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Welcome

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About Us

Exchanges

Payments

Credit Research

Asset Managers

AUTONOMOUS

- Founded in London in 2009. Subsequently expanded to the US and Asia.
- In 2019, we became part of Bernstein, which provides industrial strength research across market sectors around the world.
- In 2024, Bernstein entered into a joint venture with Société Générale.
- 35 publishing analysts globally, with 10 in US
- Cover 282 stocks globally, with combined market cap of $12+ trillion
- Cross-asset class approach. New US credit offering mirrors approach of European product suite.

Banks

Speciality Financials

Insurers

Fintech

Agenda

Autonomous University – US

Time	Schedule	Analyst
8:00-8:30am	**Registration**	
8:30-10:00am	**Banks & Consumer Finance**	Ken Usdin, Casey Haire & Rob Wildhack
10:00-10:15am	*Break*	
10:15-11:00am	**Information Services**	Christian Bolu & Kelsey Zhu
11:00-11:45am	**Insurance**	Wes Carmichael
11:45am-12:30pm	**Lunch Session - Credit**	Jesse Rosenthal
12:30-1:30pm	**Capital Markets, Alts & Asset Managers**	Christian Bolu & Patrick Davitt
1:30-2:30pm	**Payments & Global FinTech**	Ken Suchoski & Rahul Jindal

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Banks & Consumer Finance

Ken Usdin, Casey Haire & Rob Wildhack

Ken Usdin

US Large-Cap Banks, Senior Analyst

Ken Usdin is a Senior Research Analyst covering large-cap banks and the Co-Head of Autonomous US. Ken has covered US banks for over 25 years, with prior experience at Jefferies, Bank of America, UBS, and Lehman Brothers. He started his career in the Bank Supervision Group at the Federal Reserve Bank of New York. Ken has been a member of the Excel/Institutional Investor All-America Research Team a total of 17 times for his coverage of Large-Cap Banks.

Casey Haire

US Mid-Cap Banks, Senior Analyst

Casey Haire is a Senior Research Analyst at Autonomous covering mid-cap banks. Casey has covered US banks for 18 years, with prior experience at Jefferies and Bank of America. He started his career at Putnam Lovell NBF in 2004. Casey has been a member of the Excel/Institutional Investor All-America Research Team a total of 3 times for his coverage of Mid-Cap Banks.

Rob Wildhack

US Consumer Finance, Senior Analyst

Rob joined Autonomous Research in 2015 and is currently covering the consumer finance and fintech sectors. He has experience covering many different subsectors within financials, including banks, specialty finance, and payments. Prior to joining Autonomous, Rob spent four years at RBC Capital Markets with the Alternative Assets Group. He graduated from Syracuse University with degrees in Finance and Economics and is a CFA charterholder.

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Banks

Ken Usdin (Large-Cap) & Casey Haire (Mid-Cap)

Large-Cap Banks Coverage – Ken Usdin

Universal Banks	Ticker	Rating	10/9/25 Price	Price Target	Autono. Op. EPS 2025E	Autono. Op. EPS 2026E	Autono. Op. EPS 2027E	Price / Earnings 2025E	Price / Earnings 2026E	Price / Earnings 2027E	P/BV	P/TBV	Dividend Yield	Mkt. Cap ($B)
Bank of America	BAC	Neutral	$49.79	$56	$3.65	$4.05	$4.65	13.6x	12.3x	10.7x	1.3x	1.8x	2.2%	$368.8
Citigroup	C	Outperform	95.92	115	7.50	9.70	11.70	12.8x	9.9x	8.2x	0.9x	1.0x	2.5%	176.6
JPMorgan Chase	JPM	Neutral	305.53	334	19.15	19.95	21.65	16.0x	15.3x	14.1x	2.5x	3.0x	2.0%	840.1
Wells Fargo	WFC	Outperform	79.89	93	5.95	6.55	7.45	13.4x	12.2x	10.7x	1.6x	1.9x	2.3%	255.9
Universal Banks Median								**13.5x**	**12.2x**	**10.7x**	**1.5x**	**1.8x**	**2.3%**	

Large Regional Banks	Ticker	Rating	Price	Price Target	Autono. Op. EPS 2025E	Autono. Op. EPS 2026E	Autono. Op. EPS 2027E	Price / Earnings 2025E	Price / Earnings 2026E	Price / Earnings 2027E	P/BV	P/TBV	Dividend Yield	Mkt. Cap ($B)
Citizens	CFG	Outperform	$51.85	$62	$3.75	$4.85	$5.90	13.8x	10.7x	8.8x	1.0x	1.5x	3.2%	$22.4
Comerica	CMA	Outperform	80.21	95	5.05	5.10	5.40	15.9x	15.7x	14.9x	1.5x	1.7x	3.5%	10.3
Fifth Third	FITB	Outperform	43.79	51	3.50	4.05	4.75	12.5x	10.8x	9.2x	1.5x	2.1x	3.7%	29.0
Huntington	HBAN	Neutral	16.34	19	1.45	1.60	1.75	11.3x	10.2x	9.3x	1.3x	1.8x	3.8%	23.8
KeyCorp	KEY	Outperform	18.18	21	1.45	1.75	2.00	12.5x	10.4x	9.1x	1.2x	1.4x	4.5%	19.9
M&T	MTB	Outperform	188.04	223	16.55	18.60	20.55	11.4x	10.1x	9.1x	1.1x	1.7x	3.2%	29.4
PNC	PNC	Outperform	190.67	232	15.60	17.90	19.80	12.2x	10.6x	9.6x	1.4x	1.8x	3.6%	75.1
Regions	RF	Neutral	25.31	28	2.35	2.55	2.80	10.8x	9.9x	9.0x	1.3x	2.0x	4.2%	22.6
Truist	TFC	Underperform	44.25	47	3.95	4.30	4.70	11.2x	10.3x	9.4x	1.0x	1.4x	4.7%	57.1
U.S. Bancorp	USB	Neutral	47.10	53	4.35	4.80	5.25	10.8x	9.8x	9.0x	1.3x	1.8x	4.4%	73.3
Zions	ZION	Underperform	55.83	59	5.75	5.85	6.35	9.7x	9.6x	8.8x	1.3x	1.5x	3.2%	8.2
Large Regionals Median								**11.4x**	**10.3x**	**9.1x**	**1.3x**	**1.7x**	**3.7%**	

Trust Banks	Ticker	Rating	Price	Price Target	Autono. Op. EPS 2025E	Autono. Op. EPS 2026E	Autono. Op. EPS 2027E	Price / Earnings 2025E	Price / Earnings 2026E	Price / Earnings 2027E	P/BV	P/TBV	Dividend Yield	Mkt. Cap ($B)
BNY	BK	Outperform	$106.82	$124	$7.25	$8.25	$9.15	14.7x	13.0x	11.7x	2.0x	3.6x	2.0%	$75.3
Northern Trust	NTRS	Underperform	129.99	141	8.90	9.50	10.30	14.6x	13.7x	12.6x	2.1x	2.2x	2.5%	24.9
State Street	STT	Neutral	117.23	131	9.90	11.20	12.45	11.8x	10.5x	9.4x	1.4x	2.2x	2.9%	33.3
Trust Banks Median								**14.6x**	**13.0x**	**11.7x**	**2.0x**	**2.2x**	**2.5%**	

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Source: Autonomous Research, Bloomberg, Company Reports. Priced as of 10/9/2025.

Mid-Cap Banks Coverage – Casey Haire

Mid-Cap Banks	Ticker	Rating	Price	Price Target	Autono. Op. EPS 2025E	Autono. Op. EPS 2026E	Autono. Op. EPS 2027E	Price / Earnings 2025E	Price / Earnings 2026E	Price / Earnings 2027E	P/BV	P/TBV	Dividend Yield	Mkt. Cap ($B)
Associated	ASB	Outperform	$26.21	$28	$2.65	$3.00	$3.30	9.9x	8.7x	7.9x	0.9x	1.3x	3.5%	$4.3
Cadence	CADE	Outperform	39.77	41	3.05	3.70	4.00	13.0x	10.7x	9.9x	1.3x	1.7x	2.8%	7.3
Commerce	CBSH	Underperform	58.54	54	4.25	4.35	4.55	13.8x	13.4x	12.9x	2.1x	2.2x	1.9%	7.8
Cullen/Frost	CFR	Underperform	127.87	125	9.45	9.60	10.15	13.5x	13.3x	12.6x	2.0x	2.4x	3.1%	8.2
East West	EWBC	Outperform	104.95	116	9.25	10.10	10.55	11.3x	10.4x	9.9x	1.8x	1.9x	2.3%	14.5
First Citizens	FCNCA	Neutral	1,776.47	1,900	163.00	181.00	212.00	10.9x	9.8x	8.4x	1.1x	1.1x	0.4%	22.7
First Horizon	FHN	Outperform	23.43	26	1.80	2.00	2.25	13.1x	11.7x	10.4x	1.4x	1.7x	2.6%	11.9
Flagstar	FLG	Neutral	11.97	13	-0.47	0.36	0.71	NA	33.2x	16.8x	0.7x	0.7x	0.3%	5.0
FNB	FNB	Outperform	15.95	19	1.50	1.75	1.95	10.6x	9.1x	8.2x	0.9x	1.4x	3.0%	5.7
Fulton	FULT	Underperform	18.33	17	2.10	2.10	2.15	8.7x	8.7x	8.5x	1.1x	1.3x	3.9%	3.3
Hancock Whitney	HWC	Outperform	61.76	68	5.75	6.20	6.90	10.7x	10.0x	9.0x	1.2x	1.6x	2.9%	5.2
Pinnacle	PNFP	Neutral	91.18	99	7.85	11.40	12.00	11.6x	8.0x	7.6x	1.1x	1.6x	1.1%	7.1
Texas Capital	TCBI	Neutral	85.10	91	6.40	7.10	7.55	13.3x	12.0x	11.3x	1.2x	1.2x	NA	3.9
Western Alliance	WAL	Outperform	79.53	99	8.10	10.40	11.25	9.8x	7.6x	7.1x	1.2x	1.4x	1.9%	8.8
Webster	WBS	Outperform	59.18	67	5.95	6.70	7.45	9.9x	8.8x	7.9x	1.1x	1.7x	2.7%	9.8
Wintrust	WTFC	Outperform	131.42	148	11.00	11.85	12.65	12.0x	11.1x	10.4x	1.4x	1.6x	1.5%	8.8
Mid-Cap Banks Median								**11.1x**	**10.0x**	**9.0x**	**1.2x**	**1.6x**	**2.6%**	

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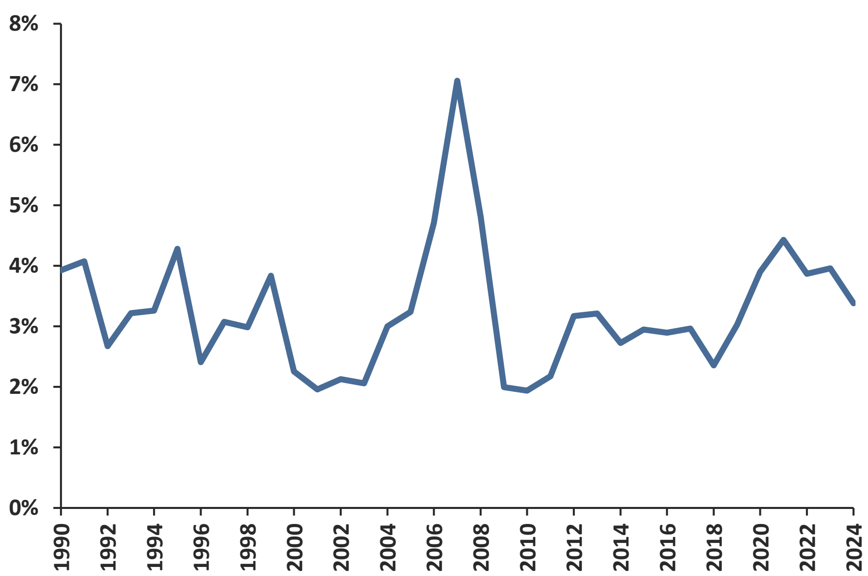
Source: Autonomous Research, Bloomberg, Company Reports. Priced as of 10/9/2025.

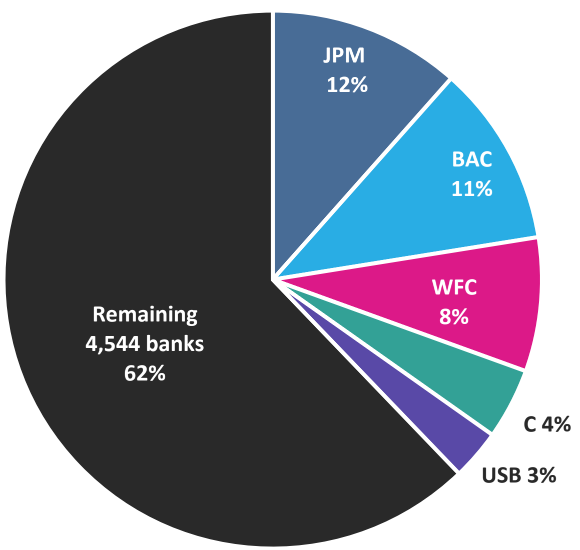
US Banks – Sector Context

- A small, but complex, sector with systemic implications.
- Understanding banks means understanding macro.
- Key sector debates: direction of interest rates, credit cycle, regulation, M&A

US Banks as % S&P 500 Market Cap



Deposit Market Share



Source: Autonomous Research, Bloomberg, FDIC.

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Part 1: How Do Banks Make Money?

Banks Do Not Operate Like Other Companies

- Unique structure where the **balance sheet generates the majority of revenues:**
  - Banks gather deposits from customers (liabilities)
  - Then use those deposits as liquidity to make new loans (assets)

- A loan is an asset to a bank versus a liability for other companies

Challenges of Analyzing and Valuing Banks	• Operating and financing cash flows are intertwined • Balance sheets subject to accrual and MTM accounting • Growth is not always "good" • Definition of "scale" varies across the sector • High regulation shapes return potential

Source: Autonomous Research.

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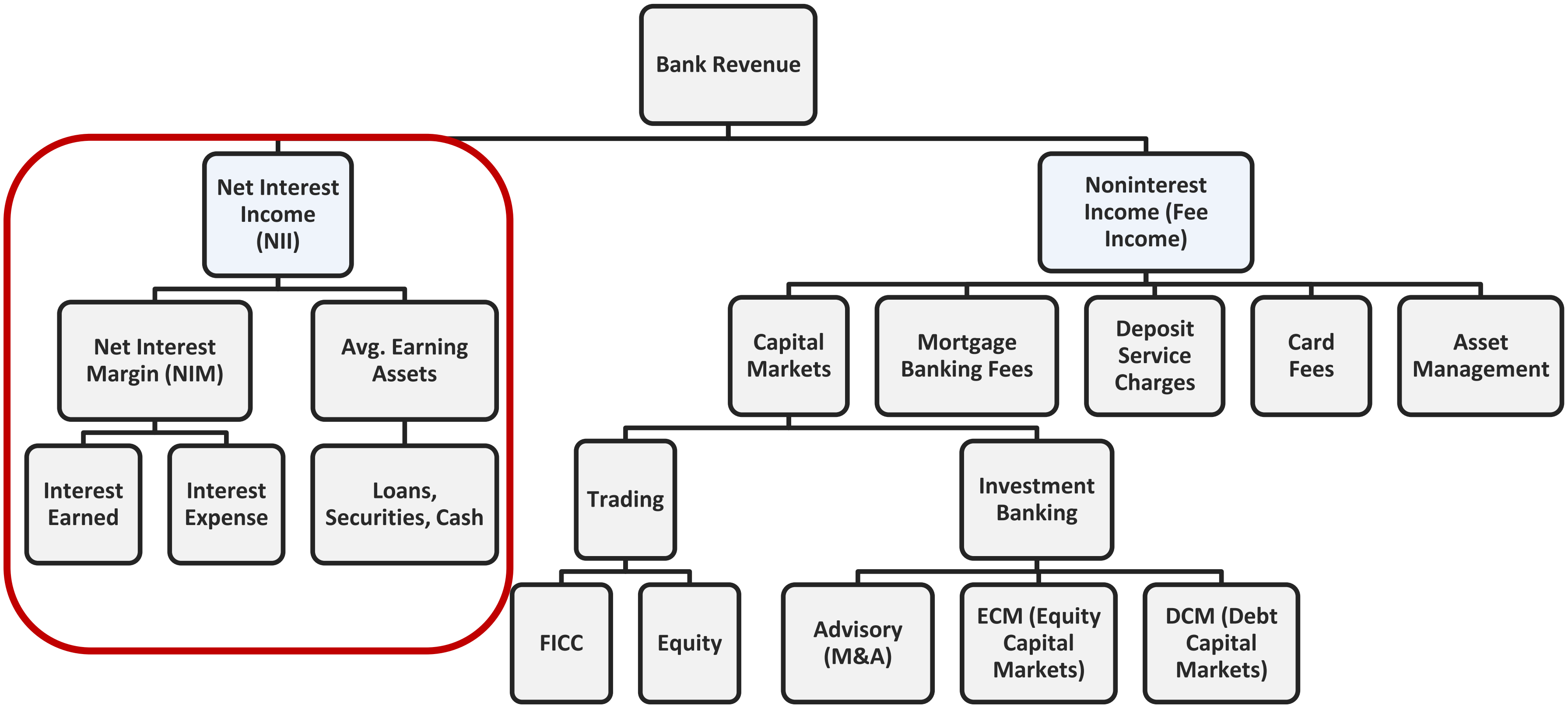
Bank Revenues – Driven by Net Interest Income (NII)



Source: Autonomous Research.

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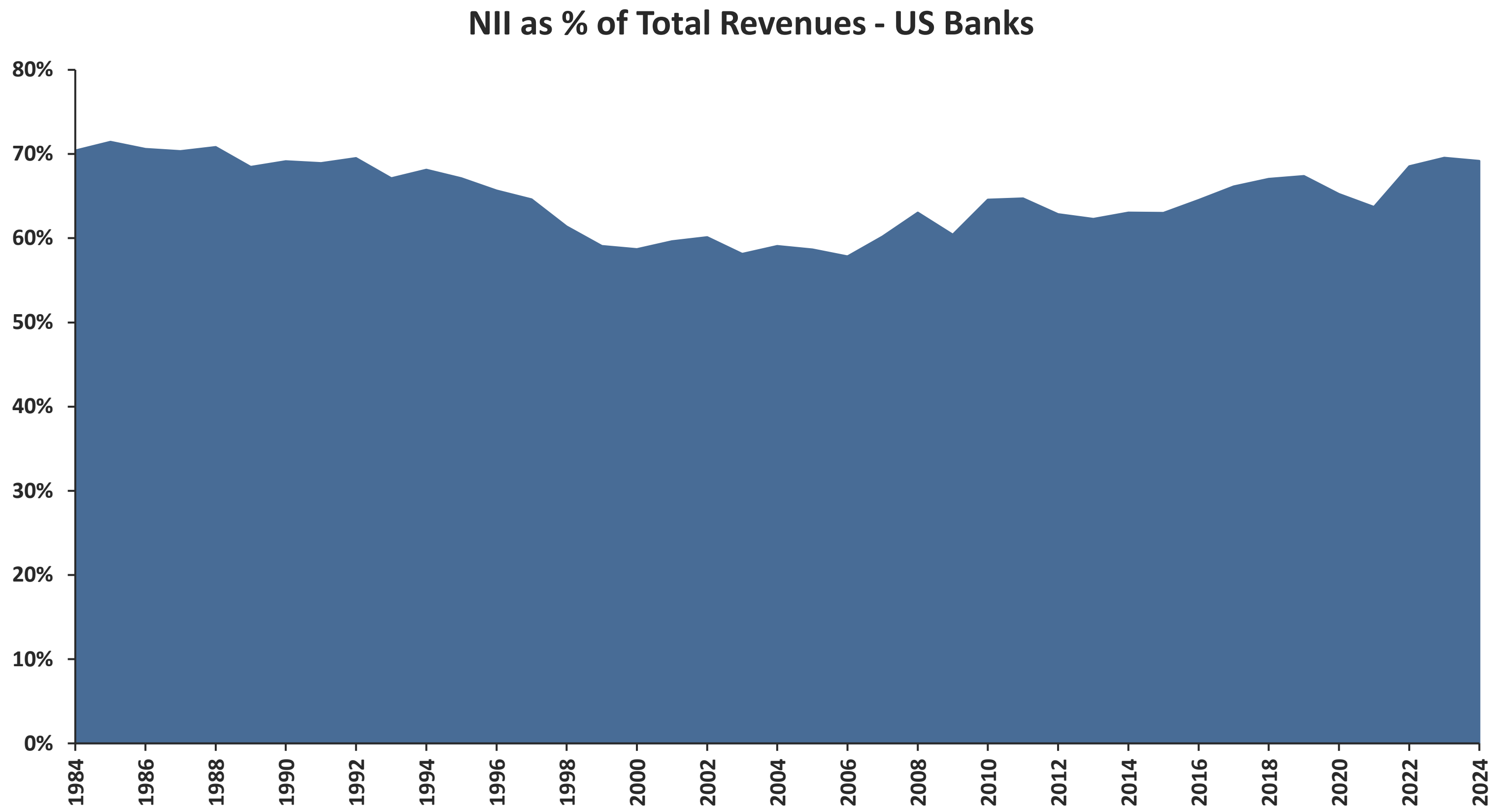
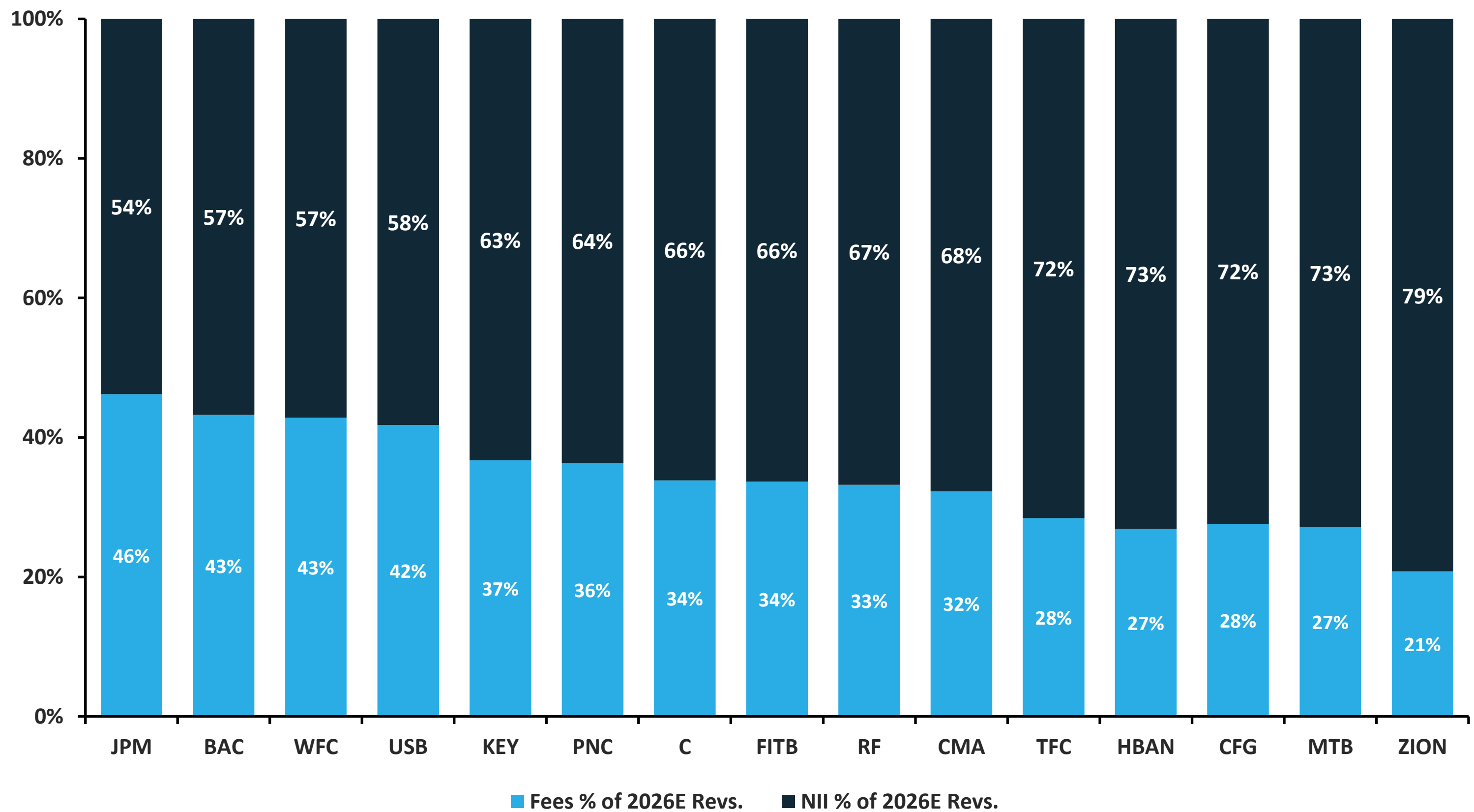
Net Interest Income (NII) Accounts for 70% of Revenues…



Source: Autonomous Research, FDIC.

...But There is Wide Dispersion in the Reliance on NII

Larger banks generate more fees:



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Source: Autonomous Research.

NII is a Function of Net Interest Margin (NIM) x Earning Assets

$$\text{Net Interest Income (\$)} = \underbrace{\text{Net Interest Margin (\%)}}_{\text{Margin or Spread}} \times \underbrace{\text{Average Earning Assets (\$)}}_{\text{Volume}}$$

Net Interest Margin (%):

$$\frac{\text{(Interest Income – Interest Expense)}}{\text{Earning Assets}}$$

Assets	Liabilities + Equity
Earning Assets: • Cash • Securities • Loans **Other Assets**	**Liabilities:** • Non-IB deposits • IB deposits • Debt • Other liabilities **Equity:** • Preferred stock • Common stock • AOCI

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Source: Autonomous Research.

NII Sensitive to Rate Movements, But Pace and Magnitude Matters

Banks provide varied sensitivities to rate movements:

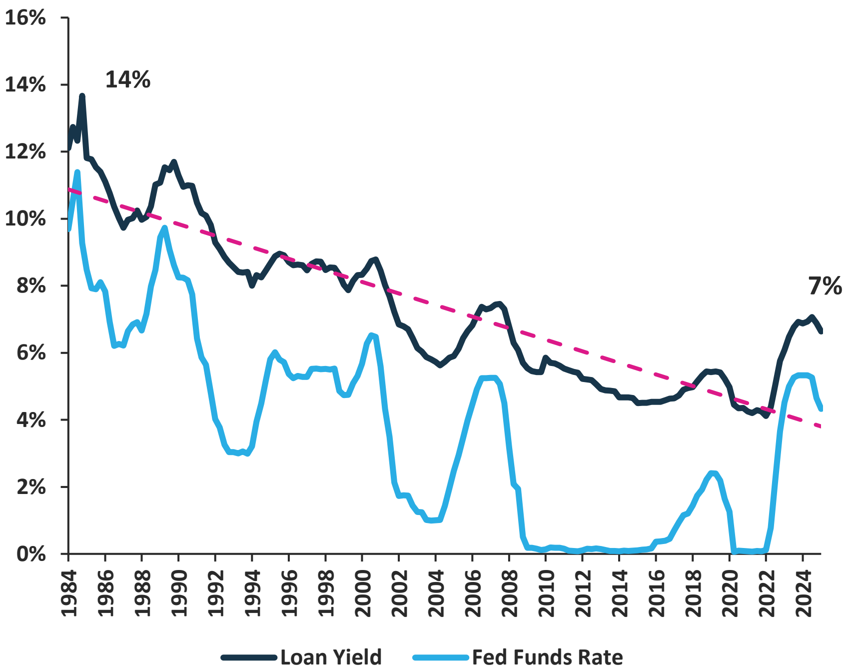
Shock Scenario				
2Q25	NII (%) Shock (100) bp	NII (%) Shock +100 bp	Rev (%) Shock (100) bp	EPS (%) Shock (100) bp
USB	1%	0%	0%	1%
PNC	-1%	0%	-1%	-2%
RF	-1%	1%	-1%	-2%
JPM	-2%	2%	-1%	-3%
TFC	-2%	2%	-1%	-5%
CFG	-2%	1%	-1%	-5%
BAC	-4%	2%	-2%	-7%
WFC	-4%	4%	-3%	-8%
C	-3%	2%	-2%	-9%
ZION	-4%	4%	-3%	-10%
Avg.	**-2%**	**2%**	**-1%**	**-5%**

Gradual Scenario				
2Q25	NII (%) Gradual (100) bp	NII (%) Gradual +100 bp	Rev (%) Gradual (100) bp	EPS (%) Gradual (100) bp
CMA	1%	-2%	1%	2%
FITB	1%	-2%	1%	2%
MTB	0%	0%	0%	0%
KEY	0%	0%	0%	-1%
HBAN	-1%	1%	-1%	-2%
RF	-1%	1%	-1%	-2%
CFG	-1%	1%	-1%	-3%
TFC	-2%	1%	-1%	-4%
Avg.	**0%**	**0%**	**0%**	**-1%**

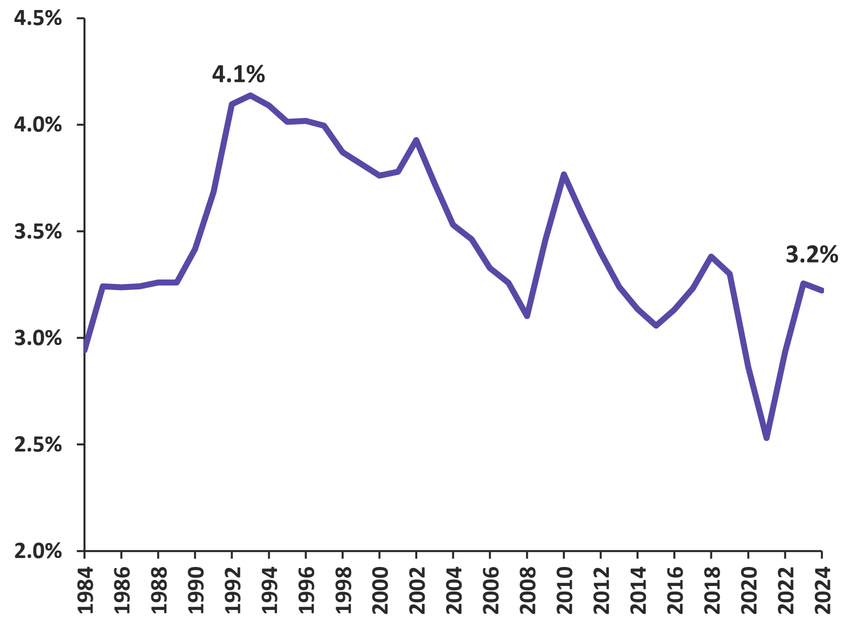
Source: Autonomous Research, Company Reports. Note: NII impacts expressed in absolute $ are converted to pcts. and use annualized 2Q25 results. Impacts are converted to a standardized basis using simple arithmetic for KEY, PNC, TFC, and USB.

