Evolve Capital Partners

Finance & Technology Market Update

Q2:2018 Issue

Financial Technology

Open Banking | Wealth Management Tech 3.0 | Data and Analytics

SPECIALIZED INVESTMENT BANKERS AT THE INTERSECTION OF FINANCE & TECHNOLOGY

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Evolve
Capital Partners

Executive Summary

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SUMMARY

- Our newsletter provides insight into the financial technology capital markets. We seek to provide a snapshot of market activity and a detailed analysis of trends.
- This issue focuses on **Open Banking, Wealth Management Tech 3.0** (building on our Q3:2017 issue), and **Data and Analytics**.
- Our sector coverage includes companies at the intersection of financial services and technology. We have observed trends in the Open Banking, Wealth Management Tech, and Data and Analytics spaces that fundamentally redefine how companies in segments like Banking and Wealth Management function.
- The key observations we made over the first quarter of 2018 are included.

KEY OBSERVATIONS

BANKING **Open banking ushering in a sea of change in banking**	Tech-enabled third-party providers (TPPs), are leveraging APIs to unbundle traditional banking services and develop expertise in specific core functions. TPPs are authorized online service providers that exist outside of the relationship between a customer and a bank but are involved in the online banking transactions that a customer carries out. They are competing with banks or leveraging bank data to create platforms that can be licensed back to banks through partnerships. These partnerships can help banks improve the customer experience, create new revenue streams, and build a more sustainable service model. But banks need to move fast. Otherwise, regulations like PSD2 that mandate banks to share their data with TPPs would allow TPPs to set up digital banks and poach banking customers. This outcome would leave no room for banks to compete directly in the digital banking space.
WEALTH MANAGEMENT **Increasing use of RPA in customer functions and the rise of hybrid advisors**	Wealth managers are increasingly using Robotic Process Automation (RPA) in customer-related functions to increase the time- and cost-efficiency of the onboarding process, as well as to maximize customer outcomes. RPA-powered onboarding solutions have experienced early success in many areas of customer service, like transaction reporting, reconciliations, and settlements and payments. Hybrid advisory models are becoming increasingly popular as they combine the low-cost advantages of robo-platforms with an advisor's expertise in handling more complex customer scenarios. However, with the advent of cognitive science-based technologies, AI-powered and fully automated personal financial advisors could replace human advisors in the medium-term.
DATA AND ANALYTICS **Exchanges diversifying revenue streams with analytics**	Exchanges are looking to diversify their revenue streams by bringing in technologies like Analytics, Machine Learning, and Artificial Intelligence that are creating compelling new opportunities. Through diversification, they are also able to overcome stagnating trading revenues. The traditional trading-based revenue model has come under pressure with dwindling mega public offerings and growing investor preference for passive and private market investments. With most major exchanges aggressively moving towards a technology-heavy revenue mix, the distinction between an exchange and financial technology business is gradually fading away.

Executive Summary

Summary of Newsletter

We are initiating interviews and a case study of key companies in our space. Below are several emerging companies profiled in this issue:

Exclusive Interview

PEERIQ

http://www.peeriq.com/

- PeerIQ is a leading provider of risk analytics to the consumer credit sector. The company's solutions enable investors and lenders to transact with confidence with standardized data and industry benchmarks, forward-looking credit models, and loan-level analytics.
- Ram Ahluwalia is CEO and Co-Founder of PeerIQ.
- Prior to PeerIQ, Ram was the CIO of Winged Foot Capital. He has also served previously as Senior Vice President at Bank of America Merrill Lynch and Vice President of the Global Bank Group at Merrill Lynch.
- He holds a BA degree in Economics – Philosophy from Columbia University and is also a CFA charterholder.

Exclusive Interview

Pefin

https://www.pefin.com/

- Pefin Operates a platform that uses proprietary artificial intelligence technology to help individuals make the most important financial decisions effortlessly and confidently. It provides personalized, actionable planning and investment strategies that automatically adapt and grow with changes in the investment environment and the investor's lifecycle stage.
- Catherine Flax is CEO of Pefin.
- Prior to Pefin, Catherine was Managing Director and Head of Commodity Derivatives, Americas at BNP Paribas. Previously, she was the Chief Marketing Officer for all of J.P. Morgan's global businesses.
- She holds a BS in Economics from Texas A&M University and an MA in Economics from Brown University.

Case Study

N26

https://www.n26.com/

- As a mobile bank, N26 has redesigned banking to make it simple, fast and contemporary. N26 partners with both innovative fintech and traditional financial companies to offer its customers best-in-class products such as TransferWise (foreign exchange), Raisin (savings), Clark and Allianz (insurance), auxmoney (credit) and others.
- Valentin Stalf is Founder and CEO of N26.
- Prior to N26, Valentin worked for Rocket Internet as an Entrepreneur in Residence and was involved in building different companies before founding N26, the leading mobile bank in Europe.
- He holds an MS in Accounting and Finance and a Bachelor's degree from University of St.Gallen.

Firm Qualifications

Evolve Capital Partners Overview

We Focus Exclusively On Finance and Technology-Related Firms

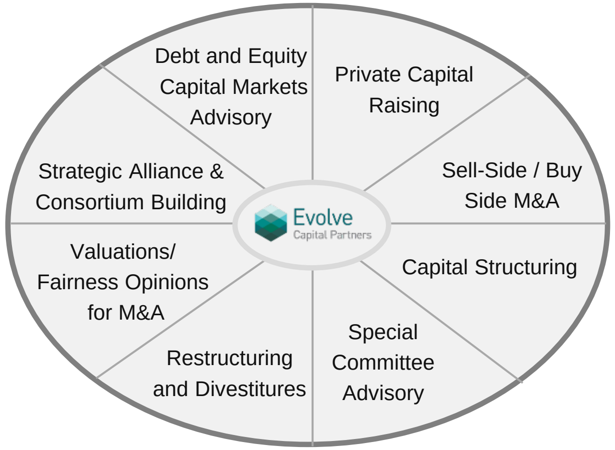
ABOUT ECP

- Evolve Capital Partners (ECP) is a specialized investment bank focused on businesses serving industries at the intersection of finance and technology.
- We were founded in 2012 and are based in New York, NY, the financial capital of the world. Our location provides unparalleled access to numerous strategic and financial partners who participate in and shape the sector.
- Since inception, we have completed over $350 million of transactions. Professionals at our firm have advised on over $3 billion of M&A and financing transactions globally.

FINANCIAL ADVISORY SERVICES

- We are a dedicated, creative, and fully independent investment bank that advises private and public companies on merger, divestiture and acquisition transactions, and capital raising through private placements.
- We produce industry-leading research on transaction trends across the Finance and Technology sector.
- Few investment banks have transaction experience across both corporate and asset finance.

Our Services



In-Depth Industry Research Reports

Quarterly FinTech Market Analysis

FinTech M&A / Financing Transaction Profiles

Our Clients

- Corporations
- Venture Capital & Private Equity Funds
- Management Teams
- Independent Directors / Boards

Industry Focus

- *We are exclusively focused on Finance and Technology firms*

BPO	Specialty Finance	Payments	Securities
IoT	Enterprise Software	Lending	Financial Services
B2B	Analytics	Insurance Tech	Financial Management

Fintech Coverage Universe

We Focus Exclusively On Finance And Technology-Related Firms

Financial Management Solutions

ADP, WageWorks, Ultimate Software, Paychex, Intuit, WEX

BPO

Genpact, Accenture, Wipro, Sutherland Global Services, Nelnet

Healthcare Tech

athenahealth, Cerner, Aetna, Cotiviti, Craneware

Data & Analytics / IoT

Nielsen, LexisNexis, Dun & Bradstreet, Cloudera, Tableau Software

Payments

Deluxe, Green Dot, PayPal, Vantiv, Square

Bank Technology Solutions

CoreLogic, Fidelity National Financial, R3, Q2, FIS, Redfin

Specialty Finance / Alternative Lending

LendingClub, OnDeck, Synchrony Financial, Elevate, Goldman Sachs

Securities

J.P.Morgan, E*TRADE, Broadridge, Charles Schwab, SS&C, First Derivatives Plc, Deutsche Börse Group

Insurance

Equifax, Verisk Analytics, Guidewire, TransUnion, Travelers, Gartner

Evolve Capital Partners — Our Expertise and Capabilities

M&A Advisory	Financing
Sales / Recaps	Private Placements
Acquisitions	Debt Capital
Divestiture	Restructuring
Strategic Advisory	

Fintech Coverage Universe

Our Finance and Technology Sector Coverage Details

Payments

- Payments Core Banking Solutions
- Payment Infrastructure
- POS Devices / Solutions
- Networks
- Prepaid / Money Transfer
- Payment Processing
- Closed Payment Network

Bank Technology Solutions

- Blockchain
- Core Processing
- Credit Scoring / Data
- Mortgage / Real Estate Tech
- Software Solutions / Services

Financial Management Solutions

- Accounting / Expenses
- Business Analytics
- Enterprise Management
- Human Capital Management
- Revenue Management

BPO

- Customer Experience
- Healthcare Industry
- HR / Payroll
- IT / Consulting
- Operations

Specialty Finance / Alternative Lending

- Consumer Lending
- Commercial Lending
- Online Lending
- Collections / Servicing
- Leasing
- Mortgage & Related

Healthcare Tech

- Analytics-Driven Solutions
- Core Solutions
- Medical Bill Servicing
- RCM
- Specialty Health Solution

Securities

- Alternative Trading Systems & Market Makers
- Diversified FIS
- Exchanges
- Financial Content Providers
- Investment Management
- Online Brokers
- Outsourced Financial Solutions
- Software & Solutions
- Brokerage
- Investment Banks

Insurance

- Title Insurance
- Traditional / Life Insurance
- Multi-Line Insurance
- P&C Specialty
- Insurance Brokers
- Online Information Providers
- P&C Insurance
- Benefits Administration

Data & Analytics / IoT

- Analytics Software Solutions
- Consumer IoT
- Industrial IoT
- Outsourced Analytics Solutions

Industry Landscape

Open banking accelerating the digital push of the banking sector

- Open Banking, driven by API technology, is the next big step in the technology evolution of the banking sector. It is a collaborative model where banks are required to share a customer's data with third-party providers (TPPs) when a customer requests so. TPPs build digital applications on top of these APIs to deliver better services to the customers.
- The potential benefits of open banking are substantial: **improved customer experience, new revenue streams, and a sustainable service model** for traditional players.
- This vast potential is attracting flocks of new players into the market with products and services that leverage APIs in remarkable ways. For example, German online-bank Fidor provides a suite of white-label ready, API-enabled application modules for digital banking designed to work seamlessly with an existing core banking system.
- Open banking is **a giant step towards a fully digitized future of banking** as it opens access to banking data for TPPs, at the customers' request. They can leverage this data to provide new and enhanced digital services for consumers.
- A new breed of challenger banks and technology incumbents is reshaping the banking industry by **creating new ecosystems**.
- Open banking has also created **opportunities for global technology players like Amazon** to create new products and services using APIs. In March 2018, Amazon initiated talks with J.P. Morgan and other banks to create a checking-account-like product for its customers. This move coincides with the company's foray into mortgages.

Global Open Banking Developments

The US	Large banks are striking data sharing deals with individual partners in a departure from the aggregate model (e.g. Chase's partnership with Intuit and Well Fargo's partnerships with Xero, and Finicity).
Europe	PSD2 and Open Banking Initiative are giving more control to the customers over personal account data. Digital banks like Fidor and digital lenders like Klarna are seeking to reinvent banking.
China	New digital finance ecosystems (e.g. WeChat & AliPay) are emerging in China based on data sharing capabilities.
East Asia	Fintechs are experiencing strong growth in API and data sharing capabilities (e.g. Paytm and other mobile wallets are thriving in India after demonetization). Some messaging services like Hike have white-labeled API-based payments solutions.
Africa	New underwriting models are emerging from access to alternative sources of data across East Africa. (e.g. Tala connects 10,000+ data points per customer to build a new kind of credit score with the aim of opening up financial access for the underserved).

Sources: "Data sharing and Open Banking" – McKinsey & Company; Media Reports

Case Study: Amazon leverages open banking for checking accounts

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

- Amazon, a leading e-commerce company provides an online platform that facilitates buying and selling of various consumer products. The company is consistently looking to diversify its services into various domains such as financial services and healthcare.
- Amazon announced in March 2018 that it would make a foray into retail banking. The company will create an Amazon-branded consumer checking account through a partnership with J.P. Morgan Chase and Capital One. This deal will allow Amazon to provide banking services through a well-established brand, without going through any regulatory hurdles such as obtaining a bank license.
- Consumers who have bank accounts with the existing banks can link directly to Amazon. The money will be transferred using the bank-owned Automated Clearing House (ACH) network to the Amazon checking account with fewer fees.
- Amazon is expected to enhance customer experience and bring more analytical insights to banks through this integrated model. The partnership will also allow Amazon to target both the unbanked and the banked population and learn more about its customers.

$250 million	Amazon can save up to $250 million a year by creating its own checking account with reduced fees on credit and debit card transactions.

Key open banking initiatives by Amazon

Payments	Amazon has partnered with Chase for an Amazon-branded Visa card and issued an Amazon store card through Synchrony Financial.
Healthcare	Amazon, Berkshire, and J.P. Morgan are developing a healthcare technology platform where consumers can buy healthcare products at a lower cost.
Lending	Amazon is offering small business loans through its platform and is focusing on offering mortgages.

Sources: Mobile Payments Today, American Banker, Consumer Intelligence Research Partners

Banking-as-a-Service reshaping the ecosystem

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

- The growing popularity of SaaS (Software-as-a-Service), IaaS (Infrastructure-as-a-Service), and PaaS (Platform-as-a-Service) has resulted in "as-a" models making their way into industry-specific services. With solutions like BaaS (Banking-as-a-Service) and BaaP (Banking-as-a-Platform), banking is one industry that is reaping the most benefits, although the adoption of BaaS and BaaP is still in its early stages.
- Fintechs and mobile / internet innovators are radically transforming the banking industry with innovative plug-and-play and multi-channel solutions.
- They are leveraging APIs to unbundle traditional banking services and develop expertise in specific services. They are competing with banks or leveraging bank data to create platforms that can be licensed right back to banks through partnerships.
- BaaS-based solutions providers are **changing a bank's role from a creator and manager of financial solutions to an assembler** of consumer-driven financial management tools and related offerings. They are redefining relationships between various entities in the banking ecosystem, and, in the process, reshaping the traditional banking ecosystem in its entirety.
- APIs provide the foundational backbone for provisioning BaaS, aiding and abetting traditional players to make the leap into digitization. Fidor Solutions leverages its open API platform to design customer-led digital banks from the ground up. Its fidorOS (fOS), platform packs all the necessary banking functions, from onboarding, card and account management and credit products to analytics.
- BaaS enables banks to **accelerate their time to market** in new environments and rapidly meet the needs and expectations of digital consumers, as long as they are willing to unlock their data and application services to partners. Online banks like N26 have benefited from this. N26 has managed to carve out significant market share by delivering consistent levels of digital customer experience by collaborating with MasterCard.

Key BaaS Companies

The Bancorp; fidor BANK; wirecard; FINLEAP; matchmove *(ECP Client)*; solarisBank

KEY HIGHLIGHTS

Fintechs and mobile / internet innovators are radically transforming the banking industry with innovative plug-and-play and multi-channel banking solutions.

Fintechs are unbundling the slate of services that banks have provided and developing specialization in individual niche services.

BaaS enables banks to accelerate their time to market in new environments and rapidly meet the needs and expectations of digital consumers.

