

# FinTechs and the Market for Financial Analysis

**Jillian P. Grennan**

Duke University

**Roni Michaely**

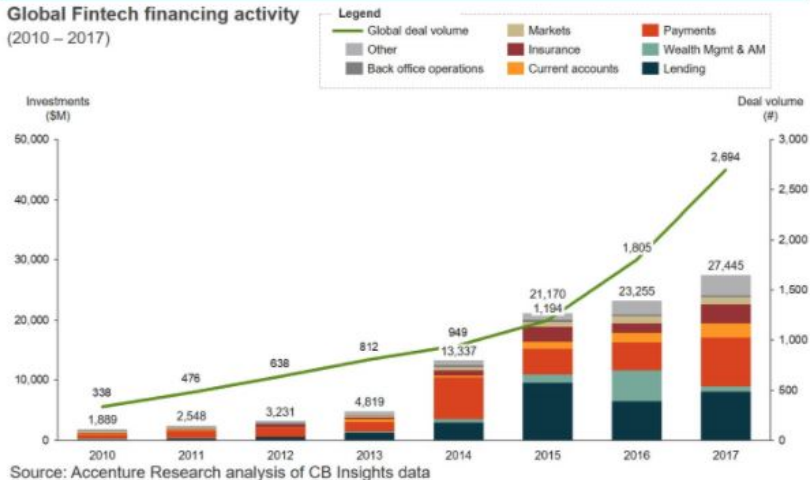
Cornell Tech

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# Enthusiasm for FinTechs Continues to Grow

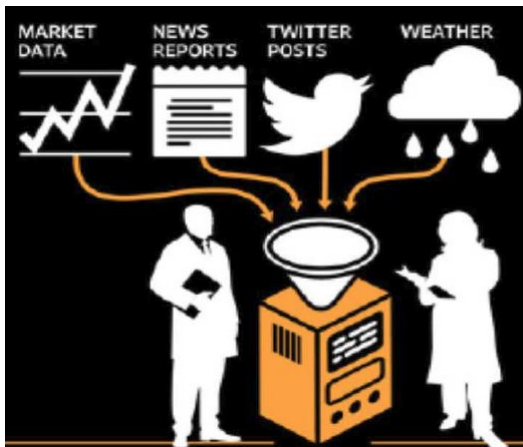
**FinTech** covers digital innovations and technology-enabled business model innovations in the financial sector.

**Global Fintech financing activity**  
(2010 – 2017)



# We Focus on Market Intelligence FinTechs

**Market intelligence** FinTechs streamline and synthesize many data sources relevant for investment recommendations.



# Research Question

**“With 80% of the data in the world created in the last two years, judgment matters more than ever. Technology is a complement to sound judgment and knowledge, not a substitute.”**

– Joyce Chang, Global Head of Research, J.P. Morgan

**RQ:** How do these FinTechs change investors’ behavior, traditional information production, and market efficiency?

**Important RQ:** An ideal market is one where prices fully reflect information, providing accurate signals for capital allocation. FinTechs have the potential to significantly disrupt this status quo but it is unclear what their consequences are.

# Literature Review

## **FinTechs, Big Data, and Information Aggregation**

- Zhu (2017), Dasgupt and Foucault (2017), Farboodi and Veldkamp (2017), Athey, Mobius, and Pal (2017), Chiou and Tucker (2015), Calzada and Gil (2016), Da and Huang (2017).

## **Disclosure, Technology, and Market Efficiency**

- Diamond (1985), Bond, Edmans, and Goldstein (2012), Goldstein and Yang (2017), Fuster et al. (2018).

## **Analysts Role in Capital Markets**

- Michaely and Womack (1999), Hong and Kubik (2003), Hong and Kacperczyk (2010), Cohen, Frazzini, and Malloy (2010), Ljungqvist, Marston, and Wilhelm (2006), Michaley, Merkeley, Pacelli (2017).

