The Mutual Fund Industry Worldwide: Explicit and Closet Indexing, Fees, and Performance

Martijn Cremers, Miguel Ferreira,

Pedro Matos and Laura Starks

The value of active management

Academic evidence regarding the value of active management in mutual funds

- **Against**
  - Sharpe (1966), Jensen (1968), Gruber (1996), French (2008), Fama and French (2010), and others
- **For**
  - Grinblatt and Titman (1989, 1993), Kacperzyck, Sialm and Zheng (2008), Cremers and Petajisto (2009), and others

But: the fund market speaks for itself

- What percentage of mutual fund assets worldwide is **managed passively** through index funds or exchange-traded funds?

16%

- **Outside the U.S.** the total is **7%**

93% is actively managed!

- **In the U.S.** the total is **20%**

80% is actively managed!

Question 1

What is the degree of passive versus active fund management around the world?

- **Explicit indexing**: (enhanced) index funds and passive, index-tracking ETFs
- **Closet Indexing**: funds claiming to be active but whose holdings are 'similar' to their benchmark, or with a **low Active Share**
- **Active management**: funds that are **truly active** in terms of distance from benchmark holdings

Question 2

How are the levels and nature of active management associated with shareholder outcomes?

- **Fees**: 'total shareholder costs'

  = total expense ratio + front-end load / 5

- **Performance**: relative to self-declared benchmark
  - **Benchmark-adjusted return**
  - **Alpha** of Benchmark-adjusted return
  - **Information Ratio** of Benchmark-adj. return

Question 3

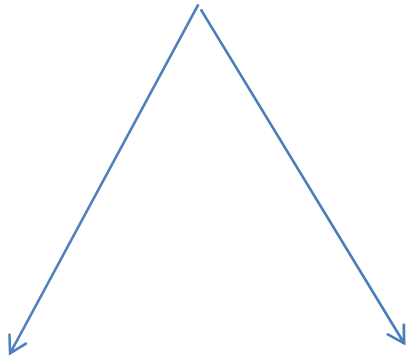
What explains the levels and nature of active and passive management across countries?

- **Competition**: industry concentration, foreign presence, presence + cost of explicit indexing, financially sophisticated investors
- **Regulation**: setup cost to start new fund, setup time to start new funds
- **Investment opportunities**: number of stocks, concentration in benchmark, liquidity, market cap, volatility

These are important questions

As of June 2010, worldwide

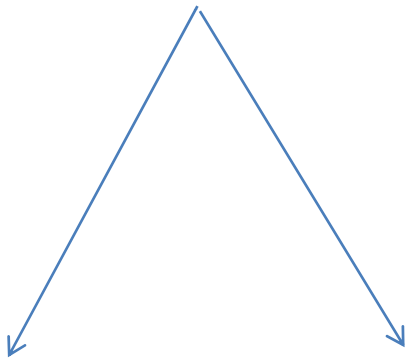
>68,000 mutual funds



7600 U.S.
11%

60,400 non-U.S.
89%

>$21 trillion in AUM



$10.5 trillion U.S.
<50%

$10.5 trillion non-U.S.
>50%

Overview of Results

- **Existence of passive management**:
  - Little explicit indexing around the world
  - Sizeable amount of closet indexing
- **Implications for shareholder outcomes**:
  - Passive management is related to fees
    - More **explicit indexing** exists ↔ **lower fees**
    - More **closet indexing** exists ↔ **higher fees**
  - **Active management can outperform**
    - A **1 σ increase in Active Share** associated with increase of
      0.94% per year in future benchmark-adjusted returns and
      0.50% per year in alpha.
- **Active management** is associated with indicators of a country's **competitive** and **regulatory** environment, but also with more investment **opportunities**

Data

- **Lipper Hindsight database**
  - Characteristics and returns of open-end equity mutual funds (called UCITS in Europe)

UCITS = Undertakings for Collective Investment in Transferable Securities

- **Factset/Lionshares database**
  - Mutual funds' portfolio holdings
  - Coverage for **> 80% of TNA of Lipper database**

Sample

- **10,145 funds ($7.9 trillion TNA) with holdings**
- **30 countries**
  20 in Europe & North America + 10 in Asia-Pacific
- **Global funds, regional funds, country funds, sector funds**
- **2002-2007** (being updated)

Benchmarks

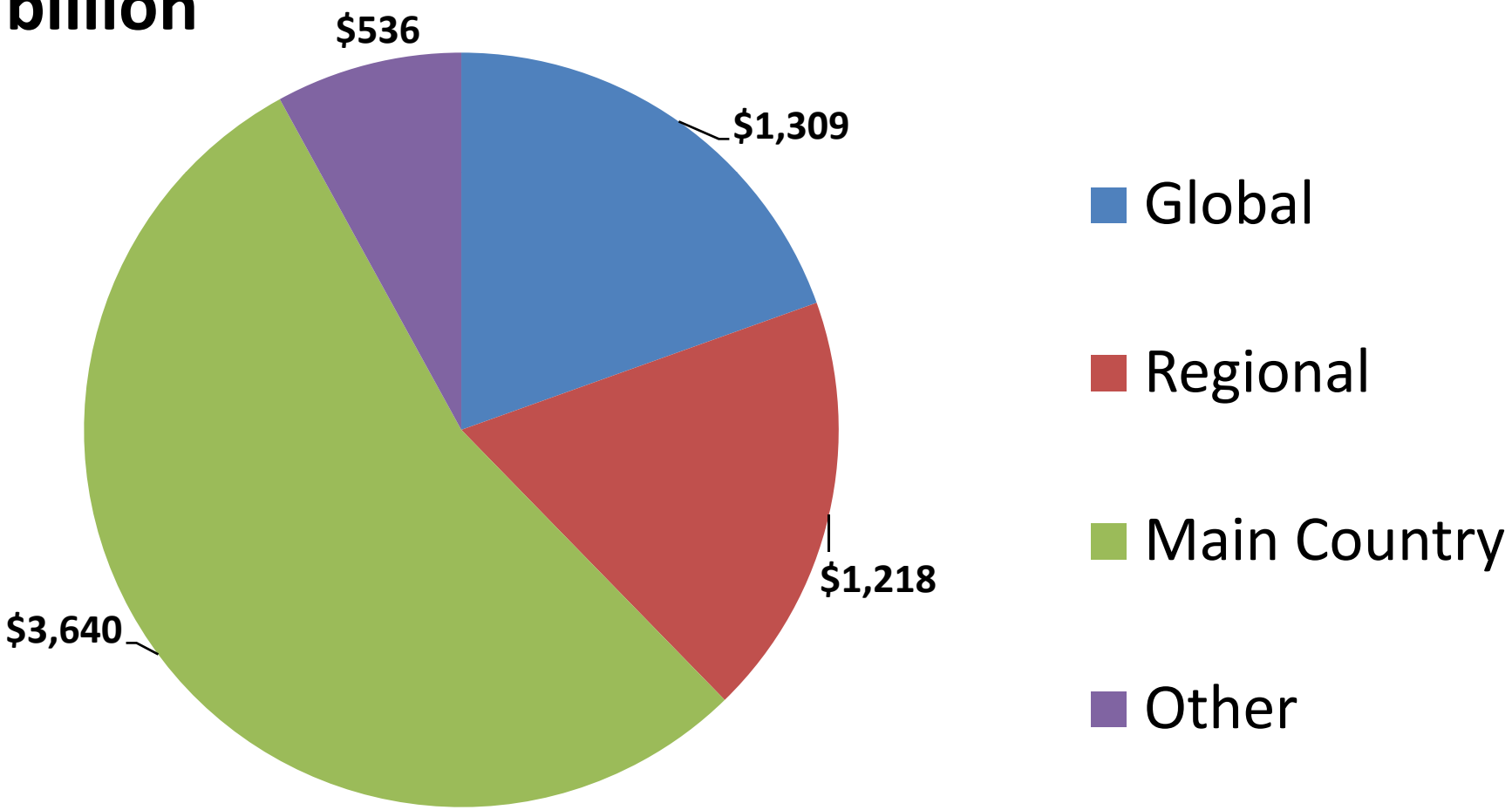
Benchmark type (**77 different benchmarks**):

- **COUNTRY** (specific country – all stocks, industry or style, further divided into **MAIN COUNTRY** or **OTHER**)
  - **DOMESTIC** Market => 4,136 funds, US$4.5 trillion
  - **FOREIGN** Market => 2,069 funds, US$ 0.6 trillion
- **WORLD** => 1,506 funds, US$ 1.4 trillion
- **REGIONAL** => 2,434 funds, US$1.5 trillion

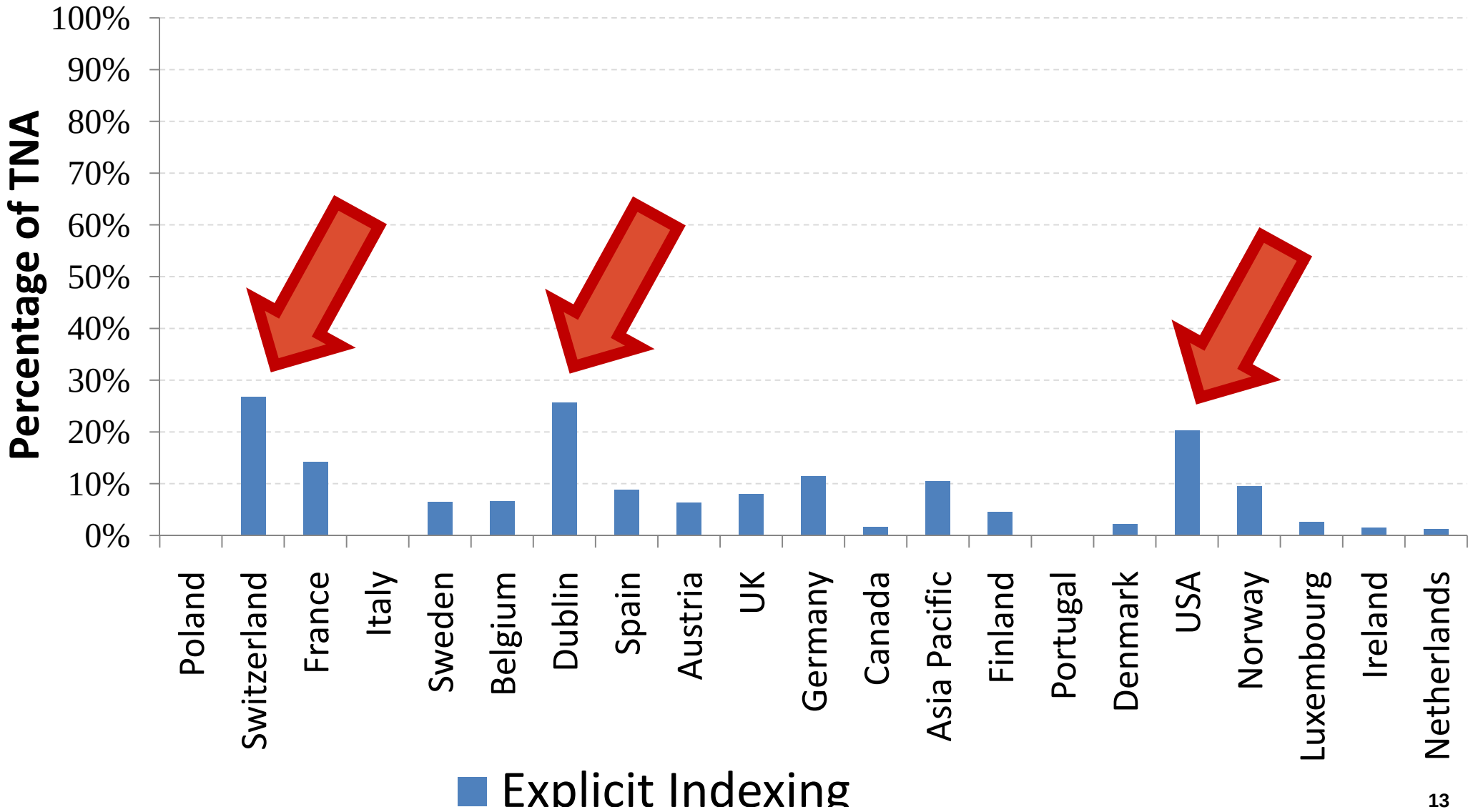
International Sample TNA (2007, bln)

