WARWICK BUSINESS SCHOOL

"BIG DATA IN FINANCE"

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INTRODUCTION

- What is Big Data in Finance?
- How does it help investors make better decisions?
- What are the risks?
- Policy implications?

INTRODUCTION

- Examples of Big Data
- Data Management
- Implications for different areas in Finance
- Limitations?

OUTLINE

- Market Microstructure
- Media Coverage & Textual Analysis
- Examples
  - Lottery Strategies and Mutual Funds Option Holdings
  - Network of Mutual Funds Stock Holdings
  - Global Citation Network

HF TRADING

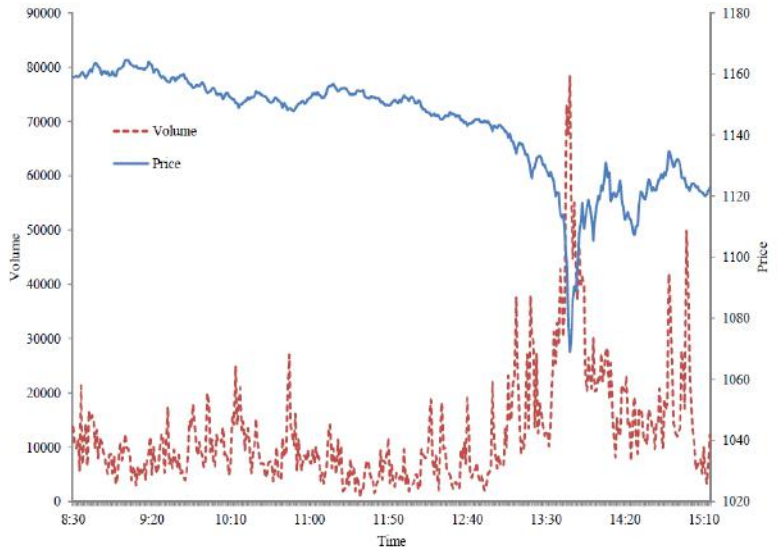
- Automated trading platform which employ powerful computers to place a large number of orders at very high speeds.
- Lowers transaction costs
- HF traders increase the liquidity of the market
- Dark trading reduce trade execution costs from price impact
- Market efficiency
- Needless and expensive
- Dark pools give rise to price manipulation, fishing and predatory trading
- Plausible increases in systemic risk
- HF trading does not take into consideration economic fundaments (Carmona, (2013))

HF TRADING

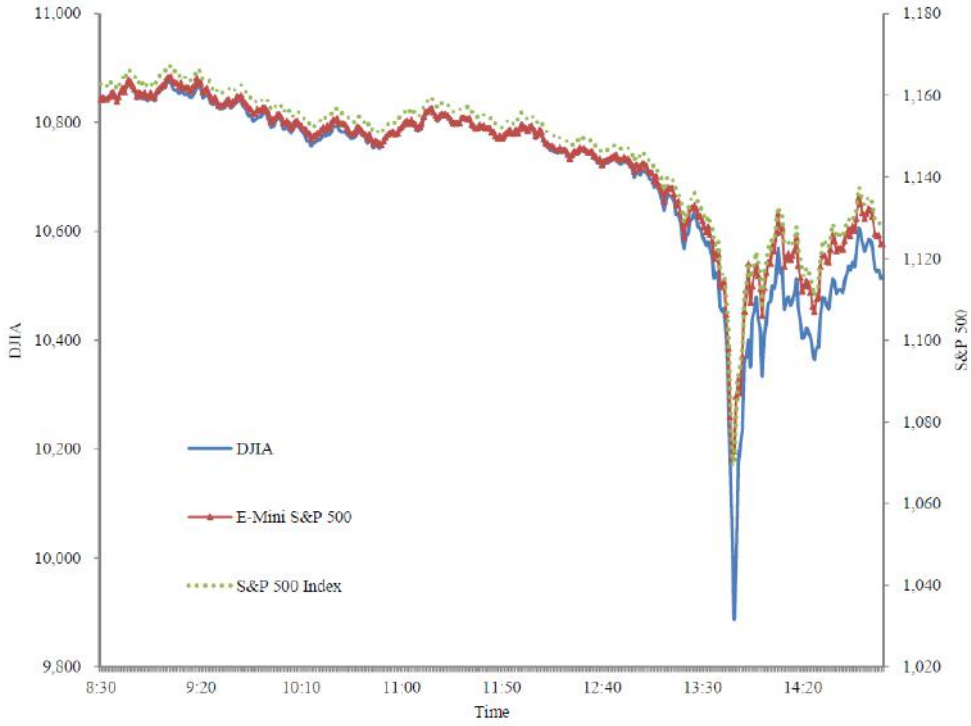
- *"The recent evolution of markets from manual to electronic trading has had huge benefits and investors save money every day due to the lower cost of trading. But electronic trading brings with it a number of new risks, and we need to continue to strengthen the resiliency of electronic markets,"*
  Mark Gorton, the founder and head of Tower Research Capital,
  Feb 4, 2016 the Financial Times
- *"Regulators and bourses such as the New York Stock Exchange and Nasdaq have introduced a clutch of reforms and firebreaks in recent years — especially in the wake of a "flash crash" in 2010 that underscored how automated markets have become — such as circuit-breakers when stocks or markets fall by a certain amount."*,
  Feb 4, 2016 the Financial Times

THE FLASH CRASH (MAY, 2010)

- Source: Kirilenko et al. (2014)
- SEC and CFTC: “Hot potato” effect
- *“HFTs did not cause the Flash Crash”*
- *“Contributed to it by demanding immediacy ahead of other market participants”*
- Waddell and Reed provided liquidity to the market Menkveld and Yueshen (2013)
- Minute-by-minute transaction prices and trading volume



- End-of-minute transaction prices of the Dow Jones Industrial Average (DJIA), S&P 500 Index, E-MiCni S&P 500



MEDIA COVERAGE - THEORIES

- Theories that link media coverage and asset allocation decisions.
  - **Information View**: media coverage helps the stock prices to incorporate the new information more rapidly. (Market Efficiency)
    - Peress (2014) examines the stock returns performance under periods of *media strikes* and finds a *decrease* in the trading volume during these periods, the volatility as well as the dispersion of stock return.
    - Rapid incorporation of the new information in the prices.
  - **Salient View**: media coverage merely shifts investor attention across securities, resulting in a transitory increase in investors' demand for salient stocks covered in the news.
    - Upward pressure to stock prices demonstrating an investor *overreaction* to salient news (Huberman and Regev, 2001; Tetlock, 2007; Tetlock et al., 2008; Tetlock, 2011; Heston and Sinha, 2014).
    - Newspapers front pages.

MEDIA COVERAGE & HFTS

- Von Beschwitz et al. (2013) show that *news analytics* can affect the *variation* and *volume* of high frequency trading.
- The stock price and trading volume *increases* a few seconds after a positive event.
- Foucault et al. (2013) show that the *speed* of news trading *matters* and it is *positively* related to trading volume and volatility of the informed investor's order flow.
- Main Dataset: RavenPack News Analytics - it provides real-time news analytics based on the Dow Jones Newswire.

MEDIA COVERAGE

- **Analyst Forecasts** are more accurate, less dispersed and less optimistically biased in countries with stronger media competition (Cao et al. (2014)).
- **Mutual Funds**: Solomon et al. (2014) show that media coverage of *mutual fund* holdings influences the allocation of money across funds.
- **News Momentum**: Hillert et al. (2014) relying on 2.2 million articles from forty-five national and local U.S. newspapers between 1989 and 2010, they find that firms particularly covered by the media exhibit, ceteris paribus, significantly stronger momentum.
- Data Source: *the Wall Street Journal*, *the New York Times*, *the Washington Post*, and *USA Today* (Factiva).

