Digital Finance and retail investors: opportunities and risks
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Content

Structural changes in financial markets

- **Value chains in financial services**: Increased fragmentation and complexity

- **Digital platforms**: Growing in use, varied business models

- **Tech entering financial services**: Still limited but potential to scale up quickly

Increasing role of third-party technology providers

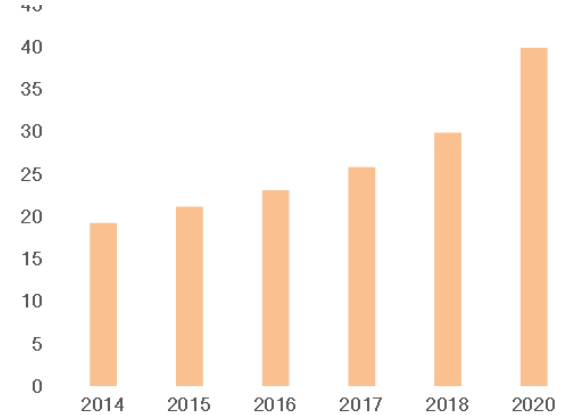Increase in remote data storage changes data risk profile

Cloud use continues to increase across the economy, including financial sector

A few large tech firms dominate cloud services

Shift to tail risk?
– Economies of scale enable stronger defences
– But greater concentration of data within firms and across sectors

Cloud computing services use

Note: Percentage of businesses purchasing cloud computing services by year in 22 EU countries, %. Countries included: AT, BE, CZ, DE, DK, EE, ES, FI, FR, GR, HU, IE, IT, LV, LT, LU, NL, PL, PT, SI, SK, SE. Firms across the economy with at least 10 employees were surveyed.
Sources: OECD, ESMA

Cloud market share
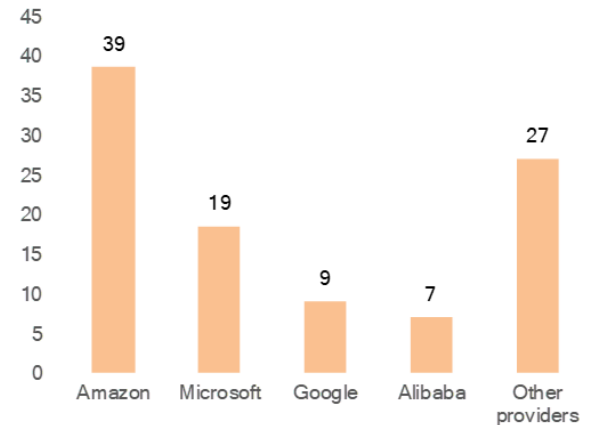
Note: Market share (in % of world revenues) as of 2019 Q3. Revenues for Public Infrastructure as a Service (IaaS) and Platform as a Service (PaaS), excluding Hosted/Managed Private Cloud.
Source: Synergy Research Group.

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Digital Platforms in Europe

New trading platforms reach EU scale
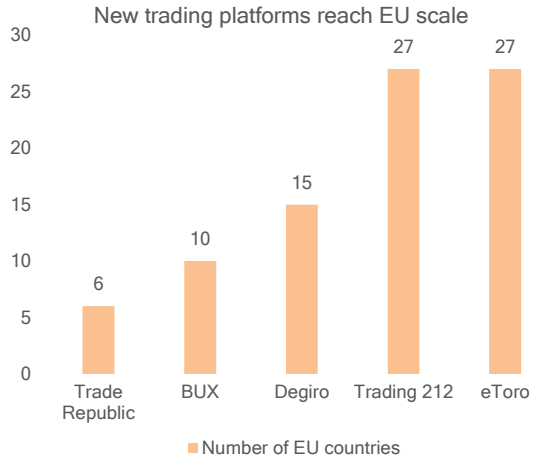
Note: Number of EU countries with presence for selected EU-headquartered digital trading platforms, December 2021.
Sources: TradeRepublic, BUX, Degiro, eToro, Trading212, ESMA.

