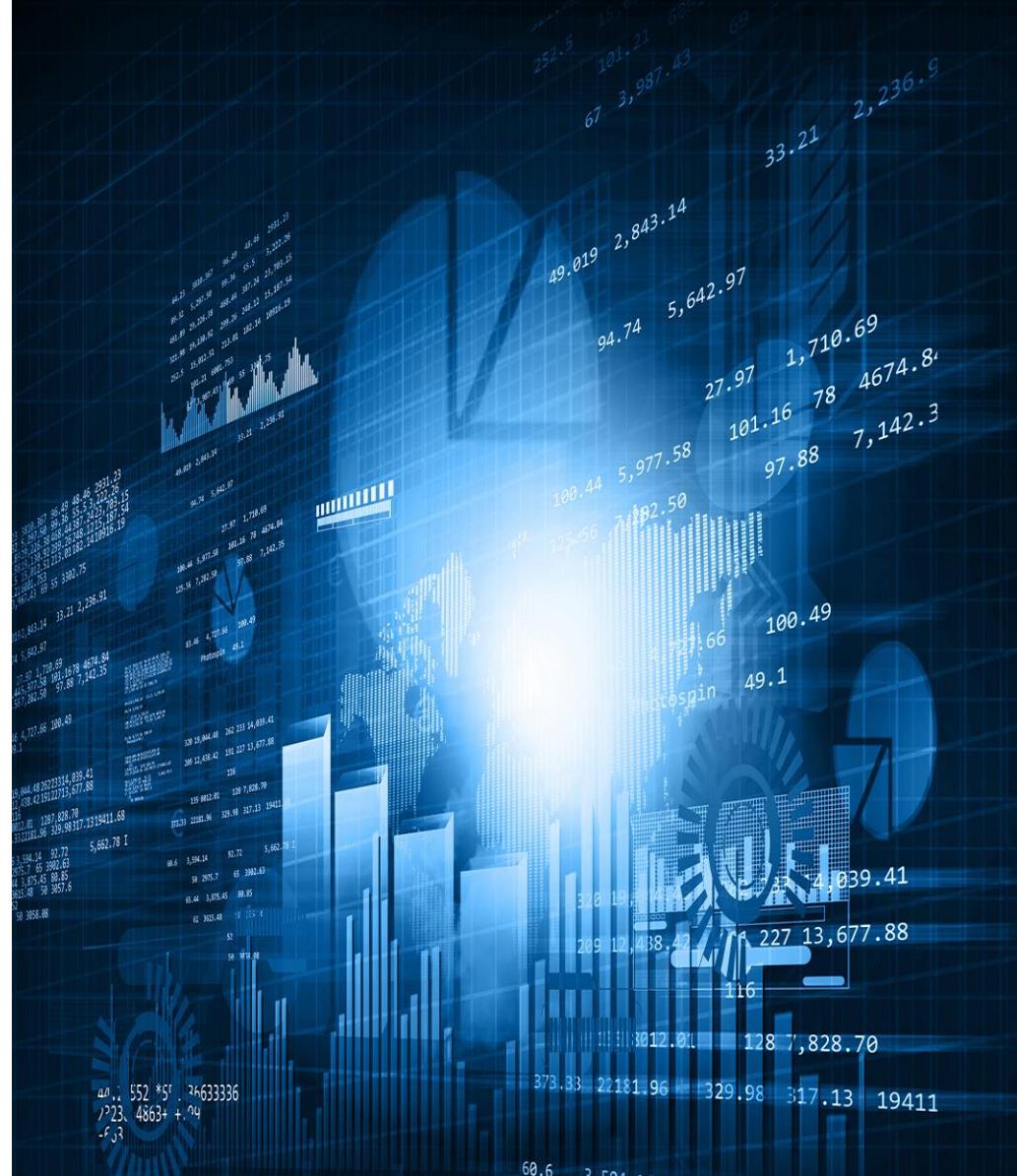




Centre  
Emile  
Bernheim

# Do You Need to Be a Quant to Be a Better Hedge Fund Manager?

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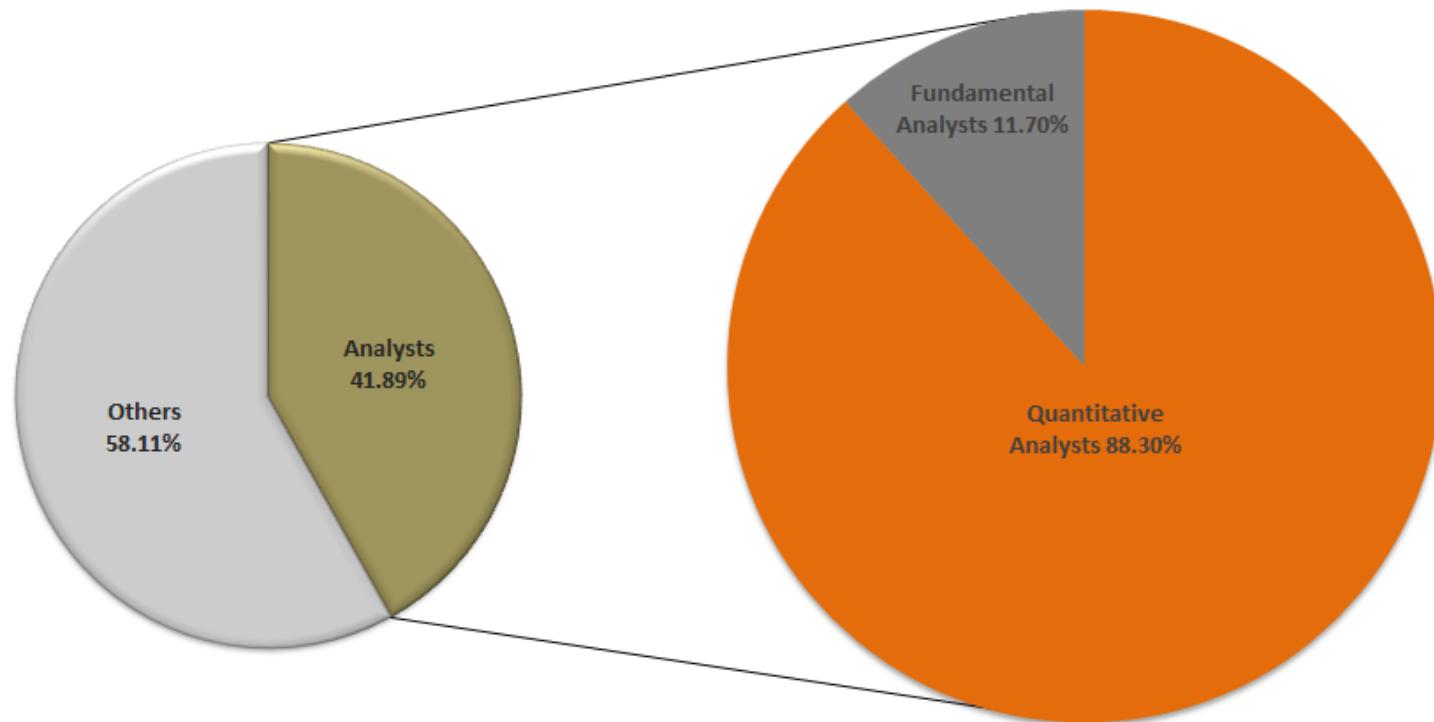


# Motivation

Why a research on the quants in the hedge fund industry?

- Job demands for quantitative analysts have dominated job demands for fundamental analysts in recent years

Figure 1 – Average proportion of jobs matching quantitative analysts and fundamental analysts in the alternative investment industry in 2017



Sources: Bank of America Merrill Lynch, indeed.com

A. Hassouni

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# Previous papers

have stressed the importance of manager skills when analyzing fund performance

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- Chevalier and Ellison (1999), and Li, Zhang and Zhao (2011)
  - » focus on the **average SAT score** at the manager undergraduate institution
  - = **most robust manager characteristic** that is **positively** related to performance
- Golec (1996), and Gottesman and Morey (2006)
  - »  $Perf(\text{managers } \underline{\text{with}} \text{ an MBA}) \gg Perf(\text{managers } \underline{\text{without}} \text{ an MBA})$

# This paper

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- We look at an additional characteristic:
  - » the academic background of the hedge fund manager
- Research question:

*“Does a hedge fund manager with a quantitative academic background deliver superior performance?”*