Sources: "Overview of APIs and Bank-as-a-Service in Fintech" – SREDA VC Asia

Case Study: Fidor Bank revolutionizing banking in Germany

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

- Fidor Bank is a digital challenger bank, founded in Germany in 2009, that pioneers the collaboration between traditional financial services and technology businesses. The company provides financial services through the Internet for private and business customers in Germany. BPCE SA acquired a majority stake in Fidor Bank in July 2016 for an undisclosed amount.
- Fidor Bank combines technology, payments, and banking to provide an experience tailored to the needs of the digital consumer. Fidor's technology runs on a proprietary cloud-based BaaS-platform called the Fidor Operating System (fidorOS).
- fidorOS is a suite of white-label ready, API-enabled application modules for digital banking designed to work seamlessly with an existing core banking system. It is a modular program that includes communications platforms for direct interactions with customers via web or mobile apps, data analysis, customer loyalty programs, forecasting models, payment solutions, banking, community solutions, content management systems, and more.
- In July 2016, Telefonica Germany launched a mobile banking service, O2 Banking, using white-label technology supplied by Fidor Bank. In February 2016, Abu Dhabi Islamic Bank (ADIB) launched a community site, using white-labeled technology from Fidor Bank, where customers can post money-saving tips and share information and advice with their peers and bank experts.

Advantages of fidorOS

	Digital onboarding is accomplished through video and card scans on fidorOS.
	60-second P2P Payments are available between those in the Fidor community, or through social media, email or phone.
	A real-time dashboard gives invaluable insights into customer needs and behaviors.
	A loyalty program can be customized to fit any industry, offering air miles, free data or whatever the customers demand.
	fidorOS fulfills PSD2 and Open Banking directives.

Fidor's Clients

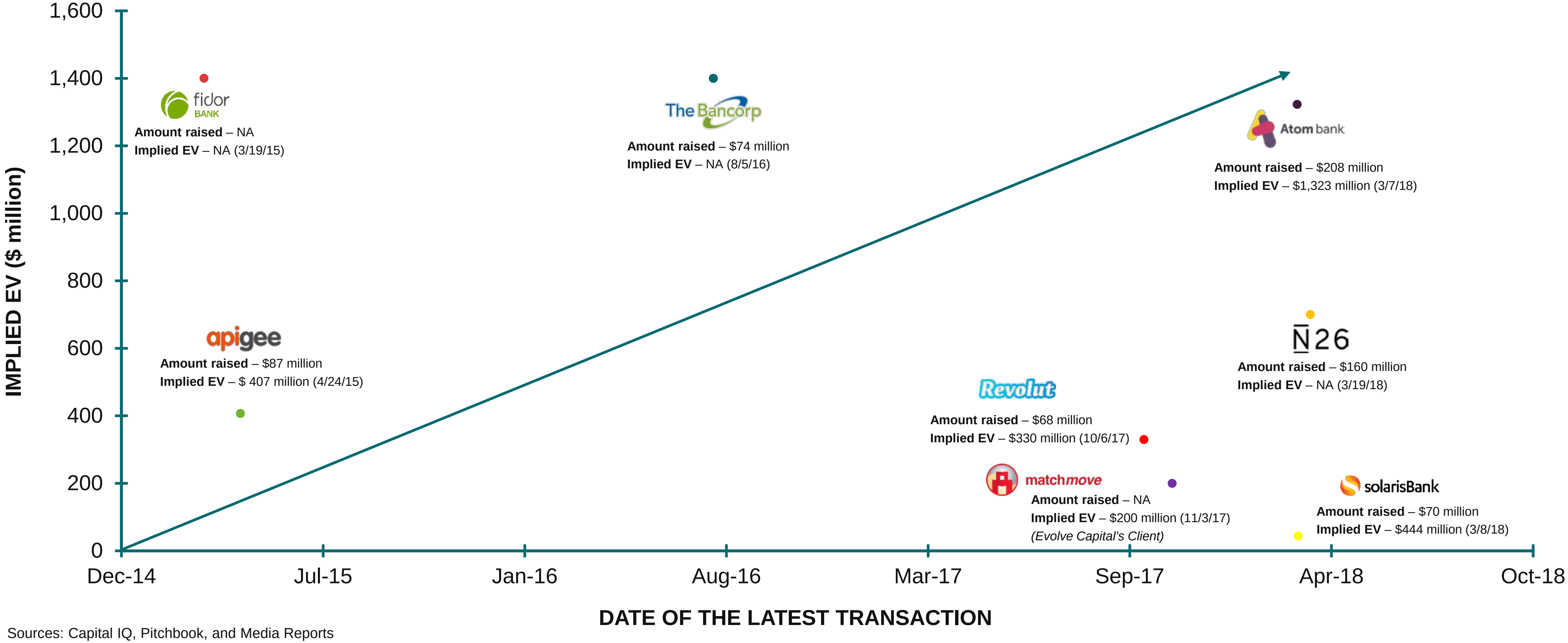
Groupe BPCE | ADIB | Telefónica O2 | Van Lanschot

Sources: Fidor Bank's website, Media reports

Competitive position of BaaS companies

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

Valuations for BaaS companies have continuously increased with investors realizing the potential of open banking



Sources: Capital IQ, Pitchbook, and Media Reports

PSD2 has created opportunities for banks, but they need to act fast

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

- Banks have a wealth of customer data, and are assumed to be the owners of this data until now. New compliance requirements in Europe – Payment Services Directive 2 (PSD2), CMA Open Banking and the European General Data Protection Regulation (GDPR) – **recognize consumers as the owners of the data, and banks as its mere custodians**. They give consumers greater control over their data by mandating banks to share it with third-party providers (TPPs).
- This data unlocks countless new opportunities for TPPs. By accessing this customer data and effectively utilizing technology, which banks desperately lack, they can offer competing services. The general **fear is that banks' customer relationships will weaken as digital-minded customers get more value through TPPs**. With customers channeling most bank dealings through TPPs, banks could get relegated to mere repositories of customer wealth.
- This fear might be unfounded. Through strategic planning, some **banks are already converting mandatory data sharing into an opportunity to partner with TPPs to accelerate their digital evolution, without a large increase in costs**. Utilizing this option is especially true for mid-sized banks.
- Banks are building robust and differentiated customer capabilities by partnering with TPPs. Banks are also **tying up with TPPs in critical business spaces where third parties fit better or where it is strategically unsound for banks to venture**. For example, it is strategically unsound for banks to compete with low-cost digital money transfer players in the cost-sensitive retail segment by launching a digital platform. However, they can collaborate with a TPP to offer these services.
- Through these partnerships, banks can become nimbler. They can simplify and automate back-end processes, remove legacy costs, eliminate options that customers no longer value and deliver experiences that are 100% digital. With banks warming up to the virtues of open banking and the race for digitization intensifying among banks, **several M&A deals could be on the horizon**.

KEY MARKET TRENDS

New compliance requirements in Europe – PSD2, CMA Open Banking, and GDPR – recognize consumers as the owners of their data, and banks as its mere custodians.

Banks are already converting mandatory data sharing into an opportunity to partner with TPPs to accelerate their digital evolution, without a large increase in costs.

With banks warming up to the virtues of open banking and the race for digitization intensifying among banks, several M&A deals could be on the horizon.

Goldman Sachs and Morgan Stanley both expect PSD2 to trigger more M&A deals in digital payments in 2018.

According to an Accenture survey, banks in Europe (75%), North America (53%) and Asia (51%) see open banking as critical to their digital transformation.

According to an Accenture survey, 74% of payment executives stated they would use open banking to access customers' financial information.

Sources: "Coping with the Challenge of Open Banking" – Bain & Company; "Data Sharing and Open Banking" – McKinsey & Company; "Open Banking Trends: Pulse Survey 2017" – Accenture Research

Online banks integrating with TPPs to win incumbents' customers

Online banks are springing up and integrating with TPPs and online lenders.
These partnerships are already starting to win over customers from incumbent banks. Incumbents need to act fast before TPPs set up more banks and shut them out of the digital space.

Online Banks	TPP	Partnership Rationale
Starling Bank	TrueLayer	Starling Bank partnered with API specialist TrueLayer on March 12, 2018. This partnership allows businesses to access customer data from Starling Bank's database and build new financial apps and services for them.
Starling Bank	Emma	Emma partnered with Starling Bank on March 8, 2018. This partnership allows users to view multiple accounts so they can better manage their money.
Lloyds Bank	Yolt	Yolt, a money management app partnered with Lloyds on January 25, 2018. The integration allows Yolt users to view their Lloyds account details with other bank account details, all in one place.

Online Banks	Alternative players	Partnership Rationale
Bank of America	PayPal	Bank of America (BofA) partnered with PayPal on March 22, 2018, to allow customers to pay with an additional option and link their BofA and PayPal accounts. This partnership is in line with BofA's efforts to incorporate digital services into its set of offerings.
solarisBank	smava	Solaris Bank launched 'Kredit2Day' in collaboration with smava, a credit comparison portal for loans, on February 21, 2018. The loan and the banking backend services will be provided by solarisBank through API, while smava will be responsible for the management of the application process, the credit assessment, and client management.
Starling Bank	PensionBee	Starling Bank announced multiple partnerships with Pensionbee, Wealthsimple, Habito, and Kasko on February 13, 2018. These partnerships will allow Starling Bank to provide multiple products for a lower cost.
Radius Bank	Mantl	Radius Bank partnered with Mantl on February 9, 2018 to open a digital account opening platform. This platform allows users to open a new bank account in just four minutes.

Sources: Press Releases; Media Reports

US banks should embrace TPPs to avoid losing customers to them

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

- Early signs suggest that regulators in **the U.S. could enact European-style laws** that make it mandatory for banks to share customer data with TPPs. Despite its many perceived benefits for banks in Europe, a **PSD2-type law may not be complementary to U.S. banks**. It could create a scenario where banks share data with fintech companies to use in delivering in-demand payment services, but the banks lose out on capitalizing from those services.
- New regulations would allow **TPPs to set up more banks and poach digital banking customers, leaving little room for banks to compete directly in the digital banking space**.
- **Banks need to start voluntarily sharing select financial data with TPPs to remain competitive and retain more bargaining power**. This model would also work in the consumer's'interest by giving banks, which are better equipped to safeguard sensitive personal information than nonbanks, some ability to vet fintech security measures before sharing real customer data.
- Some **large banks like Citigroup and Capital One have already moved** in the direction of voluntary data sharing by creating secure application programming interfaces. These banks gave hypothetical data to the fintechs with which to build apps. **Banks can assess which of these apps they find most promising** to invest their capital in. If trusted fintech services connect to banks through an API hub, banks could become the central source for identity verification, over time.
- Consumers trust banks to manage their personal data securely. **If banks pressure fintechs to strengthen their security measures, they can help extend customer trust through new digital banking tools, which could help those applications scale and gain merchant support more quickly**. But developing this business opportunity could be diminished by a regulation like PSD2 that would allow fintechs to easily access a consumer's identifiable information.

Key Market Trends

There are early signs to suggest that regulators in the U.S. could enact European-style laws that make it mandatory for banks to share customer data with TPPs.

Despite its many perceived benefits for banks in Europe, a PSD2-type law may not be complementary to the U.S. banks.

Banks need to start voluntarily sharing select financial data with third parties to remain competitive and retain more bargaining power.

Some large banks like Citigroup and Capital One have already moved in the direction of voluntary data sharing by creating secure application programming interfaces.

Developing this business opportunity could be diminished by a regulation like PSD2 that would allow fintechs to easily access a consumer's identifiable information.

Sources: *Banks should share financial data — to avoid being forced to.* Håkan Nordfjell, as published in American Banker; Media Reports

Wealth managers bringing on RPA for customer-related functions

- Wealth managers are increasingly using robotic process automation (RPA) in customer-related functions to increase the **time and cost-efficiency of the onboarding process, as well as to maximize customer outcomes**.
- RPA-driven onboarding solutions are available both as **hosted cloud-based solutions and as on-premises solutions** that integrate with legacy systems. Hosted solutions are more popular as they are more cost-effective, which means they can also be used by wealth managers who operate on a smaller scale.
- RPA-powered onboarding models have experienced early **success in many areas of customer service, such as transaction reporting, reconciliations, and settlements and payments**. By automating processes, they have significantly reduced transaction time (30-70%) and improved accuracy (70- 90%).
- At present, robo-advisors mainly use algorithmic or rule-based automation to customize client portfolios. **But hybrid advisory models are becoming increasingly popular as they combine the best aspects of a robo-platform and the human touch**.
- In the near future, RPA platforms that are developed on artificial intelligence (AI) are expected to transform robo-advisory along with the broader global wealth management market.
- With the advent of cognitive science-based technologies, **AI-powered and fully automated personal financial advisors could replace human advisors in the future**.

KEY MARKET TRENDS

RPA-powered onboarding models have experienced early success in many areas of customer service, such as transaction reporting, reconciliations, and settlements and payments.

By automating processes, they have significantly reduced transaction time (30-70%) and improved accuracy (70- 90%), among other benefits.

With the advent of cognitive science-based technologies, AI-powered and fully automated personal financial advisors could be the ultimate future state.

Leading financial services businesses using RPA

RBC
charles SCHWAB
Vanguard
Wealthsimple
WELLS FARGO
KESTRA FINANCIAL
Merrill Lynch Bank of America Corporation
Guardian Group
TD Ameritrade
billtrust
ZURICH

Sources: "Robotics: Taking Automation to The Next Level in Capital Markets" – Wipro; "MIMI – Managed Integrated Money Information and The Ultimate Future of Robo-advice" - Capco

Personal robo advisors could replace humans in the medium term

Open Banking; **Wealth Management Tech 3.0**; and Data and Analytics

An automated personal financial advisor, enabled by artificial intelligence, could be the ultimate future of robo-advisory and realized in the medium term. The journey to this future of robo-advisory will follow an evolutionary process. Although this evolution would be gradual, it can be split it into four major stages.

HYBRID

CURRENT ROBO-ADVISORS

AdvisorEngine (Technology Company)

STAGE 1
GROUP AND ASSIGN

Current state of most robo-advisors. The model here uses a simplistic, business-rules based segmentation of clients, followed by assigning these clients pre-built portfolios from existing inventory.

STAGE 2
EVALUATE, ENHANCE, AND REBALANCE

More sophisticated robo-advisors have reached this state. They offer services such as auto-rebalancing, cash balance optimization, tax loss harvesting, etc. They use business-rules based logic for internal data to adjust portfolios for changes in market forces or client profiles.

STAGE 3
BEHAVIORAL FINANCE ENGINE

A behavioral finance engine uses a broad spectrum of client data sources to build holistic client risk profiles.

These profiles enable automated services such as rebalancing, cash balance optimization and tax loss harvesting to be customized to each client's needs.

FULLY AUTOMATED

Pefin (Technology Company)

STAGE 4
PERSONAL FINANCIAL ADVISOR

A fully AI-powered robo-advisor manages all of the client's finances, acting as the client's dedicated personal financial advisor.

It is always on, plugged in, and acts autonomously. It perpetually learns about the client's life stages, individual preferences and market conditions.