Some digital trading platforms are available in **all EU27** countries

AuM of robo-advice platforms in the EU expected to reach **EUR 164bn by 2025**

Steady growth of robo-advsors
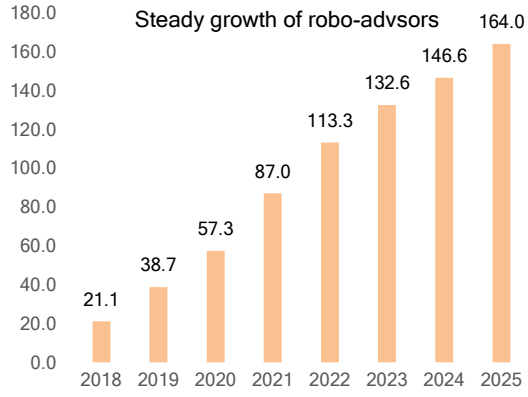
Note: Estimated assets under management of robo-adviser segment in the EU27 (in EUR bn), October 2021
Sources: Statista, ESMA

Neo-brokers enter market with new business models

ASR-PC.9
Neo-brokers' user penetration rate
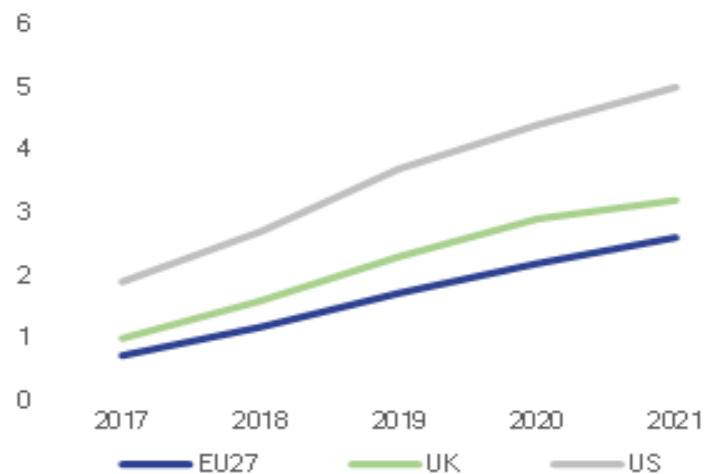
Note: Share of customers (or accounts) from the total population of the selected region by year, %. Neo-brokers exclude cryptocurrencies and robo-advisors.
Sources: Statista, ESMA.

New distribution patterns

- Benefits and costs:
  - Improved capital market access and low fees…

  - … yet not totally free

  - Limitations in terms of products offered and potential for excessive risk taking behaviour

Opportunities from structural developments

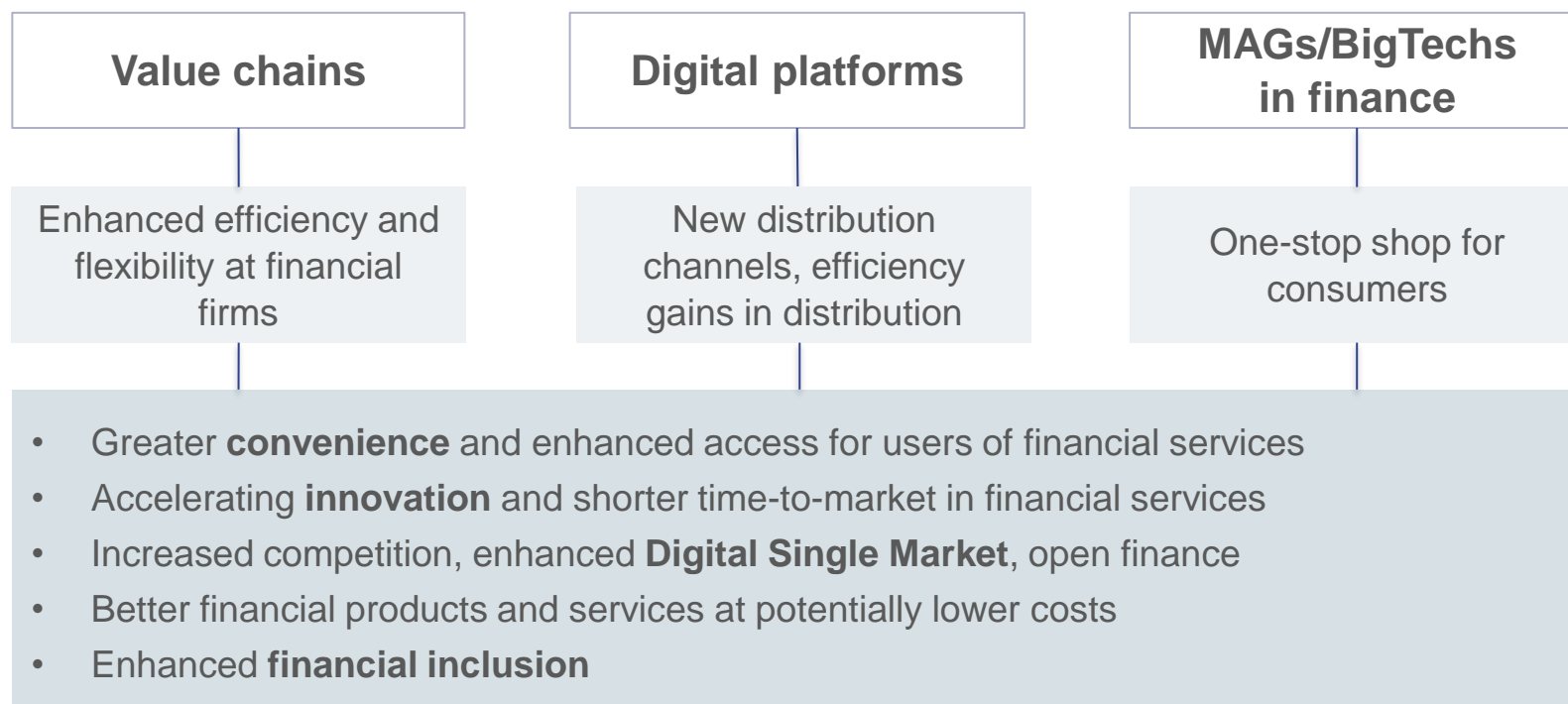| Value chains	Digital platforms	MAGs/BigTechs in finance
Enhanced efficiency and flexibility at financial firms	New distribution channels, efficiency gains in distribution	One-stop shop for consumers

