ROSENBLATT SECURITIES INC.

Financial Technologies Monthly Market Update

August 2018

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Sample Public Companies

CAPITAL MARKETS

Global Exchanges

ICE, CBOE, CME Group, NASDAQ, JPX, BM&F BOVESPA, Deutsche Börse Group, EURONEXT, Bats, BMEX, Singapore Exchange, HKEX 香港交易所, TMX, London Stock Exchange, ASX

Regional Exchanges

Bursa Malaysia, Dubai Financial Market, Bolsa Mexicana de Valores, Hellenic Exchanges, JSE, PSE, Warsaw Stock Exchange, MCX Trade with Trust, NZX, BSE

Broker Dealers & Market Makers

tullett prebon, bgc, Virtu Financial, INTL FCStone, Raymond James, Investors Capital, Ladenburg Thalmann, ITG

Retail e-Brokers

TD Ameritrade, E*TRADE, charles SCHWAB, IG Group, GAIN Capital, LPL Financial, Matsui, Interactive Brokers, FXCM, MarketAxess, Boursorama

BANKS

Global Diversified Banks

Wells Fargo, JPMorgan Chase & Co., Bank of America, citi, Morgan Stanley, Goldman Sachs, Capital One, UBS, HSBC, Credit Suisse, Standard Chartered, Lloyds Bank, Deutsche Bank, Société Générale, BNP Paribas, RBS The Royal Bank of Scotland, Barclays, Nomura

ALTERNATIVE LENDING

lendingtree, Springleaf, LendingClub, OnDeck

PAYMENTS

Payment Infrastructure

globalpayments, TSYS, Square, vantiv, fiserv., Bottomline Technologies, CARDTRONICS, ACI payment systems, FIS, jack henry & ASSOCIATES INC., Cass Information Systems, Inc., Planet PAYMENT, Euronet WORLDWIDE, VeriFone THE WAY TO PAY, First Data

P2P Transfer and Remittances

WESTERN UNION, MoneyGram, PayPal

Card Networks

VISA, AMERICAN EXPRESS, MasterCard, DISCOVER

SOFTWARE & TECHNOLOGY

Outsourced / Backend Solutions

Broadridge, SS&C, financial engines, ENVESTNET, Guidewire, SimCorp, SEI, DST, Computershare

Trading Technology

Fidessa, ADVENT Advent Software, statpro, Financial Technologies, iress, First Derivatives plc, Linedata

Financial Data / Info Providers

Gartner, D&B, THOMSON REUTERS, FACTSET, MSCI, McGraw Hill, markit, Moody's, TransUnion, FORRESTER, Value Line, MORNINGSTAR

Sample Private Companies

CAPITAL MARKETS

Exchanges / Dark Pools

iex
ISE International Securities Exchange.
BIDS TRADING
liquidnet

Broker Dealers / Market Makers

CRT CAPITAL GROUP LLC
DRW TRADING GROUP
CITADEL
CANTOR Fitzgerald

DIGITAL CURRENCIES

coinbase
kraken
magnr
rippleLabs
coinbase

ALTERNATIVE LENDING

Alternative Lenders

Kabbage
PROSPER
CAN CAPITAL
SoFi
AVANT

Crowdsourcing

KICKSTARTER
tilt
INDIEGOGO

PAYMENTS

Payment Infrastructure

POWA commercial freedom
obopay go mobile with your money
stripe
DWOLLA
Revel SYSTEMS
ShopKeep
Mozido MOBILIZING A BETTER FUTURE
BlueSnap

P2P & Remittances

worldremit
REMITLY
TransferWise
TRANSFAST

SOFTWARE & TECHNOLOGY

Institutional Software & Technology

feedzai
openfin
S3
Thinknum
esentire
neurensic
Quantopian
RAGE frameworks
Dataminr
PEERIQ
ADDEPAR
NOVUS
KENSHO

Personal Finance and Investments

comparecards Choose Wisely
blooom
Income Discovery Art of Ideal Income
ARTIVEST
motif INVESTING
Quantopian
REVOLUTION CREDIT
Betterment
wealthfront
Moven spend, save & live smarter
DriveWealth

Financial Data / Info Providers

Bloomberg
xignite
MONEY.NET
barchart
StockTwits
Seeking Alpha

These private companies are a sample of our universe.

Rosenblatt Securities Advises Visible Alpha – January 2018

Overview of Transaction

- January 2018: Rosenblatt Securities is pleased to announce its role as the exclusive financial advisor to Visible Alpha on a $38 million investment by a consortium of leading financial institutions
- Visible Alpha has seen dramatic growth over the past year and will continue to build on this momentum through the product development and global expansion enabled by this funding

Overview of Visible Alpha

- The company is transforming the way investment managers and brokers collaborate on research, financial models and corporate access
- Visible Alpha was formed by some of the world's top investment banks to create a common language and platform for their analysts' financial models and forecasts. They recognized the opportunity to deliver to their clients this insightful information in a more useful, accessible and directly comparable way, providing an unprecedented level of granularity for deep, quantifiable insight into the market
- The company also owns ONEaccess, which improves the efficiency of discovering, analyzing and valuing interactions between professionals on both sides of the market

"Rosenblatt's deep domain expertise helped us navigate this important capital raise," said Scott Rosen, CEO of Visible Alpha. "With their guidance and support, Visible Alpha is positioned as the leading platform serving the buy side and sell side in today's rapidly changing research distribution and consumption environment."

"We're simply thrilled to be a part of the Visible Alpha story," said Vikas Shah, Rosenblatt's head of FinTech investment banking. "This financing reinforces the market leadership they've established. And, with MiFID II disrupting research valuation, budgeting and distribution, the timing couldn't be more propitious to help solve a global problem."

10th Annual Financial Technologies Summit – Select Recordings

Click here to view the full keynote presentation

Click here to listen to the Cyber-Resiliency panelists response to "What is the future of identity?"

Click here to listen to the InsurTech panelists response to "Is it possible to have a full scope insurance company?"

Click here to listen to the Blockchain panelists response to "How much of the innovation is repeating the past of the financial markets?"

Blockchain	Cyber-Resiliency	InsurTech
r3	CHAINALYSIS	Slice
NOBLE	CAPSULE8	INSURIFY
symbiont	SecurityScorecard	Matic
ripple	UpGuard	BUNKER
PEERNOVA		Quantemplate

Many additional videos will be shared on Rosenblatt Fintech Investment Banking's LinkedIn – follow us and keep current on FTS content and industry news

