

A UNIVERSAL FACTOR FRAMEWORK

Benchmarking Trends by MSCI

ASOFIDUCIARIAS – Bogota 2018



QUICK QUESTION BEFORE WE
START...

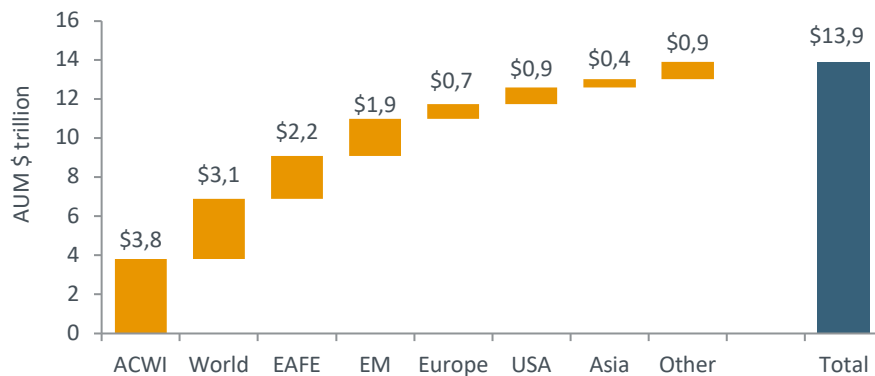
HOW MUCH MONEY IS THERE IN THE WORLD?

US\$ 1
Quadrillion

US\$ 70
Trillion

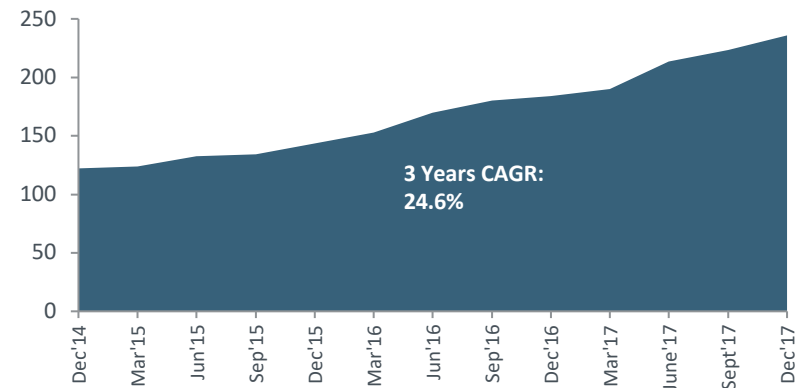
US\$ 36
Trillion

Assets Benchmarked to MSCI Market Cap Indexes



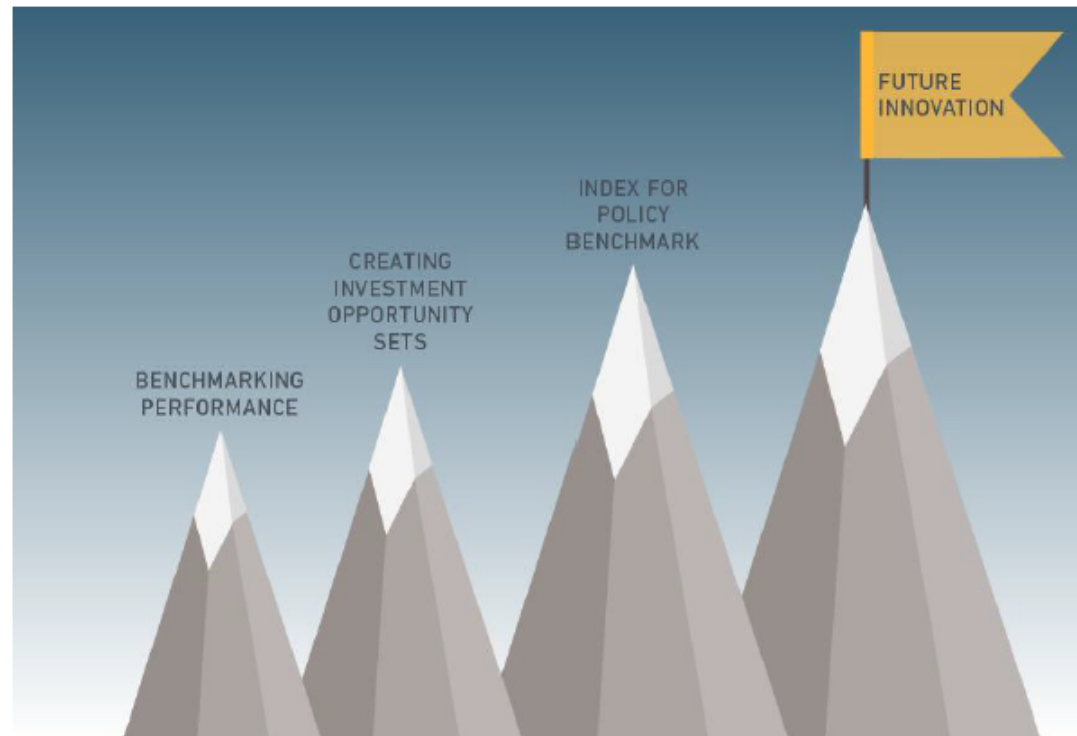
Assets Benchmarked to MSCI Factor Indexes

Approximately **USD 236 billion** in assets are
benchmarked to MSCI Factor Indexes as of Dec 2017



DON'T FEAR THE INDEXES, LEARN FROM THEM.

- The bulk of the money following various MSCI, FTSE Russell and S&P Dow Jones indexes **are in active funds** whose managers use for benchmarking or to make their own trading decisions.
- Indexes have **evolved to meet Asset Owners needs**



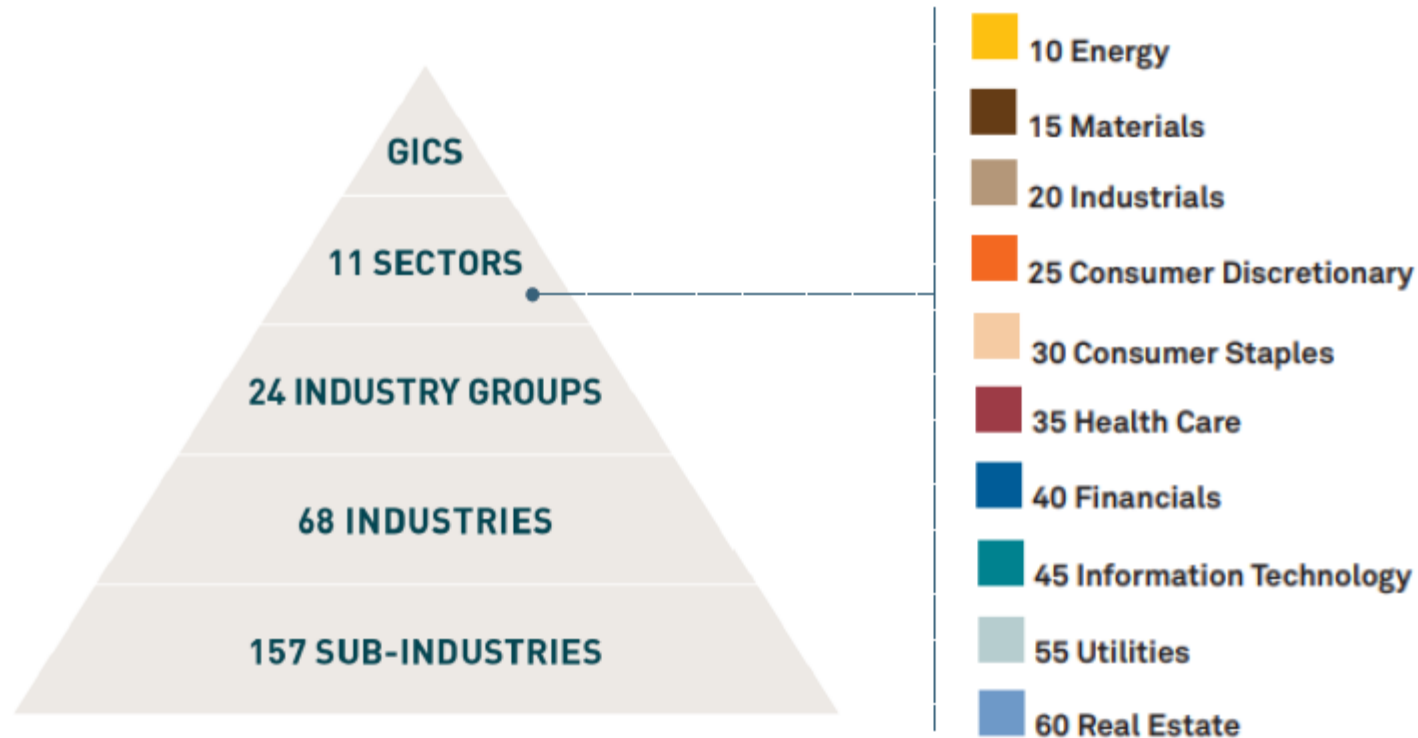
THE IMPORTANCE OF SETTING STANDARDS

Global Investing



IS AN ONGOING INDUSTRY WIDE EFFORT

GICS® Sectors



INTRODUCING THE LATEST INNOVATION



FACTOR INVESTING IS NOT NEW

The Prize in Economic Sciences 2013

The Royal Swedish Academy of Sciences has decided to award the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel for 2013 to