# Model

in line with the literature

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$$y_{it} = \beta_0 + \beta_1 \text{QUANT}_i + \beta_2 \text{SAT}_i + \beta_3 \text{MBA}_i + \beta_4 \text{PHD}_i + \beta_5 \text{MASTER}_i + \beta_6 \text{CFA}_i + \\ \beta_7 \text{WORK}_{it} + \beta_8 \text{WORK}_{it}^2 + \beta_9 \underset{T}{\text{FundAge}}_{it} + \beta_{10} \log(\text{AUM})_{it-1} \\ + \beta_{11} \text{EMN}_i + \beta_{12} \text{LSE}_i + \sum_{l=1} \delta_l \text{Year}_l + \varepsilon_{it}$$

with  $i = 1, \dots, I$  and  $t = 1, \dots, T$

- Dependent variables ( $y_{it}$ ):
  - » Raw and risk-adjusted monthly returns
  - » The volatility of monthly returns
- The analysis is conducted for three categories of hedge funds
  - » the equity market neutral funds (**EMN**),
  - » the long/short equity funds (**LSE**), and
  - » the funds of hedge funds (**FoF**)

# Data

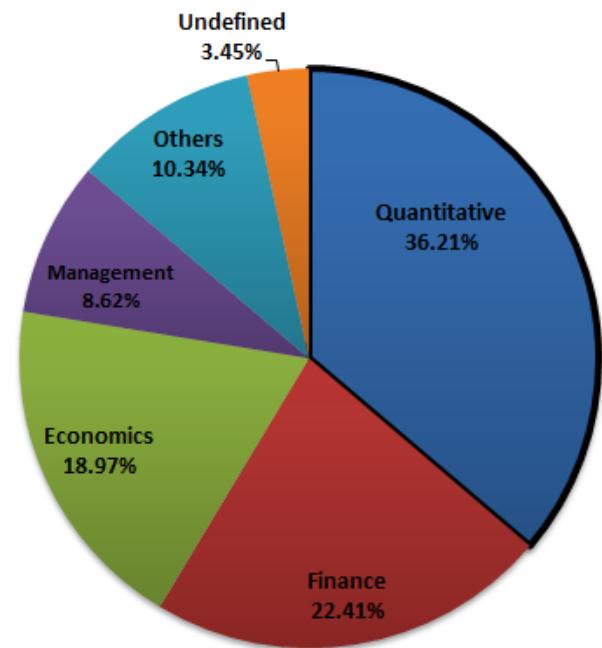
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- Data on U.S. hedge fund characteristics are extracted from the Lipper TASS database:
  - » both **live** and **graveyard** (dead) funds are included (limited survivorship bias)
  - » 1645 funds in the 3 categories
  - » data on: monthly **returns**, monthly **AUM** and **fund age**
  - » Period of analysis: **January 1994 – December 2013**
- (Originality) Data on managers characteristics are hand-collected from their LinkedIn profiles. Data on:
  - » 325 managers (56 managing EMN funds, 138 managing LSE funds and 131 managing FoF funds), 1 manager per fund (no duplicates)
  - » the educational background of the managers
  - » the professional background of the managers