- Greater **convenience** and enhanced access for users of financial services
- Accelerating **innovation** and shorter time-to-market in financial services
- Increased competition, enhanced **Digital Single Market**, open finance
- Better financial products and services at potentially lower costs
- Enhanced **financial inclusion**

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Risks from structural developments

Value chains	Digital platforms	MAGs/BigTechs in finance
High dependency on third party providers	Certain platform features may raise investor/consumer protection issues	Potential for uneven playing field between MAGs and financial groups

- New forms of **ICT and operational resilience** risks
- Potential for **consumer detriment** (e.g., not clear with whom customers are contracting, aggressive sales techniques, insufficient financial/digital literacy on the part of customers)
- Risks in relation to the access and use of **customer data**
- Possible **concentration** and **interconnectedness** risks (dominant position of certain providers)
- **Competition and level-playing** field issues
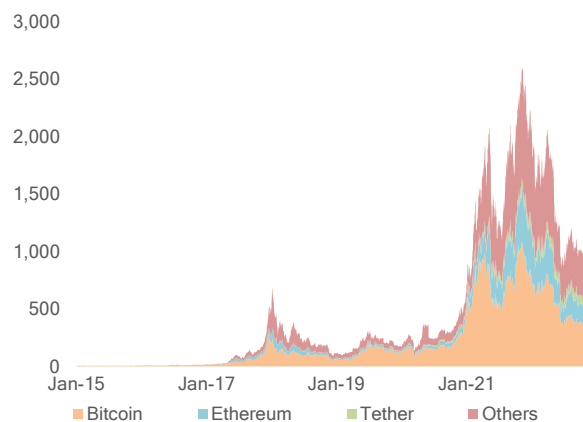- New forms of **ML/TF risks**

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Constantly evolving markets, important risks to consumers
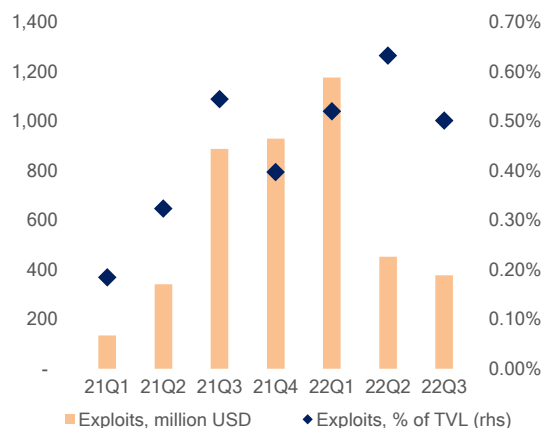
Crypto-asset market size
Down 62% since Nov. 21

Note: Market capitalisation of Bitcoin, Ethereum, Tether and other crypto-assets, in EUR bn.