Cross-section in 2007, sum of TNA of all funds with holdings:

$ 6,700 billion



Extent of Explicit Indexing



Truly Active versus Closet Index Funds

- Decompose portfolio into two parts:

$$\text{Portfolio} = \underbrace{(\text{Index})}_{\text{Passive}} + \underbrace{(\text{Portfolio} - \text{Index})}_{\text{Active}}$$

- Distinguish **truly active** funds from those that are not very active, but only advertise themselves as active, i.e. **closet index funds**

Active Share

Cremers and Petajisto, 2009

- Measure based on **'active' portfolio holdings**
- Compare **portfolios weights**: fund versus its benchmark

$$Active\ Share = \frac{1}{2}\sum_{i=1}^{N}\left|w_{fund,i} - w_{benchmark,i}\right|$$

- **Size of the active positions as a fraction of the entire portfolio**
- **Proportion of portfolio that is different from its benchmark**
- Between 0 and 100% for mutual funds
- Easy to compute, to interpret and compare
  - But hard to "game"
  - Persistent over time for typical fund

Tracking Error (Volatility)

- Consider the same portfolio decomposition:

$$\text{Portfolio} = \underbrace{(\text{Index})}_{\text{Passive}} + \underbrace{(\text{Portfolio} - \text{Index})}_{\text{Active}}$$

- Expressed in terms of **returns**:

$$R_{Portfolio} = R_{Index} + R_{Active}$$

- **Tracking error** is defined as the **standard deviation of the active return**:

$$\sigma_{\epsilon} = Stdev\left[R_{Active} \right]$$

$$= Stdev\left[R_{Portfolio} - R_{Index} \right]$$

Active Share and Tracking Error and Passive Management

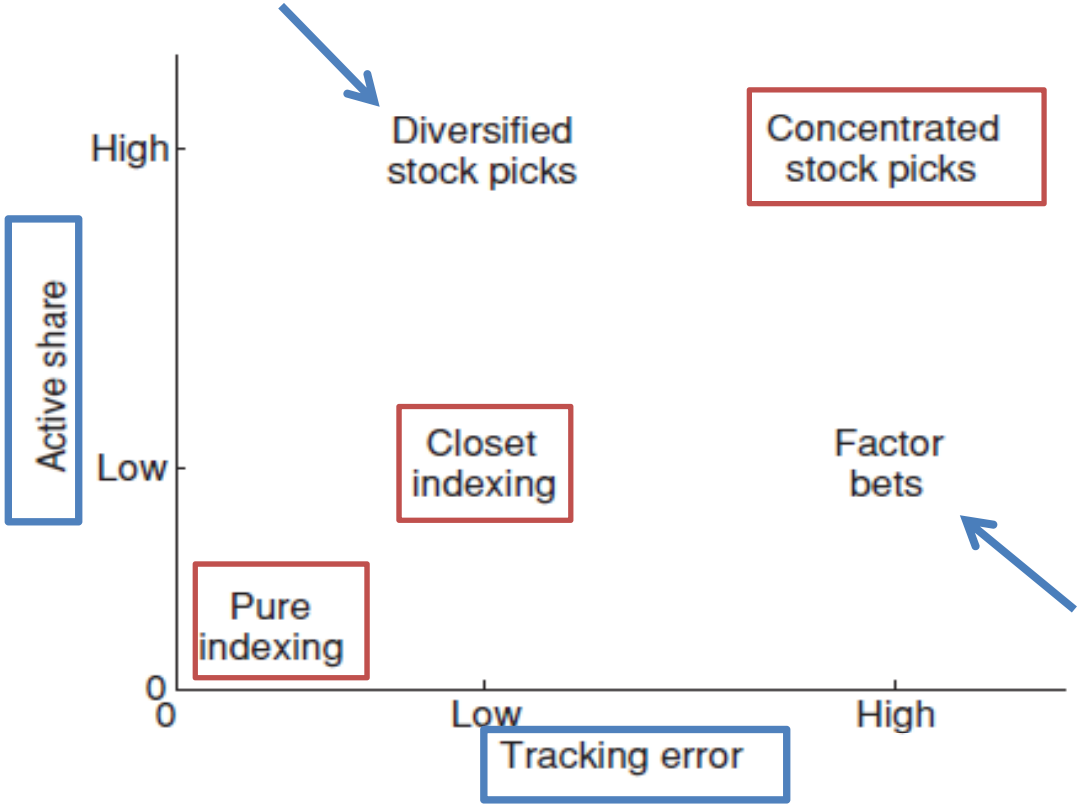
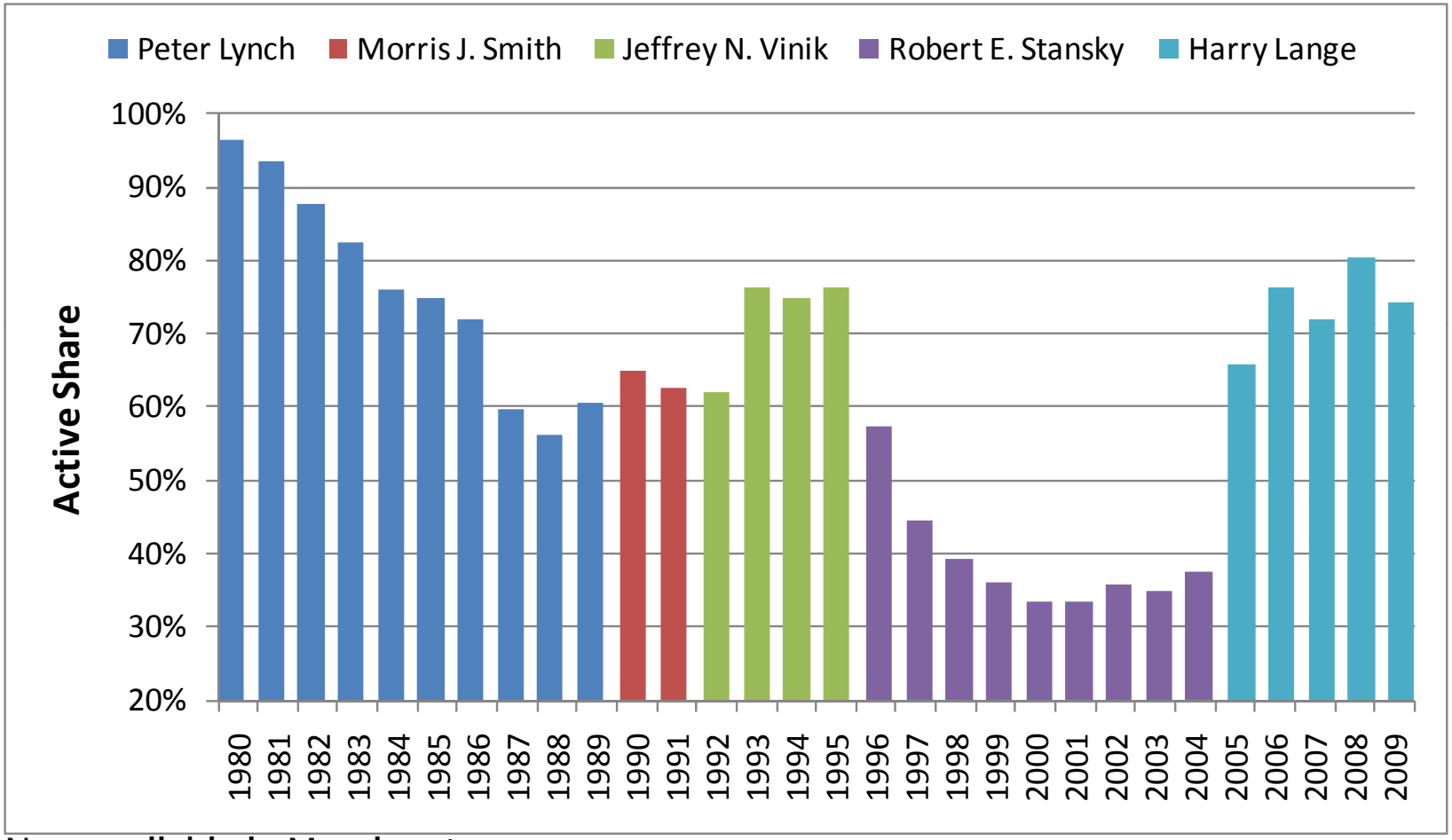


Figure 1
Different types of active and passive management
Active Share represents the fraction of portfolio holdings that differ from the benchmark index, thus emphasizing stock selection. Tracking error is the volatility of fund return in excess of the benchmark, so it emphasizes bets on systematic risk.

From Cremers-Petajisto, 2009

Example: Fidelity Magellan's Period of Closet Indexing



Now available in Morningstar:

