 2, the evidence indicates that a strong regulatory environment and a large fund industry are positively correlated with the prevalence of explicit indexing and negatively correlated with closet indexing.

3. Robustness

We conduct several robustness checks on the results of Table 3 (active share) in Table IA.7, Table 5 (TSC) in Table IA.8, and Table 7 (performance) in Table IA.11. In each table, Panel A reports the results by country of domicile and Panel B by country of sale.

The first robustness check we conduct is to estimate the results using only the non-U.S. fund sample in order to alleviate the concern that funds domiciled or sold in the United States represent a large fraction of the observations and may distort our conclusions.

The second type of robustness check is to employ alternative methods of calculating funds' active shares. First, we construct the index weights based only on ETFs that undertake full physical replication of the indices. For the majority of the 88 benchmarks (see Table IA.4), we can identify a SPDR or iShares ETF that tracks these benchmarks. We call the active share measured against the ETF weights the *Pure-ETF active share*. Second, to address any potential issues with Lipper's assignment of the Technical Indicator Benchmark to each fund, we construct an alternative active share against all possible 88 benchmarks. Following Cremers and

Petajisto (2009), we take the most representative benchmark for a fund in each year as the one with the lowest active share. We call this alternative measure the *Minimum active share*. We find that in our sample both of these alternative measures are highly correlated with the active share we employ in our main tests (correlation coefficients of 0.97 with the pure-ETF active share and 0.94 with the minimum active share). For active funds, the average (TNA-weighted) pure-ETF active share is 70% and the minimum active share is 65% which are similar to the levels of our main measure of active share. Finally, we calculate an *Active Share (vs. Active)* - the fraction of a fund's portfolio holdings that differ from the aggregate stock portfolio of active funds that track a fund's benchmark, in the spirit of the overlap measure of Wahal and Wang (2011).

The third robustness check considers alternative econometric specifications. We estimate the regression model using weighted least squares, where the total net assets of the fund are employed as the weights. We also estimate regressions using country of domicile fixed effects.

The fourth robustness check looks at specific types of funds. First, we use the sample of domestic funds, which is more commonly used in single-country studies as in the majority of the literature on U.S. equity mutual funds. We also present the analysis by measuring explicit and closet indexing separately by benchmark type (world, regional, country-domestic, and country-foreign) in each country. The diversity in the universe of stocks tracked by each benchmark has implications for the measurement of active share. For example, the SSgA World Index Equity Fund that tracks the MSCI World index (the most popular world index) holds over 1,600 stocks in its portfolio at the end of 2010, while the SPDR S&P 500 ETF Trust tracking the S&P 500 index (the most popular country index) holds 500 stocks. Many explicitly indexed funds do not engage in full physical replication. The average index or ETF fund tracking the S&P 500 has an average of 334 stocks. The number of stock positions a fund needs to replicate its benchmark

may matter for the measurement of active share.

Finally, we perform several other robustness checks of the fund performance regressions. These are reported in Table IA.11. We show that results are robust when we use benchmark-adjusted returns and several alternative risk-adjusted performance measures in alternative to the benchmark-adjusted return four-factor alpha. We use excess return (over U.S. T-bills) four-factor alphas and the information ratio (ratio of four-factor benchmark-adjusted return alpha by the standard deviation of residuals). Further we include the Amihud and Goyenko (2013) R-squared measure as an explanatory variable. Specifically, we use a logistic transformation of R-squared, $TR^2 = \log[\sqrt{R\text{-squared}}/(1 - \sqrt{R\text{-squared}})]$ where R-squared is estimated using the benchmark-adjusted return four-factor model. A lower R-squared is indicative of more active management. We find that TR^2 is insignificantly related to future fund performance in a regression that also includes active share and tracking error. Only active share is a statistically significant predictor of future fund performance. The coefficients on tracking error and TR^2 are also insignificant in regressions that do not include active share.

We extend the differences-in-differences analysis of Pension Acts to examine the effect on fund performance. We estimate the equivalent to the performance regression in column (2) of Table 7, but replacing the market share of explicitly indexed funds with the *Post pension act* ($year \geq 0$) dummy variable. The results in Table IA.12 of the Internet Appendix are consistent with those in Table 7. We find that the coefficient on the *Post pension act* ($year \geq 0$) variable is positive and significant, which indicates that performance improves more for the treatment group than the control group following the passage of the Pension Act. Moreover, the coefficient on active share is positive and significant and the interaction between active share and *Post pension act* ($year \geq 0$) is negative and significant in Panel B (estimates by country of sale).

4. Instrumental Variable Regressions

As an alternative strategy to address endogeneity concerns, we employ instrumental variables methods. We use two instruments for explicit indexing – i.e., variables that are correlated with the availability of explicitly indexed funds in a given market but should be uncorrelated with the active share and fees charged by active funds (other than through their correlation with explicitly index funds). The first instrument is the financial sophistication of retail investors in a country, which should be associated with the demand for low-cost alternatives to achieve beta exposure. That is, financially literate investors are more likely to be aware that passive funds can deliver the same fundamental beta exposure as active funds but at a lower cost. Thus, those investors will have higher demand for the indexed funds. We proxy for financial literacy in a country using the variable *Financial sophistication* measured by the World Economic Forum in the annual Global Competitiveness Report using the question “The level of sophistication of financial markets is higher than international norms.”

The second instrument is based on the development of the defined contribution (DC) pension market in a country, which can increase the demand for passive funds providing beta exposure (for example, by offering at least one passive fund in their menu of investment options). The instrument, *DC pension market*, takes the value of one if a country’s DC market is “Developed”, the value of one-half if the market is “Nascent”, and zero if there is no market, according to the KPMG (2011) classification.

Table IA.9 reports estimates of two-stage least squares (2SLS) active share regressions using instrumental variables methods. Table IA.10 reports similar 2SLS regressions of the total shareholder cost (TSC) of active funds. These results lead to the conclusion that indexing plays an important role in enhancing market contestability in the fund industry worldwide. The

evidence suggests a link from more passive management in a market to more competitive strategies by active funds such as lower fees and more product differentiation. However, these results should be interpreted with caution since they rely on the validity of the instruments.

