Trends everywhere? The case of hedge fund styles

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Hedge fund performance
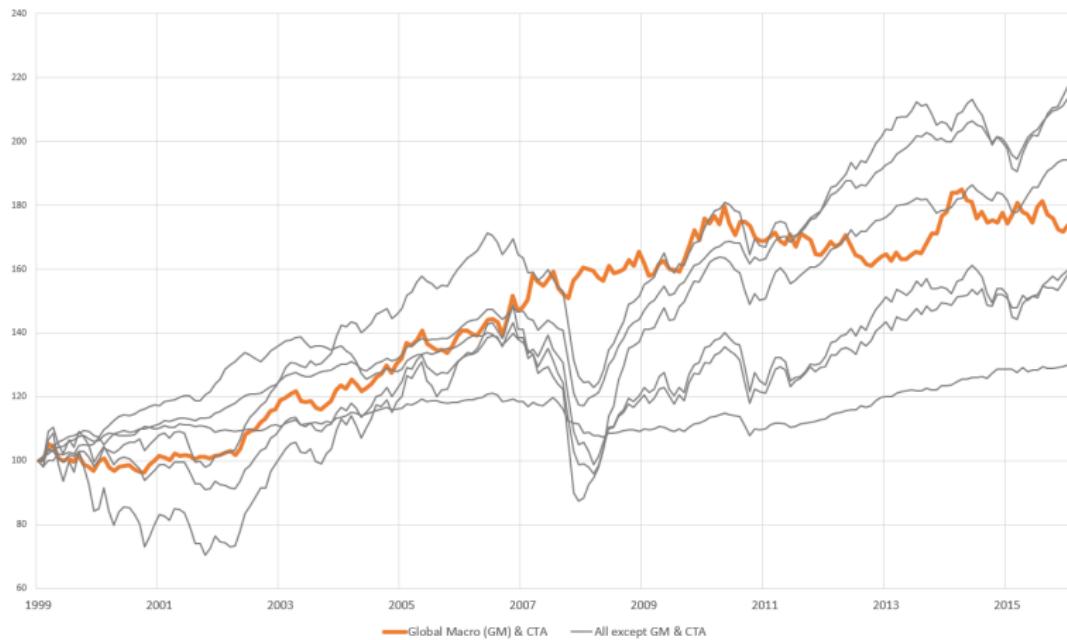
Figure: Track record of hedge funds strategies splitted into two categories: Global Macro and Systematic Diversified versus all others.