MORNINGSTAR

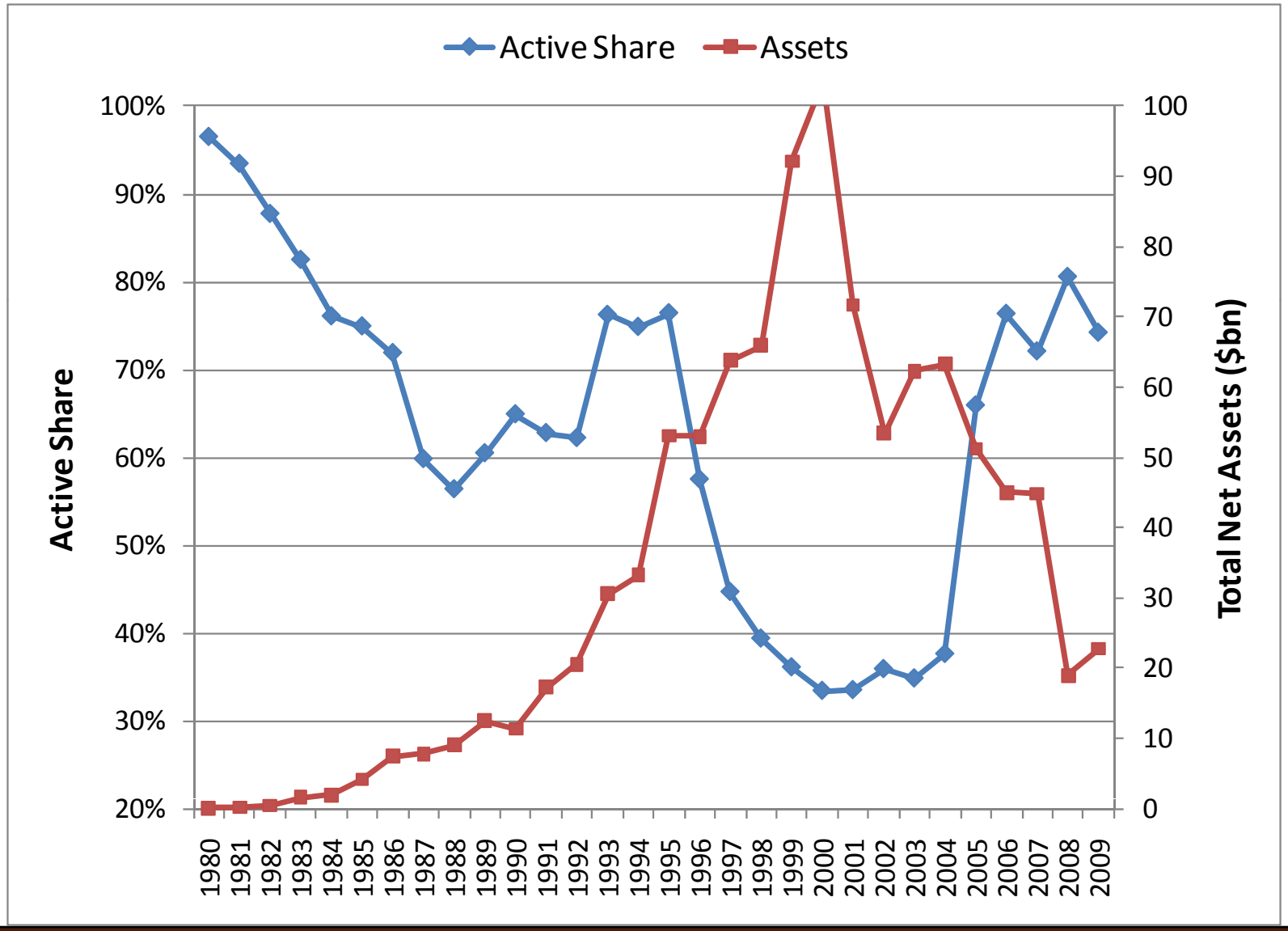
Find Out How Active Your Fund Is

By Russel Kinnel | 08-16-10 | 06:00 AM | E-mail Article

Go Active or Go Home

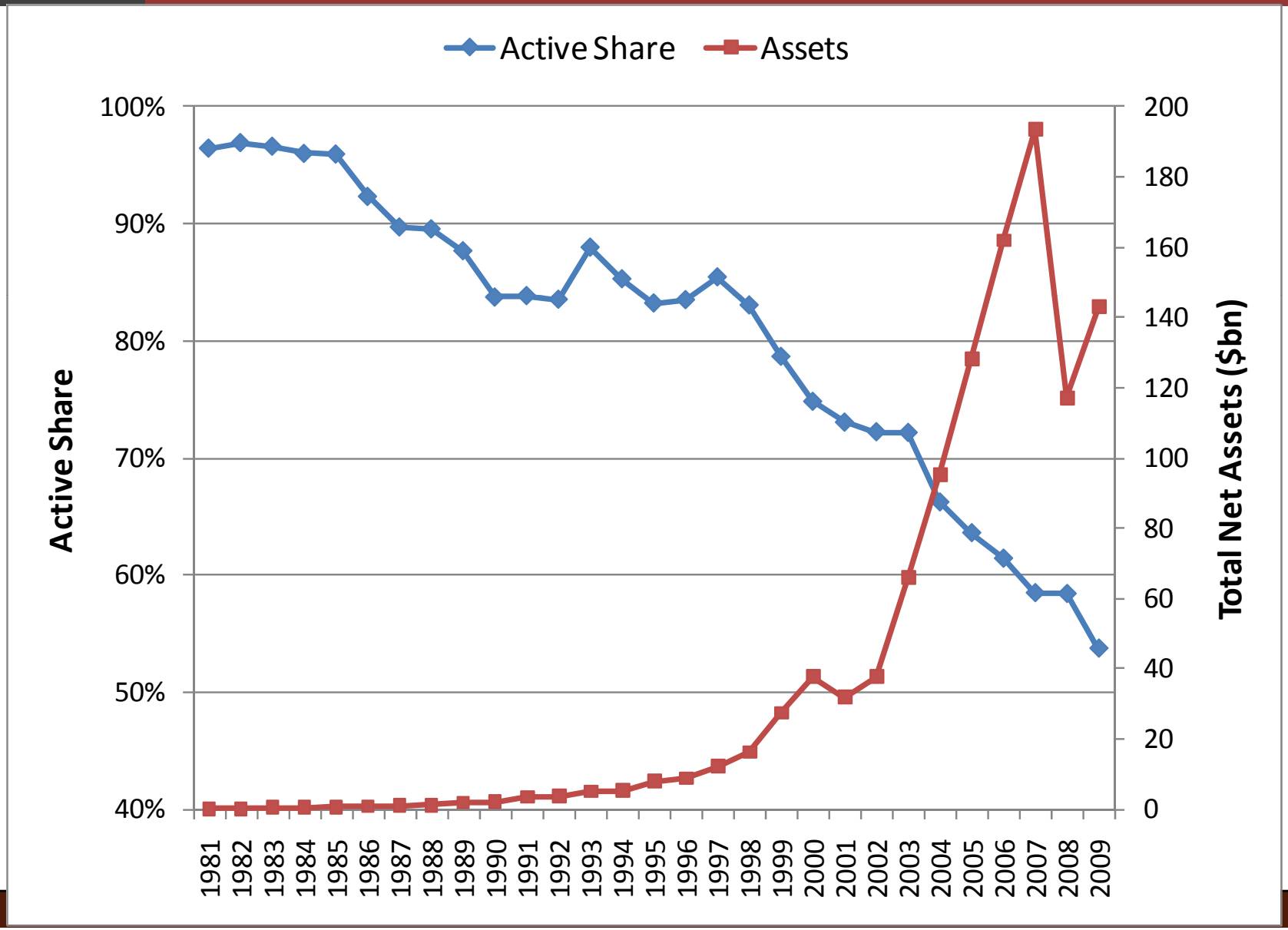
By Ryan Leggio | 09-06-10 | 06:00 AM | E-mail Article

Fidelity Magellan's Active Share & Total Assets



More Assets, Less Active Management?

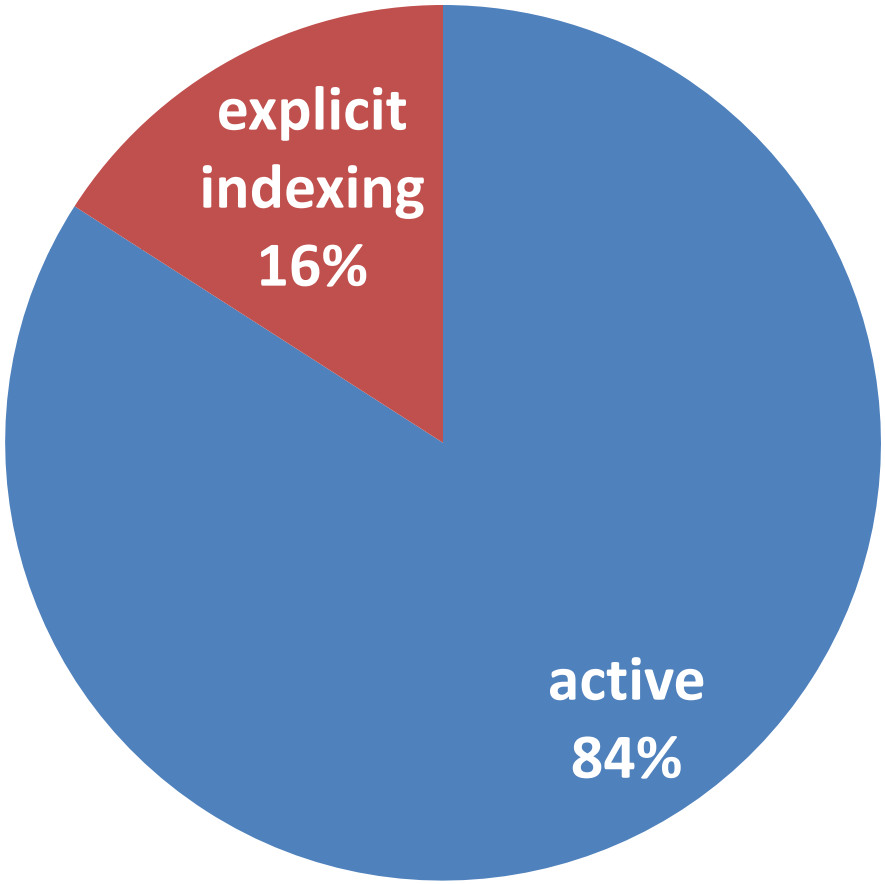
Growth Fund of America



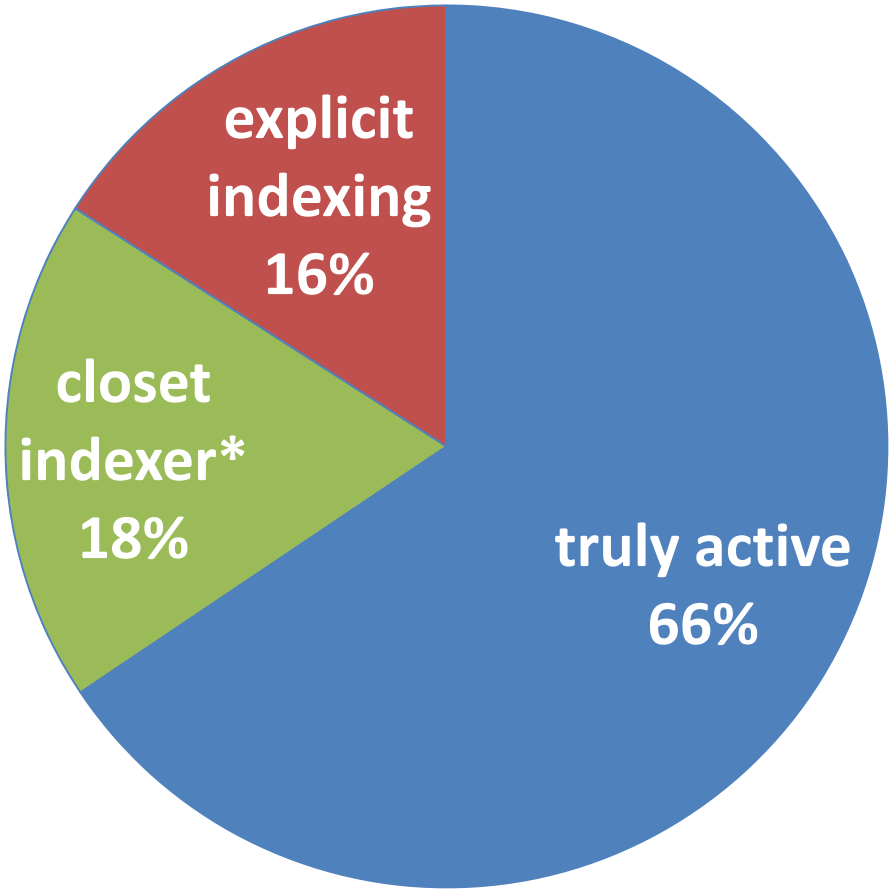
Active Share percentage cut-off

- **Closet Indexer** = **Active Share below 60%**
  - At least 40% of the fund portfolio holdings overlap with the benchmark index
- Subjective / arbitrary cutoff, but
  - *ex post*, exactly half the holdings in any portfolio will beat the portfolio's (average) return
  - … thus **a truly active fund manager should have an Active Share of clearly more than 50%**