Lower Rates Have Put Pressure on Loan Yields and NIM

Lower Rates Have Pressured Yields…



…Leading to Lower NIM



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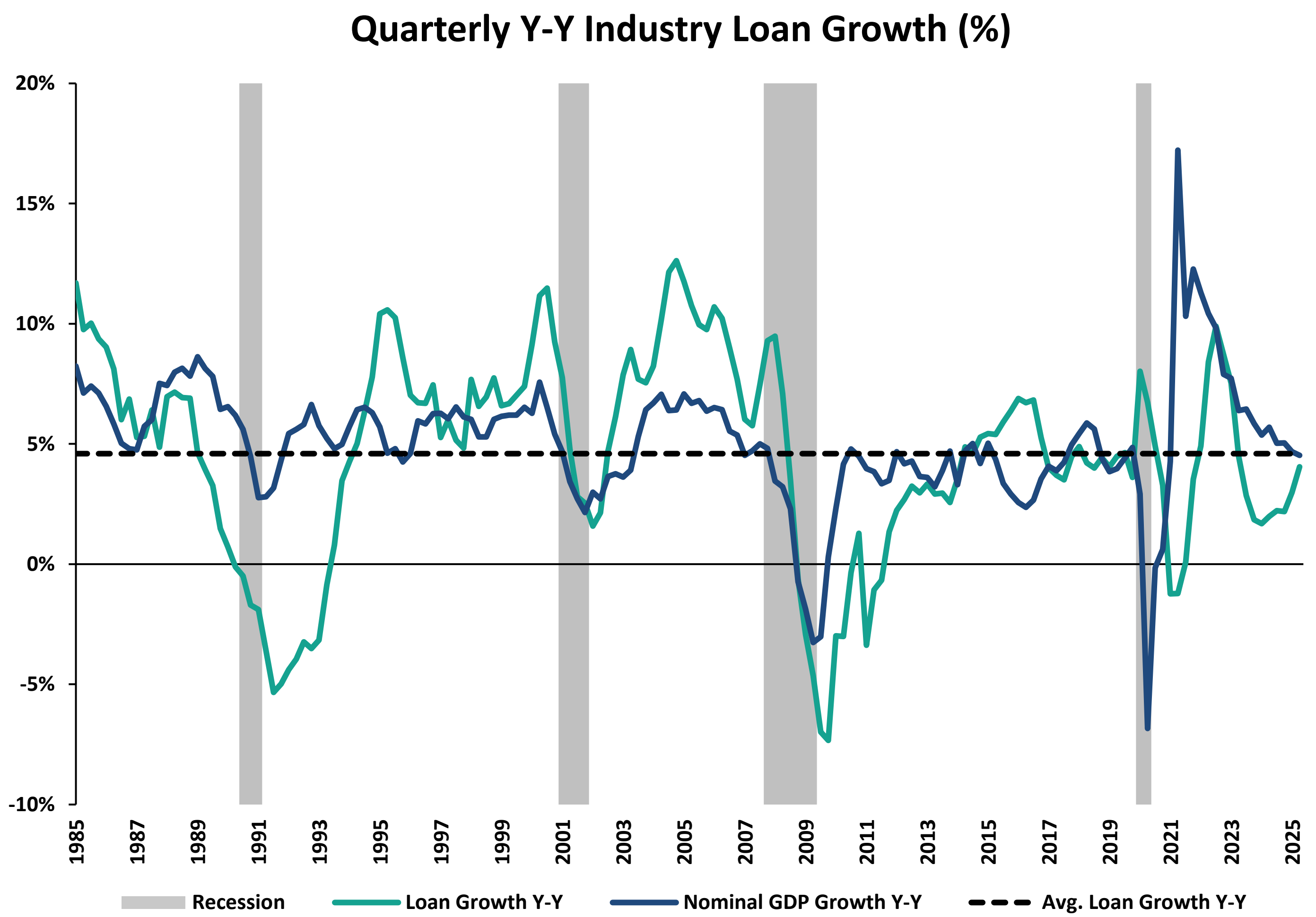
Source: FDIC, Autonomous Research.

Loan Growth is Cyclical & Historically ~1x GDP



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Source: FDIC, Autonomous Research.

Loan Mix is Different Between Large and Small Banks

Category	Amount of Loan Mix (All Banks) ($mm)	Amount of Loan Mix (Large Banks) ($mm)	Amount of Loan Mix (Small Banks) ($mm)
C&I	2,157,284	1,424,086	733,198
CRE	2,914,806	836,667	2,078,139
Construction	435,902	120,100	315,802
Multifamily	601,852	230,946	369,906
Other Commercial	2,332,424	1,865,512	466,912
HELOC	274,205	153,653	120,552
Resi RE	2,381,270	1,477,056	904,214
Card	1,048,111	951,513	96,598
Auto	497,582	422,227	75,355
Other Consumer	296,031	152,625	143,406
Total Loans	**11,901,713**	**7,283,339**	**4,618,374**
Memo: NDFI	*1,276,618*	1,107,363	169,255
Memo: NDFI + C&I	*3,433,902*	*2,531,449*	*902,453*

Category	Percent of Loan Mix (All Banks)	Percent of Loan Mix (Large Banks)	Percent of Loan Mix (Small Banks)
C&I	18%	20%	16%
CRE	24%	11%	45%
Construction	4%	2%	7%
Multifamily	5%	3%	8%
Other Commercial	20%	26%	10%
HELOC	2%	2%	3%
Resi RE	20%	20%	20%
Card	9%	13%	2%
Auto	4%	6%	2%
Other Consumer	2%	2%	3%
Total Loans	**100%**	**100%**	**100%**
Memo: NDFI	*11%*	*15%*	*4%*
Memo: NDFI + C&I	*29%*	*35%*	*20%*

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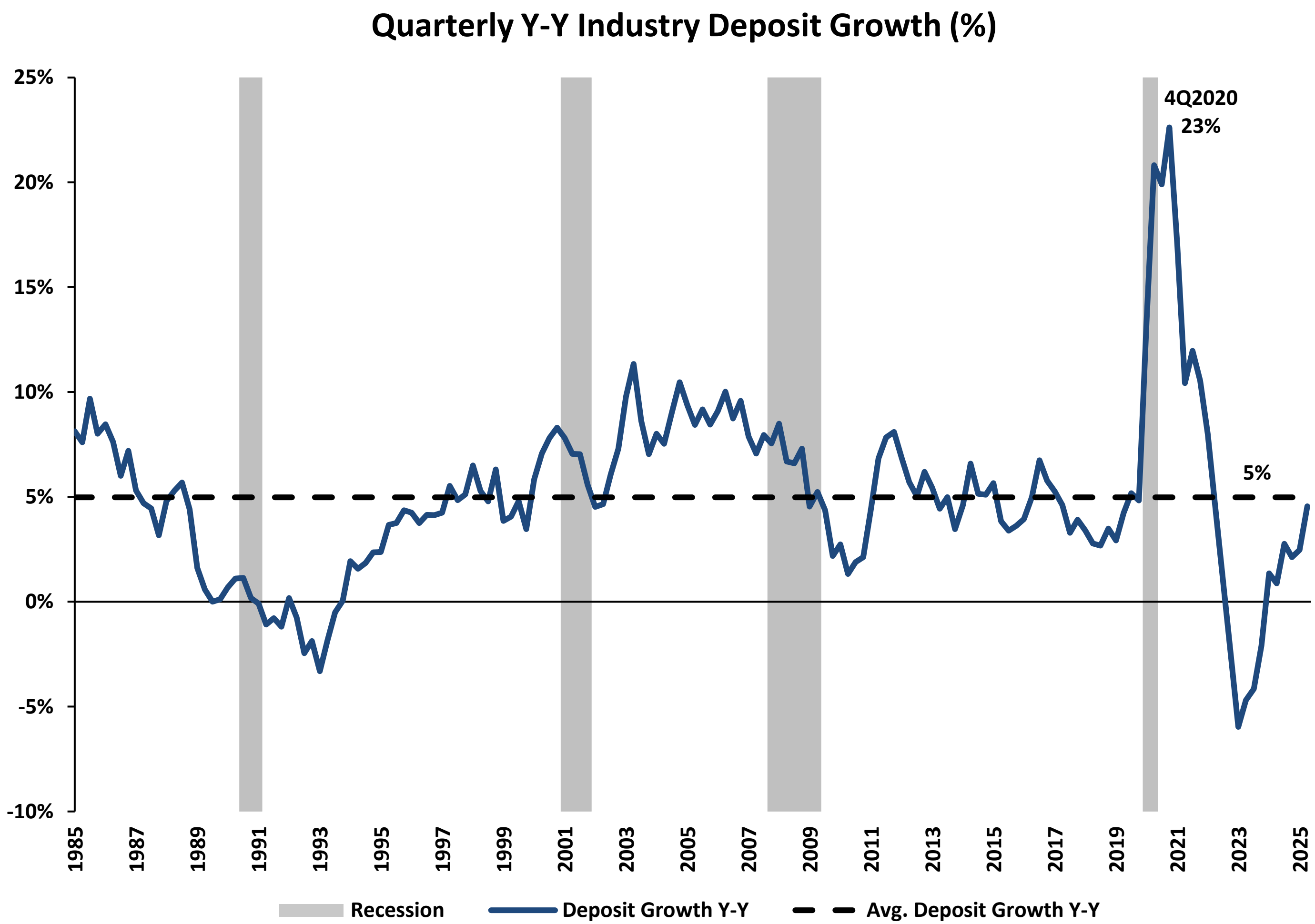
Source: Federal Reserve, Autonomous Research. Data as of 10/1/2025.

Deposit Growth is Normalizing From COVID and 2023 Failures



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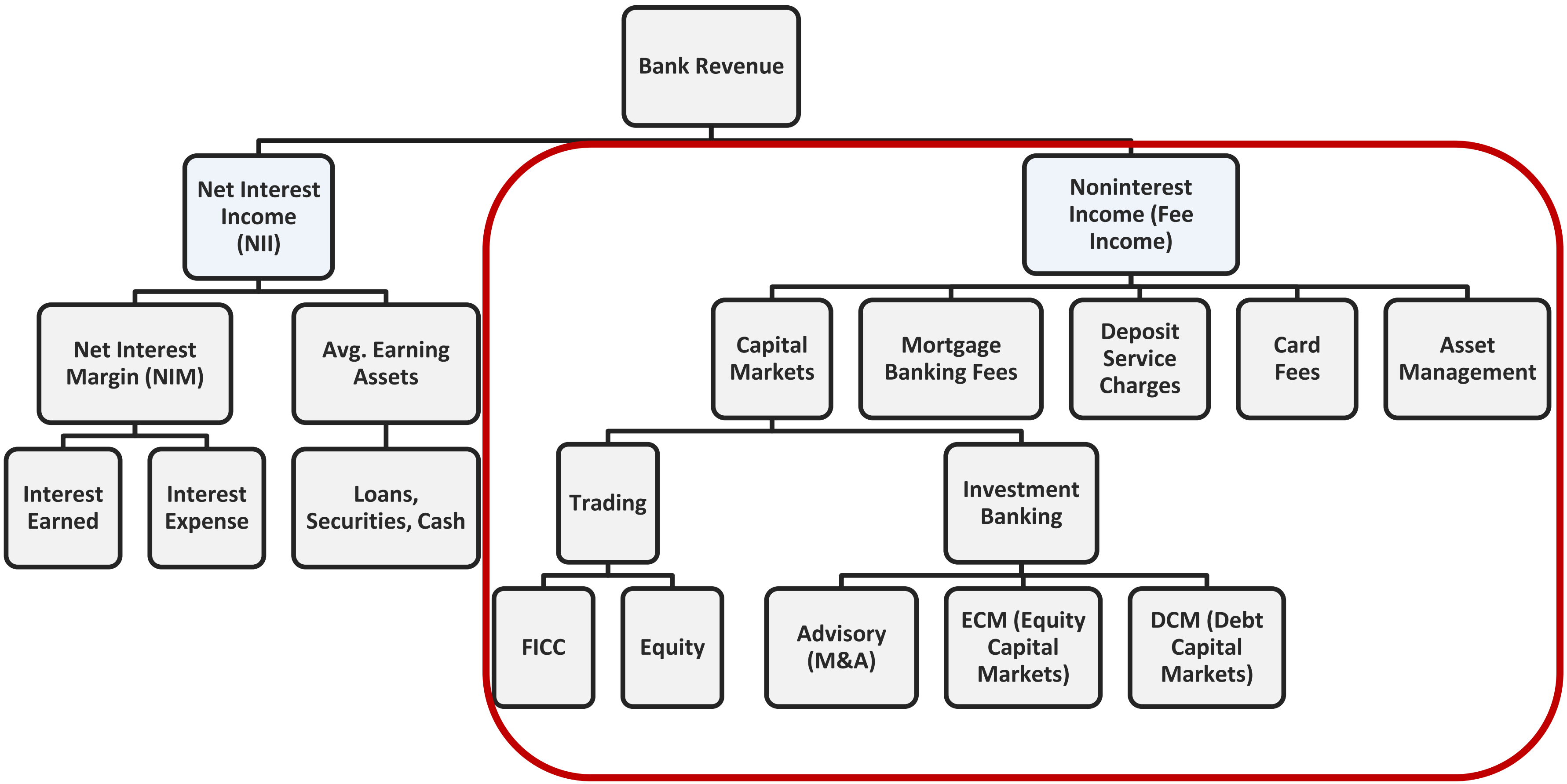
Source: FDIC, Autonomous Research.

Bank Revenues – Diverse Fee/Non-Interest Income Streams



Source: Autonomous Research.

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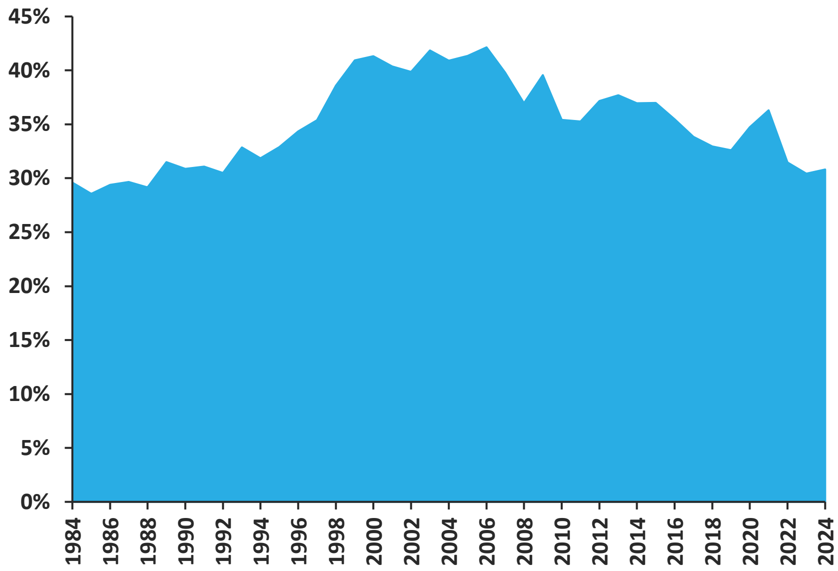
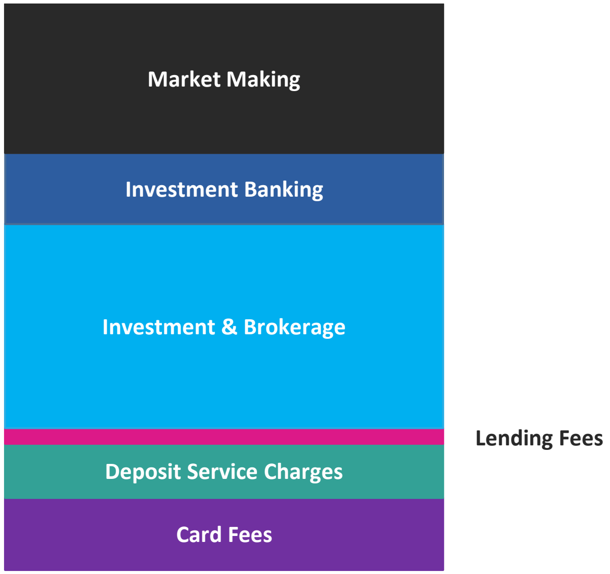
Fee Income Now ~30% of Revenues; Highly Desired by All

Fees as % of Revenues - US Banks



Example of Various Types of Fees



BAC Fee Income Mix

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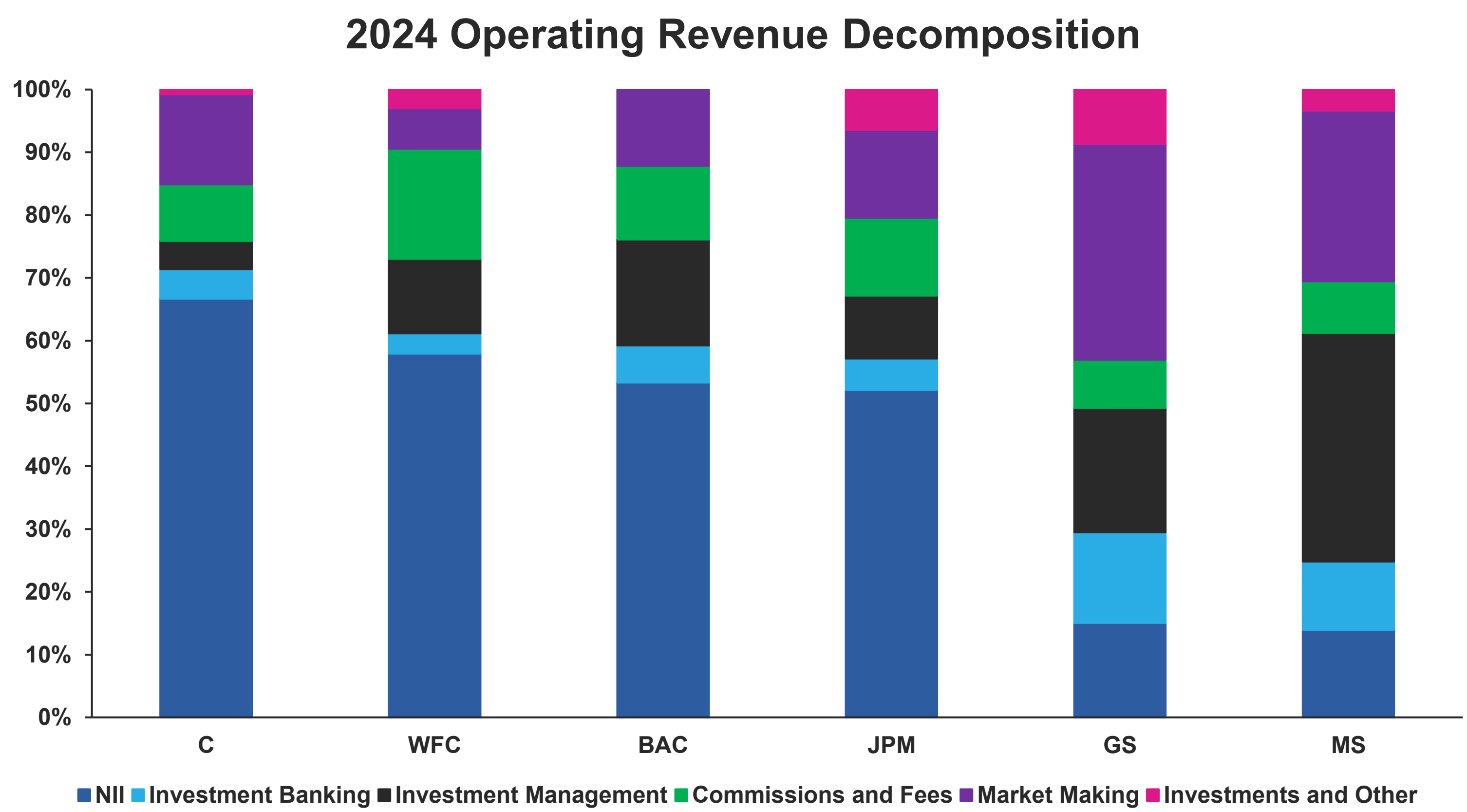
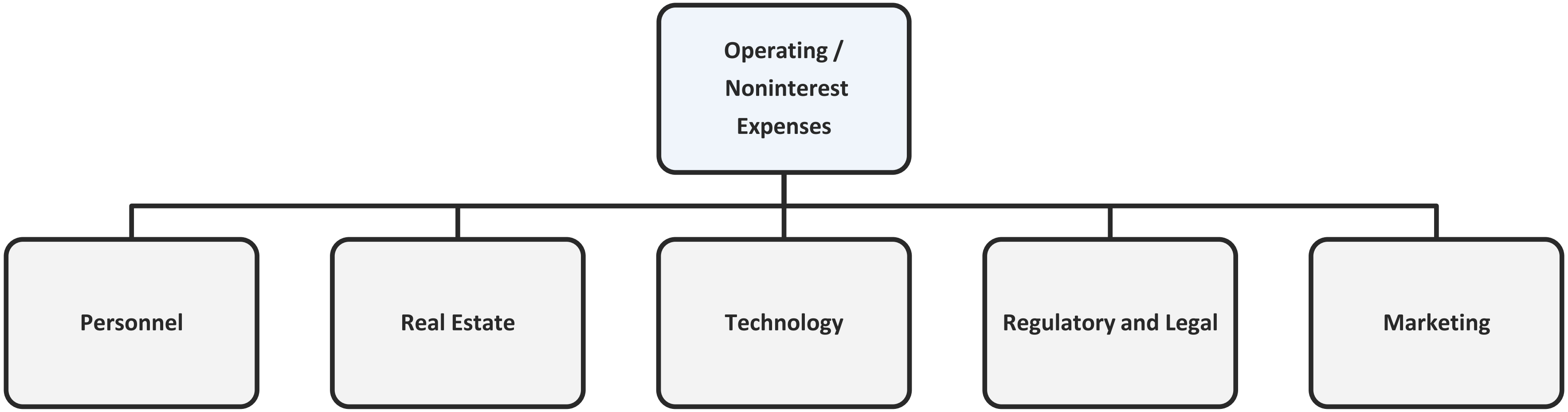
Source: FDIC, Company Reports, Autonomous Research.

Revenues Vary Significantly, Especially For Biggest Banks



Source: Autonomous Research, S&P Capital IQ, Company reports. GS/MS covered by Christian Bolu.

Operating/Noninterest Expenses: Banking is a People Business



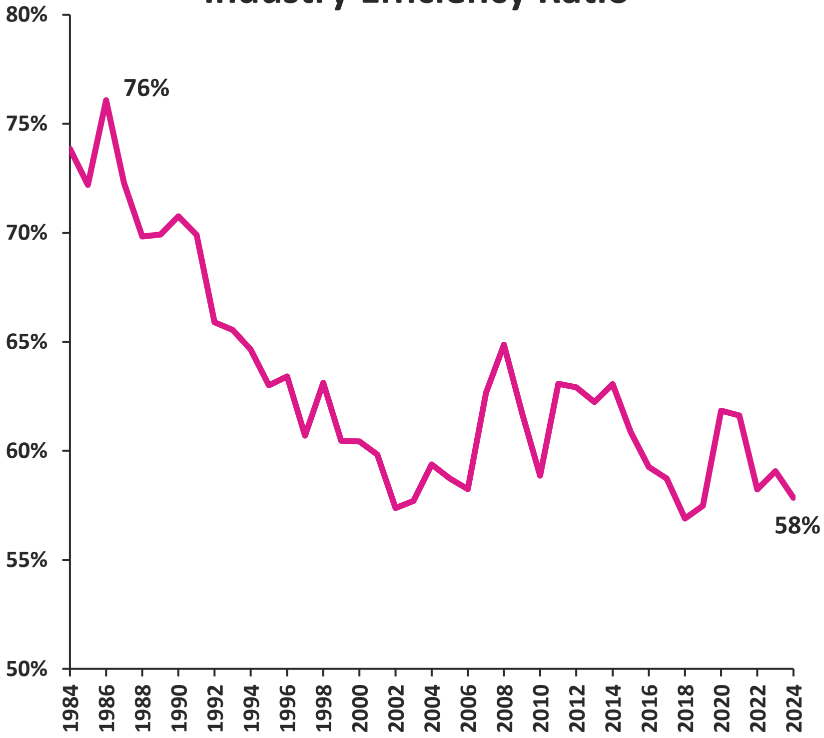
Remember: Interest expense was already deducted when calculating NII.

Source: Autonomous Research.

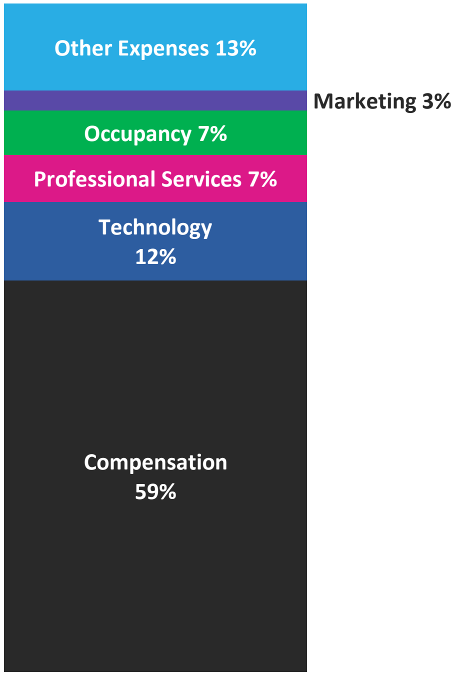
Expenses – Vast Improvements in Efficiency Over Time

$$\textit{Efficiency Ratio} = \frac{\text{Noninterest Expense}}{\text{Total Revenues}}$$

Industry Efficiency Ratio



Expenses - Universal Banks Average



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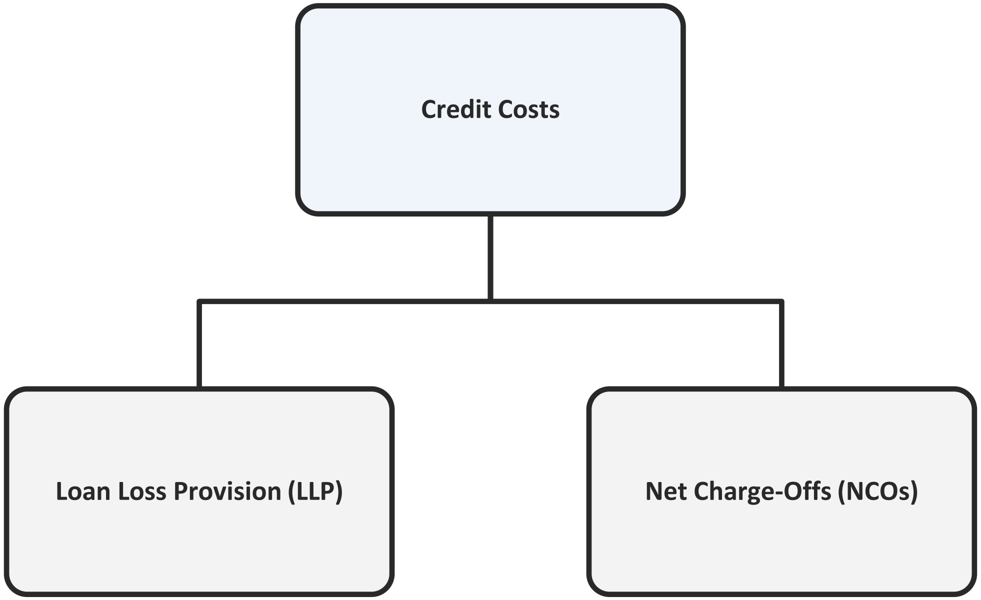
Source: FDIC, Autonomous Research, Company Data. Expenses are average of C, JPM, BAC, and WFC expenses for 2024.

Credit Costs and Provisions: The Most Important Cycle



Note: The difference between LLP and NCOs is the <u>reserve build or release</u>

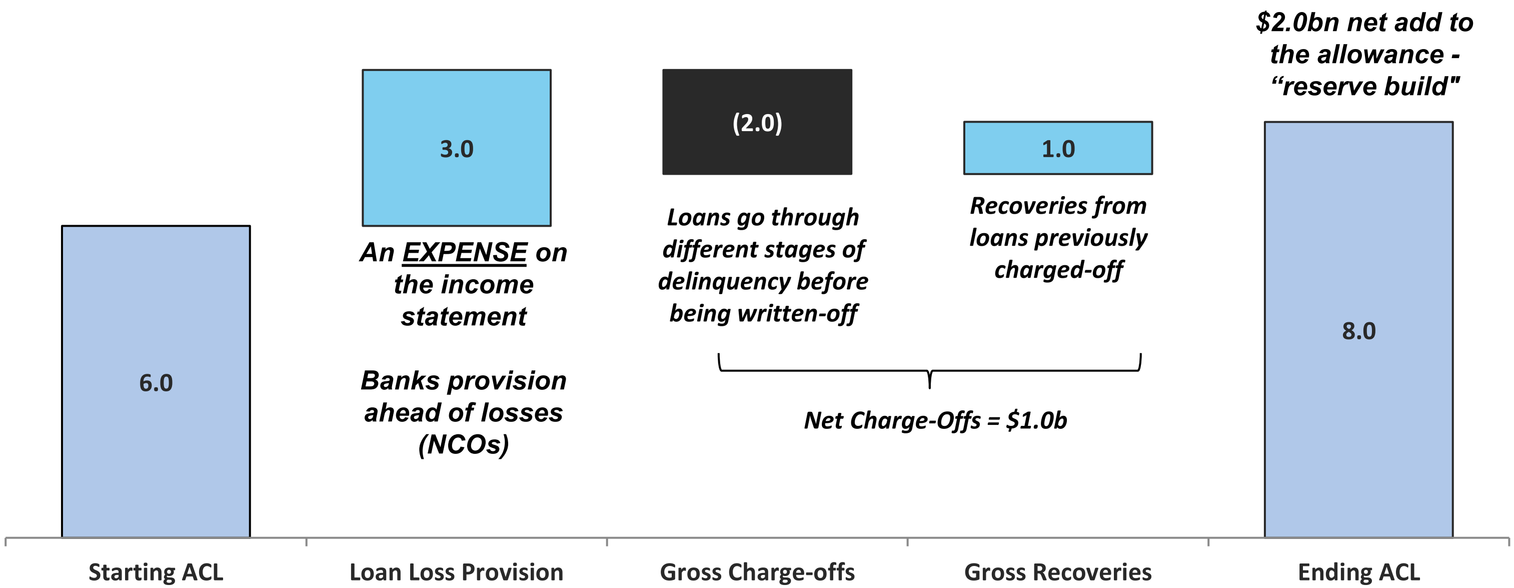
Source: Autonomous Research.