We consider one more analysis designed to capture the effects of the increased presence of explicitly indexed funds on the behavior and pricing of the active funds in a country. Specifically, we evaluate whether the hypothesized direct competitive shocks occur given the entry of low-cost explicitly indexed funds in different markets. We focus on the first time an index fund or ETF is available in a given country and benchmark index, with the advantage that such effects are staggered over time. In unreported results, we find that entry of indexed funds is associated with an increase in active shares and reduced fees of active funds in the country. However, the coefficients from the analysis are imprecisely estimated, as over four-fifths of country-benchmarks already have indexed funds at the start of our sample period. There is also the possibility that these events are not truly exogenous because the entry decision of passive funds may be influenced by the level of competition in the local fund industry in the first place.

Table IA.1

Summary statistics

This table presents mean, median, standard deviation, minimum, maximum and number of observations of variables. The sample includes open-end active equity mutual funds taken from Lipper for which holdings are available in LionShares from 2002 to 2010.

Variable	Mean	Median	Standard deviation	Minimum	Maximum	Observations
Active share	0.7050	0.7437	0.2190	0.0000	1.0000	67,195
Pure-ETF active share	0.7047	0.7430	0.2240	0.0000	1.0000	52,984
Minimum active share	0.6687	0.7009	0.2069	0.0000	1.0000	66,893
TR ²	0.1096	0.1008	0.7621	-3.8332	4.6313	62,078
Tracking error	0.0705	0.0594	0.0467	0.0027	1.7320	62,096
Total shareholder cost	2.12	2.19	0.83	0.13	4.46	67,146
Total net assets (\$ million)	634	115	3,128	0	193,453	67,195
Family total net assets (\$ million)	20,824	4,228	72,265	0	832,483	67,184
Fund age	10.70	8.50	9.44	0.00	86.42	67,195
Flows	0.1402	-0.0357	0.7287	-0.8563	4.7889	60,461
International fund dummy	0.5899	1.0000	0.4919	0.0000	1.0000	67,177
Fund of fund dummy	0.0135	0.0000	0.1156	0.0000	1.0000	67,195
Off-shore fund dummy	0.1782	0.0000	0.3827	0.0000	1.0000	67,195
Benchmark-adjusted return	0.0004	-0.0061	0.0838	-0.2818	0.3309	66,104
Benchmark-adjusted four-factor alphas	-0.0014	-0.0049	0.0793	-0.2602	0.2819	56,991
Excess return four-factor alphas	-0.0019	-0.0164	0.1223	-0.3170	0.4967	57,460
Information ratio	-0.0545	-0.1025	1.2898	-3.4331	3.2447	56,991
Explicit indexing (% TNA)	0.1280	0.0870	0.1109	0.0000	0.9574	67,195
Explicit indexing (average TSC)	0.7696	0.6499	0.5271	0.1546	2.9700	64,558
Closet indexing (% TNA)	0.3312	0.3233	0.1484	0.0000	1.0000	67,195
Approval	1.49	1.00	0.50	1.00	2.00	67,195
Judicial	42.96	47.01	7.01	29.67	49.96	67,195
Fund industry size (\$ million)	1,523,089	436,414	2,037,732	652	6,219,298	67,195
Fund industry Herfindahl	0.0697	0.0476	0.0564	0.0230	0.3482	67,195
GDP per capita (\$)	49,033	44,117	25,301	563	118,841	66,663
Financial sophistication	6.10	6.30	0.59	3.20	6.80	66,005
DC pension market	0.5357	0.5000	0.4294	0.0000	1.0000	65,158

Table IA.2

Time series averages of country variables

This table presents time-series average of country variables in the 2002-2010 period.

Country	Approval	Judicial	Fund industry size (\$ million)	Fund industry Herfindahl	GDP per capita (\$)	Financial sophistication	DC pension market	Pension act year
Australia	2	47	207,996	0.0468	40,831	6.21	1.0	1992
Austria	2	47	18,380	0.1288	40,953	5.32	0.0	1990
Belgium	2	47	34,468	0.3066	38,895	5.71	0.0	2003
Brazil	2	32	90,809	0.1114	9,744	5.40	1.0	
Canada	1	48	333,830	0.0468	39,104	6.20	0.5	1997
China	1	31	167,406	0.0396	3,838	3.20	0.5	
Denmark	1	49	25,568	0.1055	51,775	5.85	1.0	2006
Finland	1	49	22,705	0.1590	42,183	5.93	0.5	2007
France	2	45	266,107	0.0502	37,363	5.81	0.5	2003
Germany	1	47	136,732	0.1563	36,697	5.97	0.5	2004
Hong Kong	2	44	29,087	0.1902	29,518	6.43	1.0	
India	2	31	31,028	0.0929	1,095	5.01	0.5	
Ireland	1	35	205,832	0.0472	50,147	5.94	1.0	
Israel	2	40	3,719	0.0830	27,313	5.90	1.0	
Italy	2	40	67,003	0.0966	31,789	4.38	0.5	2000
Japan	2	47	152,159	0.0988	37,550	5.21		2001
Liechtenstein	1	31	6,520	0.1780				
Luxembourg	1	31	679,193	0.0310	95,617	6.20	0.0	
Malaysia	2	39	10,381	0.2407	7,037	5.25	1.0	
Netherlands	2	49	41,967	0.1336	43,256	6.08	0.5	2006
Norway	1	50	25,407	0.1716	71,472	5.48	1.0	2006
Poland	1	31	7,933	0.1082	10,585	4.01	0.5	2004
Portugal	1	39	2,798	0.1846	19,557	5.22	0.0	2007
Singapore	1	45	15,137	0.0656	34,350	6.01	1.0	
South Africa	1	32	21,763	0.0963	6,076	5.92	1.0	
Spain	2	39	26,100	0.0957	28,049	5.40	0.5	2002
Sweden	2	49	88,017	0.1637	43,446	6.08	0.0	2000
Switzerland	1	50	74,268	0.2100	56,964	6.60	1.0	2003
Taiwan	1	40	23,140	0.0633	17,472	4.79		
Thailand	2	30	4,667	0.1177	3,845	4.71	0.5	
United Kingdom	1	47	562,228	0.0257	37,855	6.73	0.0	2004
United States	2	48	4,617,651	0.0470	43,806	6.44	1.0	1974
Total	1.49	42.96	1,523,089	0.0697	49,033	6.10	0.5357	

Table IA.3**Number of fund share classes by country of domicile and country of sale**

This table presents the number of fund share classes offered by country of domicile and country of sale for the sample of open-end equity mutual funds taken from Lipper for which holdings are available in LionShares as of December 2010. Rows correspond to the fund legal country of domicile. Columns correspond to countries where fund share classes are approved for sale. A fund share class is counted multiple times based on how many countries it is approved for sale according to Lipper.