MEDIA COVERAGE

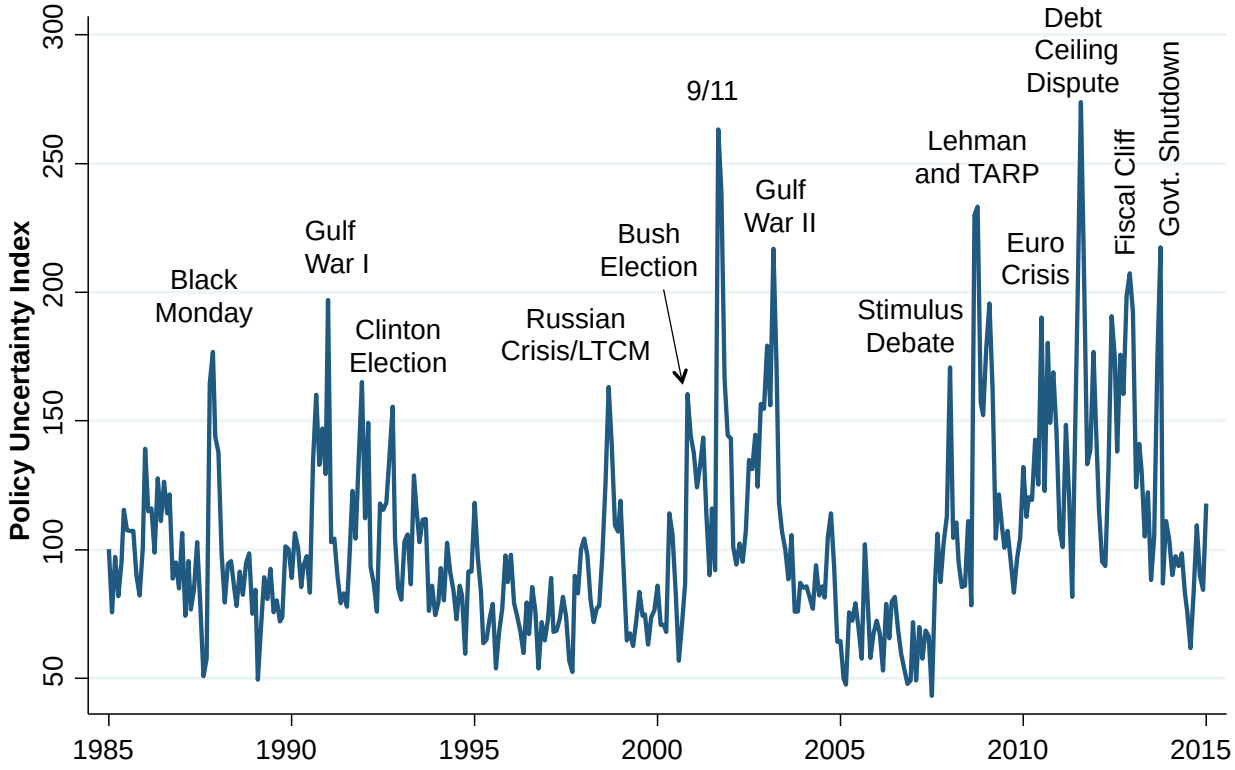
- **M&A**
  - Ahern and Sosyura (2014) show that firms tend to create *more news* in an attempt to *increase* the value of their stock before a merger is announced.
  - An increase of media coverage (active media management) tends to improve the terms of the merger.
  - Giglio and Shue (2014) show the periods of *no-news* are actually *informative* for the success of a merger.
- **IPOs**
  - Liu et al. (2014) find that a simple count of news articles mentioning a company's name in the last month before an initial public offering (IPO) is *significantly* related to both *price revision* and *initial return* of the company's stock.

MEDIA COVERAGE

- **Uncertainty Measures** (Bloom (2009), Baker et al. (2015))
  - Policy uncertainty is related to *higher* stock price *volatility* and *lower* investment and employment in policy-sensitive sectors.
  - Macro level: deterioration in investment, output, and employment in the United States.
  - Main sources: USA Today, Miami Herald, Chicago Tribune, Washington Post, Los Angeles Times, Boston Globe, San Francisco Chronicle, Dallas Morning News, New York Times, and Wall Street Journal.
  - Other sources: Lexis Nexis and Factiva.
- **Sentiment Measures**: Da et al. (2015) build a new measure of *market-level* sentiment, namely, the Financial and Economic Attitudes Revealed by Search (FEARS) based on queries that are associated with households concerns.
  - Data source: Google Trends (SVI).

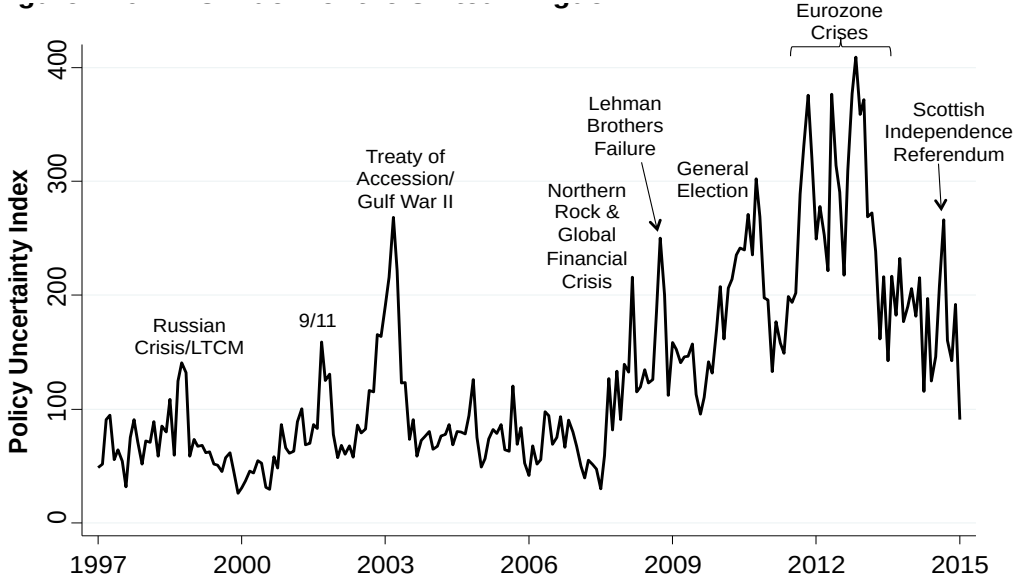
US Economic Policy Uncertainty

- Source: Baker, Bloom, and Davis (2016)
- Scaled monthly counts of articles containing ‘uncertain’ or ‘uncertainty’, ‘economic’ or ‘economy’, and
- Policy relevant terms: ‘regulation’, ‘federal reserve’, ‘deficit’, ‘congress’, ‘legislation’, or ‘white house’.
- Normalized to mean 100 from 1985-2009



UK Economic Policy Uncertainty

- Source: Baker, Bloom, and Davis (2016)
- Monthly counts of articles containing ‘uncertain’ or ‘uncertainty’, ‘economic’ or ‘economy’.
- Policy-relevant terms: ‘tax’, ‘policy’, ‘regulation’, ‘spending’, ‘deficit’, ‘budget’, or ‘central bank’.
- Normalized to mean 100 from 1997 to 2009
- Newspapers: The Times of London and the Financial Times.