Vikas Shah – No. 33 on Institutional Investor's Fintech Finance 40

Institutional Investor

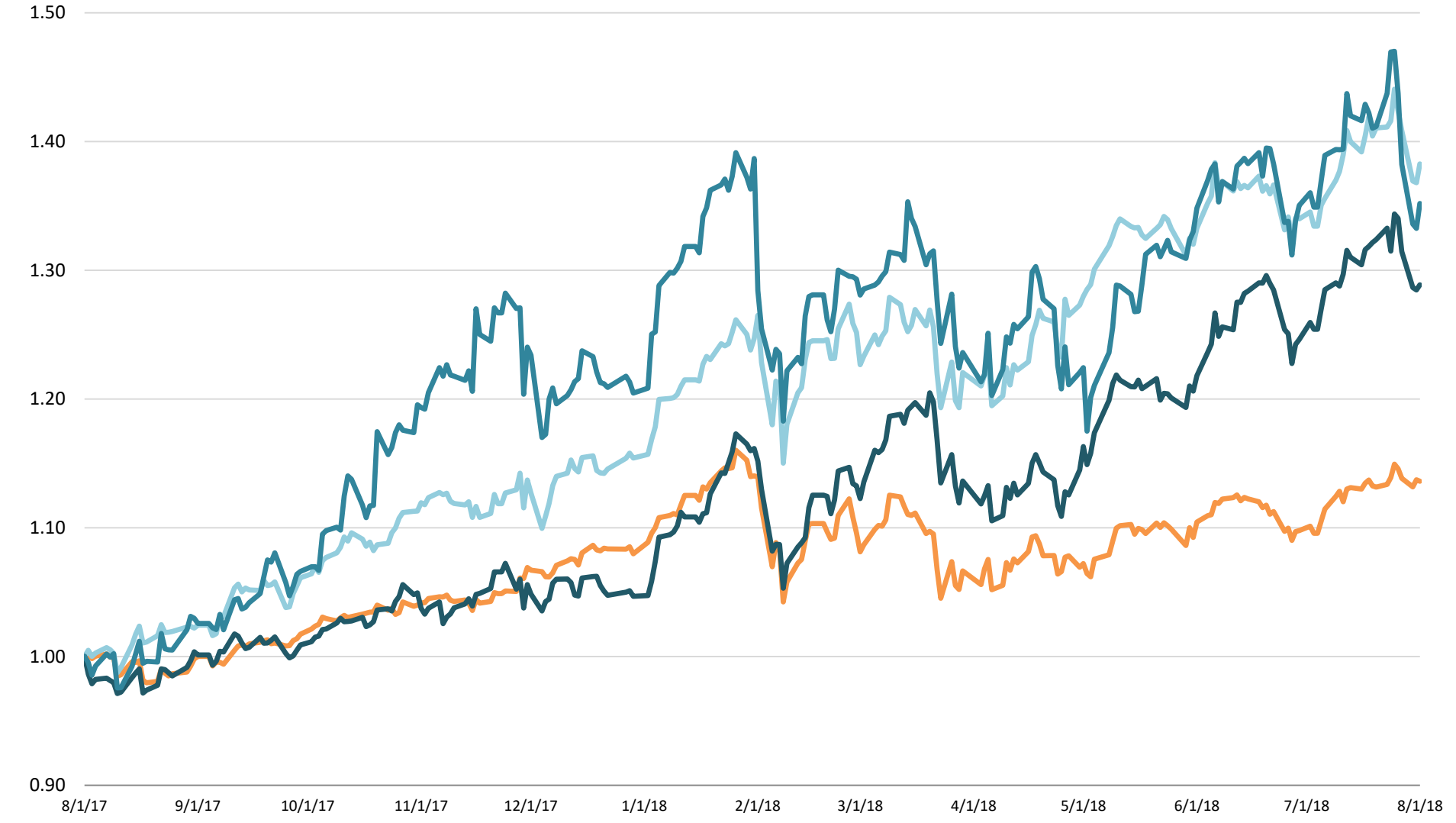
The Fintech Finance 40: Vikas Shah

<The Fintech Finance 40

Currently ranked: 33

Click here to read the full coverage from Institutional Investor

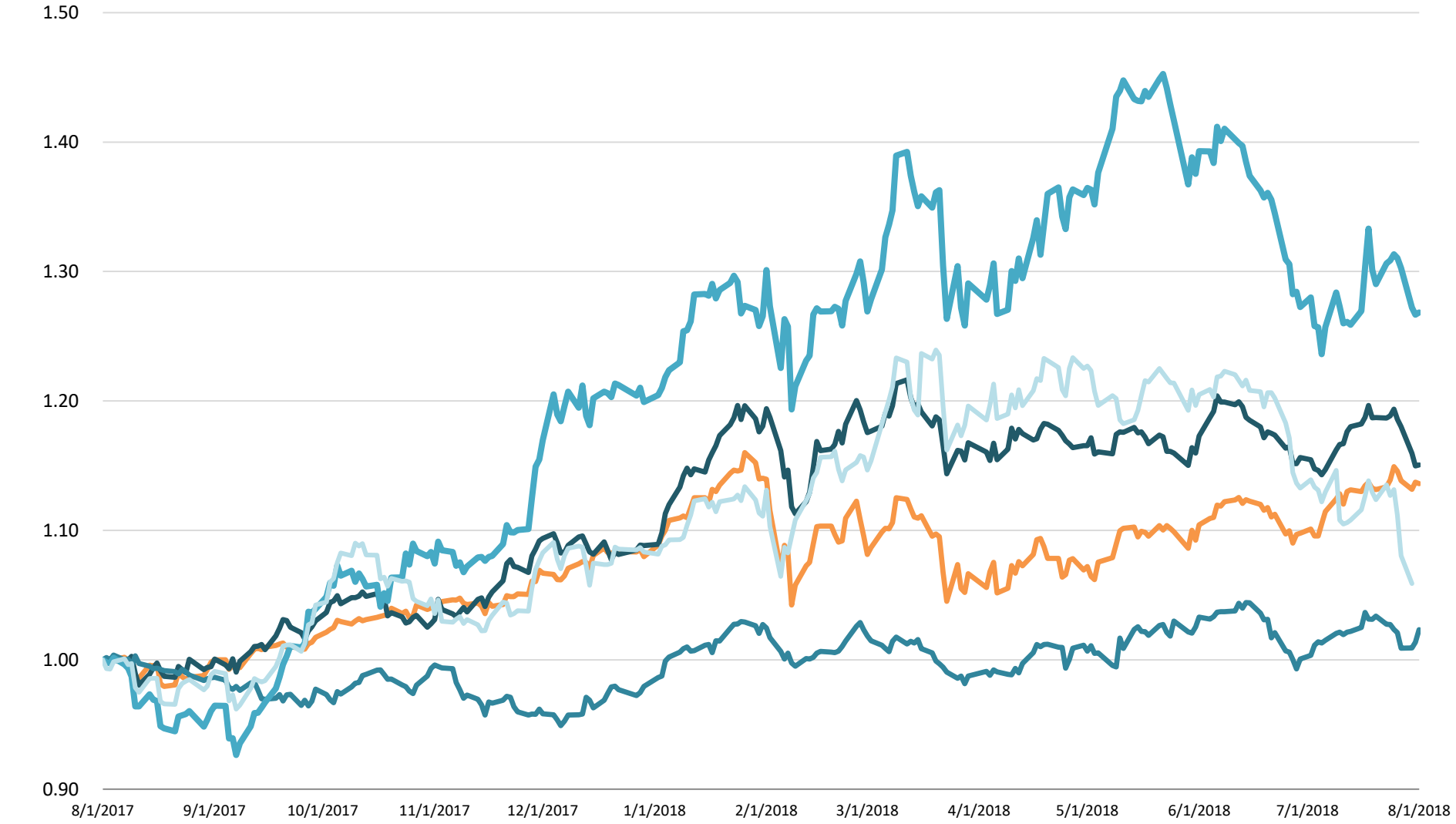
Market Cap Weighted Index Performance – Payments (Last Twelve Months)



	^SPX	Card Networks	Payment Infrastructure	P2P Transfer and Remittances
% Chg YoY	↑ 13.6%	↑ 38.3%	↑ 28.9%	↑ 35.2%
% Chg MoM	↑ 3.2%	↑ 2.8%	↑ 2.3%	↓ -0.6%

Source: Bloomberg, Capital IQ, Updated on 07/31/2018
Note: The index is made up of companies mentioned under each of the above buckets in subsequent slides except, the index does not adjust for any new companies added and excludes old companies delisted in last twelve months`

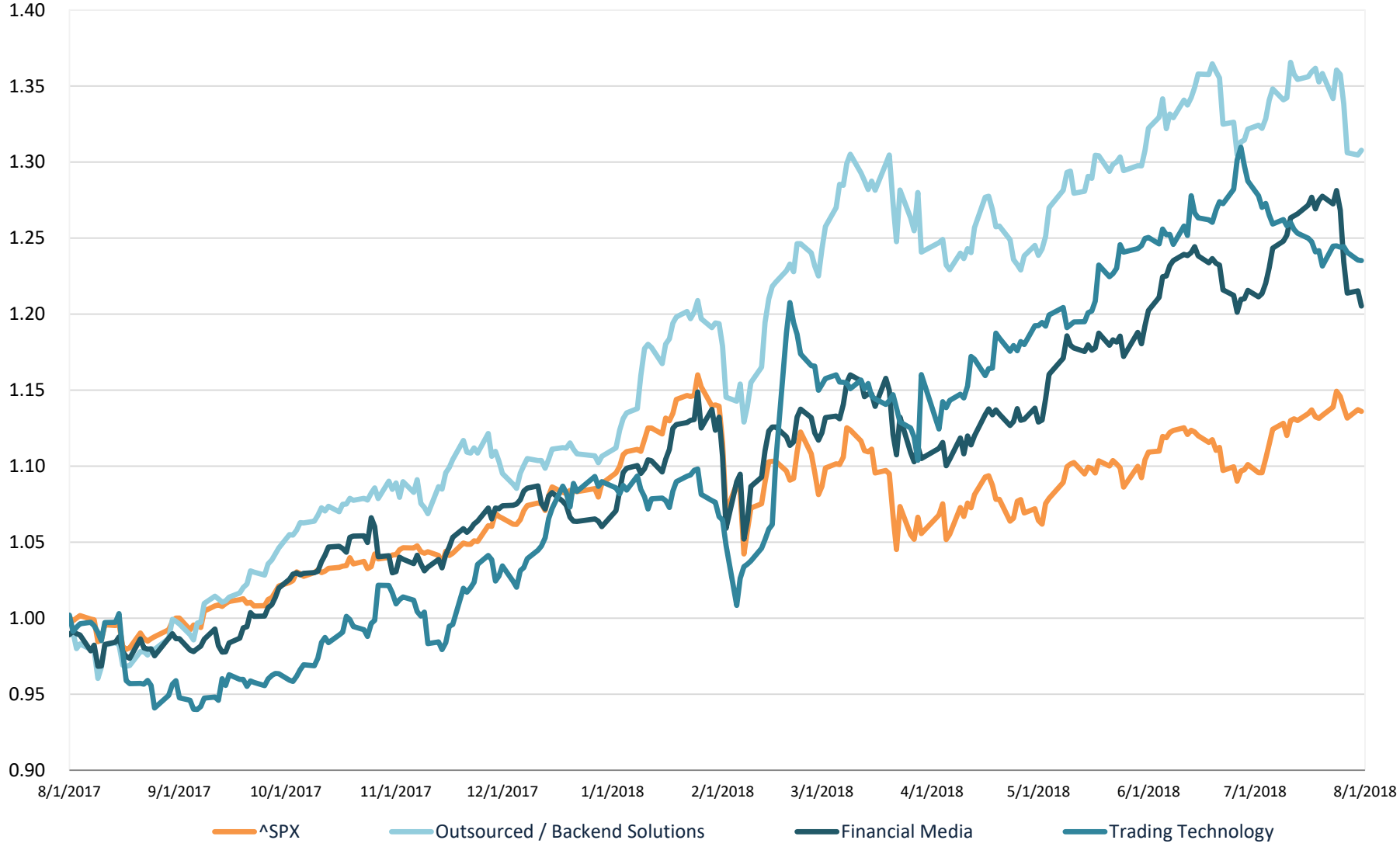
Market Cap Weighted Index Performance – Capital Markets (Last Twelve Months)



	^SPX	Large Exchanges	Regional Exchanges	Retail / e - Brokers	Broker Dealers and Market Makers
% Chg YoY	↑ 13.6%	↑ 15.1%	↑ 2.3%	↑ 26.8%	↑ 6.4%
% Chg MoM	↑ 3.2%	↓ 0.3%	↑ 2.0%	↓ 0.9%	↓ 6.6%

Source: Bloomberg, Capital IQ, Updated on 07/31/2018
Note: The index is made up of companies mentioned under each of the above buckets in subsequent slides except, the index does not adjust for any new companies added and excludes old companies delisted in last twelve months

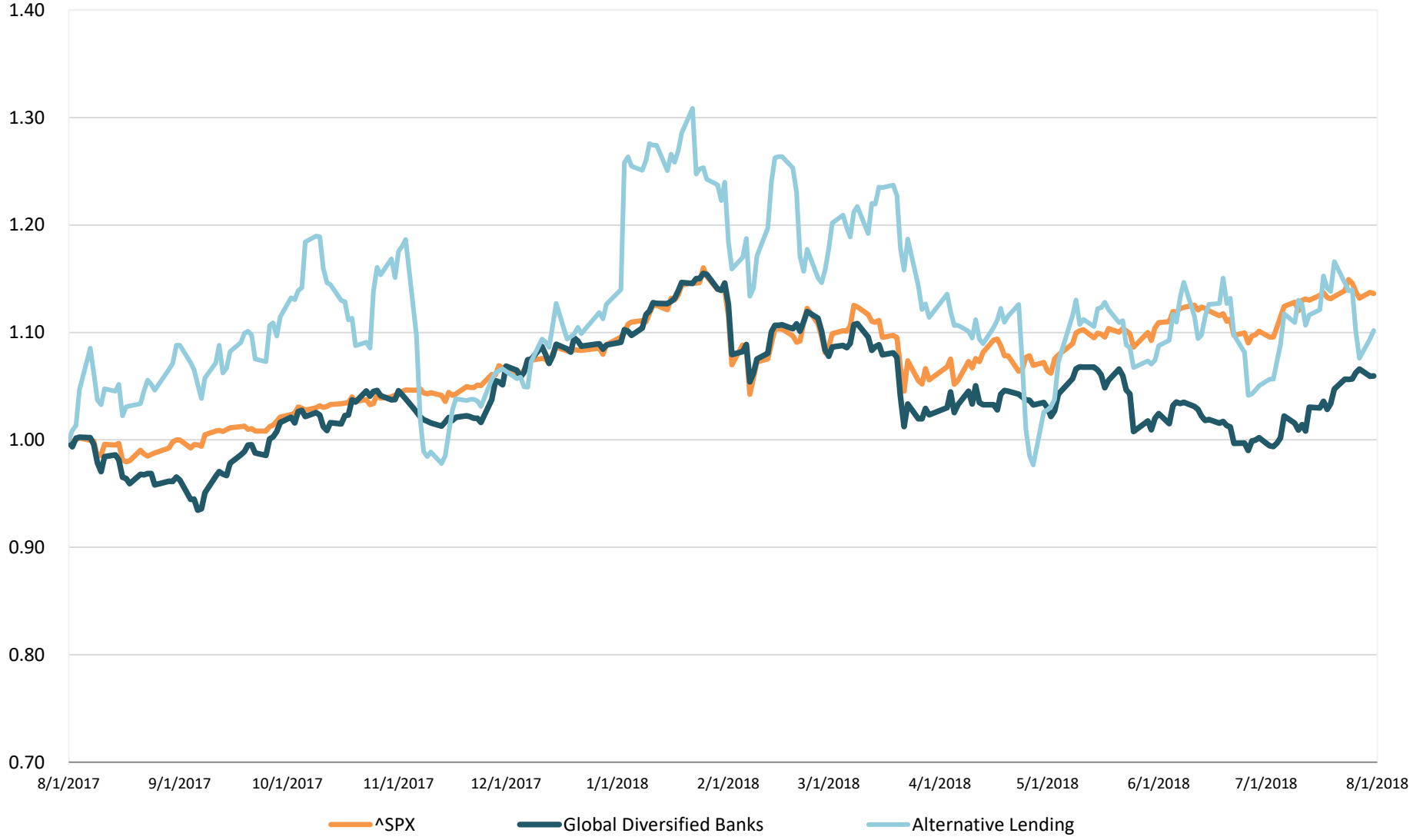
Market Cap Weighted Index Performance – Software and Technology (Last Twelve Months)