Country of domicile	Country of sale																				Asia Pac.	Other Reg.	Other Count.	Total				
	Aus.	Bel.	Can.	Den.	Finl.	Fran.	Ger.	Irel.	Italy	Liech.	Lux.	Neth.	Nor.	Pol.	Port.	Spain	Swe.	Switz.	U.K.	U.S.								
Austria	324					20	195		39					3		31		27		24	9						263	935
Belgium	76	273			6	110	105		4		131	104						26	7	39	1						142	1,024
Canada			2,083																				1			1	2,085	
Denmark				203	1	9	20				17	19	16							24	19	17					2	347
Finland					155	2	2				2	2	20							54							14	251
France	36	54				772	130	39	117		87	75				114	42	137	65			14				9	1,691	
Germany	173	6				34	411		11		31	20			2	9		59	1			16				42	815	
Ireland	463	236		151	300	538	697	923	296		433	503	256	105	82	434	511	615	818			769	41			691	8,862	
Italy						4			136																			140
Liechtenstein	26						37													57	3				3		112	238
Luxembourg	4,627	2,660	31	2,334	3,451	4,628	5,571	1,754	3,719	60	6,663	4,269	2,852	1,572	3,223	4,422	4,307	5,333	4,629			6,095	320			18,832	91,352	
Netherlands	1	3				2	2		1							1		2	2			1				3	93	
Norway				3	13						3	12	117							29	3	13					2	195
Poland														46														46
Portugal															53												5	58
Spain									2						2	269												273
Sweden	4				16	5	1				12	5	38									2					26	375
Switzerland	6					4	7				15									369		7					30	438
United Kingdom	124	63		50	31	139	175	129	34		91	100	25	1	28	57	47	152	1,366			85	13			224	2,934	
United States	1	6				2	7						7							24					8,976		615	9,670
Asia Pacific								1																	1,650		224	1,875
Other Regions																										168	57	225
Total	5,861	3,301	2,114	2,741	3,973	6,269	7,360	2,846	4,359	60	7,485	5,194	3,324	1,755	3,390	5,359	5,311	6,809	6,924	8,976	8,675	542	21,294	123,922				

Table IA.4

List of benchmark indices

This table lists the 88 benchmarks (Technical Indicator Benchmarks) for the sample of open-end active equity mutual funds taken from Lipper with portfolio holdings in LionShares as of December 2010. The sum of total net assets (in billions of U.S. dollars) of the equity mutual funds tracking each benchmark is presented in brackets.

World	Regional	Country	Country
MSCI World [\$456]	MSCI EM (Emerging Markets) [\$549]	Australia	ASX All Ordinaries [\$20]
MSCI World ex USA [\$320]	MSCI EU Growth [\$195]	Austria	ATX Prime [\$2]
MSCI AC World [\$96]	STOXX Europe 50 [\$192]	Belgium	Brussels SE [\$2]
FTSE AW/Oil & Gas [\$62]	MSCI AC Asia Pacific ex Japan [\$177]	Canada	S&P/TSX Composite [\$180]
MSCI World Growth [\$53]	MSCI Europe Australia & Far East ex-Japan [\$158]		MSCI Canada Small Cap [\$16]
MSCI World ex USA Small Cap [\$46]	MSCI EAFE [\$119]		FTSE Canada/Oil & Gas [\$11]
FTSE Gold Mines [\$39]	EURO STOXX 50 [\$92]	Denmark	OMX Copenhagen All Share [\$3]
FTSE AW/Mining [\$26]	MSCI EM Latin America [\$76]	Finland	OMX Helsinki [\$6]
Dow Jones Wilshire Global Ex-US [\$19]	S&P North American Natural Resources [\$59]	France	CAC 40 [\$25]
FTSE AW (Dev)/Real Estate Inv. [\$16]	MSCI Europe ex UK [\$57]	Germany	DAX 30 [\$48]
FTSE AW/Utilities [\$15]	MSCI AC Asia Pacific [\$44]	Italy	MSCI Italy [\$7]
FTSE EPRA/NAREIT Developed [\$15]	MSCI EM Eastern Europe [\$33]	Netherlands	AEX [\$8]
MSCI World Small Cap [\$14]	MSCI Europe Small Cap [\$28]	Norway	MSCI Norway [\$15]
MSCI World Value [\$12]	MSCI Golden Dragon [\$25]	Poland	Poland WIG [\$6]
MSCI World ex Australia [\$8]	MSCI BRIC [\$24]	Portugal	Portugal PSI General [\$1]
LCI UK & World Equity (50:50) [\$5]	MSCI Nordic Countries [\$17]	Spain	Madrid SE [\$4]
Dow Jones Commodity [\$1]	EURO STOXX [\$5]	Sweden	OMX Stockholm All Share [\$54]
		Switzerland	Swiss Performance Index [\$40]
		United Kingdom	FTSE 100 [\$157]
			FTSE All-Share [\$79]
			Hoare Govett Small Cap Extended [\$20]
		United States	S&P 500 [\$979]
			Russell 1000 Growth [\$636]
			Russell 3000 [\$400]
			Russell MidCap [\$275]
			Russell MidCap Growth [\$252]
			Russell 1000 [\$206]
			Russell 2000 [\$184]
			Russell 1000 Value [\$139]
			Russell 2000 Growth [\$100]
			S&P 500 Growth [\$92]
			S&P MidCap 400 [\$92]
			S&P 500 Value [\$73]
			S&P 100 [\$72]
			S&P U.S. Real Estate Investment Trust [\$63]
			S&P 400 Value [\$61]
			Russell MidCap Value [\$51]
			Dow Jones US Healthcare [\$43]
			Russell 2000 Value [\$42]
			S&P 600 Small Cap [\$27]
			NASDAQ Composite [\$13]
		Asia Pacific	Topix [\$82]
			CSI 300 [\$75]
			BSE 100 [\$72]
			MSCI China [\$47]
			Hang Seng [\$14]
			Taiwan Weighted Price [\$12]
			Thailand SET [\$6]
			FTSE Bursa Malaysia KLCI [\$3]
			Singapore Straits Time [\$3]
		Other Regions	Russia Moscow Times [\$19]
			FTSE South Africa [\$18]
			BOVESPA (Ibovespa) [\$17]
			TASE 25 [\$1]