## **(Social) Media and Bias**

- Mullainathan and Shleifer (2005), Gentzkow and Shapiro (2006), Gentzkow and Shapiro (2008), Zhi, Engelberg, and Zhao (2012), Tetlock (2015), Antweiler and Frank (2004), Das and Chen (2007), Niessner and Cookson (2017).



# FinTechs Crowding Out Incumbents

- With FinTechs, investors learn the best analysis is from bloggers so pay less attention to deep information producers such as analysts.

Filter Opinions	Blogger Name	Blog	Sentiment	Date	Follow	Article
<b>Blogger Opinions:</b> <input checked="" type="checkbox"/> Bullish <input checked="" type="checkbox"/> Bearish <input checked="" type="checkbox"/> Neutral  <b>Ranking:</b> <input type="checkbox"/> ★ <input checked="" type="checkbox"/> ★★ <input checked="" type="checkbox"/> ★★★ <input type="checkbox"/> ★★★★ <input checked="" type="checkbox"/> ★★★★★	D.M. Martins Research ★★★★★	Seeking Alpha	Bullish	2 days ago		
	DoctoRx ★★★★★	Seeking Alpha	Bullish	2 days ago		
	Jeremy Bowman ★★★★☆	Motley Fool	Bearish	5 days ago		
	SVI ★★★★★	Seeking Alpha	Bullish	8 days ago		
	Investing.com ★★★★★	Investing.com	Bullish	8 days ago		

- With FinTechs, investors rely only on the signal and forgo reading original-content financial analysis altogether.

Buy Recommendations <span style="float: right;">Sep 27, 2017</span>			Hold Recommendations <span style="float: right;">Sep 27, 2017</span>			Sell Recommendations <span style="float: right;">Sep 27, 2017</span>		
Company	Rating	Analyst	Company	Rating	Analyst	Company	Rating	Analyst
CBS Corp	BUY Price Target: \$81	Daniel Kurnos, Benchmark	FHN	HOLD Price Target: \$20	Ken Zerbe, Morgan Stanley	INTU	SELL	Wayne Johnson, Raymon...
MU	BUY Price Target: \$39	Joseph Moore, Morgan St...	AXON	HOLD Price Target: \$6	Brian Skorney, Robert W. ...	INT	SELL Price Target: \$36	Ken Hoexter, Merrill Lynch
CHSP	BUY	Tyler Batory, Janney Mont...	TWLO	HOLD	Brent Bracelin, KeyBanc	ED	SELL Price Target: \$74	Greg Gordon, Evercore ISI

# Empirical Predictions

- ① For investors
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  - FinTechs are substitutes; investors rely on aggregated recs.



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- 3 For markets
  - FinTechs improve market quality; analysts changes increase effect.
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# What We Do

- 1 **Data:** Gather novel data on market intelligence FinTechs, non-traditional financial analysis online, and how investors discover such analysis.
  - Business plans for 290 FinTechs, 1.3 million pieces of non-traditional analysis, click data for 1+ million investors.
- 2 **Descriptive statistics:** Describe financial analysis online and how market intelligence FinTechs make use of such analysis.
- 3 **Regression evidence:** Examine three responses:
  - Investor Response – Analyze internet click data to determine if FinTechs are substitutes.
  - Analyst Response – Analyze reporting quality in an IV framework.
  - Market Response – Analyze price informativeness and market reaction to analysts.

# Data on Market Intelligence FinTechs

# Business Model of Market Intelligence FinTechs

- Most start with an aggregator (news, experts, etc.)
- Advertisement revenue plus paid add-ons:
  - Investment signals derived via data mining
  - Wealth management or stock screening tools
- Big variation in investment signals and fees:
  - **Coverage:** data sources and structure vary widely (e.g., news, social media, retweets, audio, sensors, satellite images, etc. . .)
  - **Customization:** simple sentiment signals up to customized signals
  - **Speed:** market-moving news tends to break early on social media (e.g., train crash) vs. signals from social media trying to capture harder-to-measure concepts (e.g., consumer mindset)
- Rather than sell a signal, some focus on debiasing info, via:
  - **Ranking:** analysts, bloggers, hedge funds, etc.
  - **Crowd-sourcing:** EPS estimates, research questions, etc.