% Chg YoY	↑ 13.6%	↑ 30.8%	↑ 20.5%	↑ 23.5%
% Chg MoM	↑ 3.2%	↓ 1.0%	↓ 0.8%	↓ 4.1%

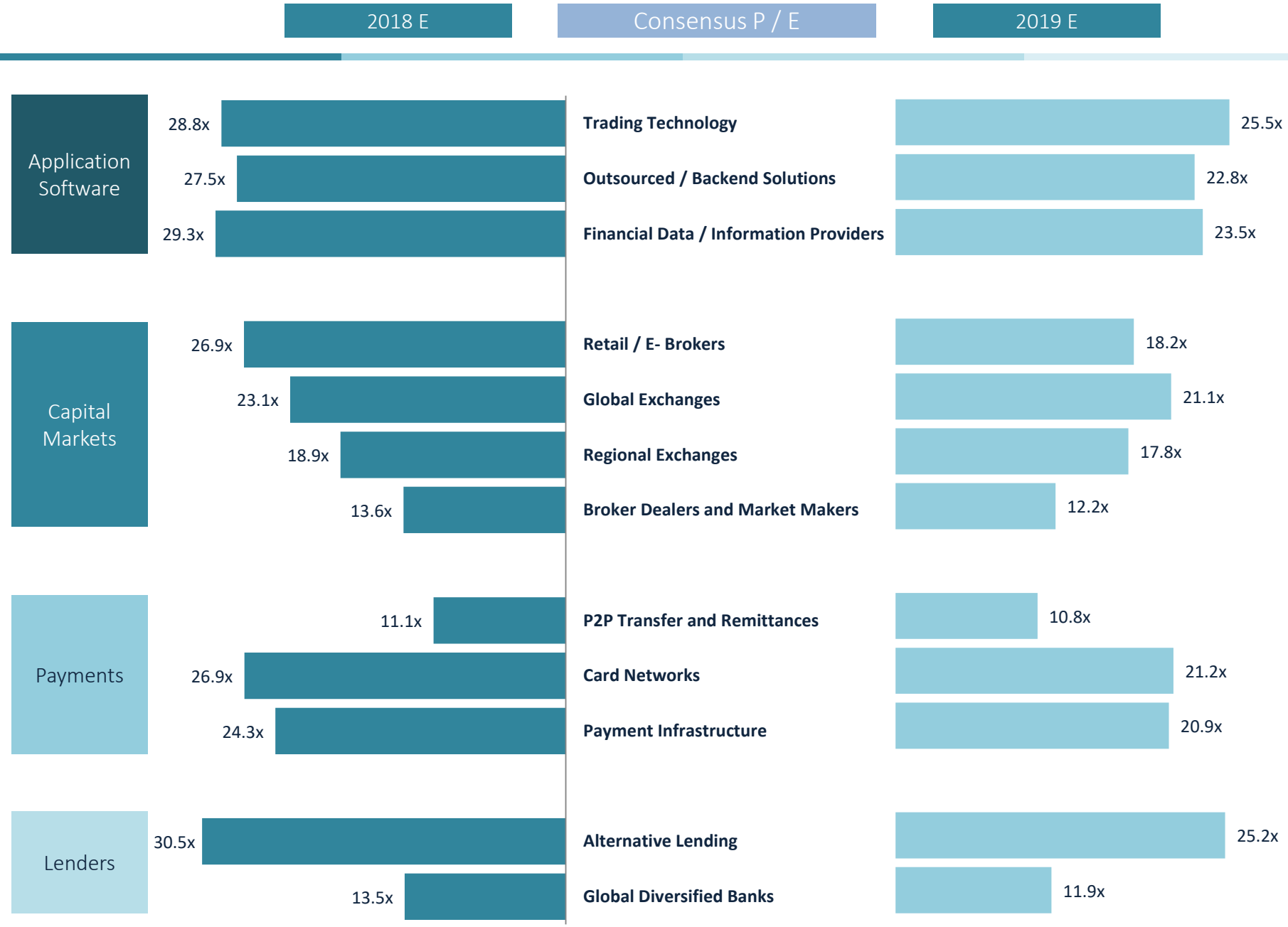
Source: Bloomberg, Capital IQ, Updated on 07/31/2018
Note: The index is made up of companies mentioned under each of the above buckets in subsequent slides except, the index does not adjust for any new companies added and excludes old companies delisted in last twelve months

Market Cap Weighted Index Performance – Banks (Last Twelve Months)



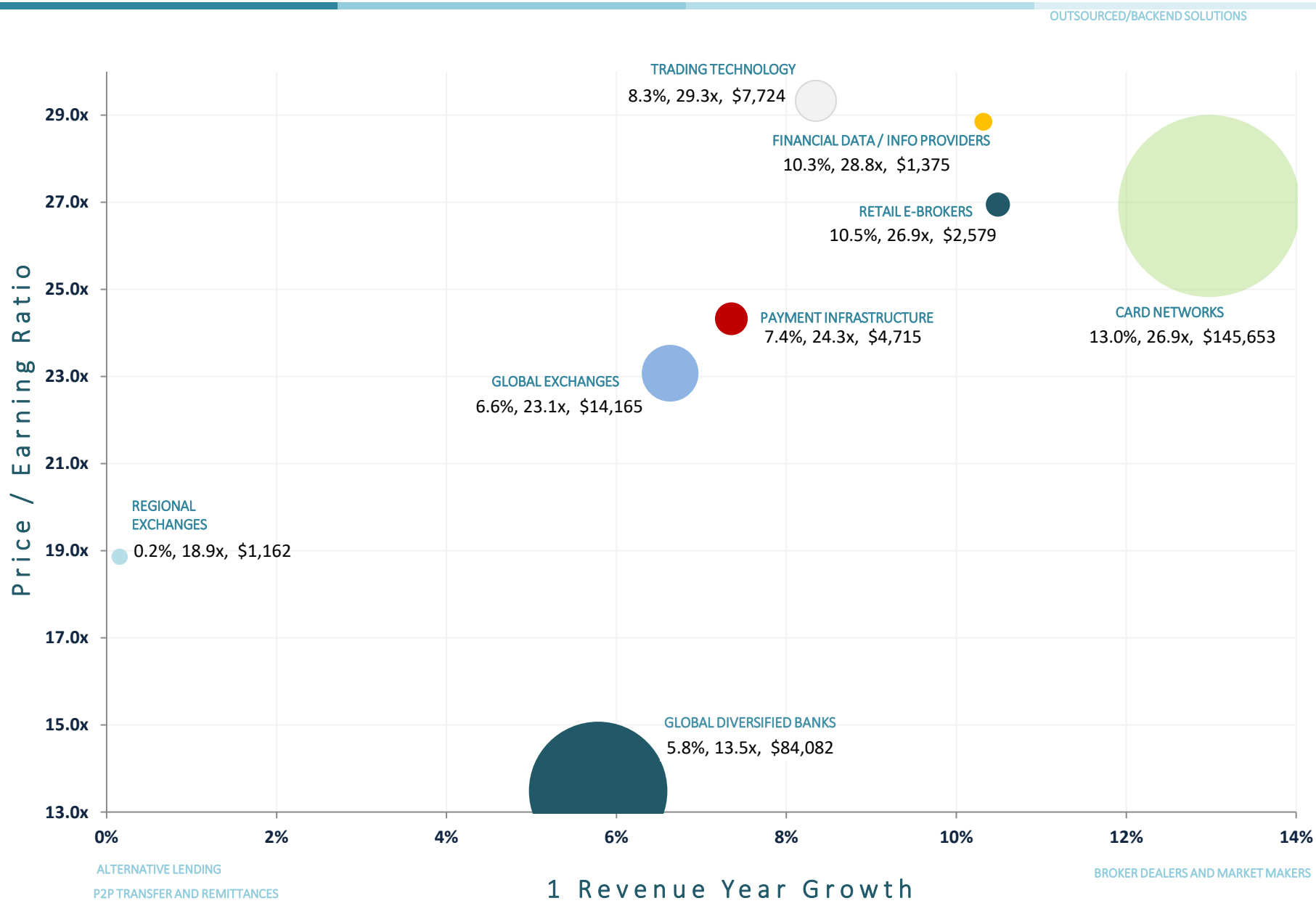
% Chg YoY	↑ 13.6%	↑ 5.9%	↑ 10.2%
% Chg MoM	↑ 3.2%	↑ 5.7%	↑ 4.9%

Source: Bloomberg, Capital IQ, Updated on 07/31/2018
Note: The index is made up of companies mentioned under each of the above buckets in subsequent slides except, the index does not adjust for any new companies added and excludes old companies delisted in last twelve months



Source: Bloomberg, Capital IQ Updated on 07/31/2018

Revenue Growth vs. Price to Earnings Ratio



Note: Every bubble represents (1 Revenue Year Growth %, 2018 E Median P/E ratios of the universe, Median Market Capitalization of the universe). The size of the bubble represents Median Market Capitalization
Alternative Lending, & P2P Transfer and Remittances, Trading Technology, Global Diversified Banks excluded because of high / low range Source: Capital IQ, Bloomberg , Updated on 07/31/2018

Market Valuations

	TEV / Sales			TEV / EBITDA			Price / Earnings						Growth %	
	LTM	2018 E	2019 E	LTM	2018 E	2019 E	LTM	2018 E	2019 E	LTM P/B	Debt / Equity	ROE	1 Year	5 Year CAGR
Banks	N/A	N/A	N/A	N/A	N/A	N/A	20.5x	22.0x	18.5x	1.5x	94%	4%	12%	30%
CapitalMarkets	7.2x	7.3x	7.0x	14.6x	13.7x	12.1x	19.7x	20.6x	17.3x	3.0x	23%	14%	8%	8%
ApplicationSoftware	5.1x	5.3x	5.1x	18.9x	18.2x	16.6x	29.1x	28.6x	23.9x	5.8x	39%	17%	11%	9%
Payments	5.2x	5.6x	5.1x	17.5x	15.8x	14.7x	35.0x	20.8x	17.7x	6.0x	-39%	19%	7%	7%