Table IA.5**Explicit and closet indexing by country and benchmark type**

This table presents total net assets (TNA) and market shares of explicit and closet indexing per country and benchmark type. The sample consists of open-end equity mutual funds taken from Lipper with portfolio holdings in LionShares as of December 2010. Explicit indexing is the percentage that explicitly indexed funds represent of the TNA in a country. Closet indexing is the percentage of the TNA by active funds with active share measure below 0.6. Funds are classified based on their benchmark as world funds, regional funds, country - domestic funds (funds investing in their country of domicile) and country - foreign funds (funds investing in a country different from their domicile). Panel A presents statistics based on the primary fund country of domicile and Panel B presents statistics based on the fund share class country of sale.

Domicile	World funds			Regional funds			Country - domestic funds			Country - foreign funds		
	TNA	Explicit	Closet	TNA	Explicit	Closet	TNA	Explicit	Closet	TNA	Explicit	Closet
	(\$ billion)	(%)	(%)	(\$ billion)	(%)	(%)	(\$ billion)	(%)	(%)	(\$ billion)	(%)	(%)
Austria	3.4	2	7	8.3	1	35	1.4	0	100	1.8	20	39
Belgium	3.2	5	9	9.1	22	49	1.7	6	91	4.0	37	37
Canada	77.1	4	3	15.4	4	13	204.9	10	56	29.1	3	9
Denmark	10.3	0	5	12.7	1	21	3.1	0	98	4.4	9	44
Finland	2.7	0	0	11.5	2	24	5.7	8	81	6.2	1	69
France	24.1	15	4	68.5	30	28	24.9	10	68	16.6	42	12
Germany	50.4	0	1	42.4	27	28	42.3	21	78	4.4	38	38
Ireland	42.8	25	15	97.7	28	37	0.0			82.0	37	17
Italy	6.5	0	0	17.5	0	37	4.2	0	100	3.1	0	24
Liechtenstein	3.1	0	2	1.7	0	18	0.0			1.2	0	58
Luxembourg	170.0	3	13	389.8	5	26	0.0			190.8	4	36
Netherlands	22.1	0	4	4.4	0	50	6.7	5	56	0.4	0	70
Norway	11.3	13	6	13.9	4	11	14.5	3	53	1.7	19	47
Poland	1.7	0	0	0.7	0	7	5.9	0	81	0.0		
Portugal	0.5	0	0	0.8	0	31	0.5	1	99	0.3	0	11
Spain	2.4	0	0	6.4	6	41	3.3	20	69	0.9	16	68
Sweden	25.6	1	13	25.8	7	55	52.2	17	73	10.0	10	76
Switzerland	11.7	33	13	11.6	48	11	34.4	63	35	11.9	79	14
United Kingdom	90.2	0	11	127.3	4	17	239.1	14	53	47.6	15	11
United States	613.5	18	12	960.7	25	21	3,576.2	29	14	0.0		
Asia Pacific	28.1	0	6	21.2	0	5	185.5	27	23	20.6	58	17
Other Regions	3.8	0	1	0.2	0	17	25.3	1	47	0.1	0	12
Total (Non-U.S.)	590.7	5	9	887.1	11	26	855.8	17	50	437.3	18	27
Total	1,204.2	12	11	1,847.8	18	24	4,431.9	27	21	437.3	18	27

Table IA.5 (continued)

<i>Panel B: By country of sale</i>												
Domicile	World funds			Regional funds			Country - domestic funds			Country - foreign funds		
	TNA (\$ billion)	Explicit indexing (%)	Closet indexing (%)	TNA (\$ billion)	Explicit indexing (%)	Closet indexing (%)	TNA (\$ billion)	Explicit indexing (%)	Closet indexing (%)	TNA (\$ billion)	Explicit indexing (%)	Closet indexing (%)
Austria	255.6	4	9	476.8	12	24	71.3	16	64	216.0	17	28
Belgium	115.1	1	15	269.1	5	26	17.1	1	83	117.7	6	31
Canada	75.7	4	3	17.1	4	16	204.0	10	56	29.7	3	9
Denmark	105.2	7	14	251.4	12	25	13.0	0	77	106.9	17	33
Finland	109.5	3	17	315.1	7	27	10.6	5	59	146.5	6	34
France	214.8	8	12	506.7	14	24	72.7	15	52	230.2	17	27
Germany	298.1	6	9	556.8	14	24	78.2	13	65	252.5	17	29
Ireland	128.1	10	15	293.0	13	25	21.7			152.4	22	24
Italy	167.7	4	14	363.4	7	27	26.2	26	56	148.7	8	36
Liechtenstein	0.0	0	0	0.6	1	56	0.0			0.8	5	10
Luxembourg	252.5	7	9	496.1	12	26	50.0			249.2	16	30
Netherlands	216.0	7	13	441.4	15	22	36.7	43	38	205.8	17	28
Norway	98.7	2	16	240.8	1	30	22.6	12	54	120.2	1	40
Poland	63.6	0	17	111.1	0	36	5.9	0	81	52.3		
Portugal	89.1	0	20	228.7	2	27	3.1	0	96	119.3	3	41
Spain	180.0	6	12	403.0	11	26	25.3	3	81	197.6	15	28
Sweden	189.0	9	14	410.6	11	24	61.4	15	67	195.1	14	31
Switzerland	255.6	8	9	524.8	15	21	79.1	29	44	246.1	20	26
United Kingdom	255.9	6	13	539.2	12	21	242.8	14	52	269.4	17	22
United States	605.6	18	12	936.3	26	20	3,536.8	29	14	0.0		
Asia Pacific	355.1	4	13	817.1	12	22	559.5	68	11	371.5	8	25
Other Regions	30.8	0	12	71.5	0	13	32.8	0	42	28.2	0	48
Other Countries	1,032.6	15	14	2,412.1	13	24	1,449.8	67	18	766.0	4	34
Total (Non-U.S.)	4,488.6	8	13	9,746.5	11	24	3,083.7	49	30	4,221.9	12	30
Total	5,094.2	9	13	10,682.9	13	24	6,620.5	38	21	4,221.9	12	30