Hedge fund performance
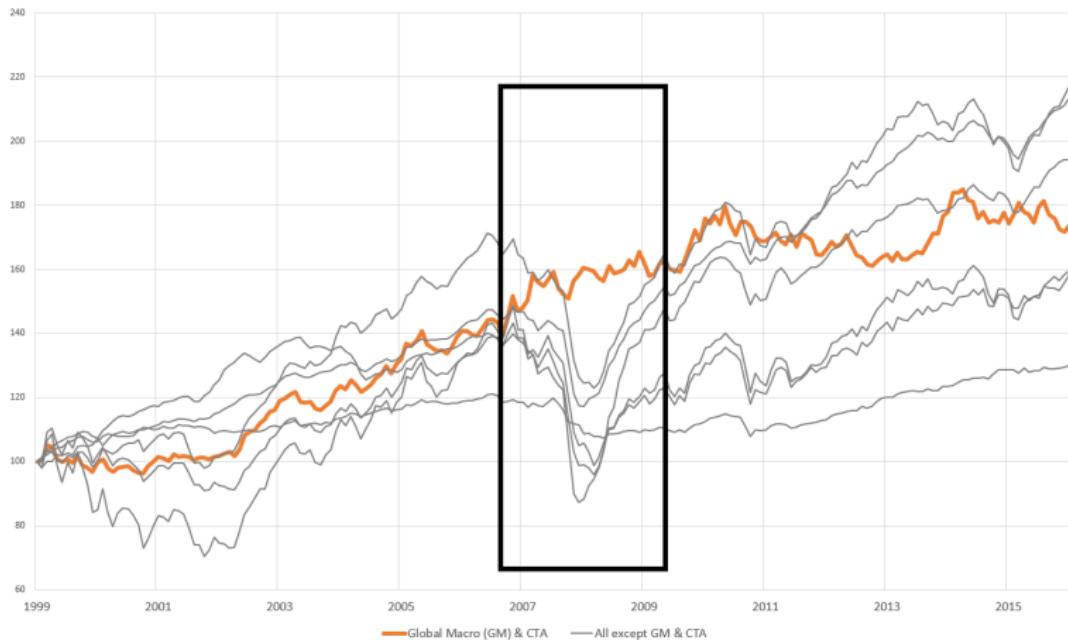

Figure: Track record of hedge funds strategies splitted into two categories: Global Macro and Systematic Diversified versus all others.

How to explain the differences in performance?

- Several generations of factor models to explain hedge funds performances:
  - 1st generation composed of traditional Buy and Hold (B&H) portfolios: static, no optionality
  - 2nd generation: Fung Hsieh (2001, RFS) [8], Agarwal Naik (2004, RFS) [1] who use lookback straddle options to proxy Trend-Following
  - Attempt for an explicit dynamic treatment: Patton Ramadorai (2013, JF) [13] allow factor loadings to change to account for the dynamics of hedge funds strategies
- Improvement in R^2 except for Managed Futures

What solutions?

- In the literature, continuing interest on the **Cross-Sectional** momentum . . .
    - Not new: Jegadeesh Titman (1993, JF) [11] and Carhart (1997, JF) [6] added the momentum to FF model
    - Recent research papers are discussing the topic: Barroso Santa-Clara (2014, JFE) [4], Huang (2015, WP) [9]
    - Work on the existence of the premium on other asset classes by Asness, Moskowitz Pedersen (2013, JF) [2]
- . . . And on the **Time-Series** momentum: Moskowitz Ooi Pedersen (2012, JFE) [12], Baltas Kosowski (2012, WP) [3]
- Recent papers compare both implementations and try to understand their relations: Bird (2015, WP) [5] and Cheema (2017, WP) [7]

But either only on equity or focus on one horizon

Our paper

Build **a collection of TREND factors**

- based on the time-series momentum methodology
- liquid, transparent and dynamic
- summable: the global TREND can be decomposed into sub versions, per signal or per asset class
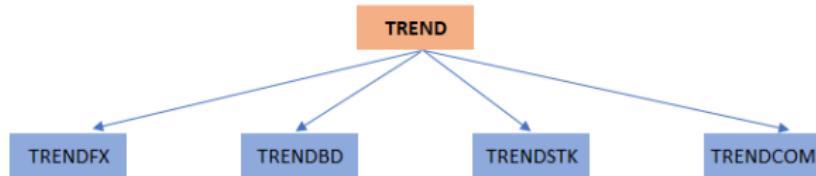
- Q1: Do we detect a global TREND everywhere?
- Q2: Do we detect asset class TREND everywhere?