	Sub - Sector	TEV / Sales			TEV / EBITDA			Price / Earnings						Growth %	
		LTM	2018 E	2019 E	LTM	2018 E	2019 E	LTM	2018 E	2019 E	LTM P/B	Debt / Equity	ROE	1 Year	5 Year CAGR
Banks	Global Diversified Banks	N/A	N/A	N/A	N/A	N/A	N/A	14.3x	13.5x	11.9x	1.1x	151%	7%	6%	0%
	Alternative Lending	N/A	N/A	N/A	N/A	N/A	N/A	26.7x	30.5x	25.2x	1.9x	37%	1%	18%	60%
Capital Markets	Global Exchanges	7.6x	8.1x	7.8x	14.6x	14.9x	14.1x	21.6x	23.1x	21.1x	3.4x	23%	17%	7%	8%
	Regional Exchanges	6.7x	6.6x	6.3x	14.7x	12.5x	10.1x	18.9x	18.9x	17.8x	3.3x	0%	21%	0%	6%
	Broker Dealers and Market Makers	N/A	N/A	N/A	N/A	N/A	N/A	16.9x	13.6x	12.2x	2.2x	41%	5%	15%	11%
	Retail / E- Brokers	N/A	N/A	N/A	N/A	N/A	N/A	21.4x	26.9x	18.2x	3.0x	27%	13%	10%	7%
Application Software	Trading Technology	4.1x	3.8x	3.9x	19.6x	18.0x	17.0x	31.6x	28.8x	25.5x	4.8x	N/A	15%	10%	9%
	Outsourced / Backend Solutions	5.6x	5.7x	5.1x	17.9x	17.8x	15.8x	25.6x	27.5x	22.8x	5.8x	0%	13%	15%	12%
	Financial Data / Information Providers	5.6x	6.4x	6.2x	19.3x	18.7x	17.0x	29.9x	29.3x	23.5x	6.9x	78%	25%	8%	6%
Payments	Payment Infrastructure	5.0x	5.5x	5.0x	18.5x	14.3x	15.0x	29.3x	24.3x	20.9x	4.5x	97%	14%	7%	9%
	P2P Transfer and Remittances	2.0x	2.1x	2.0x	18.7x	8.4x	8.2x	48.0x	11.1x	10.8x	6.5x	-389%	14%	2%	4%
	Card Networks	8.5x	9.3x	8.2x	15.5x	24.8x	21.0x	27.7x	26.9x	21.2x	7.0x	175%	28%	13%	8%

Source: Capital IQ, Bloomberg , Updated on 07/31/2018
Note: N/A denotes negative multiple or oddly high multiple or the multiple is not available

Market Valuations – Software & Technology

Company	Market Data			TEV / Sales			TEV / EBITDA			Price / Earnings						Growth %	
	% change LTM	Market Cap	Enterprise Value	LTM	2018 E	2019 E	LTM	2018 E	2019 E	LTM	2018 E	2019 E	LTM P/B	Debt / Equity	ROE	1 Year	5 Year CAGR
TRADING TECHNOLOGY																	
IRESS Market Technolgy	-11%	$ 1,489	$ 1,615	4.9x	4.9x	4.7x	19.6x	18.6x	17.5x	31.6x	26.2x	26.4x	4.8x	N/A	15%	10%	16%
Fidessa	72%	$ 1,981	$ 1,855	4.1x	3.8x	3.9x	16.0x	15.1x	17.0x	42.3x	40.3x	37.6x	8.9x	N/A	22%	7%	5%
First Derviatives	40%	$ 1,375	$ 1,398	5.7x	6.0x	5.1x	38.2x	33.0x	28.4x	N/A	N/A	N/A	7.5x	N/A	8%	23%	27%
Linedata Services	-28%	$ 302	$ 395	2.0x	1.8x	2.0x	8.1x	7.7x	8.2x	13.6x	14.7x	14.0x	2.2x	N/A	17%	7%	4%
StatPro	24%	$ 147	$ 175	2.7x	2.6x	2.3x	19.9x	18.0x	14.7x	N/A	31.5x	24.6x	3.9x	N/A	-8%	31%	9%
Median	**24%**			**4.1x**	**3.8x**	**3.9x**	**19.6x**	**18.0x**	**17.0x**	**31.6x**	**28.8x**	**25.5x**	**4.8x**	**N/A**	**15%**	**10%**	**9%**
OUTSOURCED / BACKEND SOLUTIONS																	
Broadridge	49%	$ 13,323	$ 14,174	3.3x	3.4x	3.2x	17.9x	17.8x	15.8x	32.4x	30.8x	25.8x	11.4x	104%	39%	43%	12%
SEI Investments	6%	$ 9,400	$ 8,668	5.4x	5.7x	5.3x	17.0x	17.7x	16.4x	19.5x	25.6x	19.0x	5.9x	0%	33%	9%	9%
SS&C	37%	$ 12,635	$ 14,548	8.6x	8.7x	4.3x	22.9x	21.1x	13.6x	33.0x	27.5x	22.8x	3.9x	69%	13%	13%	25%
Computershare	29%	$ 7,345	$ 8,467	3.8x	3.9x	3.6x	15.5x	14.7x	13.0x	25.6x	22.6x	19.9x	5.7x	N/A	24%	7%	3%
Docusign	N/A	$ 8,440	$ 8,719	15.5x	N/A	16.8x	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0%	N/A	36%	N/A
SimCorp	38%	$ 3,461	$ 3,460	8.2x	8.2x	7.8x	N/A	31.1x	27.3x	38.1x	41.7x	36.7x	28.8x	0%	89%	16%	10%
Financial Engines	17%	$ 2,864	$ 2,625	5.3x	5.5x	5.1x	21.6x	16.6x	15.2x	N/A	32.6x	24.4x	3.3x	0%	6%	13%	21%
Guidewire	60%	$ 2,931	$ 2,624	5.9x	5.8x	5.2x	N/A	20.6x	16.4x	23.6x	23.7x	20.8x	4.1x	10%	19%	12%	39%
Envestnet	50%	$ 2,650	$ 3,029	4.2x	4.5x	3.7x	35.4x	23.7x	19.8x	N/A	45.0x	32.3x	5.8x	92%	4%	18%	34%
Blackline	10%	$ 2,282	$ 2,168	11.4x	12.5x	9.7x	N/A	N/A	N/A	N/A	N/A	N/A	7.2x	0%	-12%	44%	N/A
Coupa Software	100%	$ 3,495	$ 3,230	16.0x	24.5x	17.8x	N/A	N/A	N/A	N/A	N/A	N/A	14.0x	67%	-22%	40%	N/A
Median	**37%**			**5.6x**	**5.7x**	**5.1x**	**17.9x**	**17.8x**	**15.8x**	**25.6x**	**27.5x**	**22.8x**	**5.8x**	**0%**	**13%**	**15%**	**12%**

Source: Capital IQ, Bloomberg, Updated on 07/31/2018
Note: N/A denotes negative multiple or oddly high multiple or the multiple is not available
All Market Cap and Enterprise Value data is in $ millions

Market Valuations – Software & Technology

FINANCIAL DATA / INFORMATION PROVIDERS

Company	Market Data			TEV / Sales			TEV / EBITDA			Price / Earnings						Growth %	
	% change LTM	Market Cap	Enterprise Value	LTM	2018 E	2019 E	LTM	2018 E	2019 E	LTM	2018 E	2019 E	LTM P/B	Debt / Equity	ROE	1 Year	5 Year CAGR
Thomson Reuters	-5%	$ 29,529	$ 36,639	3.7x	3.2x	6.6x	13.0x	10.7x	27.7x	24.0x	16.7x	N/A	2.3x	40%	6%	1%	-3%
S&P Global	31%	$ 50,411	$ 53,620	8.5x	9.0x	8.3x	18.8x	18.5x	16.9x	31.2x	30.2x	23.5x	86.4x	177%	203%	7%	6%
Moody's	30%	$ 32,838	$ 37,136	8.2x	9.0x	8.0x	17.5x	18.7x	16.6x	30.0x	28.5x	21.9x	71.4x	1157%	N/A	17%	9%
MSCI	53%	$ 14,937	$ 16,166	12.2x	12.7x	11.3x	23.3x	24.6x	20.8x	43.3x	43.4x	31.7x	35.4x	493%	99%	11%	6%
Gartner	6%	$ 12,357	$ 15,142	4.1x	4.3x	3.8x	67.9x	21.7x	20.5x	N/A	39.2x	36.1x	12.5x	221%	-10%	35%	15%
FactSet	20%	$ 7,724	$ 8,055	6.1x	6.4x	5.8x	19.3x	18.9x	18.3x	30.4x	26.0x	22.7x	14.4x	107%	49%	8%	9%
TransUnion	58%	$ 13,372	$ 17,448	8.3x	9.1x	7.5x	22.8x	23.4x	19.5x	29.9x	39.1x	29.8x	7.4x	213%	28%	13%	N/A
Dun & Bradstreet	14%	$ 4,669	$ 5,828	3.3x	3.3x	3.3x	11.2x	11.6x	11.0x	24.6x	17.5x	14.8x	N/A	-160%	N/A	2%	1%
Morning Star	60%	$ 5,628	$ 5,401	5.6x	N/A	N/A	18.5x	N/A	N/A	35.9x	N/A	N/A	6.5x	14%	19%	14%	7%
Ebix	37%	$ 2,504	$ 2,850	7.2x	8.0x	6.2x	21.5x	22.9x	17.0x	25.0x	25.4x	21.0x	5.0x	78%	22%	22%	13%
Forrester	13%	$ 832	$ 689	2.0x	2.1x	1.9x	22.0x	16.4x	15.4x	N/A	38.7x	33.0x	5.9x	0%	8%	4%	3%
The Value Line	30%	$ 221	$ 198	5.5x	N/A	N/A	49.8x	N/A	N/A	15.0x	N/A	N/A	5.0x	0%	35%	4%	0%
The Street	203%	$ 113	$ 98	1.6x	1.6x	1.6x	15.6x	14.0x	15.0x	3.8x	N/A	N/A	3.1x	0%	N/A	-2%	4%
Median	**30%**			**5.6x**	**6.4x**	**6.2x**	**19.3x**	**18.7x**	**17.0x**	**29.9x**	**29.3x**	**23.5x**	**6.9x**	**78%**	**25%**	**8%**	**6%**

Source: Capital IQ, Bloomberg, Updated on 07/31/2018
Note: N/A denotes negative multiple or oddly high multiple or the multiple is not available
All Market Cap and Enterprise Value data is in $ millions