Explicit Indexing vs. Active Management in Worldwide Funds

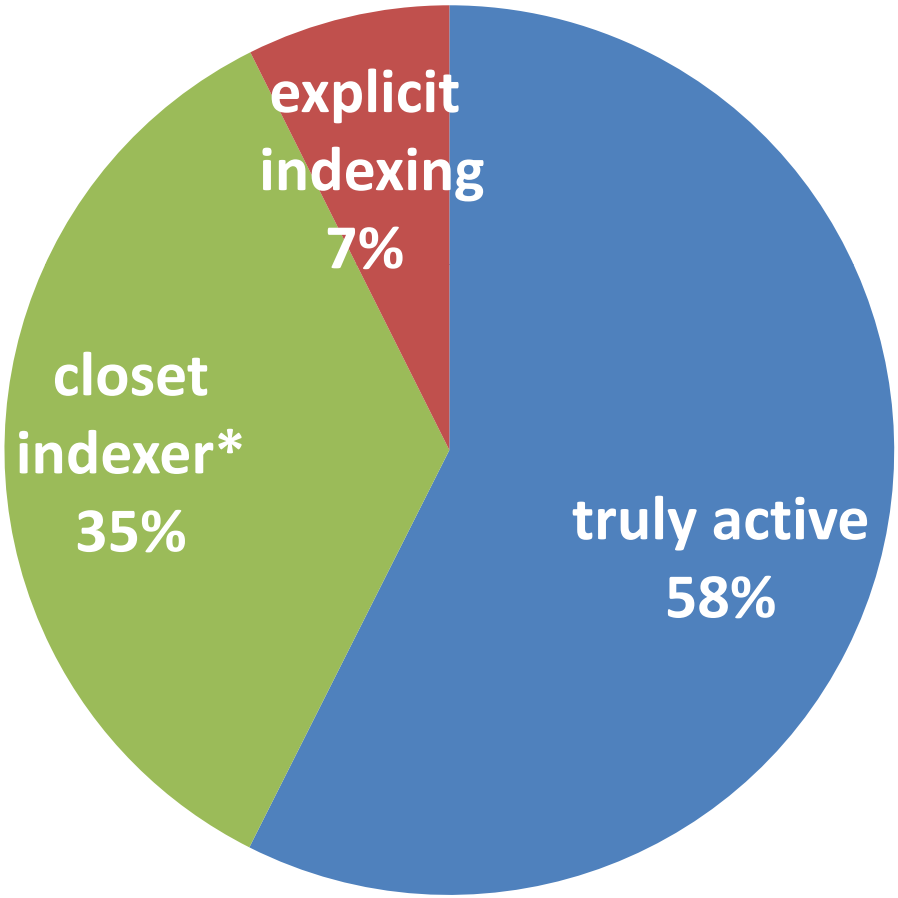


Explicit Indexing, Closet Indexing, and Truly Active % in Worldwide Funds



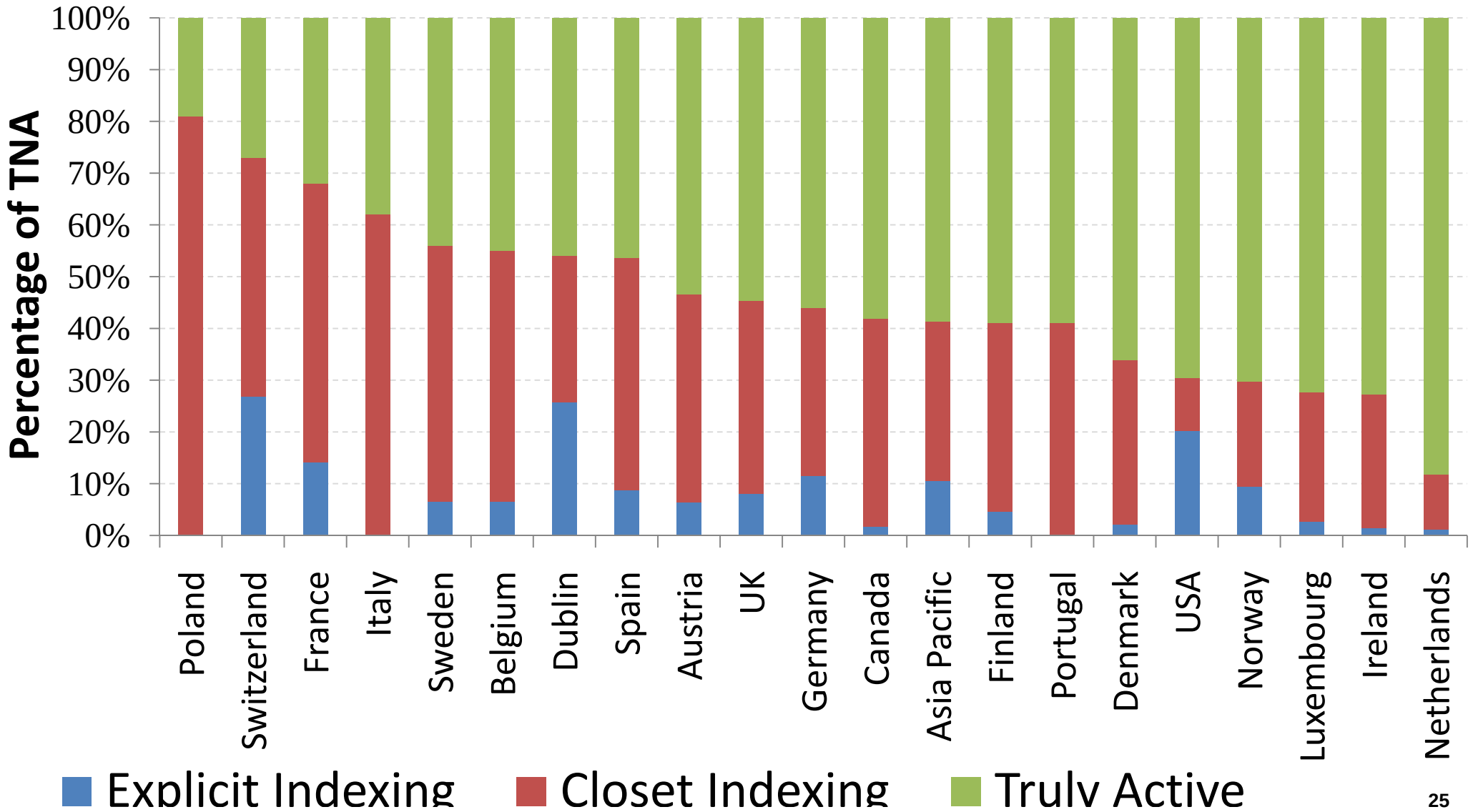
*Active share < 60%

Explicit Indexing, Closet Indexing, and Truly Active % in Non-U.S. Funds

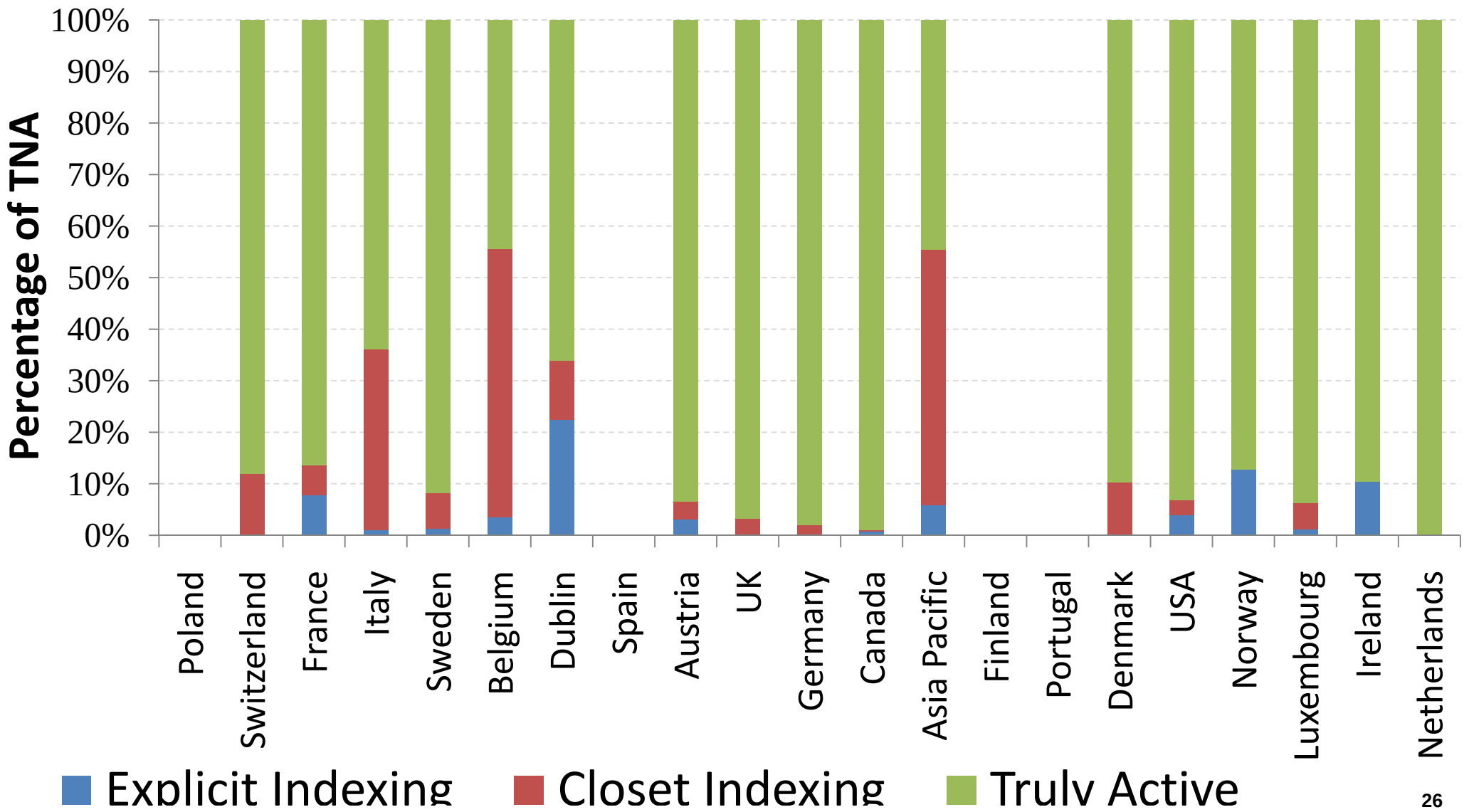


*Active share < 60%