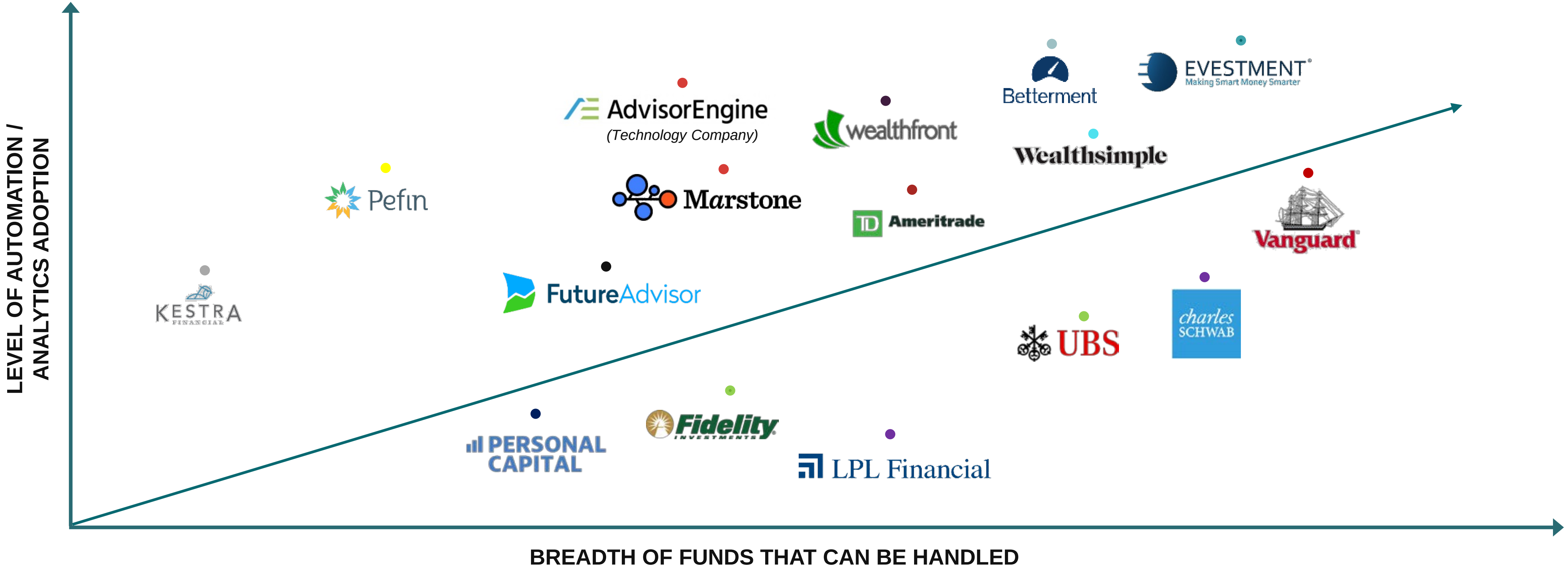
It uses this learning to continuously chart the best course of action and to secure the best most optimal financial future for the client.

Sources: "MIMI – Managed Integrated Money Information and The Ultimate Future of Robo-advice" - Capco

Competitive position of Wealth Managers

Open Banking; **Wealth Management Tech 3.0**; and Data and Analytics

Robo advisors that have achieved higher levels of automation/analytics adoption have been able to handle larger portfolio sizes efficiently. Large advisors that operate on the hybrid model have also successfully adopted AI and ML-driven analytics/automation solutions to complement the human touch.



Sources: Company Website and Media Reports

Case Study: Deployment of robotics in clients' pre-matching process

Open Banking; **Wealth Management Tech 3.0**; and Data and Analytics

- **A client's pre-matching process** typically involves extracting a report, identifying unmatched trades, checking agent updates, and calling/emailing counterparties to resolve discrepancies and updating narrations with comments (see graphic). **Deployment of robotics has automated this process**, which was previously done manually.

- **The pre-matching process**, which is performed across asset classes (i.e., cash, equity, fixed income, prime brokerage and stock loan), **faced numerous challenges** related to the manual effort involved in pre-matching the trades Sometimes, not all trades were pre-matched before the value date.

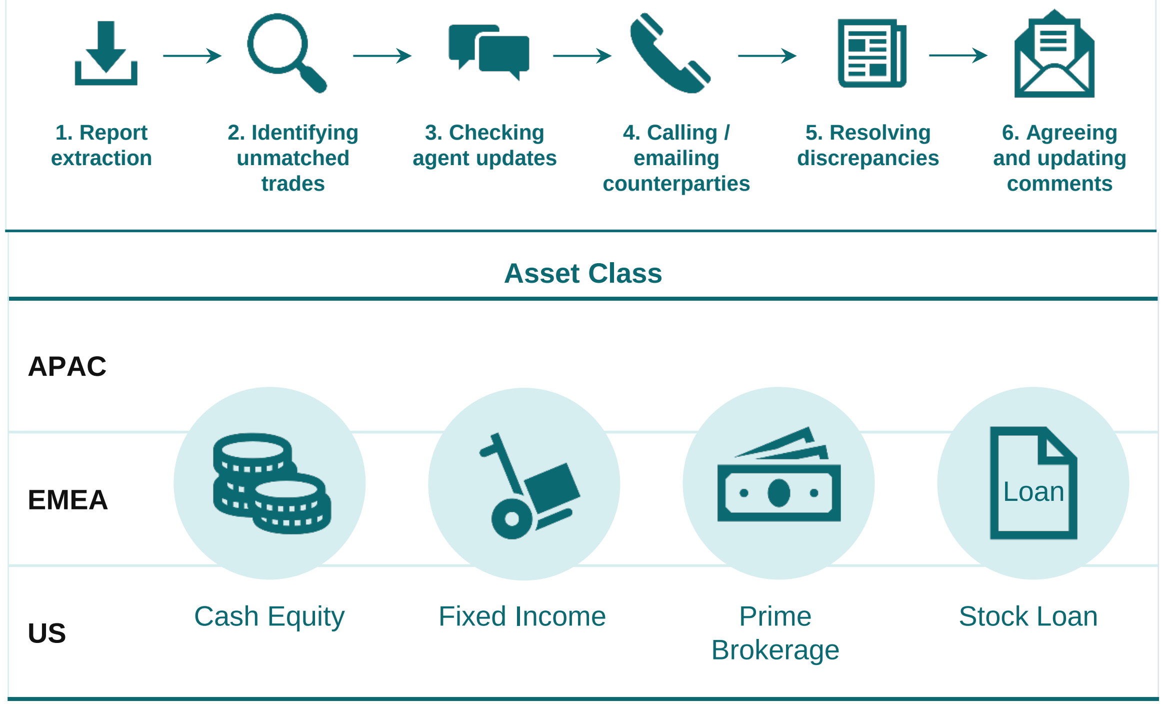
- Also, there were numerous instances where **multiple analysts were sending multiple queries for unmatched trades** to a single counterparty.

- **The post-robotics deployment of this process resulted in more than 80% of the manual effort being automated**.

- In addition,**100% pre-matching** is being done on touchpoints, and there has been a **70% reduction in trade fails** through a standardized approach and narrations.

- The **pre-matching work was centralized** by asset class and proactive pre-matching using RPA, thereby improving the ability to focus on matched fails reduction.

RPA automates more than 80% of the manual effort in the pre-matching process shown below:



Sources: "Robotics: Taking Automation to The Next Level in Capital Markets" – Wipro

RPA in onboarding improves compliance and reporting at low cost

Open Banking; **Wealth Management Tech 3.0**; and Data and Analytics

- RPA can dramatically improve regulatory compliance and reporting that often become bottlenecks during the onboarding process. With KYC, AML, and FATCA regulations coming in, the **onboarding process has become more cumbersome and dilatory than before**.
- Capital market firms now have to collect, input, and analyze more client data to ensure compliance. They also need to fulfill specific requirements before continuing to serve existing customers. This has increased their compliance costs and made it difficult for them to maximize the customer experience.
- Firms that have deployed RPA and advanced data solutions in the onboarding process have been able to improve regulatory compliance and reporting at a minimal cost. With RPA, wealth managers can **gather and input a considerable amount of structured data and maintain a complete audit trail**. Other data technologies and automation tools with natural language processing, metadata, and ontology models, enable them to process unstructured data quickly and enrich content. These technologies make it easier for wealth advisors to keep clients and regulators happy simultaneously.
- RPA is catalyzing the digital transformation of the wealth management space with verifiable benefits like **enhanced productivity, lower operational costs, reduced response times, and quicker client onboarding**.
- At present, its **benefits have only been realized for onboarding**. Its **applicability in areas such as confirmation, reporting, and KYC is high but remains mostly untapped** (see graphic).

KEY HIGHLIGHTS

RPA can dramatically improve regulatory compliance and reporting that often become bottlenecks during the onboarding process.

Firms that have deployed RPA and advanced data solutions in the onboarding process have been able to improve regulatory compliance and reporting at a minimal cost.

At present, RPAs benefits have only been realized for onboarding. Its applicability in areas such as confirmation, reporting, and KYC is high but remains largely untapped.

Client service areas with high RPA applicability

Sources: "Top 10 Trends in Wealth Management 2018" – Capgemini; Robotics: Taking Automation to The Next Level in Capital Markets – Wipro; Media Reports

Data-powered hybrid advice is gaining favor with HNWIs

- Finding the sweet spot between applying advanced analytical techniques and **deriving insights from alternative data sets** has become integral to the growth of asset and wealth management firms.
- **Millennials are increasingly choosing to engage with their wealth managers via digital channels** like email, web chat and social media, along with the traditional face-to-face interactions such as client meetings. These **channels are sources of valuable, untapped hidden customer data** that has traditionally not been utilized in analytics.
- **Tapping into this unstructured and hidden data—**client meeting notes locked inside a CRM application, email correspondence or web chats—and combining that data with a firm's traditional structured data, **presents an exciting opportunity for wealth management firms to apply analytical models** that can garner new insights and lead to more informed business decisions.
- **Alternative data pools like satellite imagery and customer activity on social media are also increasing** wealth managers' usage of accurate predictive analysis supported by innovative data and opinion mining, imagery analytics, machine learning (ML) and artificial intelligence (AI) techniques.
- Investment managers like Man Group PLC are using a plethora of alternative data sources—such as satellite imagery, social media sentiment, consumer transactions, geolocation, online reviews, and web-crawled data—to generate alpha.

Key Industry Figures

90%	According to a PwC survey, 90% of asset and wealth managers found data analytics to be a "very important" or "important" trend.
70%	According to Deloitte, in 2018 70% of new hedge fund launches globally are likely to include investment processes that are supported AI and ML.
$5.2 - $6.7 trillion	According to recent BofA Merrill Lynch report, advances in computing technology and ML, will generate a $5.2 - $6.7 trillion direct impact in the form of higher efficiency and output.

KEY MARKET TRENDS

Wealth management firms are applying advanced analytical techniques and deriving insights from alternative data sets.

Digital and traditional communication channels are sources of valuable, untapped hidden customer data.

Tapping into the unstructured hidden data presents an exciting opportunity for wealth management firms.

Sources: "Beyond automated advice: How FinTech is shaping asset & wealth management ":– PwC; "Top 10 Trends in Wealth Management 2018" – Capgemini; "2018 Investment Management Outlook: Vision and focus to drive success" – Deloitte; "The role of big data analytics for achieving sustained business improvement in wealth management" - EY

Hybrid advice is the recipe to improve HNWI engagement

- **Hybrid-advice solutions are becoming** as popular **with High Net Wealth Investors (HWNI) and Registered Investment Advisors (RIAs)** as wealth manager-led offerings. According to World Wealth Report 2017, the youngest and wealthiest HNWIs, along with those in Asia-Pacific (excl. Japan) and Europe, exhibited the greatest preference for hybrid advice.
- Combining the best of both worlds - **the low-cost advantages of robo-platforms with an advisor's expertise advise in handling more complex investing scenarios** - hybrid-advice solutions firms are ranked higher than traditional wealth advisors and all other firms that offer an algorithm-based platform.
- Wealth management firms realize that **investors want to reduce their sole reliance on wealth managers or robo-advisors and want flexibility** in choosing their approach to wealth management processes. The firms are enthusiastic about the implementation of hybrid models as it will improve **productivity, lower the cost-to-income ratio, reduce errors, and increase conversions by leveraging technology**.
- Despite the support of hybrid-advice models, **firms have yet to roll out effective solutions**. Although wealth management firms have taken initiatives, they are still falling short of delivering hybrid solutions that are fully satisfying HWNIs.
- **Fee-only advisors and RIAs are experiencing increased compliance cost pressures**, which is resulting in many of them replacing their broker/dealer partners. For example, between November 2017 and January 2018, LPL Financial, a provider of an integrated platform of brokerage and investment advisory services, lost hybrid practices with $2.1 billion in combined client assets to Mutual Securities. In March 2018, The Main Street Group, with $270 million in client assets also moved from LPL Financial to Kestra Financial.

Key Industry Figures

68%	According to an Accenture study, 68% of Emerging Wealthy and High Net Worth Investors prefer hybrid models to a traditional advice model.
53.7%	The World Wealth Report 2017 notes that 53.7% of global wealth management firms have hybrid advice programs underway, but none has a fully implemented solution.
93.2%	According to the World Wealth Report 2017, 93.2% of Latin America and 90.1% of Asia-Pacific (excl. Japan) Younger HWNIs are more serious about consolidating their assets with hybrid advice providers.

Key Wealth Mangers Adopting the Hybrid Advice Model

DIAMAN PARTNERS
Morgan Stanley
Vanguard
Wealthsimple
UBS
JPMorgan Chase & Co.

Sources: "The New Face Of Wealth Management In The Era Of Hybrid Advice" - Accenture; World Wealth Report 2017 – Capgemini; "Top 10 Trends in Wealth Management 2018" – Capgemini

Case Study: Vanguard's low-cost hybrid solution

Open Banking; **Wealth Management Tech 3.0**; and Data and Analytics

- The Vanguard Group provides investment management and advisory services.
- The company manages equity, fixed income, and balanced portfolios. It also manages mutual funds and exchange-traded funds. Vanguard conducts qualitative and quantitative analysis to create portfolios for clients.
- Vanguard caters to pooled investment vehicles, corporations, individuals, and retirement plan sponsors.
- Vanguard offers a hybrid service where wealth advice is offered over the phone, with a digital platform as a front. The company claims that some areas like tax planning and estate planning consistently require the presence of a human advisor. Vanguard has the ability to facilitate a hybrid service with a combination of experienced industry experts and technology.
- Hybrid investment advisors like Vanguard are constantly trying to lower fees for clients. New regulations like the MiFID II directive have also given an impetus to managers. Vanguard's in-house research team makes sure that clients don't pay for any investment research themselves. The company is also investing in its technology and hiring experts to cut down on costs.
- The company was founded in 1975 and is based in Malvern, PA.

Key Statistics	
> $25 million	Vanguard has saved investors in the U.S. more than $25 million in costs by lowering fees in the FY17 fiscal year.
$101 billion	Vanguard's Personal Advisor Services crossed $101 billion in assets under management (AUM), as of December 31, 2017.
90%	90% of the AUM is coming from clients that already have an account with Vanguard.
> 500	Vanguard's human element consists of more than 500 employees.
4X	Vanguard's AUM is as much as four times that of its rivals.
$4.1 trillion	Robo advisors are expected to manage assets worth $4.1 trillion by 2022.

Sources: Financial Planning.com, Reuters, Investopedia and Company Website

Exchanges creating new revenue streams using Data and Analytics

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

- Exchanges are looking to diversify their revenue streams by bringing in **technologies like Analytics, Machine Learning, and Artificial Intelligence that are creating compelling new opportunities**. Through diversification, they are also able to overcome stagnating trading revenues. The traditional trading-based revenue model has come under pressure with dwindling mega public offerings and a growing investor preference for passive and private market investments.
- With most major exchanges aggressively moving towards a technology-heavy revenue mix, the **distinction between an exchange and a financial technology business is fading away**. For example, Nasdaq's revenue mix has changed radically over the years with its trading revenues consistently declining and its technology and data/analytics-based services commanding a significant and increasing revenue share. Data and analytics collectively accounted for nearly 35% of Nasdaq's net sales in H1:2017.
- **Exchanges are now morphing into analytics and trading technology ecosystems of sorts**, as they seek to create new capabilities – through R&D and an acquire-and-combine model. In addition to revenue diversification, they aim to make business more efficient for themselves and their clients.
- In their pursuit of these twin aims, **exchanges are building a data analytical environment that can even handle large data and produce a broader range of datasets**. Many, such as the Australian Securities Exchange (ASX), are also investing actively in Distributed Ledger Technology (DLT) capabilities. ASX is investing heavily in technology to upgrade a secondary datacenter, to upgrade its ASX Net communications strategy, and to develop a cloud strategy.
- With the benefits of marrying these technologies with data becoming more apparent to exchanges, **partnerships, CVC deals, and M&A deals have increased**.