Table IA.6**Determinants of explicit and closet indexing: robustness by country and benchmark type**

This table presents estimates of yearly country-level regressions where the dependent variable is the percentage that explicitly indexed funds represent of the TNA in a country (Explicit Indexing (% TNA)), the TNA-weighted average total shareholder cost of explicitly indexed funds in a country (Explicit Indexing (Average TSC)), and the percentage that active funds with active share measure below 0.6 represent of the TNA in a country (Closet Indexing (% TNA)). The sample includes open-end equity mutual funds taken from Lipper for which holdings are available in LionShares from 2002 to 2010. In Panel A the unit of observation is a country of domicile j and benchmark type b in year t . In Panel B the unit of observation is a country of sale k and benchmark type b in year t . Benchmark types are world funds, regional funds, country - domestic funds (funds investing in their country of domicile) and country - foreign funds (funds investing in a country different from their domicile). Regressions include year dummies. Refer to Appendix A for variable definitions. Robust t -statistics are reported in parentheses. *, **, *** reflects significance at the 10%, 5% and 1% levels.

<i>Panel A: By Country of domicile and benchmark type</i>						
	Explicit indexing (% TNA)		Explicit indexing (Average TSC)		Closet indexing (% TNA)	
	(1)	(2)	(3)	(4)	(5)	(6)
Approval	0.0183 (1.49)		0.1308** (2.58)		0.0024 (0.10)	
Judicial	0.0021** (2.25)		-0.0218*** (-5.57)		-0.0030* (-1.75)	
Fund industry size (log)		0.0206*** (4.32)		-0.0766*** (-3.84)		-0.0166* (-1.91)
Fund industry Herfindahl		0.3905*** (3.81)		0.4524 (1.08)		0.2326 (1.23)
GDP per capita (log)		0.0003 (0.04)		-0.0366 (-1.18)		-0.0070 (-0.48)
Observations	491	473	409	409	490	472
R-squared	0.023	0.064	0.104	0.123	0.080	0.102
<i>Panel B: By country of sale and benchmark type</i>						
	Explicit indexing (% TNA)		Explicit indexing (Average TSC)		Closet indexing (% TNA)	
	(1)	(2)	(3)	(4)	(5)	(6)
Approval	0.0943*** (6.83)		-0.1936*** (-5.04)		-0.0596*** (-2.68)	
Judicial	0.0053*** (5.20)		-0.0352*** (-11.82)		-0.0092*** (-5.60)	
Fund industry size (log)		0.0183*** (3.66)		-0.1004*** (-7.58)		-0.0281*** (-3.45)
Fund industry Herfindahl		-0.1856 (-1.46)		1.5400*** (4.81)		0.0230 (0.11)
GDP per capita (log)		0.0043 (0.55)		-0.0965*** (-4.82)		-0.0116 (-0.90)
Observations	491	491	471	471	490	490
R-squared	0.144	0.088	0.297	0.417	0.118	0.101

Table IA.7**Determinants of active management: robustness**

This table presents estimates of panel regressions where the dependent variable is a fund's active share at year-end, defined as the percentage of a fund's portfolio holdings that differ from the fund's benchmark. Columns (1) and (2) use the sample of non-U.S. domiciled mutual funds. In columns (3) and (4) the dependent variable is the active share measure calculated as the percentage of portfolio holdings that differ from pure-ETFs that track each benchmark. In columns (5) and (6) the dependent variable is the minimum active share calculated against all possible 88 benchmarks. In columns (7) and (8) the dependent variable is the active share calculated against the aggregate stock portfolio of active funds. Columns (9) and (10) present regressions estimates using weighted least squares where the weights are the fund's total net assets. Columns (11) and (12) present regressions estimates including country fixed effects. Columns (13) and (14) present estimates for the sample of domestic funds. Columns (15) and (16) measure explicit indexing at the country-benchmark type level. The sample includes open-end active equity mutual funds taken from Lipper for which holdings are available in LionShares from 2002 to 2010. In Panel A the unit of observation is a fund's primary share class i domiciled in country j in year t . In Panel B the unit of observation is a fund share class s offered for sale in country k in year t . Regressions include the fund and country control variables used in Table 3 (coefficients not shown) as well as year and benchmark dummies. Refer to Appendix A for variable definitions. Robust t -statistics clustered by country of domicile-year (Panel A) or country of sale-year (Panel B) are reported in parentheses. *, **, *** reflects significance at the 10%, 5% and 1% levels.

<i>Panel A: By country of domicile</i>								
	Non-U.S. funds		Pure-ETF active share		Minimum active share		Active share (vs. active)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Explicit indexing (% TNA)	0.0115 (0.74)		0.0414** (2.43)		0.0353** (2.16)		0.0235 (1.30)	
Explicit indexing (Avg. TSC)		-0.0210*** (-4.31)		-0.0255*** (-4.48)		-0.0275*** (-4.79)		-0.0297*** (-5.50)
Observations	41,155	39,222	46,712	45,667	58,255	56,324	58,487	56,554
R-squared	0.620	0.621	0.598	0.601	0.566	0.566	0.620	0.619
	Weighted-least squares		Country fixed effects		Domestic funds		By country-benchmark type	
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Explicit indexing (% TNA)	-0.0256 (-0.98)		-0.0113 (-0.30)		0.0641* (1.74)		0.0175 (0.97)	
Explicit indexing (Avg. TSC)		-0.0325*** (-3.37)		-0.0383*** (-3.66)		-0.0469** (-2.64)		-0.0284*** (-4.42)
Observations	58,487	56,554	58,931	56,554	24,825	24,156	58,487	56,554
R-squared	0.643	0.643	0.329	0.323	0.695	0.692	0.622	0.622

Table IA.7 (continued)