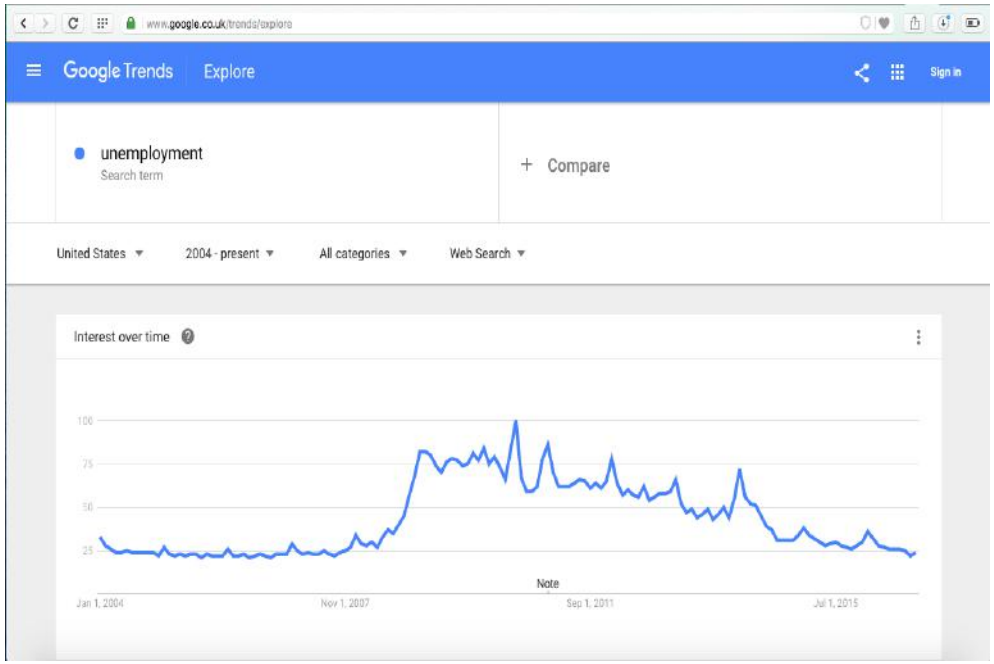


TEXTUAL ANALYSIS

- Loughran and McDonald (2011) show that the existing list of negative words that are developed for different disciplines might not necessarily be negative in the Finance literature.
- Particularly, most of the current research classifies the words that appear in articles as positive or negative based on the *Harvard Psycosociological Dictionary* (Harvard-IV-4 TagNeg (H4N) file).
- They build on the H4N list and develop a new list of negative words for Finance (Fin-Neg).
- Loughran and McDonald (2014) improve the Fog Index in order to be more appropriate for financial applications.
  - The Fog Index is a readability measure that it is defined as linear combination of average *sentence length* and the proportion of *complex words* (words with more than two syllabes).

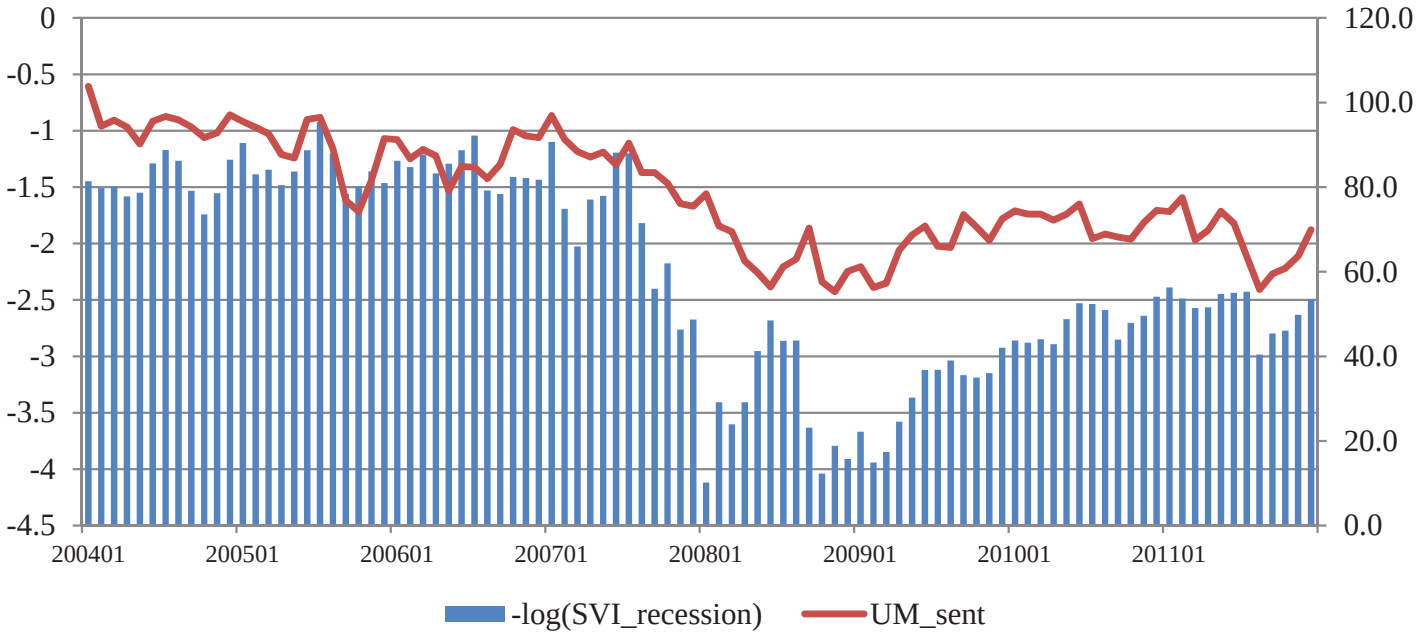
GOOGLE TRENDS

- Andrei and Hasler (2014) show empirically and theoretically that stock return variance and risk premia comove with attention and uncertainty. Dimpfl and Jank (2012) also find that SVI Ganger causes volatility.
- Search Volume Index (SVI) of search terms
- The data is adjusted to make comparisons between terms easier
- The measure is scaled on a range of 0 to 100



SVI & UM Consumer Sentiment Index

- Source: Da et al. (2015)



FEARS INDEX

- Da et al. (2015)
- Financial and Economic Attitudes Revealed by Search (FEARS) index
- Harvard IV-4 Dictionary and the Lasswell Value Dictionary
  - e.g, categories of words: “positive,” “negative,” “weak,” “strong,”, @ECON.
  - 149 primitive words (daily data)
- Ten “top searches” related to each primitive word. (total of 1,245 words). The authors apply a number of filters that relate to data availability and relation of the words with Finance and Economics. (final data consist of 118 search terms).

FEARS INDEX

- $\Delta SVI_{j,t} = \ln(SVI_{j,t}) - \ln(SVI_{j,t-1})$
- The authors winsorize, remove intra-week and intra-year seasonality, and standardize the data. (e.g., $\Delta ASVI_{j,t}$)
- Expanding Backward-looking rolling regressions to identify the most appropriate words for particular assets.
- Rank the words based on their *negative t*-statistics.
- Negative words create more appropriate measures of investor sentiment (Tetlock (2007))
- $FEARS_t = \sum_{i=1}^{30} R^i(\Delta ASVI_t)$
- The measures exhibits strong predictability for
  - short-term reversals
  - Temporary increases in volatility
  - Mutual Fund flows

TEXTUAL ANALYSIS

- Latent Dirichlet Allocation (LDA)
  - Probabilistic topic model that allows for classification of documents, developed by Blei, Ng, and Jordan (2003)
  - Hierarchical Bayesian analysis to categorize the semantic structure of different documents
  - Assumption: The text is generated from a probability distribution over a fixed number of topics
  - Drawbacks: does not allow any involvement from the researcher apart from the selection of the parameter specifications
  - No year-over –year continuity of common themes (Hanley and Hoberg (2016))
  - Semantic Vector Analysis (SVA)
- Examples:
  - Wu (2016) construct a measure of firm-level shocks to production and show that they affect the revenue of the firm up to 4 connections far from the origin
  - Hanley and Hoberg (2016) develop a systemic risk measure analyzing risk factors in bank 10-Ks
  - Hansen, McMahon, Prat (2015) examine the role of transparency in monetary policymakers deliberations

EXAMPLES

- Mutual Funds Option Holdings
- Global Citation Network
- Network of Mutual Funds and Stock Holdings

EXAMPLES – MUTUAL FUNDS HOLDINGS

- Research Question: Substitution effect between stocks and options with lottery payoffs. (Filippou, Garcia-Ares and Zapatero (2016))
- Lottery assets: low average prices, high idiosyncratic volatility and positive skewness.
- They resemble a real lottery as they are relatively cheap providing huge returns with low probability.
- We examine whether there is a switching in lottery stock and option investing (i.e. “substitution effect”) under particular states of the world that could explain the performance of lottery stocks.