Sources: "6 insurance trends" 2017 – Capgemini, Press Releases

Key M&A deals

Exchange	Target(s)		
Nasdaq	EVESTMENT 9/5/17	SYBENETIX 7/25/17	
London Stock Exchange Group	The Yield Book 8/31/17	citi 8/31/17	MERGENT 11/21/16
ice	VIRTU FINANCIAL BondPoint 10/24/17		

Key Partnerships

Exchange	Partner(s)	Description
ASX	Digital Asset	ASX announced it would replace its post settlement system with a DLT system provided by Digital Asset on December 7, 2017.
Deutsche Börse	TRUMID	Deutsche Borse partnered with Trumid to develop products and services for credit and bond markets in Europe on July 10, 2017.
JPX	IBM	IBM and JPX partnered to develop blockchain technology in trading on February 16, 2016.
SGX	smartkarma	SGX partnered with Smartkarma to develop a data reporting platform for investors on March 12, 2018.
London Stock Exchange Group	IBM	IBM and LSE partnered to use blockchain for digital issuance of securities on July 20, 2017.

Case Study: Nasdaq reallocating capital into R&D, analytics

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

- Nasdaq, like many major global exchanges, is in the middle of a radical business transformation. The exchange is working towards **diversifying its revenue mix by adding forward-looking technology businesses to its portfolio and reducing its dependence on trading revenues**.
- The exchange has embarked on a significant capital reallocation drive to **divest slower-growing and lower-margin businesses** that are not core to its strategy. It is **reinvesting the divestment proceeds on R&D** as it looks to develop innovative technology and analytics capabilities that can be monetized.
- In January 2018, Nasdaq signed an agreement to sell two of its non-core businesses – Public Relations and Digital Media Services – for $335 million. At the same time, the exchange's 2018 guidance includes a >60% YoY increase in R&D spending commitment that is entirely funded through the reallocation of capital away from lower growth businesses.
- The company has also been **actively investing capital in acquiring and funding promising analytics and technology businesses**. The company has acquired eVestment and Sybenetix and funded Digital Reasoning Systems between July 2017 and April 2018.
- This change in investor perception has been reinforced by management's 2018 priorities of 1) maximizing the company's opportunities as an analytics and technology partner to capital markets (including attracting/retaining top talent and investing in tech like the Nasdaq Financial Framework/Surveillance/Analytics Hub), and 2) developing/deploying the company's marketplace economy tech strategy outside of capital markets.

Sources: UBS; Raymond James & Associates; Capital IQ

KEY STATISTICS
Nasdaq's **non-transactional business witnessed an acceleration** in its organic growth to 5% in Q4:2017, largely due to 9% growth in its Information Services and 10% growth in the Market Technology business.
The exchange's **transaction revenues declined** marginally YoY in Q4:2017.
Nasdaq **acquired or funded three technology and analytics businesses** between July 2017 and April 2018. These deals have a combined deal size of >$800 million.
The exchange divested two non-core businesses in Q1:2018, with a combined value of $335 million.
Nasdaq's **2018 guidance includes a commitment of $65 to $75 million to R&D** vs. $40 to $45 million in 2017.
The exchange's **subscription businesses have grown to approximately three quarters** of total revenues over the past couple of years.
Nasdaq's subscription businesses also have **impressive retention rates**, often exceeding 90%.

Case Study: Exchanges investing in data and analytics companies

Open Banking; Wealth Management Tech 3.0; and **Data and Analytics**

Digital Reasoning Systems raises $30 million in growth funding

Target Company Overview

Digital Reasoning Systems uses AI to analyze human behavior and generates insights for businesses and government organizations. The company was founded in 2000 and is based in Franklin, TN.

Acquisition Details

Digital Reasoning Systems raised $30 million in a growth funding on March 19, 2018 from Nasdaq (which is a part of a consortium of investors). The consortium included other investors such as BNP Paribas, Barclays Bank, and, Goldman Sachs. As part of the transaction, Angel Rodriguez-Issa of BNP Paribas Développement SA, SCR has joined the company's board of directors.

Transaction Rationale

Digital Reasoning Systems intends to use the proceeds to expand its solutions into capital markets and wealth management. The company also intends to use the funds to accelerate innovations across speech analytics and natural language understanding.

Trifacta receives $48 million in Series D funding

Target Company Overview

Trifacta develops and provides data wrangling solutions for businesses, IT, and data analysts. The company was incorporated in 2012 and is based in San Francisco, CA.

Acquisition Details

Trifacta received $48 million in a Series D funding on January 31, 2018 from Deutsche Börse (which is a part of a consortium of investors). The consortium included other investors such as Columbia Pacific Advisors, Ericsson Ventures, GV, New York Life Insurance Company, and Accel Partners.

Transaction Rationale

Trifacta intends to use the proceeds to expand globally and to continuously invest in its data wrangling platform. The transaction is expected to expand Deutsche Börse's capabilities in data-driven areas such as risk management, investment decision making, and trading analytics.

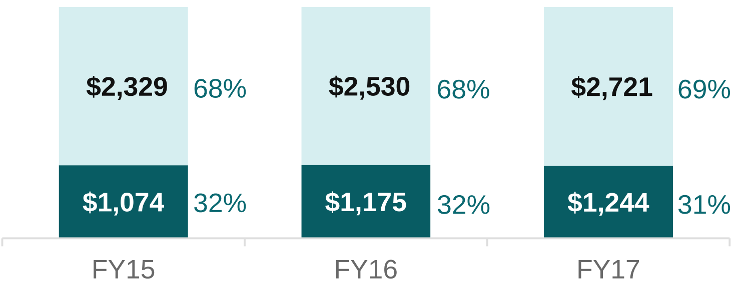
Sources: Capital IQ and Media Reports

Exchanges are experiencing a constant increase in data revenues

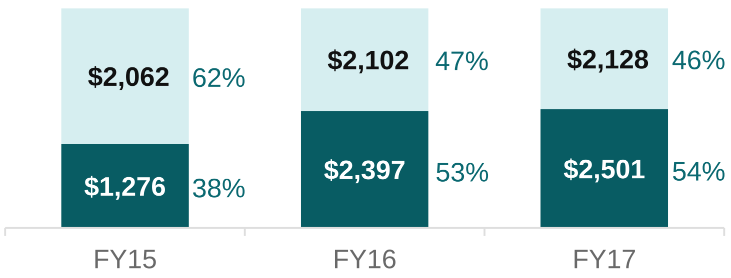
The data and analytics revenue growth for most exchanges is growing.
These companies are either developing analytical capabilities in-house or acquiring players with the expertise.
The trading revenues for exchanges continues to remain stagnant as they look to diversify into other businesses.

All figures in $mm

Nasdaq



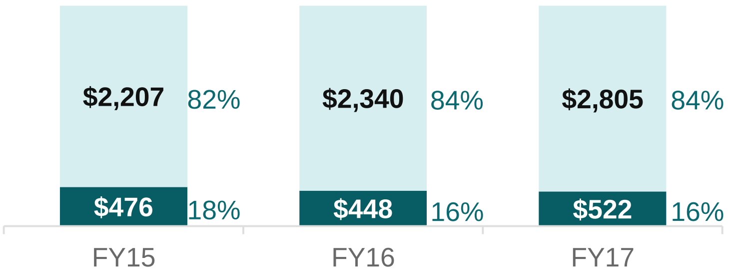
Intercontinental Exchange



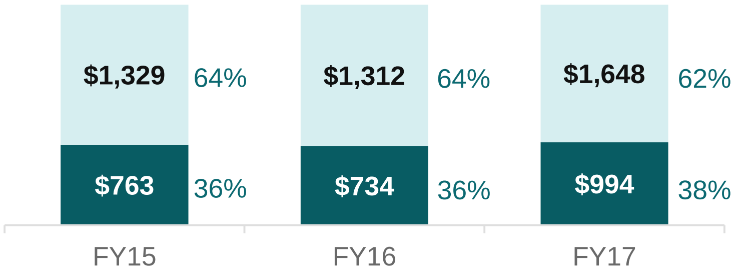
Trading and Other revenue

Data and Analytics revenue

Deutsche Börse



London Stock Exchange



Data and Analytics revenue calculated as follows:

- *Nasdaq = Market Services revenue + Information Services Revenue*
- *Intercontinental Exchange = Market Data Revenue*
- *Deutsche Börse = Market Data + Services*
- *London Stock Exchange = Information Services*

Sources: Capital IQ

New generation predictive analytics coming up for asset managers

- **Investment bankers and asset managers are no strangers to big data analytics**. Predictive analytics allows the investment bankers and asset managers to monitor a vast volume of data which assists in asset allocation decisions for clients.
- **Constant technology changes, high competition, and artificial intelligence (AI) are making predictive analytics market more competitive**. As AI gets more advanced, a critical shift from hindsight to foresight predictability is occurring. That is, intuitive programming is close to predicting future asset dislocations before actual events take place.
- No longer does “peeking” at stock orders to front-run clients generate the requisite revenue growth needed to offset the massive CAPEX. Companies like AnalytixInsight Inc. are transforming data into narratives through their artificial intelligence platform. **Institutions are now looking at ways to predict trades before they happen. To do this, they are investing heavily in building predictive analytics capabilities or are partnering with fintechs that have the desired capabilities**.
- The rate of technology evolution is so high that the **pioneers of data analytics are now playing a game of constant catch up with the newcomers who are chipping away at their market share**. As falling human trading volumes and narrowing technology advantages take shape, a classic battle for industry supremacy is brewing.
- To exemplify how competitive the trading landscape is, superior analytics and computing capabilities have made the High Frequency Trading (HFT) trading landscape so competitive that some trading firms like ZeroHedge and Virtu Financial exited the HFT industry.

KEY MARKET TRENDS

According to a Zion Market Research report, the global predictive analytics market is expected to reach approximately $11 billion by 2022, growing at a CAGR of approximately 21% between 2016 and 2022.

Constant technology changes, high competition, and artificial intelligence (AI) are making the predictive analytics market more competitive.

As AI becomes more advanced, a critical shift from hindsight to foresight predictability is occurring. Intuitive programming is close to predicting future asset dislocations before actual events take place.

The rate of technology evolution is so high that the pioneers of data analytics are being swept away by new incumbents.

Firms which master the new generation predictive analytics will reap the rewards of billions of dollars in profits.

ML & AI driving M&A transactions and partnerships

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

- Whether financial institutions are looking for improved customer service, risk management, fraud prevention, investment prediction, or cybersecurity, **the scope of machine learning (ML) and artificial intelligence (AI) is limitless**.
- The **strong uptick in the number of fintech investment deals during 2017** can be attributed to financial institutions prioritizing digital innovation.
- **AI is one of the top priorities for banks when it comes to security and fraud identification**. It can use past spending behaviors on different transaction instruments to point out odd transactions such as using a card from another country just a few hours after it has been used elsewhere, or attempting to withdraw a sum of money that is unusual for the account.
- **Investment in fintech remains strong as banks are increasingly getting into the game**. Both sides bring value propositions that are very complementary: **Fintechs bring an innovation culture, new business models, and new methodologies that banks struggle with due to legacy infrastructure. On the flip side, banks have the consumer trust and distribution channels**.
- A number of examples can be seen in Q4:2017. Citi Ventures and PNC made an undisclosed investment in the commercial payments startup HighRadius. PNC and Citi Ventures intend to revamp their receivables by leveraging the AI and automating technologies of HighRadius through this investment.
- TD Bank acquired Layer 6, an artificial intelligence company based in Toronto that uses technology to offer personalized and predictive communications to financial services customers. BB&T announced on January 16, 2018, that it will set aside $50 million to invest in or acquire emerging financial technology companies in the upcoming year.

KEY MARKET TRENDS

According to KPMG's The Pulse of Fintech – Q4:2017, heading into 2018, the adoption of machine learning, AI, and IoT enablement is expected to continue at a rapid pace in the fintech sector.

There was a strong uptick in the number of fintech financing deals during Q4 2017.

AI-based Voicera raised an undisclosed amount of funding from GGV Capital on March 7, 2018. Digital Reasoning Systems raised $30 million on March 19, 2018.

AI is one of the top priorities for banks when it comes to security and fraud identification.

KPMG notes in The Pulse of Fintech – Q4:2017 that AI has become a major driver of M&A activity in the Americas as companies are automating processes, such as regulatory compliance and reporting, through AI.

Case Study: LexisNexis acquires ThreatMetrix for $830 million

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

Target Company Overview

- ThreatMetrix Inc. provides context-based business security and fraud prevention solutions for businesses in various industries worldwide.
- The company's technology analyzes connections among devices, locations, anonymized identity information and threat intelligence. The technology combines this data with behavioral analytics to identify high-risk digital transactions in real-time.
- ThreatMetrix is headquartered in San Jose, CA.

Acquisition Details

- LexisNexis Risk Solutions Inc., a subsidiary of RELX Group plc., acquired ThreatMetrix Inc. for $830 million on January 29, 2018.
- ThreatMetrix will become part of Risk & Business Analytics at LexisNexis. The transaction is expected to close during the first half of 2018.
- The transaction is not expected to have a material impact on 2018 RELX Group earnings.

Services Offered

- ThreatMetrix offers the TrustDefender Cybercrime Protection Platform, which delivers a comprehensive visitor assessment by screening users and devices in real-time to reveal fraudsters and hackers.
- The company also provides context-based authentication solutions in remote workforce access, frictionless two-factor authentication, and customer/workforce single sign-on.

Transaction Rationale

- The acquisition is in line with the organic growth strategy of LexisNexis Risk Solutions.
- ThreatMetrix will become part of Risk & Business Analytics which, under the LexisNexis Risk Solutions brand, addresses fraud and authentication challenges by applying advanced analytics to physical identity attributes, including identity credentials, addresses and asset ownership.

Sources: Capital IQ, Press Release

Deal Activity

Evolve
Capital Partners

Deal Activity

Key Industry Transactions in Q1 2018

We monitor the finance and technology space from all angles, including Open Banking, Wealth Management Technology, and Data and Analytics. Over the last few months, we have seen an increase in deal activity as well as in the number of strategic partnerships. Deal activity has primarily involved large players acquiring or funding analytics solutions providers at high valuations. Such **acquisitions allow them to improve customer experience and offer new services**. Banks, both online and digital, have entered strategic partnerships with TPPs, as they realize that the business environment is changing radically and soon **they may not have the option of not sharing their data**.

Highlighted Transactions and Partnerships

Date	Partner / Target	Acquirer	Type	Value ($ mm)	Comments
3/9/18	BNP PARIBAS FORTIS	tink	Partnership	NA	Tink will be providing its Aggregation, Personal Finance Management (PFM) and Payment Initiation technology to support the release of Fortis' new multi-banking app Hello Bank! later this summer, with an update to the bank's Easy Banking App to follow by autumn.
2/25/18	ANZ	DATA REPUBLIC	Stake Purchase	$2	Data Republic raised $2 million of venture funding from ANZ Banking on February 25, 2018. ANZ has taken an equity stake in local start-up Data Republic to boost its innovation ambitions through data-sharing environments. The acquisition will provide ANZ access to Data Republic's cloud-based platform, which delivers a "data sharing control center" for organizations to store, categorize and share data while maintaining governance and auditing frameworks. The terms of the transaction were not disclosed.
3/2/2018	UiPath Robotic Process Automation	Accel	Funding	$153	UiPath Inc. designs and develops robotic process automation software for companies across different sectors like finance and banking, insurance, healthcare, etc. The company will use part of the proceeds to accelerate its product roadmap, particularly innovations that integrate machine learning and artificial intelligence algorithms. Post-money valuation of UiPath was $1.1 million.
2/21/2018	Wealthsimple	POWER FINANCIAL CORPORATION	Funding	$51	Wealthsimple is an online investment manager that combines user-friendly digital tools and personal financial advice to make smart, automated investing available to clients. Wealthsimple Financial Inc. will use the proceeds to evolve its investing product, explore new financial product offerings, accelerate growth across its three markets, and further develop its B2B platform.
1/29/2018	ThreatMetrix	LexisNexis RISK SOLUTIONS	Acquisition	$830	The acquisition is in line with the organic growth strategy of LexisNexis Risk Solutions. ThreatMetrix will become part of Risk & Business Analytics which, under the LexisNexis Risk Solutions brand, addresses fraud and authentication challenges by applying advanced analytics to physical identity attributes, including identity credentials, addresses and asset ownership.

