FinTech:

Shaping the Financial World

April 29, 2020

Class 9: Overview

- Online Brokerage

- Robinhood & Zero Commission Trading

- Robo Advisors

- Capital Markets FinTech Startups

- Crypto Exchanges, Lending & Decentralized Finance

Class 9: Readings

- '*How Robinhood Changed an Industry*' John Divine, US News

- '*Charles Schwab and the New Broker Wars*' Daren Fonda, Bloomberg

- '*Robo-Advisors: Product vs. Platform*' Henry O'Brien, The Startup

Class 9: Study Questions

- How did online brokers emerge during an earlier stage of FinTech development? How were Robinhood and this era's FinTech startups able to further disrupt the brokerage world?

- How are Robo Advisors transforming the provision of retail asset management services? How has Big Finance - incumbent asset managers and banks - reacted?

- What are FinTech trends and applications affecting trading, asset management & capital market infrastructure?

Online Brokerage Company Landscape

- Retail Brokers: Charles Schwab / TD Ameritrade (1971) – 12M each, E*TRADE (1982) – 5.2M, Firstrade (1985), Interactive Brokers (1978) – 0.8M, LBMZ Zacks Trade (1978), Monex TradeStation (1999 / 1982)

- Asset Managers: Fidelity (1946), Vanguard (1975)

- Banks: JP Morgan You Invest (1871 / 2018), Merrill Edge (1914 / 2010), Ally Invest (1919 / 2016) 4M

- FinTech Startups: Freetrade (2016), Public (2017), Robinhood (2013) - 10M, Stash (2015) – 3.5M, Tastyworks (2017), Upstox (2012), Webull (2017)

Mobile Trading – App Comparison

Feature	E*TRADE Open Account	TD Ameritrade Open Account	Fidelity Open Account	Interactive Brokers Open Account
iPhone App	✓	✓	✓	✓
Android App	✓	✓	✓	✓
Apple Watch App	✓	✓	✓	✓
Trading - Stocks	✓	✓	✓	✓
Trading - After-Hours	✓	✓	✓	✓
Trading - Conditional Orders	✓	✓	✗	✓
Trading - Mutual Funds	✓	✗	✓	✓
Trading - Simple Options	✓	✓	✓	✓
Trading - Complex Options	✓	✓	✓	✓
Trading - Option Rolling	✗	✓	✗	✗
Touch / Face ID	✓	✓	✓	✓