Eugene F. Fama

University of Chicago, IL, USA

Lars Peter Hansen

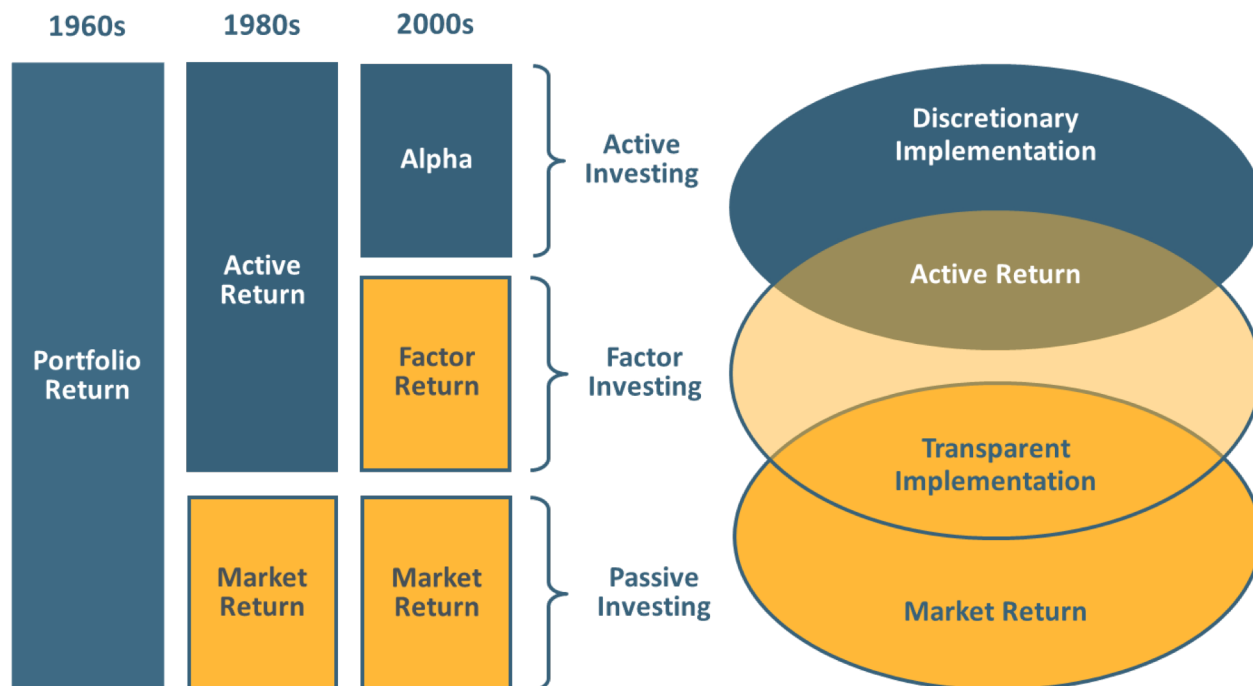
University of Chicago, IL, USA

Robert J. Shiller

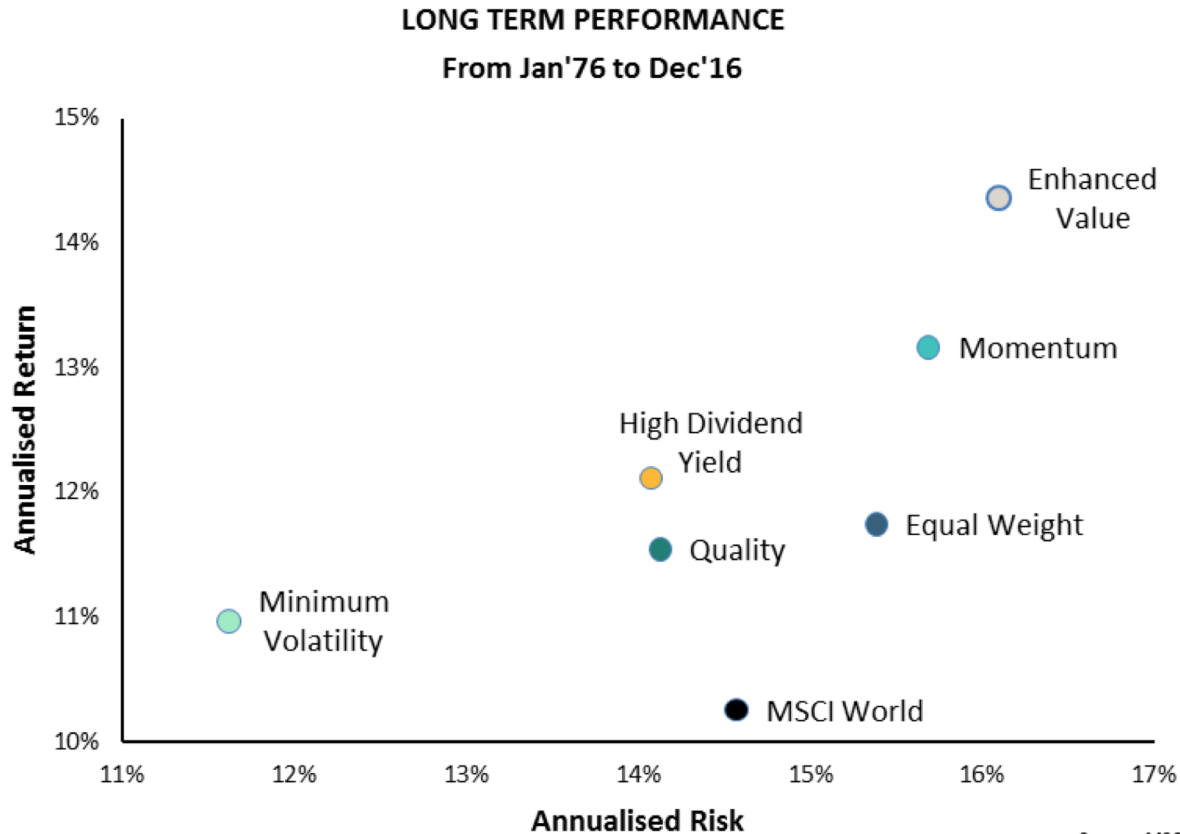
Yale University, New Haven, CT, USA

“for their empirical analysis of asset prices”

According to the latest FTSE Russell Smart Beta Survey: **In 2018, 91% of asset owners** globally have a smart beta investment allocation, have evaluated or are planning to evaluate this topic in the next 18 months.



FACTORS DRIVE PERFORMANCE



Source: MSCI

Source: Factor Indexes in Perspective, Insights from 40 Years of Data, MSCI Research Insight

To complete a 40-year simulation, the MSCI factors are represented by the following indexes:

Yield by High Dividend Yield, *Size* by Equal-Weighted, *Low Volatility* by Top 300 Volatility-Tilt prior to 1988 and by Min Volatility afterwards, and *Value* by Value-Weighted. Parent Index is MSCI World