Sources: Capital IQ; Press Releases

Company Interviews

“Industry Insight”

Evolve
Capital Partners

ECP Newsletter Overview

Company C-Suite and Investors - Bios

Exclusive Interview

PEERIQ

http://www.peeriq.com/

- PeerIQ is a leading provider of risk analytics to the consumer credit sector. The company's solutions enable investors and lenders to transact with confidence using standardized data and industry benchmarks, forward-looking credit models, and loan-level analytics.
- Ram Ahluwalia is CEO and Co-Founder of PeerIQ.
- Prior to PeerIQ, Ram was the CIO of Winged Foot Capital. He has also served previously as Senior Vice President at Bank of America Merrill Lynch and Vice President of the Global Bank Group at Merrill Lynch.
- He holds a BA degree in Economics – Philosophy from Columbia University and is also a CFA charterholder.

Exclusive Interview

Pefin

https://www.pefin.com/

- Pefin operates a platform that uses proprietary artificial intelligence technology to help individuals make important financial decisions effortlessly and confidently. It provides personalized, actionable planning and investment strategies that automatically adapt and grow with changes in the investment environment and the investor's lifecycle stage.
- Catherine Flax is CEO of Pefin.
- Prior to Pefin, Catherine was Managing Director and Head of Commodity Derivatives, Americas at BNP Paribas. Previously, she was the Chief Marketing Officer for all of J.P. Morgan's businesses, globally.
- She holds a BS in Economics from Texas A&M University and an MA in Economics from Brown University.

Case Study

N26

https://www.n26.com/

- As a mobile bank, N26 has redesigned banking to make it simple, fast and contemporary. N26 partners with both innovative fintech and traditional financial companies to offer its customers best-in-class products such as TransferWise (foreign exchange), Raisin (savings), Clark and Allianz (insurance), auxmoney (credit) and others.
- Valentin Stalf is Founder and CEO of N26.
- Prior to N26, Valentin worked for Rocket Internet as an Entrepreneur in Residence and was involved in building different companies before founding N26, the leading mobile bank in Europe.
- He holds an MS in Accounting and Finance and a Bachelor's degree from University of St.Gallen.

PeerIQ Overview

Company Profile

PEERIQ

Headquarters: New York, NY
Founded: 2014

Ram Ahluwalia
Co-Founder & CEO

Ram is the CEO and Founder of PeerIQ. Previously, Ram was the CIO of Winged Foot Capital, an investment advisor responsible for managing alternative investments in structured credit including ABS, CMBS, RMBS, and CLOs. Previously, Ram was a Senior Vice President at Bank of America-Merrill Lynch and a member of the Cards & Deposits executive management team. Prior to this role, Ram was a Vice President at the Merrill Lynch Global Bank Group. Ram received a B.A. in Economics-Philosophy from Columbia University and is a CFA charterholder.

Kevin Walsh
Chief Commercial Officer

Kevin Walsh brings more than 20 years of consumer credit risk experience. Prior to PeerIQ, he ran direct-to-consumer mortgage lending for Ocwen Financial. He began his career in analytical consulting at Inductis and Opera Solutions, where he led engagements in underwriting, pricing, marketing, and fraud management in consumer and small business credit. He also served as SVP, Credit and Marketing Analytics at Advanta Bank Corp. Kevin holds a Ph.D. in Physics from Yale, and has a B.S. in Applied Physics from Cornell.

PEERIQ OVERVIEW

- PeerIQ is a leading provider of risk analytics to the consumer credit sector. The company's solutions enables investors and lenders to transact with confidence with standardized data and industry benchmarks, forward looking credit models, and loan-level analytics.
- PeerIQ's platform provides institutional investors with tools to analyze, access, and manage risk in the peer-to-peer lending sector. It offers an analytics platform that ingests and standardizes loan data from more than 20 non-bank originators. The platform offers credit risk analytics and benchmarks that enables clients to assess loan performance, generate cash flows, develop investment views, price credit instruments, value and manage loan portfolios, and gauge risk.
- The company's solutions include data aggregation, portfolio analytics, scalable reporting, facility management, client portal and valuation services. The platform provides a bridge between lenders and the capital markets, alleviating major capital sourcing constraints that these lenders face.
- Major investors in PeerIQ include venture capital firms such as Victory Park Capital, WorldQuant Ventures, Fenway Summer Ventures, Hearst Ventures. Other investors include Macquarie Group, Uprising, Transunion and Broadhaven Capital Partners.

Source(s): PeerIQ Website, Capital IQ, Pitchbook

PeerIQ Overview

Interviewee Profile and Company History

INTERVIEWEE PROFILE

Ram Ahluwalia
Co-Founder & CEO

- Ram is the CEO and Co-Founder of PeerIQ. PeerIQ's platform provides solutions data analytics and risk solutions to enable safe movement of capital into the alternative lending sector through better informed decision making.
- Previously, Ram was the CIO of Winged Foot Capital, an investment advisor responsible for managing alternative investments in structured credit including ABS, CMBS, RMBS, and CLOs. Prior to this role, Ram was a Senior Vice President at Bank of America-Merrill Lynch and a member of the Cards & Deposits executive management team. Ram was also Vice President at the Merrill Lynch Global Bank Group.
- Ram received a B.A. in Economics-Philosophy from Columbia University and is a CFA charterholder.

COMPANY HISTORY

$12 million *August 02, 2017*	The company raised $12 million of Series A funding from lead investors TransUnion, Hearst's Financial Venture Fund and Macquarie Group. Existing investors Uprising and John Mack, former Morgan Stanley CEO, also participated in the round. PeerIQ will expand its core platform beyond online into traditional lending markets, and collaborate on new product initiatives with strategic partners.
$9 million *September 14, 2015*	The company raised $8.5 million of seed funding ($6 million in April, and $2.5 million of seed-extension in September). Participants in the round include new investor and customer Victory Park Capital, as well as Fenway Summer Ventures and existing investors Uprising and former Morgan Stanley CEO John Mack. The $6 million in seed funding was from several prominent capital markets and technology investors.
Key Investors	TransUnion; Fenway Summer Ventures; Broadhaven Capital Partners; Uprising; WorldQuant Ventures; Hearst Ventures; Macquarie; Victory Park Capital
Prominent Individual Backers	**John Mack**, former Morgan Stanley CEO; **Vikram Pandit**, former Citigroup CEO; **Arthur Levitt**, former SEC Chairman; **Dan Doctoroff**, former CEO of Bloomberg LP; and **Eric Schwartz**, former co-CEO of Goldman Sachs Asset Management.

Source(s): PeerIQ Website, Capital IQ, Pitchbook

PeerIQ Overview

Q&A with Ram Ahluwalia and Kevin Walsh, PeerIQ

Ram Ahluwalia
Co-Founder & CEO

Kevin Walsh
Chief Commercial Officer

Q: Please describe PeerIQ's business in your own words.

A: PeerIQ is an analytical software-as-a-service provider for loan originators, asset managers, warehouse lenders, and capital markets participants. We deliver best-in-class risk analytics for originating and funding consumer credit, including measurements of pre-pays, defaults, and cash-on-cash returns with loan level valuations.

Q: Why is now the right time for PeerIQ's solutions?

A: PeerIQ was founded in 2014, in the middle of considerable growth in non-bank lending. This rise greatly expanded the associated ecosystem in terms of credit facilities provided to originators, originated loan volumes, and take-outs via whole loan buying and secondary market transactions. PeerIQ grew with marketplace lending from its early days to the more mature state it is in today, where participants look to PeerIQ to level-up their risk management and valuation infrastructure to better compete and serve the market.

Q: What new technologies have enabled PeerIQ to launch its solution?

A: There are actually quite a few. Our Vertica column-oriented database can handle billions of data points, while Kafka messaging handles high volumes of valuations with microservices. Additionally, we use a Tensor Flow AI neural network in our cash flows and Spark ML for transforming massive data sets. With these and other capabilities, we have built a platform with functionality and speed that would not have been possible two years ago.

PeerIQ Overview

Q&A with Ram Ahluwalia and Kevin Walsh, PeerIQ (Continued)

Ram Ahluwalia
Co-Founder & CEO

Kevin Walsh
Chief Commercial Officer

Q: What is PeerIQ's revenue model?

A: We operate under a cloud-based software-as-a-service model with annual contracting. Most of our products are GUI-based, including our Analytics Suite, Credit Facility Management Suite, and Consumer Credit Insights Suite, which is derived from TransUnion data in each major asset class (personal loans, student loans, auto loans, credit cards, mortgages, home equity loans and lines). We have an offering in Valuation Services that is executed on platform and delivered as a report. We are planning on launching more TransUnion-derived offerings in Q2 and Q3.

Q: How big is the market opportunity out there for your solutions? Can you give an indication of how much this will increase as you expand your platform beyond online and into traditional lending markets?

A: We believe that the total addressable market (TAM) in the marketplace lending space for the offerings we have today is about $100 million. Note that this TAM differs from the market size in that participants have the option of performing related functions internally or not at all. We believe that there is an additional $500 million in TAM in adjacent non-bank markets via expanding existing offerings and launching new products in Q2 and Q3. Beyond that, serving banks should represent a similar $500 million TAM opportunity.

Q: What are the key hurdles/challenges that PeerIQ faces?

A: As is often the case for B2B sales, purchases are carefully considered and decision cycles tend to be slow. Objections can range from lack of analyst talent to engage with the platform in smaller organizations to a reliance on in-house tools and resources in larger ones. We lose to business-as-usual far more often than we do to competing vendors. However, the increasing penetration of our products and elevated competition in the market appears to be creating a "virtuous circle" of adaptation in the last quarter. Also typical for young companies, maintaining a focus on strategic plans while being flexible enough to address new opportunities that arise is a recurring challenge.

PeerIQ Overview

Q&A with Ram Ahluwalia and Kevin Walsh, PeerIQ (Continued)

Ram Ahluwalia
Co-Founder & CEO

Kevin Walsh
Chief Commercial Officer

Q: What are your key growth drivers?

A: There are two main drivers, adaptation of existing market participants to outsourced analytical platforms and services as well as launching new products to serve new and existing markets. By most measures, such as originated volume and number of participating organizations, growth in the marketplace lending space is flat to modest. However, personal loans represent less than 1% of consumer credit outstanding and ample opportunities exist in other asset classes to drive growth.

Q: How is PeerIQ differentiated against potential competitors? Who are your closest competitors now, if any?

A: Our DNA in consumer credit originations, the power of our platform, and the availability of TransUnion data differentiate us relative to the competition. PeerIQ is the only platform to offer loan level pre-pay, default, cash-on-cash-return metrics, and cash flow valuations, all of which can be benchmarked against TransUnion market-comparable data. We compete against Orchard and dv01 on occasion, although both have focus areas outside of ours, such as secondary market trading (Orchard) and offering an ABS deal library (dv01).

Q: What industry trends are providing tailwinds for PeerIQ?

A: Banks and non-banks are escalating both their competition and collaboration with each other in consumer lending, which increases the frequency and scale of opportunities for us on each side. As an example of cooperation, non-banks are selling their production to banks that are asset-rich and lack origination infrastructure. Here, PeerIQ can help the seller market and distribute their wares while allowing the buyer to evaluate the collateral and build their own price / yield estimates to transact with confidence. In competitive scenarios, originators can leverage TransUnion benchmarks to compare against risk, performance, pricing, and returns within each origination cell to continuously improve portfolio profitability.

PeerIQ Overview

Q&A with Ram Ahluwalia and Kevin Walsh, PeerIQ (Continued)

Ram Ahluwalia
Co-Founder & CEO

Q: Congratulations on your Series A in August last year. Transunion, amongst others, invested and deepened their relationship with you. Can you elaborate on a few strategic partnerships that PeerIQ has and how they are crucial to your expansion going forward?

A: Thank you, we appreciate that! TransUnion is obviously a key relationship, both as an important differentiator today and as a foundation for product offerings now and in the future. We look forward to continuing our role as TransUnion's gateway into capital markets. Hearst, the majority owner of Fitch Ratings and BlackBook automotive data, was a Series A investor as well. They share our interest in leveraging this unique data to make better decisions. The Macquarie Group rounded out our Series A. They were crucial to our building out of the Credit Facility Management Suite. We relied on their domain expertise as warehouse lenders to inform the look, feel, and user experience we delivered in our solution. Macquarie and PeerIQ were nominated for a LendIt award for Most Promising Partnership, wish us luck!

Kevin Walsh
Chief Commercial Officer

Q: PeerIQ bridges the gap between lenders and capital markets, do you hope to further expand your customer base (currently asset managers, investment banks, lenders, and ABS investors)? Do you plan to incorporate additional data sets into your platform?

A: Yes, we believe that there are opportunities to broaden our customer base, both by extending existing product offerings and launching new ones. Part of this will be accomplished by allowing customers to interact with us in any way they choose, such as reports, data feeds, and APIs, in addition to a platform GUI. When we think about data, we center on our foundation within consumer credit and ask, will this new data advance that mission? There are many cases where we believe the answer is yes. Examples would be adding auto and home collateral value to TransUnion loan data, because loan-to-value is an important behavioral predictor. Other expansions, such as FactorTrust data recently acquired by TransUnion, are a possibility in the future as well.

Thank you Ram and Kevin.

Pefin Overview

Company Profile

Pefin

Headquarters: New York, NY
Founded: 2011

Catherine Flax
CEO

Catherine Flax is the CEO at Pefin. As CEO, she leads the business and growth strategy. Prior to Pefin, Catherine was the Managing Director and Head of Commodity Derivatives, Americas at BNP Paribas. Before BNP, she was the Chief Marketing Officer for all of J.P. Morgan's businesses, globally. Catherine was nominated as the Most Influential Woman in European Investment Banking in 2011 and 2012, winning that award in 2012. She holds a BS in Economics from Texas A&M University and an MA in Economics from Brown University.

Ramya Joseph
Founder

Ramya is the Founder of Pefin. Before founding Pefin, she managed trading for multi-billion dollar portfolios as a VP at Goldman Sachs and an Associate at Morgan Stanley. Ramya concurrently completed her MS in Machine Learning (AI) and a MS in Financial Engineering from Columbia University. She also holds a BS in Computer Science from University of Maryland.

PEFIN OVERVIEW

- Pefin is the world’s first AI financial advisor. Pefin, through its proprietary technology, provides comprehensive, tailored, fiduciary planning and advice at a fractional cost of a traditional financial advisor. Pefin’s platform helps users navigate long term financial planning - from buying a house to starting a new job to saving for a child and retirement. It also provides personalized, actionable investment strategies that are tied to specific financial plans.
- Pefin’s uses a patent-pending Artificial Intelligence platform that analyzes between 2-5 million data points per user to provide personalized real time actionable advice. The platform uses machine learning to analyze and understand a user’s complete financial situation, including their current spending patterns, their debt, investments and their goals.
- The company’s platform also has an interactive chat experience that helps users plan for life events. It provides ongoing advice to users to help them achieve their plans, create debt repayment schedules and investment advice for capital growth.
- Pefin also offers investment advice and portfolio management services through its SEC regulated subsidiary, Pefin Advisors.