Source: 'Best Stock Trading Apps for 2020', Brian Reinkensmeyer, StockBrokers. com (April 17, 2020)
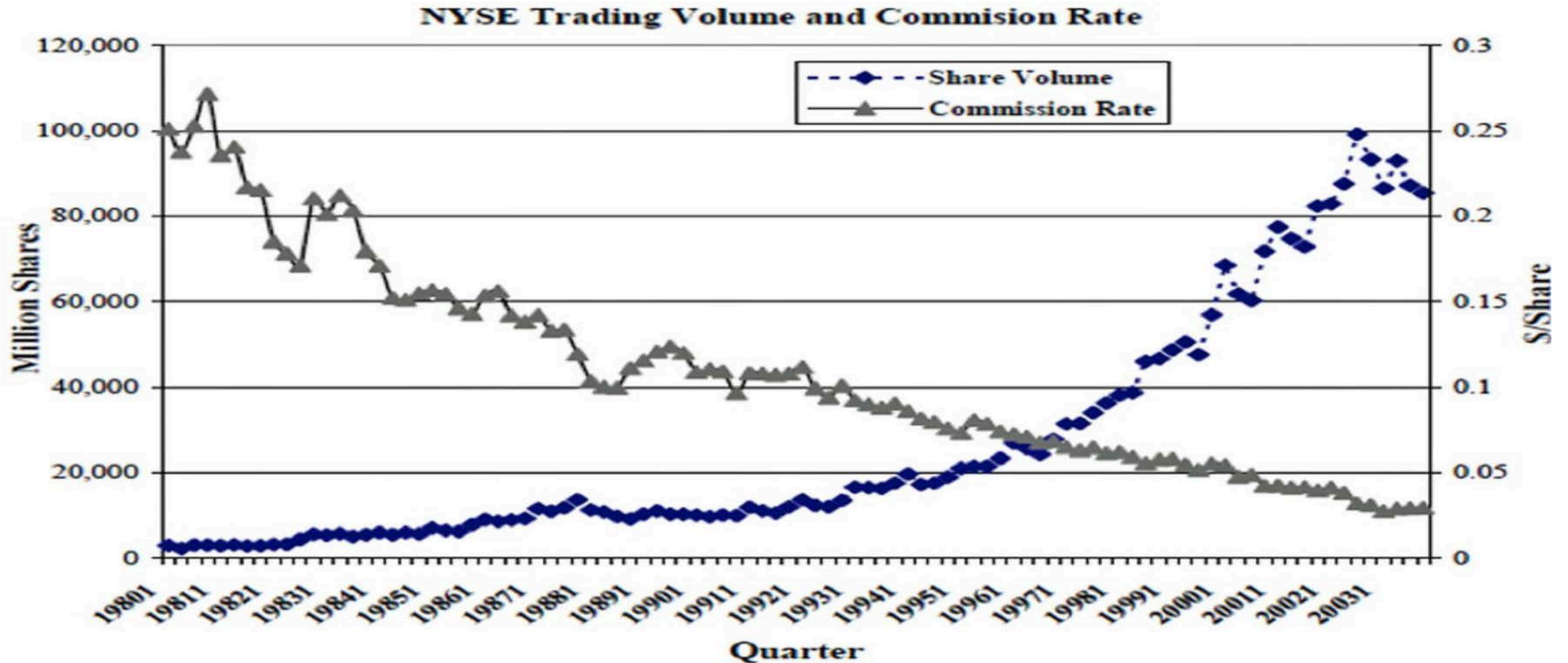
Online Brokerage Recent Developments

Commission Free Brokerage Rates – October 2019:

- IBKR Lite, Charles Schwab, E*Trade, TD Ameritrade, Ally, Fidelity

Incumbent 2019 / 2020 Megadeals:

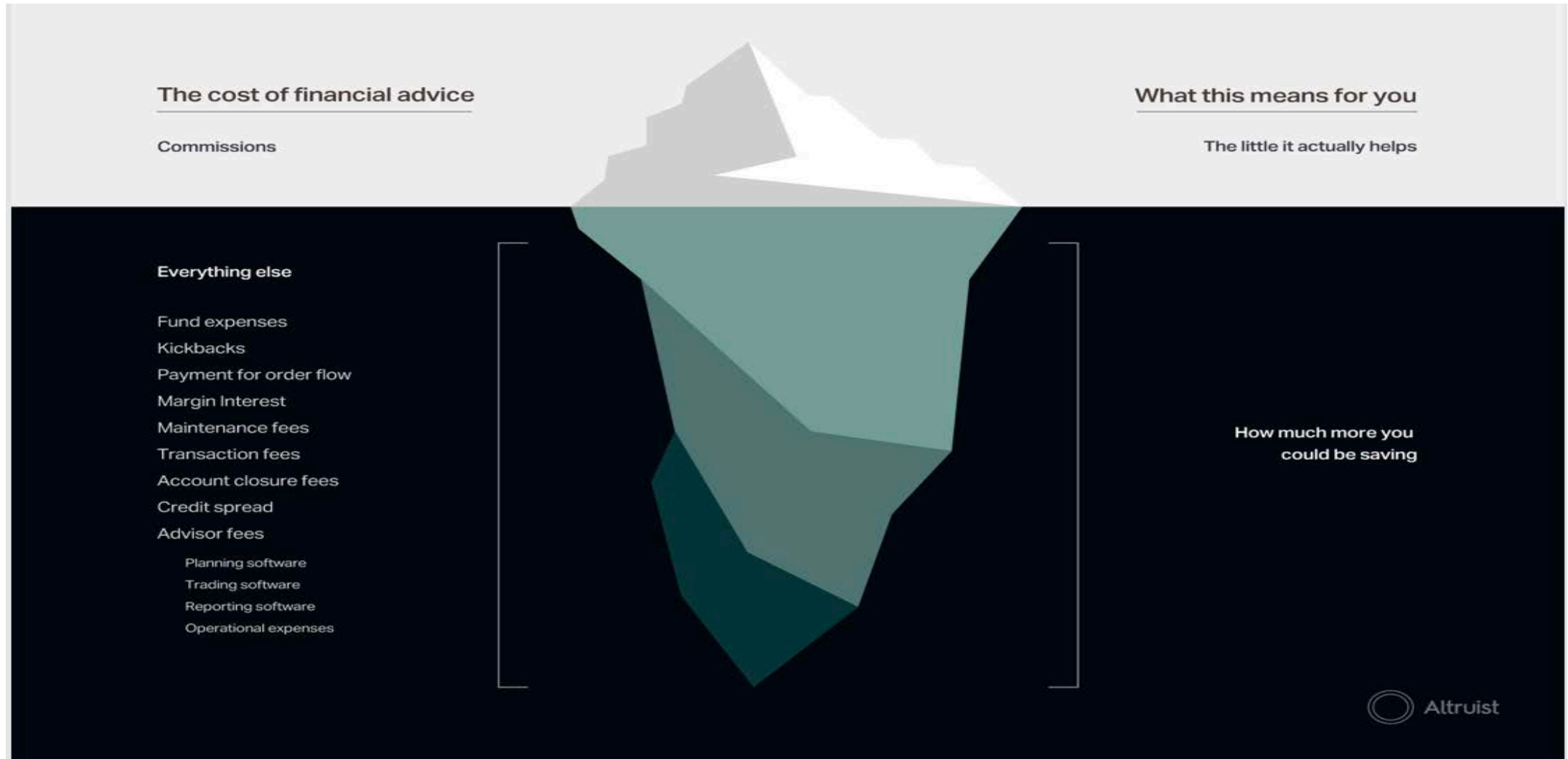- Charles Schwab - TD Ameritrade: $26B
- Morgan Stanley – E*Trade: $13B