USE CASES

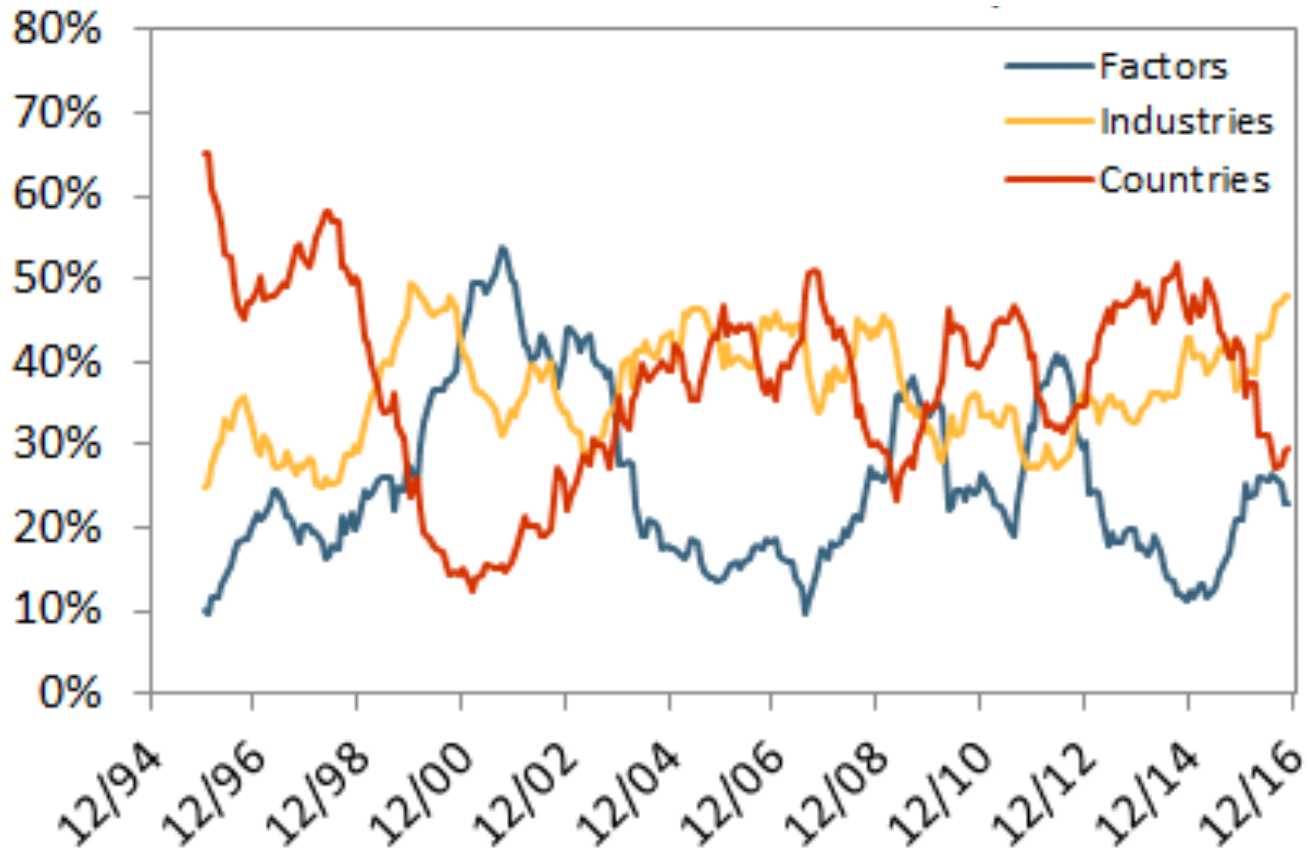
Excess Returns

Manage Volatility

Increase Yield

FACTORS ALSO EXPLAIN RISK



CROSS SECTIONAL VOLATILITY



LETS GET A BIT TECHNICAL...

INTRODUCING THE ELEMENTS OF PERFORMANCE

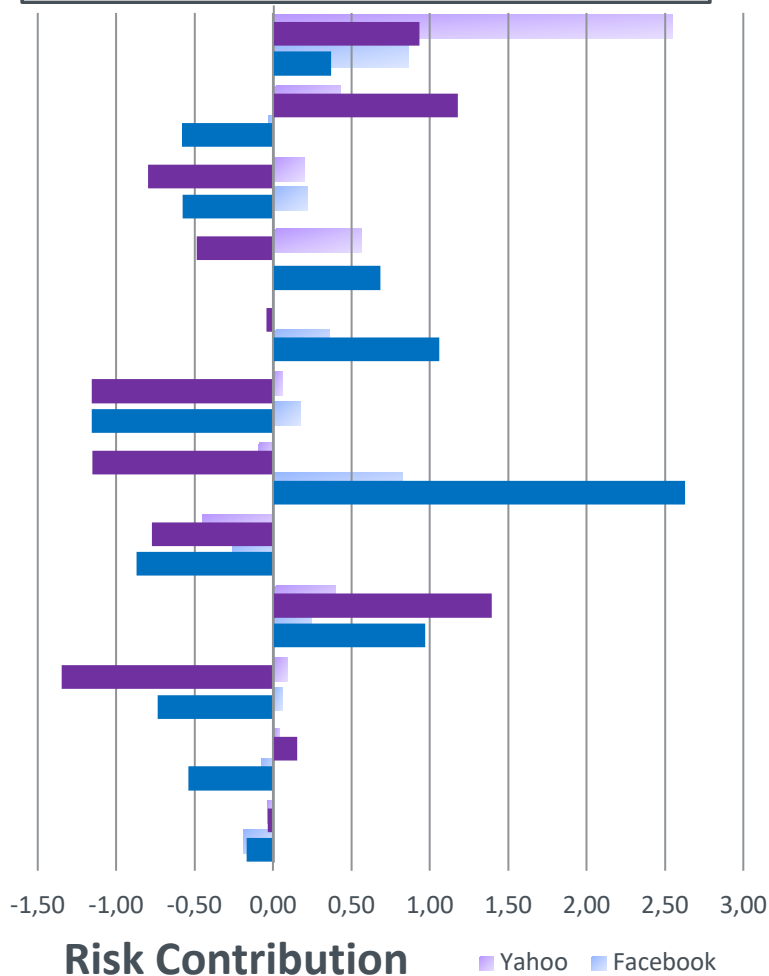
- 8 Factor Groups, 16 Factors and 41 descriptors

 VALUE	 SIZE	 MOMENTUM	 QUALITY	 YIELD	 VOLATILITY	 GROWTH	 LIQUIDITY
Book to Price Book to Price Earnings Yield Reported E/P Forecast E/P Cash E/P EBITD/EV Long Term Reversal LT Relative Strength LT Historical Alpha	Size Log of Mkt Cap Mid Cap Cube of Size	Momentum Relative Strength Historical Alpha	Leverage Debt to Assets Book Leverage Mkt Leverage Profitability Asset Turnover Profitability Profit Margin Return on Assets Earnings Variability Var in Sales Var in Earnings Var in Cash Flow Var in For EPS Earnings Quality Cash earn/Earn Accr-bal sheet Accr- C/F statement Investment Quality Asset Growth Capex Growth Issuance Growth	Yield Reported D/P Forecast D/P	Beta Hist Beta Residual Volatility His Sigma Daily ST Dev Cum Range	Growth Sales Growth Earnings Growth Forecast LTG	Liquidity 1m Turnover 3m Turnover 12m Turnover 12m ATVR

UNDERSTANDING STYLE FACTOR RISK EXPOSURE

Factor Exposure

■ Yahoo ■ Facebook



Style Factor

Commentary on risk exposures

US Beta	Yahoo has moved more closely with the market
US Book-to-Price	By this metric Yahoo is a stronger value stock
US Earnings Yield	EPS of both is low
US Momentum	Trailing performance of Yahoo has been poor
US Size	Facebook's has a larger market cap
US Dividend Yield	Neither pays a dividend
US Growth	Facebook clearly has larger growth potential
US Leverage	Indication of quality – neither firm is highly leveraged
US Liquidity	Regular trading activity in both stocks
US Non-linear Beta	Orthogonal to beta but still driven by market sensitivity
US Non-linear Size	Systematic driver from large vs. small cap stocks
US Residual Volatility	From highly volatile stocks not capture by beta

Source: MSCI

CALCULATING PORTFOLIO EXPOSURE TO FACTORS

MSCI Colombia IMI Index					
Asset Name		Quality Factor Z-			
MSCI Factor Box					
Exposure Summary					
	Underweight	Overweight	Port	Bmk	Active
ALMACENES EXITO					
AVIANCA HOLDINGS SA					
BANCOLOMBIA SA					
BANCOLOMBIA SA					
CEMENTOS ARGOS SA					
CEMEX LATAM HOLDINGS SA					
CORPORACION FINANCIERA COLO					
ECOPETROL SA					
GRUPO ARGOS SA					
GRUPO AVAL ACCIONES Y VALORE					
GRUPO DE INVERSIONES SURAME					
GRUPO DE INVERSIONES SURAME					
INTERCONNECTION ELECTRIC SA E					
Value			0.014	0.000	0.014
Low Size			0.441	0.000	0.441
Momentum			0.031	0.000	0.031
Quality			-0.353	0.000	-0.353
Yield			0.121	0.000	0.121
Low Volatility			0.828	0.000	0.828
Growth			0.574	0.000	0.574
Liquidity			0.308	0.000	0.308

-0.042602928
-0.000133352
-0.047881458
-0.107299634
-0.014480649
0.01191768
-0.035161177
0.108869105
-0.046487235
-0.036218563
-0.048501746
-0.021871569
-0.073117443
-0.352968968

ality

- Portfolio exposures are deemed to be significant
- Typical active portfolios have about **0.5** standard deviation exposure to the target factor.