<i>Panel B: By country of sale</i>								
	Non-U.S. funds		Pure-ETF active share		Minimum active share		Active share (vs. active)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Explicit indexing (% TNA)	0.0085 (1.22)		0.0300*** (4.02)		0.0192*** (2.78)		0.0164** (2.14)	
Explicit indexing (Avg. TSC)		-0.0087*** (-3.81)		-0.0100*** (-4.16)		-0.0140*** (-5.14)		-0.0132*** (-4.61)
Observations	372,239	364,933	362,794	356,635	420,378	413,073	443,706	435,899
R-squared	0.623	0.623	0.594	0.593	0.568	0.567	0.618	0.618
	Weighted-least squares		Country fixed effects		Domestic funds		By country-benchmark type	
	(9)	(10)	(11)	(12)	(13)	(14)	(13)	(14)
Explicit indexing (% TNA)	0.0332* (1.96)		-0.0028 (-0.21)		0.0229 (0.56)		-0.0109 (-0.98)	
Explicit indexing (Avg. TSC)		-0.0087 (-1.64)		-0.0162*** (-4.57)		-0.0302*** (-2.90)		-0.0117*** (-3.28)
Observations	423,103	415,797	423,103	415,797	56,202	55,963	423,103	415,797
R-squared	0.641	0.640	0.158	0.159	0.664	0.664	0.617	0.616

Table IA.8**Determinants of the total shareholder costs of active funds: robustness**

This table presents estimates of panel regressions where the dependent variable is a fund's yearly total shareholder cost, defined as total expense ratio plus one-fifth of the front-end load. Columns (1)-(3) use the sample of non-U.S. domiciled mutual funds. In columns (4)-(6) the active share measure is calculated as the percentage of portfolio holdings that differ from pure-ETFs that track each benchmark. In columns (7)-(9) the minimum active share is calculated against all possible 88 benchmarks. In columns (10)-(12) the active share is calculated against the aggregate stock portfolio of active funds. Columns (13)-(15) present regressions estimates using weighted least squares where the weights are the fund's total net assets. Columns (16)-(18) present regressions estimates including country fixed effects. Columns (19)-(21) presents estimates for the sample of domestic funds. Columns (22)-(24) measure explicit at the country-benchmark type level. The sample includes open-end active equity mutual funds taken from Lipper for which holdings are available in LionShares from 2002 to 2010. In Panel A the unit of observation is a fund's primary share class i domiciled in country j in year t . In Panel B the unit of observation is a fund share class s offered for sale in country k in year t . Regressions include the fund and country control variables used in Table 4 (coefficients not shown) as well as year and benchmark dummies. Refer to Appendix A for variable definitions. Robust t -statistics clustered by country of domicile-year (Panel A) or country of sale-year (Panel B) are reported in parentheses. *, **, *** reflects significance at the 10%, 5% and 1% levels.

<i>Panel A: By country of domicile</i>												
	Non-U.S. funds			Pure-ETF active share			Minimum active share			Active share (vs. active)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Explicit indexing (% TNA)	-0.0924 (-0.75)			0.0263 (0.24)			-0.0647 (-0.52)				-0.0540 (-0.43)	
Explicit indexing (Avg. TSC)		0.3276*** (6.73)			0.3138*** (6.23)			0.3257*** (7.43)			0.3288*** (7.52)	
Closet indexing (% TNA)			0.0024 (0.02)			0.1148 (1.01)			0.2866** (2.46)			0.2790** (2.37)
Active share	0.5970*** (11.93)	0.6189*** (11.85)	0.5968*** (11.87)	0.6156*** (11.95)	0.6327*** (11.86)	0.6191*** (11.99)	0.5895*** (13.83)	0.6127*** (14.21)	0.6015*** (13.90)	0.5980*** (13.43)	0.662*** (14.54)	0.610*** (13.40)
Observations	41,155	39,222	41,155	46,712	45,667	46,712	58,255	56,324	58,255	58,487	56,554	58,487
R-squared	0.287	0.289	0.287	0.372	0.381	0.372	0.389	0.391	0.390	0.388	0.3923	0.3897
	Weighted-least squares			Country fixed effects			Domestic funds			By country-benchmark type		
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Explicit indexing (% TNA)	-0.1276 (-0.67)			-0.3483** (-2.21)			-0.1437 (-0.98)				0.0102 (0.10)	
Explicit indexing (Avg. TSC)		0.2755*** (5.07)			0.0920*** (2.70)			-0.0334 (-0.72)			0.4451*** (12.94)	
Closet indexing (% TNA)			0.3311** (2.25)			0.2159*** (2.71)			0.1273* (1.83)			0.0222 (0.39)
Active share	0.5032*** (6.42)	0.5103*** (6.29)	0.5126*** (6.43)	0.2561*** (8.45)	0.2560*** (8.10)	0.2590*** (8.52)	0.6249*** (14.55)	0.6398*** (14.59)	0.6264*** (14.59)	0.6078*** (13.94)	0.6378*** (14.21)	0.6095*** (14.17)
Observations	58,487	56,554	58,487	58,931	56,554	58,931	24,825	24,156	24,825	58,487	56,554	58,487
R-squared	0.513	0.513	0.513	0.415	0.403	0.415	0.426	0.387	0.426	0.390	0.399	0.390

Table IA.8 (continued)

<i>Panel B: By country of sale</i>												
	Non-U.S. funds			Pure-ETF active share			Minimum active Share			Active share (vs. active)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Explicit indexing (% TNA)	-0.3071***			-0.4480***			-0.4170***			-0.4079***		
	(-3.55)			(-5.23)			(-4.27)			(-3.71)		
Explicit indexing (Avg. TSC)		0.1003***			0.0874***			0.1261***			0.1224***	
		(5.00)			(4.80)			(6.00)			(5.32)	
Closet indexing (% TNA)			-0.1382			0.5082***			0.3024**			0.4601***
			(-1.05)			(3.86)			(2.31)			(2.71)
Active share	0.5830***	0.5808***	0.5818***	0.5739***	0.5728***	0.5749***	0.6005***	0.6026***	0.6021***	0.6169***	0.6171***	0.6204***
	(24.36)	(24.00)	(24.18)	(22.03)	(21.73)	(21.89)	(24.22)	(24.05)	(23.99)	(23.95)	(23.59)	(23.14)
Observations	372,239	364,933	372,239	362,794	356,635	362,794	420,378	413,073	420,378	443,706	435,899	443,706
R-squared	0.102	0.102	0.102	0.182	0.184	0.182	0.198	0.198	0.197	0.282	0.282	0.282
	Weighted-least squares			Country fixed effects			Domestic funds			By country-benchmark type		
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(19)	(20)	(21)
Explicit indexing (% TNA)	-0.6323***			-0.1062			-0.3772**			-0.3041***		
	(-4.03)			(-1.53)			(-2.25)			(-3.49)		
Explicit indexing (Avg. TSC)		0.0829***			0.0277**			0.1173**			0.1966***	
		(3.74)			(2.04)			(2.10)			(8.75)	
Closet indexing (% TNA)			1.0300***			0.0337			0.1417			0.0419
			(7.11)			(0.52)			(1.14)			(0.72)
Active share	0.5367***	0.5324***	0.5572***	0.2068***	0.2070***	0.2071***	0.5844***	0.5887***	0.5859***	0.5848***	0.5859***	0.5865***
	(14.01)	(13.77)	(14.80)	(17.52)	(17.15)	(17.43)	(16.41)	(16.40)	(16.44)	(23.94)	(23.63)	(23.84)
Observations	423,103	415,797	423,103	423,103	415,797	423,103	56,202	55,963	56,202	423,103	415,797	423,103
R-squared	0.493	0.493	0.494	0.199	0.200	0.199	0.273	0.252	0.273	0.198	0.200	0.198