Credit Costs are Driven by Multiple Factors

As loans <u>start to go bad</u>, banks add to an allowance for credit losses (ACL), which is then drawn down when they <u>actually</u> lose money on loans

- *Additions to ACL are done through "provisioning," an expense item on the income statement*

An Example of Allowance for Credit Losses ($bn)



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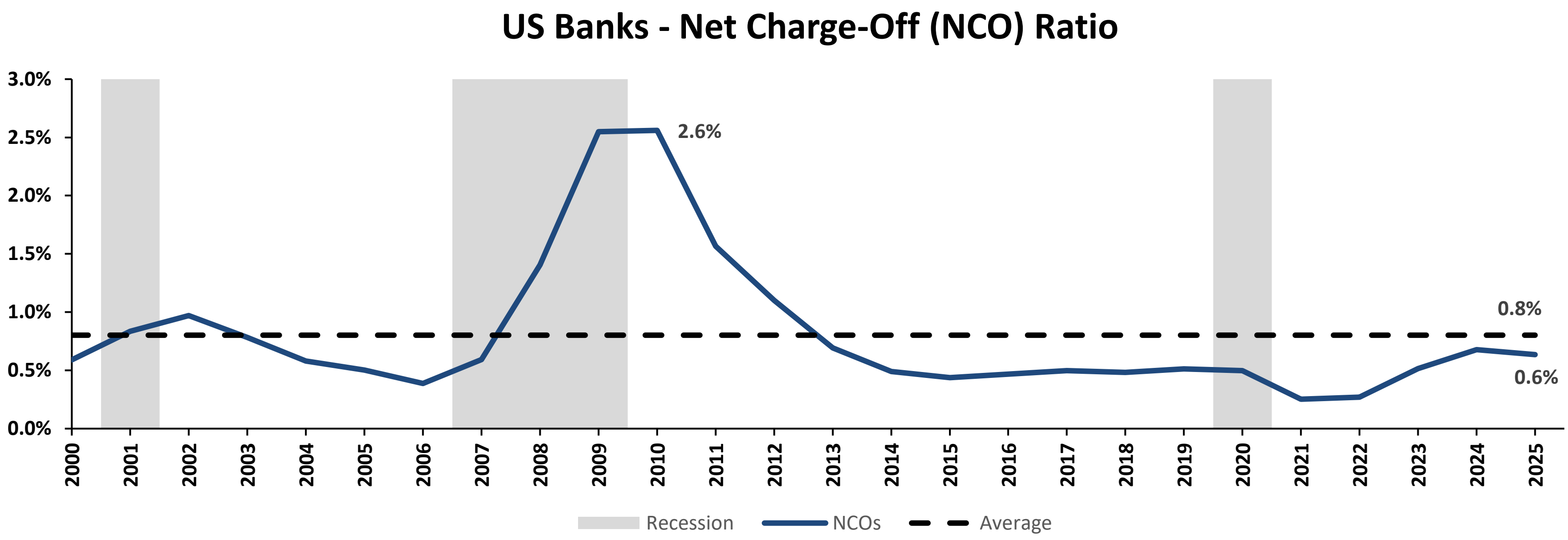
Source: Autonomous Research.

Credit Costs are Cyclical

- *Charge-offs normalization higher from all-time lows*
- *Periods of low charge-offs are frequently followed by periods of higher-than-average charge-offs*
- *Commercial real estate (especially office) is the biggest point of concern for investors today*



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Source: FDIC, Federal Reserve, Autonomous Research. Data for 2025 is annualized.

Part 2: Topical Issues

Deregulation & Capital

Banks Get Placed into Regulatory Buckets in "Tailoring"

- **Category I**
  - US GSIBs
- **Category II**
  - Assets > $700B or >$75B in cross-jurisdictional activity
- **Category III**
  - Assets of $250-$700B or > $75B in nonbank assets, weighted short-term wholesale funding, or off-balance sheet exposure
- **Category IV**
  - Assets of $100-$250B

Regulatory Tiering	Company Ticker	Total Assets ($mm)
Category I	JPM	4,552,482
	BAC	3,441,142
	C	2,622,772
	WFC	1,981,269
	GS	1,785,009
	MS	1,353,870
	BK	485,781
	STT	376,717
Category II	NTRS	171,884
Category III	USB	686,370
	PNC	559,107
	TFC	543,833
Category IV	FCNCA	229,653
	CFG	218,310
	FITB	209,991
	MTB	211,584
	HBAN	207,742
	ALLY	189,473
	KEY	185,499
	RF	159,206
	SYF	120,505
	PNFP/SNV*	115,858
	FLG**	92,237

* Pro forma for announced PNFP/SNV merger.

** FLG was over $100B in assets for the 2024 stress test.

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Source: S&P Capital, Bloomberg, Autonomous Research.

Tailoring Leads to Different Tests for Banks to Meet

Banks	Category	Stress Test	Global Market Shock	Exploratory Market Shock	Counterparty Default	Adv. Approach	TLAC	SLR	LCR
BAC	I	Annual	X	X	X	X	X	eSLR	Full
BK	I	Annual		X	X	X	X	eSLR	Full
C	I	Annual	X	X	X	X	X	eSLR	Full
GS	I	Annual	X	X	X	X	X	eSLR	Full
JPM	I	Annual	X	X	X	X	X	eSLR	Full
MS	I	Annual	X	X	X	X	X	eSLR	Full
STT	I	Annual		X	X	X	X	eSLR	Full
WFC	I	Annual	X	X	X	X	X	eSLR	Full
NTRS	II	Annual				X		SLR	Full
PNC	III	Annual						SLR	Mod.
TFC	III	Annual						SLR	Mod.
USB	III	Annual						SLR	Mod.
CFG	IV	Biennial							Ltd.
FCNCA	IV	Biennial							Ltd.
FITB	IV	Biennial							Ltd.
FLG	IV	Biennial							Ltd.
HBAN	IV	Biennial							Ltd.
KEY	IV	Biennial							Ltd.
MTB	IV	Biennial							Ltd.
RF	IV	Biennial							Ltd.
PNFP/SNV	IV	Biennial							Ltd.

Source: Autonomous Research.

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There are Different Types of Capital Requirements

Risk-Weighted Assets (RWAs) = Risk Weight (%) x Risk Asset ($)

Risk-Based Asset Ratios:

CET1 Ratio:

$$\frac{\text{Retained Earnings + Com. Stock + AOCI - Intangibles}}{\text{RWAs}}$$

Tier 1 Capital Ratio:

$$\frac{\text{CET1 + Preferred + Contingent Convertible Bonds}}{\text{RWAs}}$$

Total Capital Ratio:

$$\frac{\text{Tier 1 + Sub. Debt w/ Mat.} > \text{5 yrs + ACL}}{\text{RWAs}}$$

Raw Leverage Ratios:

Tier 1 Leverage:

$$\frac{\text{Tier 1 Capital}}{\text{Avg. Assets Adjusted for Intangibles}}$$

SLR:*

$$\frac{\text{Tier 1 Capital}}{\text{Avg. Total On \& Off-Balance Sheet Lev. Exposure}}$$

* Cat. I banks are subject to an enhanced SLR (eSLR) ratio.

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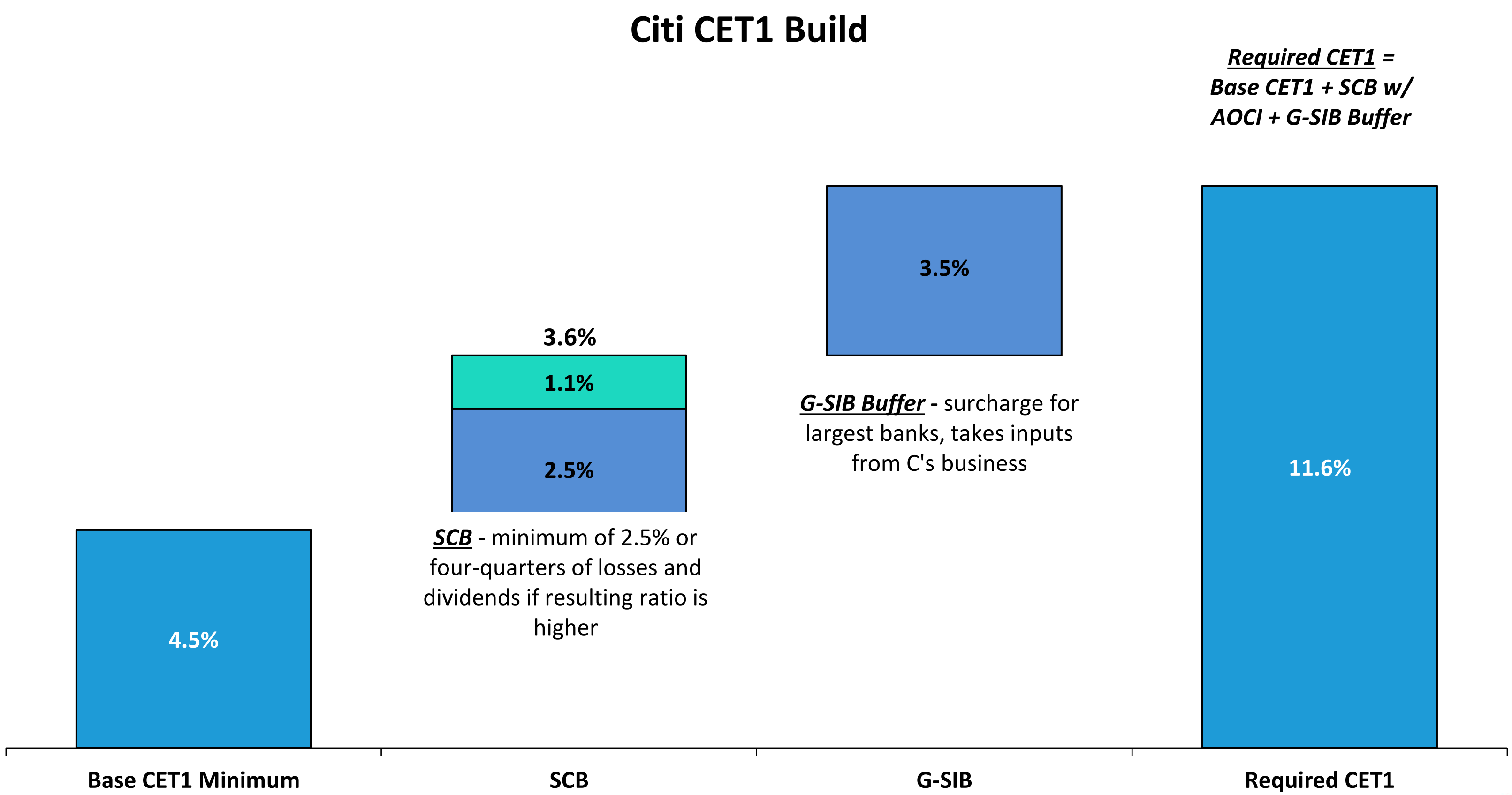
Source: Autonomous Research.

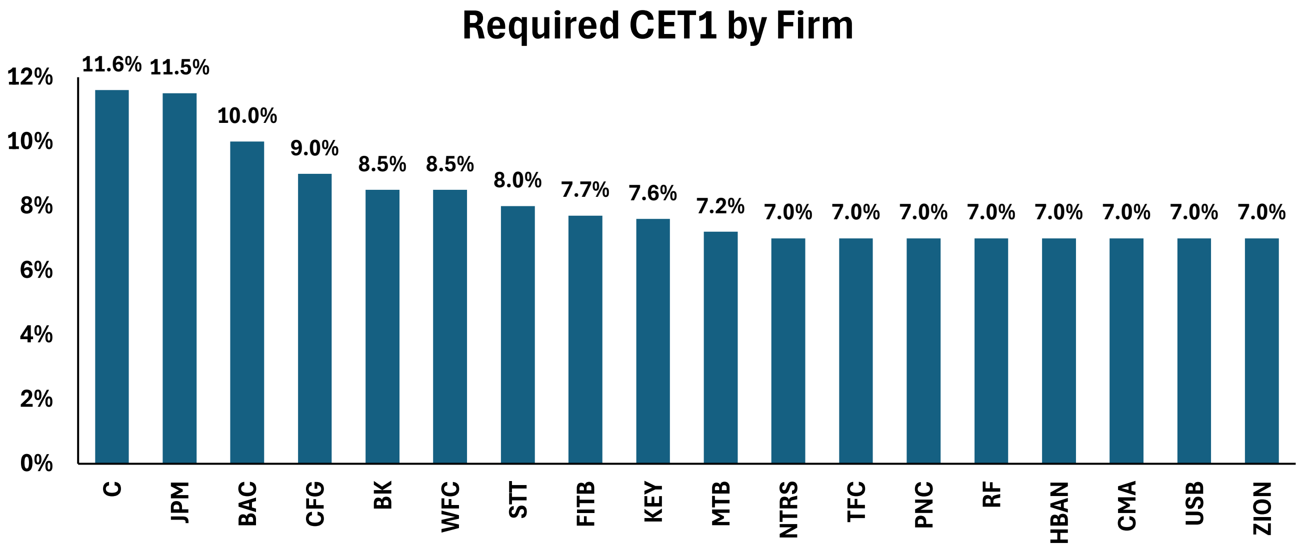
Walkthrough of a CET1 Requirement



Source: Federal Reserve, Autonomous Research.

Required CET1 Varies by Firm

- Different banks have different levels of CET1 to maintain
- The greater the bank's scope & complexity, the higher its required CET1 ratio



Source: Federal Reserve, Autonomous Research.

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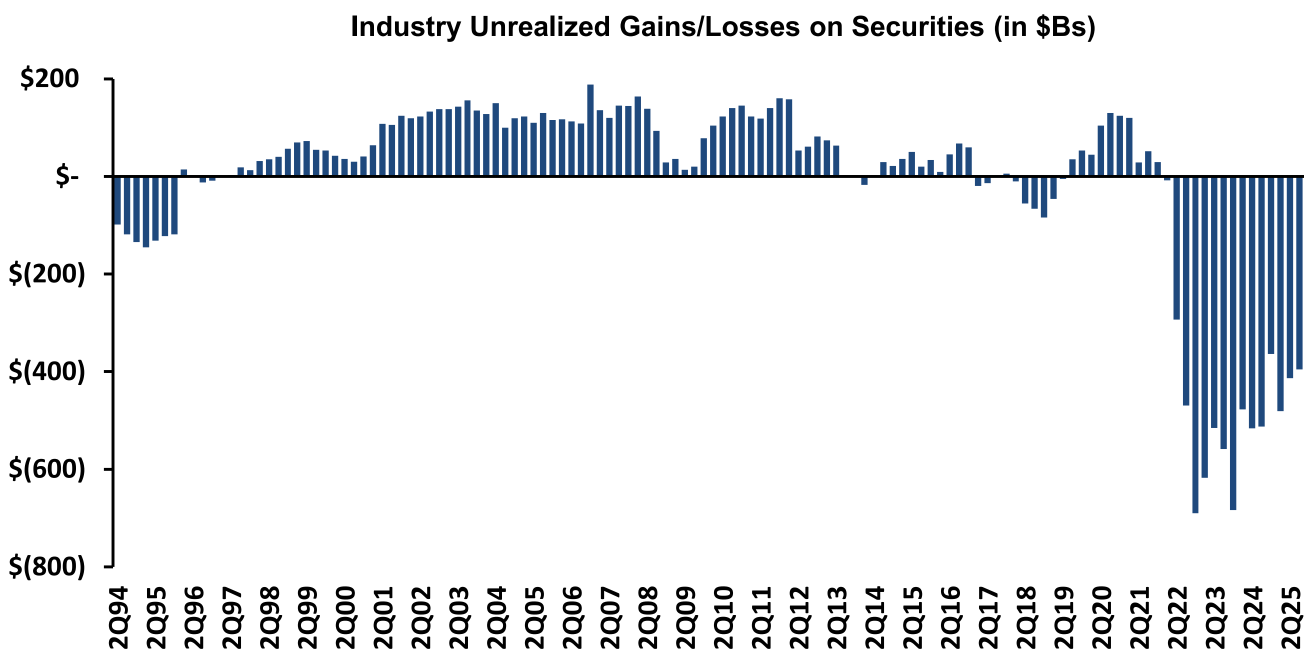
Why Talk About AOCI?

- Cat. I & II banks must include AOCI in their CET1
- Cat. III & IV banks can opt out of the AOCI inclusion – but regulators are considering eliminating that option
- Heading into the 2025 Stress Test, AOCI inclusion would have reduced Cat. III & IV banks' average excess CET1 by 1.8%



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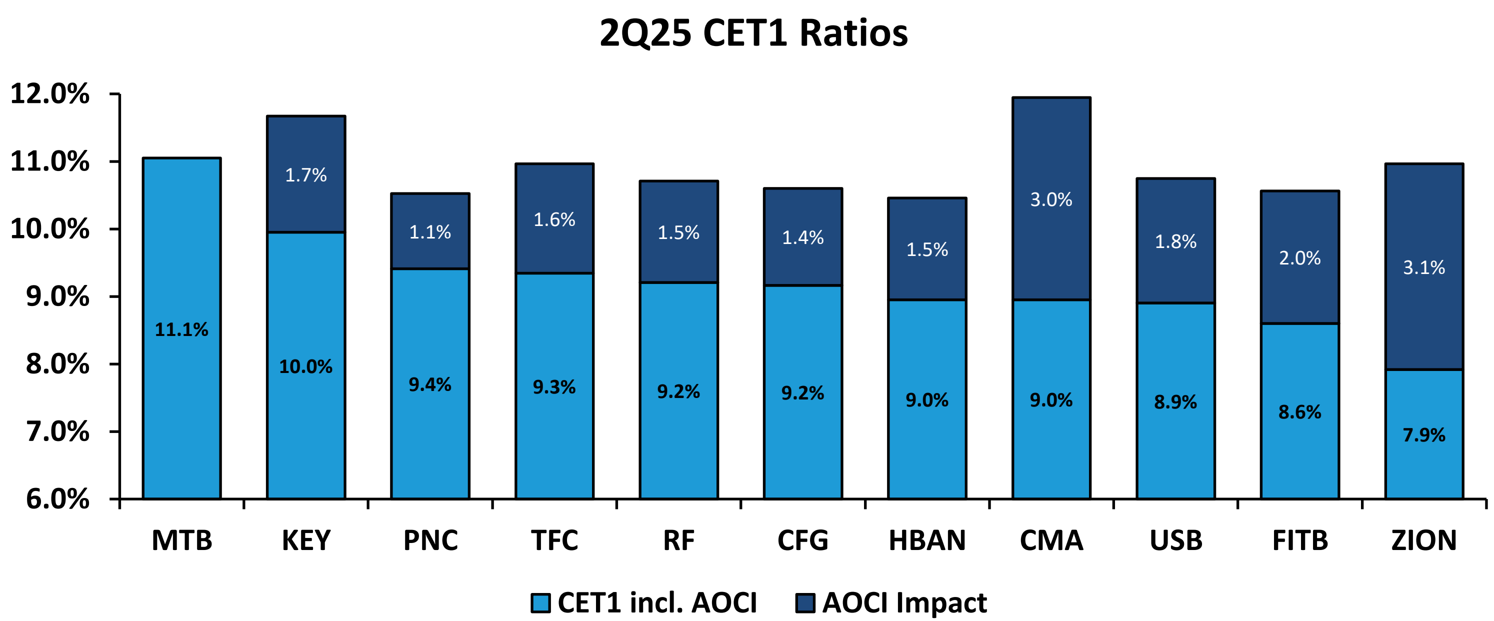
Source: Autonomous Research, FDIC.

Banks Are Well-Capitalized Today

- While banks would get closer to their regulatory minimums if economic conditions deteriorated, they are in strong capital positions, especially as AOCI continues to recover with lower rates.



Source: Autonomous Research.

Proposed eSLR Reform – More of a UST Market Benefit

- Current proposal for eSLR would reduce the requirement from 5% to 3% plus half of the Method 1 G-SIB buffer.
- The modification to eSLR would reduce this capital requirement for all the US G-SIBs.

	Current SLR Requirement	2025 Method 1 G-SIB Surcharge	New Proposed SLR Requirement	Reduction in SLR Requirement
BK	5.00%	1.00%	3.50%	-1.50%
MS	5.00%	1.00%	3.50%	-1.50%
STT	5.00%	1.00%	3.50%	-1.50%
WFC	5.00%	1.00%	3.50%	-1.50%
BAC	5.00%	1.50%	3.75%	-1.25%
GS	5.00%	1.50%	3.75%	-1.25%
C	5.00%	2.00%	4.00%	-1.00%
JPM	5.00%	2.50%	4.25%	-0.75%
Average	**5.00%**	**1.44%**	**3.72%**	**-1.28%**

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Source: Autonomous Research.

Proposed G-SIB Surcharge Adjustment Would Free Up Capital

- G-SIB surcharges are calculated under two methodologies: one set by the BIS that the Fed matches, and a second, Fed-specific mechanism that alters the BIS methodology and has resulted in tighter capital requirements.
- The formulas were set after the GFC and are not adjusted for economic growth.
- Proposed changes would adjust the G-SIB calculation for economic growth as well as make narrower bands for smaller step-ups in capital requirements.

	Current Surcharge	Adj. for Econ Growth	Adj. for Growth & ST Funding	Adj. for Growth/ST Funding/Skinny Bucket	Est. Reduction in Surcharge (bp)
JPM	5.5%	4.0%	3.5%	3.4%	-210bp
GS	4.0%	3.0%	2.0%	2.1%	-190bp
MS	3.5%	2.5%	2.0%	1.8%	-170bp
C	4.0%	2.5%	2.5%	2.3%	-170bp
BAC	3.5%	2.5%	2.0%	2.2%	-130bp
BK	1.5%	1.5%	1.0%	1.0%	-50bp
WFC	1.5%	1.0%	1.0%	1.1%	-40bp
STT	1.0%	1.0%	0.0%	1.0%	0bp
Average	**3.1%**	**2.3%**	**1.8%**	**1.9%**	**-120bp**

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Source: Autonomous Research.

Part 3: Topical Issues

M&A

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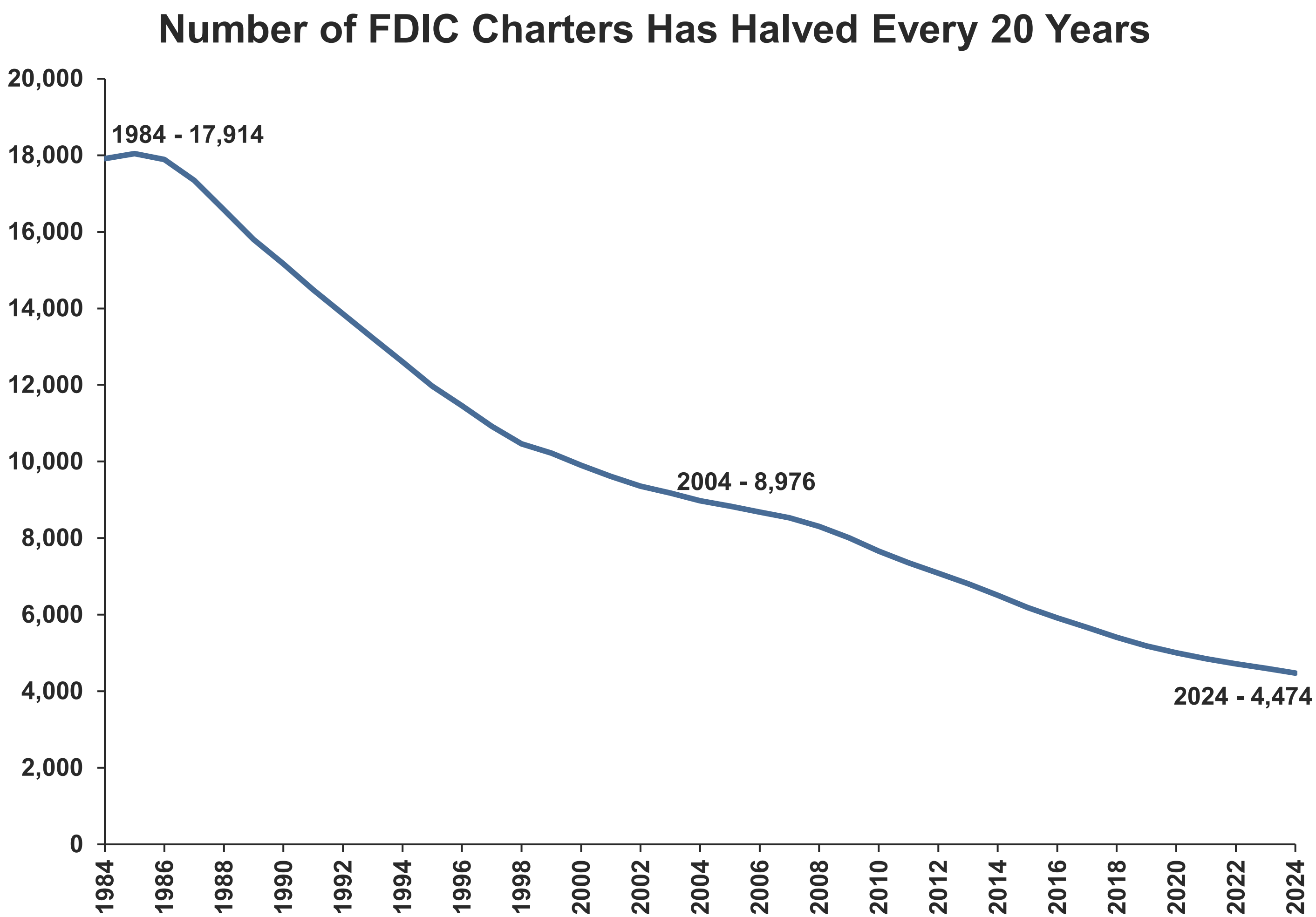
The Total Number of Banks Continues to Decline



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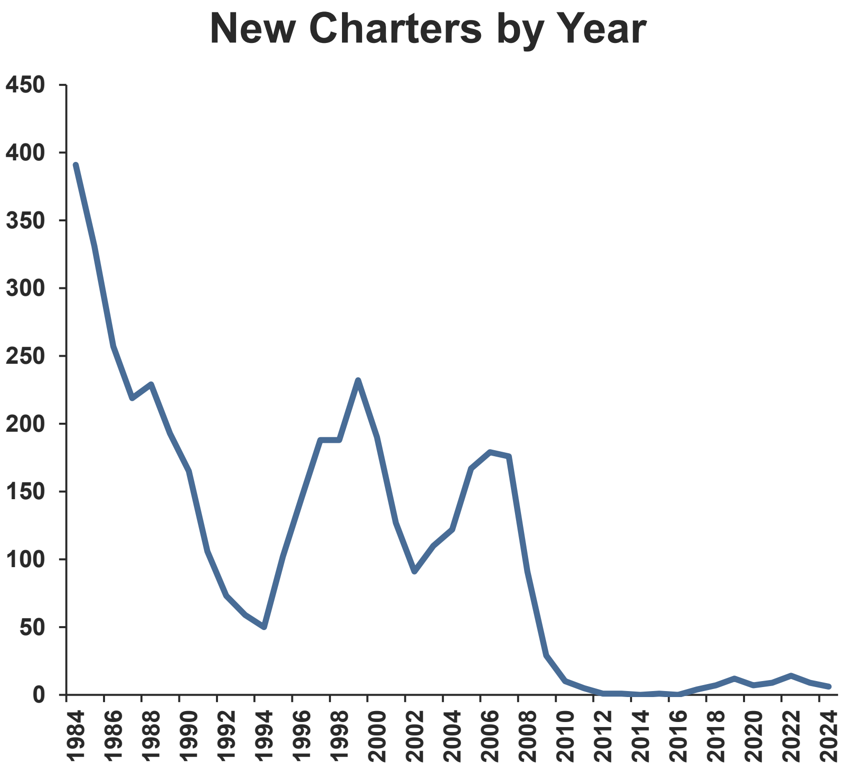
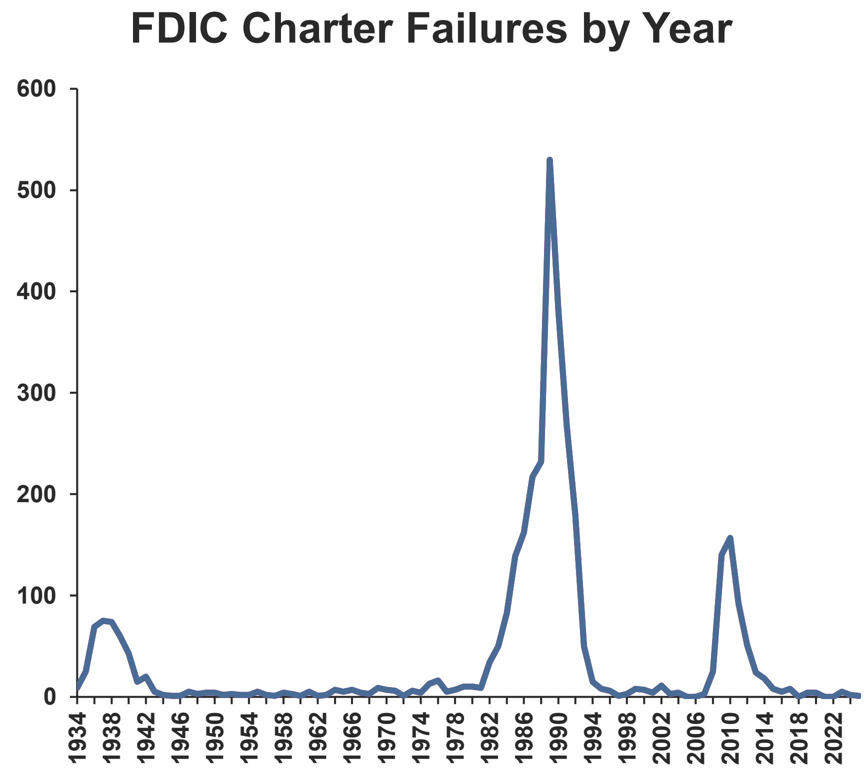
Source: FDIC, Autonomous Research.