Sources: Individual public announcements by Acquiring Companies

Commission Rates Long Decline

NYSE Trading Volume and Commision Rate

Source: "Commission Costs, Illiquidity and Stock Returns", August 2006, Jinliang Li, Robert Mooradian, W. David Zhang Deutsche Bank

Source: 'Back In The Day, Brokers Got Away With Murder In Trading Commissions', Rob Wile, Business Insider (March 31, 2014)

Zero Commission Revenue Models

The cost of financial advice

Commissions

Everything else

Fund expenses
Kickbacks
Payment for order flow
Margin Interest
Maintenance fees
Transaction fees
Account closure fees
Credit spread
Advisor fees

  Planning software
  Trading software
  Reporting software
  Operational expenses

What this means for you

The little it actually helps

How much more you
could be saving

Altruist

Courtesy of Altruist. Used with permission.

Source: 'The real story behind commission free trading', Jason Wenk, Altruist (October 16, 2019)

Robo Advisors Company Landscape

- Retail Brokers: Charles Schwab Intelligent Portfolios (1971), E*TRADE Adaptive Portfolio (1982), TD Ameritrade Essential Portfolios (1971)

- Asset Managers: BlackRock FutureAdvisor (1988 / 2000), Fidelity Go (1946), Vanguard Digital Advisor (1975), Zacks Advantage (1978)

- Banks: JP Morgan You Invest (1871 / 2018), Merrill Edge (1914 / 2010), Ally Invest (1919 / 2016)