Source(s): Pefin Website

Pefin Overview

Interviewee Profile and Company History

INTERVIEWEE PROFILE

Catherine Flax
CEO

- Catherine Flax is the CEO at Pefin. As CEO, she leads the business and growth strategy.
- With a 20-year track record in financial services, Catherine has successfully developed strategies to build robust, client centered franchises.
- Prior to joining Pefin as CEO, Catherine was an advisor to the company, providing strategic advice on marketing, regulation, business development, and international growth.
- A long-time champion of diversity, Catherine has served on the Investment Banking Inclusive Leadership Council as well as on the J. P. Morgan Chase Diversity Council. Her passion for volunteerism led to her Board seat for the non-profit Part of the Solution (POTS), an organization in the Bronx that serves the basic needs of the community.

COMPANY HISTORY

Key Management Background	Morgan Stanley, Goldman Sachs, J.P.Morgan, BNP PARIBAS, WEISS, IBM
Award(s)	Winner of the People’s Choice Award at SXSW in March 2018. SXSW

COMPETITIVE ADVANTAGES

	Pefin	Betterment	wealthfront	intuit mint	Human Advice
Built for financial advice	✓				✓
Analyze spending patterns	✓				
Affordable	✓	✓	✓	✓	
Spending & Budgeting	✓			✓	
Investments	✓	✓	✓		✓
Planning	✓				✓
Advice	✓				✓

Source(s): Pefin Website, LinkedIn

Pefin Overview

Q&A with Catherine Flax, Pefin

Catherine Flax
CEO

Q: Please describe Pefin's business in your own words

A: Pefin is a fiduciary. We provide comprehensive financial advice and planning in real-time at a fraction of the cost of traditional advisors. Pefin's mission is to democratize finances for all.

Q: Why is now the right time for Pefin's solutions?

A: Now is the right time for Pefin because technology allows for the provision of completely tailored, holistic, fiduciary advice at a fraction of the cost of a traditional advisor. People are requiring more than what traditional financial institutions can provide, both in terms of services and in terms of interactive capabilities, and Pefin can provide this.

Q: What new technologies have enabled Pefin to launch its service?

A: Our patent-pending AI platform analyzes between 2-5 mm data points, 24/7, providing up-to-the-minute financial advice and planning that can project outcomes for up to 80 years. We have harnessed the power of AI to help people get the information they need, when they need it, to make sound financial decisions and vastly improve the trajectory of their financial outcomes.

Q: What is Pefin's revenue model?

A: Pefin is a subscription service that costs $10/month. For users for whom its appropriate, and if they choose to invest through Pefin's regulated subsidiary, Pefin Advisors, we charge 0.25% for balances over $5,000. The first $5,000 of assets under management are managed for free. A typical human advisor charges $2,000-$5,000 for a one time financial plan, and usually well over 1.00% for assets under management.

Pefin Overview

Q&A with Catherine Flax, Pefin (Continued)

Catherine Flax
CEO

Q: How much of the total market are you expecting to disrupt from traditional advisors? Can you put a value on the total market opportunity out there?

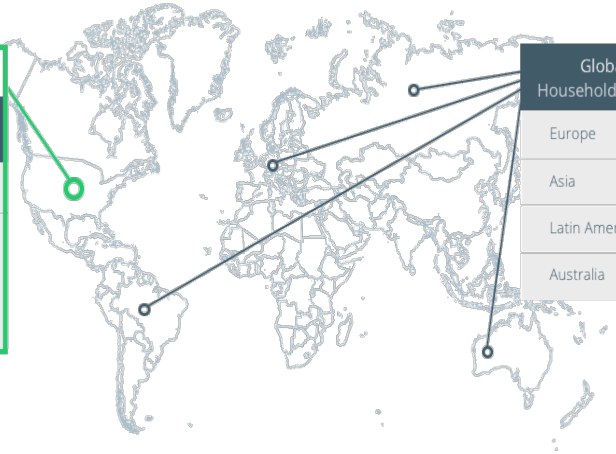
A: We recognize that for certain high net worth individuals, they may choose to keep their human advisor, but we have found that some of our users prefer to have both Pefin, as well as a human advisor, to be able to have a continuous update on their financial situation and a point of view to discuss with their advisor. A far bigger market than disrupting the traditional advisors is to tap into the vast numbers of people that have not historically had access to advice

The Addressable Market for Virtual Advice is Global

Our Focus Today

US Addressable Market

	>100K AUM*	<100K AUM
Households	10MM	20MM
AUM	$ 6.4T	$ 2.5T
Revenues	$ 34B	$ 15B



Global Market Households > 100K AUM*	
Europe	12MM
Asia	17MM
Latin America	1MM
Australia	2MM

McKinsey estimates the market for virtual advice "> $100K AUM" is **42 MM households** and **$66B in revenues***

We estimate the "< $100K AUM" market is 2-8X this size depending on country

Growth rates are 10-15% annually driven by web / smartphone penetration

*Source: McKinsey & Co. The Virtual Financial Advisor: Delivering Personalized Advice in the Digital Age, June 2015. Study based on consumers with assets between $100K and $1 MM.

Pefin Overview

Q&A with Catherine Flax, Pefin (Continued)

Catherine Flax
CEO

Q: What are the key hurdles/challenges that Pefin faces?

A: There are a number of challenges:

1) Helping people who have never experienced true fiduciary financial planning and advice to understand how much this can help to assist them in achieving what matters most to them. Once they see it, it is a transformational experience.
2) Helping people to understand why an AI financial advisor is safe, secure and also guards their privacy. In today's world with things like the Equifax hack, or the recent issues surrounding Facebook and privacy, people are rightfully questioning how comfortable they should be dealing with sensitive information online. Security has been at the forefront of our business model since day one. We use military-grade encryption and our security standards are among the safest financial applications in existence today. And with all of the noise around AI, we are remaining diligent in ongoing education and transparency for our users and potential users so they understand it, versus fearing it.

Q: What industry trends are providing tailwinds for Pefin?

A: People are expecting to have more and more customized information at their fingertips when they want it – and to be able to receive that information digitally. Old models that require making an appointment to speak with an advisor, or require only getting information at discrete points in time, don't work anymore. People expect to have control and Pefin gives them the control they are looking for in their financial lives.

Q: How is Pefin different from potential competitors? Who are your closest competitors? Would you consider robo-advisors to be competing for the same slice of the pie?

A: Currently there are budgeting apps and there are robo-advisor apps. Budgeting and Investing are features of Pefin, but no other platform has comprehensive, tailored, fiduciary financial advice. Today the only service that at all compares are human advisors, but the price point is wildly different and human advisors can't do things like analyze the spending behaviors of their clients.

Pefin Overview

Q&A with Catherine Flax, Pefin (Continued)

Catherine Flax
CEO

Q: Many of the “non-traditional” advisors have not gone through an economic downturn. What do you think will happen to the space if/when this happens? How is Pefin better equipped for this scenario compared to its peers?

A: Unfortunately, in many instances the term “Advisor” is a misnomer. Robo “advisors” aren’t really providing advice in the fiduciary sense, but rather are selling fairly generic ETF portfolios, often to people who are not very savvy about investing. It is reasonable to assume that in a market downturn those investors will pull their money out – because they are not investing in the context of a long-term plan. Pefin is providing users with advice around how to plan for what matters most to them – and the advice Pefin gives is focused on all of the levers that a person has in their life, such as the impact of downsizing a home, or of delaying retirement by a year or two. Pefin will tell users when it is NOT appropriate to invest, which is not something a robo-advisor will do.

Q: Pefin monitors over 2 million data points in real-time 24/7. Further down the road, what additional data points are you considering to analyze on your platform (thinking along the lines of Redfin integration to analyze property prices for your platform’s home value calculation, for example)?

A: There are plenty of opportunities to add additional value to Pefin’s clients from adding insurance data and information, more detailed mortgage and home buying information, and much more.

Q: How do you see the financial services industry changing over the next few years with the use of artificial intelligence (AI)? How much of current processes can be disrupted with AI technology?

A: As in most fields today, including medicine, law, and others, AI will disrupt a good part of the market. Financial services will be the same. The vast majority of what is done by humans can be done with AI, but in very unusual or highly complex situations it will remain human nature to want to speak with a human being. We believe that people with complex financial lives that include things like trust structures or family offices should have a human (and legal and tax) advisor.

Thank you Catherine.

N26 Overview

Company Profile

N26

Headquarters: Berlin, Germany
Founded: 2013

Valentin Stalf
Founder & CEO

Maximilian Tayenthal
Founder & CFO

Valentin Stalf is the Founder and CEO of N26. Born in Vienna, Valentin studied Accounting & Finance (M.A. HSG) at the University of St. Gallen, Sophia University in Tokyo, and the Vienna University of Economics and Business Administration. During his studies he worked in a number of fields including Strategy Consulting (Roland Berger) and Investment Banking/Mergers & Acquisition (Deutsche Bank). After graduating, Valentin worked for Rocket Internet as an Entrepreneur in Residence and was involved in building different companies before founding N26.

Maximilian Tayenthal is a Founder and serves as the CFO of N26. Born in Vienna, Maximilian studied Business Administration, International Management and Law in Vienna, Rotterdam and Paris. He is also a Chartered Financial Analyst. He worked as a strategy consultant with Booz & Company, assistant to the CFO in Austria's largest insurance company and gained experiences in Corporate/M&A in a law firm before he founded N26.

N26 OVERVIEW

- N26 is a mobile bank that has redesigned banking to make it simple, fast and contemporary. The company was founded in 2013 and launched the initial product in early 2015. •
- With its fully digital business model, N26 operates on a much lower cost base with lean organizational structures, without IT legacies and without an expensive branch network. N26 passes on these cost benefits to its customers. •
- N26 partners with the most innovative fintech and traditional financial companies to offer its customers best-in-class products such as TransferWise (foreign exchange), Raisin (savings), Clark and Allianz (insurance), auxmoney (credit) and others.
- Today, N26 is one of the fastest growing banks in Europe with over 380 employees and more than 850,000 customers across 17 European markets. N26 currently operates in: Austria, Belgium, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Portugal, Slovakia, Slovenia, and Spain, and intends to enter the UK and US markets in 2018.
- N26 has raised more than $215 million from renowned investors including Allianz X, Tencent Holdings Limited, Li Ka-Shing’s Horizons Ventures, Peter Thiel’s Valar Ventures, members of the Zalando management board and Earlybird Venture Capital.

Source(s): N26 Website, Capital IQ, Pitchbook

N26 Overview

Series C Transaction Profile and Detailed Case Study

N26 raises $160 million in Series C funding

Acquisition Details

Allianz X
We build companies

Tencent 腾讯

N26 has raised $160 million in a Series C Funding round co-led by Allianz X, the digital investment unit of Allianz Group, and Tencent Holdings Ltd., a leading provider of internet value-added services in China.

The funding represents the largest equity financing round (non IPO) in the fintech industry in Germany to date and one of the largest in Europe. Funding will be used to accelerate N26's global growth strategy and product vision.

Total funds raised as of today are $215 million.

Transaction Rationale

The funding will be used toward N26's overall growth strategy and international expansion, particularly into the US and UK later this year. It also will support product development for existing markets. A key to N26's success and growth is its focus on making retail banking easy and transparent for users. N26 wants to take this a step further by making the banking experience even smarter and more personalized for customers through the use of artificial intelligence.

Since its launch in January 2015, N26 has acquired more than 850,000 customers and is one of the fastest growing European banks. The goal is to reach more than 5 million customers by the end of 2020. N26 has processed over 9 billion Euros in transaction volume to date, with a projected volume of more than 13 billion Euros in 2018 alone.

Sources: N26 Press Release and Media Reports

Transaction Commentary

"N26 is a clear frontrunner in mobile banking. N26's banking platform is modernizing traditional business models of financial services, ultimately providing a better customer experience."

- Solmaz Altin, Chief Digital Officer of the Allianz Group

Allianz X
We build companies

"As a pioneer of the mobile banking industry in Europe, N26 is committed to offering their customers a more convenient and cost-efficient banking experience. We see the increasing demand of digital banking products and services in the European markets and we are delighted to be a strategic investor of N26 to build a long-term partnership and participate in their growth."

Tencent 腾讯 **- Lin Haifeng, Managing Partner, Tencent Investment of Tencent Holdings**

"We are very pleased to have Allianz X and Tencent leading our Series C. Not only are they powerhouses in their respective fields of financial and internet services, but they also understand the power of intelligent technology and design to disrupt industries."

- Valentin Stalf, CEO and Founder, N26

N26

N26 Overview

Select N26 Commentary

Q: How do you see financial services evolving?

A: In the future, your banking practices will be driven by your individual profile and the actions you have taken in the past. If you have just recently got a new job, we know you have different financing needs from someone who has had a job for 20 years. Already, we are categorizing all the transactions of our customers, and creating profiles to understand their life situations. We currently use this for fraud management and risk-scoring. If we see unusual patterns in our transactions that suggest fraud, we can block the crime before it happens. In the future, we will use similar methods to serve each customer's individual needs.

Q: What kinds of people are ready to switch to banking this way? Is it largely millennials?

A: I prefer to call our target audience "digital customers." They exist in every age group. We see two trends that justify this behavioral change. First, people want something easy to use that will save them time. Second, they no longer tolerate restrictions. They can shop on Amazon with one click; they get instant access to music with Spotify. But the banking experience is still mostly like it was 20 years ago. You make a request, and maybe two weeks later something arrives. Our customers don't understand why they should go to a bank branch to open an account, or why they need to fill out five forms to make an investment. They want ease of use and they want banks to customize products to their needs.

- Valentin Stalf

CEO and Founder, N26

Q: Can you tell us a bit about the process behind the banking license?

A: Sure. I took over this project as the responsible project lead. We were responsible for handing in the application for the banking license, answering all the questions the different regulators had. Eventually, we received our banking license from the European Central Bank and became a principal member with Mastercard.

So, basically the project team was responsible for setting up the N26 Bank that we have running today from an infrastructure, organizational and procedural perspective. Last but not least, when launching our own bank, we transferred all existing customers from our previous banking partner to our newly established bank. Since completion of this about a year ago, we have been focusing a lot on growing internationally. One year ago, I started to establish a team that has taken on the responsibility for internationalizing N26. With the banking license we received from the ECB, we passported into all Euro currency markets. The team is working together to develop these markets and expand to further markets.

- Alex Weber

Head of International Markets

Q: Along with the vibration notification, do you have any other example of design in the N26 app which impacts the user?

A: Another example is probably our spending statistics, which are automatically generated based on your expenses. People are using different apps to keep track of their expenses. So, in order to have an overview and maintain control over what they spend on certain things, we automatically generate—every time a user makes a transaction—statistics that illustrate their spending behavior. It's not really mind blowing that we are able to do that, since there are also a few banks out there that allow users to get these overviews. Sometimes we often feel that banks are not interested in serving this kind of information, despite having easy access to it. We are in this position because we have this information; we want to be as transparent as possible while helping people to understand what their spending behavior is. That's why we think understanding and getting a bit more education about their financial situation is so important to users.

- Christian Hertlein

Head of Design

Sources: N26 Press Release, N26 Magazine, Strategy+Business, and Venture Beat

Transaction and Partnership Themes

Transaction and Partnership Themes – Open Banking

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

- **After the roll out of PSD2 and CMA in January 2018**, the open banking segment in Europe and the UK has seen an increase in **partnership activity in Q1:2018**. **Traditional banks and challenger banks are partnering with Third Party Providers** (TPPs), which is enabling the bank's customers to share their data with other companies.