Market Valuations – Payments

Company	Market Data			TEV / Sales			TEV / EBITDA			Price / Earnings						Growth %	
	% change LTM	Market Cap	Enterprise Value	LTM	2018 E	2019 E	LTM	2018 E	2019 E	LTM	2018 E	2019 E	LTM P/B	Debt / Equity	ROE	1 Year	5 Year CAGR
CARD NETWORKS																	
Visa	37%	$ 278,164	$ 284,038	14.2x	15.2x	13.4x	21.3x	21.7x	19.0x	29.4x	36.8x	28.8x	10.0x	50%	35%	22%	12%
MasterCard	55%	$ 205,614	$ 202,279	14.5x	16.3x	13.5x	26.5x	27.8x	23.0x	44.3x	43.3x	31.0x	39.1x	109%	85%	16%	11%
American Express	17%	$ 85,692	$ 113,804	2.9x	3.4x	2.8x	9.7x	N/A	N/A	26.1x	17.0x	13.7x	4.1x	277%	16%	5%	1%
Discover Financial	17%	$ 24,609	$ 33,420	2.7x	3.4x	3.0x	5.9x	N/A	N/A	11.3x	12.1x	9.1x	2.3x	241%	21%	10%	5%
Median	**27%**			**8.5x**	**9.3x**	**8.2x**	**15.5x**	**24.8x**	**21.0x**	**27.7x**	**26.9x**	**21.2x**	**7.0x**	**175%**	**28%**	**13%**	**8%**
P2P TRANSFERS AND REMITTANCES																	
PayPal	40%	$ 97,227	$ 94,262	6.5x	7.3x	6.1x	29.8x	27.8x	24.5x	48.0x	44.2x	35.0x	6.5x	0%	14%	21%	18%
Western Union	2%	$ 9,288	$ 11,497	2.0x	2.1x	2.0x	15.1x	8.4x	8.2x	N/A	11.1x	10.8x	N/A	-807%	N/A	2%	-1%
Moneygram International Inc.	-60%	$ 363	$ 1,254	0.8x	0.8x	0.8x	18.7x	4.5x	5.0x	N/A	6.3x	10.0x	N/A	-389%	N/A	-2%	4%
Median	**2%**			**2.0x**	**2.1x**	**2.0x**	**18.7x**	**8.4x**	**8.2x**	**48.0x**	**11.1x**	**10.8x**	**6.5x**	**-389%**	**14%**	**2%**	**4%**
PAYMENT INFRASTRUCTURE																	
Fidelity National Information	13%	$ 33,911	$ 42,225	4.9x	4.6x	4.9x	14.5x	13.8x	13.4x	23.7x	23.4x	19.7x	3.3x	84%	14%	-1%	9%
Fiserv	17%	$ 30,904	$ 35,361	6.1x	6.2x	6.1x	16.7x	17.3x	16.2x	22.1x	29.7x	24.2x	10.4x	162%	53%	3%	5%
WorldPay	29%	$ 25,698	$ 34,129	8.6x	16.1x	8.8x	39.0x	33.6x	18.5x	N/A	24.5x	21.7x	2.5x	74%	0%	13%	17%
Square, Inc	145%	$ 25,905	$ 25,335	10.5x	26.2x	17.2x	N/A	N/A	N/A	N/A	N/A	N/A	32.0x	45%	-10%	30%	61%
Global Payments	19%	$ 17,960	$ 21,874	5.7x	5.8x	5.3x	20.4x	17.0x	15.0x	34.6x	24.3x	20.2x	4.5x	101%	15%	37%	13%
First Data	25%	$ 21,719	$ 39,870	3.6x	5.4x	4.5x	13.8x	13.1x	11.9x	12.7x	15.4x	15.9x	6.1x	273%	65%	4%	2%
Total System	44%	$ 16,688	$ 20,303	4.5x	4.4x	5.2x	17.2x	17.1x	15.0x	25.7x	27.4x	20.9x	6.7x	162%	27%	18%	21%
Jack Henry	26%	$ 10,412	$ 10,459	7.0x	7.1x	6.6x	19.7x	20.1x	19.1x	29.3x	40.2x	35.6x	8.5x	9%	32%	6%	7%
Euronet	-5%	$ 4,715	$ 4,484	1.9x	2.0x	1.8x	11.3x	10.8x	9.2x	32.8x	20.2x	16.9x	4.4x	94%	14%	15%	12%
ACI Worldwide	12%	$ 3,008	$ 3,613	3.6x	3.5x	3.5x	21.8x	14.3x	14.0x	N/A	36.7x	29.4x	3.1x	67%	-1%	2%	9%
VeriFone	17%	$ 2,536	$ 3,259	1.8x	1.8x	1.8x	25.7x	11.3x	11.6x	N/A	17.3x	15.2x	3.4x	112%	-10%	-6%	0%
Bottomline Technologies	89%	$ 2,201	$ 2,246	5.9x	6.1x	5.5x	50.0x	27.3x	23.2x	N/A	49.7x	40.7x	7.0x	50%	-3%	2%	9%
Evo Payments	N/A	$ 1,692	$ 2,816	5.6x	N/A	4.9x	N/A	N/A	19.0x	N/A	N/A	35.5x	N/A	436%	N/A	N/A	N/A
Evertec	31%	$ 1,692	$ 2,195	5.2x	5.5x	5.0x	14.3x	12.6x	11.3x	30.7x	16.0x	13.9x	8.8x	277%	34%	5%	4%
Cardtronics	-19%	$ 1,163	$ 1,959	1.3x	1.3x	1.5x	23.1x	5.8x	7.5x	N/A	8.8x	16.1x	2.8x	219%	-34%	19%	14%
Cass Information	12%	$ 828	$ 628	4.4x	N/A	N/A	12.4x	N/A	N/A	29.6x	N/A	N/A	3.7x	0%	12%	9%	3%
I3 Verticals	N/A	$ 403	$ 513	N/A	N/A	4.7x	N/A	N/A	17.3x	N/A	N/A	28.2x	N/A	N/A	N/A	32%	N/A
Median	**19%**			**5.0x**	**5.5x**	**5.0x**	**18.5x**	**14.3x**	**15.0x**	**29.3x**	**24.3x**	**20.9x**	**4.5x**	**97%**	**14%**	**7%**	**9%**

Source: Capital IQ, Bloomberg, Updated on 07/31/2018
Note: N/A denotes negative multiple or oddly high multiple or the multiple is not available
All Market Cap and Enterprise Value data is in $ millions

Market Valuations – Capital Markets

Company	Market Data			TEV / Sales			TEV / EBITDA			Price / Earnings						Growth %	
	% change LTM	Market Cap	Enterprise Value	LTM	2018 E	2019 E	LTM	2018 E	2019 E	LTM	2018 E	2019 E	LTM P/B	Debt / Equity	ROE	1 Year	5 Year CAGR
LARGE EXCHANGES																	
CME	33%	$ 54,191	$ 56,430	14.3x	15.6x	13.6x	20.8x	22.5x	18.8x	12.2x	33.5x	23.9x	2.3x	15%	20%	1%	5%
ICE	11%	$ 42,811	$ 49,208	10.5x	10.6x	10.0x	16.5x	16.7x	15.6x	17.4x	25.1x	20.9x	2.5x	41%	15%	3%	28%
Hong Kong Exch. & Clearing Ltd.	2%	$ 36,789	N/A	N/A	N/A	N/A	N/A	N/A	N/A	34.4x	38.6x	30.2x	7.2x	5%	22%	11%	12%
Deutsche Boerse	27%	$ 25,460	$ 6,615	2.2x	2.1x	2.1x	3.9x	3.7x	3.6x	23.4x	23.1x	21.5x	4.5x	47%	19%	3%	5%
London Stock Exchange	17%	$ 20,086	$ 21,562	8.7x	8.0x	7.7x	18.8x	16.6x	15.4x	29.3x	28.1x	25.5x	4.8x	N/A	16%	18%	19%
Nasdaq	23%	$ 15,261	$ 18,439	7.3x	7.6x	7.3x	14.7x	14.9x	14.1x	20.1x	21.8x	19.1x	2.8x	69%	14%	7%	8%
BM&F Bovespa SA	16%	$ 13,069	$ 12,455	9.6x	10.2x	10.0x	15.2x	17.7x	14.6x	30.9x	21.0x	19.9x	2.0x	23%	5%	58%	12%
CBOE	3%	$ 10,926	$ 11,919	6.2x	11.1x	10.2x	16.2x	18.3x	15.0x	21.9x	28.5x	21.3x	3.4x	38%	17%	217%	34%
Japan Exchange Group	1%	$ 9,523	$ 8,764	7.9x	8.1x	7.9x	12.1x	12.6x	12.3x	20.5x	21.9x	21.0x	4.1x	20%	20%	12%	11%
Australian Stock Exchange	23%	$ 9,458	$ 2,698	4.5x	4.4x	4.3x	5.9x	5.8x	5.6x	27.6x	27.5x	26.8x	3.2x	N/A	11%	3%	4%
Singapore Exchange	-2%	$ 5,851	$ 5,236	8.3x	8.6x	8.5x	14.5x	14.9x	14.2x	21.6x	22.2x	21.1x	7.3x	0%	34%	5%	3%
Euronext	8%	$ 4,355	$ 4,225	6.5x	6.4x	5.9x	11.9x	11.5x	10.3x	14.4x	16.9x	15.9x	4.8x	43%	38%	7%	1%
Median	**11%**			**7.6x**	**8.1x**	**7.8x**	**14.6x**	**14.9x**	**14.1x**	**21.6x**	**23.1x**	**21.1x**	**3.4x**	**23%**	**17%**	**7%**	**8%**
REGIONAL EXCHANGES																	
Dubai Financial Market	-18%	$ 2,113	$ 1,317	18.9x	11.3x	10.2x	39.3x	23.5x	N/A	47.4x	29.3x	33.0x	1.0x	0%	2%	-11%	17%
Bolsa Y Mercados Espanoles	-11%	$ 2,695	$ 2,324	6.2x	5.9x	6.3x	9.9x	8.9x	10.0x	15.4x	14.1x	15.6x	5.3x	N/A	33%	0%	2%
TMX	27%	$ 3,576	$ 4,425	7.7x	7.7x	7.0x	14.6x	14.2x	12.5x	20.5x	17.5x	16.0x	1.4x	17%	12%	-2%	18%
Bursa Malaysia	15%	$ 1,561	$ 1,133	8.7x	7.9x	8.0x	14.8x	13.2x	13.3x	27.7x	27.2x	26.5x	7.0x	1%	25%	10%	6%
JSE	26%	$ 1,103	$ 905	5.4x	4.9x	5.0x	N/A	11.8x	9.9x	17.0x	16.3x	14.5x	4.0x	N/A	24%	-5%	10%
Bolsa Mexicana	16%	$ 1,131	$ 1,031	5.6x	6.1x	5.4x	10.1x	11.0x	9.9x	16.1x	18.9x	16.1x	3.6x	9%	23%	12%	11%
Multi Commodity Exchange of India	-21%	$ 657	$ 509	12.6x	13.2x	10.7x	45.7x	49.5x	30.9x	38.9x	38.5x	31.2x	3.3x	N/A	8%	0%	-13%
Bombay Stock Exchange	-27%	$ 623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18.2x	21.4x	18.1x	1.4x	0%	25%	28%	N/A
Philippine Stock Exchange	-13%	$ 327	$ 257	10.8x	N/A	N/A	19.0x	N/A	N/A	18.8x	N/A	N/A	3.1x	0%	18%	-3%	1%
Hellenic Exchange	-12%	$ 333	$ 233	6.7x	7.0x	6.2x	20.4x	23.8x	16.2x	N/A	N/A	41.5x	2.6x	0%	4%	3%	-4%
Warsaw Stock Exchange	-18%	$ 445	$ 366	3.8x	3.5x	3.9x	6.3x	5.8x	6.4x	10.2x	9.7x	10.0x	1.9x	29%	19%	13%	5%
OTC Markets Group	25%	$ 334	N/A	N/A	N/A	N/A	N/A	N/A	N/A	25.7x	24.0x	22.3x	22.2x	0%	83%	7%	9%
New Zealand Exchange	-5%	$ 202	$ 205	3.8x	3.8x	3.9x	10.0x	10.1x	10.1x	19.1x	17.4x	17.4x	4.3x	N/A	21%	-3%	6%
Median	**-11%**			**6.7x**	**6.6x**	**6.3x**	**14.7x**	**12.5x**	**10.1x**	**18.9x**	**18.9x**	**17.8x**	**3.3x**	**0%**	**21%**	**0%**	**6%**