# Market Intelligence FinTechs

- We observe 290 FinTechs with a mean founding year of 2008.
- 72% of the FinTechs target retail investors and 60% target professional investors with some targeting both.
- Capabilities include: aggregating financial news (83%), datamining for investment signals (57%), evaluating and ranking existing financial advice (27%), crowdsourcing financial advice (16%), and aggregating financial experts (11%).

## Other Data



THOMSON REUTERS I/B/E/S



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- 3 **Investors mostly skim.** Investors view 16 pages of market commentary on blogs in 6.6 minutes per month.
- 4 **The analysis they read is probably bad.** 90% of the time, the market-adjusted returns to blog recs were negative at an investment horizon of 6 or 12 months.

## Investors Relationship with FinTechs

# For Investors, FinTechs Replace Traditional Research

- Using ComScore's U.S. sample with full internet click history.
- Investors visit 31 p.p. fewer websites with original-content financial analysis, view 17 p.p. fewer pages, and spend 5 p.p. less time there when they visit a FinTech.

	Reads original-content financial analysis	Page views of original-content analysis	Time spent on original-content financial analysis
<b>FinTech Coverage</b>	<b>-0.31***</b> <b>(0.03)</b>	<b>-0.17***</b> <b>(0.01)</b>	<b>-0.05***</b> <b>(0.01)</b>
User FE	Y	Y	Y
Time FE	Y	Y	Y
Adjusted R <sup>2</sup>	26%	1%	2%
Observations	260,003	260,003	260,003

# Analysts Relationship with FinTechs

# Test Linking Analysts' Research Quality to FinTechs

- $ReportQuality_{it} = \alpha + \beta FinTechs_{it} + \Gamma X_{it} + f_i + \delta_t + \epsilon_{it}$

Obs. at the level of stock  $i$  in quarter  $t$ .

$ReportQuality_{it}$  is consensus analyst optimism bias or accuracy.

$FinTechs_{it}$  measures the quantity of non-traditional sources analyzing equity  $i$  in quarter  $t$ .

$X_{ijt}$  is a vector of observables (analyst coverage, firm size, market-to-book, volatility, etc.)

$f_i$  is an equity fixed-effect;  $\delta_t$  is a quarter fixed-effect.

- Instrument for  $FinTechs_{it}$  using short newspaper titles.

# Relevance of the Headline Instrument

- Short newspaper headlines attract attention (Umar (2016)).
- Bloggers and people on social media write about what's popular.



- By controlling for total news, identification is from incremental changes in non-traditional info induced by headline length.



# Exclusion Restriction and Headline Instrument

- Headline length does not convey content.
- Example short vs. long headline for Apple
  - Nokia Sues Apple Over iPhone Patent Infringement
  - Elan to Expand Patent Lawsuit Against Apple to Include the iPad
- Evidence suggests headline length is quasi-random.

<b>Dep. Var. = Headline Length</b>	
Log Market-to-Book	0.00 (0.00)
Profitability	-0.53 (0.77)
ROE	0.01 (0.00)
Momentum	1.32 (0.79)
Firm Size	-0.02 (0.05)
Newspaper Fixed Effect	Y
Adjusted R <sup>2</sup>	0.10%
Observations	7,538,452

# FinTechs Decrease Analysts' Reporting Quality

	Consensus (as % of EPS)	
	Bias	Accuracy
<b>FinTech Coverage</b>	<b>0.14***</b> <b>(0.04)</b>	<b>-0.23***</b> <b>(0.04)</b>
Controls	Y	Y
Time FE	Y	Y
Equity FE	N	N
First Stage F-Stat	195.6	195.6
T-Stat on Instrument	14.0	14.0
Adjusted R <sup>2</sup>	39%	41%
Observations	81,597	81,597

- Optimism bias increases while accuracy decreases.
- In comparison to controls, FinTech coverage ranks in middle.
- Controls include newspaper coverage, analyst coverage, firm size, daily return volatility, mean monthly return, log market-to-book, volatility of ROE, profitability, and S&P 500 membership.