- **Deal activity in the open banking space is still in its infancy**, with only a few deals in Q1:2018. The pace at which the banks are adopting open banking practices in their services is likely to give **boost to M&A activities in the coming quarters in 2018**. Also the **ripple effects of PSD2 and CMA are likely to be seen in US.** which will further result in an increase in M&A deal volumes.

Relevant Recent Transaction/Partnership (1/2)

Date	Bank	Partner / Target	Type	Partnership Details
3/13/18	Starling Bank	TRUELAYER	Partnership	API specialist TrueLayer partnered with Starling Bank to enable businesses to access customer account data. The partnership will allow the bank's customers to share their data and use products created by the developers - including income verification tools, lending products and collated financial dashboards.
3/12/18	N26	Allianz Tencent 腾讯	Funding (Amount - $160 million)	NUMBER26 GmbH, through its subsidiary, offers mobile banking solutions to customers in the European Union. N26 raised a $160 million Series C round led by Tencent and Allianz on March 12, 2018. N26 GmbH intends to use the proceeds toward its overall growth strategy and international expansion, particularly into the United States and United Kingdom. later in 2018 and to support product development for existing markets.
3/9/18	BNP PARIBAS FORTIS	tink	Partnership	Tink will be providing its Aggregation, Personal Finance Management (PFM) and Payment Initiation technology to support the release of Fortis' new multi-banking app Hello Bank! later this summer, with an update to the bank's Easy Banking App to follow by autumn.
3/8/18	Starling Bank	Emma	Partnership	Emma is currently building the banking app for millennials (iOS and Android), a mobile-only solution that helps consumers avoid overdrafts, find and cancel subscriptions, track debt and save money. The product aims to provide a consumer-focused banking experience with the goal of improving the financial situation of its users.

Sources: Capital IQ; Pitchbook; Press Releases

Transaction and Partnership Themes – Open Banking

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

Relevant Recent Transaction/Partnership (2/2)

Date	Bank	Partner / Target/ Key Investor	Type	Partnership Details
3/8/18	solarisBank	BBVA	Funding (Amount raised = $70 million)	solarisBank AG developed a banking platform that enables startups, fintechs, and established digital companies to create custom solutions for their unique financial needs. solarisBank AG received $70 million in its Series B round of funding on March 8, 2018. The company intends to use the proceeds to expand geographically.
2/25/18	ANZ	DATA REPUBLIC	Stake Purchase (Deal amount = $2 million)	Data Republic raised $2 million of venture funding from ANZ Banking on February 25, 2018. ANZ, has taken an equity stake in local startup Data Republic to boost its innovation ambitions through data-sharing environments. The acquisition will provide ANZ access to Data Republic's cloud-based platform, which delivers a "data sharing control center" for organizations to store, categorize and share data while maintaining governance and auditing frameworks. The terms of the transaction were not disclosed.
2/5/18	TANDEM COMPUTERS	personetics	Partnership	UK Challenger bank Tandem announced a partnership with cognitive banking company Personetics to provide users with personalized insights on their spending across all of their bank accounts in one place, as well as warning users about unexpected fees and unusual activity in their accounts.
1/25/18	LLOYDS BANK	YOLT	Partnership	Yolt, a UK money management app owned by ING, became the first third-party provider to complete a successful connection with a CMA9 bank - Lloyds - under the new Open Banking system.
1/24/18	BANKIFI	Nordea	Partnership	BankiFi aims to equip financial services providers with a consent-centric platform that enables them to open up their business to external (fintech) partners in a way that is safe, easy-to-use, monitor and monetize. The platform's launching customer is Nordea's Open Banking Developer Portal.
1/22/18	monzo	Emma	Partnership	Monzo launched its Interim API to celebrate the release of Open Banking in the first half of January, allowing third-party apps to begin working on developing technological integrations with the challenger. Emma is currently building its self-acclaimed "banking app for millennials," a mobile-only solution that helps consumers avoid overdrafts, find and cancel subscriptions, track debt and save money.

Sources: Capital IQ; Pitchbook; Press Releases

Transaction Themes – Wealth Management Tech 3.0

Open Banking; **Wealth Management Tech 3.0**; and Data and Analytics

- **Digitizing manual work flows and reporting, automating investment advisory, and centralizing client lifecycle management are the key drivers of M&A** activities in Q1:2018. Fintechs are raising funds to develop innovative products and expand in new markets. Asset and wealth managers are investing in RPA solutions to automate their business operations and provide an enhanced customer experience.
- Deal activity for hybrid solution providers is still in its infancy, with only a few deals in Q1:2018. Adoption of the hybrid advice solution is expected to give boost to the M&A activities in the coming quarters of 2018.

Relevant Recent Transactions (1/2)

Date	Target	Acquirer / Key Investor	Type	Value ($mm)	Transaction Details
3/21/2018	eToro	中民金融 CM Financial	Funding	$100	eToro received $100 million in Series E funding led by China Minsheng Financial Holding Corporation Limited on March 21, 2018. The company intends to use the proceeds to further develop its technology infrastructure, to enter new markets, and to continue its research and development of blockchain technology.
3/7/2018	Voicera	GGV Capital	Funding	NA	Voicera designs and develops artificial intelligence (AI) based enterprise voice assistant software that facilitates meetings, takes notes of decisions, and takes follow-up on action items. Voicera will use the proceeds to continue rollout of its innovative voice collaboration artificial intelligence system that transforms meetings into productive, accountable, efficient parts of an enterprise's day.
3/2/2018	UiPath Robotic Process Automation	Accel	Funding	$153	UiPath Inc. designs and develops robotic process automation software for companies across different sectors like finance and banking, insurance, healthcare, etc. The company will use part of the proceeds to accelerate its product roadmap, particularly innovations that integrate machine learning and artificial intelligence algorithms. Post-money valuation of UiPath was $1,100 million.
2/21/2018	trizic	Sorenson Capital	Funding	$10	Trizic, Inc. develops a cloud-based platform that allows clients to interact with financial firms. The company intends to use the funds to expand its offering across the wealth spectrum, deploying digital wealth technology to RIAs, asset managers, broker-dealers, banks, and credit unions.
2/21/2018	Wealthsimple	Power Financial Corporation	Funding	$51	Wealthsimple is an online investment manager that combines user-friendly digital tools and personal financial advice to make smart, automated investing available to clients. Wealthsimple Financial Inc. will use the proceeds to evolve its investing product, explore new financial product offerings, accelerate growth across its three markets, and further develop its B2B platform.

Sources: Capital IQ; Pitchbook; Press Releases

Transaction Themes – Wealth Management Tech 3.0

Open Banking; **Wealth Management Tech 3.0**; and Data and Analytics

Relevant Recent Transactions (2/2)

Date	Target	Acquirer / Key Investor	Type	Value ($mm)	Transaction Details
2/9/2018	grove	First Round	Funding	$2	Grove is a provider of an online platform intended to offer financial advice to clients. The company intends to use the proceeds to launch a hybrid software-and-human powered financial planning service.
2/6/2018	FINOMIAL	Silver 8	Funding	$7	Finomial automates the hedge fund subscription process and provides investor analytics on compliance, marketing and investor relations. The company intends to use the funds to expand its presence globally in existing and new markets, including asset managers, private banks and wealth managers, commercial and investment banks, as well as fintechs, including alternative banks and cryptoasset platforms.
1/29/2018	STASH	union square ventures	Funding	$38	Stash is a fintech company offering a mobile app with micro-investing services. The company intends to use the funds to accelerate product expansion and serve millions of financially underserved Americans, to develop its brand, and to double its team of 120 over the course of the year.
1/17/2018	Finametrix	allfunds BANK Leaders in Open Architecture	Acquisition	NA	This acquisition is expected to benefit Allfunds´ extensive network of institutional clients, including managers and distributors, becoming the ideal partner for the technological revolution facing the sector. Additionally, Finametrix, as part of Allfunds, is expected to benefit from the international scale and structure of a global and consolidated entity.
1/4/2018	wealthfront	TIGER Tiger Global Management, LLC	Funding	$75	Wealthfront is a software-based wealth management company that is targeting the millennial segment. Wealthfront intends to use the proceeds to expand its efforts to optimize and automate financial services using Path to develop new products, to pursue an even more aggressive push into software-based financial planning and financial services, and to accelerate its investment in its brokerage infrastructure to enable it to build and launch new services more quickly.
1/2/2018	JUNXURE	AdvisorEngine	Acquisition	NA	Junxure Cloud, a cloud CRM solution enables financial advisors to capture client demographic and financial information, manage workflow, track the firm's efficiency, capture client documents and financial data, and access client data. The acquisition is expected to enhance AdvisorEngine's open-architecture ecosystem and continues the company's approach of connecting disparate technologies, data, and workflows to create a unified user experience.

Sources: Capital IQ; Pitchbook; Press Releases

Transaction Themes – Data and Analytics

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

- With the increasing use of data and analytics in the financial services space, especially in the customer-related aspects of business, M&A deals have been on the rise in recent quarters. **Companies across the financial services spectrum**, including wealth management, online banking, and information services are acquiring data and analytics companies who have solutions they can integrate into their services.
- There were several **big-ticket deals and deals with strong valuation** multiples in Q1:2018. S&P Global acquiring Kensho and JPMorgan acquiring Mosaic were some of the highlights of the quarter.

Relevant Recent Transactions (1/2)

Date	Target	Acquirer / Key Investor	Type	Value ($mm)	Transaction Details
3/21/2018	ansarada	Ellerston Capital	Funding	$18	Ansarada pty limited raised $18 million in its Series A round of funding led by the new investor Ellerston Capital Limited on March 21, 2018. Ansarada pty limited designs and provides a data room for mergers and acquisitions for analysts, advisors, and sellers. The company intends to use the proceeds to accelerate expansion in the United States and EMEA.
3/19/2018	Digital Reasoning	Nasdaq	Funding	$30	Digital Reasoning Systems raised $30 million in a growth funding on March 19, 2018 from Nasdaq (which is a part of a consortium of investors). The company intends to use the proceeds to expand its solutions into capital markets and wealth management. The company also intends to use the funds to accelerate innovations across speech analytics and natural language understanding.
3/14/2018	mosaic SMART DATA	JPMorgan Chase & Co.	Acquisition	$550	Mosaic Smart Data Limited owns and operates an online platform that provides data analytics solutions that consolidate diverse data sets and presents them in a single and intuitive visualization format. J.P. Morgan aims to deploy Mosaic Smart Data's real-time data analytics platform MSX® to optimize the productivity and profitability of its global fixed income sales and trading division

Sources: Capital IQ; Pitchbook; Press Releases

Transaction Themes – Data and Analytics

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

Relevant Recent Transactions (2/2)

Date	Target	Acquirer / Key Investor	Type	Value ($mm)	Transaction Details
3/6/2018	KENSHO	S&P Global	Acquisition	$550	S&P Global Inc. signed an agreement to acquire the remaining 97.46% stake in Kensho Technologies Inc. for $550 million on March 6, 2018. The company provides analytics, AI, machine learning and data visualization systems to Wall Street banks. S&P aims to boosts its AI, natural processing language and data analytics capabilities, helping it to improve the client's user experience.
1/29/2018	ThreatMetrix	LexisNexis Risk Solutions	Acquisition	$830	The acquisition is in line with the organic growth strategy of LexisNexis Risk Solutions. ThreatMetrix will become part of Risk & Business Analytics which, under the LexisNexis Risk Solutions brand, addresses fraud and authentication challenges by applying advanced analytics to physical identity attributes, including identity credentials, addresses and asset ownership.
1/9/2018	LAYER 6	TD Bank America's Most Convenient Bank®	Acquisition	NA	Layer 6 Inc. offers a platform to deploy machine learning solutions through an artificial intelligence prediction engine for enterprise data. The acquisition will enable TD Bank to increase its AI capabilities to gain better customer insights and deliver more personalized services.

Sources: Capital IQ; Pitchbook; Press Releases

Public Comparables

Evolve
Capital Partners

Public Trading Comparables

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

(All figures in US Dollars. Figures in millions, except per share data, as of March 29, 2018)

Open Banking

COMPANY INFORMATION	Market Data				LTM Operating Performance					Valuation Multiples					
	Stock Price	% of 52-Wk High	Equity Value	Enterprise Value	LTM Revenue	Revenue Growth	EBITDA Growth	Gross Margin	EBITDA Margin	EV / Revenue LTM	EV / Revenue FY2018	EV / Revenue FY2019	EV / EBITDA LTM	EV / EBITDA FY2018	EV / EBITDA FY2019
Q2 Holdings, Inc.	$45.55	93.4%	$1,914	$1,815	$194	29.1%	NM	48.7%	(7.7%)	9.4x	7.7x	6.3x	NM	NM	NM
SS&C Technologies Holdings, Inc.	$53.64	99.4%	$11,084	$13,065	$1,675	13.1%	24.2%	47.1%	37.5%	7.8x	7.4x	7.0x	20.8x	17.3x	16.0x
Jack Henry & Associates, Inc.	$120.95	95.0%	$9,345	$9,387	$1,472	5.6%	6.5%	43.0%	31.0%	6.4x	6.2x	5.8x	20.6x	17.9x	16.9x
Fidelity National Information Services, Inc.	$96.30	92.9%	$31,893	$40,100	$9,123	(1.3%)	11.8%	32.2%	27.5%	4.4x	4.7x	4.5x	16.0x	12.8x	12.0x
PayPal Holdings, Inc.	$75.87	87.9%	$91,056	$80,430	$13,094	20.8%	15.3%	46.0%	18.5%	6.1x	5.3x	4.6x	33.1x	19.7x	16.7x
Fiserv, Inc.	$71.31	95.8%	$29,466	$34,041	$5,696	3.5%	6.7%	46.9%	31.4%	6.0x	5.8x	5.5x	18.7x	16.1x	15.2x
MEAN		**94.1%**	**$29,126**	**$29,806**	**$5,209**	**11.8%**	**12.9%**	**44.0%**	**23.0%**	**6.7x**	**6.2x**	**5.6x**	**21.8x**	**16.8x**	**15.4x**
MEDIAN		**94.2%**	**$20,275**	**$23,553**	**$3,686**	**9.4%**	**11.8%**	**46.4%**	**29.2%**	**6.3x**	**6.0x**	**5.7x**	**20.6x**	**17.3x**	**16.0x**

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EBITDA = Earnings Before Interest, Taxes, Depreciation and Amortization

Sources: Capital IQ

Public Trading Comparables

Open Banking; **Wealth Management Tech 3.0**; and Data and Analytics

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Trading Software / Solutions

COMPANY INFORMATION	Market Data				LTM Operating Performance					Valuation Multiples					
										EV / Revenue			EV / EBITDA		
	Stock Price	% of 52-Wk High	Equity Value	Enterprise Value	LTM Revenue	Revenue Growth	EBITDA Growth	Gross Margin	EBITDA Margin	LTM	FY2018	FY2019	LTM	FY2018	FY2019
SimCorp A/S	$69.25	93.6%	$2,729	$2,727	$412	16.0%	29.9%	61.4%	26.8%	6.5x	5.9x	5.5x	24.1x	21.3x	19.3x
Brady Corporation	$37.15	92.3%	$1,922	$1,878	$1,143	(0.7%)	5.3%	50.2%	14.4%	1.6x	1.6x	1.6x	11.4x	10.8x	10.1x
IRESS Limited	$7.28	70.8%	$1,237	$1,365	$336	10.3%	(4.8%)	32.5%	22.8%	4.1x	3.8x	3.6x	18.1x	14.0x	12.7x
Fidessa group plc	$51.42	93.4%	$1,979	$1,855	$478	6.6%	8.8%	58.3%	18.7%	3.7x	3.8x	3.7x	19.9x	16.8x	15.6x
First Derivatives plc	$51.21	82.2%	$1,315	$1,332	$215	29.6%	26.3%	27.4%	12.3%	5.7x	5.3x	4.7x	46.4x	29.5x	26.1x
Linedata Services S.A.	$38.74	54.3%	$278	$278	$215	7.3%	(20.5%)	16.9%	19.2%	1.7x	1.7x	1.7x	8.6x	7.1x	7.1x
StatPro Group plc	$2.39	90.4%	$157	$184	$67	31.4%	9.3%	22.4%	21.8%	2.7x	2.3x	2.2x	12.3x	14.8x	13.0x
	MEAN	82.4%	$1,374	$1,374	$410	14.4%	7.8%	38.4%	19.4%	3.7x	3.5x	3.3x	20.1x	16.3x	14.8x
	MEDIAN	90.4%	$1,315	$1,365	$336	10.3%	8.8%	32.5%	19.2%	3.7x	3.8x	3.6x	18.1x	14.8x	13.0x