ARE ACTIVE MANAGERS EXPOSED TO FACTORS?

- We generally find that active funds have significant exposures to their target factor
- We also find that most funds also have significant exposure to several other factors

	Key Word								
	Value	Large	Mid	Small	Momentum	Volatility	Quality	Income	Growth
Book to Price	0.15	-0.15	-0.16	-0.10	-0.25	-0.22	-0.34	-0.05	-0.23
Earnings Yield	0.07	-0.02	-0.15	-0.01	-0.04	-0.10	-0.01	0.04	-0.10
Reversal	0.10	-0.02	-0.14	-0.08	-0.37	0.01	0.13	0.10	-0.14
Size	-0.22	0.03	-1.00	-0.58	-0.60	-0.55	0.19	-0.08	-0.23
Midcap	0.05	-0.03	0.36	0.12	0.30	0.39	-0.16	0.02	0.10
Momentum	-0.01	0.06	0.14	0.07	0.47	0.32	0.18	0.05	0.14
Beta	0.06	-0.02	0.12	0.06	-0.23	-0.86	-0.39	-0.13	0.00
Residual Volatility	-0.01	-0.02	0.03	-0.02	-0.07	-0.10	-0.15	-0.06	-0.03
Leverage	-0.01	-0.07	-0.14	-0.09	-0.06	0.05	-0.04	0.08	-0.12
Profitability	-0.04	0.18	0.20	0.14	0.29	0.21	0.47	0.01	0.28
Earnings Variability	0.06	-0.05	0.18	-0.01	0.04	-0.14	-0.37	-0.10	0.01
Earnings Quality	0.09	-0.03	-0.16	-0.07	-0.06	0.06	-0.17	0.03	-0.08
Investment Quality	0.09	-0.01	-0.17	-0.09	0.01	0.15	0.28	0.11	-0.13
Dividend Yield	0.02	-0.14	-0.45	-0.24	-0.31	0.08	-0.02	0.35	-0.34
Growth	-0.02	0.07	0.22	0.12	0.11	-0.15	-0.08	-0.15	0.18
Liquidity	0.02	-0.01	0.13	-0.01	0.11	0.03	-0.27	-0.06	0.01
Number of Funds	120	58	9	43	5	7	5	81	134
AUM \$B	137.8	70.0	10.6	35.7	0.6	1.4	3.1	60.8	159.6

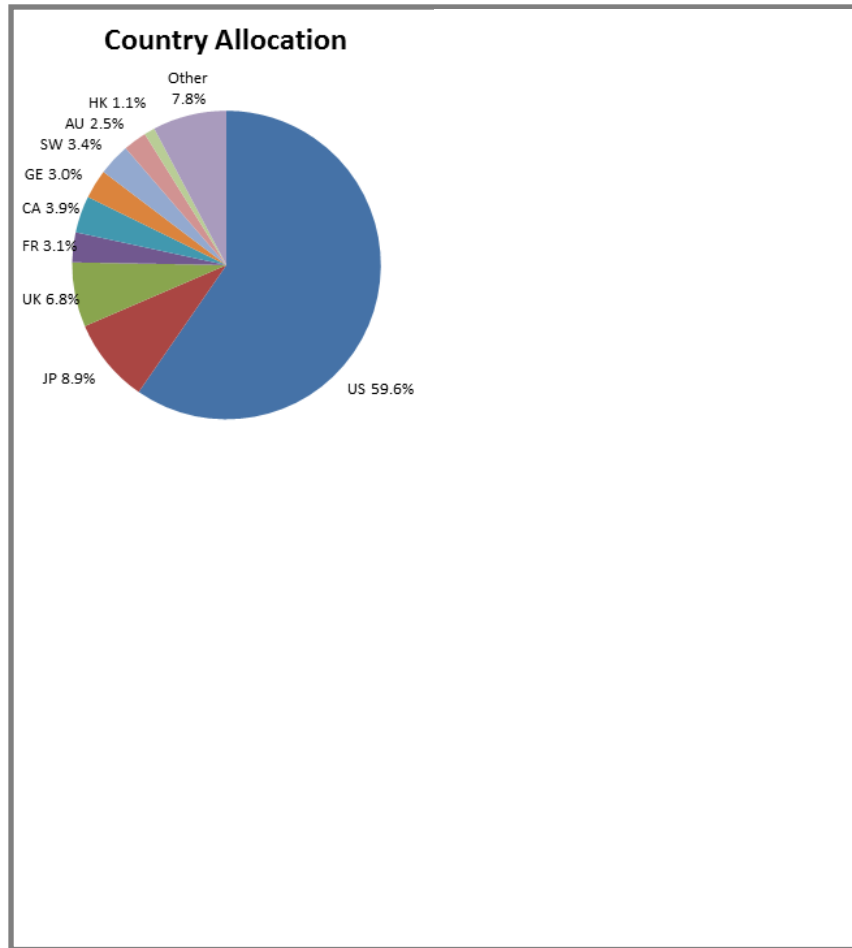
MAIN USE CASES FOR FACTOR CLASSIFICATION AND FACTOR BENCHMARKING

FUND PICKING: APPLE OR ORANGE?