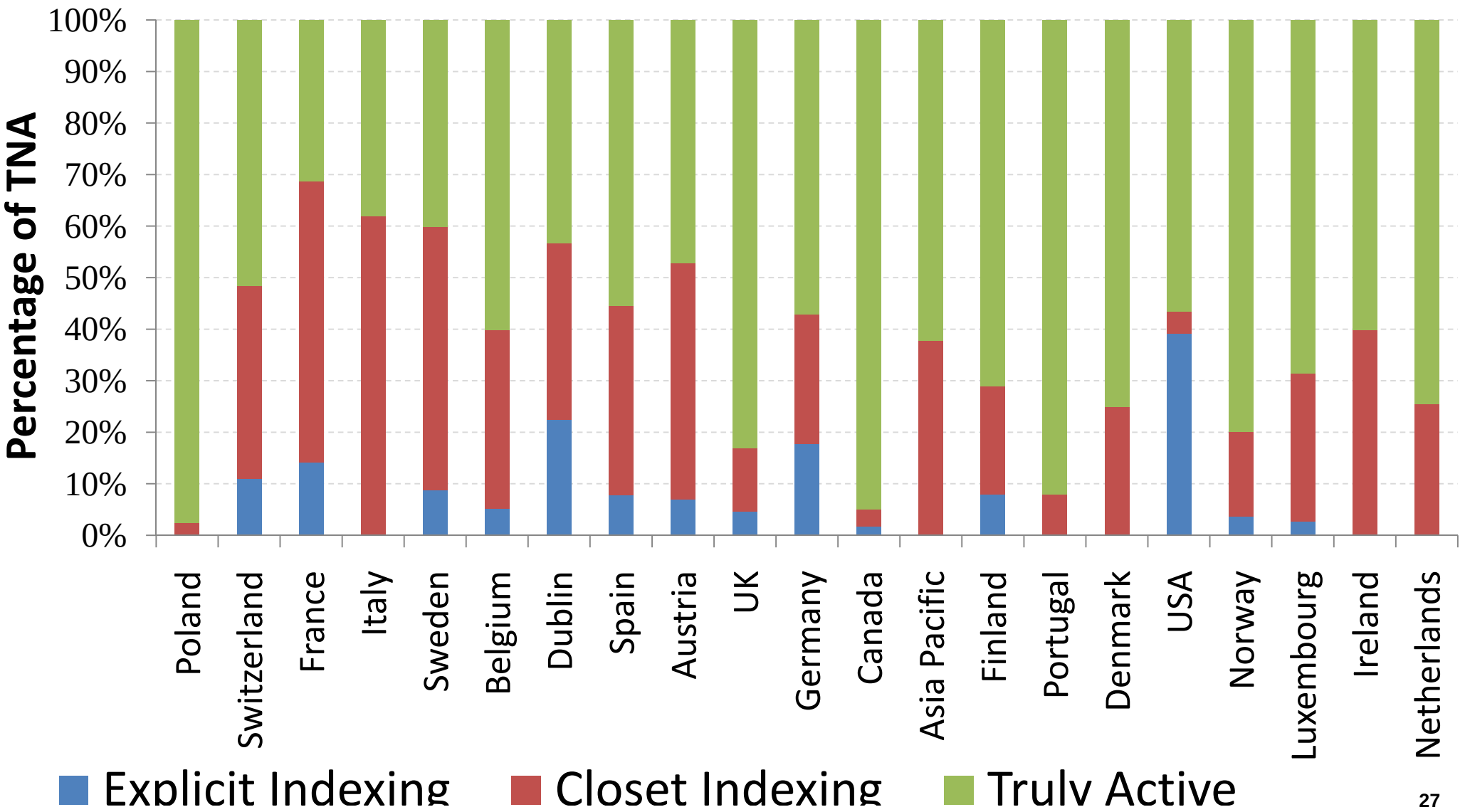
Individual Country Analyses



Global Funds Only

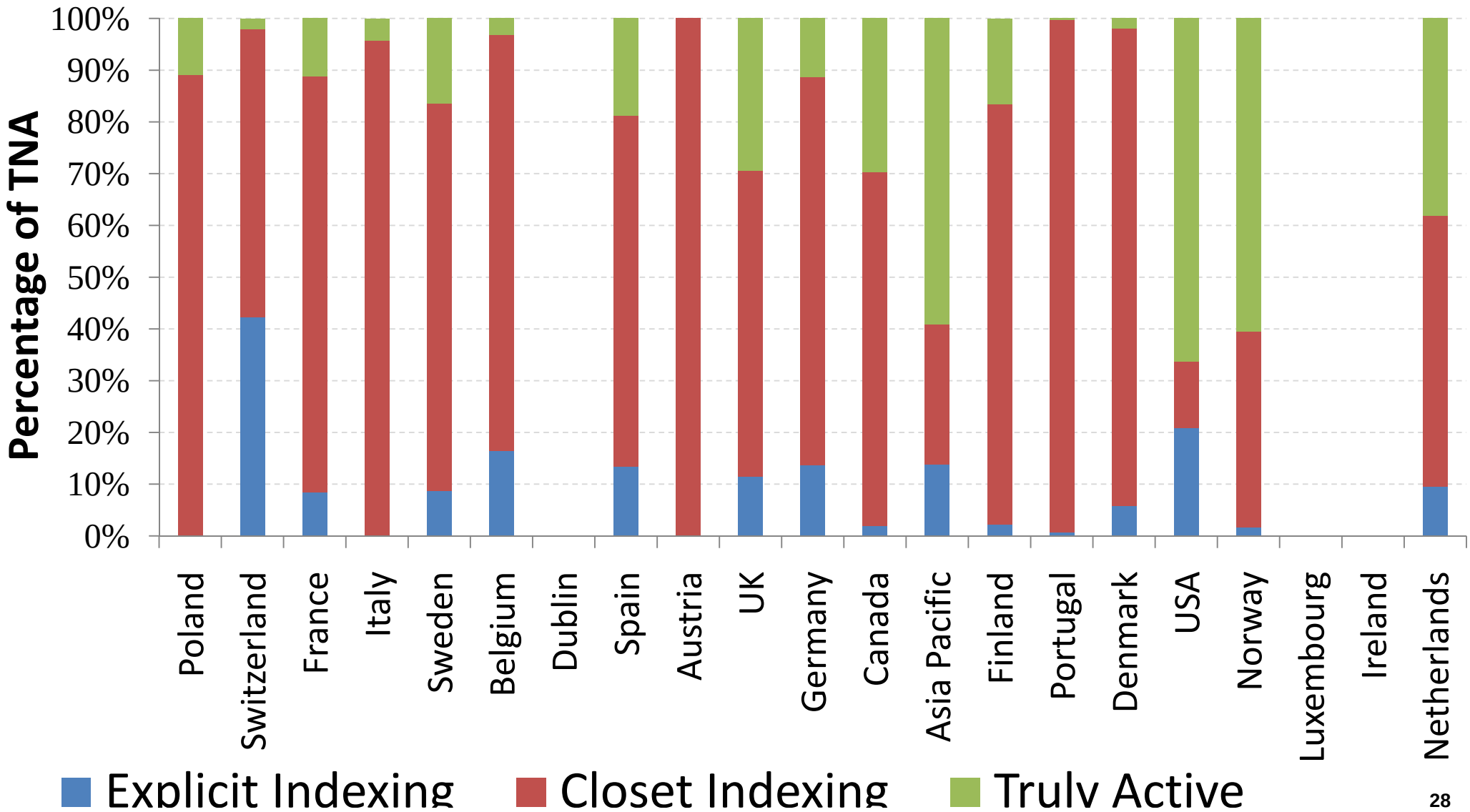


Regional Funds Only



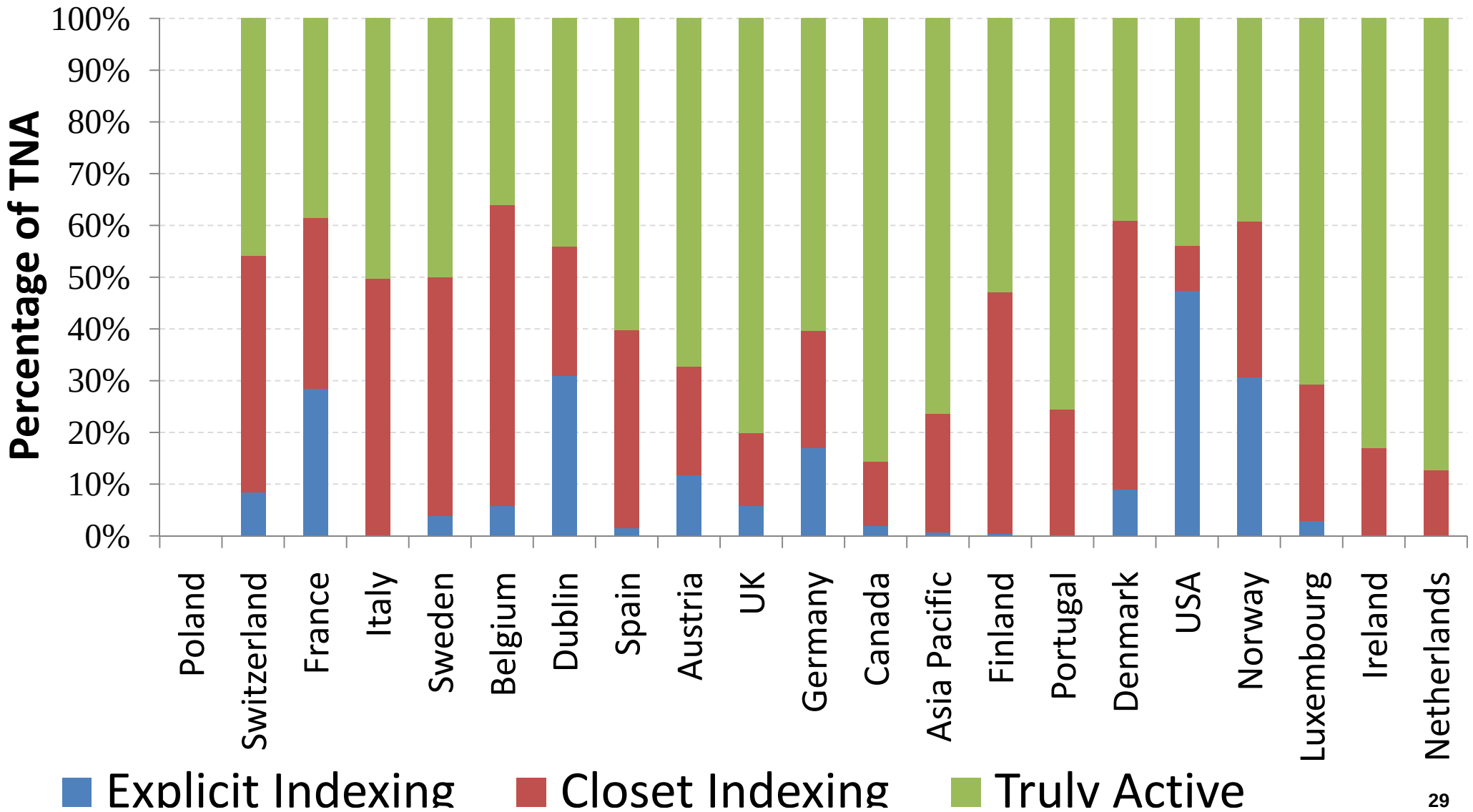
Domestic Country Funds Only

(Fund domiciled in same country as the firms held)



Foreign Country Funds Only

(Fund domiciled in a different country than the firms held)



Fund Fees (Total Shareholder Costs)