Quarterly losses to exploits as a share of TVL
Losses from exploits increasing

Note: Monthly losses from on-chain exploits (in million USD) and relative to the size of the overall DeFi ecosystem (% of TVL). Figures are notional at the time of the exploit.
Sources: Rekt, DeFiLlama, ESMA.

Staggering growth in 2021, collapse in 2022

— Mkt cap: ~ EUR 850 bn (-70% since Nov 2021 all time high, but 15% above 2018 peak)

— Rapidly and constantly evolving ecosystem:

— +20,000 coins, +500 exchanges, exponential growth of DeFi in 2021;

— Mostly unregulated in the EU, pending MiCA

Investor protection concerns

— Crypto-assets highly speculative and risky

— Aggressive promotion, including through social media

— Increasingly complex products and business models (e.g. high leverage, collateral re-use)

— Numerous scams and exploits (EUR 2bn lost in DeFi exploits in 2022 YTD)

— Several failures (TerraUSD, Celsius, FTX)

Financial stability concerns

— Growing interconnectedness with 'traditional' system (esp. fund-exposures or "stablecoins")

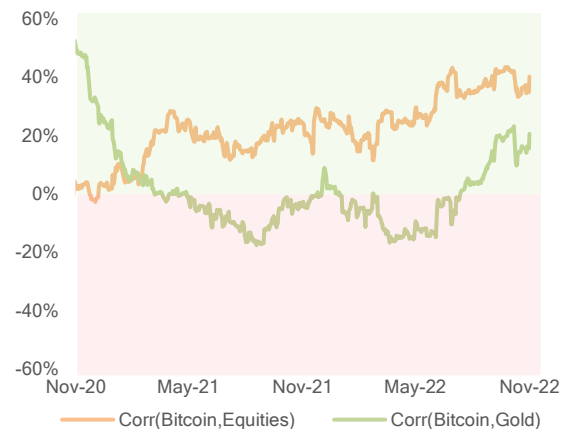— Relatively small in size yet monitoring necessary as situation may change quickly

Bitcoin dominates the market, other crypto assets are highly correlated

Dominance: Bitcoin market cap represents **40%** of the entire **EUR 850 bn** market for crypto assets. Most crypto assets are highly correlated with each other.

Bitcoin also shares a **moderate positive correlation (~30%) with European equities** in the Stoxx 600 Index

	BTC	ETH	BNB	ADA	XRP	LTC	XMR	DOGE	SOL	DOT
BTC	1									
ETH	0.77	1								
BNB	0.64	0.64	1							
ADA	0.63	0.65	0.57	1						
XRP	0.58	0.57	0.61	0.57	1					
LTC	0.8	0.83	0.68	0.68	0.66	1				
XMR	0.61	0.58	0.6	0.5	0.53	0.63	1			
DOGE	0.45	0.47	0.3	0.38	0.34	0.48	0.29	1		
SOL	0.45	0.57	0.49	0.5	0.5	0.5	0.4	0.35	1	
DOT	0.7	0.73	0.62	0.69	0.63	0.75	0.62	0.4	0.54	1
LUNA	0.13	0.16	0.11	0.15	0.14	0.15	0.16	0.1	0.18	0.1
AVAX	0.53	0.57	0.56	0.67	0.52	0.57	0.46	0.37	0.51	0.59
GOLD	-0.07	0.02	0.04	0.07	0.02	0	-0.01	0.05	-0.02	0.05
SP500	0.34	0.32	0.24	0.33	0.26	0.28	0.23	0.15	0.28	0.34
DOW	0.29	0.25	0.18	0.24	0.18	0.24	0.2	0.12	0.17	0.25

Corr(Bitcoin,Equities)　Corr(Bitcoin,Gold)

Note: 90d price return correlation (measured daily) between Bitcoin and the Stoxx Europe 600 index.
Sources: Refinitive, ESMA.

Extensive use of the ESMA toolkit, pending MiCA
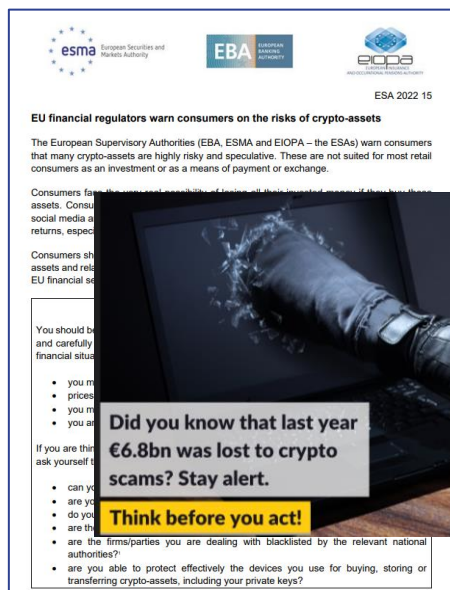
Repeated Warnings to consumers
- March 2022 Joint-ESAs Warning
- To (re-)alert consumers about the risks and highlight key steps to take to protect themselves