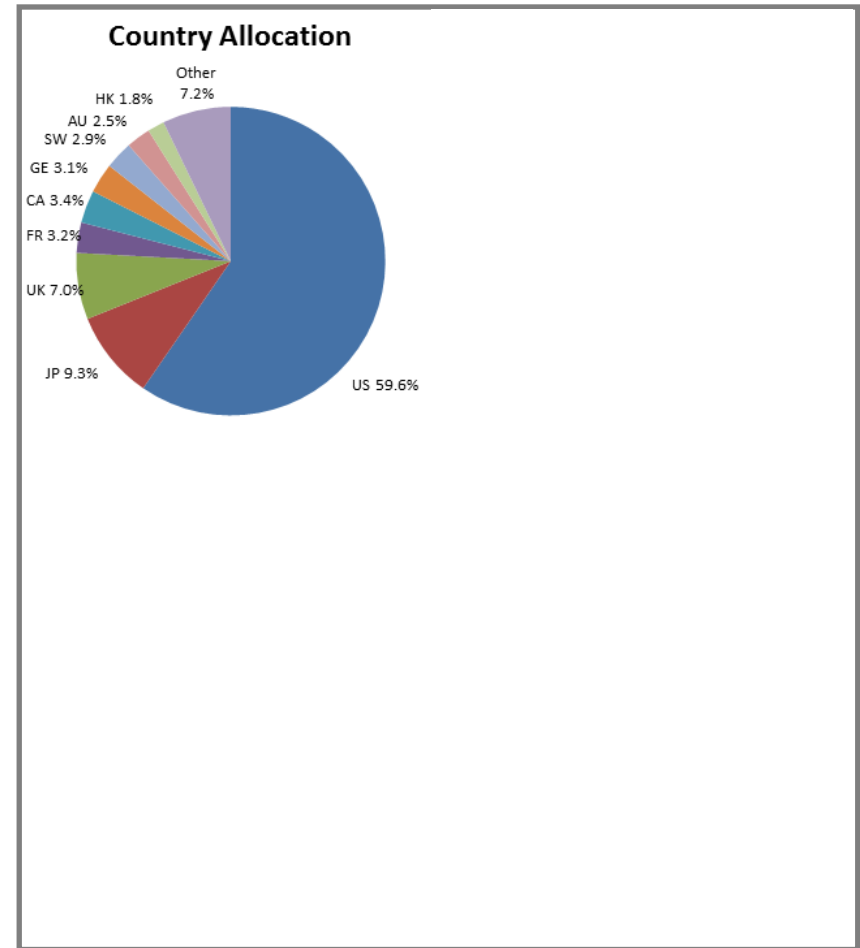


SIMILAR COUNTRY, SECTOR, STOCK ALLOCATIONS

APPLE FUND

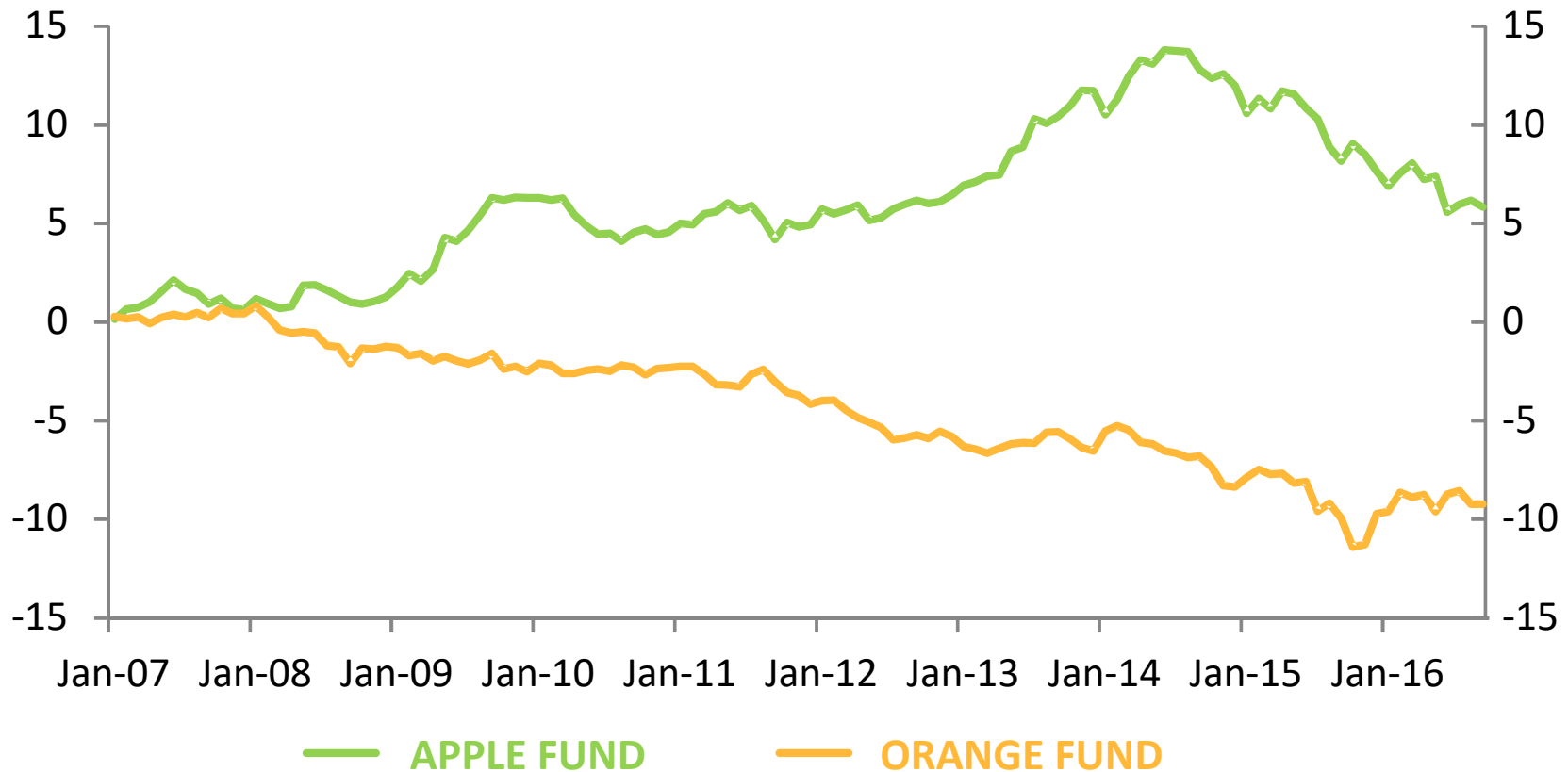


ORANGE FUND



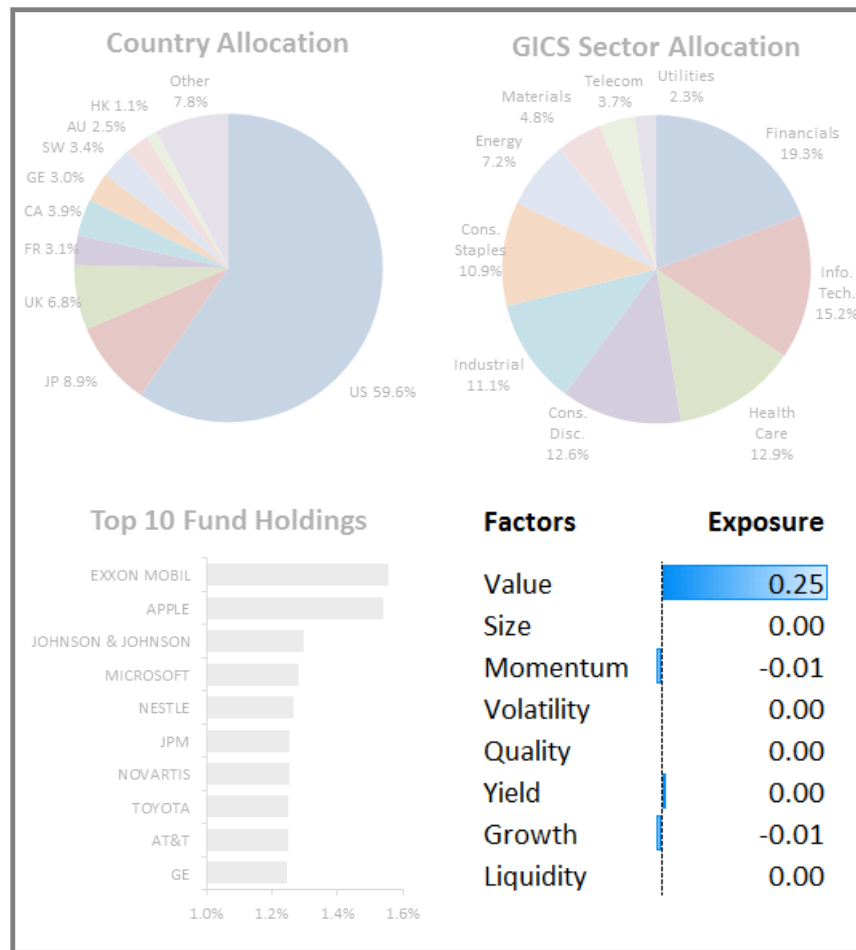
BUT VERY DIFFERENT PERFORMANCE...

ACTIVE PERFORMANCE (%)