New Bank Charters are Offset by Failures Each Year





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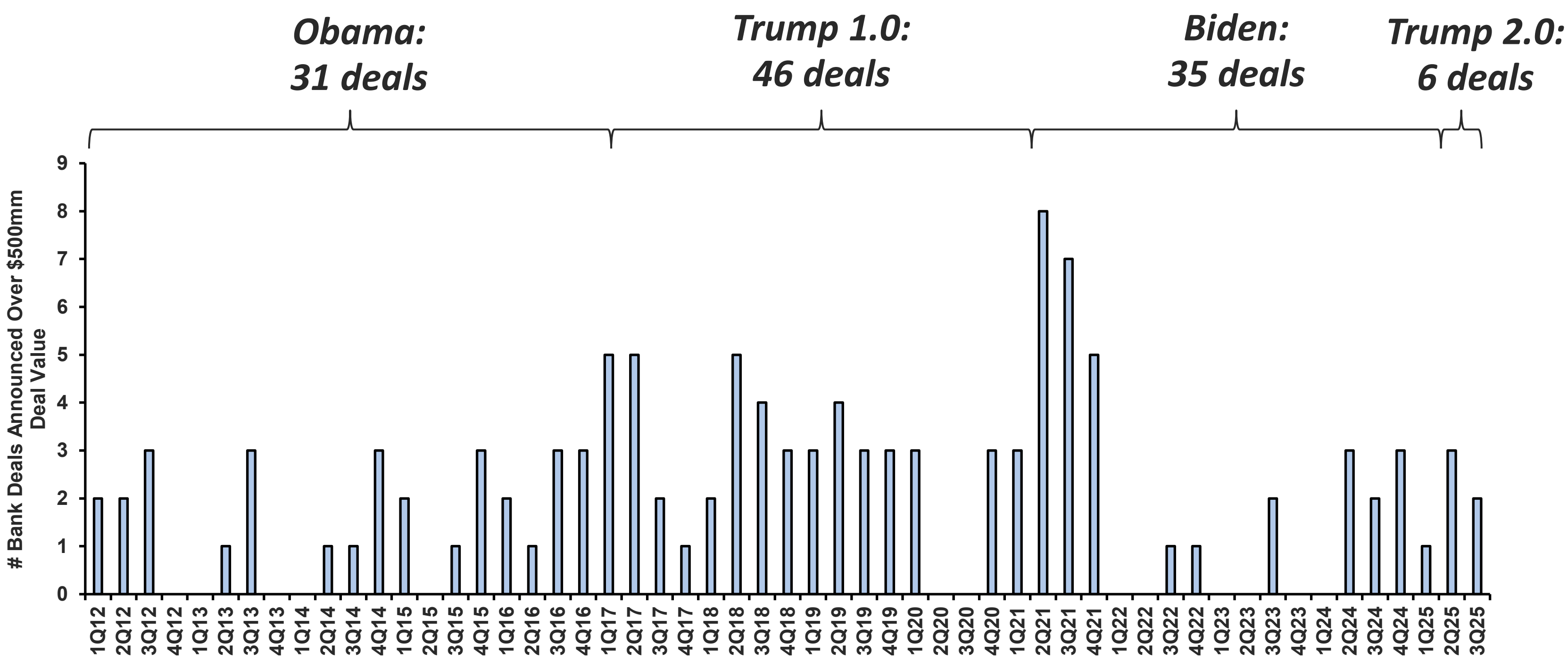
Source: FDIC, Autonomous Research.

An Administration With an M&A Precedent

- Trump's first term saw more deals of $500mm+ value than Obama and Biden despite no deals during 2Q20 and 3Q20 due to COVID



Source: S&P Capital, Autonomous Research.

A Busy Summer of M&A

Rumor mill back again as conversations started to flow

Announced deals of size increasing. Recent deals over $500mm:

- 6/16 – Commerce Bancshares announces transaction with FineMark [NC] ($585mm)
- 7/14 – Huntington announces deal with Veritex [NC]($1.9B)
- 7/22 – Synovus and PNFP announce merger of equals in largest deal since 2022 ($7.8B)
- 9/8 – PNC announces deal with FirstBank Holding [NC] ($4.1B)

Deals are closing quickly under this administration. Recently closed deals over $500mm:

- 5/1 – Old National [NC] acquired Bremer Financial Corporation [NC] ($1.4B)
- 5/18 – Capital One acquired Discover ($35B)
- 6/30 – Renasant [NC] acquired The First Bancshares [NC] ($1.1B)
- 6/30 – First Busey [NC] acquired CrossFirst Bancshares [NC] ($805mm)
- 7/1 – Independent Bank Corp. [NC] acquired Enterprise Bancorp [NC] ($562mm)

Source: S&P Capital, Autonomous Research.

How to Sell & What to Buy

Sellers Cues:

- CEO approaching retirement age and lack of succession plan or obvious successor
- Cleaning up bond and loan books, either through sales, prudent runoffs, or other restructurings
- Selling non-core books of business (e.g., a non-core insurance brokerage business)
- CEO or board have prior experience selling a bank or made comments about selling the bank
- Bank earnings growth/revisions challenged

Buyer Cues:

- Complementary products, cross-selling potential
- Attractive geography – growing regions of economic activity (and therefore loan growth opportunities)
    - TX, FL, and NC
- Quality deposit base
- Relatively strong valuation multiple

Source: Autonomous Research.

What Makes a Good (or Questionable) Deal?

Good Deals	Questionable Deals

• Low TBVPS dilution (<=5%)
• Reasonable earnback period (target <3 years)
• Average 25%-30%+ in cost saves
• New market entry, particularly in growthy areas
  ◦ Southeast/Southwest hot today
• Adds a strategic business line or capability
• Fills gaps in the business model of either party
• No reliance on revenue synergies
	• Merger of equals (MOE)
	• Competitor takeout, limited new geographic expansion
	  ◦ Limits upside for customer acquisition
	• Low cost saves (<25%)
	• High TBVPS dilution and earnback period
	• Crossing regulatory asset thresholds by a marginal amount
	• Management is the clear winner with change in control payouts and leadership positions

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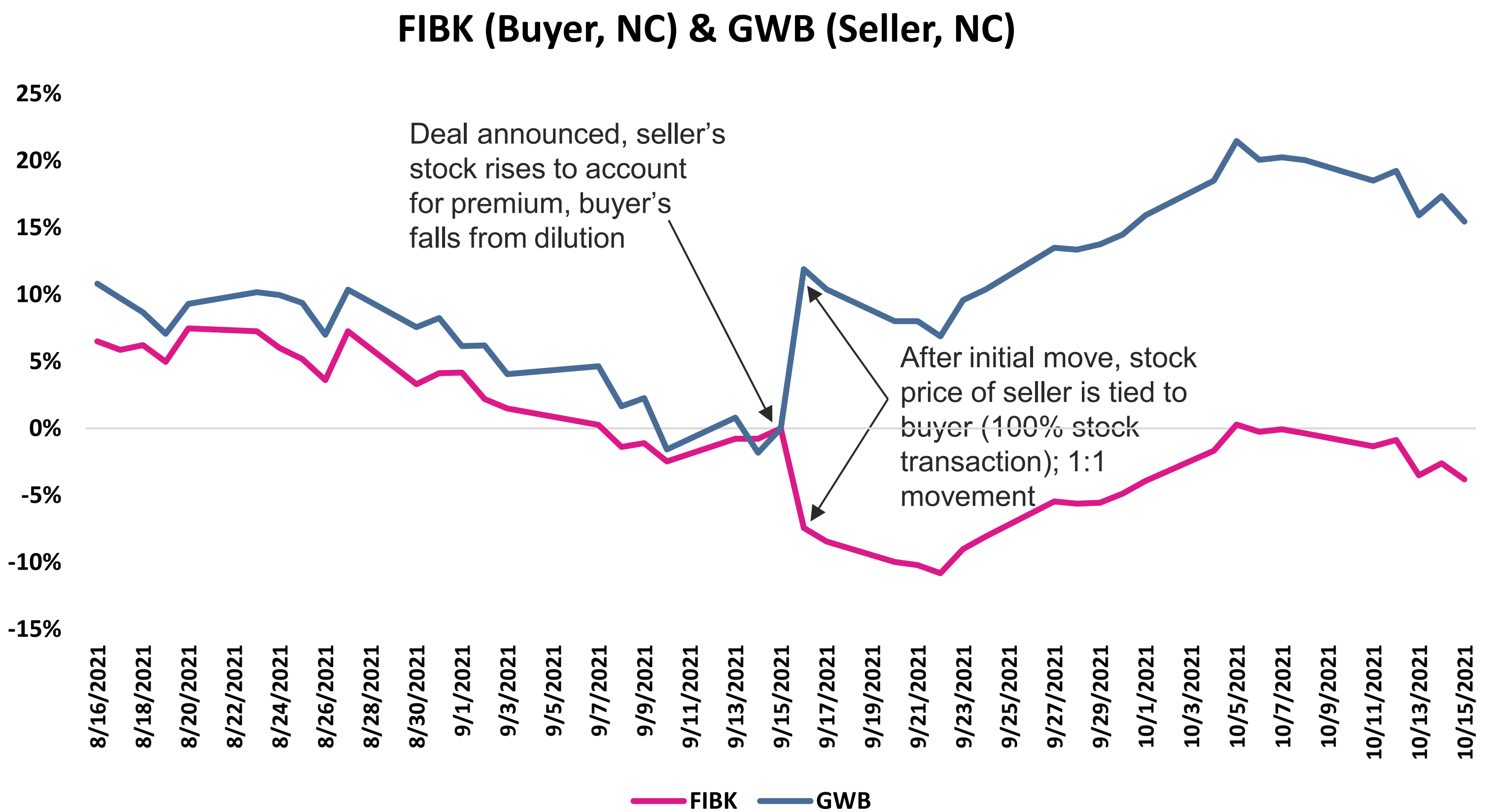
Source: Autonomous Research.

The Typical Reaction for M&A Announcement: One Up, One Down

Traditional post-ann't. M&A merger arbitrage strategy: sell the buyer, buy the seller



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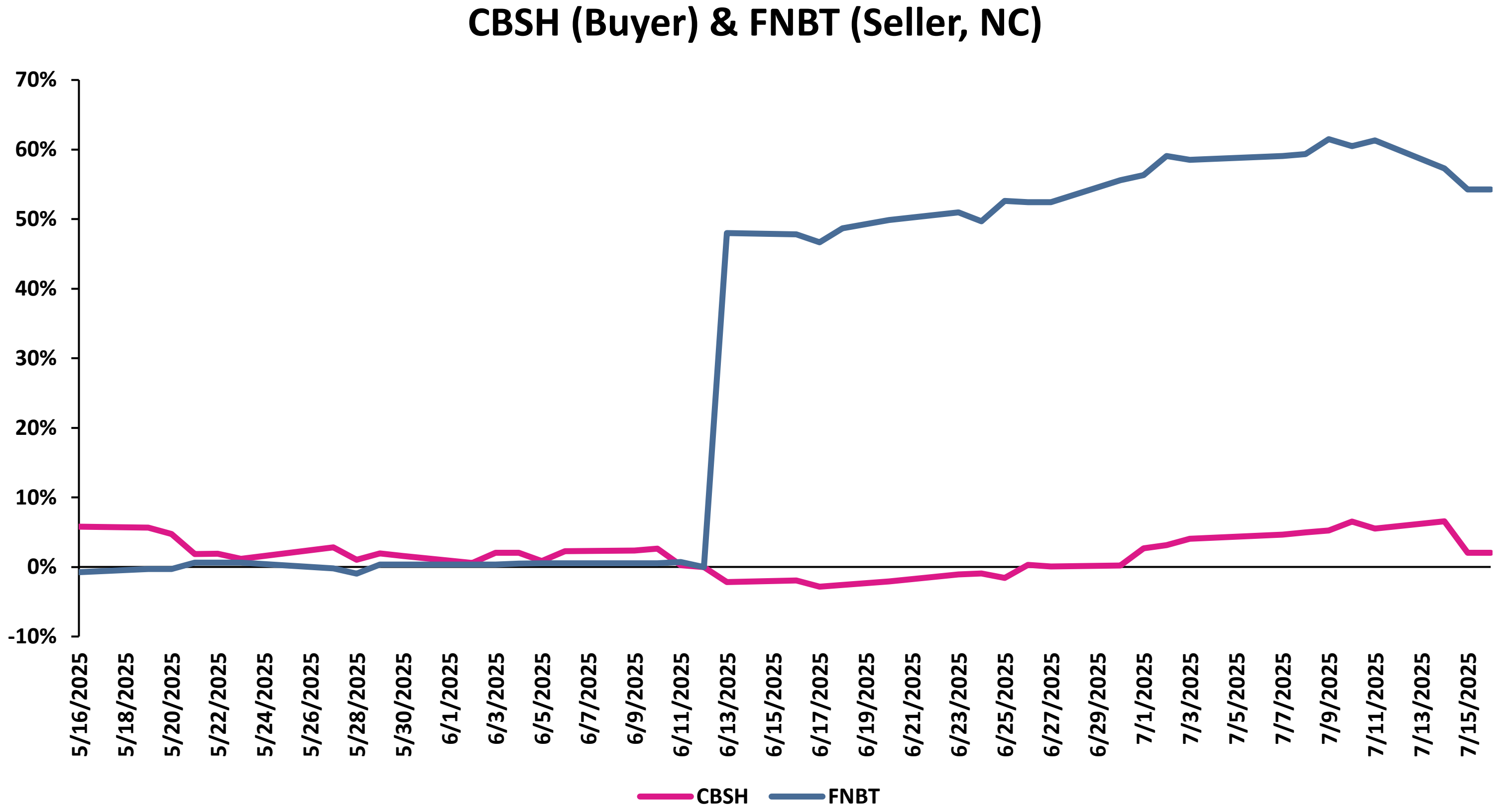
Source: Bloomberg, Autonomous Research.

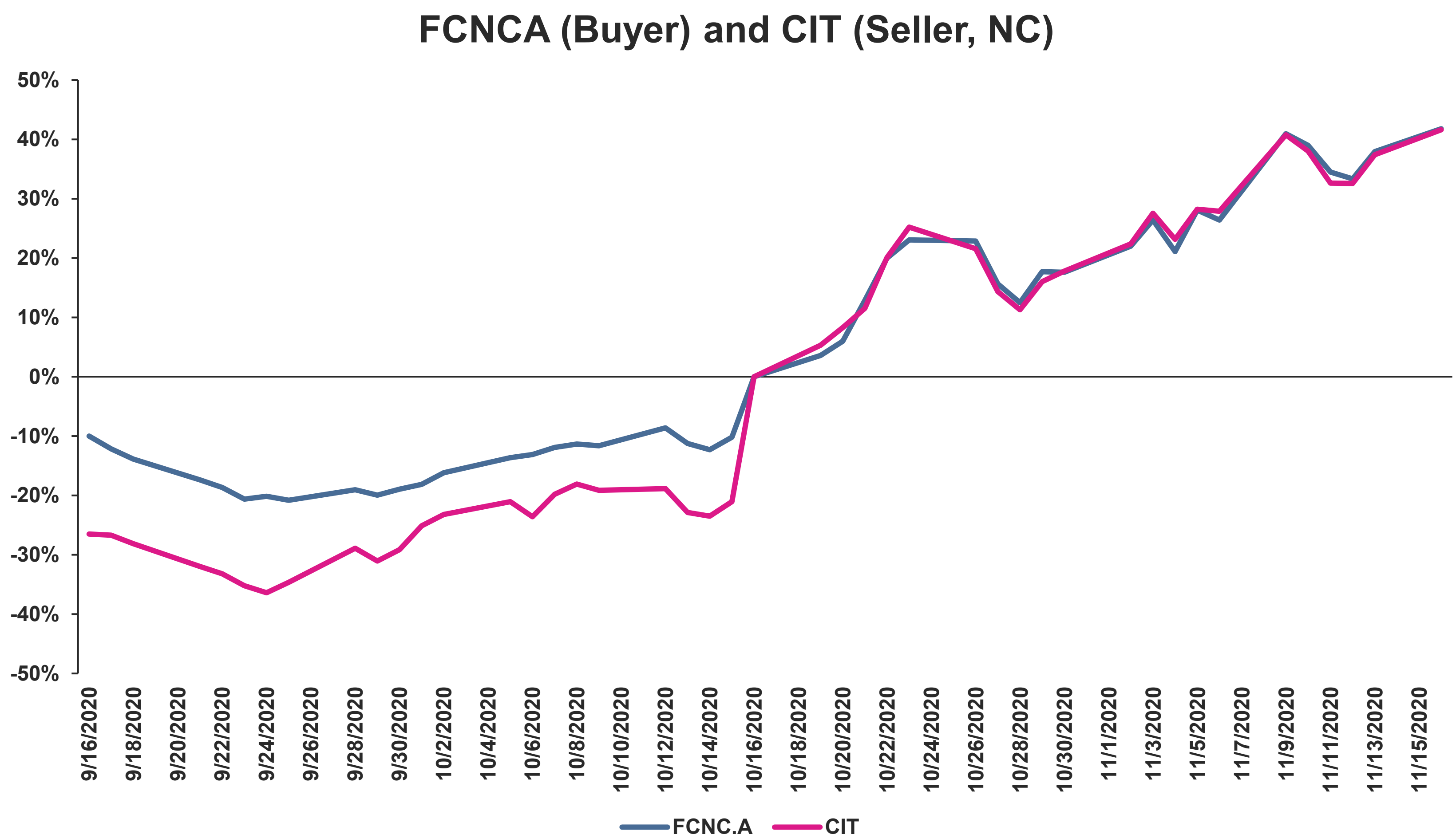
Example of a Good Deal Reaction

Minimal TBV dilution (~2%) while strong underlying deposit base and attractive wealth management business adds to CBSH's offerings



Source: Bloomberg, Autonomous Research.

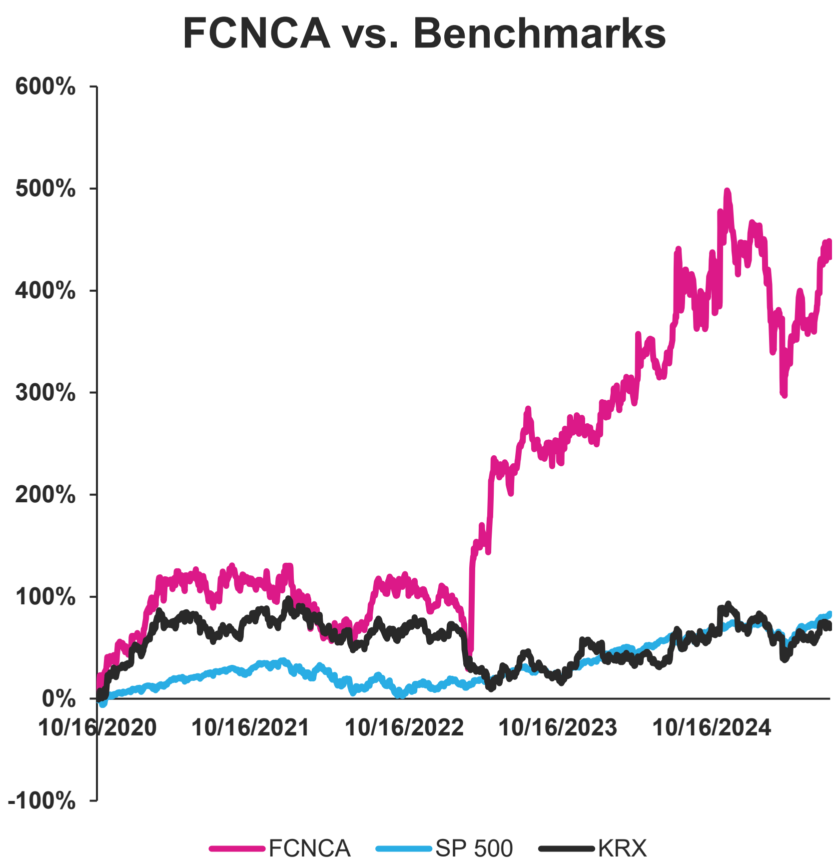
A Rarity: Both Stocks Rise - First Citizens & CIT Group Example



Source: Bloomberg, Autonomous Research.

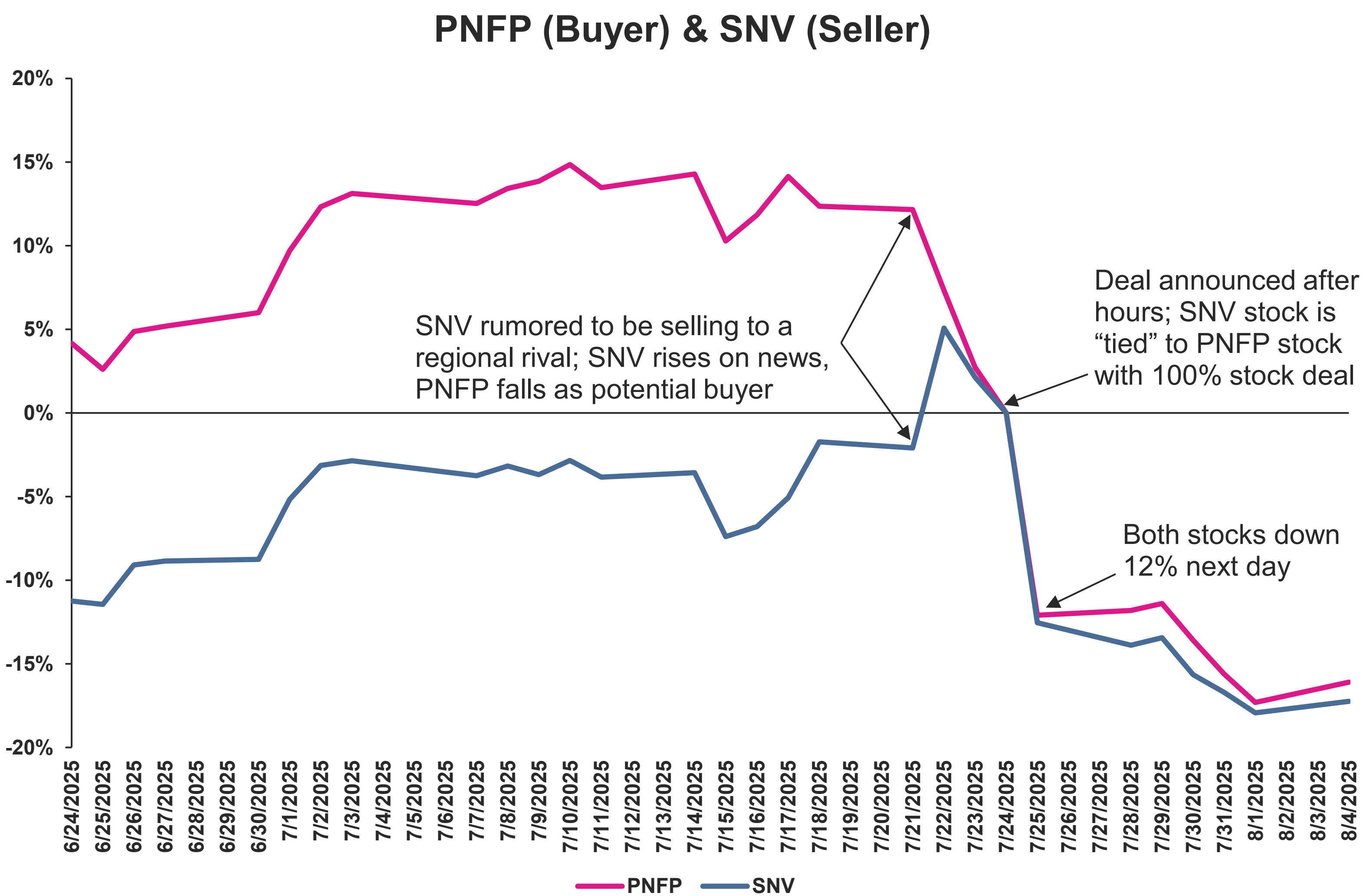
Why Was FCNCA's Transaction Received Positively?

- Immediately 30% accretive to FCNCA's TBV (rather than avg. dilution of 5%)
- Low premium paid (11% vs. average of 23%)
- Disparate geographic footprints, positioned for market expansion
- Different & complementary fee services (wealth management, FX, specialized business lending)



Source: Bloomberg, S&P Capital, Autonomous Research.

Why MOEs Are Tough



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Source: Bloomberg, S&P Capital, Autonomous Research.

Why Was PNFP/SNV Received So Negatively?

Cons:

- A merger-of-equals is not easy
- Reported TBV dilution of 9% (already high) vs. 14% Autonomous calculated
- Crossed $100B threshold marginally, leading to new reporting requirements
- Low cost saves (~20%)
- Culture was a focal point for both firms individually, may have culture conflict
- Not clear shareholder value maximized

Pros:

- Solves succession problem for PNFP
- Increased scale (e.g. higher loan limits)

Source: Autonomous Research.

Part 4: Valuation & Performance

Valuations Remain Reasonable, But Uncertainty High

P/E remains the main valuation metric:

- Multiple range across the group is very tight
- Most banks are discounted in absolute terms relative to their own history
- Relative to group historical averages, the same discount holds true again
- Relative to broader market, banks remain at a meaningful discount to the S&P 500

Backcheck of P/TBV against ROTCE to see dislocations:

- Look below the line for potential "value" where perception might be causing a disconnect
- Above the line often represents a "quality" premium for fast capital generation

Multiple gaps across sub-sectors:

- Universal banks have re-rated vs. regionals and trust banks as the presumed long-term winners
- Large- and mid-sized regional bank gaps have flip flopped over time – now close to parity
- Trust banks well-below all historical comparisons as organic growth has slowed

Valuation Heat Map

Date	S&P 500 Index	Q/Q	S&P 500 P/E	10Y UST	KRX	Q/Q	KRX P/E	Relative P/E
3/31/12	1,408		13.4x	2.2%	57		14.9x	111%
6/30/12	1,362	-3.3%	12.6x	1.6%	55	-3.1%	13.9x	110%
9/30/12	1,441	5.8%	13.4x	1.6%	57	2.9%	13.8x	102%
12/31/12	1,426	-1.0%	13.1x	1.8%	55	-3.0%	13.0x	99%
3/31/13	1,569	10.0%	14.0x	1.8%	62	12.6%	14.1x	101%
6/30/13	1,606	2.4%	14.2x	2.5%	65	4.9%	15.0x	106%
9/30/13	1,682	4.7%	14.6x	2.6%	70	7.0%	15.2x	104%
12/31/13	1,848	9.9%	15.8x	3.0%	79	13.6%	16.5x	104%
3/31/14	1,872	1.3%	15.8x	2.7%	80	0.9%	16.1x	102%
6/30/14	1,960	4.7%	16.0x	2.5%	77	-3.0%	16.0x	100%
9/30/14	1,972	0.6%	15.7x	2.5%	73	-6.2%	14.8x	94%
12/31/14	2,059	4.4%	16.7x	2.2%	79	9.1%	15.6x	94%
3/31/15	2,068	0.4%	17.4x	1.9%	80	0.8%	15.7x	90%
6/30/15	2,063	-0.2%	17.1x	2.4%	87	9.5%	16.8x	99%
9/30/15	1,920	-6.9%	15.8x	2.0%	81	-7.2%	15.3x	97%
12/31/15	2,044	6.5%	16.7x	2.3%	82	1.0%	15.3x	92%
3/31/16	2,060	0.8%	17.4x	1.8%	78	-5.4%	14.3x	82%
6/30/16	2,099	1.9%	17.3x	1.5%	80	3.1%	14.5x	84%
9/30/16	2,168	3.3%	17.5x	1.6%	86	8.2%	15.3x	87%
12/31/16	2,239	3.3%	17.6x	2.4%	111	28.6%	18.9x	107%
3/31/17	2,363	5.5%	18.1x	2.4%	107	-4.1%	17.4x	96%
6/30/17	2,423	2.6%	18.0x	2.3%	107	-0.1%	16.6x	92%
9/30/17	2,519	4.0%	18.3x	2.3%	109	2.3%	16.3x	89%
12/31/17	2,674	6.1%	18.6x	2.4%	111	1.7%	15.9x	85%
3/31/18	2,641	-1.2%	16.7x	2.7%	112	0.9%	14.2x	85%
6/30/18	2,718	2.9%	16.6x	2.9%	114	1.8%	14.0x	84%
9/30/18	2,914	7.2%	17.3x	3.1%	111	-2.8%	13.0x	75%
12/31/18	2,507	-14.0%	14.9x	2.7%	89	-19.2%	10.3x	69%
3/31/19	2,834	13.1%	17.1x	2.4%	97	8.6%	11.1x	65%
6/30/19	2,942	3.8%	17.3x	2.0%	100	3.2%	11.3x	65%
9/30/19	2,977	1.2%	17.4x	1.7%	99	-1.4%	11.5x	66%
12/31/19	3,231	8.5%	18.9x	1.9%	108	8.9%	12.8x	68%
3/31/20	2,585	-20.0%	17.1x	0.7%	64	-40.9%	9.3x	54%
6/30/20	3,100	20.0%	23.8x	0.7%	72	13.4%	12.0x	50%
9/30/20	3,363	8.5%	22.8x	0.7%	64	-11.1%	10.1x	44%
12/31/20	3,756	11.7%	23.7x	0.9%	95	47.6%	13.0x	55%
3/31/21	3,973	5.8%	22.7x	1.7%	122	28.9%	14.4x	64%
6/30/21	4,298	8.2%	22.3x	1.5%	119	-2.0%	13.2x	59%
9/30/21	4,308	0.2%	20.8x	1.5%	122	2.5%	13.4x	65%
12/31/21	4,766	10.6%	22.0x	1.5%	126	2.9%	13.5x	62%
3/31/22	4,530	-4.9%	20.0x	2.3%	123	-2.7%	12.8x	64%
6/30/22	3,785	-16.4%	16.1x	3.0%	107	-12.6%	9.9x	62%
9/30/22	3,586	-5.3%	15.6x	3.8%	111	3.2%	9.4x	60%
12/31/22	3,840	7.1%	17.2x	3.9%	114	3.2%	9.5x	55%
3/31/23	4,109	7.0%	18.8x	3.5%	93	-18.6%	8.3x	44%
6/30/23	4,450	8.3%	20.1x	3.8%	87	-6.7%	8.7x	43%
9/30/23	4,288	-3.6%	18.6x	4.6%	88	1.4%	9.3x	50%
12/31/23	4,770	11.2%	20.4x	3.9%	110	24.6%	11.9x	58%
3/31/24	5,254	10.2%	21.7x	4.2%	102	-6.7%	11.5x	53%
6/30/24	5,460	3.9%	21.7x	4.4%	99	-3.5%	11.4x	52%
9/30/24	5,762	5.5%	22.4x	3.8%	113	14.8%	12.9x	58%
12/31/24	5,882	2.1%	22.3x	4.6%	120	6.0%	13.6x	61%
3/31/25	5,612	-4.6%	20.8x	4.2%	113	-6.2%	11.8x	57%
6/30/25	6,205	10.6%	22.7x	4.2%	116	2.7%	11.5x	51%
10/10/25	6,553	5.6%	23.0x	4.0%	116	0.5%	10.7x	47%
Average		**3.1%**	**18.1x**	**2.5%**		**2.2%**	**13.4x**	**76%**

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Source: Bloomberg, Autonomous Research. Note: Priced as of 10/10/25.