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Sources: Capital IQ

Public Trading Comparables

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Wealth Management Software / Solutions

COMPANY INFORMATION	Market Data				LTM Operating Performance					Valuation Multiples					
										EV / Revenue			EV / EBITDA		
	Stock Price	% of 52-Wk High	Equity Value	Enterprise Value	LTM Revenue	Revenue Growth	EBITDA Growth	Gross Margin	EBITDA Margin	LTM	FY2018	FY2019	LTM	FY2018	FY2019
MSCI Inc.	$149.47	93.4%	$13,434	$14,622	$1,274	10.7%	10.5%	78.5%	51.7%	11.5x	10.2x	9.3x	22.2x	18.7x	16.8x
SS&C Technologies Holdings, Inc.	$53.64	99.4%	$11,084	$13,065	$1,675	13.1%	24.2%	47.1%	37.5%	7.8x	7.4x	7.0x	20.8x	17.3x	16.0x
Broadridge Financial Solutions, Inc.	$109.69	99.7%	$12,796	$13,652	$4,292	43.0%	13.3%	25.9%	18.5%	3.2x	3.2x	3.1x	17.3x	15.8x	15.3x
Computershare Limited	$13.27	94.3%	$7,206	$8,338	$2,230	7.2%	7.2%	20.4%	24.6%	3.8x	3.6x	3.5x	15.4x	13.4x	12.3x
LPL Financial Holdings Inc.	$61.07	91.6%	$5,509	$7,174	$4,281	5.7%	8.5%	25.6%	14.4%	1.7x	1.5x	1.3x	11.6x	9.4x	8.2x
Financial Engines, Inc.	$35.00	77.8%	$2,207	$1,983	$481	13.3%	27.9%	55.7%	23.2%	4.1x	3.8x	3.5x	17.8x	11.6x	10.4x
Envestnet, Inc.	$57.30	95.1%	$2,563	$2,743	$684	18.3%	36.5%	29.3%	11.3%	4.0x	3.3x	3.0x	36.1x	17.9x	14.8x
Sanne Group plc	$9.92	84.5%	$1,395	$1,414	$153	77.2%	42.7%	64.0%	33.5%	8.9x	7.4x	6.6x	26.6x	20.9x	18.2x
Bravura Solutions Limited	$2.07	95.4%	$444	$436	$157	3.9%	6.7%	29.6%	16.7%	2.8x	2.7x	2.4x	16.9x	15.0x	12.9x
MEAN	**$1**		**$6,293**	**$7,047**	**$1,692**	**21.4%**	**19.7%**	**41.8%**	**25.7%**	**5.3x**	**4.8x**	**4.4x**	**20.5x**	**15.5x**	**13.9x**
MEDIAN		**94.3%**	**$5,509**	**$7,174**	**$1,274**	**13.1%**	**13.3%**	**29.6%**	**23.2%**	**4.0x**	**3.6x**	**3.5x**	**17.8x**	**15.8x**	**14.8x**

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Evolve Capital Partners

Public Trading Comparables

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Exchanges

COMPANY INFORMATION	Market Data				LTM Operating Performance					Valuation Multiples					
										EV / Revenue			EV / EBITDA		
	Stock Price	% of 52-Wk High	Equity Value	Enterprise Value	LTM Revenue	Revenue Growth	EBITDA Growth	Gross Margin	EBITDA Margin	LTM	FY2018	FY2019	LTM	FY2018	FY2019
CME Group Inc.	$161.74	94.2%	$55,058	$55,297	$3,645	1.4%	2.4%	100.0%	68.9%	15.2x	13.6x	12.9x	20.9x	18.3x	17.3x
Intercontinental Exchange, Inc.	$72.52	95.0%	$42,228	$47,805	$4,629	2.9%	3.3%	100.0%	61.4%	10.3x	9.8x	9.2x	16.6x	15.1x	14.0x
Hong Kong Exchanges and Clearing Limite	$32.52	83.4%	$40,217	$37,729	$1,674	18.2%	24.8%	96.2%	69.2%	22.6x	18.5x	16.6x	32.8x	24.2x	21.6x
Deutsche Börse Aktiengesellschaft	$136.01	98.2%	$25,380	$27,379	$3,595	6.0%	11.9%	88.6%	49.6%	7.4x	8.3x	7.8x	13.2x	14.0x	12.9x
London Stock Exchange Group plc	$57.89	98.1%	$20,019	$21,540	$2,642	18.0%	19.3%	89.0%	42.0%	7.9x	7.5x	6.9x	19.0x	14.0x	12.7x
Nasdaq, Inc.	$86.22	99.1%	$14,361	$18,116	$3,965	7.0%	8.9%	61.2%	31.9%	4.6x	7.0x	6.8x	14.2x	13.7x	12.8x
ASX Limited	$42.98	95.0%	$8,319	$7,237	$756	2.6%	1.8%	97.1%	77.3%	9.8x	11.5x	10.9x	12.6x	15.0x	14.3x
Singapore Exchange Limited	$5.62	86.7%	$6,015	$5,459	$613	(2.1%)	0.7%	78.9%	52.8%	8.7x	8.4x	8.0x	16.4x	14.5x	13.6x
TMX Group Limited	$57.93	93.6%	$3,214	$4,105	$596	0.3%	21.8%	93.1%	59.8%	7.0x	6.6x	6.3x	11.7x	11.4x	10.9x
Cboe Global Markets, Inc.	$114.10	82.4%	$12,860	$13,916	$2,229	217.0%	18.6%	44.7%	29.6%	6.2x	11.9x	11.4x	21.1x	17.6x	16.5x
	MEAN	92.6%	$22,767	$23,858	$2,434	27.1%	11.3%	84.9%	54.3%	10.0x	10.3x	9.7x	17.9x	15.8x	14.7x
	MEDIAN	94.6%	$17,190	$19,828	$2,436	4.4%	10.4%	91.1%	56.3%	8.3x	9.1x	8.6x	16.5x	14.8x	13.8x

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Brokerages

COMPANY INFORMATION	Market Data				LTM Operating Performance					Valuation Multiples					
	Stock Price	% of 52-Wk High	Equity Value	Total Assets	LTM Revenue	Revenue Growth	Total Assets Growth	Gross Margin	Return on Assets	Price / Tang BV LTM	Price / Tang BV FY2018	Price / Tang BV FY2019	Mkt. Cap / Total Revenue LTM	Mkt. Cap / Total Revenue FY2018	Mkt. Cap / Total Revenue FY2019
INTL FCStone Inc.	$42.68	90.9%	$804	$6,809	$31,220	99.5%	4.9%	1.5%	(0.1%)	2.1x	NM	NM	NM	NM	NM
Compagnie Financière Tradition SA	$108.65	98.1%	$748	$1,399	$818	(1.3%)	(11.9%)	100.0%	3.7%	2.4x	NM	NM	0.9x	NM	NM
Casa de Bolsa Finamex S.A.B. de C.V.	$2.41	100.0%	$153	$2,179	$471	1.3%	(10.5%)	(0.3%)	NM	1.6x	NM	NM	0.3x	4.4x	2.6x
The Charles Schwab Corporation	$52.22	89.9%	$70,313	$243,274	$8,618	15.5%	8.9%	97.3%	1.0%	4.9x	NM	NM	8.2x	7.0x	6.2x
TD Ameritrade Holding Corporation	$59.23	94.0%	$33,605	$39,412	$3,997	10.1%	34.0%	92.3%	2.8%	18.6x	NM	NM	8.4x	6.4x	5.9x
E*TRADE Financial Corporation	$55.41	94.7%	$14,688	$63,365	$2,534	21.2%	29.3%	90.3%	1.1%	4.3x	NM	NM	5.8x	5.3x	5.0x
Matsui Securities Co., Ltd.	$8.93	87.4%	$2,294	$7,308	$283	(15.0%)	18.7%	82.3%	2.1%	2.8x	NM	NM	8.1x	7.4x	7.3x
Yintech Investment Holdings Limited	$9.47	43.5%	$664	$636	$345	(12.6%)	5.6%	98.2%	11.6%	2.1x	NM	NM	1.9x	2.2x	1.4x
CMC Markets Plc	$2.37	90.8%	$685	$365	$234	(5.1%)	10.2%	42.3%	19.8%	2.4x	NM	NM	2.9x	2.7x	2.9x
GAIN Capital Holdings, Inc.	$6.75	50.9%	$303	$1,449	$296	(26.5%)	1.3%	65.4%	(0.7%)	1.6x	NM	NM	1.0x	0.8x	0.8x
MEAN		84%	$12,426	$36,620	$4,882	8.7%	9.1%	66.9%	4.6%	4.3x	NM	NM	4.2x	4.5x	4.0x
MEDIAN		90.9%	$776	$4,494	$645	NM	7.3%	86.3%	2.1%	2.4x	NM	NM	2.9x	4.8x	3.9x

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Investment Banks

COMPANY INFORMATION	Market Data				LTM Operating Performance					Valuation Multiples					
										Price / Tang BV			Mkt. Cap / Total Revenue		
	Stock Price	% of 52-Wk High	Equity Value	Total Assets	LTM Revenue	Revenue Growth	Total Assets Growth	Gross Margin	Return on Assets	LTM	FY2018	FY2019	LTM	FY2018	FY2019
JPMorgan Chase & Co.	$109.97	92.2%	$375,043	$2,533,600	$93,689	3.7%	1.7%	NM	1.0%	2.1x	NM	NM	4.0x	3.5x	3.3x
The Goldman Sachs Group, Inc.	$251.86	91.5%	$95,462	$916,776	$32,073	4.8%	6.6%	89.3%	0.5%	1.5x	NM	NM	3.0x	2.9x	2.8x
Morgan Stanley	$53.96	90.9%	$96,688	$815,733	$37,945	9.6%	4.5%	89.8%	0.7%	1.6x	NM	NM	2.5x	2.4x	2.3x
UBS Group AG	$17.55	85.0%	$65,284	$939,544	$29,826	2.6%	(2.1%)	NM	0.1%	1.5x	NM	NM	2.2x	2.1x	2.0x
Deutsche Bank Aktiengesellschaft	$13.92	63.4%	$28,765	$1,770,812	$31,131	(9.7%)	(7.3%)	NM	NM	0.4x	NM	NM	0.9x	0.8x	0.8x
Credit Suisse Group AG	$16.70	85.0%	$42,601	$817,075	$21,230	3.1%	(2.9%)	NM	(0.1%)	1.1x	NM	NM	2.0x	1.8x	1.7x
Macquarie Group Limited	$78.90	95.6%	$25,400	$148,866	$7,817	0.1%	(7.1%)	NM	1.3%	2.3x	NM	NM	3.2x	3.1x	3.0x
Stifel Financial Corp.	$59.23	86.1%	$4,256	$21,384	$2,926	13.9%	11.8%	93.9%	0.9%	2.6x	NM	NM	1.5x	1.4x	1.3x
Piper Jaffray Companies	$83.05	83.2%	$1,262	$2,025	$875	17.1%	(4.7%)	91.3%	(2.9%)	1.8x	NM	NM	1.4x	1.4x	1.3x
Cowen Inc.	$13.20	72.3%	$389	$3,296	$554	46.9%	63.3%	71.2%	(1.4%)	0.7x	NM	NM	0.7x	0.5x	0.5x
	MEAN	84.5%	$73,515	$796,911	$25,807	9.2%	6.4%	87.1%	NM	1.6x	NM	NM	2.1x	2.0x	1.9x
	MEDIAN	85.6%	$35,683	$816,404	$25,528	4.3%	(0.2%)	89.8%	0.5%	1.5x	NM	NM	2.1x	2.0x	1.9x

LTM = Latest Twelve Months
Enterprise Value = (Market Capitalization) + (Debt + Preferred Stock + Minority Interest) - (Cash & Equivalents)
EBITDA = Earnings Before Interest, Taxes, Depreciation and Amortization

Sources: Capital IQ

Public Trading Comparables

Open Banking; Wealth Management Tech 3.0; and Data and Analytics

(All figures in US Dollars. Figures in millions, except per share data, as of March 29, 2018)

Investment Management

COMPANY INFORMATION	Market Data				LTM Operating Performance					Valuation Multiples					
										EV / Revenue			EV / EBITDA		
	Stock Price	% of 52-Wk High	Equity Value	Enterprise Value	LTM Revenue	Revenue Growth	EBITDA Growth	Gross Margin	EBITDA Margin	LTM	FY2018	FY2019	LTM	FY2018	FY2019
BlackRock, Inc.	$541.72	91.1%	$87,645	$84,393	$12,491	12.0%	7.7%	54.8%	44.3%	6.8x	6.0x	5.5x	15.2x	13.7x	12.5x
Franklin Resources, Inc.	$34.68	72.8%	$19,133	$10,285	$6,447	(3.4%)	(2.2%)	45.8%	35.7%	1.6x	1.6x	1.6x	4.3x	4.4x	4.2x
Northern Trust Corporation	$103.13	93.1%	$23,264	$25,457	$5,422	8.7%	NM	NM	NM	NM	NM	NM	NM	NM	NM
Ameriprise Financial, Inc.	$147.94	80.4%	$21,613	$23,604	$12,075	2.9%	4.6%	51.1%	27.8%	2.0x	1.9x	1.8x	7.0x	6.2x	5.9x
T. Rowe Price Group, Inc.	$107.97	89.9%	$26,409	$25,136	$4,793	13.5%	8.8%	62.2%	46.0%	5.2x	4.7x	4.5x	11.4x	10.0x	9.6x
Invesco Ltd.	$32.01	83.3%	$13,150	$17,797	$5,160	9.0%	9.3%	36.4%	28.6%	3.4x	4.3x	4.0x	11.7x	10.5x	9.8x
Hargreaves Lansdown plc	$22.91	84.4%	$10,855	$10,478	$563	18.1%	11.8%	81.2%	67.6%	17.9x	16.9x	15.0x	26.5x	24.9x	21.7x
Investec plc	$7.71	84.6%	$7,202	$3,051	$3,024	18.0%	NM	NM	NM	NM	NM	NM	NM	NM	NM
Artisan Partners Asset Management Inc.	$33.30	80.3%	$1,749	$1,850	$796	10.4%	42.6%	49.4%	36.7%	2.3x	2.1x	2.0x	6.3x	5.7x	5.2x
WisdomTree Investments, Inc.	$9.17	68.4%	$1,240	$1,184	$230	4.7%	27.9%	44.7%	22.6%	5.2x	4.2x	3.6x	22.8x	13.1x	10.1x
	MEAN	82.8%	$21,226	$20,323	$5,100	9.4%	13.8%	53.2%	38.7%	5.5x	5.2x	4.8x	13.2x	11.1x	9.9x
	MEDIAN	83.8%	$16,142	$14,138	$4,977	9.7%	9.1%	50.3%	36.2%	4.3x	4.2x	3.8x	11.6x	10.2x	9.7x

LTM = Latest Twelve Months
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EBITDA = Earnings Before Interest, Taxes, Depreciation and Amortization

Sources: Capital IQ

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