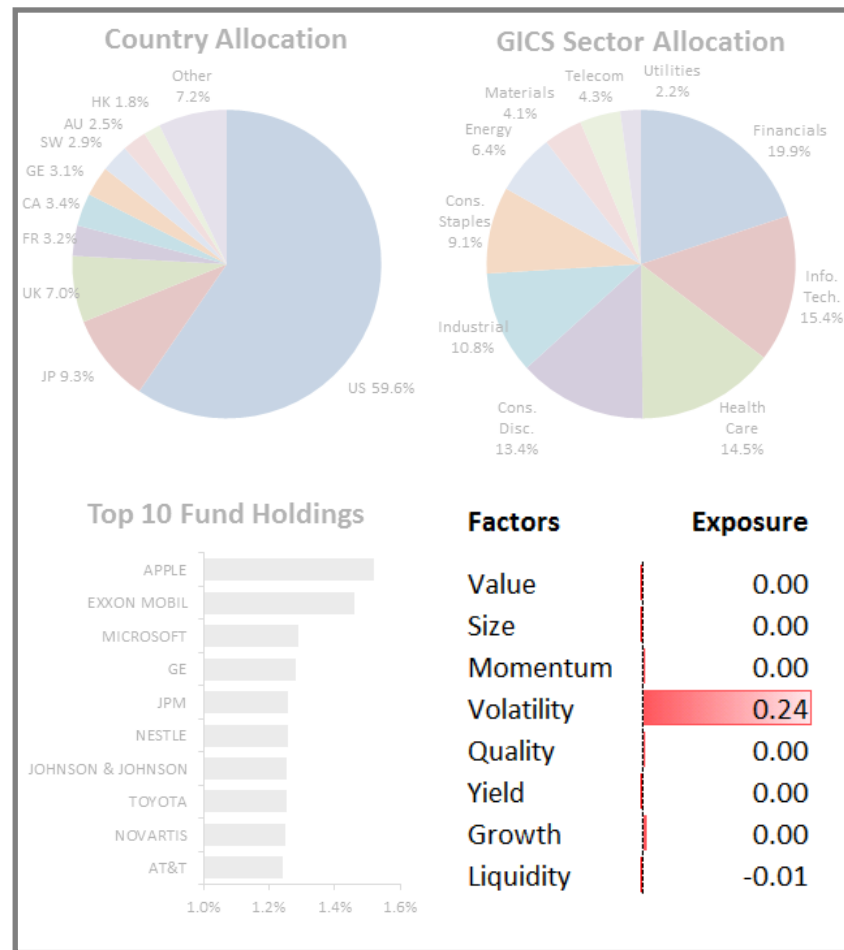


FACTORS PROVIDE ANOTHER LENSE

BLUE FUND



RED FUND



THE BEST LATAM EQUITY FUNDS IN 2018

EL MERCURIO *Inversiones*



Jueves, 19 de abril de 2018 | 13:06

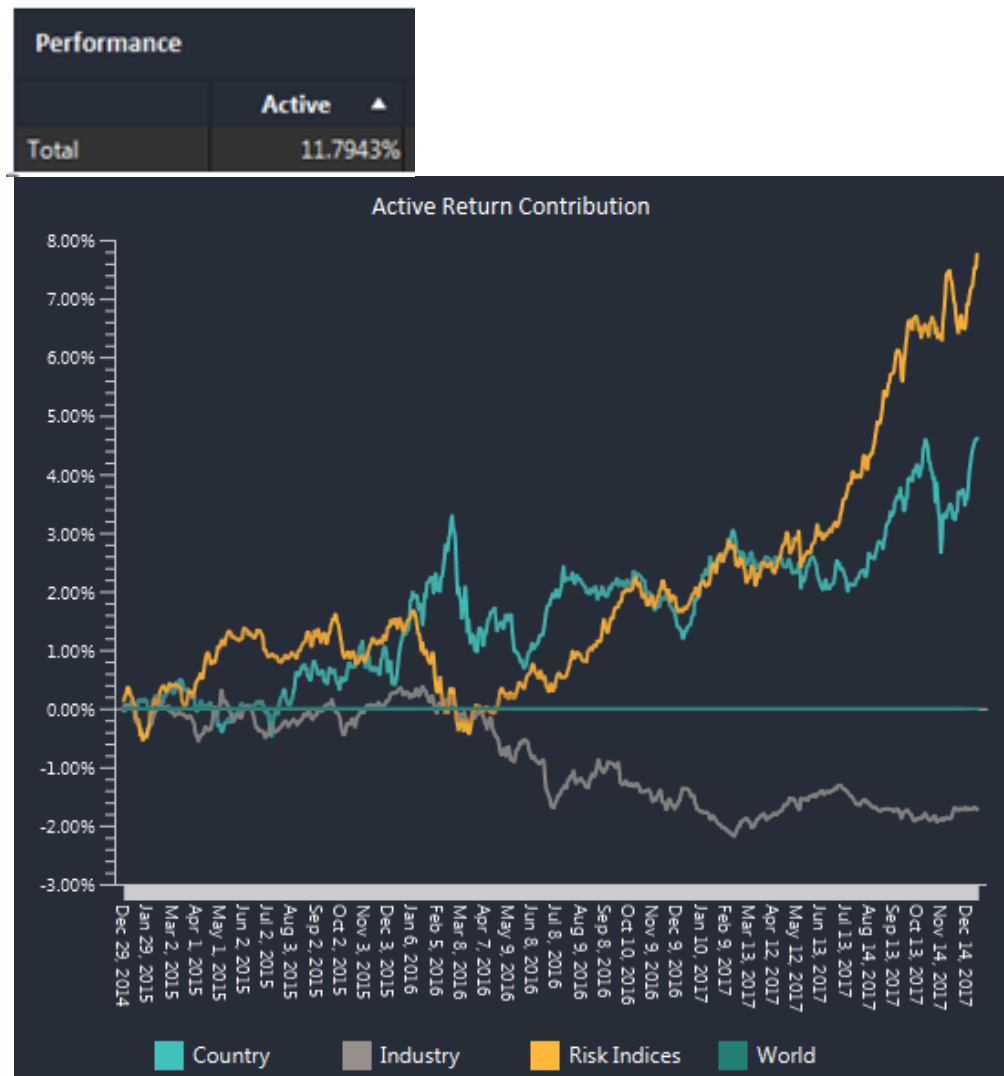
Los mejores fondos para invertir en Latinoamérica

La renta variable del continente fue uno de los pocos activos que brilló durante el primer trimestre de 2018. Conozca las series de mejor retorno y menor riesgo.

**1st Place: Fondo "X"
Latinoamericano**

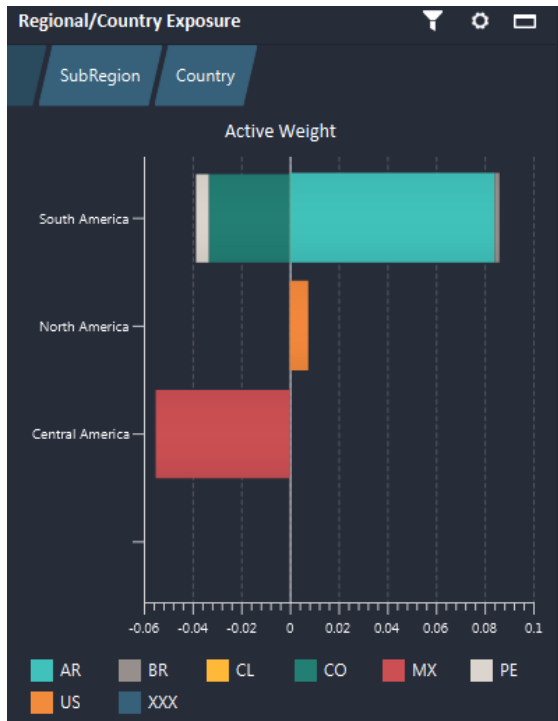


Returns: 3 Years,
Gross, USD.

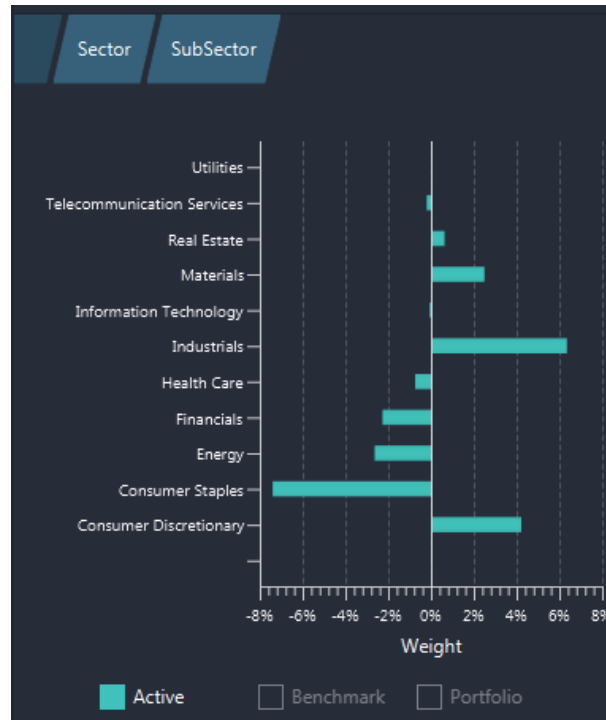


CHOOSING THE RIGHT BENCHMARK IS KEY

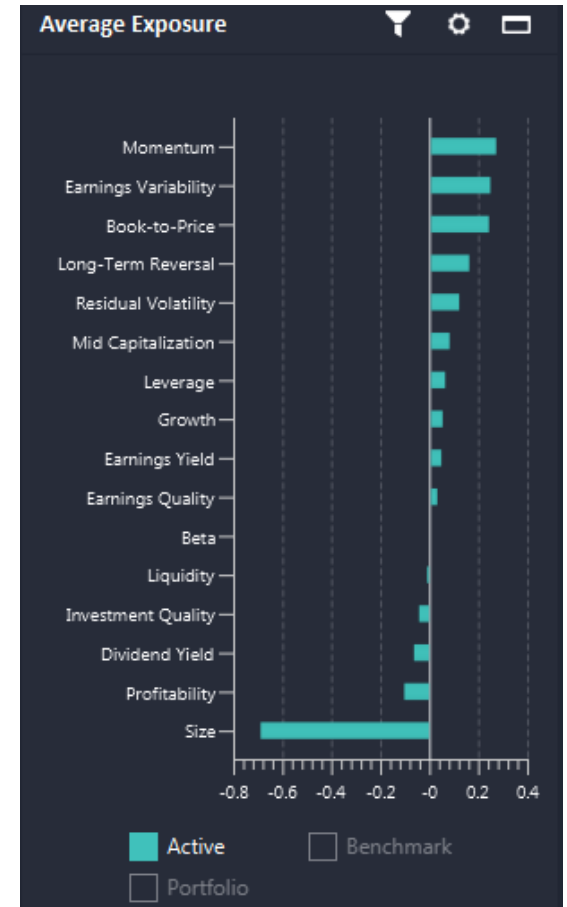
Country OW: Argentina



OW: Industrials, UW: Consumer Staples



OW: Momentum, UW: Size



Argentina is not part of MSCI EM Latam Index, additionally the index does not hold any Small Caps stocks.