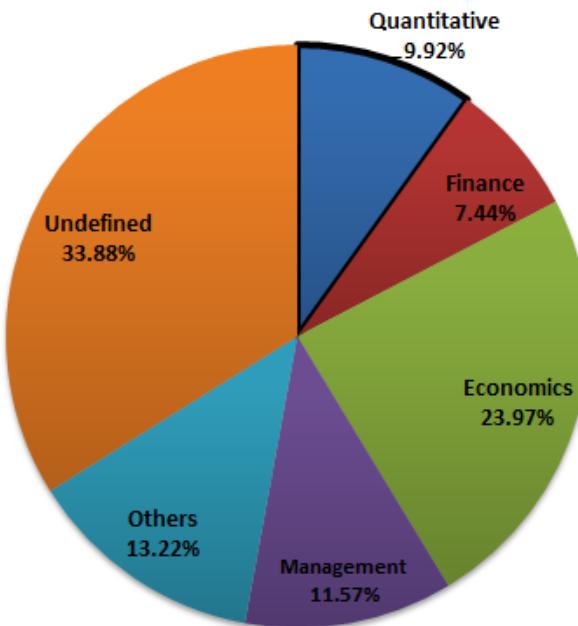
# Descriptive statistics

Figure 2 – Breakdown of managers according to their academic background

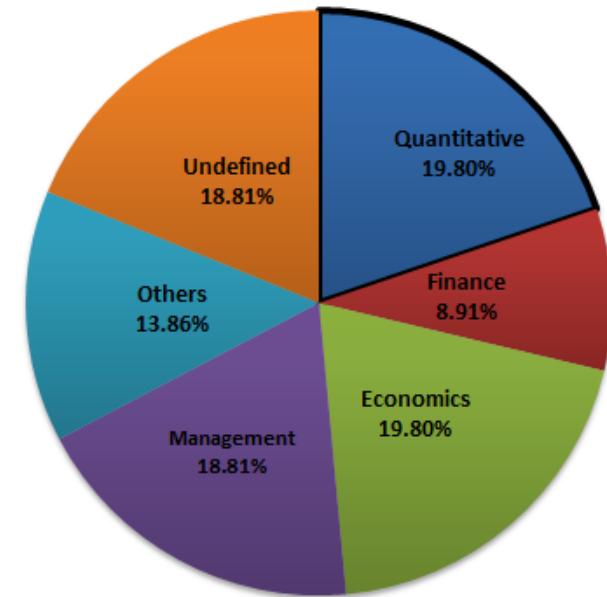
EMN Funds



LSE Funds



FoF Funds



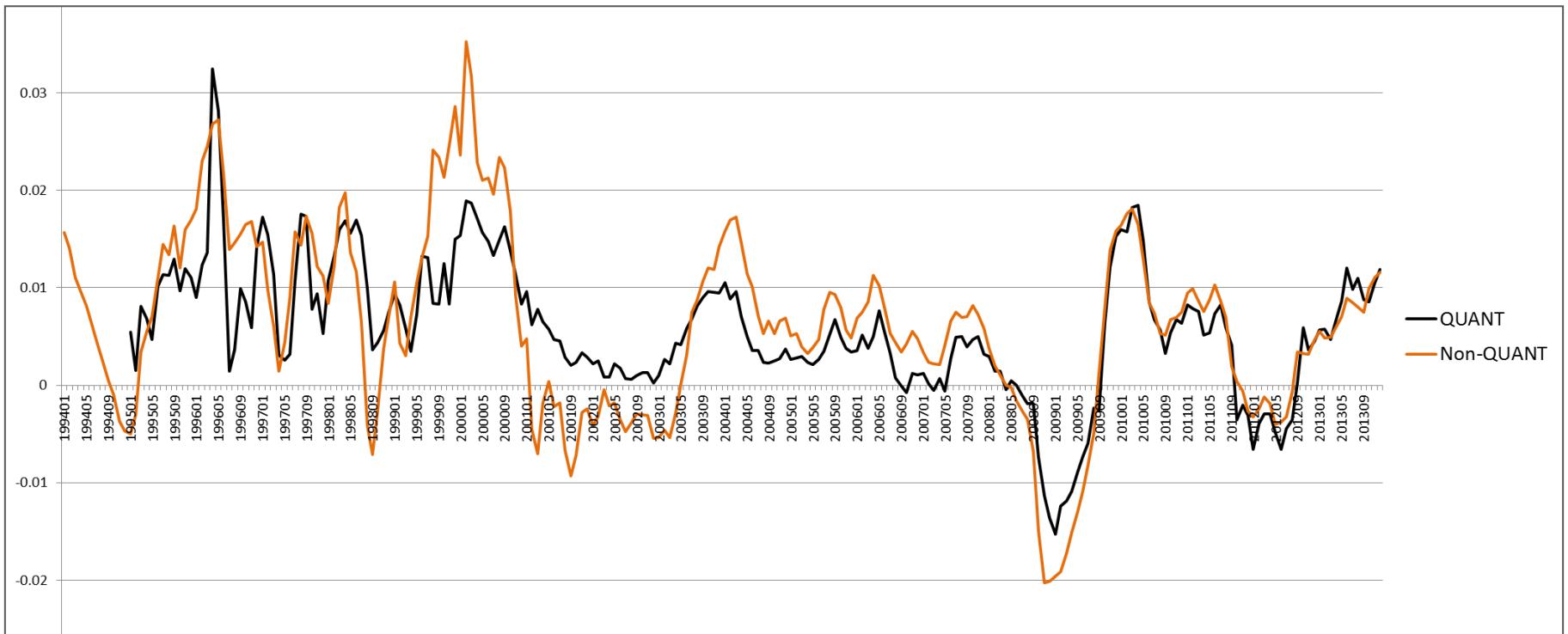
\*Others include Political Science, History, Law, literature, Anthropology, Psychology, Medicine and International Relations.

\*Undefined corresponds to the proportion of managers for whom we are unable to identify the academic background.