LOTTERY STRATEGIES

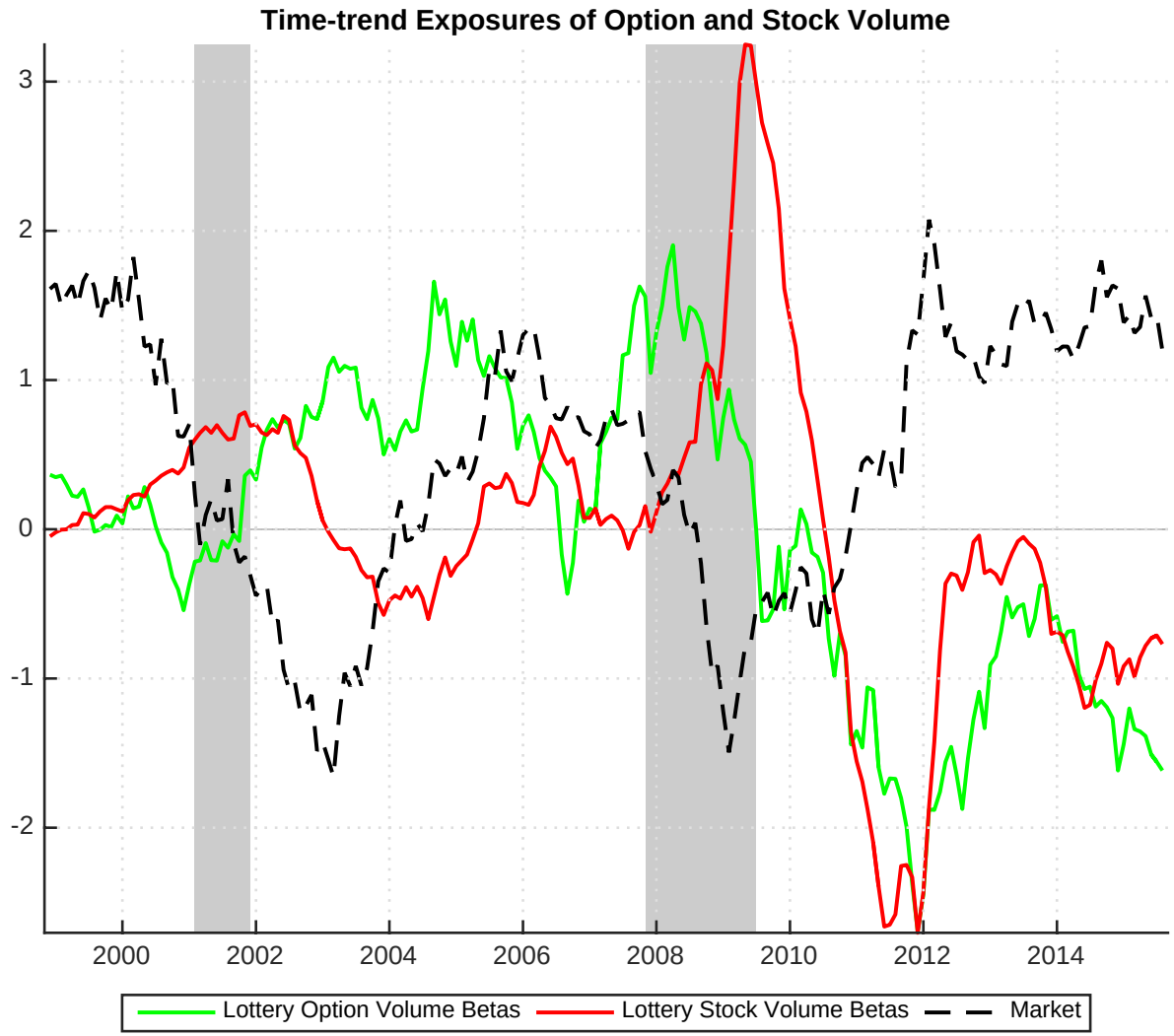
- Bali et al. (2011) identify a statistically and economically significant relation between maximum past daily returns and expected stock returns.
- Kumar (2009) stresses the role of the socioeconomic attributes of the investors in their tendency to gamble.
- Boyer and Vorkink (2014) find that total skewness is *negatively* related to average option returns. This finding suggests that investors can accept losses from options that exhibit lottery payoffs.
- Dorn, Dorn, and Sengmueller (2014) find a negative relation between jackpot and trading of stocks with lottery-like payoffs.
- Investor's sentiment can partially explain this phenomenon (Fong and Toh, 2014).
- Lottery stocks are mainly traded by individual investors.

LOTTERY STOCKS

- Gambling in the Stock Market

GAMBLING IN THE OPTION MARKET

VOLUME OF LOTTERY STOCKS AND OPTIONS



ROLLING T-STATISTICS

DYNAMICS OF LOTTERY ASSETS

- We show that the MAX strategy (i.e. lottery stocks) with options is statistically significant only for call options that are illiquid, highly volatile and exhibit high levels of moneyness.
- Investors with gambling preferences trade call options with lottery characteristics and increase their demand for lottery stocks when the options market is less liquid.
- Price pressure: when the market is performing well, investors are more involved in momentum and reversal strategies. Under periods of stress when there are less investment opportunities in the market, investors increase their gambling preferences and look for assets that could increase in value substantially.

THEORETICAL BACKROUND

- The (Embedded) Leverage Channel
  - Informed traders invest in the option market conditional on the leverage of the option contracts (e.g., Black (1998); Easley, O'Hara, and Srinivas (1998)).
  - Pan and Potesham (2006) find that deep-out-of-the money options with high leverage exhibit strong predictability while the reverse holds for option contracts with low leverage.
  - Easley et al. (1998) show that informed traders invest in both stocks and option ("pooling equilibrium") when there is high implicit leverage, the stock market is illiquid or there are many informed traders.

DATA

- Stock Data
  - Source: CRSP (daily and monthly U.S. stocks)
  - Common stock (share codes 10 and 11)
  - NYSE, AMEX, and NASDAQ
  - Time Period: 1963.07-2015.08
- Option Data
  - Source: Ivy database of OptionMetrics (daily data)
  - Option data on common stocks.
  - We apply a number of filters to ensure tradability and avoid outliers.
  - Time period: 1996.01-2015.08

PORTFOLIOS CONSTRUCTION

- MAX Portfolios
  - We sort stocks into deciles based on their maximum daily return over the previous month.
  - MAX1: lowest maximum daily return over the past month.
  - MAX10: highest maximum daily return over the past month.
  - MAX: a zero-cost portfolio which takes a long position on MAX 10 and a short position on MAX1 stocks (i.e. MAX=MAX10-MAX1).

PORTFOLIOS CONSTRUCTION

- Lottery Option Portfolios
  - We sort out-of-the money (OTM) call options with expirations up to one month into deciles the last trading day of each month.
  - $(X/S)_1$: OTM options with the lowest moneyness.
  - $(X/S)_{10}$: OTM options with the highest moneyness.
  - OTM: a zero-cost portfolio which takes a long position on $(X/S)_{10}$ and a short position on $(X/S)_1$ stocks (i.e. OTM=$(X/S)_{10}$-$(X/S)_1$).
  - Return of holding a call option to maturity is defined as:
    - $RX^{c}_{j,t:T} = \frac{\max(0, S_{j,T} - X_j)}{0.5(P_c^{ask} + P_c^{bid})}$.
    - X_j: Strike price of the underlying asset j at maturity.
    - We mainly focus on call options due to the fact that gamblers have higher preferences for this kind of options (e.g., Shefrin and Statman, 2000).