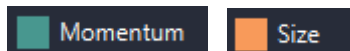
AN EXAMPLE OF AN ACTIVE PM USING FACTORS TO HIS ADVANTAGE

Turnaround stars: the three most improved PMs in LatAm equity

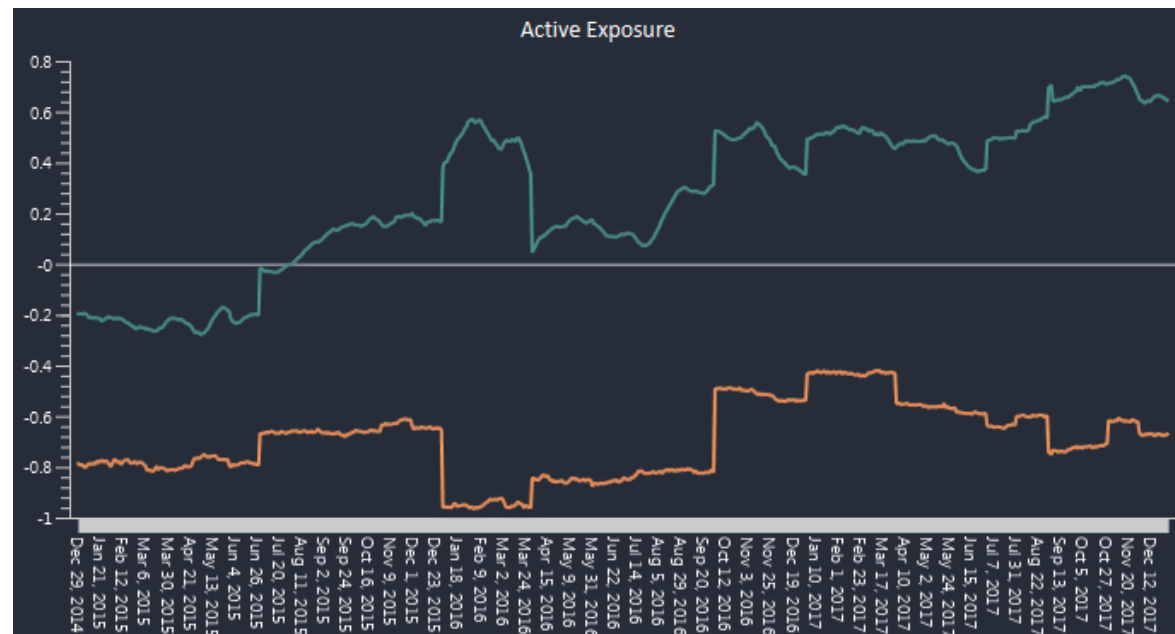
By Atholl Simpson / 16 Nov, 2017



The new PM has since early 2016 deployed a systematic exposure to cyclical factors: Momentum & Small Caps

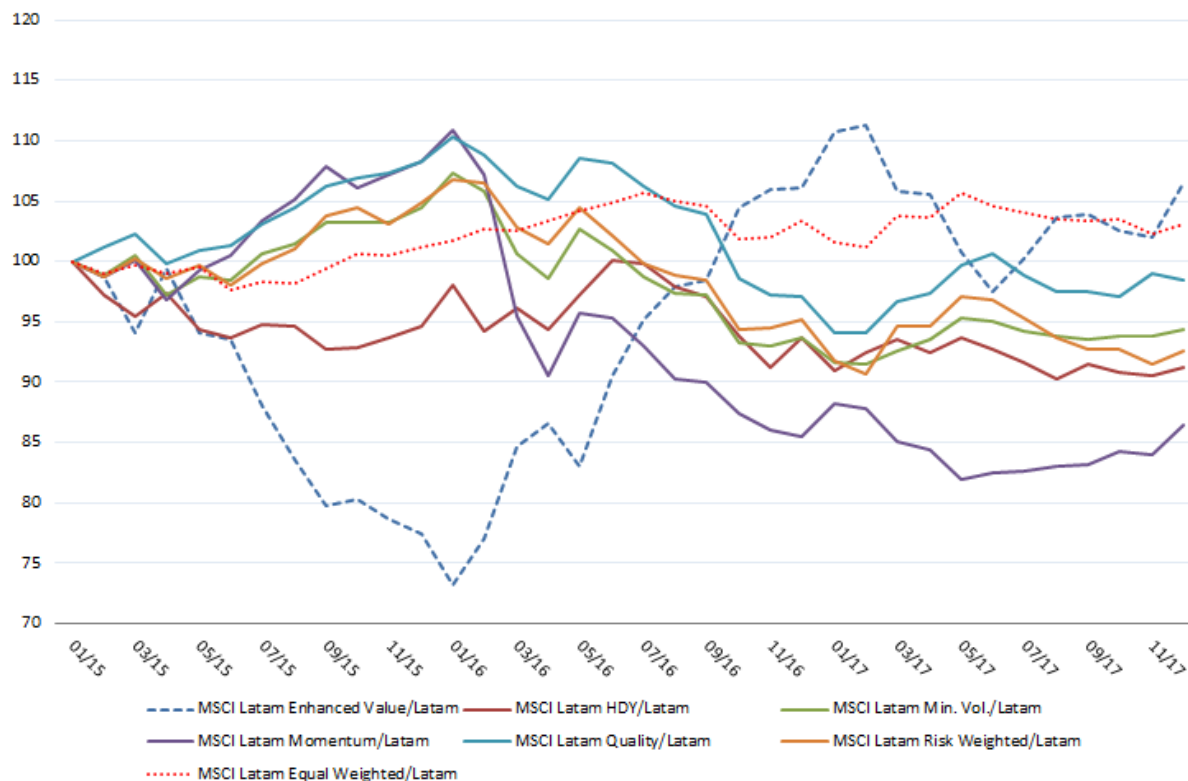


MSCI Factor Box					
	Underweight	Overweight	Exposure Summary		
			Port	Bmk	Active
Value			-0.068	0.015	-0.083
Low Size			0.431	-0.185	0.616
Momentum			0.837	0.171	0.667
Quality			0.024	0.028	-0.004
Yield			-0.091	0.029	-0.120
Low Volatility			-0.262	-0.041	-0.221
Growth			0.144	0.028	0.116
Liquidity			0.527	0.282	0.245



CONSIDER USE OF A FACTOR INDEX AS A BENCHMARK

Relative Performance MSCI Latam Factor Indexes
Dec 2014 - Dec 2017



Strategy	Active Performance (3 Years, USD, GROSS)
"X" Latinoamericano	11.79%
MSCI Latam Enhanced Value	6.51%
MSCI Latam Equal Weighted	3.13%
MSCI Latam Quality	-1.57%
MSCI Latam Minimum Volatility	-5.65%
MSCI Latam High Dividend Yield	-8.79%
MSCI Latam Momentum	-13.55%

FINANCIAL ADVISORS: AN EXAMPLE OF THE GROWTH OF FACTOR ANALYSIS ADOPTION



Vanguard®

Factor Investing Tool

Enter multiple funds below

Percentage

dfqtx|

► DFQTX (DFA US Core Equity 2 I)

HOME

EXPOSURE

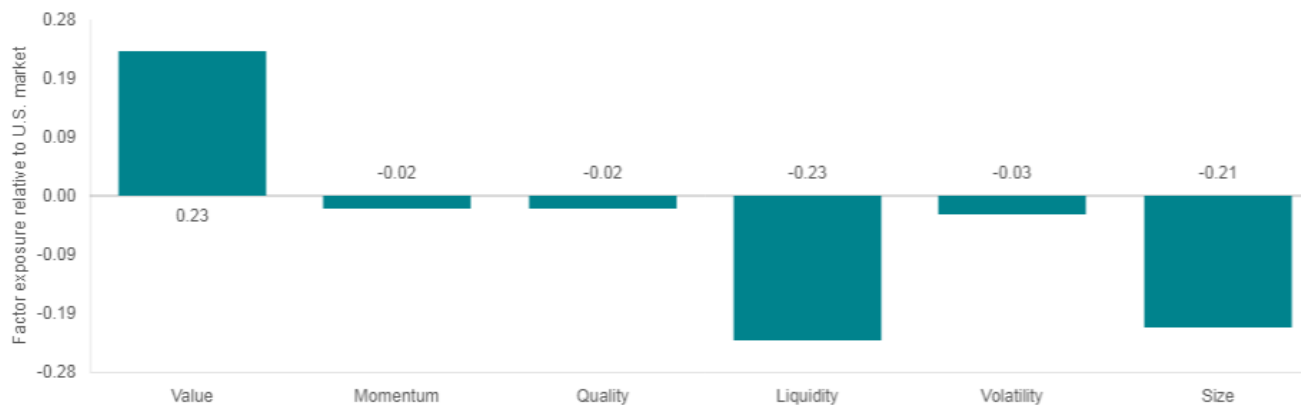
What factors do I own?