First result: with global TREND
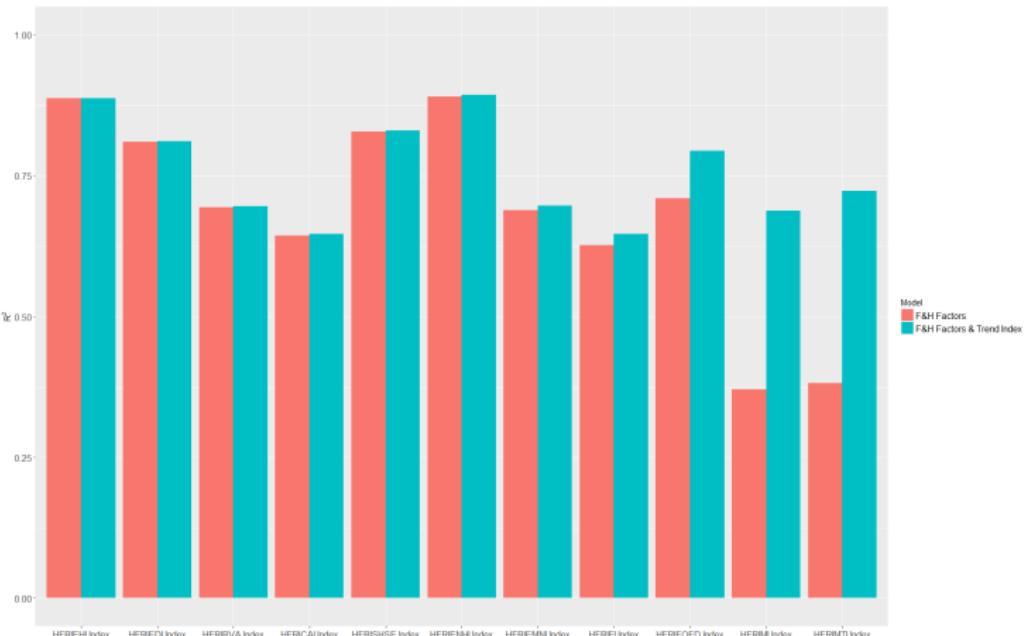
Figure: R^2 of both models on the HFR indexes.

First result: with global TREND
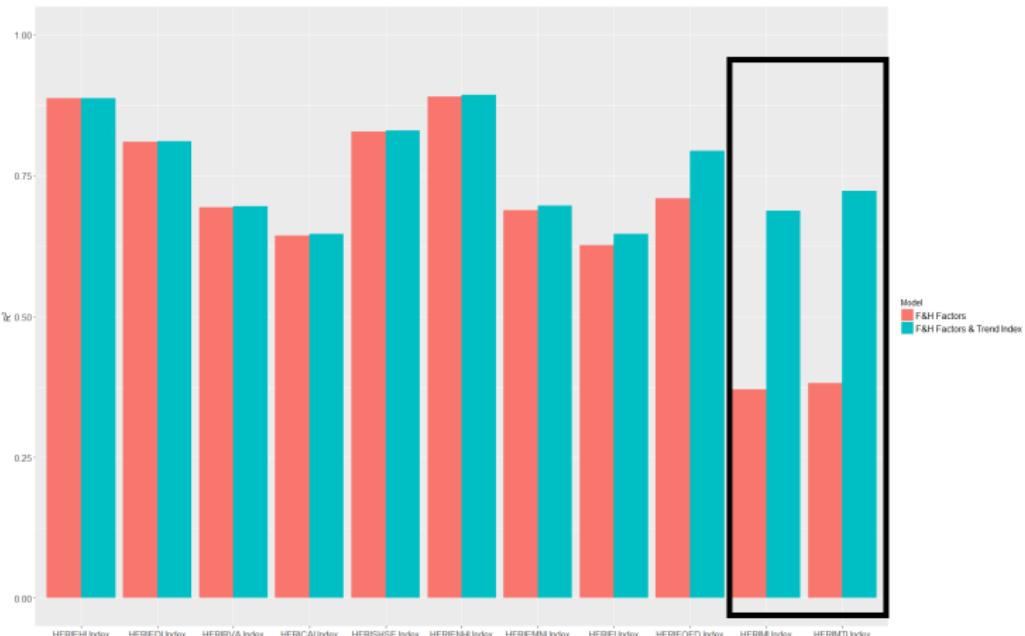
Figure: R^2 of both models on the HFR indexes.

Data

Our dataset is the following:

1. 50 futures: 19 commodities, 12 equities, 9 bonds, 7 currencies and 3 short-term interest rates
2. 4pm UTC and Close prices
3. Longest available period: from January 1990 to July 2017
4. Continuous series are made with a forward-ratio price adjustment

$\rightarrow$ standard in the Trend Following literature: Moskowitz Ooi Pedersen (2012) [12], Baltas Kosowski (2012) [3] and Hurst Ooi Pedersen (2015) [10].