Table IA.9**Instrumental variables regressions of active management**

This table presents estimates of instrumental variables regressions of a fund's active share at year-end. The first-stage dependent variables are the percentage that explicitly indexed funds represent of the TNA in a country (Explicit indexing (% TNA)) and the TNA-weighted average total shareholder cost of explicitly indexed funds in a country (Explicit indexing (average TSC)). The sample includes open-end active equity mutual funds taken from Lipper for which holdings are available in LionShares from 2002 to 2010. In Panel A the unit of observation is a fund's primary share class i domiciled in country j in year t . In Panel B the unit of observation is a fund share class s offered for sale in country k in year t . Regressions include the fund and country control variables used in Table 3 as well as year and benchmark dummies. Refer to Appendix A for variable definitions. Robust t -statistics clustered by country of domicile-year (Panel A) or country of sale-year (Panel B) are reported in parentheses. *, **, *** reflects significance at the 10%, 5% and 1% levels.

<i>Panel A: By country of domicile</i>				
	First stage regression		Second stage regression	
	Explicit indexing (% TNA)	Explicit indexing (average TSC)	Active share	
	(1)	(2)	(3)	(4)
Explicit indexing (% TNA)			0.9795*** (3.04)	
Explicit indexing (average TSC)				-0.2421*** (-3.89)
Financial sophistication	0.0316** (2.40)	-0.1169** (-2.22)		
DC pension market	0.0583*** (4.48)	-0.2570*** (-3.93)		
Observations	56,590	54,669	56,590	54,669
R-squared	0.666	0.758	0.211	0.230
Instruments F-statistic	10.04	8.63		
p-value	0.000	0.000		
Hansen J-statistic			2.604	1.041
p-value			0.107	0.308
<i>Panel B: By country of sale</i>				
	First stage regression		Second stage regression	
	Explicit indexing (% TNA)	Explicit indexing (average TSC)	Active share	
	(1)	(2)	(3)	(4)
Explicit indexing (% TNA)			0.6072*** (4.36)	
Explicit indexing (average TSC)				-0.0612*** (-2.78)
Financial sophistication	0.0246*** (4.00)	-0.1943*** (-6.47)		
DC pension market	0.0521*** (6.96)	-0.1116*** (-4.53)		
Observations	420,262	412,956	420,262	412,956
R-squared	0.558	0.685	0.110	0.122
Instruments F-statistic	30.60	31.56		
p-value	0.000	0.000		
Hansen J-statistic			1.545	0.921
p-value			0.214	0.337

Table IA.10**Instrumental variables regression of the total shareholder costs of active funds**

This table presents estimates of instrumental variables regressions of a fund's yearly total shareholder cost, defined as total expense ratio plus one-fifth of the front-end load. The first-stage dependent variables are the percentage that explicitly indexed funds represent of the TNA in a country (Explicit indexing (% TNA)), TNA-weighted average total shareholder cost of explicitly indexed funds in a country (Explicit indexing (average TSC)), or percentage that active funds with active share measure below 0.6 represent of the TNA in a country (Closet indexing (% TNA)). The sample includes open-end active equity mutual funds taken from Lipper for which holdings are available in LionShares from 2002 to 2010. In Panel A the unit of observation is a fund's primary share class i domiciled in country j in year t . In Panel B the unit of observation is a fund share class s offered for sale in country k in year t . Regressions include the fund and country control variables used in Table 4 as well as year and benchmark dummies. Refer to Appendix A for variable definitions. Robust t -statistics clustered by country of domicile-year (Panel A) or country of sale-year (Panel B) are reported in parentheses. *, **, *** reflects significance at the 10%, 5% and 1% levels.

<i>Panel A: By country of domicile</i>						
	First stage regression			Second stage regression		
	Explicit indexing (% TNA)	Explicit indexing (Average TSC)	Closet indexing (% TNA)	Total shareholder cost		
	(1)	(2)	(3)	(4)	(5)	(6)
Explicit indexing (% TNA)				-4.3860*** (-3.58)		
Explicit indexing (avg. TSC)					0.6938*** (3.36)	
Closet indexing (% TNA)						1.3072*** (3.99)
Financial sophistication	0.0603*** (4.62)	-0.2664*** (-4.05)	-0.1759*** (-11.68)			
DC pension market	0.0321** (2.46)	-0.1229** (-2.32)	-0.0244 (-1.34)			
Observations	56,590	54,669	56,590	56,590	54,669	56,590
R-squared	0.668	0.752	0.723	0.236	0.329	0.310
Instruments F-statistic	10.67	9.17	72.13			
p-value	0.000	0.000	0.000			
Hansen J-statistic				2.659	0.172	1.798
p-value				0.103	0.679	0.180
<i>Panel B: By country of sale</i>						
	First stage regression			Second stage regression		
	Explicit indexing (% TNA)	Explicit indexing (TSC)	Closet indexing (% TNA)	Total shareholder cost		
	(1)	(2)	(3)	(4)	(5)	(6)
Explicit indexing (% TNA)				-1.1098*** (-2.61)		
Explicit indexing (avg. TSC)					0.1695** (2.28)	
Closet indexing (% TNA)						0.8339*** (2.85)
Financial sophistication	0.0518*** (6.95)	-0.1108*** (-4.54)	-0.0840*** (-9.45)			
DC pension market	0.0247*** (4.00)	-0.1944*** (-6.47)	-0.0242*** (-3.85)			
Observations	420,262	412,956	420,262	420,262	412,956	420,262
R-squared	0.557	0.685	0.546	0.168	0.170	0.169
Instruments F-statistic	30.52	31.73	45.53			
p-value	0.000	0.000	0.000			
Hansen J-statistic				0.263	1.921	0.022
p-value				0.608	0.166	0.882