Current Portfolio as of 04/30/2018

Current Portfolio

DFQTX - DFA US Core Equity 2 I

Weighted Average

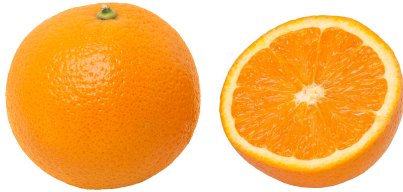


Source: MSCI

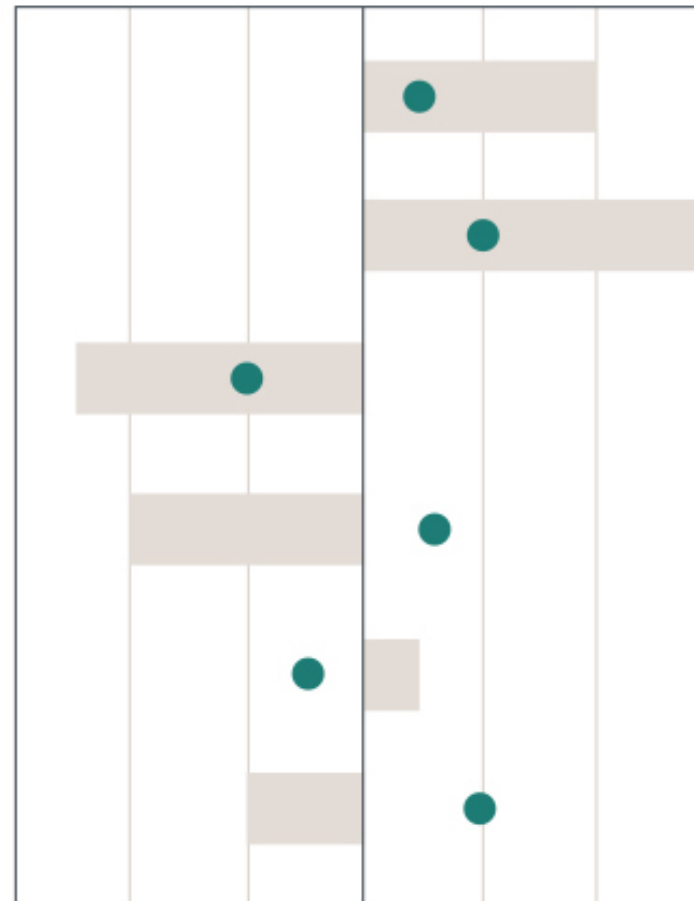
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Axis Data ☒

ANALYZING EXPOSURES AGAINST A BENCHMARK



UNDERWEIGHT NEUTRAL OVERWEIGHT



● FUND EXPOSURE
● BENCHMARK EXPOSURE

IDENTIFYING DEVIATIONS FROM STATED OBJECTIVES



Factor	"Global Value" Fund 1		"Global Value" Fund 2	
Value	0.68		-0.38	
Size	-0.16		-0.50	
Momentum	-0.32		-0.23	
Volatility	0.43		0.35	
Quality	-0.03		-0.28	
Yield	-0.14		-0.71	
Growth	-0.14		0.11	
Liquidity	0.29		0.26	

ANALYSING THE INTENSITY OF THE FACTOR EXPOSURE

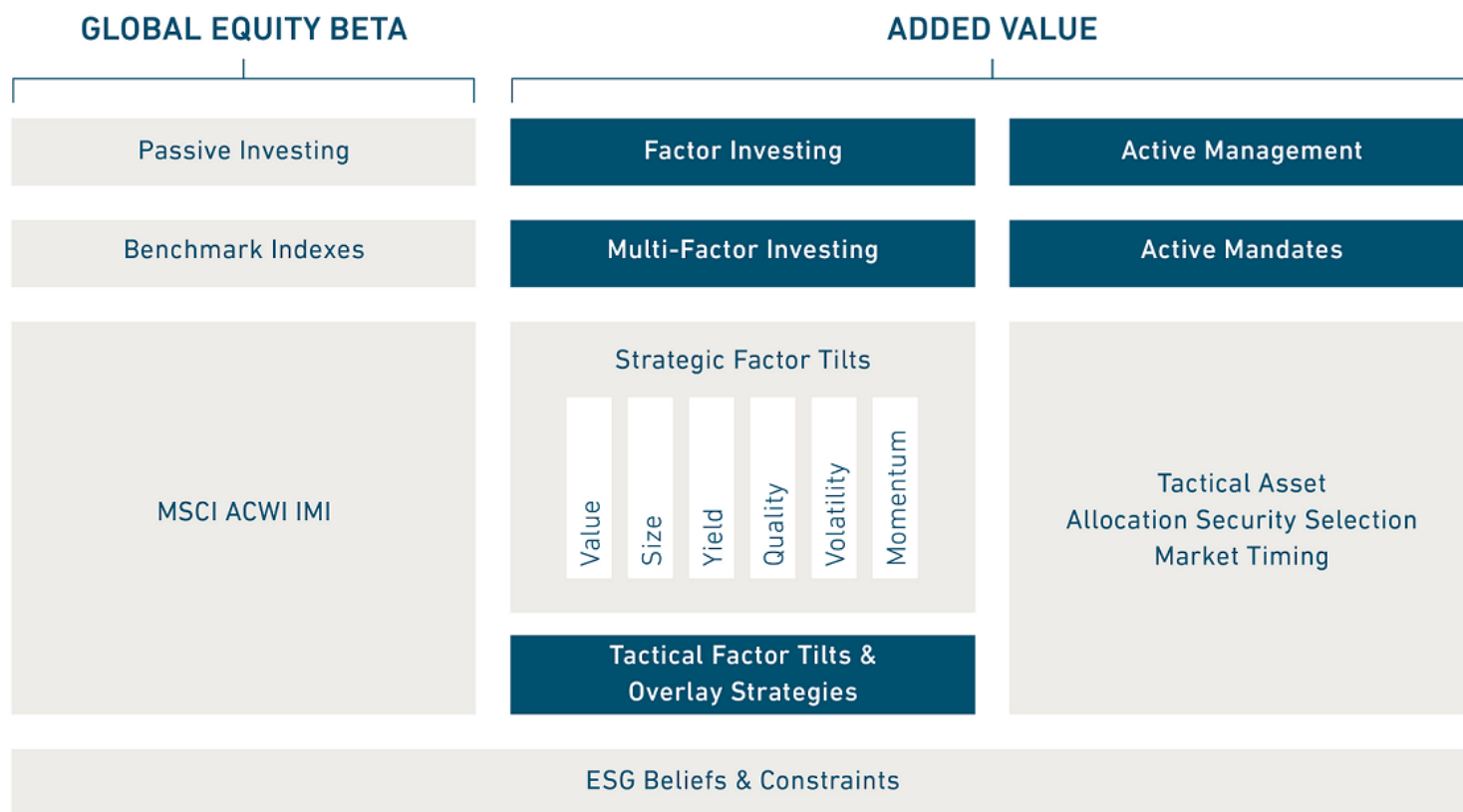


Factor	Portfolio 1
Value	0.80
Yield	0.36
Volatility	0.30
Liquidity	0.18
Size	-0.01
Quality	-0.14
Growth	-0.14
Momentum	-0.21

Factor	Portfolio 2
Value	0.37
Yield	0.24
Volatility	0.12
Liquidity	0.08
Size	-0.06
Quality	-0.12
Growth	-0.18
Momentum	-0.24

CONCLUSION: EMBRACE THE BEST OF BOTH WORLDS

- Factors are important systematic sources of return in active portfolios
- Fund factsheets focus on countries and sectors but lack factor analysis



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Our line of products and services includes indexes, analytical models, data, real estate benchmarks and ESG research.

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