Basic Trend Signal
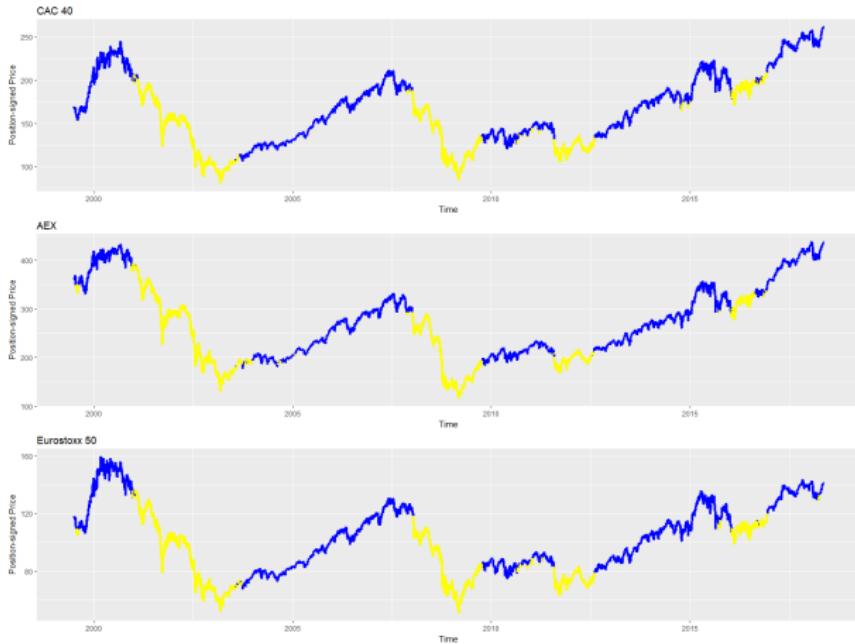
Figure: Signal of a 1 year Momentum on 3 markets.

Factor construction

Factor

$$r_t^P = \frac{\kappa}{N_t} \sum_{i=1}^{N_t} S_{i,t-1} \frac{r_{i,t}}{\sigma_{i,t-1}}$$

- $S_{i,t-1}$ is the momentum signal
- $r_{i,t}$ is the return of future i on day t
- $\sigma_{i,t-1}$ is the realized volatility of future i
- N_t is the number of available futures
- κ is the target volatility

$\longrightarrow$ Standard allocation process in the CTA space and in the TSMOM literature

Asset class aggregation
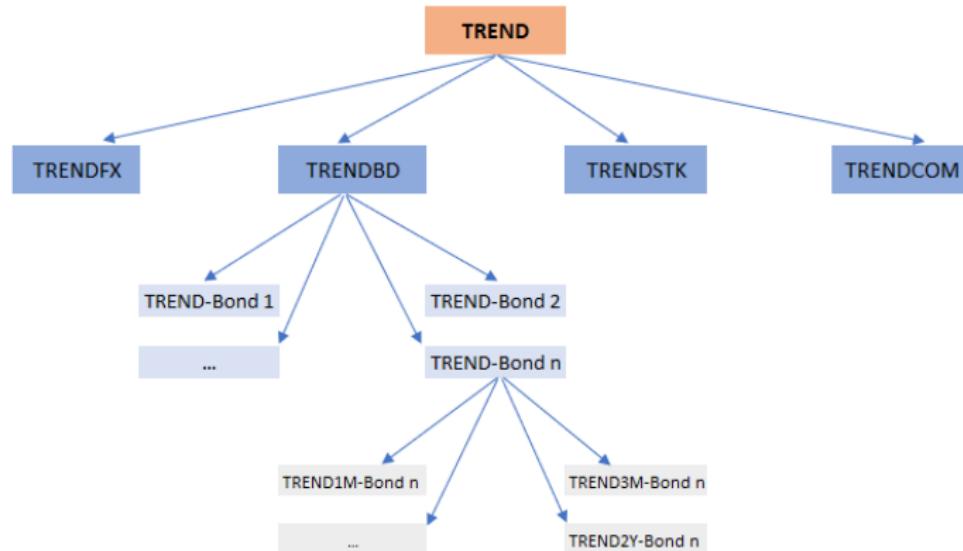
Figure: Asset class aggregation of the TREND factor.