UNIVARIATE SORTS ON MAX

Panel A: Full Sample

	EW Portfolios				VW Portfolios			
Decile	Average Return	t-stat	FF5 Alpha	t-stat	Average Return	t-stat	FF5 Alpha	t-stat
Low MAX	0.81	4.15	0.16	1.59	0.48	3.02	-0.04	-0.59
2	0.92	4.75	0.20	3.35	0.53	3.31	-0.04	-0.72
3	1.04	4.85	0.26	4.33	0.55	2.98	-0.03	-0.63
4	1.02	4.42	0.24	3.59	0.58	2.88	0.05	0.69
5	0.99	3.89	0.22	3.36	0.58	2.70	0.05	0.77
6	0.93	3.37	0.21	2.30	0.61	2.44	0.07	0.87
7	0.85	2.81	0.18	1.74	0.56	1.92	0.15	1.52
8	0.82	2.41	0.17	1.38	0.40	1.24	-0.06	-0.60
9	0.59	1.59	0.00	0.00	0.13	0.36	-0.26	-2.40
High MAX	0.22	0.51	-0.24	-1.17	-0.30	-0.76	-0.62	-3.83
HML	-0.59	-1.89	-0.40	-2.04	-0.78	-2.36	-0.58	-3.27

Panel B: 1996-2015

	EW Portfolios				VW Portfolios			
Decile	Average Return	t-stat	FF5 Alpha	t-stat	Average Return	t-stat	FF5 Alpha	t-stat
Low MAX	1.00	3.78	0.37	3.24	0.71	2.89	0.18	1.87
2	1.01	3.23	0.26	2.60	0.66	2.64	-0.02	-0.25
3	1.07	3.02	0.28	2.54	0.72	2.32	0.01	0.08
4	1.01	2.68	0.21	1.74	0.57	1.60	-0.10	-0.90
5	1.00	2.37	0.26	2.01	0.63	1.59	-0.06	-0.54
6	0.91	1.98	0.22	1.32	0.42	0.90	-0.28	-2.09
7	0.88	1.72	0.30	1.58	0.50	0.90	0.07	0.43
8	0.89	1.48	0.35	1.41	0.34	0.57	-0.17	-0.94
9	0.85	1.25	0.45	1.40	0.18	0.25	-0.25	-1.16
High MAX	0.60	0.78	0.50	1.24	0.15	0.19	-0.11	-0.34
HML	-0.40	-0.60	0.12	0.32	-0.56	-0.82	-0.29	-0.81

Panel C: 1996-2015 (Conditional on Options)

	EW Portfolios				VW Portfolios			
Decile	Avg Ret With Options	t-stat	Avg Ret No Options	t-stat	Avg Ret With Options	t-stat	Avg Ret No Options	t-stat
Low MAX	0.86	3.00	0.94	3.52	0.69	2.73	0.68	2.98
2	0.81	2.71	0.85	2.59	0.70	3.03	0.67	2.25
3	0.87	2.62	0.87	2.46	0.64	1.98	0.47	1.43
4	0.93	2.55	0.76	1.94	0.43	1.26	0.52	1.57
5	0.85	2.07	0.64	1.56	0.68	1.83	0.05	0.11
6	0.61	1.37	0.64	1.37	0.49	1.18	-0.16	-0.34
7	0.37	0.75	0.54	1.01	0.60	1.12	-0.20	-0.36
8	0.45	0.78	0.45	0.76	0.43	0.70	-0.58	-0.95
9	0.38	0.65	0.48	0.70	0.27	0.45	-0.67	-0.92
High MAX	-0.07	-0.10	0.15	0.19	0.21	0.28	-1.27	-1.58
HML	-0.93	-1.58	-0.79	-1.18	-0.49	-0.82	-1.95	-2.80

DOUBLE SORTS

Panel A: Equally-weighted Portfolios				
Decile	Average Return	*t-stat*	Five-factor Alpha	*t-stat*
		Lottery Stocks		
$HML_{X/S}^{Low}$	-0.26	-0.63	0.04	0.09
$HML_{X/S}^{2}$	-0.31	-0.71	-0.08	-0.18
$HML_{X/S}^{3}$	-0.51	-0.92	-0.31	-0.59
$HML_{X/S}^{4}$	-0.74	-1.17	-0.35	-0.56
$HML_{X/S}^{High}$	-2.22	-4.24	-1.78	-3.51

Panel B: Value-weighted Portfolios				
Decile	Average Return	*t-stat*	Five-factor Alpha	*t-stat*
		Lottery Stocks		
$HML_{X/S}^{Low}$	0.26	0.53	0.59	1.30
$HML_{X/S}^{2}$	0.02	0.07	0.11	0.27
$HML_{X/S}^{3}$	-0.32	-0.73	-0.04	-0.09
$HML_{X/S}^{4}$	-0.34	-0.52	-0.10	-0.16
$HML_{X/S}^{High}$	-1.42	-2.03	-0.80	-1.43

DOUBLE SORTS

Panel A: Equally-weighted Portfolios				
Decile	Average Return	*t-stat*	Five-factor Alpha	*t-stat*
		Lottery Stocks		
HML^{Low}_{EmbLev}	-1.74	-3.20	-1.38	-2.74
HML^{2}_{EmbLev}	-0.86	-1.88	-0.47	-1.17
HML^{3}_{EmbLev}	-0.88	-1.97	-0.49	-1.05
HML^{4}_{EmbLev}	-0.44	-0.94	-0.21	-0.44
HML^{High}_{EmbLev}	0.08	0.18	0.41	0.97

Panel B: Value-weighted Portfolios				
Decile	Average Return	*t-stat*	Five-factor Alpha	*t-stat*
		Lottery Stocks		
HML^{Low}_{EmbLev}	-1.54	-2.60	-1.13	-2.13
HML^{2}_{EmbLev}	-0.10	-0.15	0.20	0.40
HML^{3}_{EmbLev}	-0.99	-2.28	-0.72	-1.78
HML^{4}_{EmbLev}	-0.11	-0.30	0.23	0.51
HML^{High}_{EmbLev}	-0.14	-0.37	0.13	0.39

MAIN RESULTS

- The MAX strategy (EW and VW portfolios) is negative and statistically significant only for
  - High moneyness
  - High implied volatility
  - High implied illiquidity
  - This phenomenon is also driven by the number of OTM options. The strategy is significant when there are more than one OTM options.
- This finding shows that there is a substitution effect between options and stocks, consistently with our hypothesis.
- Investors prefer lottery options on average and substitute lottery options with lottery stocks when the option market dries out.

OTHER SPECIFICATION TESTS

- Price Pressure?
  - Objective: Look at the average return of the MAX strategy only for high moneyness, implied volatility or option illiquity after controlling for price pressure. (triple sorts)
  - We controlled for momentum, reversals, size and institutional ownership.
- Asset Pricing Tests: Fama and MacBeth (1973) regressions.
  - Lottery options (spread portfolios) can price the cross-section of lottery stocks (e.g., stocks ranked based on previous month daily maximum 1-day return).
  - Lottery options can price options sorted on moneyness.

Lottery Assets

- Identifying the cashier and the player.

THE ROLE OF MUTUAL FUNDS

- We examine whether mutual funds provide liquidity to the gamblers.
- The literature focuses on 13F Filings.
  - Firm-level
  - They are only filed by large investors (those with more than $100 million in 13F securities)
  - They include information only on the large (more than 10,000 shares and market value exceeding $200,000) positions in the 13F securities.
  - The 13F forms only discloses *long* positions.
- We focus on N-30D, N-Q, N-CSR and N-CSRS
  - detailed information about the investment of mutual funds
  - the N-Q and N-CSR forms are filed by *all* mutual funds for all types of securities regardless of the fund's size, the size or the sign of the positions held in individual securities.
  - They include *all* positions.

OPTION HOLDINGS OF MUTUAL FUNDS

- Objective:
  - Extract mutual funds option holdings.
- Limitations:
  - No available database which compiles option holdings of mutual funds.
- Previous Attempts:
  - Goldman Sachs report: Identifies 2000 option positions (common stock, indexes and ETFs) for specific years.
  - We focus on more than 40,000 positions written on common stock.
  - NSAR: it is asking questions to mutual fund managers about their holdings (potential option holders). Written options? Short-selling?

MANDATORY PORTFOLIO DISCLOSURE

- SEC forms used by the mutual funds to report their holdings.
- **N-30D**: *semi-annual* portfolio holdings reported before the May 2004 regulation.
- **N-CSR/S**: reported at the end of the *second* and *fourth fiscal quarters* after May 2004.
- **N-Q**: reported at the end of the *first* and *third fiscal quarters* after May 2004.