ESMA Advice to EU policy makers
- Comprehensive assessment of the applicability of existing EU financial securities rules to crypto-assets

Proactive monitoring - assess risks but also potential benefits
- Bi-annual TRV report, Oct 2022 article on risks to financial stability
- Engagement with external stakeholders

Contribution to international workstreams
- FSB, IOSCO, co-chair of ESRB group

AI is finding its way in financial markets

Many AI/ML tools have existed for decades, at least in theory

Recent years: explosion in data generation, storage and use. Catalyst for AI
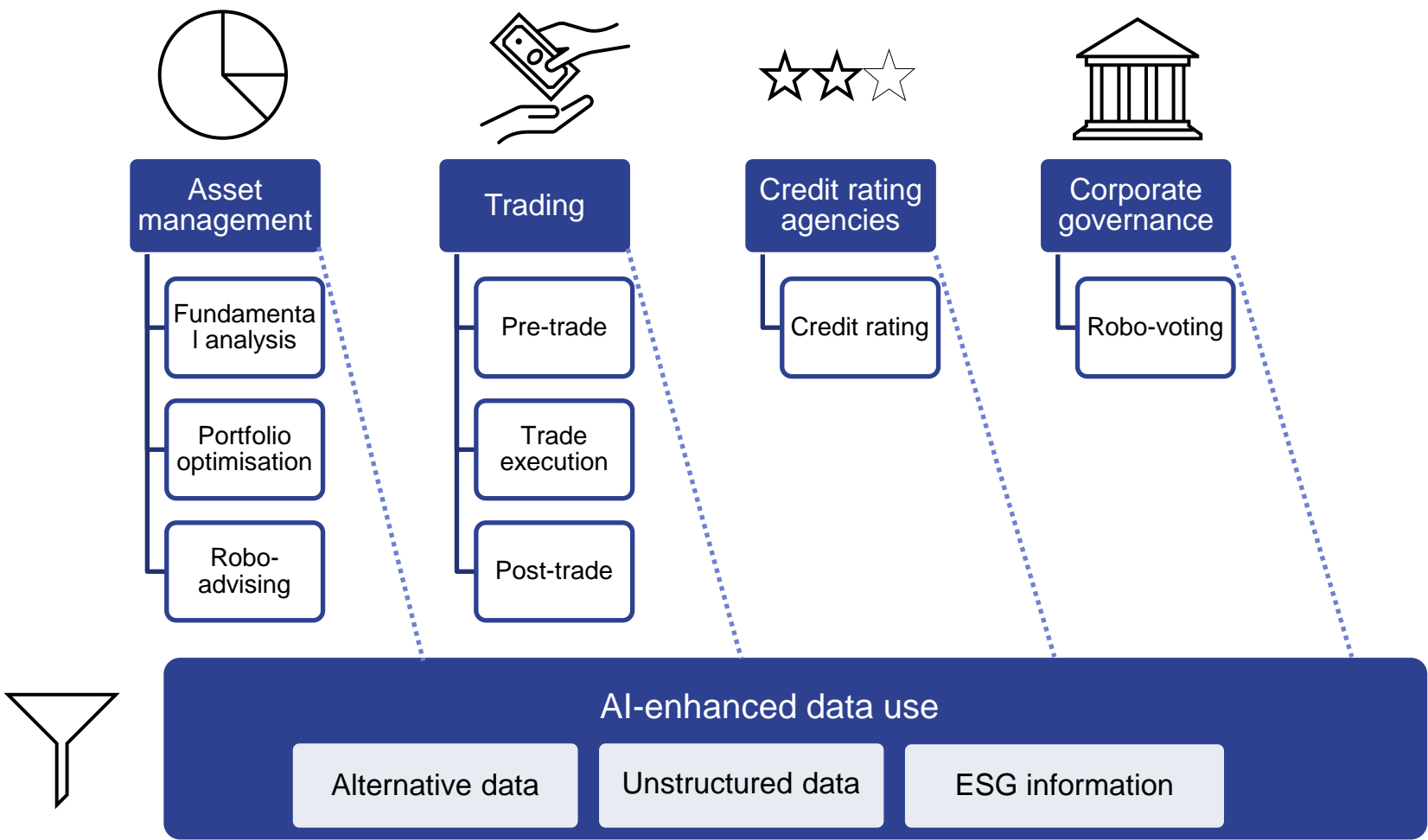
Financial sector has seen changes in market structure with new entrants (FinTech)