Data: HFRI indexes

- 11 HFR indices
- Monthly frequency
- Net of fees
- Period: from January 1990 to December 2016

Q1: TREND everywhere?

	Alpha	PTFSBD	PTFSFX	PTFSCOM	PTFSIR	PTFSSTK	Equity	Size	Bond	Credit	TREND	R^2
Equity Market Neutral	0.00	-0.01	0.00	-0.01	-0.00	-0.00	0.12	0.00	0.02	0.00	0.02	0.69
	(1.16)	(-1.52)	(1.12)	(-2.63)	(-0.37)	(-0.25)	(6.89)	(0.06)	(1.88)	(0.11)	(0.86)	
Equity Quant. Directional	-0.00	-0.02	0.01	-0.01	0.00	-0.02	0.41	0.07	0.01	0.02	**0.10**	0.90
	(-1.94)	(-2.65)	(1.84)	(-1.29)	(0.66)	(-3.13)	(15.72)	(1.84)	(0.91)	(1.12)	**(2.18)**	
Equity Short Selling	-0.00	0.02	-0.00	-0.01	-0.01	-0.00	-0.51	-0.27	-0.01	0.05	-0.03	0.83
	(-1.10)	(2.00)	(-0.21)	(-0.51)	(-0.61)	(-0.04)	(-10.25)	(-3.74)	(-0.46)	(1.34)	(-0.31)	
Fund of funds	-0.00	-0.00	0.00	-0.00	-0.00	-0.00	0.19	0.04	0.01	-0.04	**0.17**	0.79
	(-1.59)	(-0.91)	(0.61)	(-0.63)	(-0.48)	(-0.75)	(8.85)	(1.17)	(1.14)	(-2.35)	**(4.88)**	
Systematic Diversified	-0.01	0.00	0.01	0.01	0.00	-0.02	0.17	-0.08	-0.02	0.01	**0.80**	0.82
	(-3.64)	(0.51)	(1.55)	(1.21)	(0.42)	(-2.85)	(4.27)	(-1.36)	(-1.27)	(0.38)	**(12.30)**	
Convertible Arb.	0.00	-0.00	0.00	-0.01	-0.01	-0.01	0.21	0.04	-0.01	-0.05	0.02	0.64
	(0.19)	(-0.20)	(0.18)	(-1.45)	(-0.72)	(-0.71)	(6.49)	(0.78)	(-0.45)	(-2.08)	(0.39)	
Fixed Income Multistrat.	0.00	-0.01	0.00	-0.00	0.00	-0.00	0.13	0.03	-0.02	-0.07	0.05	0.63
	(2.05)	(-1.73)	(0.91)	(-0.85)	(0.36)	(-0.93)	(5.28)	(0.91)	(-1.63)	(-3.85)	(1.16)	
Event-Driven	-0.00	-0.00	0.00	-0.01	-0.01	-0.00	0.27	0.08	0.00	-0.08	0.00	0.81
	(-0.05)	(-0.69)	(0.39)	(-1.85)	(-0.89)	(-0.17)	(9.14)	(1.94)	(0.07)	(-3.58)	(0.06)	
Equity Hedge	-0.00	-0.01	0.01	-0.01	-0.00	-0.00	0.44	0.15	0.00	-0.04	-0.01	0.89
	(-1.42)	(-1.15)	(1.18)	(-2.19)	(-0.27)	(-0.54)	(14.18)	(3.30)	(0.31)	(-1.50)	(-0.10)	
Global Macro	-0.00	-0.00	0.01	0.00	0.00	-0.01	0.15	-0.02	-0.01	0.00	**0.48**	0.79
	(-3.71)	(-0.44)	(1.14)	(0.33)	(0.80)	(-2.76)	(6.08)	(-0.44)	(-0.68)	(0.11)	**(11.43)**	
Relative Value	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.14	0.02	-0.02	-0.07	-0.00	0.69
	(2.22)	(-1.20)	(0.20)	(-1.16)	(0.01)	(-2.01)	(6.05)	(0.71)	(-1.67)	(-3.79)	(-0.11)	

Table: Regressions of the HFR indexes on the Fung-Hsieh factors, combined with TREND. T-statistic is displayed below the coefficients. *Note: Significant TREND exposures are in bold.*

Q2: *sector*-TREND everywhere?