- Source: Agarwal et al. (2014)

Year	N-30D	N-CSR	N-CSRS	N-Q	Total
1994	1,159	0	0	0	1,159
1995	3,565	0	0	0	3,565
1996	5,714	0	0	0	5,714
1997	6,040	0	0	0	6,040
1998	6,217	0	0	0	6,217
1999	6,282	0	0	0	6,282
2000	6,259	0	0	0	6,259
2001	6,305	0	0	0	6,305
2002	6,216	0	0	0	6,216
2003	2,850	2,682	939	3	6,474
2004	450	3,850	2,488	2,195	8,983
2005	330	3,434	2,632	6,042	12,438
2006	423	3,290	2,667	5,871	12,251
2007	455	3,261	2,746	5,889	12,351
2008	456	3,224	2,723	5,843	12,246
2009	379	3,082	2,675	5,613	11,749
2010	347	2,862	2,709	5,463	11,381
2011	349	2,891	2,657	5,374	11,271

EXTRACTING THE OPTION DATA

- We download mutual funds filings: Edgar system of the U.S. Security and Exchange Commission.
  - **Procedure**: We start by creating a list with all the mutual funds by *name*, *fiscal quarter* from 1996 to date with their *identifiers* used by SEC (*CIK code*).
- Download the list with all the filings by *identifier*.
- Reading the filings.
  - We look for specific words, such as call or covered call.
  - We extract the header, the reported date and the main body of the filing.
  - We download all option positions from OptionMetrics by quarter of year.
  - We match the OptionMetrics data with the filings by common stock name, expiration price, and expiration date.
  - Sometimes the funds just mention the word call without investing in a call (false positive).
  - The search in OptionMetrics is based on current, previous and next year.
  - Text detections based on the sliding window algorithm.

FILINGS - EXAMPLE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM N- CSR

CERTIFIED SHAREHOLDER REPORT OF REGISTERED MANAGEMENT INVESTMENT COMPANIES

Investment Company Act file number 811- 10401

Trust for Professional Managers
(Exact name of registrant as specified in charter)

615 East Michigan Street
Milwaukee, WI 53202
(Address of principal executive offices) (Zip code)

Adam W. Smith
U.S. Bancorp Fund Services, LLC
615 East Michigan Street
Milwaukee, WI 53202
(Name and address of agent for service)

(414) 765- 6115
Registrant's telephone number, including area code

Date of fiscal year end: **February 28, 2016**

Date of reporting period: **August 31, 2015**

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM N- Q

QUARTERLY SCHEDULE OF PORTFOLIO HOLDINGS OF REGISTERED MANAGEMENT INVESTMENT COMPANY

Investment Company Act file number 811- 10401

Trust for Professional Managers
(Exact name of registrant as specified in charter)

615 East Michigan Street
Milwaukee, WI 53202
(Address of principal executive offices) (Zip code)

Adam W. Smith
U.S. Bancorp Fund Services, LLC
615 East Michigan Street
Milwaukee, WI 53202
(Name and address of agent for service)

(414) 765- 6115
Registrant's telephone number, including area code

Date of fiscal year end: **February 28, 2016**

Date of reporting period: **November 30, 2015**

STOCK HOLDINGS - EXAMPLE

AllianceBernstein/TWM Global Equity & Covered Call Strategy Fund

Schedule of Investments

August 31, 2015 (Unaudited)

	Shares	Value
COMMON STOCKS 98.65%		
Aerospace & Defense 5.28%		
BAE Systems PLC (a)	169,390	$ 1,165,970
General Dynamics Corp.	10,100	1,434,503
Honeywell International, Inc.	21,540	2,138,276
Northrop Grumman Corp.	7,850	1,285,359
Raytheon Co.	13,230	1,356,869
United Technologies Corp.	29,840	2,733,642
		10,114,619
Air Freight & Logistics 0.56%		
Expeditors International of Washington, Inc.	21,860	1,070,484
Banks 2.00%		
National Bank Of Canada (a)	26,130	860,010
Toronto- Dominion Bank (a)	74,490	2,971,446
		3,831,456
Beverages 2.54%		
Coca- Cola Co. (b)(c)	123,830	4,868,996
Capital Markets 1.35%		
Aberdeen Asset Management PLC (a)	159,120	772,365
IGM Financial, Inc. (a)	30,130	862,264
T Rowe Price Group, Inc.	13,130	943,784
		2,578,413
Chemicals 1.31%		
Air Liquide SA (a)	11,200	1,340,366
Air Products & Chemicals, Inc.	7,460	1,040,894
Novozymes A/S (a)	2,300	100,011
PPG Industries, Inc.	200	19,058
		2,500,329
Commercial Services & Supplies 0.00%		
Aggreko PLC (a)	100	1,626
Communications Equipment 0.52%		
Harris Corp.	13,060	1,003,269
Distributors 0.49%		
Genuine Parts Co.	11,220	936,758
Diversified Consumer Services 0.60%		
H&R Block, Inc.	33,640	1,144,433
Diversified Financial Services 1.02%		
Groupe Bruxelles Lambert SA (a)	12,440	964,177
McGraw- Hill Financial, Inc.	10,180	987,358
		1,951,535
Diversified Telecommunication Services 1.24%		
Nippon Telegraph & Telephone Corp. (a)	62,300	2,376,256

The accompanying notes are an integral part of these financial statements.

Item 1. Schedule of Investments.

AllianceBernstein/TWM Global Equity & Covered Call Strategy Fund
Schedule of Investments
November 30, 2015 (Unaudited)

	Shares	Value
COMMON STOCKS - 98.53%		
Aerospace & Defense - 5.94%		
BAE Systems PLC (a)	166,590	$ 1,295,707
General Dynamics Corp.	9,900	1,449,954
Honeywell International, Inc.	21,240	2,207,898
Meggitt PLC (a)	135,600	790,785
Northrop Grumman Corp.	7,650	1,425,654
Raytheon Co.	13,430	1,665,723
United Technologies Corp.	29,540	2,837,317
		11,673,038
Air Freight & Logistics - 0.54%		
Expeditors International of Washington, Inc.	22,060	1,070,792
Banks - 1.99%		
National Bank Of Canada (a)	26,630	872,811
Toronto- Dominion Bank (a)	74,490	3,042,184
		3,914,995
Beverages - 2.66%		
Coca- Cola Co. (b)(c)	122,930	5,239,277
Capital Markets - 1.33%		
Aberdeen Asset Management PLC (a)	153,820	739,675
IGM Financial, Inc. (a)	30,730	876,028
T Rowe Price Group, Inc.	13,030	992,235
		2,607,938
Chemicals - 1.20%		
Air Liquide SA (a)	10,900	1,328,985
Air Products & Chemicals, Inc.	7,460	1,021,199
		2,350,184
Communications Equipment - 0.56%		
Harris Corp.	13,160	1,093,991
Construction & Engineering - 0.46%		
SNC- Lavalin Group, Inc. (a)	28,700	911,643
Distributors - 0.52%		
Genuine Parts Co.	11,320	1,025,932
Diversified Consumer Services - 0.64%		
H&R Block, Inc.	34,340	1,259,935
Diversified Financial Services - 1.01%		
Groupe Bruxelles Lambert SA (a)	12,440	1,022,301
McGraw- Hill Financial, Inc.	10,080	972,418
		1,994,719
Diversified Telecommunication Services - 1.17%		
Nippon Telegraph & Telephone Corp. (a)	62,100	2,305,079
Electric Utilities - 1.08%		
Cheung Kong Infrastructure Holdings Ltd. (a)	130,000	1,138,215
Power Assets Holdings Ltd. (a)	111,000	991,185
		2,129,400
Electrical Equipment - 1.34%		
Eaton Corp PLC (a)	19,000	1,105,040
Emerson Electric Co.	30,680	1,534,000
		2,639,040
Electronic Equipment, Instruments & Components - 0.46%		
Kyocera Corp. (a)	19,600	908,727
Food & Staples Retailing - 0.67%		
Woolworths Ltd. (a)	77,280	1,318,438
Food Products - 3.54%		
Nestle SA (a)(b)(c)	93,980	6,965,729
Health Care Equipment & Supplies - 0.61%		
DENTSPLY International, Inc.	19,760	1,198,642

OPTION HOLDINGS - EXAMPLE

AllianceBernstein/TWM Global Equity & Covered Call Strategy Fund

Schedule of Options Written

August 31, 2015 (Unaudited)