Large-Cap Banks Have Outperformed Mid-Cap Banks

- Over the past decade, large-cap banks have outperformed mid-caps by ~36%

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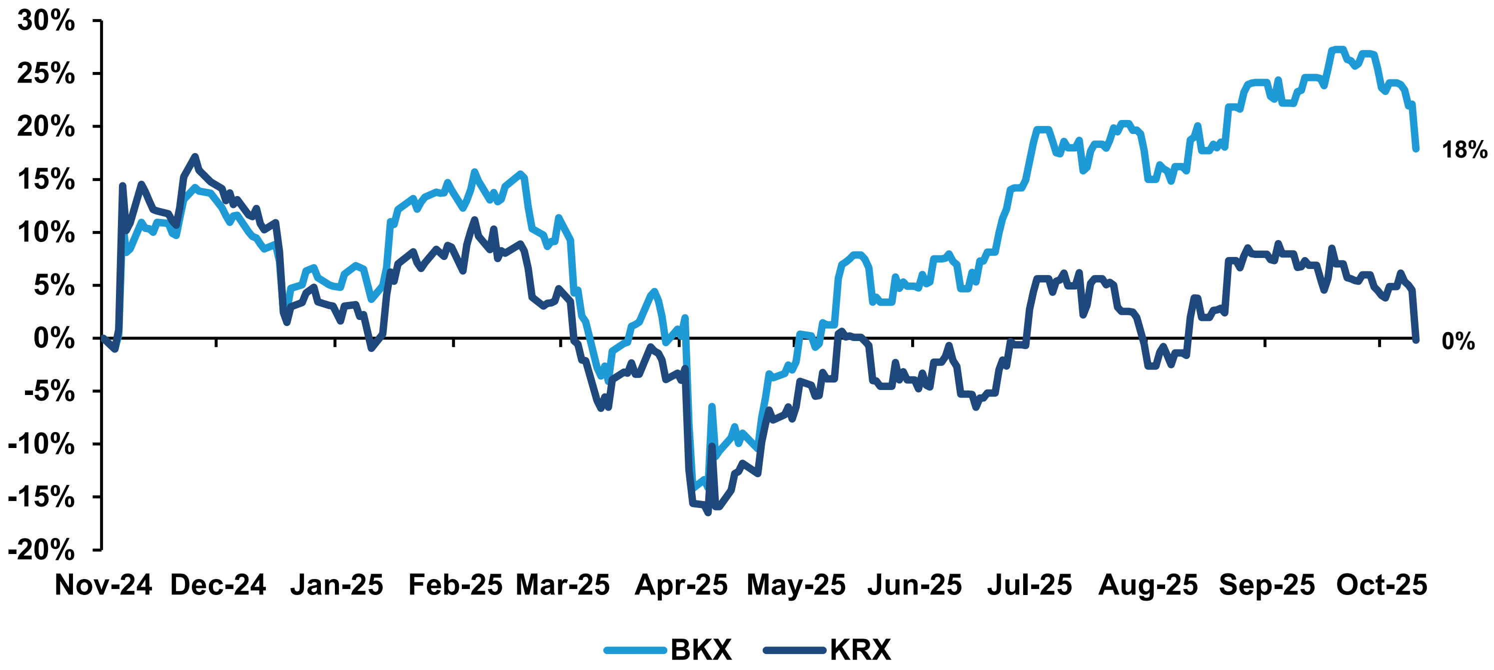
Source: Bloomberg, Autonomous Research. Note: Priced as of 10/10/25.

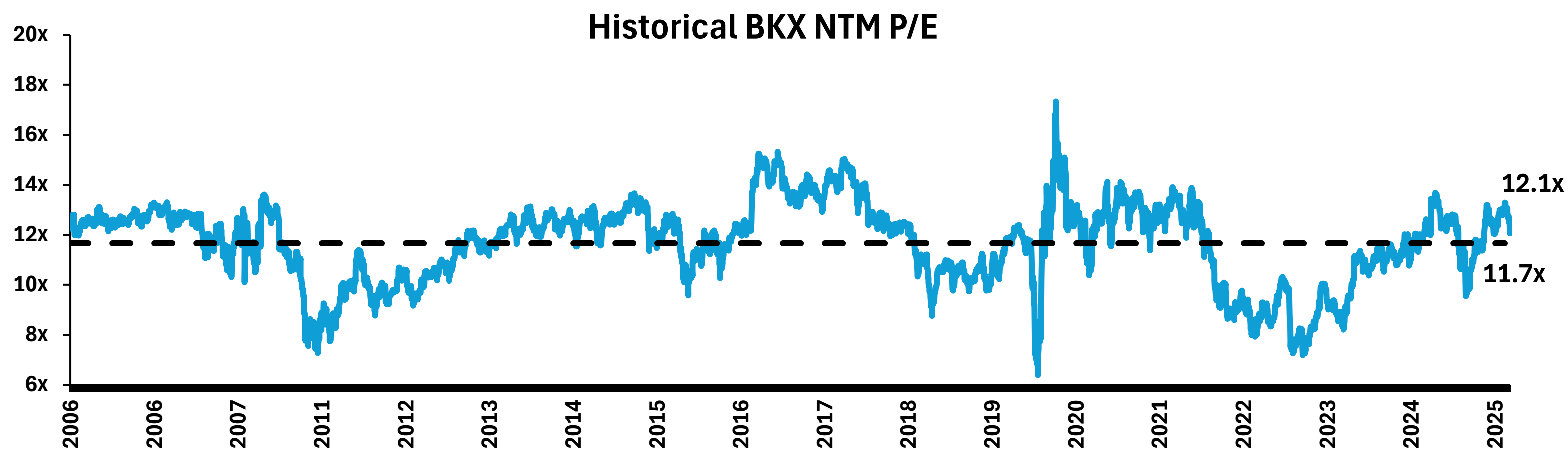
Much of the Performance Gap Opened This Summer

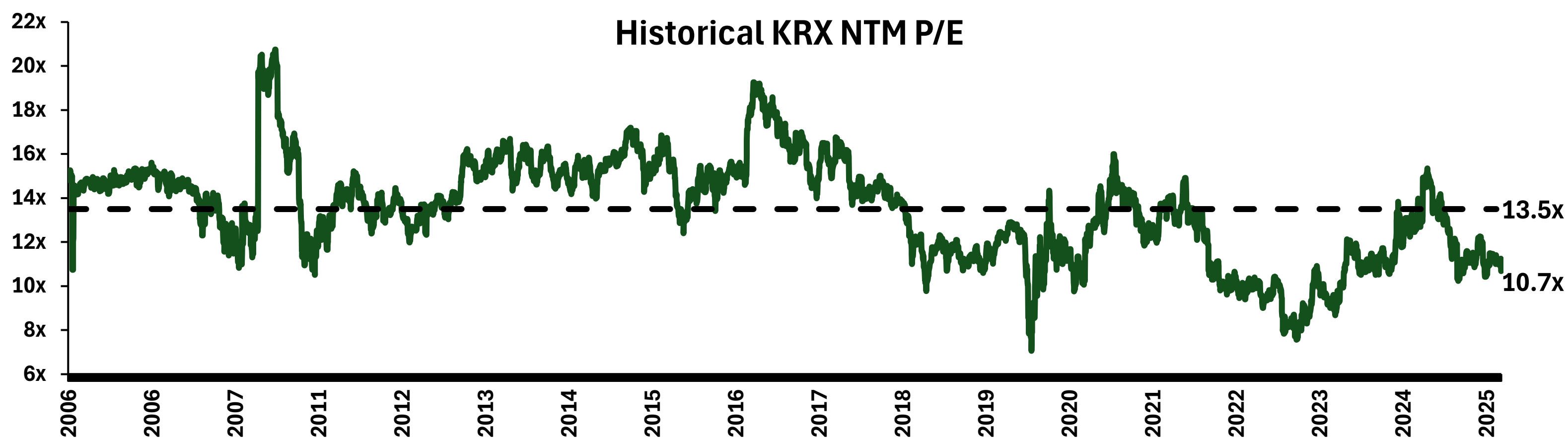
- After large-cap (BKX) and regional (KRX) bank indexes mostly tracked each other leading into the election, the performance gap has grown to 20%+ since last July.



Source: Bloomberg, Autonomous Research. Note: Priced as of 10/10/25.

Historical Bank Valuations – NTM P/E





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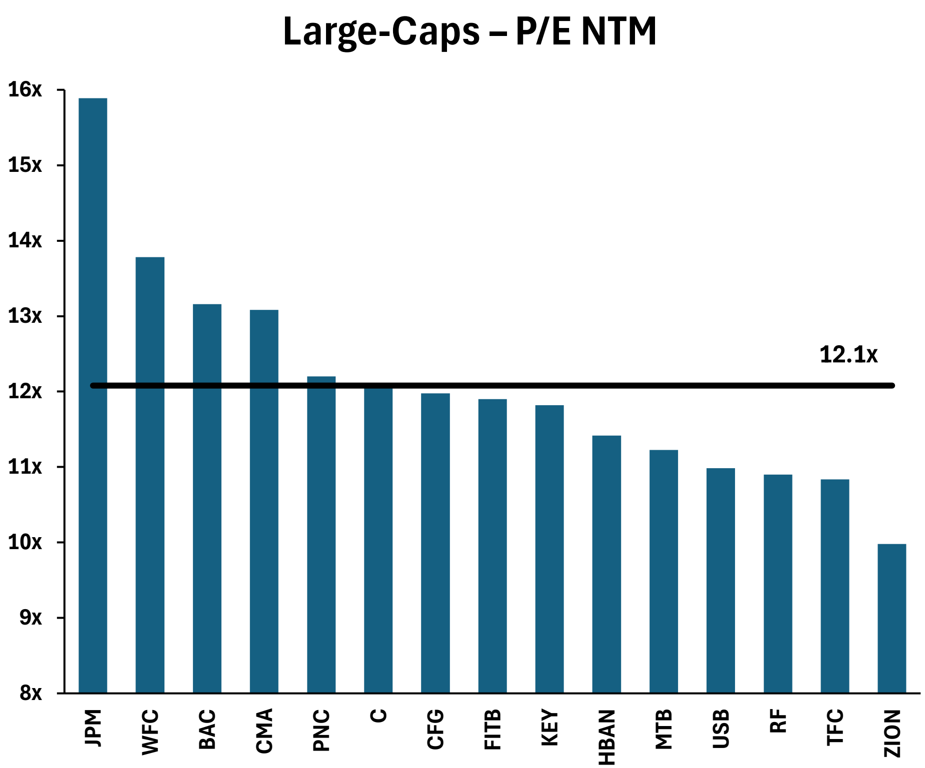
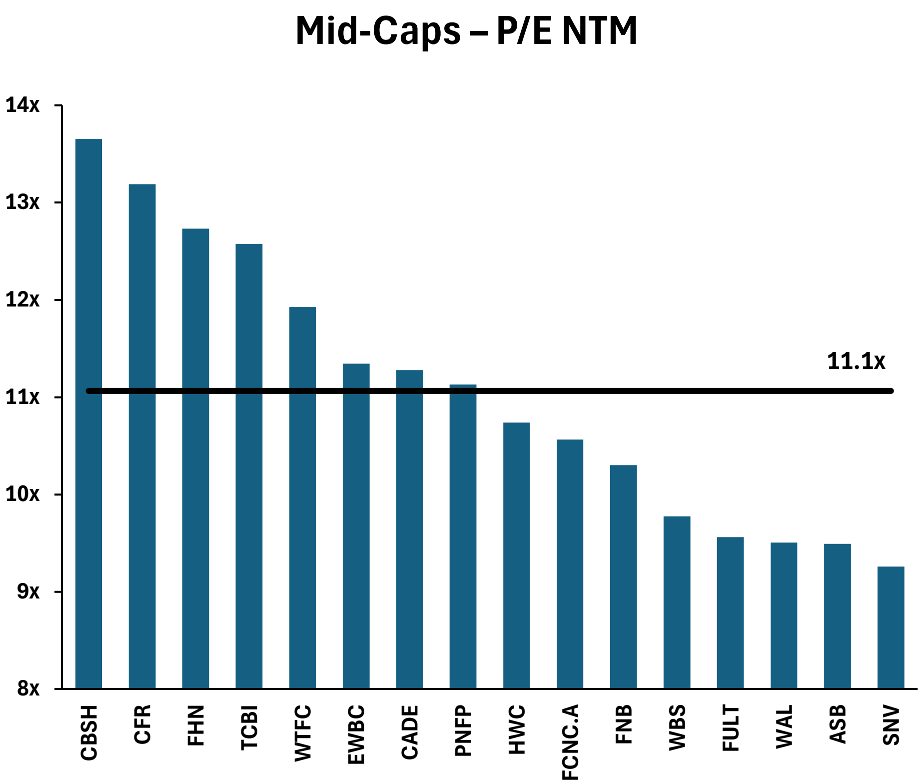
Source: Bloomberg, Autonomous Research. Note: Priced as of 10/10/25. Charts exclude GFC period.

Bank Valuations – P/E NTM





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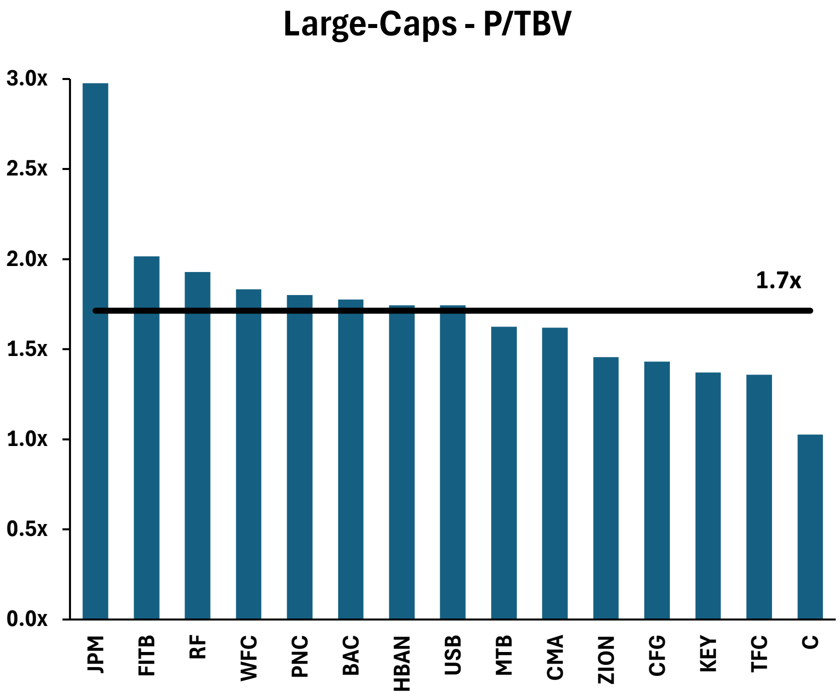
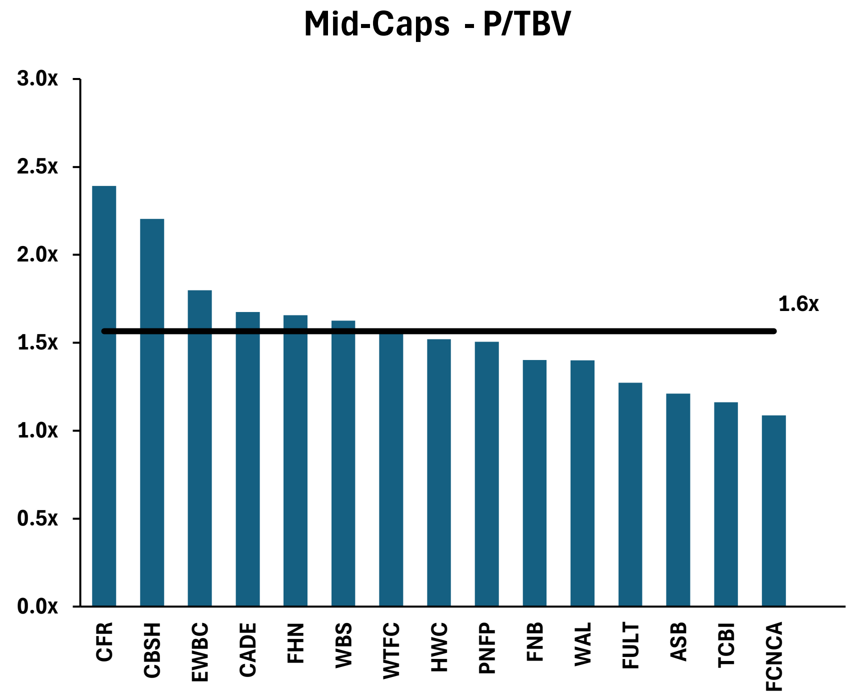
Source: Bloomberg, Autonomous Research. Note: Priced as of 10/10/25. Mid-Caps chart excludes FLG.

Bank Valuations – P/TBV





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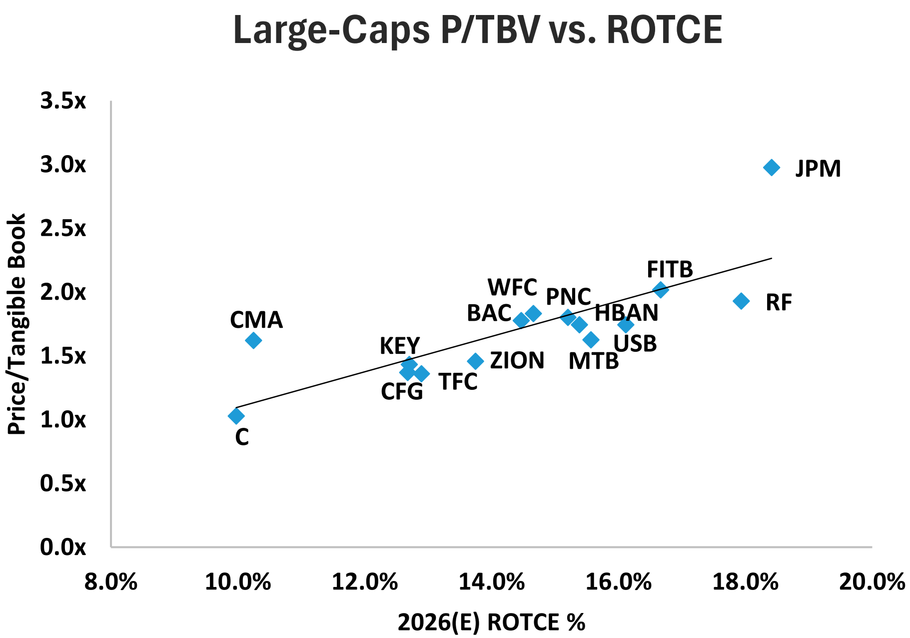
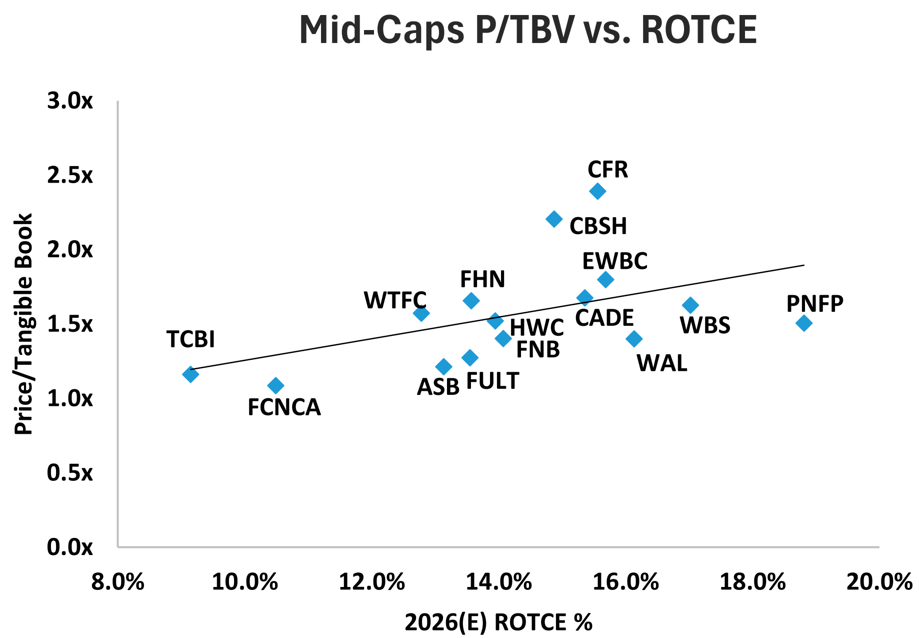
Source: Bloomberg, Autonomous Research. Note: Priced as of 10/10/25. Mid-Caps chart excludes FLG and SNV.

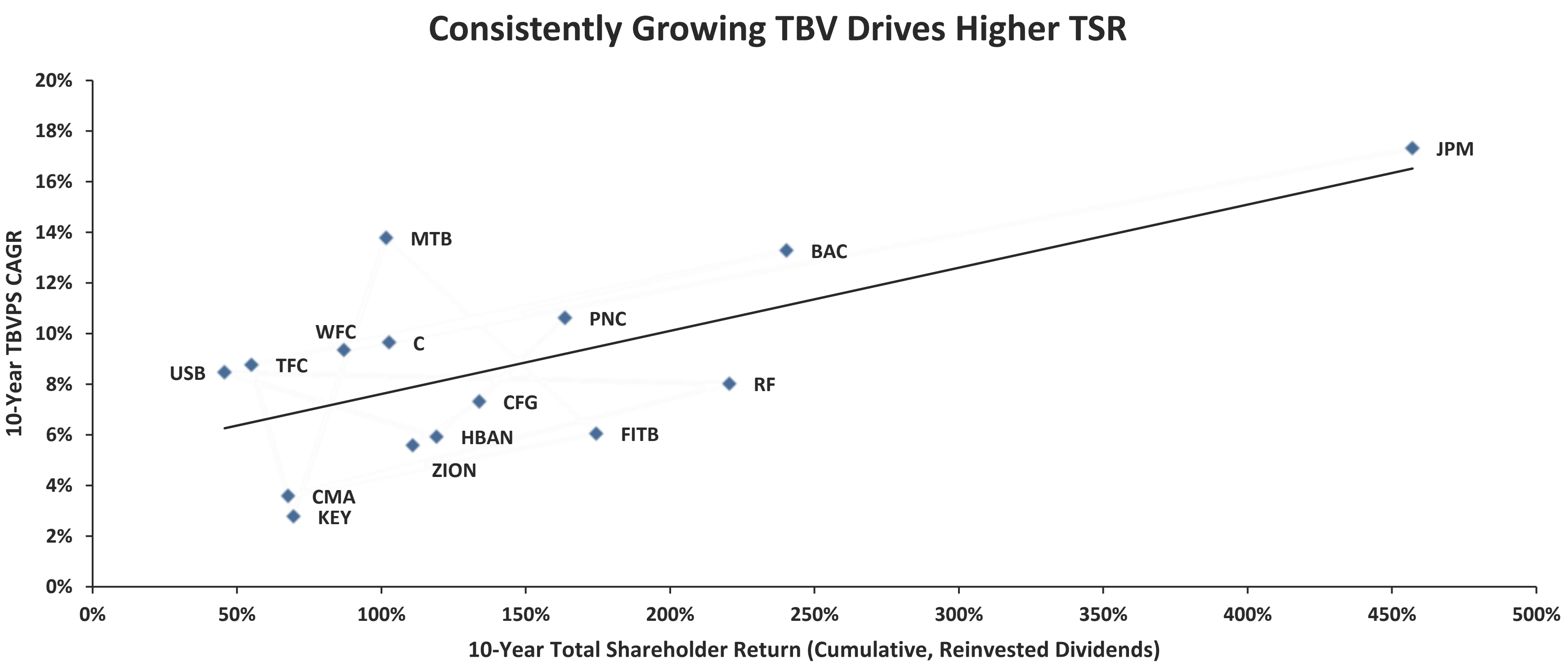
Price/Tangible Book Valuations Track ROTCE Outlooks





Source: Bloomberg, Autonomous Research. Note: Priced as of 10/10/25. Mid-Caps chart excludes FLG.

Quality Compounders Are Rewarded Over Time



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Source: S&P Capital, Bloomberg, Autonomous Research.

Top Picks – Balance Feels The Right Way to Go

Universal Banks

- **Citi** for op. leverage formula and powerful buybacks allowing ROTCE progress towards 10%-11% in 2026
- **WFC** for bal. sheet flexibility and earnings optionality associated in part with the Fed asset cap removal

Regional Banks

- **CFG** for built-in NII/NIM support thru legacy loans/swaps book run-off allowing for ROTCE improvement
- **FITB** for strong returns, lower CRE exposure, and attractive Southeast markets
- **KEY** for NII/NIM trajectory improvement, capital markets optionality, and strong capital profile
- **MTB** for defensive balance sheet, strong capital profile, and CRE decline nearing bottom
- **PNC** for defensive balance sheet, expansion strategies, and attractive valuation

Trust Banks

- **BK** for op. leverage defensiveness, benefits from activity/volatility, and strong capital return

Mid-Cap Regionals

- **WBS** for high ROTCE and excess capital that supports organic growth and capital return
- **FNB** for valuation, NIM support from hedge profile/CD repricing and building capital

Autonomous University

Consumer Finance

Rob Wildhack

Consumer Finance Coverage

Company	Rating	Price target	Summary
Affirm	OP	$102	*Core payments and lending product forms a durable competitive advantage that should drive continued share of wallet gains and volume growth. Inherent operating leverage and progress on profitability mean earnings should inflect higher*
Klarna	OP	$51	*As the world's largest BNPL provider, Klarna is well positioned to benefit as a growing payment method in the US and abroad. Further, its mix shift into longer duration Fair Financing volume should drive additional unit profitability.*
Ally	OP	$46	*Ally earnings should take a turn for the positive, as its balance sheet is liability-sensitive and credit trends are set to improve as the company digests its difficult 2022 vintage*
Capital One	OP	$260	*Well-positioned to benefit from immediate cost synergies and longer-term development of the Discover network. Further, restrained buyback cadence heading into the deal paired with a conservative capital position allows for material capital return in the medium-term.*
Global-e	OP	$41	*Global-e is a market leader in cross-border e-commerce with a strong value propistion. Further, Global-e's partnership with Shopify offers a unique distribution strategy for a wide range of new merchants. While trade policy changes generate short term noise, trade complexity is an inherent driver of Global-e's value propisition.*
American Express	N	$375	*American Express is unique among the card names with above average credit quality, high spend per cardholder, and an integrated network to capture greater interchange economics. Recent product refreshes, paired with a reacceleration in card spending positions the firm well on both billed business and fee revenue growth.*
Figure	N	$41	*Figure is arguably the first blockchain company to meaningfully disrupt the financial services industry. While limited to HELOC loans today, expansion into other consumer credit segments like auto would drive volumes meaningfully higher. That said, we believe its underdeveloped markets offering, and a rather full valuation, limits upside in the near term.*
Shopify	N	$150	*Shopify is an unquestioned leader in e-commerce and boasts a standard-setting product, a high-quality management team, and a significant untapped market. The company is expanding its reach both internationally and with new merchant cohorts. While the company and opportunity are attractive, the stock is priced for perfection.*
Synchrony	N	$74	*Despite improving credit results, Synchrony remains reticent on reigniting loan growth. However, the demise of the CFPB's late fee rule paired with limited curtailment of Synchrony's prior mitigants, should form an earnings tailwind for the company.*
Credit Acceptance	N	$497	*Credit Acceptance has been growing originations and loans rapidly since 2022, but current credit trends and legal risk create overhang on the stock*
Chime	UP	$25	*Chime ranks highly among other neobanks on customer satisfaction, unaided brand awareness, and users. However, the firm's business model is heavily dependent on interchange revenues and much of Chime's current revenue growth is driven by credit sensitive products like MyPay and SpotMe.*
Upstart	UP	$52	*Upstart has improved its funding base since running into trouble in 2022. Still, the company has meaningful off-balance sheet credit exposure while at the same time rapidly growing originations in a highly competitive enviroment.*
SoFi	UP	$15	*While touted as an earnings driver, we remain cautious on the prospects for SoFi's loan platform business, as the growth here is largely dependent on third-party capital demand and elevated gain on sale spreads. While SoFi's capital raise returned our pro-forma ratio to a more comfortable level, we still believe that the business is inherently capital intensive.*

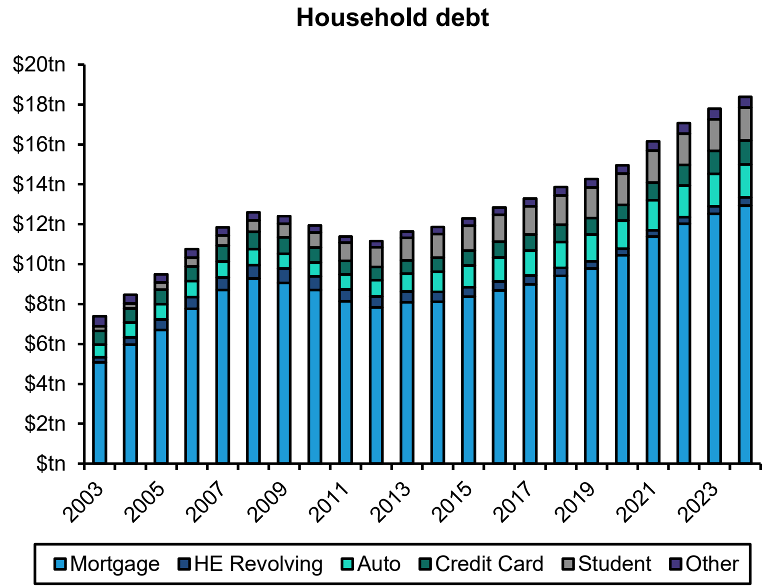
Source: Autonomous estimates and analysis as of 10/10/2025.