- Advisory Platforms: Acorns (2014), Betterment (2008), Blooom (2013), Ellevest (2014), Groww (2013), M1 Finance (2015), Motif (2012), Nutmeg (2012), Personal Capital (2009), SigFig (2006), SoFi (2011), Tastyworks, Wealthfront (2008), Wealthsimple (2014)
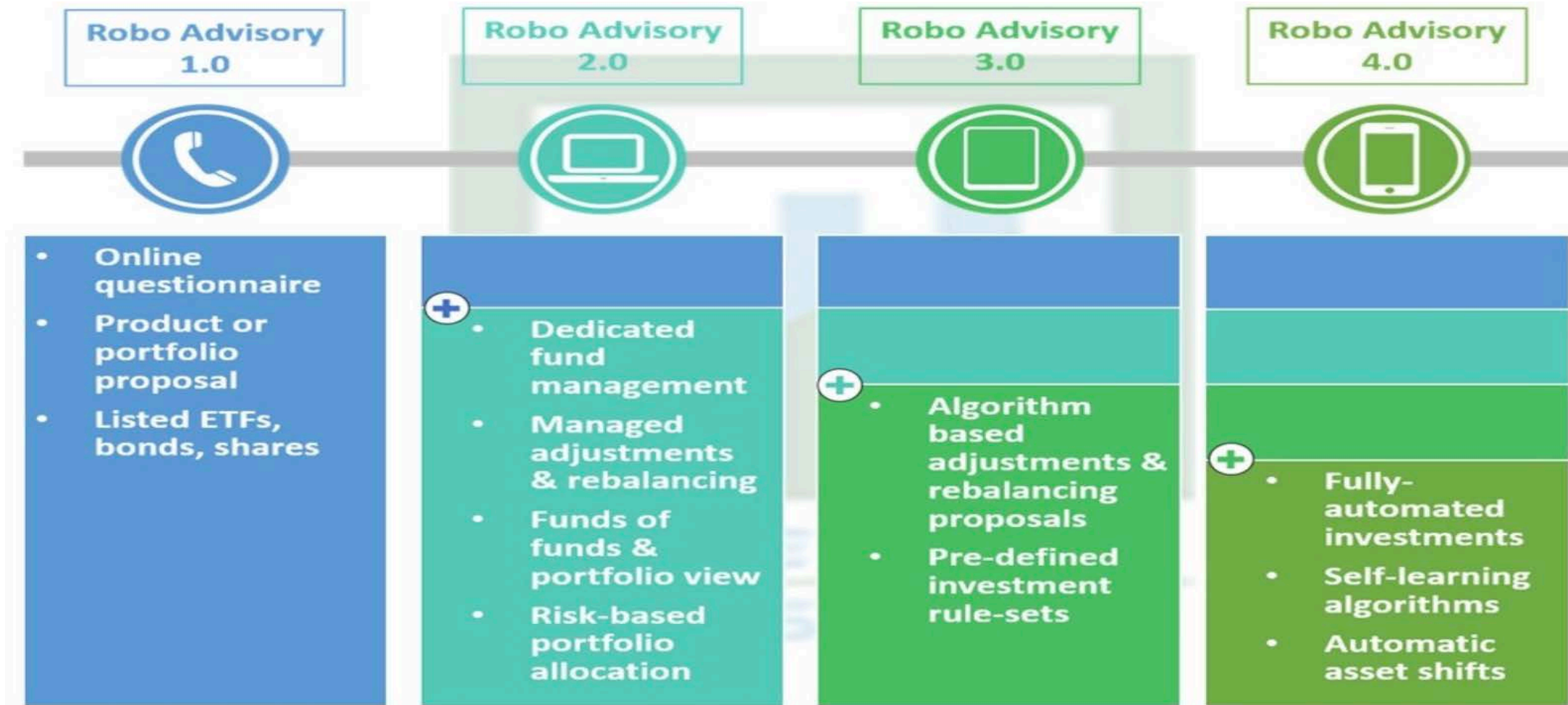
Number of users in the robo-advisors segment, in millions