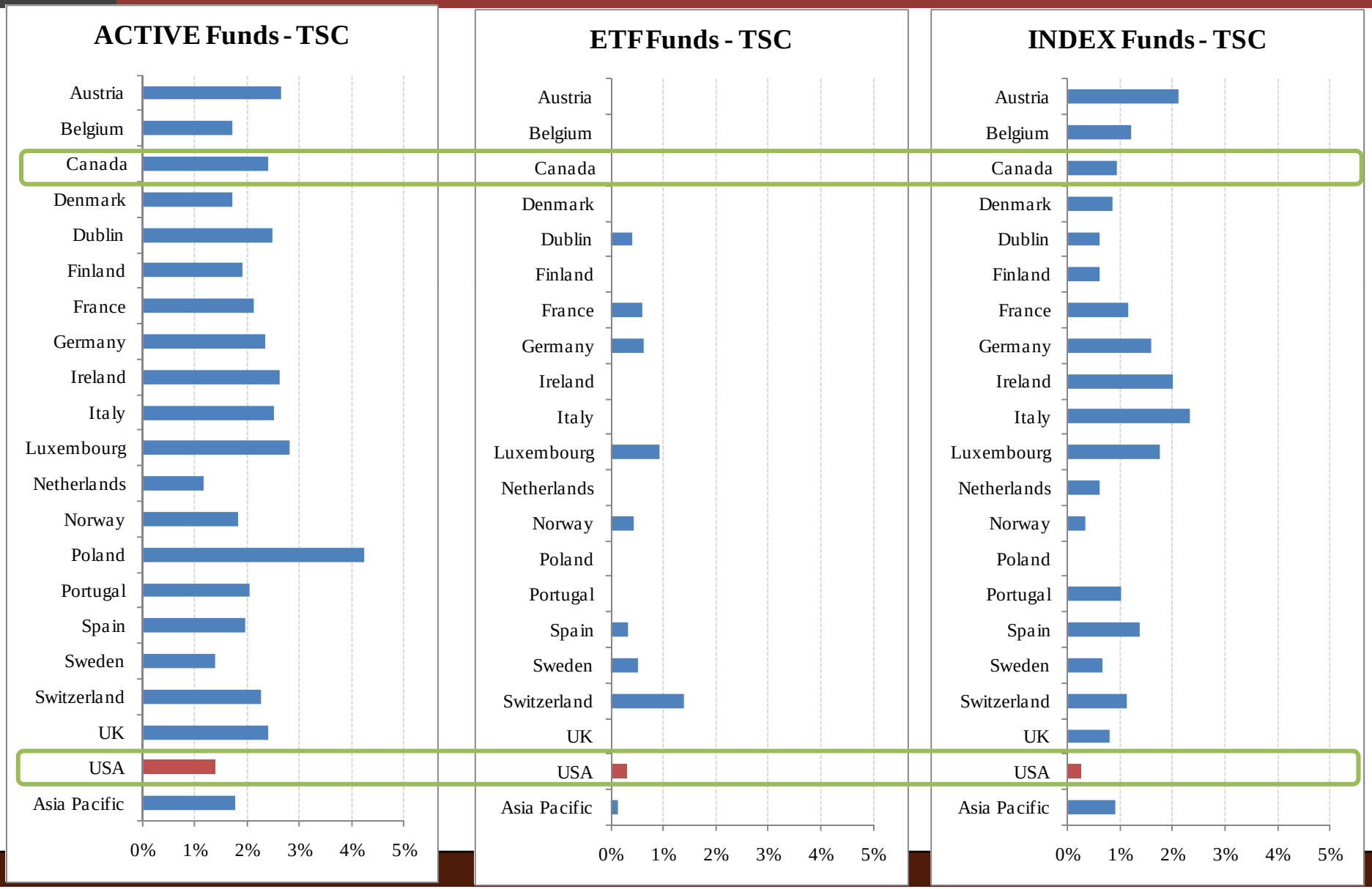
Calculated as

Total Expense Ratio + front-end load/5

Table 3 shows (unsurprising) results across countries:

- **Index funds and ETFs have lower costs**
- **U.S. lowest costs**
- Differences across countries generally larger than differences within countries (across fund types)

Fees by Fund Type



Hypotheses on relation between fees and explicit or closet indexing

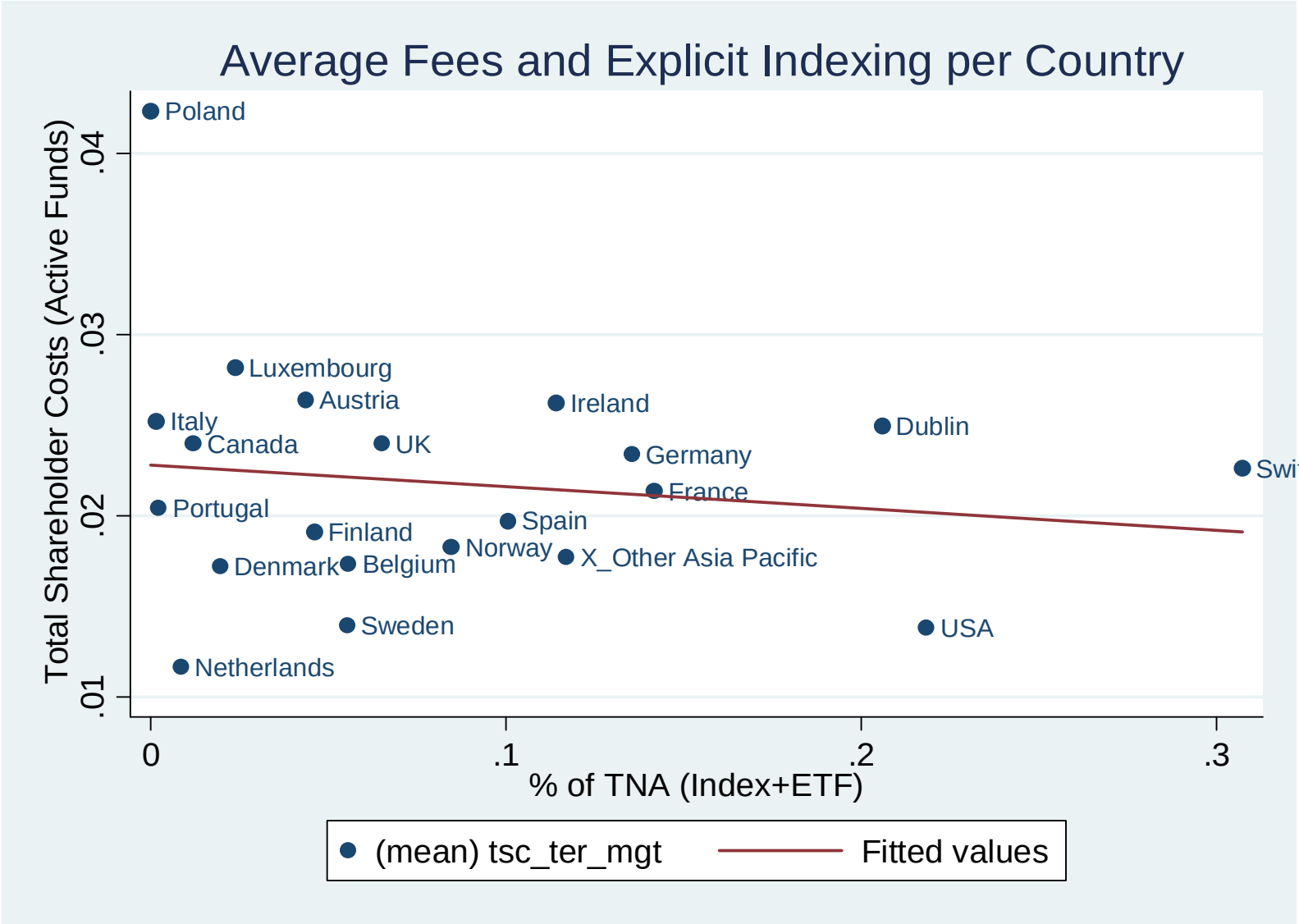
Indexing in a country is related to fees (i.e., competition)

- Presence of explicit index funds:
  - **low cost alternatives to actively managed funds**

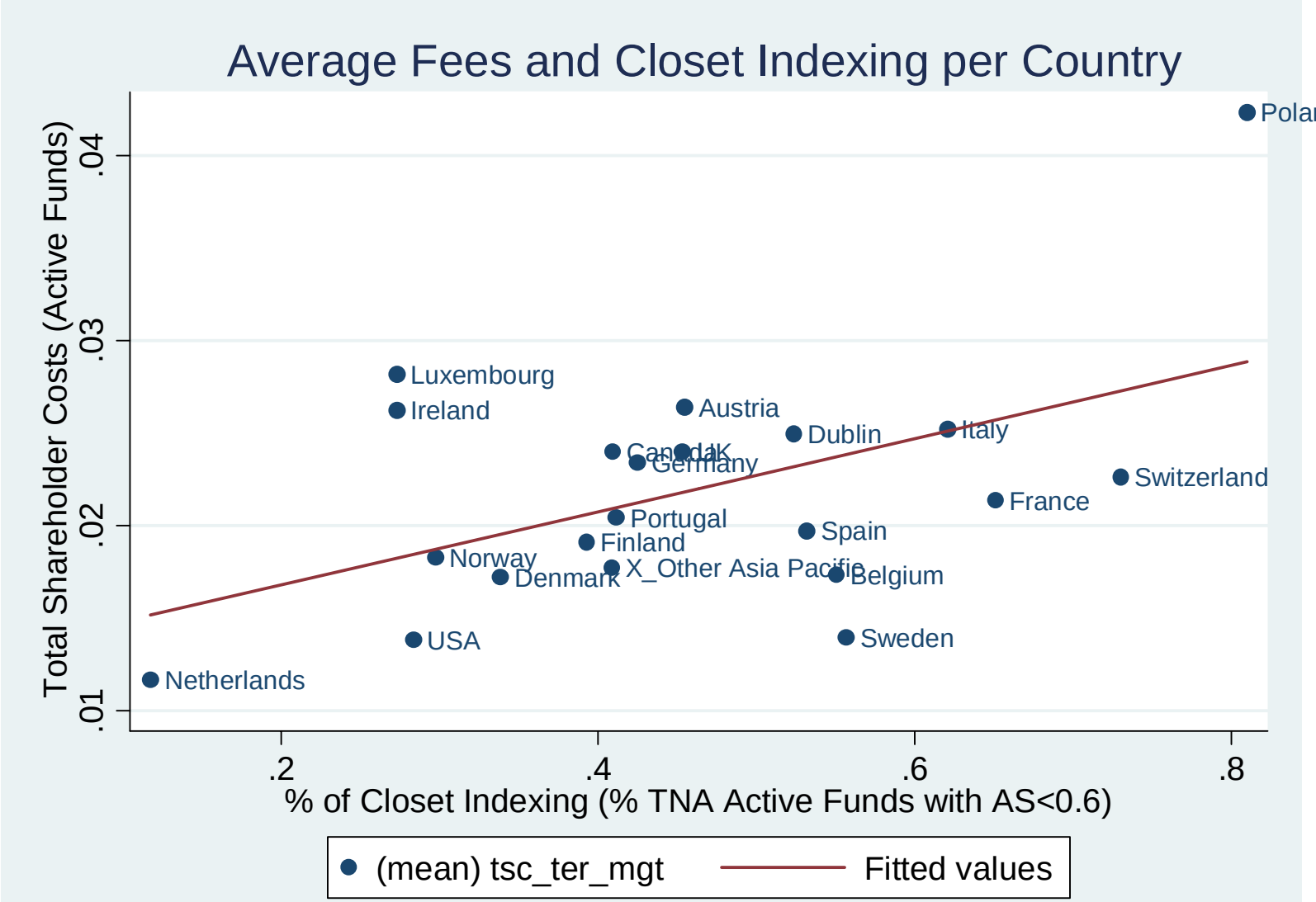
  Implication: **More explicitly indexed funds associated with lower fees for actively managed funds**
- Presence of substantial closet indexing:
  - **less choice for investors in actively managed funds**

  Implication: **More closet indexing related to higher fees for actively managed funds**

Slightly Lower Fees for Active Funds in Countries with more Explicit Indexing



Much Higher Fees in Countries with more Closet Indexing



Summary of Results for Shareholder Costs

- **Lower Fees for**
  - **Larger** funds
  - **Younger** funds
  - Investment strategy of funds with a **domestic focus**
  - Funds with **lower flows**
- Fees **increase** in a fund's **Active Share**
- Fees **decrease** with the level of **explicit indexing** in a country
- Fees **increase** with the level of **closet indexing** in a country
- Relation between fees and Active Share stronger for U.S. than for Non-U.S.