Range of AI/ML applications are emerging across financial markets

– Investment strategies

– Trade execution

– Risk management

– Customer interfaces

AI use cases in securities markets

Use of AI in portfolio management

AI allows asset managers to enhance fundamental analysis

– For instance, **natural language processing** (NLP) is a key tool to digest news and develop sentiment indicators, with huge time savings

– NLP is increasingly used to generate **ESG assessments**, also based on real-time communications by companies

– Leverage **alternative** and **unstructured** datasets (e.g., social media, satellite imagery)

## AI (in particular ML) can overhaul systematic investment strategies

– Promising tool but outperformance of ML models is not obvious: **data quality** and correct **model specification** are essential (high signal-to-noise ratio of financial data, possible regime shifts)

– Mixed feedback from clients for approaches perceived as "black boxes"

AI solutions may be developed in-house or provided by third parties

– Emerging "tech native" firms allow more asset managers access to AI, but need to ensure proper management and safeguards around data and models used
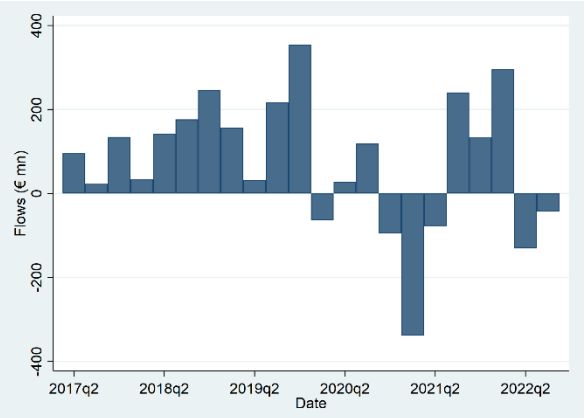
Use of AI in portfolio management

Mutual funds stating use of AI/ML
Five-fold increase in five years
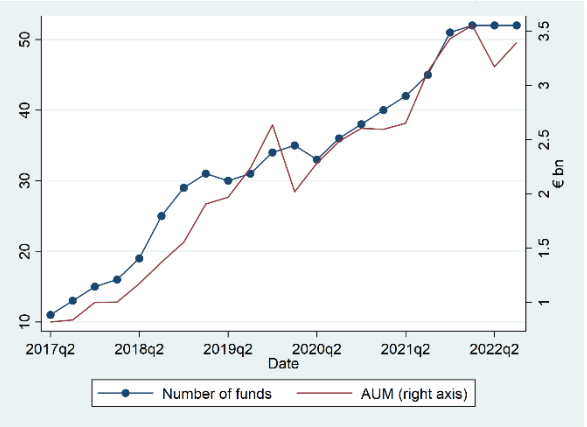
Note: Number and assets under management (EUR bn) of EU mutual funds
which mention using AI/ML in the investment process.
Source: Morningstar, Lipper, ESMA research.

Mutual funds stating use of AI/ML
No booming inflows

Note: Investor flows (EUR mn) of EU mutual funds which mention using AI/ML
in the investment process.
Source: Morningstar, Lipper, ESMA research.

Number of EU funds declaring that they use AI/ML steadily increasing, but assets under management not "booming"

- As of October 2022, 29 equity funds, 11 alternative, 10 mixed assets, 1 bond and 1 real estate
- 12 funds already liquidated
- Approx. 70% retail, 30% institutional share classes
- Additional 9 funds use NLP

Of 64 funds, 34 have AI or ML in their name

- Others include "quant", "numeric", "smart alpha"

Results in line with industry feedback:

- Limited number of quant funds rely heavily on ML (and use this as selling proposition)
- Most funds likely weigh in reputational risk due to lack of widespread acceptance of AI/ML, and choose not to advertise it

Conclusions

- ✓ Increased digitalisation, data availability and computing capabilities have accelerated some existing trends

- ✓ Consumers have access to a broader sample of products and easily exposed to risky products too

- ✓ Appropriate resources and cross-sectoral cooperation needed for regulators and supervisors need to supervise digital finance in an efficient way