Source: Capital IQ, Bloomberg, Updated on 07/31/2018
Note: N/A denotes negative multiple or oddly high multiple or the multiple is not available
All Market Cap and Enterprise Value data is in $ millions

Market Valuations – Capital Markets

RETAIL / e-BROKERS

Company	Market Data			Price / Earnings						Growth %	
	% change LTM	Market Cap	Enterprise Value	LTM	2018 E	2019 E	LTM P/B	Debt / Equity	ROE	1 Year	5 Year CAGR
Charles Schwab	19%	$ 68,889.39	N/A	25.7x	31.6x	21.0x	4.2x	21%	16%	17%	12%
TD Ameritrade	25%	$ 32,429.83	N/A	26.1x	27.4x	16.8x	4.1x	32%	18.4%	10%	7%
Interactive Brokers	49%	$ 24,768.53	N/A	36.5x	36.0x	27.9x	3.7x	3%	10.5%	31%	10%
E*Trade	46%	$ 15,659.43	N/A	21.4x	25.8x	16.7x	2.7x	39%	12.9%	21%	2%
MarketAxess	-4%	$ 7,280.13	N/A	45.7x	49.2x	44.0x	13.1x	0%	29.5%	7%	16%
IG Group	45%	$ 4,445.36	N/A	14.6x	17.1x	16.6x	4.5x	N/A	27.1%	13%	8%
LPL Financial	45%	$ 5,839.91	N/A	17.8x	29.9x	13.2x	5.8x	236%	35.2%	6%	3%
Matsui Securities	23%	$ 2,578.73	N/A	21.9x	N/A	N/A	2.9x	190%	13.3%	16%	9%
Comdirect Bank	19%	$ 2,092.68	N/A	24.9x	24.7x	26.8x	2.8x	1%	11.3%	8%	1%
Monex	81%	$ 1,341.29	N/A	20.1x	26.9x	21.8x	1.8x	259%	9.3%	14%	6%
Swissquote Group	134%	$ 1,006.80	N/A	19.4x	25.7x	19.7x	3.1x	0%	13.6%	28%	12%
Gain	1%	$ 304.77	N/A	18.2x	N/A	9.7x	0.9x	38%	24.0%	-25%	15%
VIEL et Cie	-11%	$ 471.87	N/A	12.8x	13.3x	11.6x	1.1x	N/A	8.7%	-2%	-3%
Bourse Direct	-16%	$ 102.83	N/A	26.4x	N/A	N/A	1.5x	N/A	5.2%	2%	3%
Median	**23%**			**21.4x**	**26.9x**	**18.2x**	**3.0x**	**27%**	**13%**	**10%**	**7%**

Source: Capital IQ, Bloomberg, Updated on 07/31/2018
Note: N/A denotes negative multiple or oddly high multiple or the multiple is not available
All Market Cap and Enterprise Value data is in $ millions

Market Valuations – Capital Markets

BROKER / DEALERS & MARKET MAKERS

Company	Market Data			Price / Earnings						Growth %	
	% change LTM	Market Cap	Enterprise Value	LTM	2018 E	2019 E	LTM P/B	Debt / Equity	ROE	1 Year	5 Year CAGR
Raymond James	10%	$ 13,350	N/A	16.9x	16.9x	13.3x	2.2x	41%	13.2%	18%	11%
TP ICAP	-42%	$ 2,071	N/A	18.1x	8.0x	8.2x	0.9x	N/A	4.7%	97%	16%
BGC Partners	-15%	$ 5,214	N/A	N/A	10.3x	7.7x	3.8x	109%	4.9%	15%	14%
NEX Group	51%	$ 5,035	N/A	33.4x	39.3x	31.7x	4.4x	N/A	12.2%	9%	-17%
Virtu Financial	22%	$ 4,009	N/A	9.5x	46.1x	11.5x	2.8x	74%	24.9%	46%	11%
INTL FCStone	37%	$ 1,012	N/A	N/A	N/A	13.0x	2.2x	73%	1.0%	17%	12%
ITG	0%	$ 732	N/A	N/A	N/A	17.4x	2.0x	24%	-10.5%	3%	-1%
Ladenburg Thalmann	49%	$ 680	N/A	N/A	N/A	N/A	N/A	0%	N/A	15%	14%
Median	**10%**			**16.9x**	**13.6x**	**12.2x**	**2.2x**	**41%**	**5%**	**15%**	**11%**

Source: Capital IQ, Bloomberg, Updated on 07/31/2018
Note: N/A denotes negative multiple or oddly high multiple or the multiple is not available
All Market Cap and Enterprise Value data is in $ millions

Market Valuations – Banks

GLOBAL DIVERSIFIED INVESTMENT BANKS

Company	Market Data			Price / Earnings						Growth %	
	% change LTM	Market Cap	Enterprise Value	LTM	2018 E	2019 E	LTM P/B	Debt / Equity	ROE	1 Year	5 Year CAGR
JP Morgan Chase	25%	$ 391,379	N/A	15.2x	16.7x	12.6x	1.7x	139%	11%	8%	1%
Wells Fargo	6%	$ 277,805	N/A	14.4x	14.1x	13.0x	1.5x	106%	11%	0	1%
Bank of America	28%	$ 308,437	N/A	15.7x	17.1x	12.1x	1.3x	86%	8%	7%	0%
Citigroup	5%	$ 180,919	N/A	N/A	13.7x	11.0x	1.0x	136%	-3.5%	7%	0%
Goldman Sachs	5%	$ 93,148	N/A	18.8x	12.5x	9.8x	1.2x	370%	6%	12%	0%
U.S, Bancorp	0%	$ 86,724	N/A	13.8x	15.5x	13.0x	2.0x	74%	14.7%	6%	2%
Morgan Stanley	8%	$ 89,504	N/A	12.5x	14.4x	10.5x	1.3x	258%	9%	15%	6%
Capital One	9%	$ 45,125	N/A	14.2x	12.1x	8.5x	1.0x	106%	6.8%	9%	5%
US Banks Median	**7%**			**14.4x**	**14.3x**	**11.5x**	**1.3x**	**121%**	**9%**	**8%**	**1%**
HSBC	-4%	$ 191,220	N/A	19.4x	14.3x	13.3x	1.0x	35%	5.5%	6%	-6%
Commonwealth Bank of Australia	-12%	$ 97,885	N/A	12.6x	13.3x	13.6x	2.0x	N/A	15.7%	1%	-2%
Royal Bank of Canada	9%	$ 112,565	N/A	12.7x	13.1x	12.0x	2.1x	12%	16.9%	8%	6%
Lloyds	-5%	$ 58,560	N/A	13.2x	7.3x	8.4x	1.0x	175%	7.0%	-3%	-8%
BNP Paribas	-15%	$ 81,439	N/A	9.7x	8.3x	9.0x	0.8x	213%	7.7%	1%	0%
Royal Bank of Scotland	3%	$ 40,392	N/A	23.6x	9.3x	9.9x	0.6x	188%	2.6%	-2%	-9%
UBS	1%	$ 63,549	N/A	43.0x	12.3x	11.8x	1.2x	452%	2.7%	3%	1%
Barclays	-4%	$ 43,564	N/A	N/A	12.0x	9.9x	0.7x	162%	-5.3%	-2%	-5%
Deutsche Bank	-26%	$ 27,056	N/A	N/A	15.0x	23.9x	0.4x	242%	-2.0%	-5%	-4%
Bank of Montreal	9%	$ 50,778	N/A	14.1x	12.4x	11.6x	1.7x	13%	11.6%	9%	6%
Credit Suisse	9%	$ 41,248	N/A	N/A	20.8x	13.9x	0.9x	381%	-1.2%	4%	-4%
Standard Chartered	-19%	$ 29,842	N/A	26.0x	16.8x	12.2x	0.6x	N/A	2.2%	7%	-4%
Foreign Banks Median	**-4%**			**14.1x**	**12.7x**	**11.9x**	**1.0x**	**182%**	**4%**	**2%**	**-4%**

Source: Capital IQ, Bloomberg, Updated on 07/31/2018
Note: N/A denotes negative multiple or oddly high multiple or the multiple is not available
All Market Cap and Enterprise Value data is in $ millions