Table V. Active Share and Indexing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Explicit indexing (by country)	0.1782***		0.1713***				0.0608
	(3.13)		(3.74)				(1.56)
Closet indexing (by country)		-0.2266***	-0.2252***				0.0226
		(-8.26)	(-8.24)				(0.71)
Explicit indexing (by country/type)				-0.1984*		0.1101**	0.0951*
				(-1.97)		(2.39)	(1.99)
Closet indexing (by country/type)					-0.2660***	-0.2881***	-0.2902***
					(-18.54)	(-14.58)	(-12.80)
R-squared (logistic)	-0.0912***	-0.0877***	-0.0876***	-0.0905***	-0.0854***	-0.0854***	-0.0857***
	(-12.72)	(-12.25)	(-12.11)	(-12.84)	(-12.20)	(-12.12)	(-12.00)
Total shareholder cost	0.0084	0.0091*	0.0092*	0.0076	0.0072	0.0075	0.0074
	(1.67)	(1.68)	(1.69)	(1.47)	(1.49)	(1.52)	(1.53)
TNA (log)	-0.0037**	-0.0042***	-0.0042***	-0.0036**	-0.0039**	-0.0040**	-0.0039**
	(-2.18)	(-2.78)	(-2.81)	(-2.02)	(-2.35)	(-2.48)	(-2.39)
Fund age	-0.0010***	-0.0010***	-0.0010***	-0.0009***	-0.0008***	-0.0008***	-0.0008***
	(-5.98)	(-5.48)	(-5.59)	(-5.03)	(-5.34)	(-5.42)	(-5.36)
Domestic dummy	0.0801	0.0642**	0.0401	0.1206**	0.0146	-0.0013	-0.0054
	(1.55)	(2.13)	(1.12)	(2.54)	(0.60)	(-0.05)	(-0.20)
Flows	0.0067**	0.0051*	0.0053*	0.0061*	0.0026	0.0025	0.0026
	(2.12)	(1.84)	(1.92)	(1.97)	(0.97)	(0.95)	(1.01)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic focus dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	28198	28198	28198	28198	28198	28198	28198
R-squared	0.580	0.589	0.591	0.583	0.628	0.629	0.630

Summary: where managers are more active

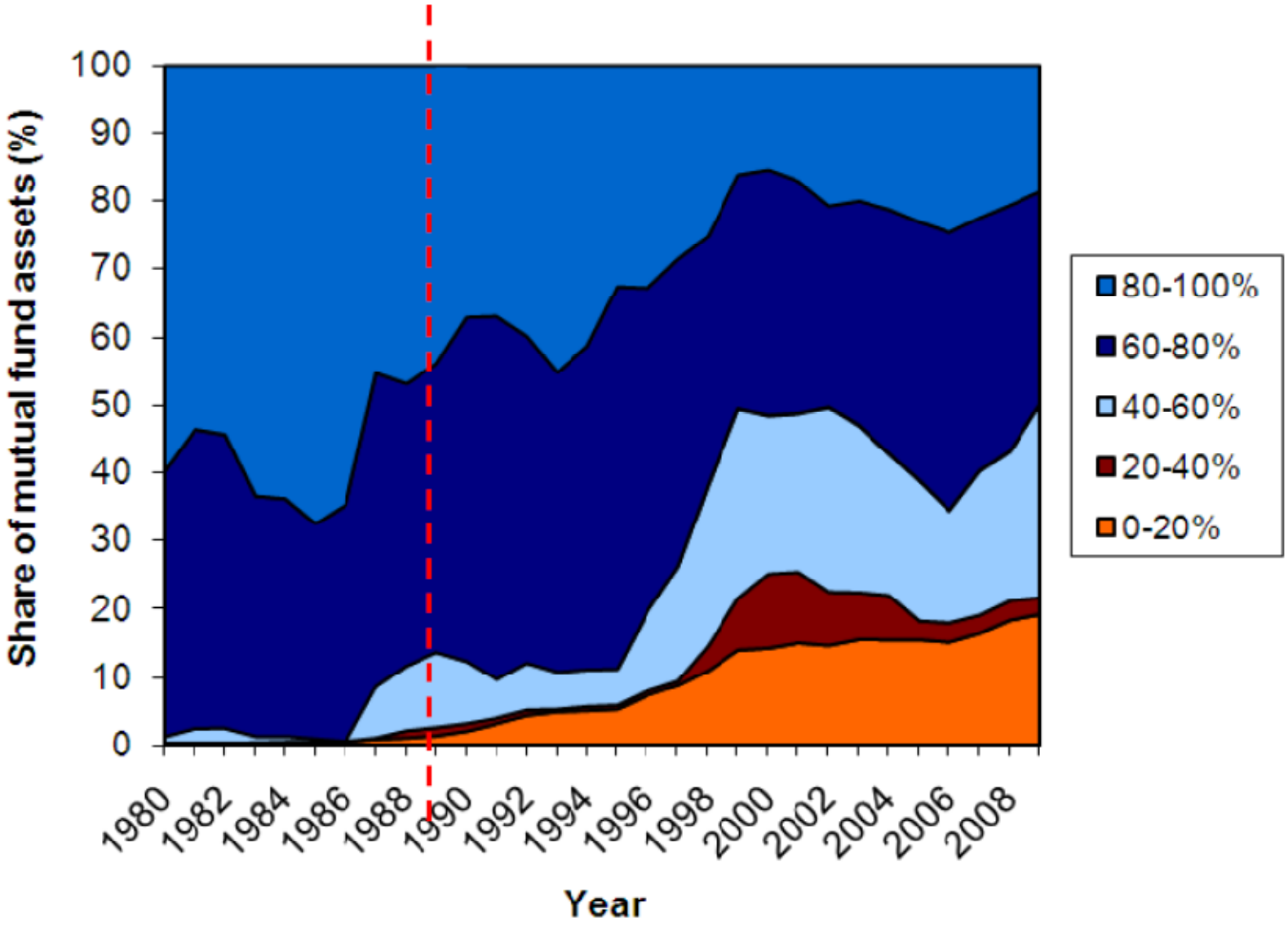
Active Share

- **Increasing in explicit indexing** in country
  - More explicit indexing means more low-costs alternatives, thus **more competition?**
  - Effects strongest at country/type - level
- Decreasing in closet indexing in country
  - Partly mechanical
- **Decreasing in a fund's R^2, TNA, and age**
- **Increasing in investment opportunities**
  - **Liquidity, more stocks, larger stocks, volatility, less concentrated benchmark, larger stock market**

Example: funds benchmarked to the *S&P 500* versus *Madrid SE index*

- **Domestic funds benchmarked to Madrid SE index**
  - About 75 domestic active funds in sample
  - Average Active Share of 37%, medium of 32%
  - Average (per year): Turnover 79%, Volatility 24%, Market cap (US$) 630 million, about 150 stocks
- **Domestic funds benchmarked to S&P 500 index**
  - Over 200 domestic active funds in sample
  - Average Active Share of 70%, medium of 70%
  - Average (per year): Turnover 207%, Volatility 30%, Market cap (US$) 14.6 billion, over 9,000 stocks

U.S. Equity Sample: Evolution of Active Share over Time

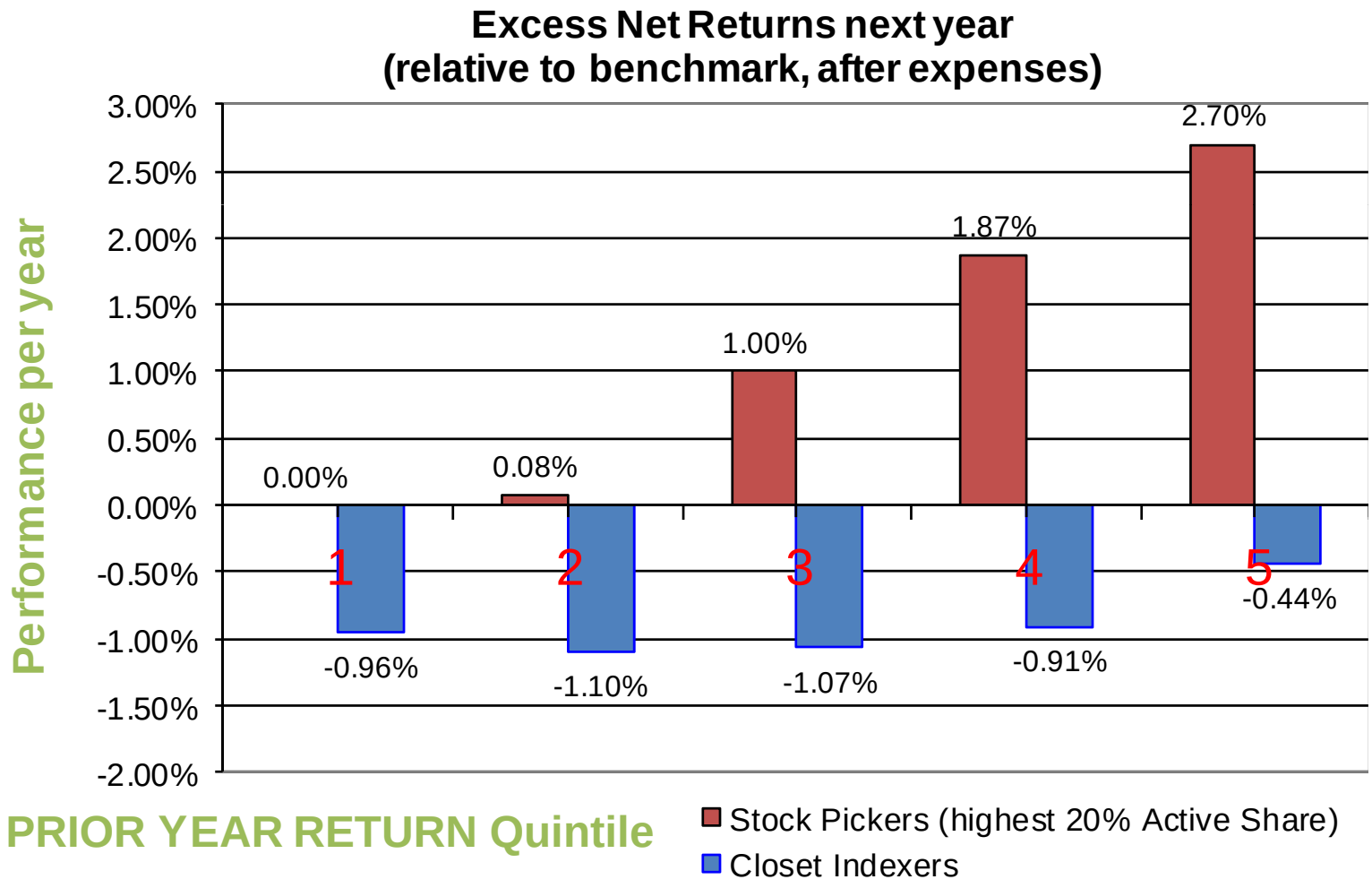


Active Share and Performance?