Table IA.11**Determinants of the performance of active funds: robustness**

This table provides presents estimates of panel regressions where the dependent variable is the yearly fund performance. Column (1) uses benchmark-adjusted return which is the difference between the fund return and its benchmark return. Column (2) uses four-factor alphas estimated using excess returns. Column (3) uses the information ratio. All other columns use benchmark-adjusted return four-factor alphas. Column (4) includes the R-squared measure of Amihud and Goyenko (2013). In column (5) the active share measure is calculated as the percentage of portfolio holdings that differ from pure-ETFs that track each benchmark. In column (6) the minimum active share is calculated against all possible 88 benchmarks. In column (7) the active share is calculated against the aggregate stock portfolio of active funds. Column (8) presents regressions estimates using weighted least squares where the weights are the fund's total net assets. Column (9) uses the sample of non-U.S. domiciled mutual funds. Column (10) presents regression estimates including country fixed effects. Column (11) presents estimates for the sample of domestic funds. The sample includes open-end active equity mutual funds taken from Lipper for which holdings are available in LionShares from 2002 to 2010. In Panel A the unit of observation is a fund's primary share class i domiciled in country j in year t . In Panel B the unit of observation is a fund share class s offered for sale in country k in year t . All explanatory variables are lagged by one period. Regressions include the fund and country control variables used in Table 7 (coefficients not shown) as well as year and benchmark dummies. Refer to Appendix A for variable definitions. Robust t -statistics clustered by country of domicile-year (Panel A) or country of sale-year (Panel B) are reported in parentheses. *, **, *** reflects significance at the 10%, 5% and 1% levels.

<i>Panel A: By country of domicile</i>											
	Benchmark-adjusted returns	Excess return four-factor alphas	Information ratio	R-squared	Pure-ETF active share	Minimum active share	Active share (vs. active)	Weighted-least squares	Non-U.S. funds	Country fixed effects	Domestic funds
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Active share	0.0450*** (6.45)	0.0161** (2.46)	0.6138*** (7.50)	0.0318*** (6.21)	0.0342*** (7.08)	0.0330*** (5.50)	0.0311*** (5.92)	0.0246*** (2.72)	0.0330*** (5.36)	0.0141** (2.31)	0.0214** (2.31)
Tracking error	0.0184 (0.56)	-0.1073*** (-3.00)	0.2588 (0.83)	-0.0826*** (-3.22)	-0.1156*** (-5.05)	-0.0737*** (-3.05)	-0.0786*** (-3.43)	0.0176 (0.25)	-0.0818* (-1.96)	-0.1069*** (-4.96)	-0.0944*** (-3.24)
TR ²				0.0008 (0.62)							
Observations	50,925	51,570	51,570	51,570	51,570	51,351	49,864	35,310	40,365	51,919	22,099
R-squared	0.056	0.167	0.087	0.074	0.089	0.074	0.073	0.093	0.083	0.019	0.084
<i>Panel B: By country of sale</i>											
	Benchmark-adjusted returns	Excess return four-factor alphas	Information ratio	R-squared	Pure-ETF active share	Minimum active share	Active share (vs. active)	Weighted-least squares	Non-U.S. funds	Country fixed effects	Domestic funds
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(7)
Active share	0.0572*** (13.76)	0.0362*** (7.22)	1.1120*** (22.06)	0.0548*** (12.96)	0.0669*** (13.52)	0.0544*** (12.01)	0.0428*** (9.88)	0.0216*** (3.75)	0.0591*** (12.12)	0.0113** (2.53)	0.0265*** (3.22)
Tracking error	0.0126 (0.53)	-0.1230*** (-4.79)	0.2701 (1.11)	-0.1221*** (-4.99)	-0.1863*** (-6.63)	-0.1020*** (-4.50)	-0.0993*** (-4.14)	0.1306*** (3.12)	-0.1264*** (-4.03)	-0.0455*** (-3.07)	-0.1097*** (-10.10)
TR ²				0.0008 (1.26)							
Observations	342,251	346,711	346,711	346,711	288,823	344,446	371,948	346,711	300,604	346,711	49,413
R-squared	0.058	0.187	0.131	0.101	0.135	0.101	0.099	0.112	0.107	0.017	0.084

Table IA.12

Differences-in-differences performance estimates using the Passage of Pension Acts

This table presents differences-in-differences estimates where the dependent variable is a fund's yearly benchmark-adjusted return four-factor alpha. Benchmark-adjusted return is the difference between the fund net return and its benchmark return. Four-factor alphas are estimated using three years of past monthly benchmark-adjusted fund returns in U.S. dollars with regional factors (Asia, Europe, North America or Emerging Markets) or world factors in the case of world funds. The sample includes open-end active equity mutual funds taken from Lipper for which holdings are available in LionShares from 2002 to 2010. In column (1) the unit of observation is a fund's primary share class i domiciled in country j in year t . In column (2) the unit of observation is a fund share class s offered for sale in country k in year t . Post pension act (year ≥ 0) is a dummy variable that equals one if a fund's country has passed a pension act that year or earlier. Regressions include year and fund fixed effects, and the fund and country control variables used in Table 7 (coefficients not shown). Refer to Appendix A for variable definitions. Robust t -statistics clustered by country of domicile-year (Panel A) or country of sale-year (Panel B) are reported in parentheses. *, **, *** reflects significance at the 10%, 5% and 1% levels.

	By country of domicile	By country of sale
	(1)	(2)
Post pension act (year ≥ 0)	0.0255** (1.98)	0.0343*** (4.05)
Active share	0.0235 (1.32)	0.0413*** (3.42)
Post pension act (year ≥ 0) \times Active share	-0.0235 (-1.39)	-0.0400*** (-3.50)
Tracking error	-0.1030 (-1.20)	-0.0480 (-0.88)
Observations	22,802	46,868
R-squared	0.286	0.299