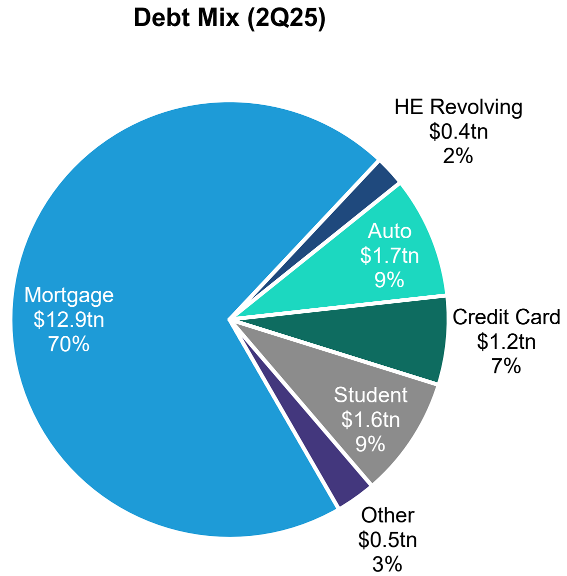
Consumer Finance – Session Overview

- Consumer debt components
- How do consumer lenders make money, and what drives their profitability?
- How does one track consumers' financial health?
- Subsectors: Mortgage, auto, student, credit card, unsecured
- Banks and nonbanks
- Spotlight on: ABS market
- Valuation
- Trading the sector

US Consumers Have >$18Tn in Debt

- Consumer debt has been growing for the last 10+ years and recently topped the $18tn mark
- Mortgage is the largest category of consumer debt outstanding, at more than $12tn; auto loans, credit cards, and student loans are the other main categories





Source: NY Fed, Autonomous.

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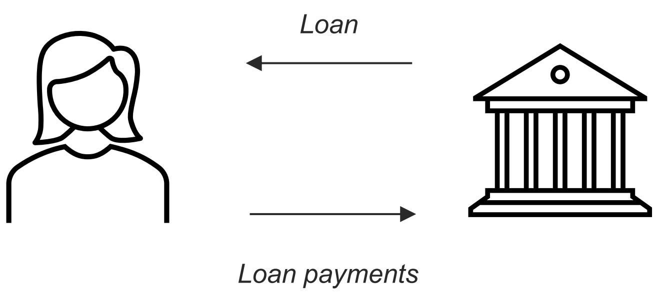
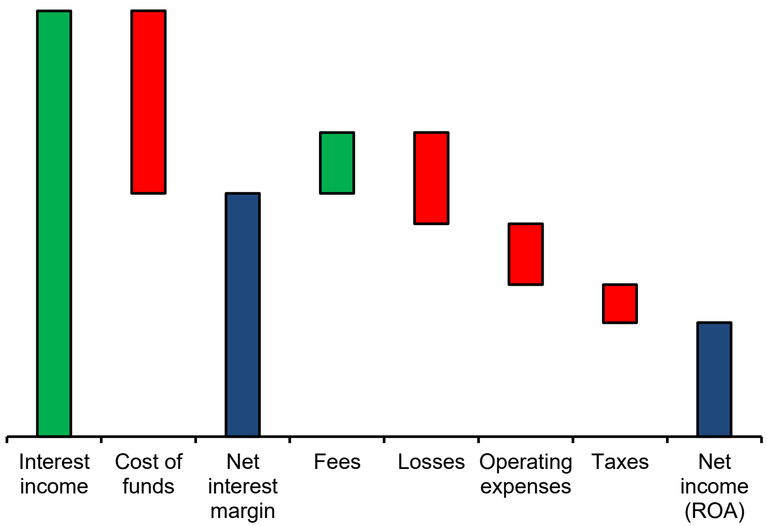
How Do Consumer Lenders Make Money?

- Most consumer lenders hold loans on their balance sheet; they earn revenue from interest income and fees

- Expenses include cost of funds, credit or loan losses, operating expenses (e.g. marketing, salaries, etc.), and taxes

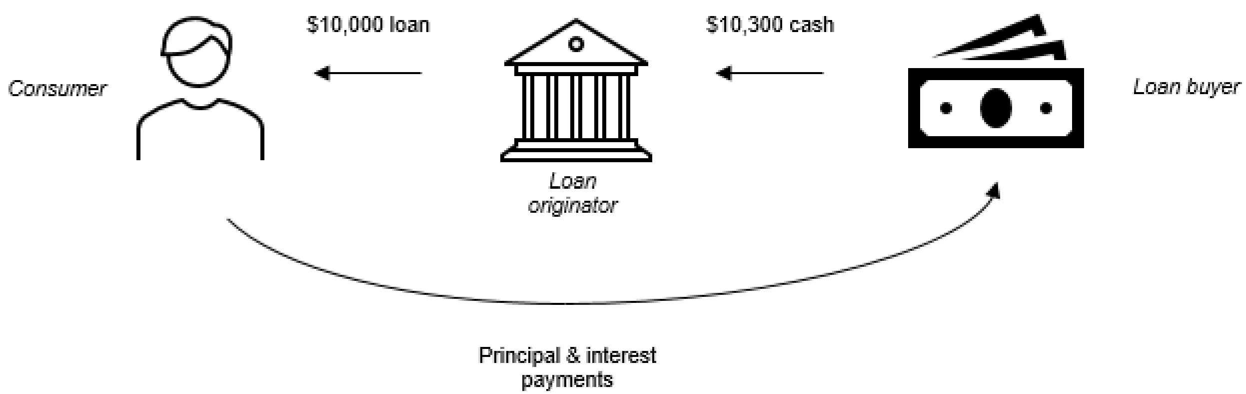




Source: Autonomous.

How Do Consumer Lenders Make Money?

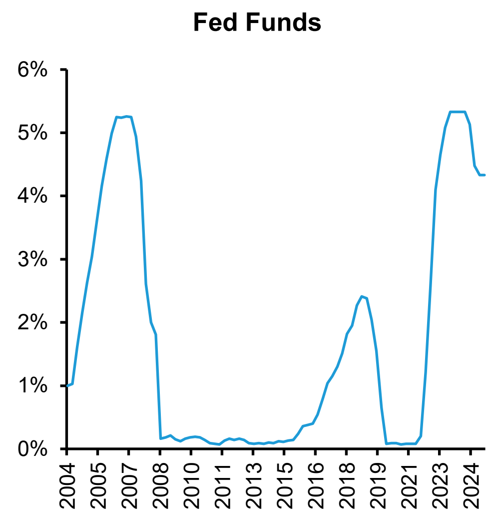
- Other consumer finance companies don't hold loans, they "originate to sell"
- These companies sell loans to third party investors – for a premium - and pocket the gain
- Loan originators make a quick buck, while the loan buyers receive principal and interest payments from the consumer

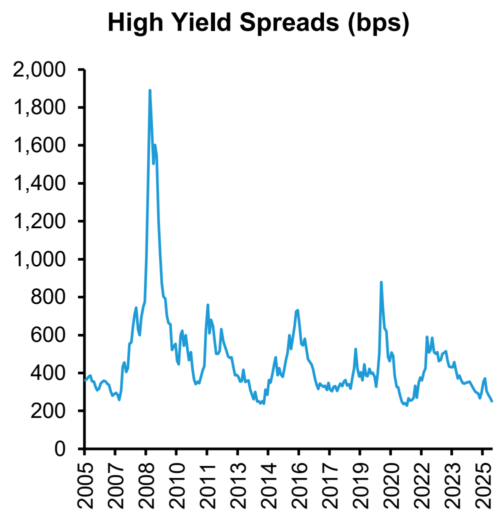


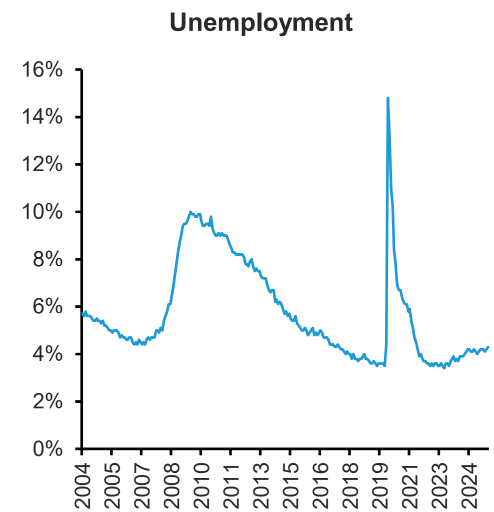
Source: Autonomous.

Key Profit Drivers

- Risk-free rates are the foundation of consumer loan pricing; some loans like mortgage and auto are generally fixed, while credit cards are generally floating
- Spreads – the amount over the risk-free rate – are an important driver too; spreads can vary with the broader macro climate
- Unemployment is the main driver of credit performance and loan losses



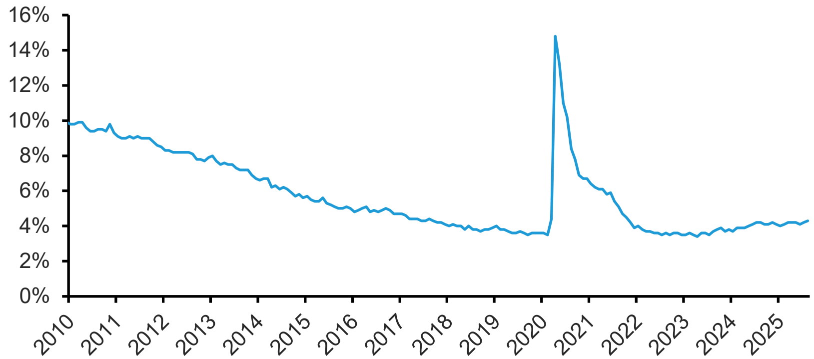




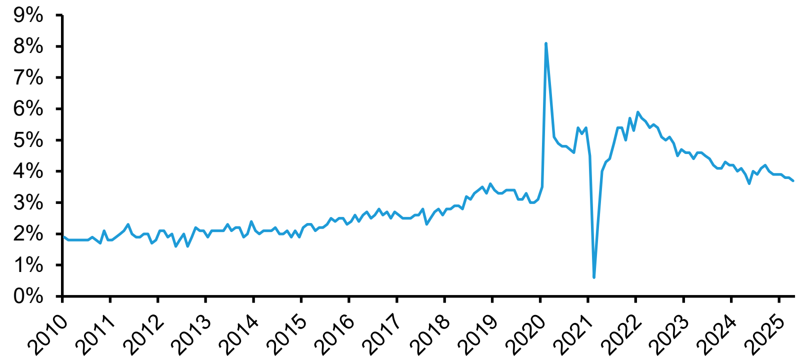
Source: NY Fed, Bloomberg, Autonomous.

Key Metrics of Consumer Financial Health

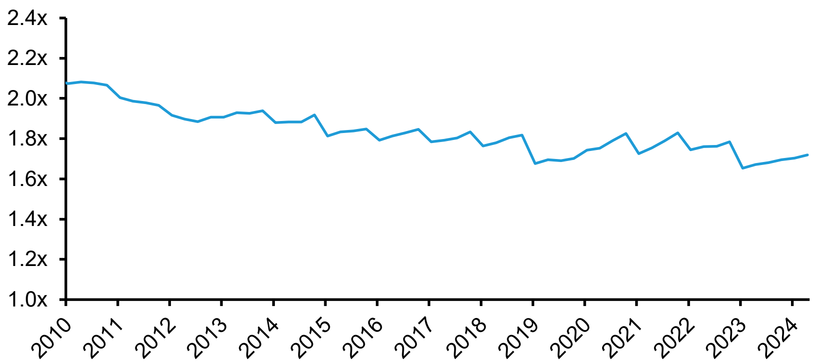
Unemployment rate



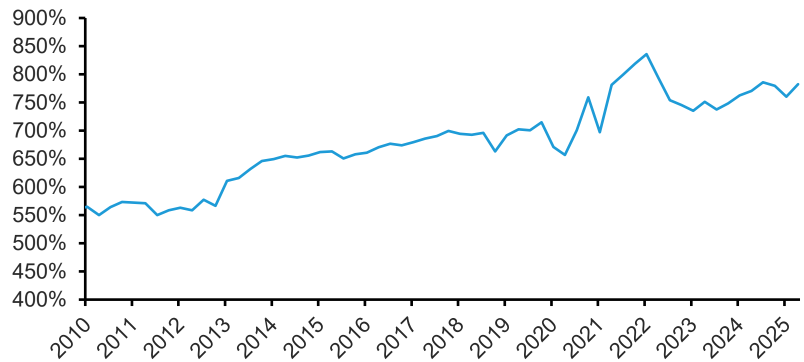
Wage growth (YoY, nominal dollars)



Debt to income ratio



Net worth as a % of disposable income

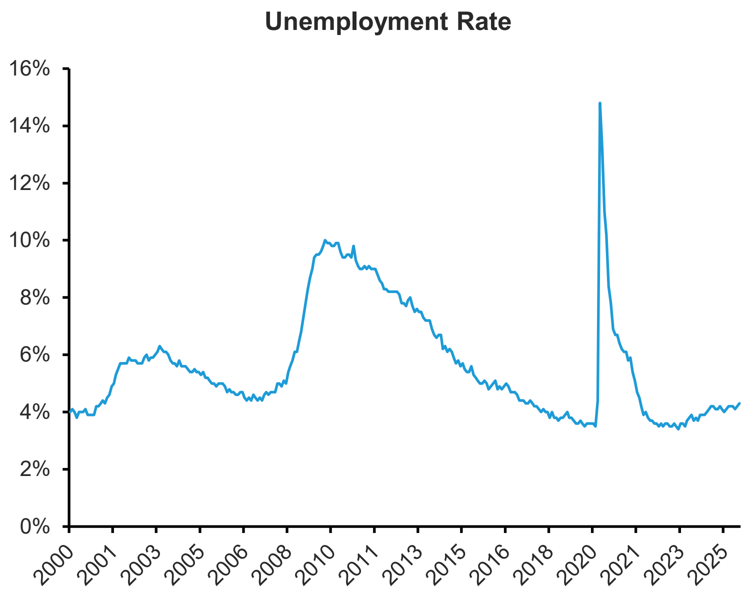


Source: NY Fed, Bloomberg, Autonomous.

Key Metrics of Consumer Financial Health

- Unemployment is a critical driver of consumer credit performance – if consumers have jobs, they generally pay their bills

- Wage growth is an important variable too, especially in an inflationary world; this has been strong lately



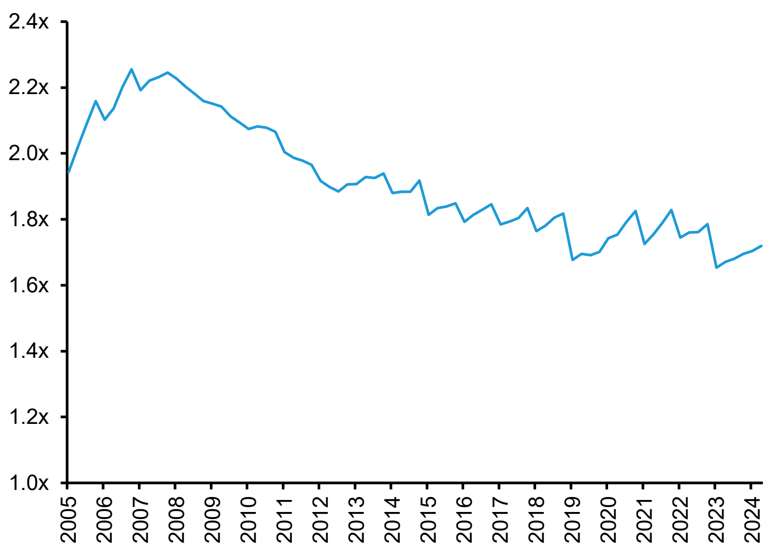
Source: Bloomberg, Autonomous.

Key Metrics of Consumer Financial Health

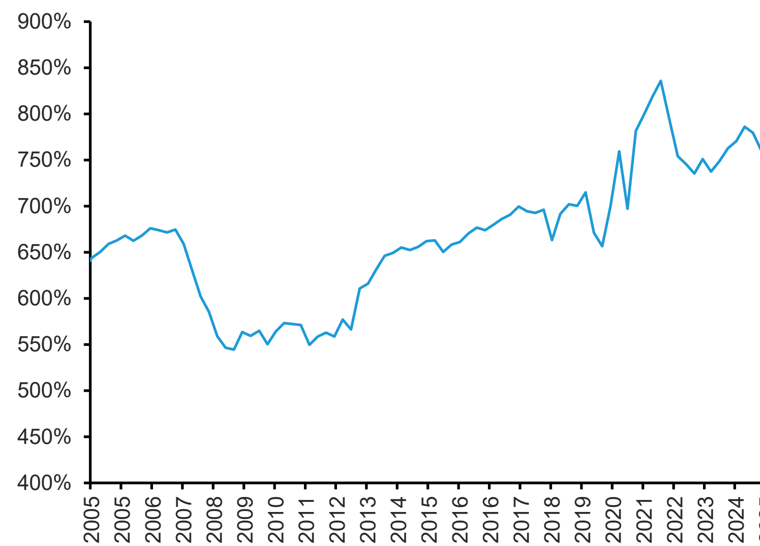
- Other metrics like the debt-to-income ratio or the financial obligations ratio give context to consumer debt burdens

- Currently, consumers are benefitting from a strong labor market and elevated levels of net worth

Debt to income ratio



Net worth as a percentage of disposable income

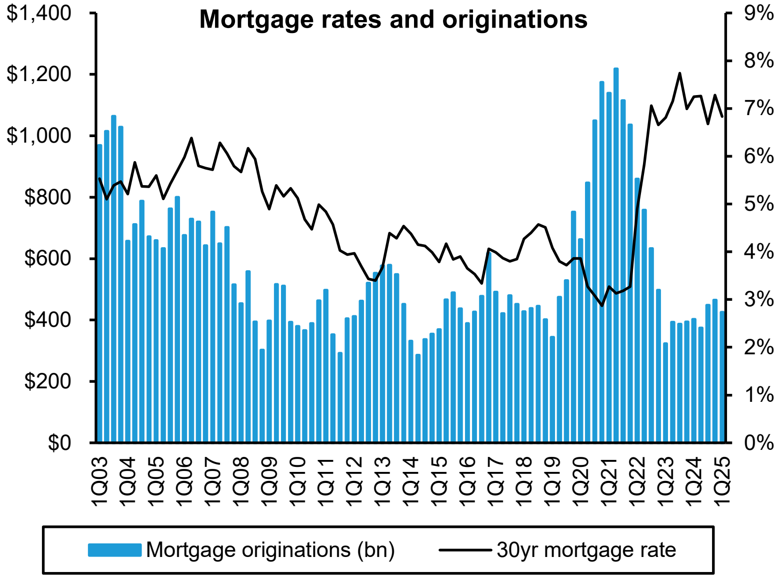


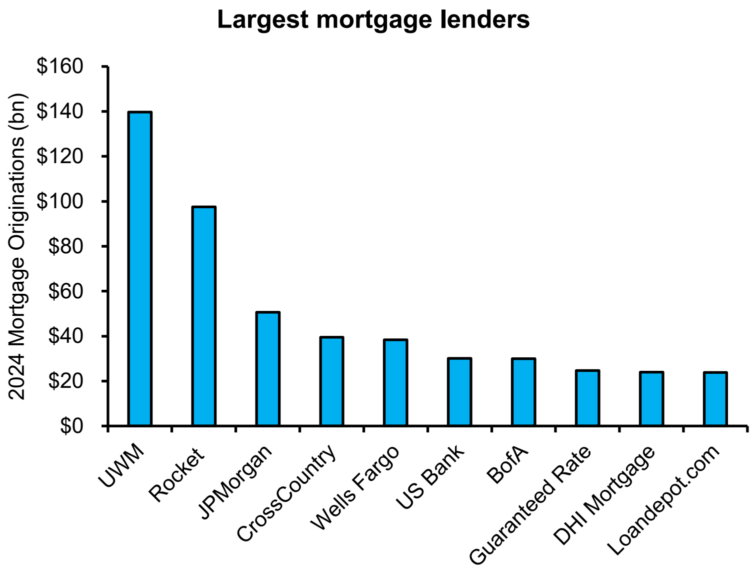
Source: NY Fed, Bloomberg, Autonomous.

Mortgage is the $13Tn Elephant in the Room…

- Mortgages are long duration (30 years), so consumer demand and monthly payments are highly sensitive to interest rates

- Nonbanks like Rocket and UWM are major players, as are big banks like Wells Fargo and Chase





Source: NY Fed, Bloomberg, Autonomous.

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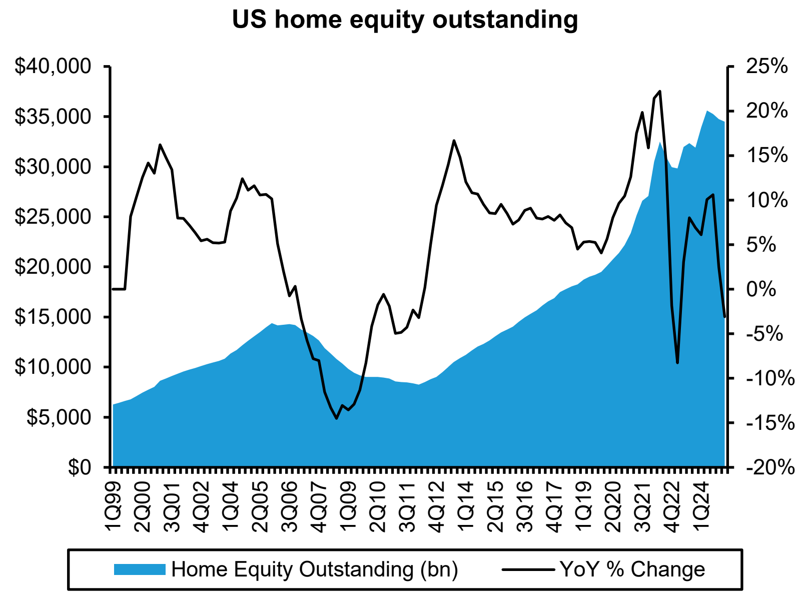
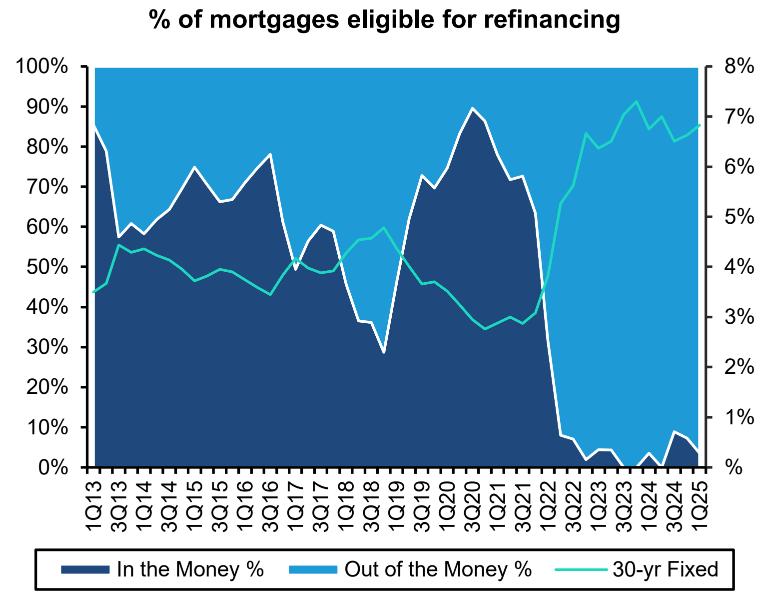
...With a $35Tn Home Equity Gorilla Behind It

- With traditional 30-year fixed mortgage rates well above 6% for more than two years, both refinance and purchase mortgage volume has slowed significantly.

- Simultaneously, homeowners have paid down their 3-4% outstanding mortgages, driving total home equity to more than 200% of its GFC peak.





Source: Board of Governors, Bloomberg, Bankrate.com, FHFA, Autonomous.

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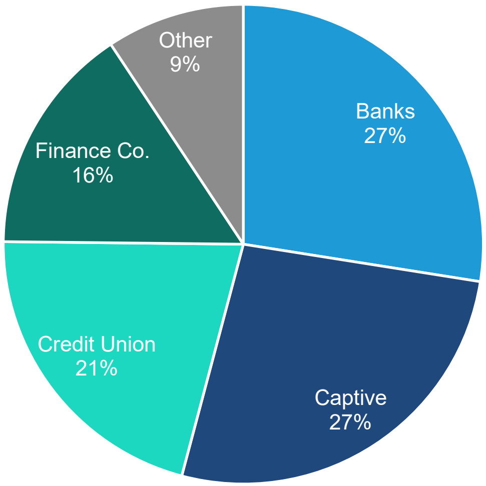
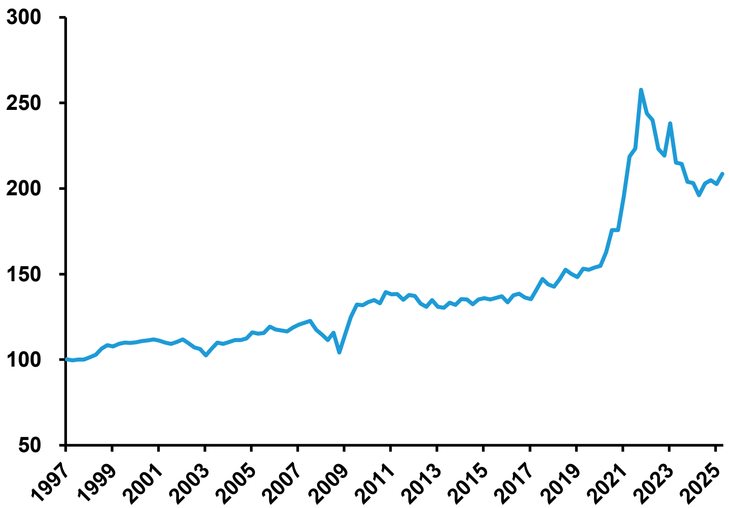
Auto Loans Come In 2nd With $2Tn Outstanding

- Auto loans are typically fixed rate and from five to seven years in term
- Auto loans are "secured" – the car is the collateral – so recovery values play an important role in lender profitability
- Bank, credit unions, and captives target prime borrowers while nonbanks target subprime borrowers

Market share of auto financing



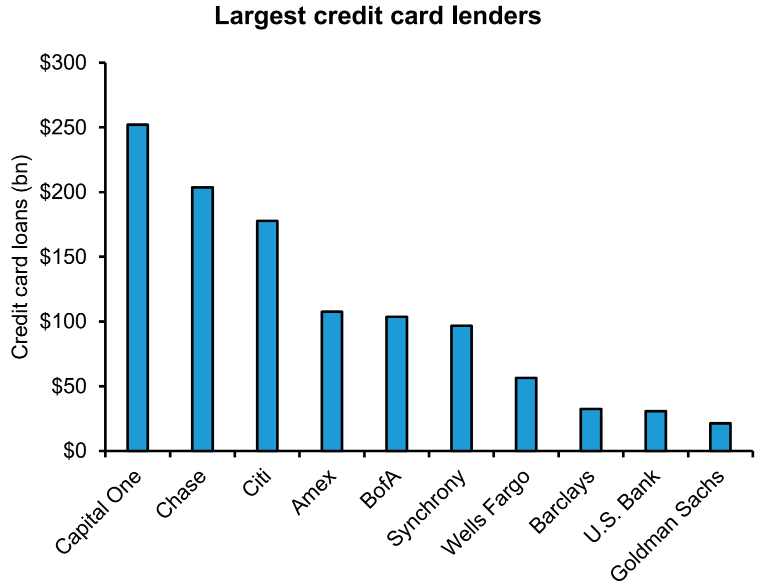
Manheim used vehicle price index

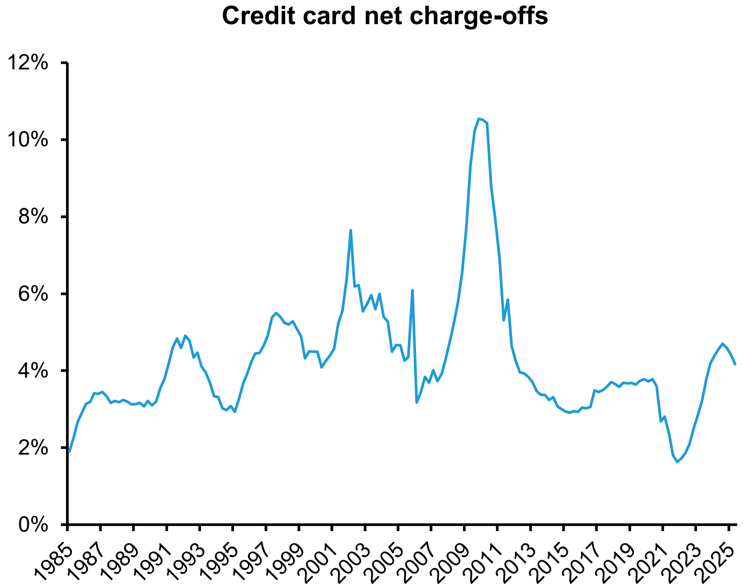


Source: Experian, Manhiem, Autonomous.

Credit Card is Also in the "Trillion" Dollar Club

- Credit card debt is floating rate and revolving – it has a minimum payment, but not a fixed monthly payment
- Big banks like Chase, Bank of America, Wells Fargo, etc. generally dominate the credit card industry. However, following its acquisition of Discover, Capital One has become the largest US card lender.