- *Quants* are those graduated in:
  - » Computer Science, Engineering, Math or Physics

# Descriptive statistics

Figure 3 – Average **excess-return** of *quants* and *non-quants* in the three hedge fund categories: January 1994 – December 2013



# Preliminary findings

- Dependent variables:
  - » Monthly raw excess returns
  - » Volatility of monthly returns

TABLE 1

	Raw Excess Return	Volatility
Intercept	-1.57e-02*	6.21e-02***
QUANT	8.13e-04**	1.77e-03***
SAT	-4.18e-05*	-2.73e-06
MBA	3.87e-04	-2.03e-03***
PHD	7.28e-04	-4.20e-03***
MASTER	1.95e-03***	4.89e-04
CFA	1.27e-03***	-5.63e-03***
WORK	7.98e-05	-3.98e-05
WORK <sup>2</sup>	-1.16e-06	3.00e-06*
Fund age	-2.74e-04***	-4.99e-04***
Fund size	6.82e-04***	-1.97e-03***
EMN	-1.28e-03***	-6.18e-04
LSE	2.04e-03***	3.01e-02**
Time-fixed effects	Yes	Yes
R <sup>2</sup>	0.189	0.352
Adjusted R <sup>2</sup>	0.187	0.351
Number of funds	228	228

# Findings based on risk-adjusted returns

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- **Risk-adjusted returns** estimated based on:
  - » Monthly **Sharpe** ratios
  - » The Fama and French (1992) 3-factor model (**FF 3-factor**)
  - » The Fung, Hsieh, Naik and Ramadorai (2008) 7-factor model (**FHNR 7-factor**)
  - » A one factor market-model, in which the factor is represented by the value-weighted average of returns of all hedge funds in the TASS database (**Index model**)

# Findings based on risk-adjusted returns

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- The quants seem to outperform the non-quants
  - » However, the finding is not consistent across the four measures of performance

TABLE 2

	Sharpe Ratio	FF 3-factor	FHNR 7-factor	Index
Intercept	-5.73e-01 ***	-2.52e-02 ***	-2.12e-02 ***	-3.36e-02 ***
<b>QUANT</b>	<b>3.40e-02 ***</b>	<b>4.43e-04</b>	<b>1.90e-03 **</b>	<b>3.31e-04</b>
SAT	1.03e-03 *	-6.90e-05 **	-1.26e-04 ***	-8.86e-05 **
MBA	1.12e-02	4.82e-04	-2.19e-04	8.64e-06
PHD	3.17e-02 **	9.52e-04	2.29e-04	1.09e-03
MASTER	-4.81e-03	1.17e-03 *	2.21e-03 ***	1.89e-03 ***
CFA	3.68e-02 ***	8.56e-04	1.87e-03 ***	2.70e-03 ***
WORK	6.87e-03 ***	1.36e-04	8.43e-05	3.89e-04 ***
WORK <sup>2</sup>	-1.08e-04 ***	-2.31e-06	-8.25e-07	-6.85e-06 ***
Fund age	-7.77e-03 ***	-3.90e-06	-1.89e-05	7.44e-05
Fund size	2.87e-02 ***	7.75e-04 ***	1.19e-03 ***	7.24e-04 ***
EMN	-1.39e-01 ***	-9.72e-04	-2.85e-03 ***	7.32e-04
LSE	-1.50e-01 ***	-3.44e-03 ***	-6.38e-03 ***	-2.18e-03 ***
Time-fixed effects	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.211	0.092	0.092	0.091
Adjusted R <sup>2</sup>	0.209	0.091	0.090	0.090
Number of funds	228	192	192	192

# Quants in the three different hedge fund categories

- The quants appear to outperform their counterparts only in the case of EMN and LSE funds

TABLE 3

	Sharpe Ratio	FF 3-factor	FHNR 7-factor	Index
Intercept	-5.18e-01 ***	-2.42e-02 ***	-1.99e-02 ***	-3.22e-02 ***
QUANTEMN	2.57e-01 ***	7.13e-03 ***	6.11e-03 ***	5.29e-03 *
QUANTLSE	1.17e-01 ***	6.20e-03 ***	9.47e-03 ***	6.20e-03 ***
QUANT	-7.12e-02 ***	-2.50e-03 ***	-1.79e-03 **	-2.44e-03 **
SAT	8.66e-04	-7.94e-05 **	-1.49e-04 ***	-1.06e-04 ***
MBA	2.36e-02 ***	7.67e-04 *	4.80e-04	5.01e-04
PHD	2.95e-02 **	1.24e-03	8.84e-04	1.49e-03 *
MASTER	5.56e-03 ***	1.26e-03 **	2.11e-03 ***	1.89e-03 ***
CFA	3.55e-02 ***	1.28e-03 **	2.19e-03 ***	2.88e-03 ***
WORK	7.29e-03 ***	1.69e-04 *	7.24e-05	3.93e-04 ***
WORK <sup>2</sup>	-1.28e-04 ***	-3.13e-06 *	-9.39e-07	-7.20e-06 ***
Fund age	-7.83e-03 ***	-3.98e-05	-3.70e-05	5.76e-05
Fund size	2.66e-02 ***	7.53e-04 ***	1.18e-03 ***	6.91e-04 ***
EMN	-2.16e-01 ***	-3.27e-03 **	-4.35e-03 ***	-7.56e-04
LSE	-1.67e-01 ***	-4.07e-03 ***	-7.30e-03 ***	-2.81e-03 ***
Time-fixed effects	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.209	0.091	0.091	0.093
Adjusted R <sup>2</sup>	0.208	0.090	0.090	0.091
Number of funds	228	192	192	192