Market Valuations – Alternative Lending

ALTERNATIVE LENDING

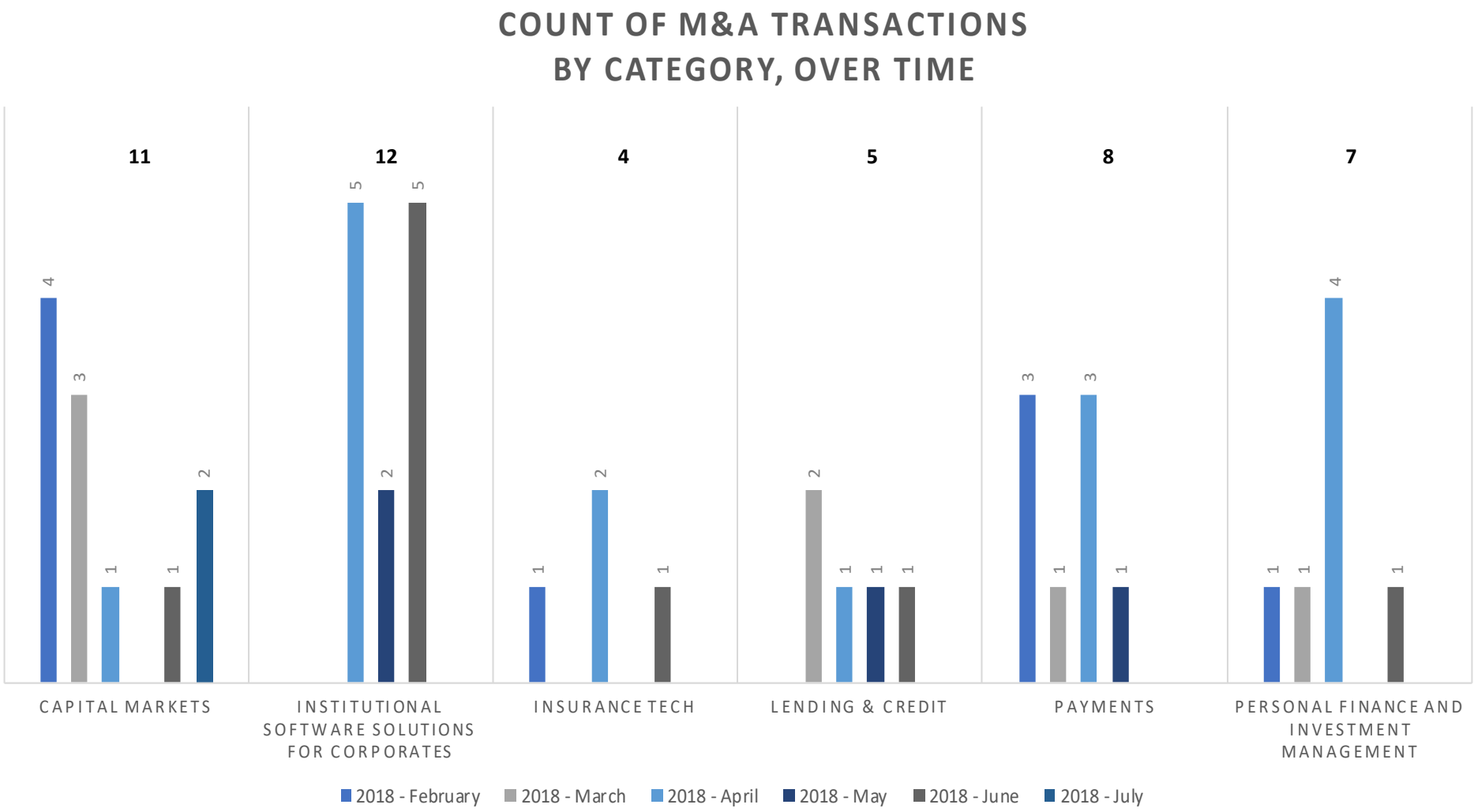
Company	Market Data			Price / Earnings						Growth %	
	% change LTM	Market Cap	Enterprise Value	LTM	2018 E	2019 E	LTM P/B	Debt / Equity	ROE	1 Year	5 Year CAGR
Greensky	N/A	$ 3,221	$ 3,232	N/A	33.1x	27.4x	N/A	0%	N/A	24%	N/A
Spring Leaf	24%	$ 4,512	$ 19,010	18.8x	9.4x	6.8x	1.3x	431%	7.2%	-3%	16%
Lending Tree	8%	$ 3,061	$ 3,012	34.7x	N/A	41.4x	8.8x	70%	24%	61%	51%
Lending Club	-19%	$ 1,729	$ 1,328	N/A	N/A	41.2x	1.9x	0%	-16%	-1%	89%
On Deck	59%	$ 508	$ 449	N/A	N/A	23.0x	1.9x	3%	-4%	20%	69%
Elevate Credit	13%	$ 394	$ 848	N/A	30.5x	13.6x	3.5x	462%	0.9%	16%	N/A
Median	**13%**			**26.7x**	**30.5x**	**25.2x**	**1.9x**	**37%**	**1%**	**18%**	**60%**

Source: Capital IQ, Bloomberg, Updated on 07/31/2018
Note: N/A denotes negative multiple or oddly high multiple or the multiple is not available
All Market Cap and Enterprise Value data is in $ millions

ROSENBLATT SECURITIES INC.

M&A Trends

Select Last 6 Months - M&A Transactions Trend



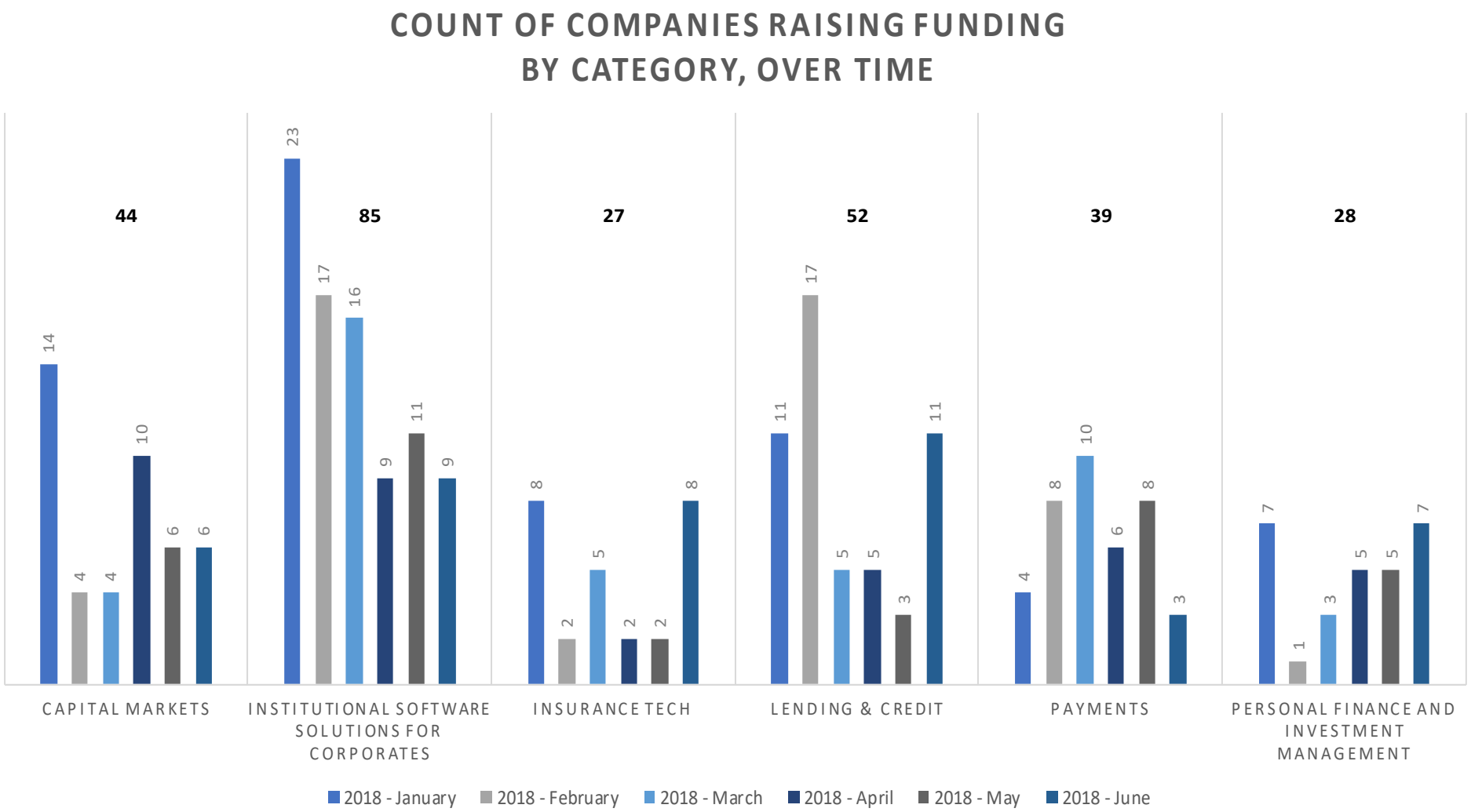
Source: Capital IQ, Bloomberg, Crunchbase, Waters Technology, Nasdaq, Finextra Research, FinSME, Pitchbook

All M&A transactions in this report are U.S. target companies and any foreign target companies with U.S. buyer(s)

ROSENBLATT SECURITIES INC.

Capital Raising Trends

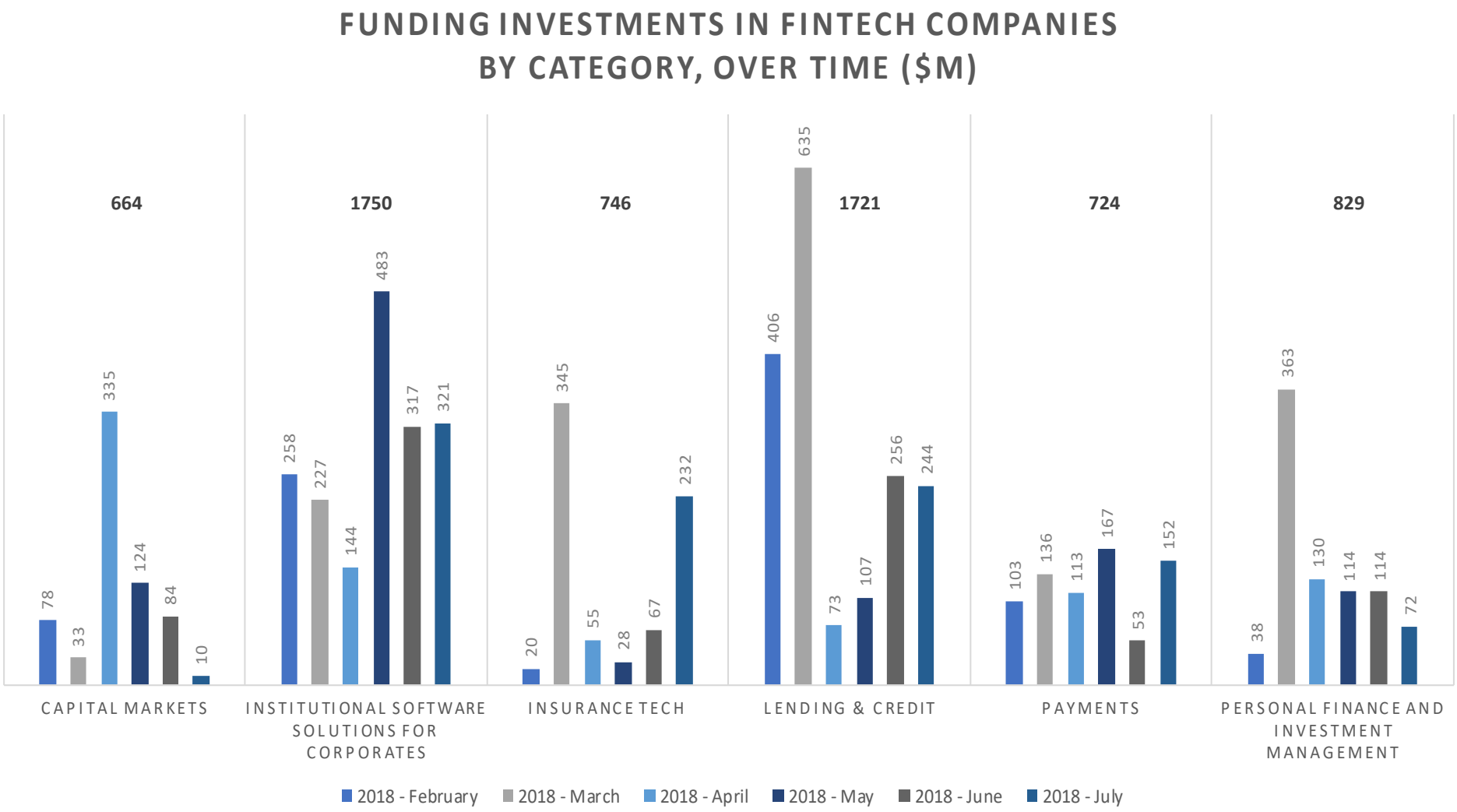
Select Last 6 Months Capital Raise Trends