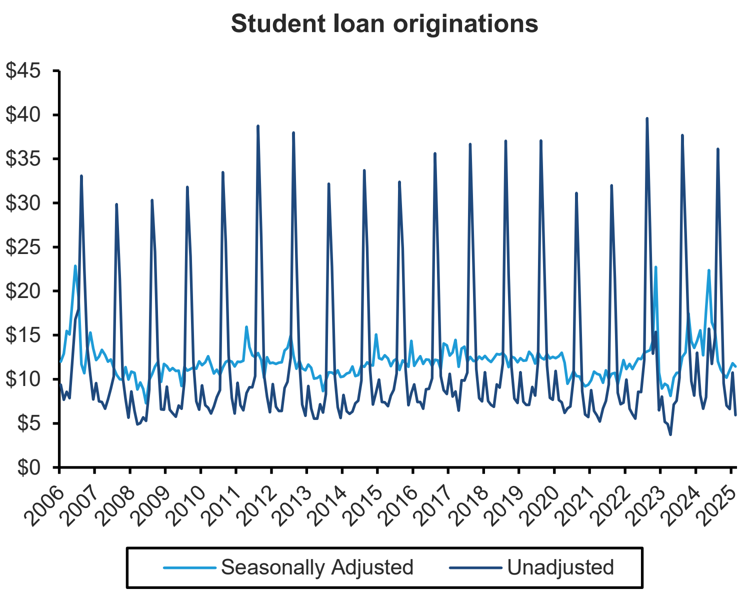


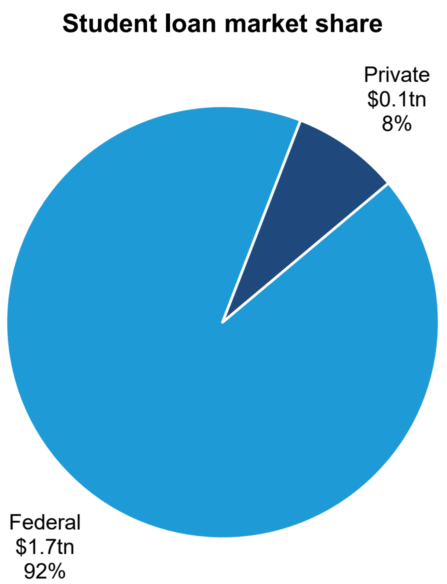


Source: Company data, San Francisco Fed, Autonomous.

Student Lending is Dominated by the Government

- Student loans are generally fixed rate and have term lengths of 10 to 20+ years
- The Federal government is the largest student lender in the US, by a landslide
- Until recently, there was a moratorium on student loan payments, meaning borrowers did not have to repay





Source: CFPB, Enterval, Autonomous.

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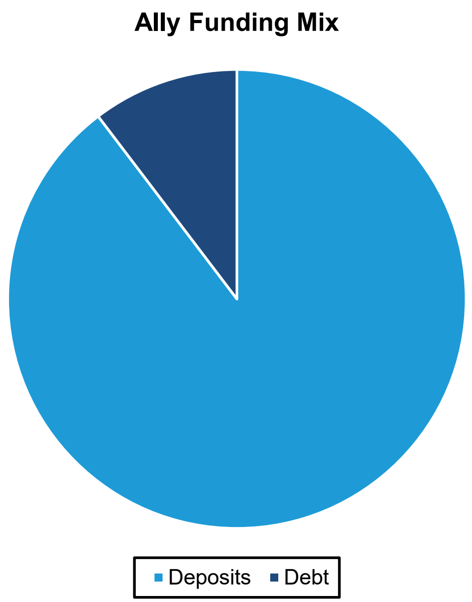
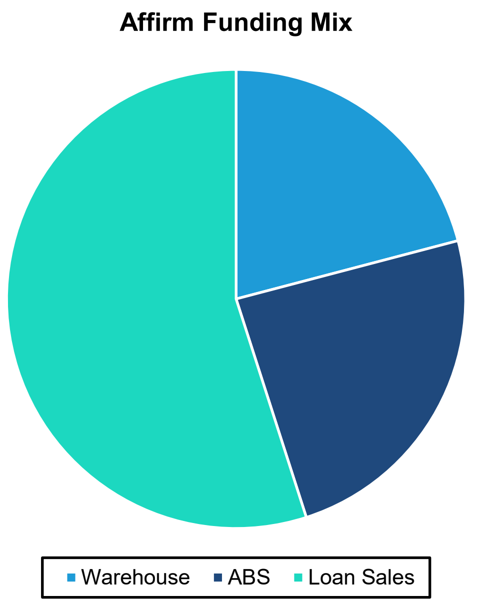
Banks Take Deposits, Nonbanks Don’t

- Both banks and nonbanks (also known as specialty finance companies) play in consumer finance
- The key difference between the two is how they fund their loans: banks use deposits, nonbanks don’t





Source: Company data, Autonomous.

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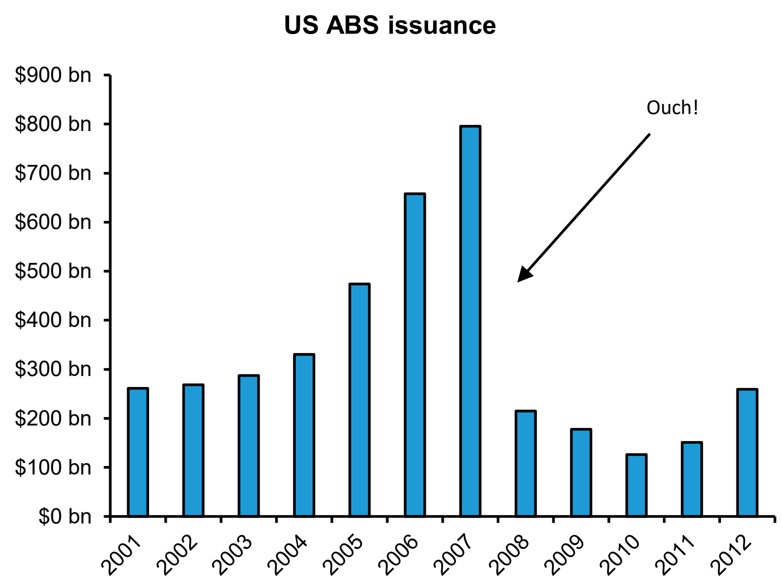
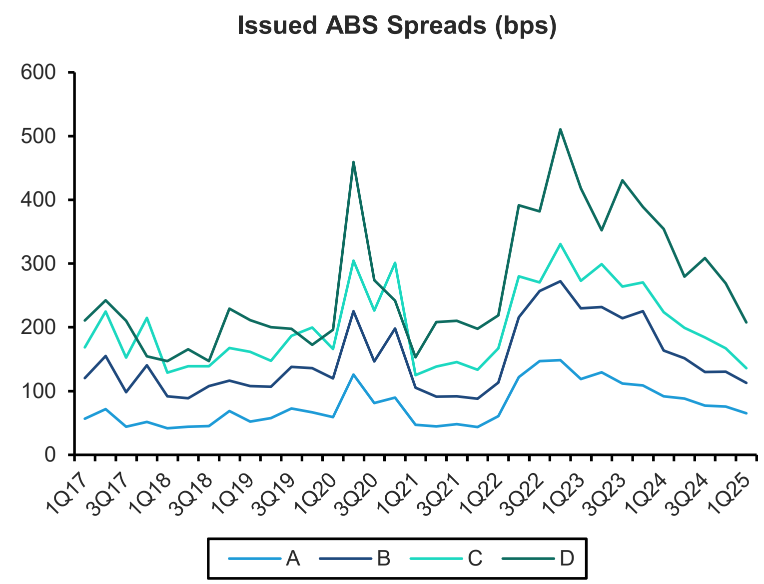
Nonbank Funding Can Be Volatile

- Nonbank funding is considered risky; ABS market can seize up and warehouse lines have to be renewed regularly

- Deposits are generally considered much more “stable”, conferring a cost and stability advantage to bank lenders; this has led to nonbanks emphasizing subprime





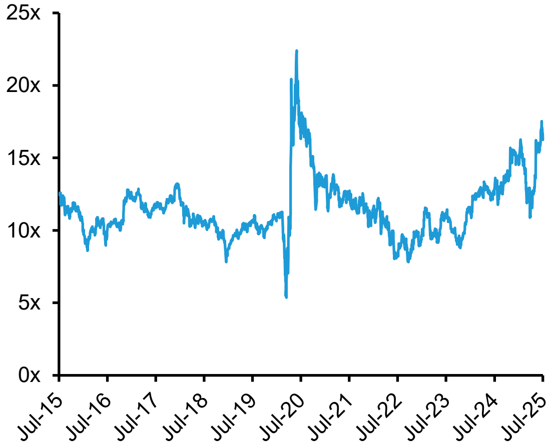
Source: SIFMA, Bloomberg, Autonomous.

Consumer Finance Rarely Gets a High Multiple

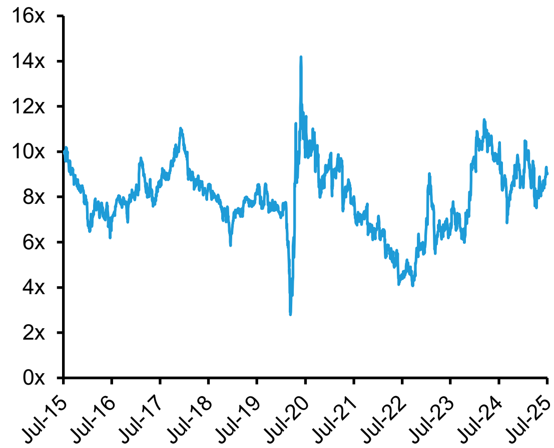
- Consumer finance companies are generally low multiple businesses – think high single-digit multiples on P / E

- This is because loans are a fairly commoditized product, the industry is competitive, and earnings can be very volatile

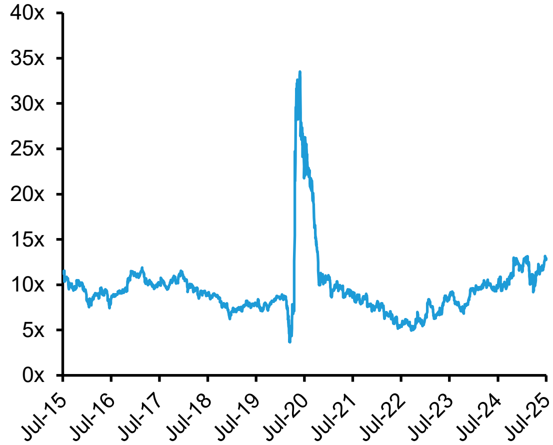
S&P Consumer Finance P / E



Ally Financial P / E



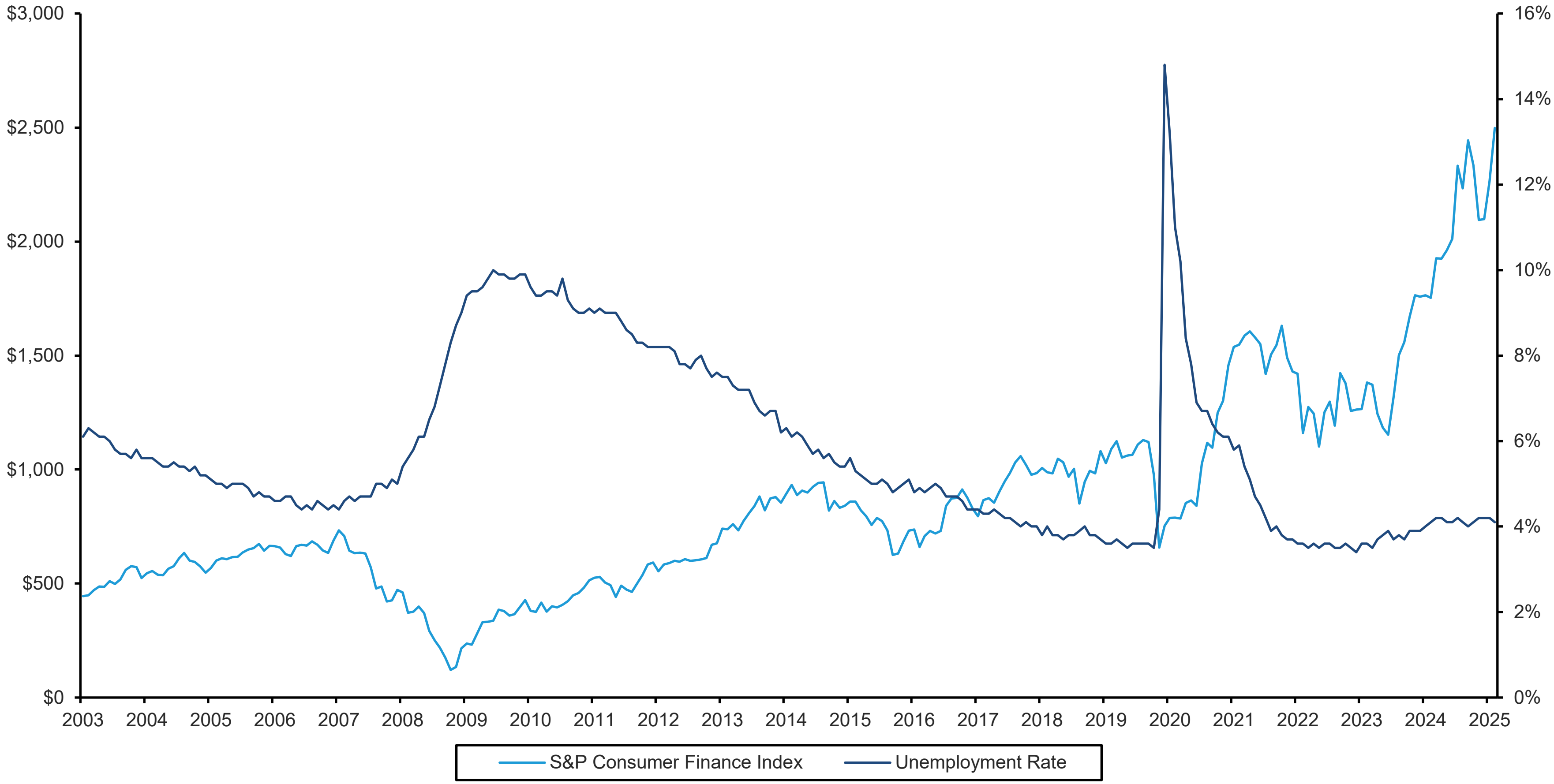
Capital One P / E



Source: Bloomberg, Autonomous.

Trading the Sector: Unemployment

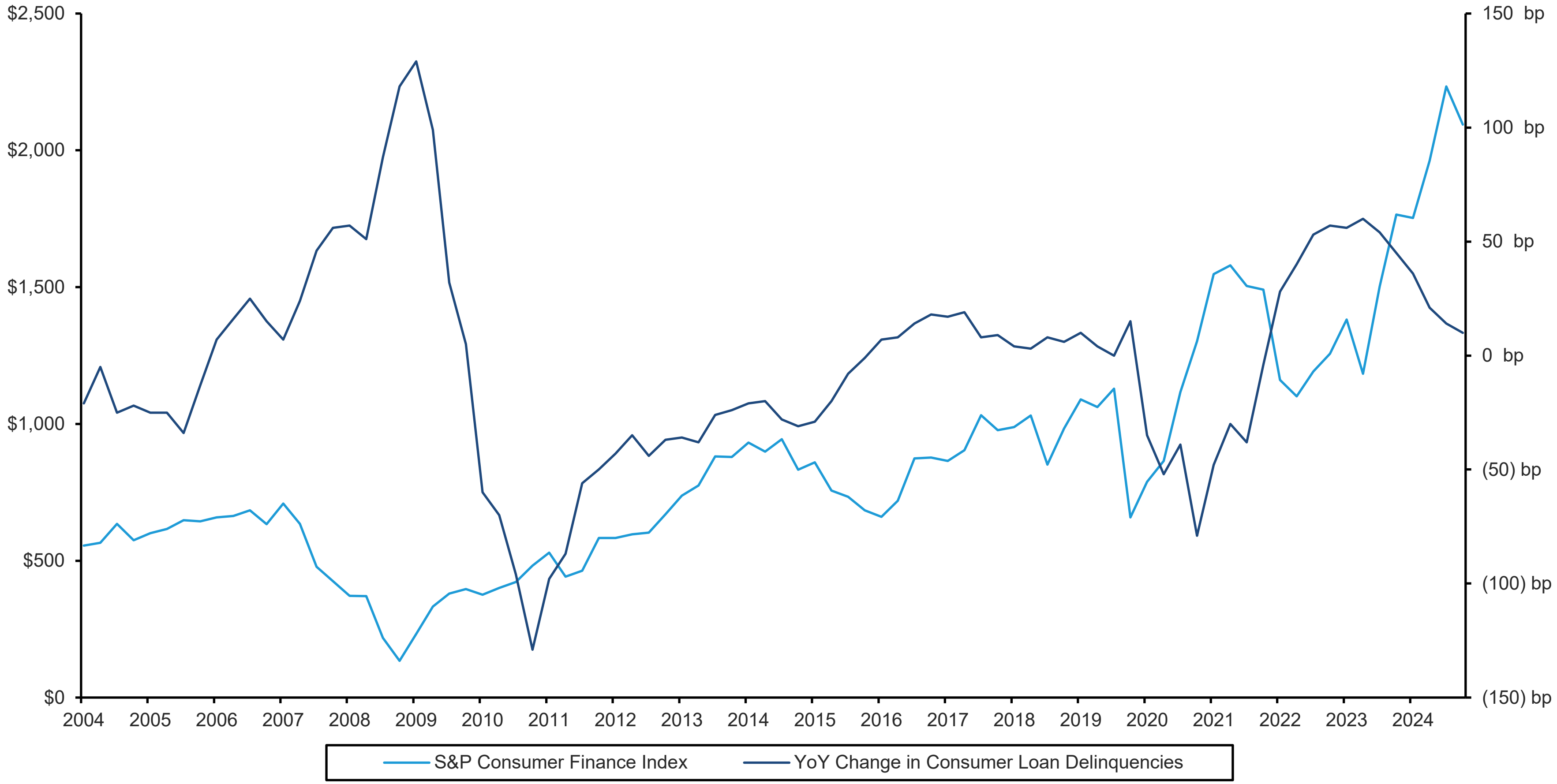
Financial stock performance versus Unemployment rates



Source: Bloomberg, Autonomous.

Trading the Sector: The 2nd Derivative

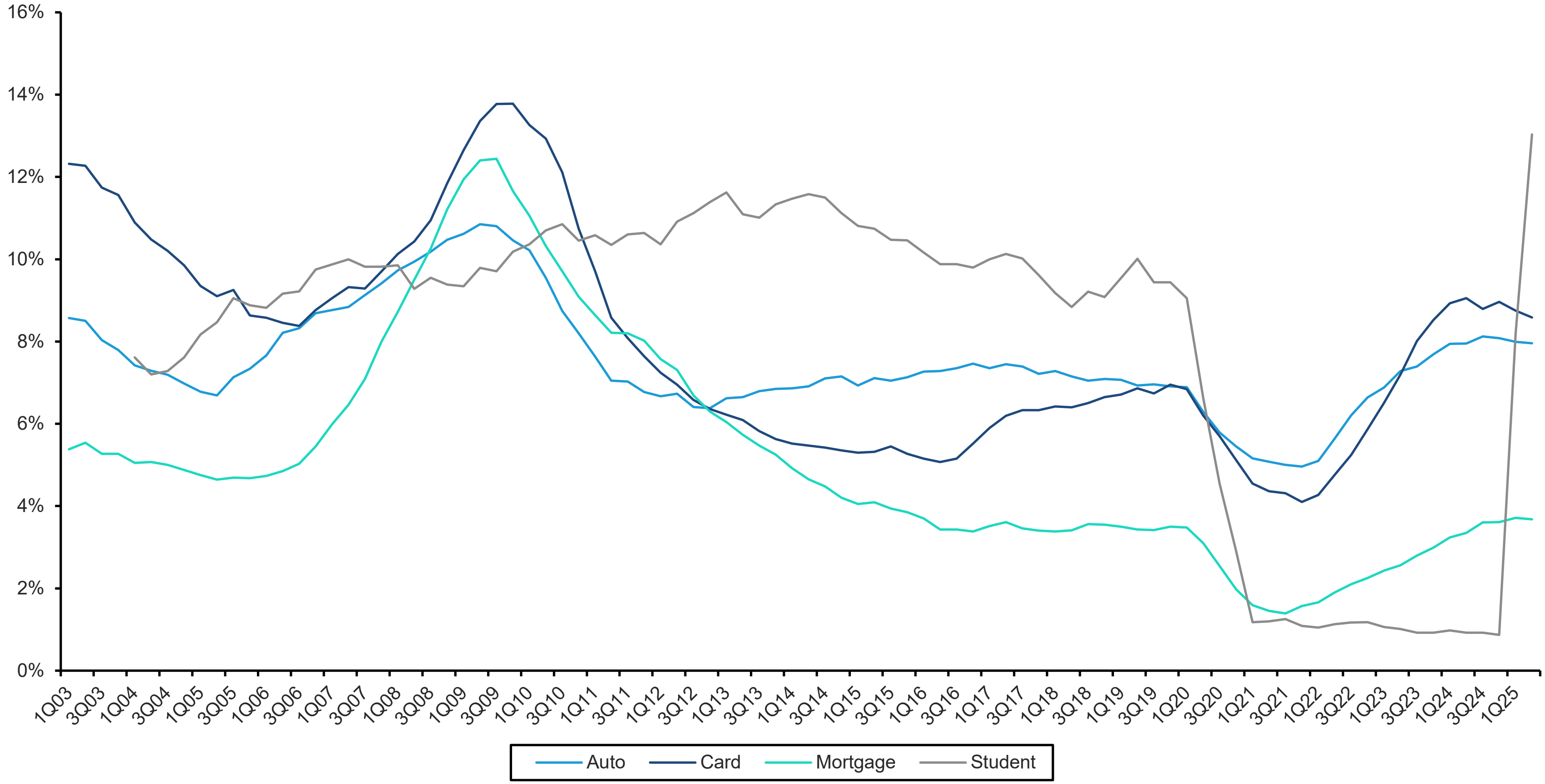
Financial stock performance versus delinquency rates



Source: Bloomberg, Autonomous.

Trading the Sector: Cycles

30+ delinquency rates by product



Source: NY Fed, Autonomous.

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Financial Information Services

Christian Bolu & Kelsey Zhu

Christian Bolu

US Capital Markets, Senior Analyst

Prior to transferring to Autonomous Research, Christian covered US capital markets at Bernstein since 2017. He previously worked in Credit Suisse's Investment Bank strategy department and as a senior analyst in Credit Suisse’s Equity Research division.

Kelsey Zhu

US Financial Information Technology & Business Services, Senior Analyst

Kelsey joined Autonomous in 2022 with 8 years of research experience across IT Hardware supply chain companies that specialized in flat panel display, display glass, PCs and industrial robotics; Asian equity strategy, and Asian and US gaming companies. Before Autonomous, Kelsey led the expansion of Bernstein’s Global Gaming team. Prior to Bernstein, Kelsey worked at Deutsche Bank covering China cement and oilfield services. Kelsey holds a BA in Business Administration from Hong Kong University of Science and Technology.

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Financial Information Services

Christian Bolu

Christian Bolu - Capital Markets Comp Sheet

	Ticker	Mkt Cap ($bn)	Rating	Price Target	Upside to PT	Price / Earnings 2026	Price / Earnings 2027	Price / BV	Price / TBV	Price / Sales 2026	Price / Sales 2027	Div Yield
Institutional Brokers												
Goldman Sachs	GS	$245	Outperform	$960	24%	14.6x	13.0x	2.2x	2.3x	4.1x	3.9x	2.1%
Morgan Stanley	MS	$249	Neutral	$170	9%	16.0x	14.4x	2.5x	3.2x	3.5x	3.3x	2.6%
Retail Brokers												
LPL Financial	LPLA	$26	Neutral	$372	14%	14.7x	11.8x	-	-	1.3x	1.2x	0.4%
Charles Schwab	SCHW	$175	Underperform	$88	-6%	17.3x	14.7x	-	-	6.8x	6.2x	1.2%
Raymond James Financial	RJF	$33	Neutral	$182	10%	14.0x	12.5x	-	-	2.1x	2.0x	1.3%
Neo Brokers												
Robinhood	HOOD	$135	Outperform	$170	12%	70.0x	60.8x	15.2x	16.2x	26.6x	23.5x	-
Coinbase Global	COIN	$104	Underperform	$350	-10%	55.5x	48.1x	8.3x	9.2x	12.2x	11.6x	-
Financial Exchanges												
Cboe Global Markets	CBOE	$25	Neutral	$268	11%	23.4x	21.9x	-	-	10.4x	10.0x	1.1%
CME Group	CME	$97	Outperform	$322	21%	23.4x	22.2x	-	-	14.4x	13.6x	4.3%
Intercontinental Exchange	ICE	$91	Outperform	$197	24%	20.9x	18.8x	-	-	8.7x	8.2x	1.3%
Nasdaq	NDAQ	$52	Outperform	$108	20%	24.5x	21.9x	-	-	9.5x	8.8x	1.2%
MarketAxess	MKTX	$6	Neutral	$182	6%	21.0x	18.4x	-	-	6.9x	6.3x	1.8%
Tradeweb	TW	$24	Outperform	$127	18%	28.6x	25.9x	-	-	10.4x	9.5x	0.5%
Information Services												
Moody's	MCO	$88	Neutral	$502	2%	31.4x	27.9x	-	-	10.8x	10.0x	0.8%
S&P Global	SPGI	$152	Neutral	$562	16%	25.3x	22.5x	-	-	9.4x	8.7x	0.9%
	Total	**$1,505**		**Average**	**12%**							

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Source: Bloomberg, Autonomous estimates and analysis. As at 10/9/2025.

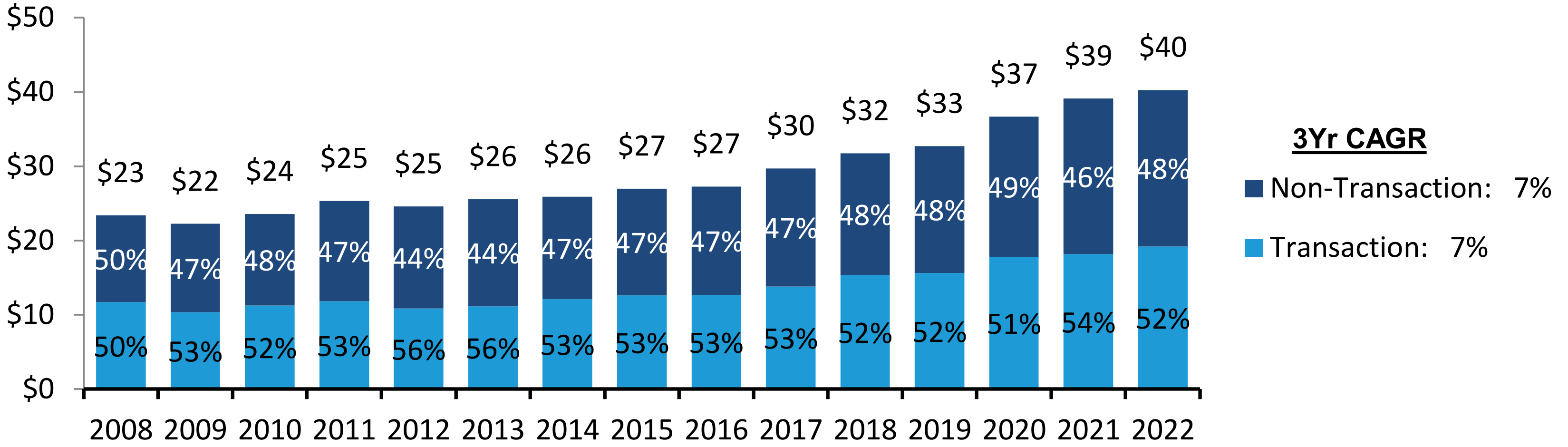
Exchanges & Credit Rating Agencies – Session Overview

- Exchanges Overview
- Exchanges Business Mix
- Exchanges Valuation
- Credit Ratings Agencies Overview
- Credit Ratings Agencies Business Mix
- Credit Ratings Agencies Valuation
- What we like in the sector

Exchanges – Business Mix

- Business mix – ~50/50 transactional vs non-transactional businesses but mix varies by exchange
- Transaction – cash equities (stocks) or derivatives trading
- Non-transaction – market data, connectivity, access, listings, software

Global Exchange Revenue by Business ($bn)



Source: Company reports, Autonomous analysis. Based on analysis of publicly traded exchanges. Inclusive of acquisitions.