Assets under management in the robo-advisors segment, in billion U.S. dollars
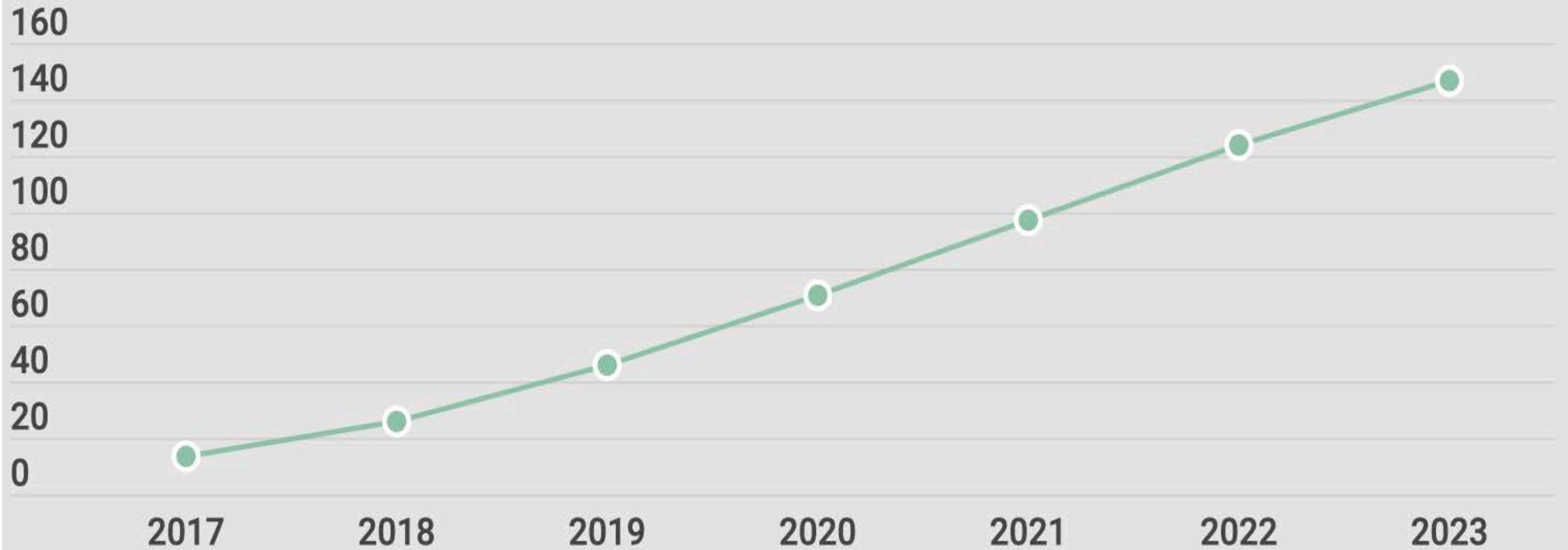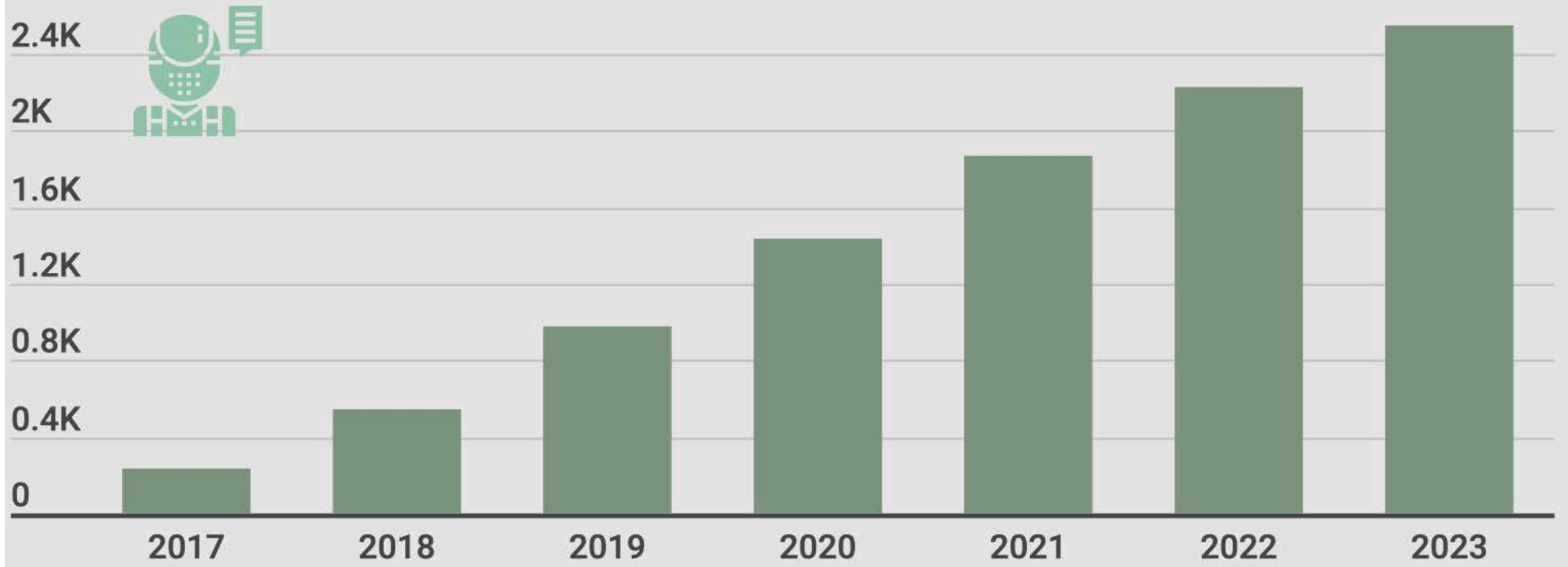
Source: 'Robo-advisor Industry to hit $1.4trn This Year' Jastra Ilic, LearnBonds (April 15, 2020)