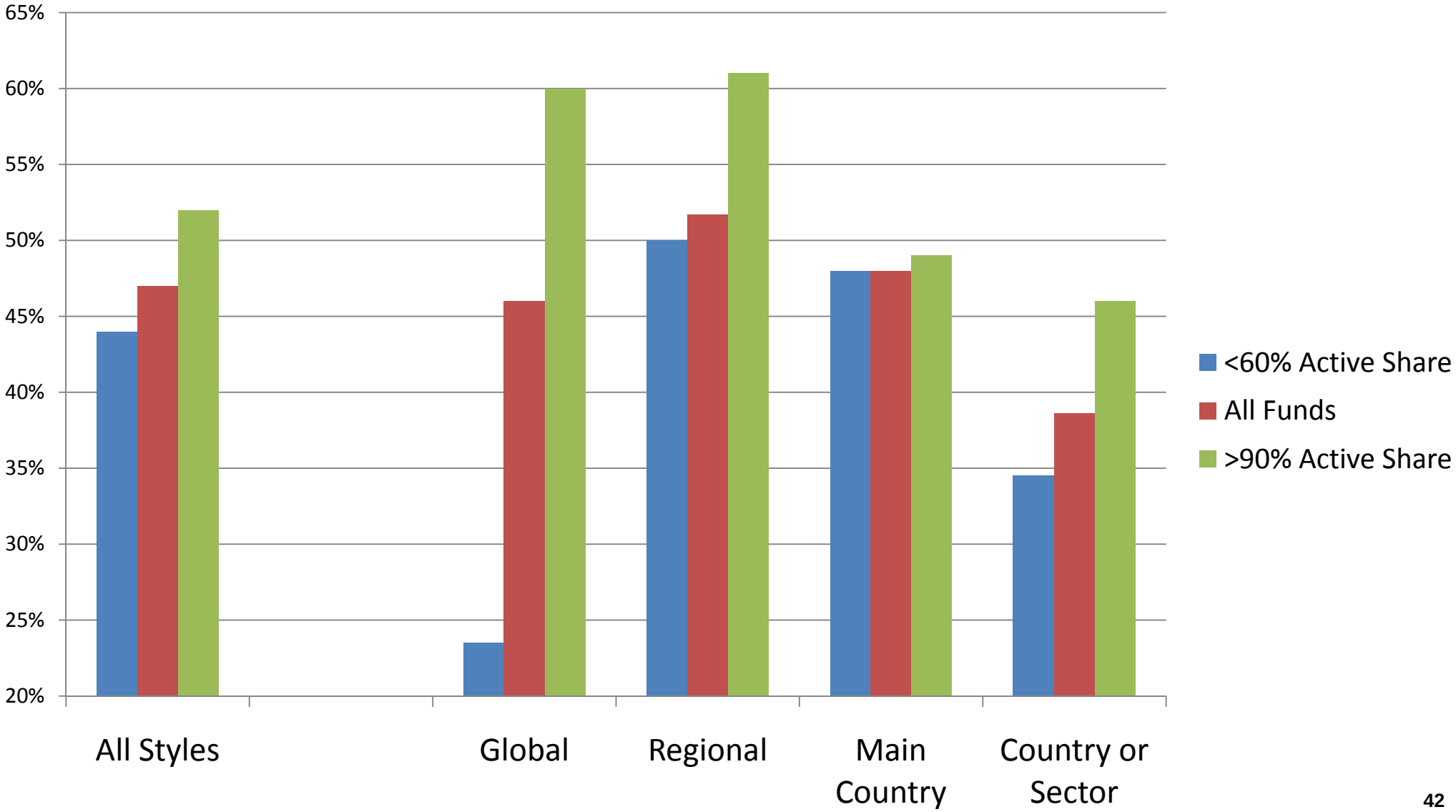
- **Closet Index Funds**
  - Similar holdings to benchmark funds
  - Higher costs than passive, explicit index funds
  - **Expected to underperform benchmarks**
- **Most Active Funds**
  - Holdings very different from their benchmarks
  - **Strong conviction / guts**
  - **Could measure skill** if competitive environment allows only most skillful managers to survive with a truly active portfolio

Does Active Share Pay Off in Terms of Future Performance?

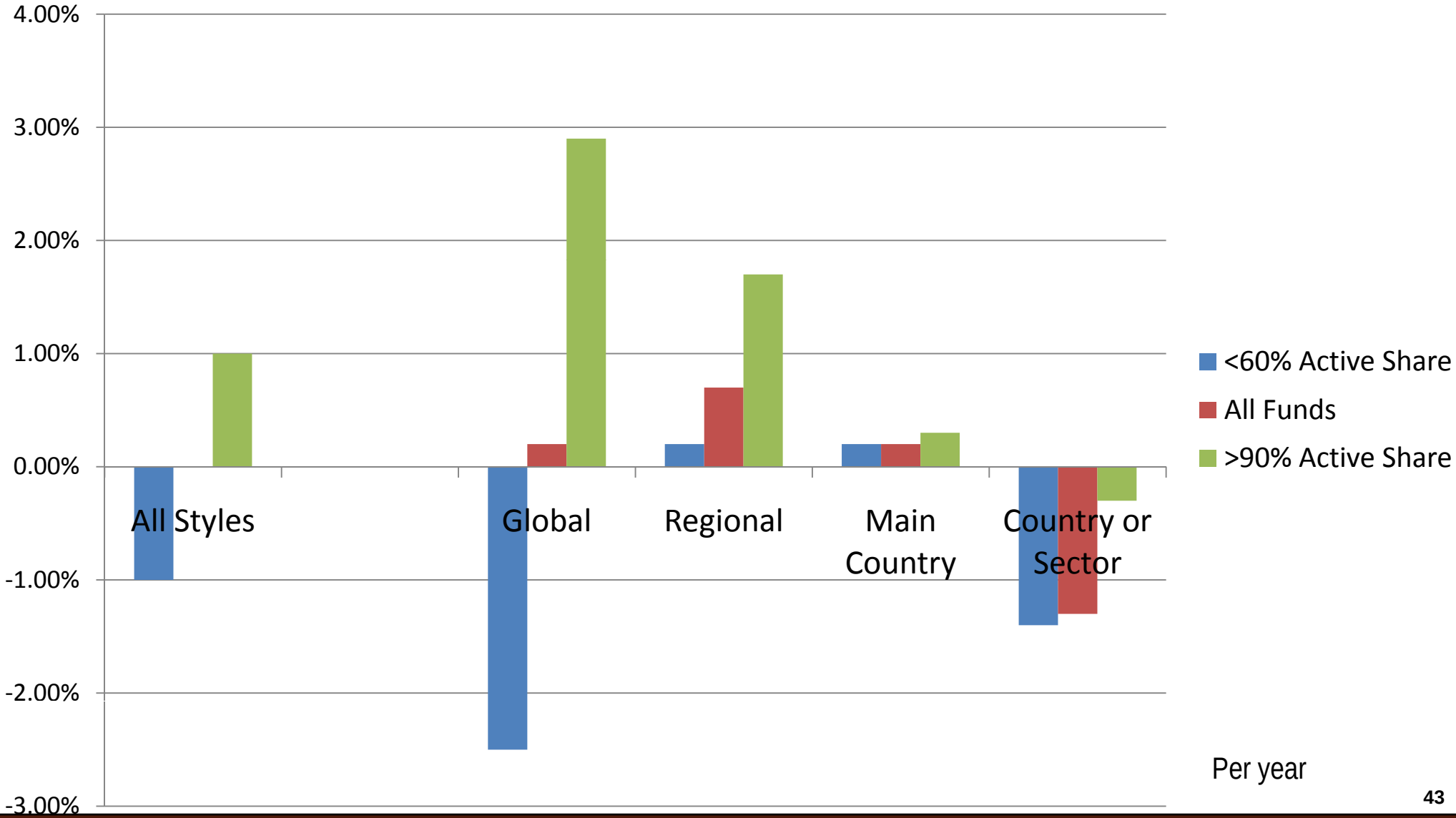
Previous evidence from U.S. (Cremers-Petajisto, 2009)



Active Share & Batting Average:
% of funds beating the benchmark (1 year)



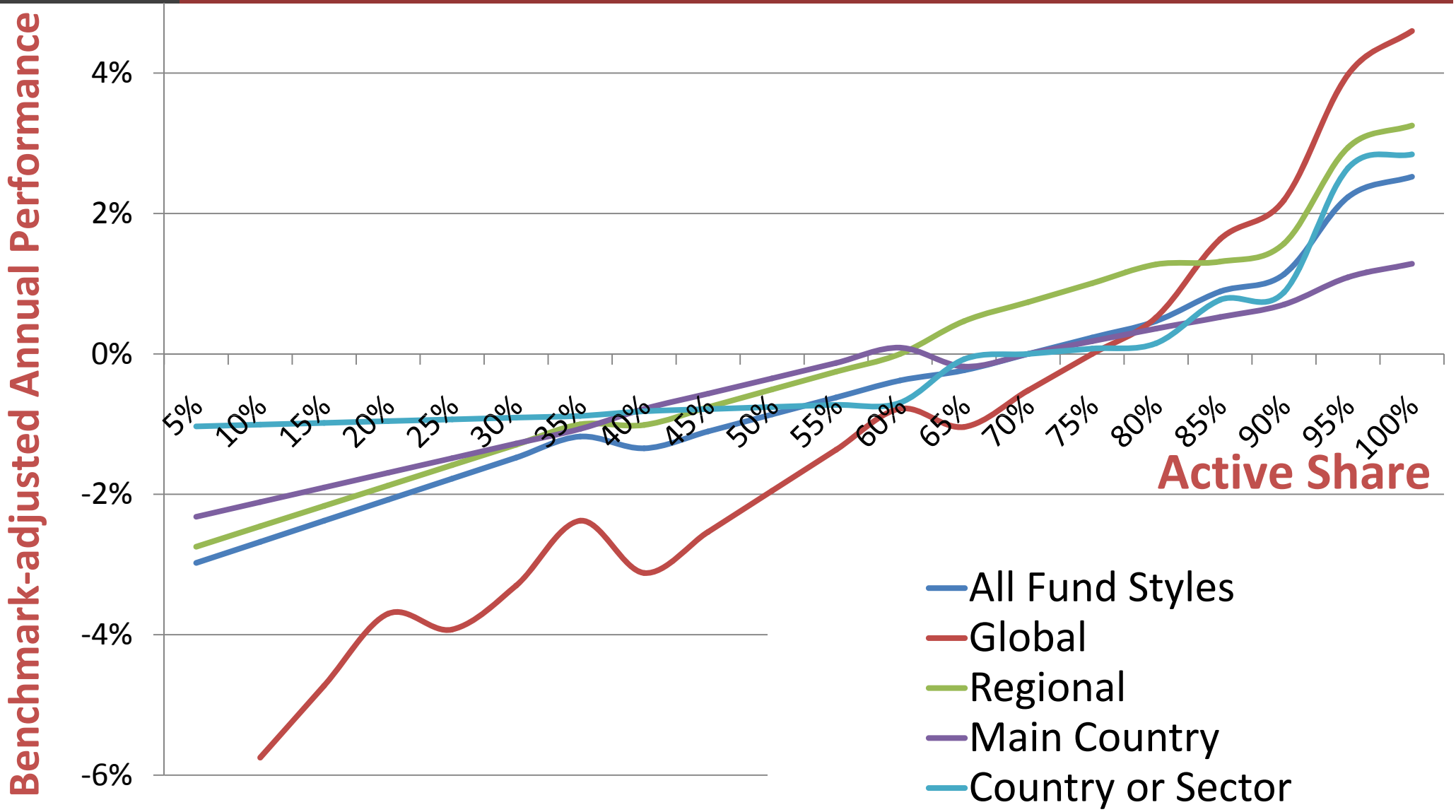
Active Share & Annual Performance:
Raw performance net of the benchmark



Where is the predictability strongest?

- **Active Share predicts future performance**
  - For all fund styles, but **strongest for global funds**
- **Predictability strongest in markets with**
  - **Less foreign competition**
  - **Less financially sophisticated investors**
  - Higher mutual fund setup costs
  - **Less explicit indexing** (less competition?)
  - **More investment opportunities**
- **All of these may make it easier for active managers to outperform**

Active Share & Annual Performance:
Step-wise linear regression evidence



Conclusions

- **Little explicit indexing, but lots of closet indexing**
- **Shareholder Costs**
  - negatively related to existence of low-cost explicit index funds
  - positively related to prevalence of closet indexing
- **Returns to active management**
  - **"truly active" funds** (high Active Share) outperform their benchmarks
  - **"closet indexers"** (low Active Share) underperform

… **both depending on country factors** (investment opportunities, competition, regulation)