# Analyst Results Driven by Quality FinTech Coverage

	Consensus Bias		Consensus Accuracy	
	Best Short-term	Best Long-term	Best Short-term	Best Long-term
<b>Quality FinTech Coverage</b>	<b>0.14***</b> <b>(0.04)</b>	<b>0.17***</b> <b>(0.05)</b>	<b>-0.22**</b> <b>(0.04)</b>	<b>-0.27**</b> <b>(0.05)</b>
Controls	Y	Y	Y	Y
Time FE	Y	Y	Y	Y
Equity FE	N	N	N	N
First Stage F-Stat	183.6	165.5	183.6	165.5
T-Stat on Instrument	13.5	12.9	13.5	12.9
Adjusted R <sup>2</sup>	39%	39%	40%	40%
Observations	81,597	81,597	81,597	81,597

- Quality defined by excess returns associated with blogger recs.

# Markets Relationship with FinTechs

# For Markets, Price Informativeness Increases

- Price informativeness is measured by price nonsynchronicity.

Dep. Var. = Price Informativeness		
<b>FinTech Coverage</b>	<b>0.460***</b>	
	<b>(0.04)</b>	
<b>Quality FinTech Coverage</b>		<b>0.454***</b>
		<b>(0.04)</b>
Controls	Y	Y
Time FE	Y	Y
First Stage F-Stat	190.4	179.9
T-Stat on Instrument	13.8	13.4
Adjusted R-squared	48%	48%
Observations	79,543	79,543

# Market Is Less Responsive To Analysts

- Lower returns and volume is consistent with information crowd-out or market recognizing change in reporting quality.

<b>Response to Analyst Recs (2010-2016)</b>	<b>Excess Returns</b>	<b>Excess Volume</b>
<b>FinTech Coverage</b>	<b>-0.24%***</b>	<b>-0.047***</b>
<b>T-stat</b>	<b>(5.01)</b>	<b>(5.91)</b>
Time FE	Y	Y
Analyst FE	Y	Y
Obs. (Recommendations)	39,454	39,454

# Analysts Contribute Less to Price Informativeness

Dep. Var. = Analyst Info Ratio		
<b>FinTech Coverage</b>	<b>-0.107***</b>	
	<b>(0.04)</b>	
<b>Quality FinTech Coverage</b>		<b>-0.106***</b>
		<b>(0.04)</b>
Controls	Y	Y
Time FE	Y	Y
First Stage F-Stat	195.9	183.6
T-Stat on Instrument	14.0	13.5
Adjusted R-squared	24%	23%
Observations	81,597	81,597

- FinTechs diminish analysts' role in markets by incorporating non-traditional data sources.

# Implications from these FinTechs



# Implications

- 1 **Useful innovation:** Overall, investors are prudent to look to FinTechs for investment advice.
- 2 **Not-traditional form of competition:** Prior evidence suggests competition reduces bias (Hong and Kacperczyk 2010), but FinTechs increase bias of analysts.
- 3 **Decline of analysts:** Additional results suggest the change by analysts are driven by both an extensive and intensive margin. As more FinTechs compete, the talent pool for analysts shrinks.
- 4 **Underlying algorithms cannot be static:** FinTechs algorithms need constant updating to account for feedback effect of traditional information-producers' increasing bias.

# Conclusion

- 1 **Original data:** Gather novel data on FinTechs, financial analysis online, and how investors discover such analysis.
- 2 **FinTechs are substitutes:** Significant substitution between investors' use of traditional information sources and FinTechs.
- 3 **FinTechs crowd-out analysts' information production:** Analysts' reporting quality decreases.
- 4 **FinTechs improve market quality:** Price informativeness improves, while market responses to analysts' reports decrease as does analysts' contribution to price informativeness.