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Robo Advisory Possible Evolution

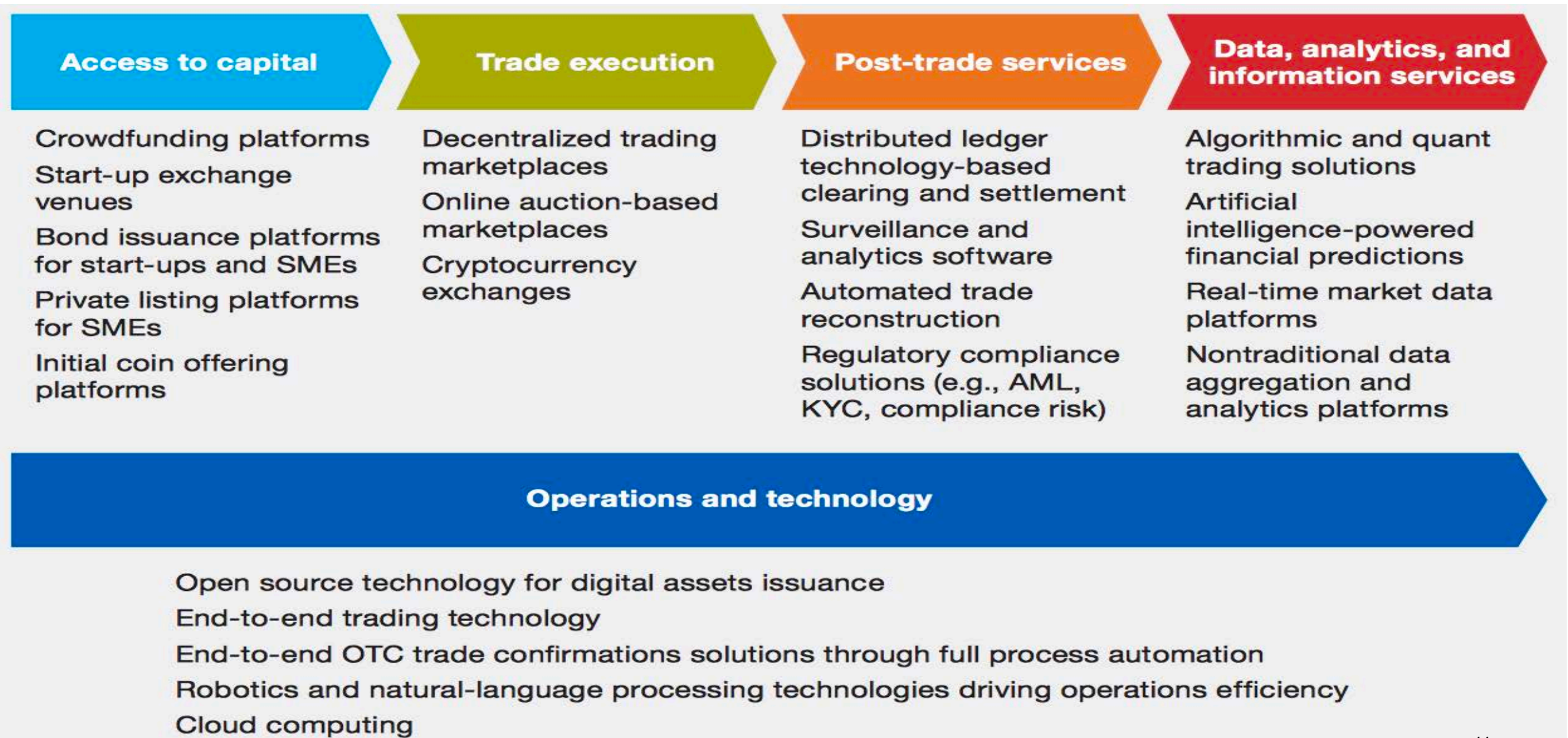| Robo Advisory 1.0	Robo Advisory 2.0	Robo Advisory 3.0	Robo Advisory 4.0
• Online questionnaire • Product or portfolio proposal • Listed ETFs, bonds, shares	• Dedicated fund management • Managed adjustments & rebalancing • Funds of funds & portfolio view • Risk-based portfolio allocation	• Algorithm based adjustments & rebalancing proposals • Pre-defined investment rule-sets	• Fully-automated investments • Self-learning algorithms • Automatic asset shifts