# Sensitivity analyses

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- Sensitivity analysis for the **definition of the variable QUANT**
  - » new QUANT = old QUANT + Finance
- **Sub-periods analysis** of the performance of the quants in the three different hedge fund categories
  - » 5 sub-periods of 3 years
  - » Findings reported for the 7-factor alpha

# Sensitivity analysis for the variable QUANT

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- The analysis suggests that a difference should be made between managers who graduated in Quantitative Finance and managers who graduated in other quantitative fields

TABLE 4

	Sharpe Ratio	FF 3-factor	FHNR 7-factor	Index
Intercept	-5.70e-01***	-2.49e-02***	-2.05e-02***	-3.30e-02***
QUANT	1.79e-02	-8.98e-04	3.19e-04	-9.24e-04
SAT	1.13e-03 *	-5.95e-05 *	-1.17e-04 ***	-8.40e-05 **
MBA	1.23e-02	4.29e-04	-2.05e-04	5.33e-05
PHD	3.65e-02***	1.07e-03	3.99e-04	1.20e-03
MASTER	-9.05e-03	1.33e-03 **	2.07e-03 ***	2.09e-03 ***
CFA	3.71e-02***	1.02e-03 *	1.91e-03 ***	2.75e-03 ***
WORK	7.13e-03***	1.54e-04	1.09e-04	3.99e-04 ***
WORK <sup>2</sup>	-1.14e-04***	-2.76e-06	-1.42e-06	-7.03e-06 ***
Fund age	-7.69e-03***	-9.87e-06	-1.05e-05	7.52e-05
Fund size	2.84e-02***	7.59e-04***	1.14e-03 ***	7.04e-04 ***
EMN	-1.40e-01***	-4.17e-04	-2.60e-03 ***	1.28e-03
LSE	-1.52e-01***	-3.51e-03***	-6.57e-03 ***	-2.26e-03 ***
Time-fixed effects	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.211	0.092	0.092	0.091
Adjusted R <sup>2</sup>	0.210	0.091	0.090	0.088
Number of funds	228	192	192	192

# Sub-periods analysis

- The analysis highlights the situation in the hedge fund industry in the aftermath of the 2008 financial crisis

TABLE 5

	7-factor alpha				
	<u>1996 – 1998</u>	<u>1999 – 2001</u>	<u>2002 – 2004</u>	<u>2005 – 2007</u>	<u>2008 – 2010</u>
QUANTEMN	1.97e-02	-1.47e-02***	8.91e-03***	1.08e-02***	8.36e-03
QUANTLSE	3.18e-03	1.06e-02	1.38e-02 ***	3.45e-03	3.65e-03
QUANT	-4.97e-03	4.27e-03	-3.72e-03***	-4.07e-03***	2.29e-03
EMN	1.97e-02	-5.13e-03	-4.90e-03***	-1.15e-02***	2.47e-03
LSE	-1.23e-02***	-1.64e-02***	-3.16e-03***	-7.75e-03***	-5.48e-03***
Control variables	Yes	Yes	Yes	Yes	Yes
Time-fixed effects	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.077	0.116	0.075	0.083	0.050
Adjusted R <sup>2</sup>	0.066	0.112	0.070	0.079	0.043
Number of funds	74	121	121	101	72

# Concluding remarks

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- The paper attempts to extend the previous research on the relationship between **manager educational background and fund performance**
- The appraisal of manager academic background should be part of the due diligence process
- Investors might be better off by selecting a hedge fund manager with a quantitative background, especially in the case of equity market neutral and long-short equity funds