	TRENDCOM	TRENDSTK	TRENDBD	TRENDFX
Equity Market Neutral	0.01	-0.03	0.05	0.04
	(0.90)	(-1.07)	(1.59)	(1.81)
Equity Quant. Directional	0.03	0.05	0.08	**0.07**
	(1.24)	(1.12)	(1.54)	**(2.16)**
Equity Short Selling	0.02	-0.11	0.08	-0.05
	(0.42)	(-1.45)	(0.92)	(-0.84)
Fund of funds	**0.05**	**0.16**	0.07	**0.09**
	(2.10)	**(4.88)**	(1.53)	**(3.10)**
Systematic Diversified	**0.34**	**0.45**	**0.47**	**0.41**
	(5.99)	**(4.73)**	**(4.03)**	**(5.71)**
Convertible Arb.	0.04	0.00	-0.02	-0.02
	(1.11)	(0.09)	(-0.25)	(-0.38)
Fixed Income Multistrat.	0.01	**0.09**	0.01	-0.02
	(0.31)	**(2.36)**	(0.28)	(-0.51)
Event-Driven	-0.03	0.08	-0.02	-0.01
	(-0.89)	(1.76)	(-0.43)	(-0.31)
Equity Hedge	-0.01	0.04	-0.02	-0.03
	(-0.34)	(0.91)	(-0.32)	(-0.74)
Global Macro	**0.21**	**0.27**	**0.29**	**0.24**
	(5.93)	**(4.48)**	**(4.07)**	**(5.30)**
Relative Value	-0.03	0.04	0.02	-0.03
	(-1.13)	(1.25)	(0.55)	(-1.00)

Table: Regressions of the HFR indexes on the Fung-Hsieh factors, combined with one of the four sector TREND factors. T-statistic is displayed below the coefficients. *Note: Each column corresponds to a model with the nine Fung-Hsieh factors and one sector-TREND factor. Only the sector-TREND coefficients are shown.*

Data: Individual funds

- From the EuroHedge database
- Monthly frequency
- Reported net of fees
- Gross of fees returns are calculated

889 funds checking the 3 criteria:

- Labelled in USD
- 2 years of track record
- Last AUM $> 20\$M$

Quantile portfolios

- Next-month returns of quantile portfolios (trend-beta sorted, based on a 36-months rolling regression)

$$r_{i,t} = \alpha_{i,t} + \beta_{i,t}\text{TREND}_t + \epsilon_{i,t}$$

	QUANTILE PORTFOLIOS		
	1 (LOW)	4 (HIGH)	4 - 1
Ann. Return (in %)	11.44	7.72	-3.72
	(5.52)	(3.10)	
9-factor Alpha (in %)	0.15	0.56	0.41
	(0.88)	(2.19)	
Avg. β_{TREND}	-0.29	0.44	

Table: Quantile portfolios statistics (based on univariate β_{TREND} sorts). T-statistic is displayed below the coefficients. *Note: Funds have been scaled to have the same volatility as TREND, on each window.*

Takeaways

- Global TREND present in some HF styles, explaining the 2008 performances
- Specific TRENDS can be found in Equity Quant Dir. and FoHF
- TREND delivers alpha
- Improved risk management for both :
    - Fund of Hedge Funds: TREND exposure can be controlled across hedge fund styles
    - Fund of CTAs: TREND and *sub*-TREND exposures can be controlled when picking funds

Work under progress & further research

- Is the premium only global or equally present across asset classes?
    - *Estimation of the sector-TREND premia*
- Do high beta CTAs perform better than low beta CTAs?
    - *Classification of the CTA space*

- Non-gaussian framework, with higher order moments
- Capacity constraint: relation between the TREND loading and the size of the fund

Questions?

Thank you for your attention.

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