Source: Capital IQ, Bloomberg, Crunchbase, Waters Technology, Nasdaq, Finextra Research, FinSMEs, Pitchbook

All capital raises in this report are U.S. companies and any foreign companies with U.S. investor(s)

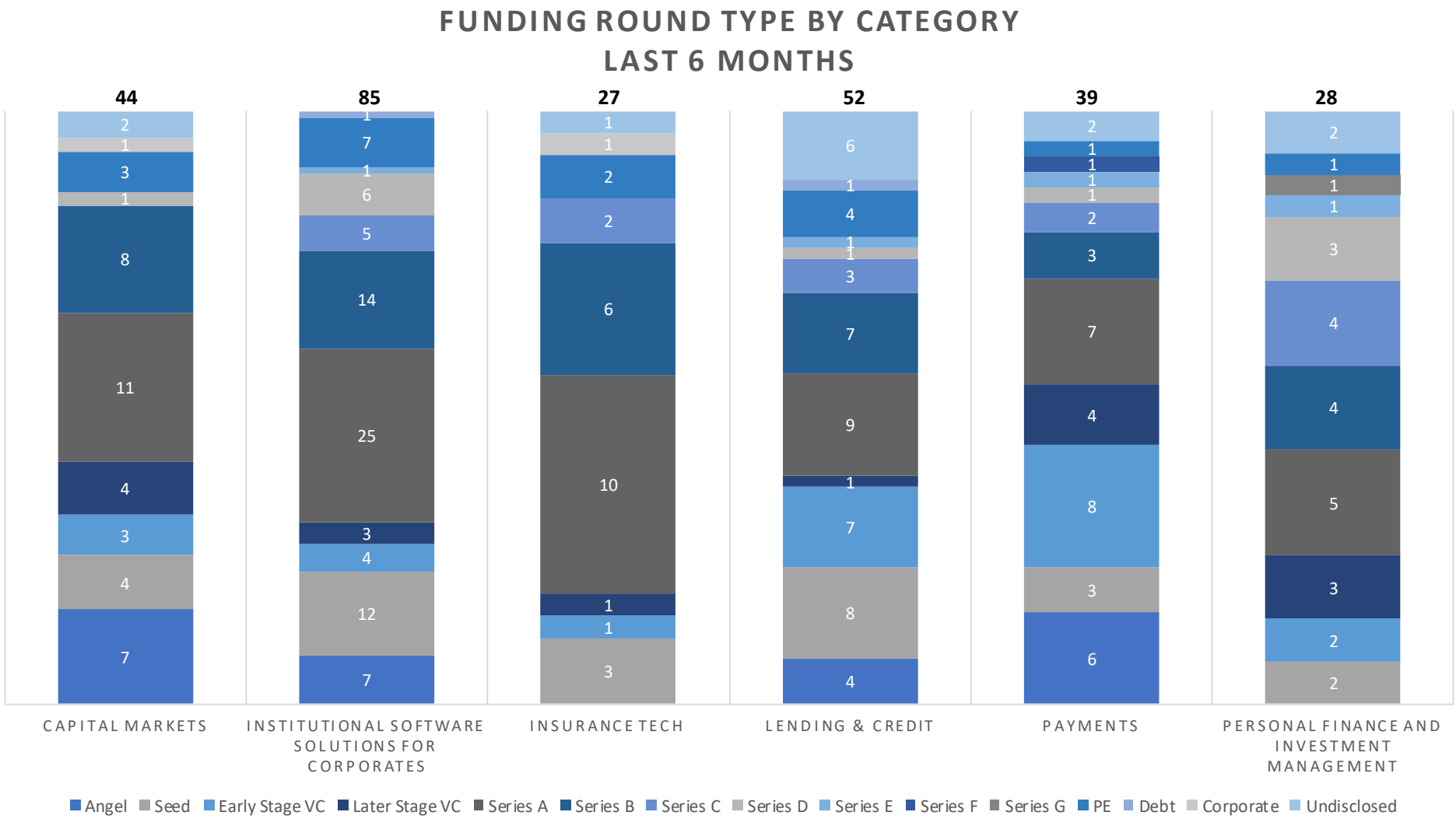
Select Last 6 Months Capital Raise Trends



Source: Capital IQ, Bloomberg, Crunchbase, Waters Technology, Nasdaq, Finextra Research, FinSMEs, Pitchbook

All capital raises in this report are U.S. companies and any foreign companies with U.S. investor(s)

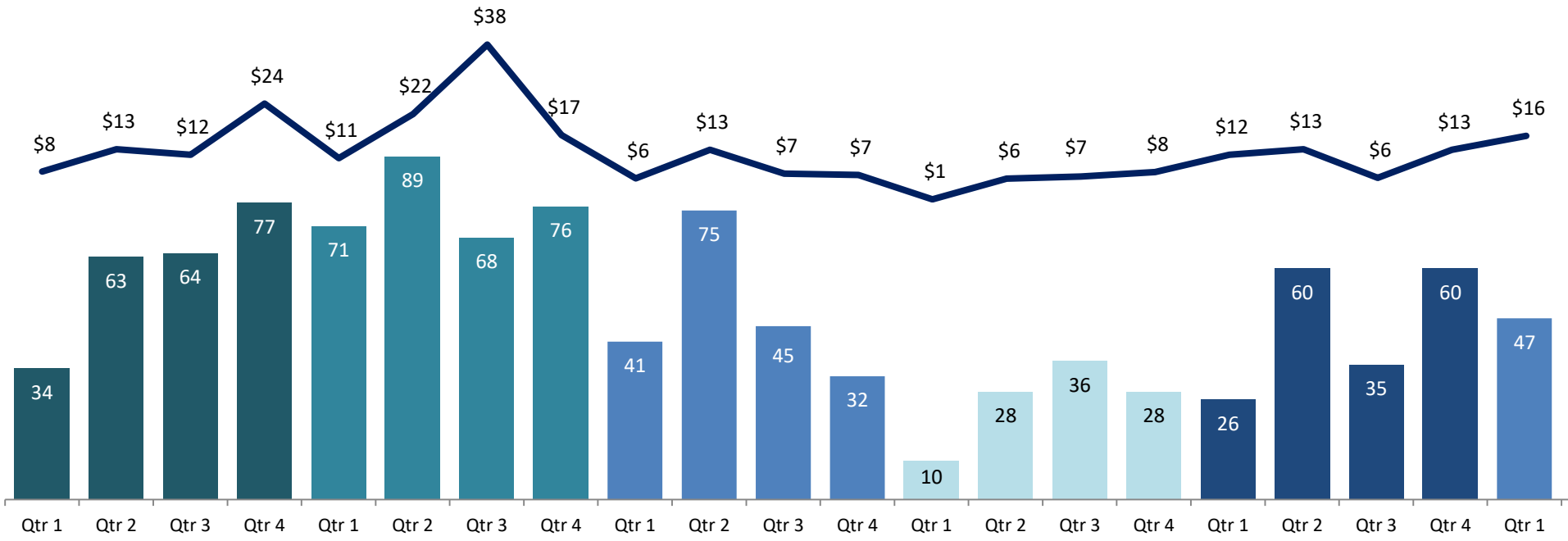
Select Last 6 Months Capital Raise Trends



Source: Capital IQ, Bloomberg, Crunchbase, Waters Technology, Nasdaq, Finextra Research, FinSMEs, Pitchbook

All capital raises in this report are U.S. companies and any foreign companies with U.S. investor(s)

State of Capital Markets – US IPO Market Update



CY 2013

Total Offerings – 238

Capital Raised - $57 Billion

CY 2014

Total Offerings – 304

Capital Raised - $87 Billion

CY 2015

Total Offerings – 196

Capital Raised - $33.1 Billion

CY 2016

Total Offerings – 123

Capital Raised - $23 Billion

CY 2017

Total Offerings – 181

Capital Raised - $44.2 Billion

YTD Q1 2018

Total Offerings – 47

Capital Raised - $16 Billion

Source: PWC

Select FinTech US Public Offerings – 2014 - 2018

Offering Date	Company	Sector	Ticker Name	Amount Raised* (in $ millions)	Offering Price Range ($)	Offering Price ($)	1 Week Return
6/24/2018	I3 Vertical.	Payments	NASDAQ: IIIV	86.5	11.00-13.00	18.00	-17.80%
5/24/2018	Greensky, Inc.	Lending & Credit	NASDAQ: GSKY	874	22.00-23.00	23.00	14.7%
5/23/2018	EVO Payments	Payments	NASDAQ: EVOP	224	16.00-19.00	16.00	11.2%
4/27/2018	Docusign INC.	Institutional Software & Technology	NYSE: DOCU	629	26.00 – 28.00	29.00	3.4%
11/10/2017	PPDAI Group Inc.	Alternative lending	NYSE: PPDF	221	16.00-19.00	13.00	0%
10/17/2017	Qudian Inc.	Alternative Lending	NYSE:QD	900	19.00-22.00	24.00	18.3%
4/6/2017	Elevate Credit	Alternative Lending	NYSE:ELVT	80.6	12.00-14.00	6.50	18.5%
10/28/2016	Blackline, Inc.	Institutional Software & Technology	NasdaqGS:BL	14.2	16.00-17.00	17.00	41%
10/6/2016	Coupa Software	Institutional Software & Technology	NasdaqGS:COUP	133.2	16.00-18.00	18.00	70%
04/15/2016	Bats Global Markets	Global Exchanges	BZX:BATS	291	17.00-19.00	19.00	20.3%
11/19/2015	Square, Inc	Payments	NYSE:SQ	2,215	11.00-13.00	9.00	33%
10/15/2015	First Data Corporation	Payments	NYSE:FDC	2,166	16.00-18.00	16.00	-4%
7/20/2015	PayPal, Inc	Payments	NasdaqGS:PYPL	Spun off from Ebay, Inc (NasdaqGS:EBAY). Each shareholder received one share of PYPL.			-11.3%
6/24/2015	TransUnion	Institutional Software & Technology	NYSE:TRU	665	21.00-23.00	22.50	10.8%
4/16/2015	Virtu Financial, Inc.	Broker Dealers	NasdaqGS:VIRT	314	17.00-19.00	19.00	18.9%
12/17/2014	On Deck Capital, Inc	Alternative Lending	NYSE:ONDK	200	16.00-18.00	20.00	15.6%
12/11/2014	LendingClub Corp.	Alternative Lending	NYSE:LC	870	12.00-14.00	15.00	79.6%
10/9/2014	MOL Global, Inc.	Payments	NasdaqGS:MOLG	169	12.50 – 14.50	12.50	-38%

Source: Capital IQ, Bloomberg, Crunchbase, Waters Technology, Nasdaq, Finextra Research
1) Yodlee's return is as of its acquisition date, August 10 2015
*Amount raised excludes greenshoe option

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