	Contracts	Value
CALL OPTIONS		
AstraZeneca PLC		
Expiration: October, 2015, Exercise Price: $70.59 (a)	45	$ 16,572
BHP Billiton PLC		
Expiration: October, 2015, Exercise Price: $19.18 (a)	250	138,104
Chevron Corp.		
Expiration: October, 2015, Exercise Price: $100.00	570	3,420
Coca- Cola Co.		
Expiration: October, 2015, Exercise Price: $42.00	530	7,420
Eli Lilly & Co.		
Expiration: November, 2015, Exercise Price: $90.00	250	38,000
GlaxoSmithKline PLC		
Expiration: September, 2015, Exercise Price: $22.25 (a)	180	17,954
Intel Corp.		
Expiration: October, 2015, Exercise Price: $31.00	1,750	64,750
iShares MSCI EAFE ETF		
Expiration: September, 2015, Exercise Price: $69.00	1,200	6,600
Expiration: November, 2015, Exercise Price: $64.00	640	36,480
Muenchener Rueckvesicherungs- Gesellschaft AG		
Expiration: October, 2015, Exercise Price: $201.99 (a)	150	6,396
Nestle SA		
Expiration: October, 2015, Exercise Price: $76.55 (a)	750	70,605
Procter & Gamble Co.		
Expiration: September, 2015, Exercise Price: $82.50	730	730
Roche Holdings AG		
Expiration: November, 2015, Exercise Price: $289.66 (a)	180	76,864
Sanofi		
Expiration: September, 2015, Exercise Price: $107.73 (a)	370	15,362
Target Corp.		
Expiration: October, 2015, Exercise Price: $87.50	260	5,330
Unilever NV		
Expiration: October, 2015, Exercise Price: $49.37 (a)	620	696
Zurich Insurance Group AG		
Expiration: September, 2015, Exercise Price: $320.70 (a)	1,410	146
Total Options Written (Premiums received $874,557)		**$ 505,429**

(a) Foreign issued security denominated in U.S. dollars.

The accompanying notes are an integral part of these financial statements.

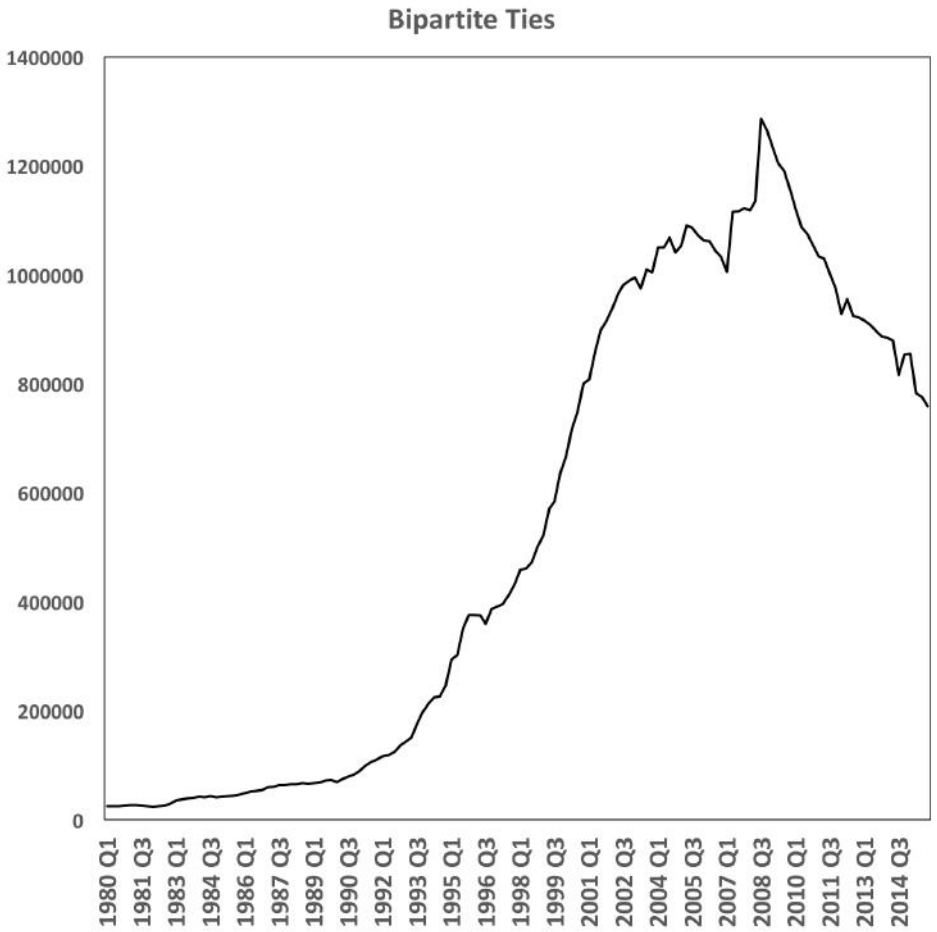
MAIN FINDINGS

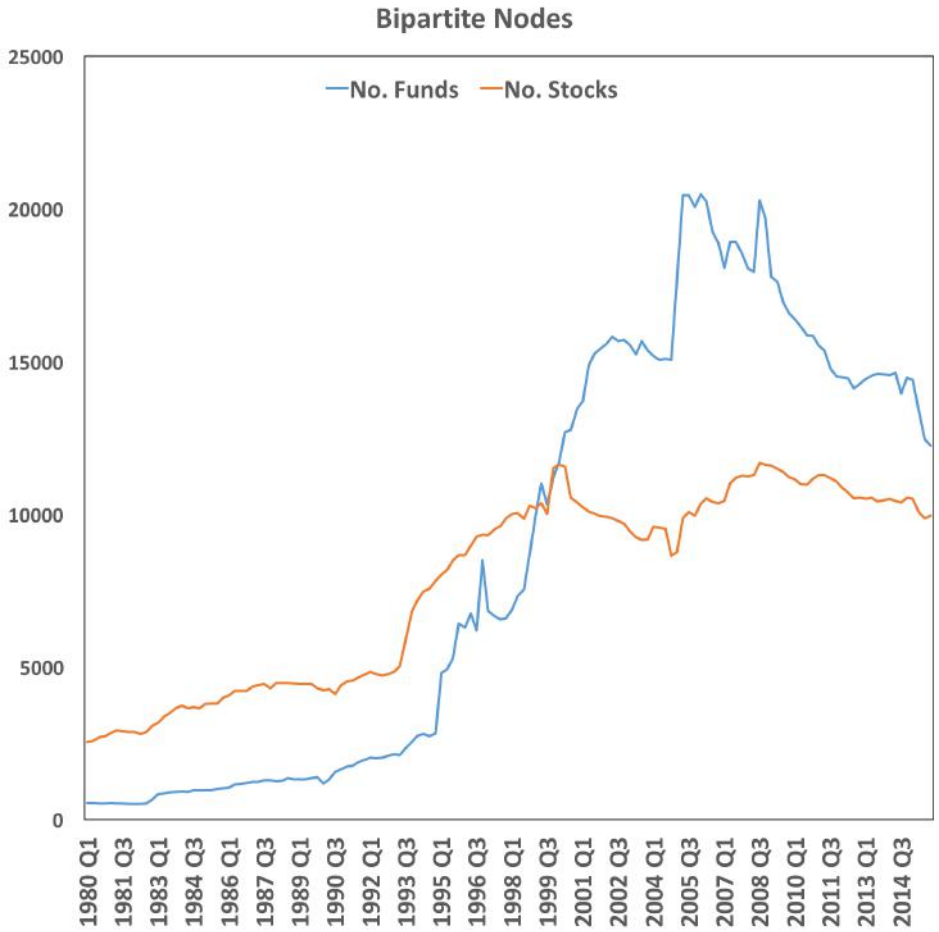
- We examine the *substitution* between equities with high past skewness or past daily maximum returns (i.e. lottery stocks) and options with high moneyness or high *ex-ante* skewness (i.e. lottery options).
- We find that lottery stocks tend to provide *insignificant* returns due to the increasing role of lottery option trading.
- Consistently with theoretical information-based models, we find that embedded leverage (main determinant of option trading volume) is the driver of this phenomenon as investors tend to substitute lottery options with lottery stocks when the moneyness, implied volatility and stock illiquidity are high.
- We examine whether mutual funds act as a "*casino*" by providing liquidity to the gamblers.