Source: Research Nester

Source: 'Introduction to Robo Advisor', Research Nester (December 30, 2019)

Capital Markets Fintech

Access to capital	Trade execution	Post-trade services	Data, analytics, and information services
Crowdfunding platforms	Decentralized trading marketplaces	Distributed ledger technology-based clearing and settlement	Algorithmic and quant trading solutions
Start-up exchange venues	Online auction-based marketplaces	Surveillance and analytics software	Artificial intelligence-powered financial predictions
Bond issuance platforms for start-ups and SMEs	Cryptocurrency exchanges	Automated trade reconstruction	Real-time market data platforms
Private listing platforms for SMEs		Regulatory compliance solutions (e.g., AML, KYC, compliance risk)	Nontraditional data aggregation and analytics platforms
Initial coin offering platforms			

Operations and technology

Open source technology for digital assets issuance

End-to-end trading technology

End-to-end OTC trade confirmations solutions through full process automation

Robotics and natural-language processing technologies driving operations efficiency

Cloud computing

Source: McKinsey Panorama Fintech database

Capital Markets FinTech Startups

- Addepar (2009) – Wealth Management Platform for Financial Advisors
- Capitolis (2017) – Equities & FX Infrastructure
- Carta (2012) – Ownership Management Platform
- Cloud9 (2013) – Digitizing Voice Trading
- CloudMargin (2014) – Collateral Management
- Elefant (2018) – Digital Fixed Income Broker
- iCapital Network (2013) – Alternative Investment Platoform for Financial Advisors
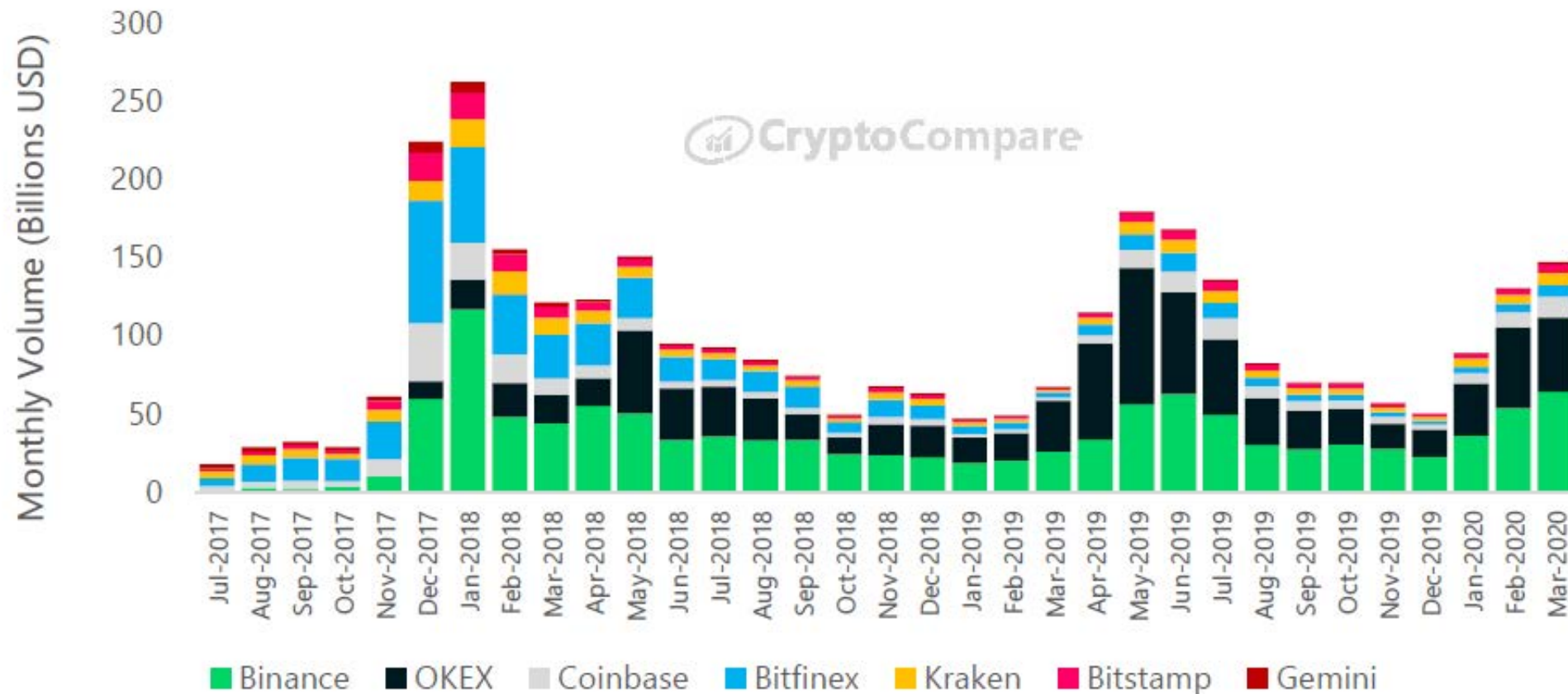
Capital Markets FinTech Startups

- IEX (2012) – Stock Exchange
- Kantox (2011) – Institutional FX Trading
- Pitchbook (2007) – Private Capital Market Research
- Q4 (2006) – Investment Research
- Trumid (2014) – Bond Trading & Data Platform
- TruValue Labs (2013) – Analytics on ESG Investing

Crypto Exchanges

- Act as agents (matching buyers & sellers) -- Traditional exchanges do as well

- Act as market makers (buying & selling from customers) -- Traditional exchanges don't

- Hold customer funds in Custody -- Traditional exchanges don't

- Public has direct access -- Traditional exchanges must go through a broker

- Lend money to customers for margin trading -- Securities markets use brokers or banks

- Crypto fees wide vs. Traditional markets

- Crypto Market Largely traded on Crypto only platforms – lacking direct fiat capabilities

- Not regulated for market integrity rules, rife with fake volumes and manipulation

- List tokens for fees similar to equity markets but different than currency markets

Crypto Exchanges 'Top Tier' Trading Volumes

Historical Monthly Top Tier Exchange Volume

Legend: Binance, OKEX, Coinbase, Bitfinex, Kraken, Bitstamp, Gemini

Source: 'Exchange Review March 2020', CryptoCompare (4/20)

Crypto Lending and Borrow

- Lending Crypto or Fiat collateralized by Crypto
  - BlockFi, Celsius, CoinLoan, Crypto.com, ETHLend, Genesis Capital, Nexo, Salt

Traditional Finance vs. Decentralized Finance

Traditional Finance	Decentralized Finance
Proprietary software	Open source
Central clearing	Blockchain
Intermediaries	Peer-to-peer / web
Trust in institutions	Trust in technology
Censoreable	Censorship resistant
Permissioned	Permissionless
"Separate castles"	Composable, modular
Limited transparency	Transparent
Registered instruments	Bearer instruments
Credit-based assets	Commodity-based assets

Crypto 'DeFi' Platforms

- Exchanges
  - Binance, IDEX, Uniswap

- Crypto Lending & Borrow
  - Compound, Dharma, InstaDapp, Maker, Nuo, REX, Synthetix

- Prediction Markets
  - Augur, Hedge Trade