OTHER BIG DATA PROJECTS

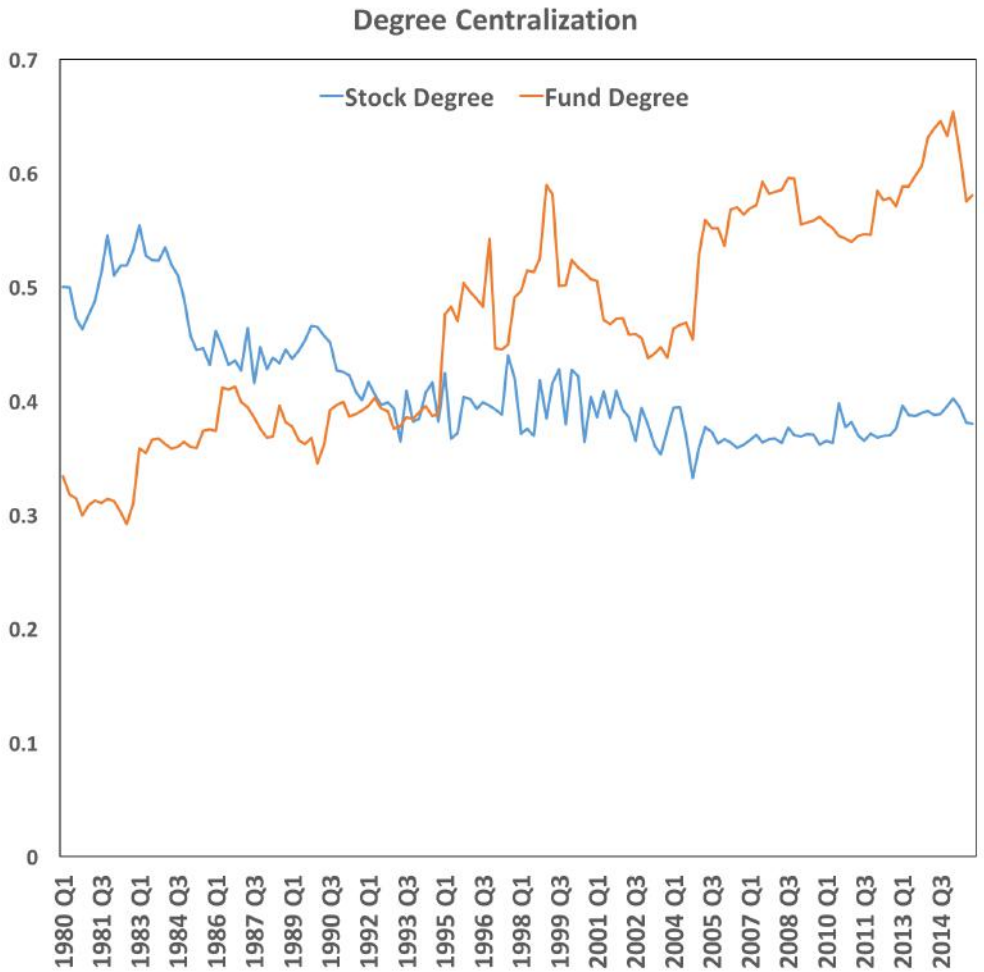
- Network of Mutual Funds
  - We construct a bipartite network of mutual funds and their holdings and identify the most well-connected stocks that are shared by the most prominent mutual funds.
  - To this end, we develop a trading strategy that goes long (short) stocks with high (low) rich club effect coefficients in order to assess the economic value of our findings.

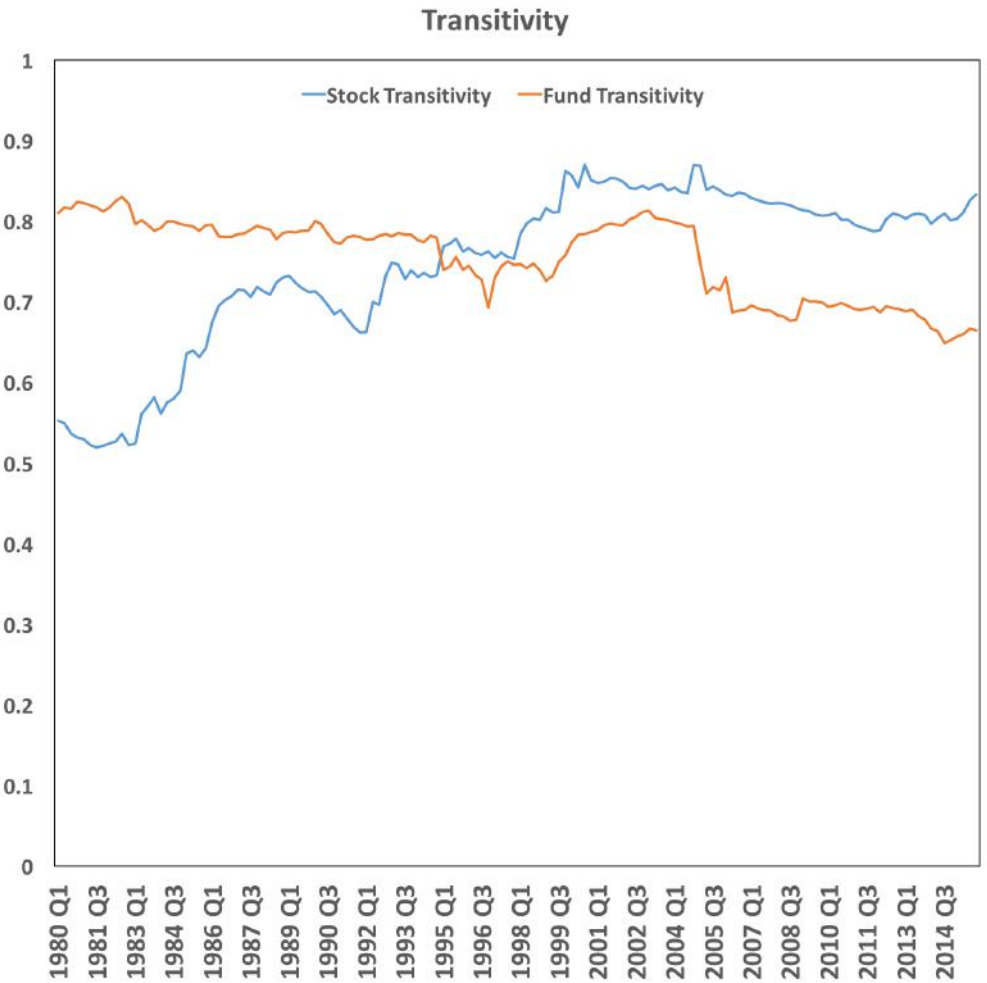
NETWORK MEASURES





NETWORK MEASURES





OTHER BIG DATA PROJECTS

- Global Citation Network – Innovation Commonality around the world.
  - Top 2000 firms: R&D activity and investment output.
  - Patent applications filed at the five top IP offices (IP5) in the world, namely:
    - EPO (European Patent Office),
    - JPO (Japan Patent Office),
    - KIPO (Korean Intellectual Property Office),
    - SIPO (State Intellectual Property Office of the People's Republic of China), and
    - USPTO (United States Patent and Trademark Office).
  - Trademark applications filed at the USPTO, OHIM (Office for Harmonization in the Internal Market) and IP AUS (IP Australia).
  - We collect global patent data from OECD.
  - Firm-level data is obtained from Compustat Global and Datastream.

FINAL REMARKS

- Big Data matter for Finance and Economics
- HF trading helps investors make better decisions and reduce transactions
- It involves many risks
- Media coverage affects asset prices
- Substitution effects between assets with lottery payoffs
- Network of Mutual Funds and Financial Crisis