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Exchanges – Business Drivers – Transaction

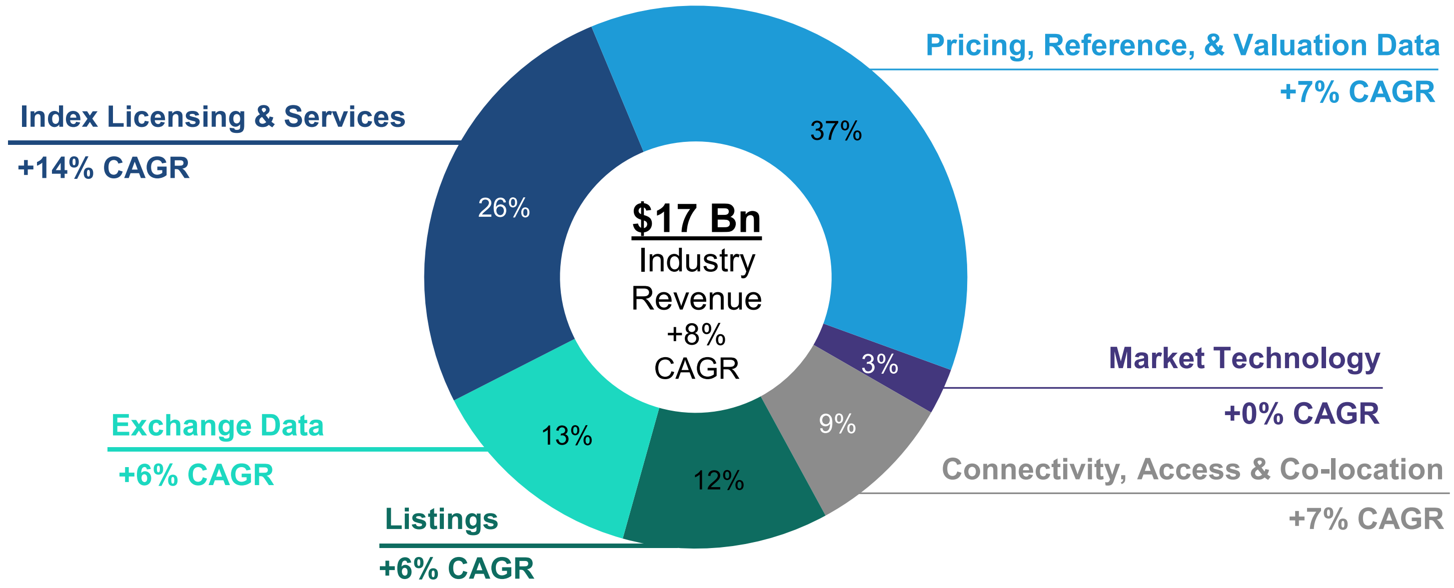
Transaction fees = trading volumes x revenue capture

- Two broad categories of transaction businesses
  - #1. Cash equities – low growth, very competitive
  - #2. Derivatives (Futures) – higher growth, asset class monopolies
- Futures monopoly comes from ***vertical integration*** and ***non-fungible*** contracts
- Non-fungibility means that first mover get all the liquidity and all the volumes
- Exchanges generate revenues from the amount of ***volume*** traded on the exchange, multiplied by the ***revenue capture*** for each share or contract
- Transaction volume drivers
  - Market volatility – increased hedging & risk management; increased opportunities for speculators
  - Technology – e.g. electronification 1970s and 1990s
  - New product innovation – e.g. interest rate futures (1970s), energy futures (1980s), crypto (2010s)
  - Regulation – Reg NMS
  - Globalization – Expansion into new markets; CME non-US growth is ~2x its US growth

Exchanges – Business Drivers – Non-Transaction

- For exchanges, the more traditional sources of further monetizing its transaction businesses has been listings, data and indexing. As transactional activity has matured, particularly post electronification, market data and indexing in particular has been a key source of revenue growth
- Data & Access businesses carry high levels of recurring revenue which can offset the cyclicality of traditional exchanges' revenues, which is dependent on transaction activity

Exchanges – Non-Transaction Fee Pool (2022)



Source: Company data, Burton Taylor, Autonomous estimates.

Exchanges – What's Driving Non-Transaction Revenue Growth?

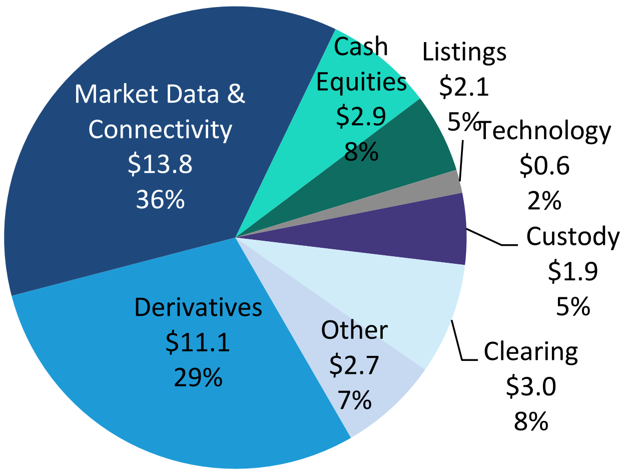
- **#1. Automation of Markets.** As markets continue to electronify and computing costs come down, quantitative driven strategies have grown significantly. These strategies are highly dependent on the quality of data inputs, thus we expect them to continue to be a voracious consumer of data and connectivity solutions.

- **#2. Regulatory & Compliance Requirements.** Compliance with a myriad of global regulations is driving increased demand for data. Use of independent third-party data for pricing, valuation, best execution compliance and analytics are deeply embedded into the compliance processes of asset managers and banks.

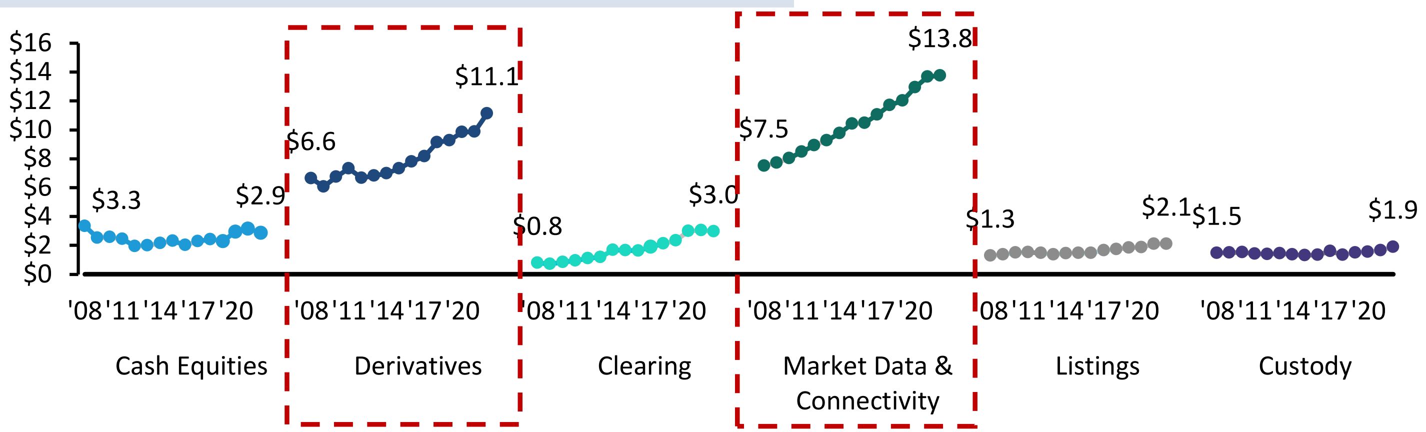
- **#3. Information security.** As the volume, speed and complexity of data flows increase, the need for secure ways to access and store data becomes increasingly important. Exchanges are well positioned to meet this need with services such as data centers, private cloud and high-speed secure connectivity services.

Exchanges – Revenue Mix

Global Exchange Revenue (2022, $bn)



Global Exchange Revenue by Business ($bn)



Source: Company reports, Autonomous analysis. Based on analysis of publicly traded exchanges. Inclusive of acquisitions.

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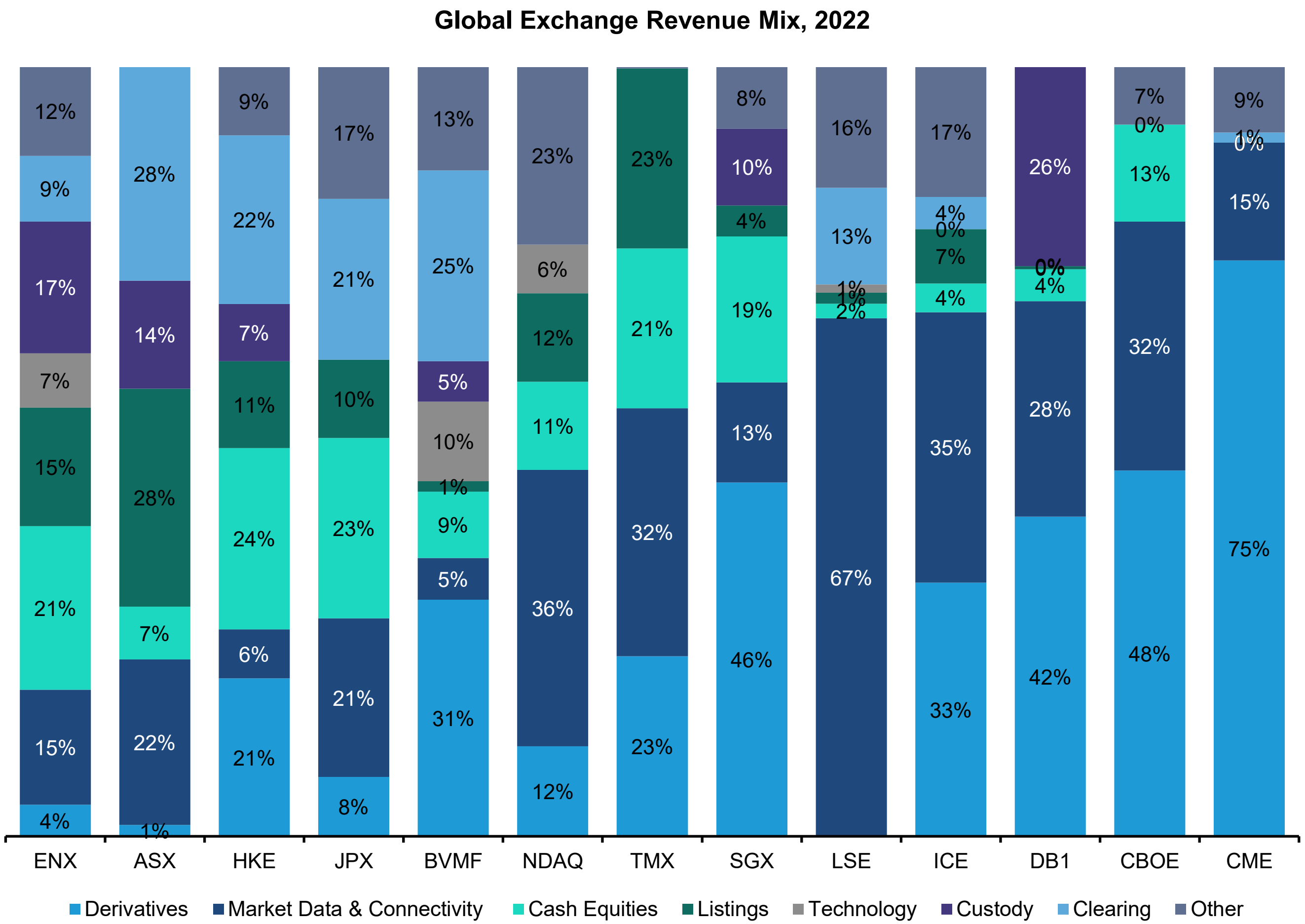
Exchanges – Mix Differences



Source: Company reports, Autonomous analysis. Based on analysis of publicly traded exchanges

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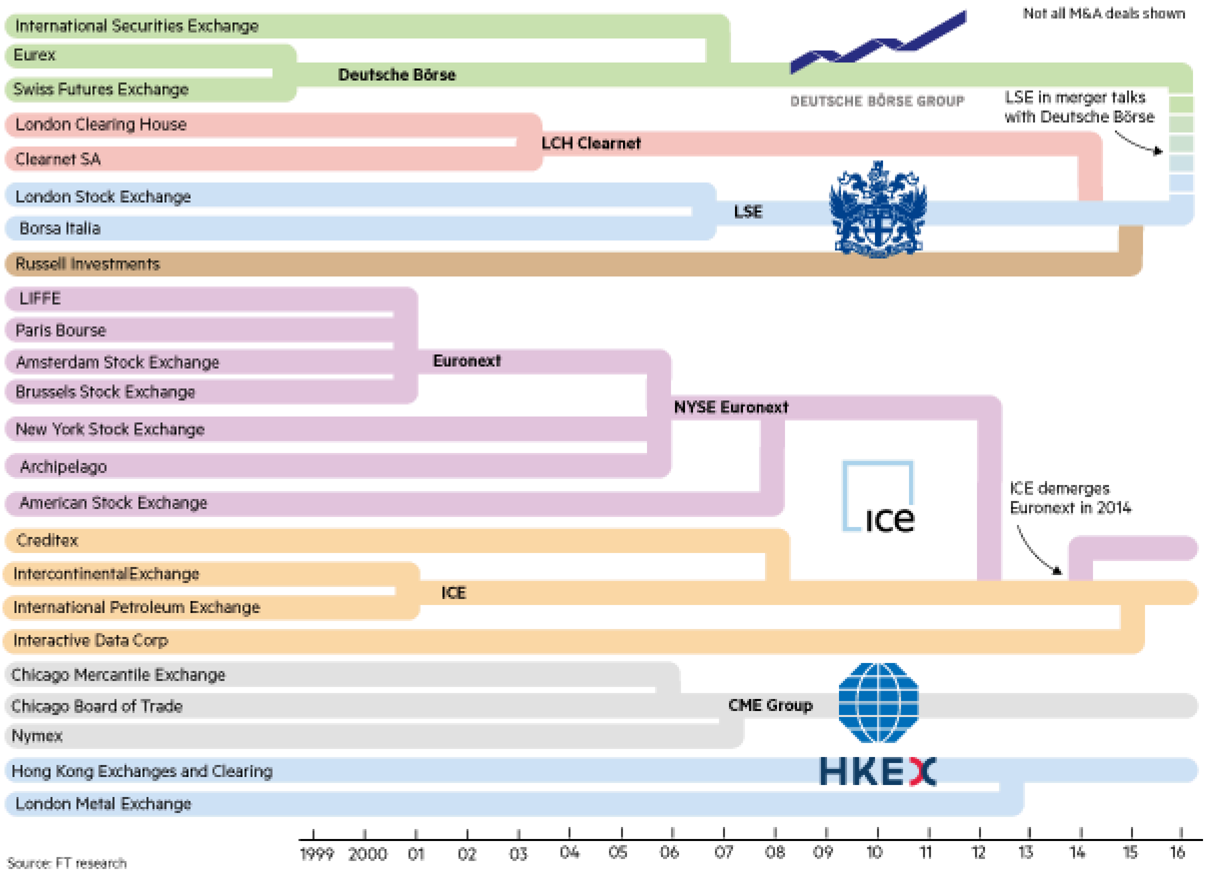
Exchanges – M&A



Source: Financial Times

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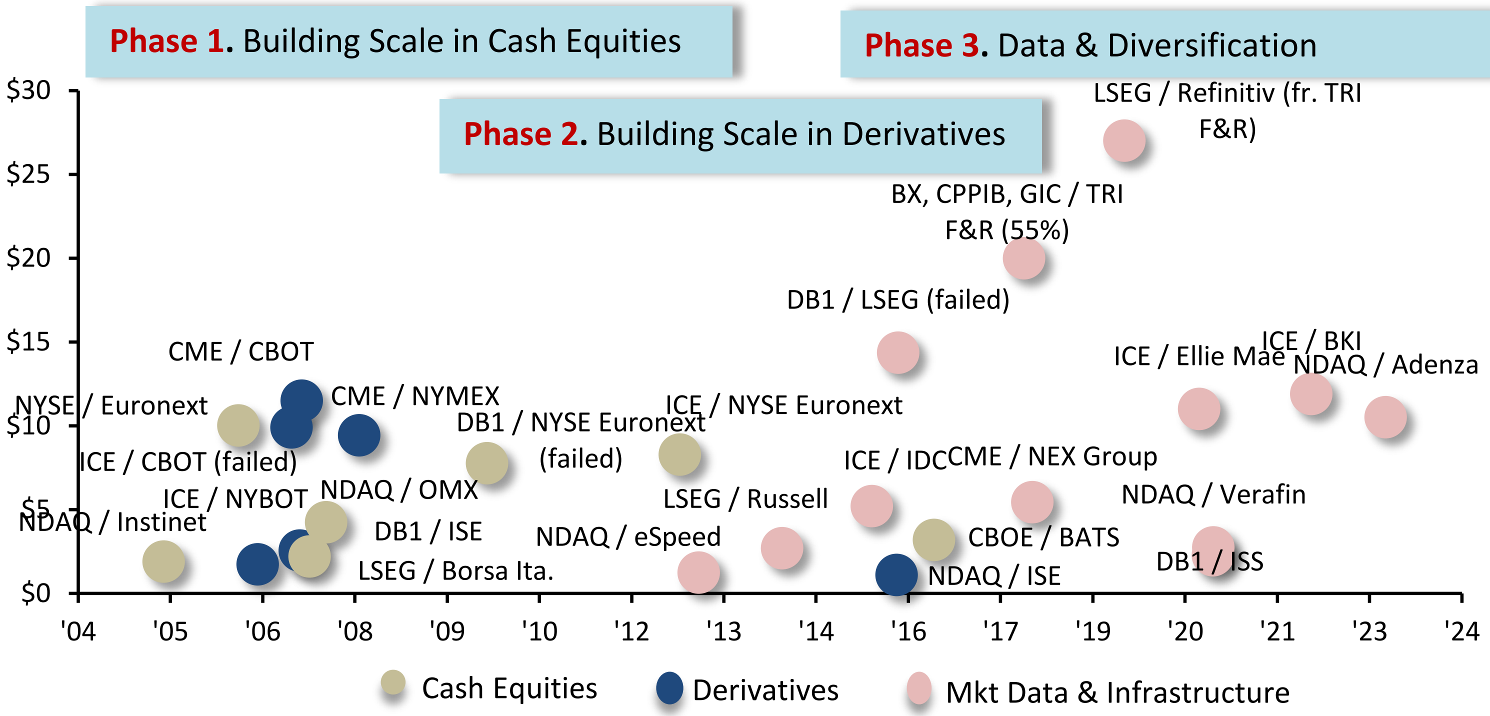
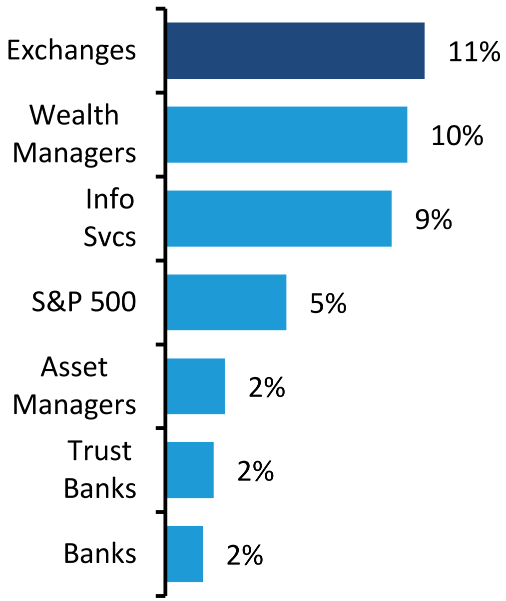
Exchanges – M&A



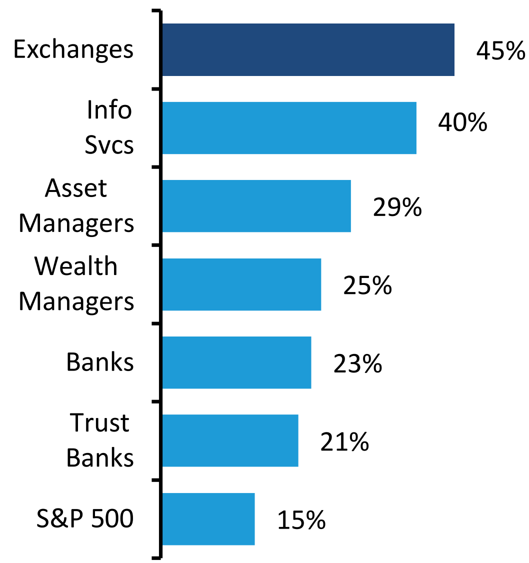
Source: Company reports, Autonomous analysis.

Exchanges – Playing the Stocks

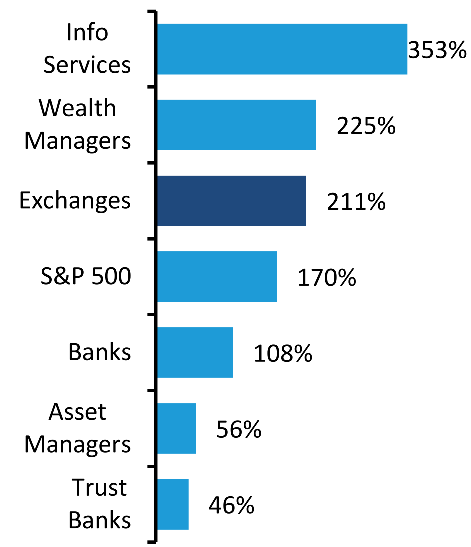
Revenues '13-'23 (CAGR)



Operating Margins (2023)



Total Shareholder Return '15-'23



Source: Bloomberg, Autonomous Research analysis. Based on publicly traded companies. Peer groups as follows: Wealth Managers (SCHW, LPLA, IBKR, RJF), Banks (GS, MS, JPM, BAC, C), Exchanges (CBOE, CME, ICE, NDAQ), Info Services (FDS, MCO, MSCI, SPGI), Asset Managers (AB, BEN, BLK, LM, IVZ, TROW, AMG, EV) and Trust Banks (BK, NTRS, STT).

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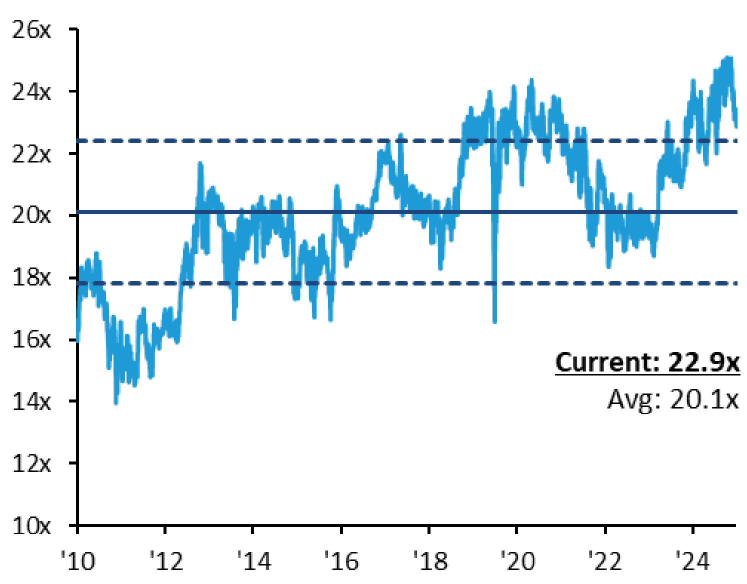
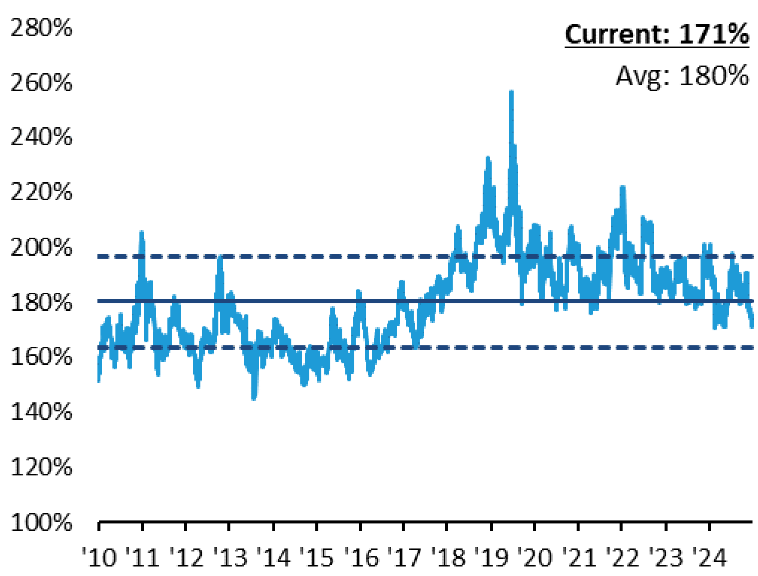
Exchanges – Valuation

- Valuations are healthy given defensive tilt

Global Exchanges – NTM Price-to-Earnings

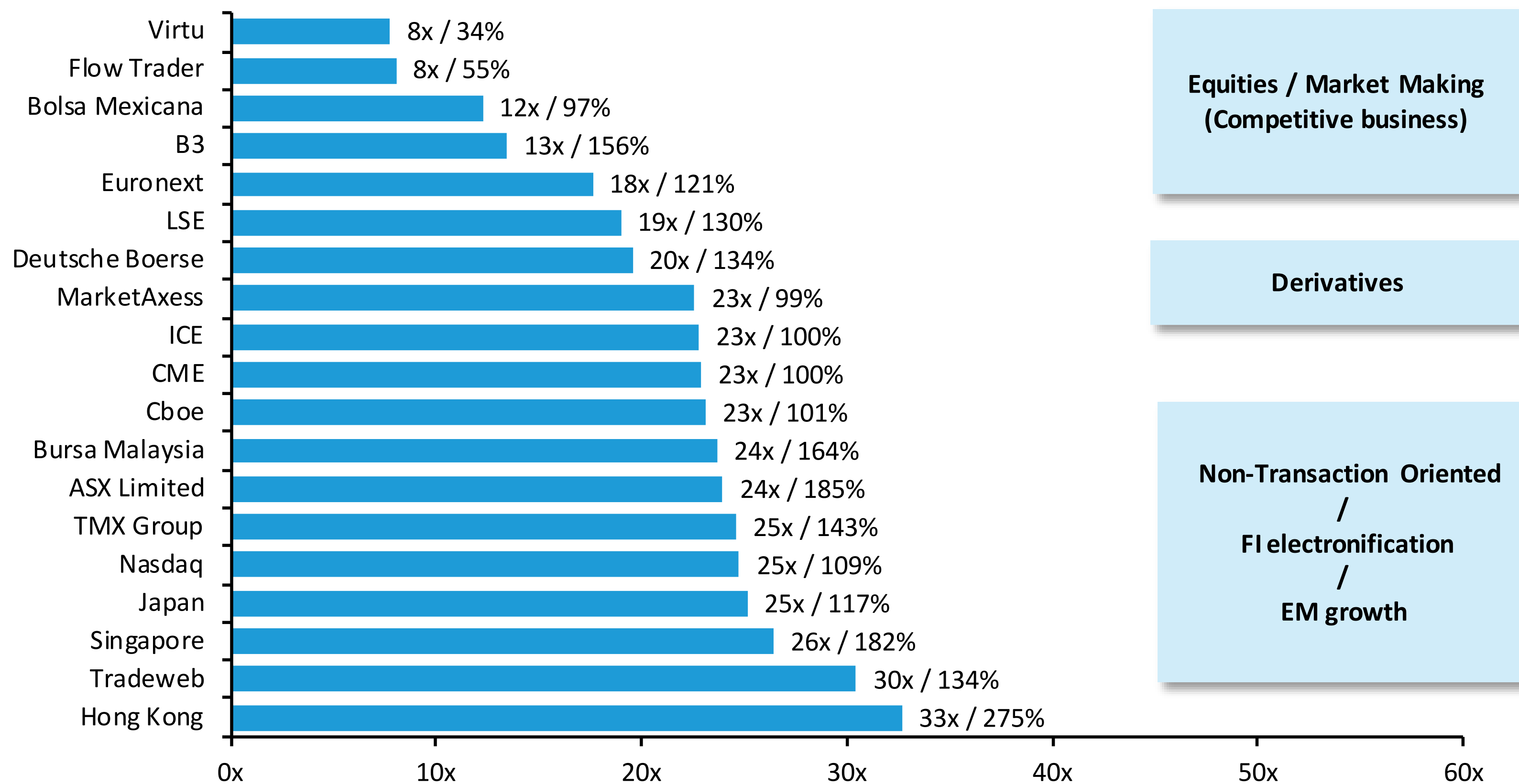


Global Exchanges P/E Relative to MSCI Financials



Exchanges – What drives valuation?

- Mix Matters – exposure to higher growth, more recurring revenues benefits valuations

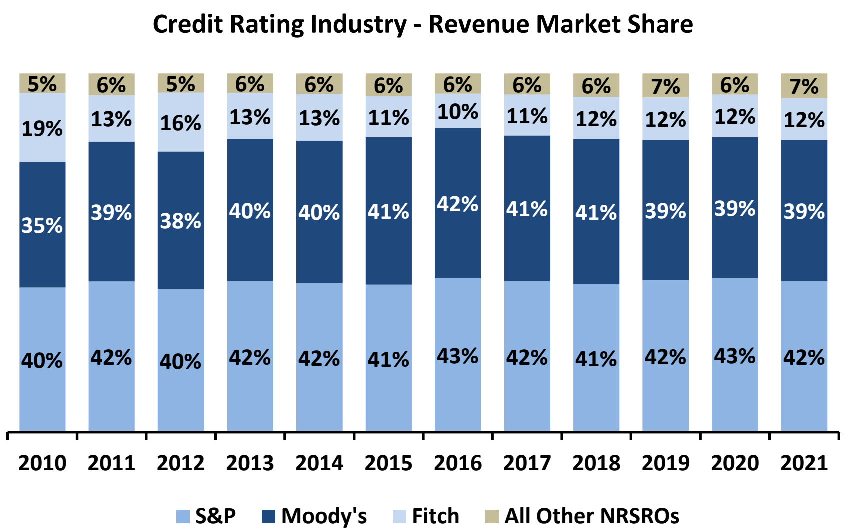


Source: Bloomberg, Autonomous Research analysis.

Credit Rating Agencies (CRAs) – Near Duopoly on Credit Ratings

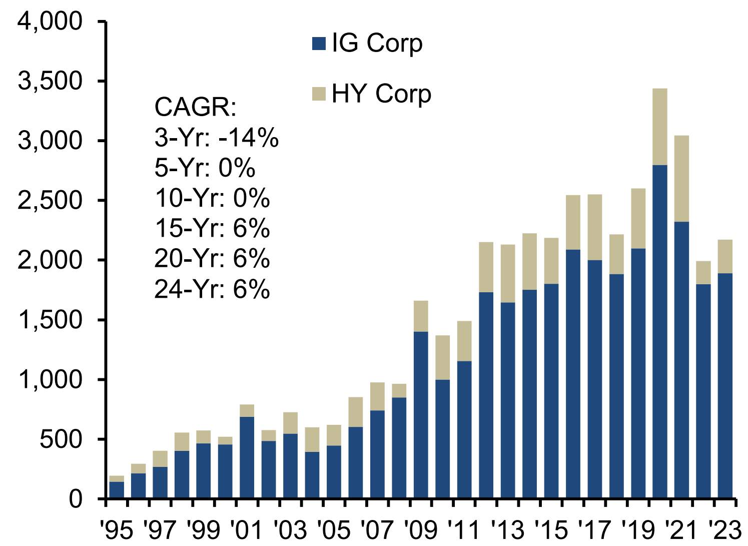
- **Moody's & S&P comprise ~80% of industry revenues; with Fitch ~93%**
- **Bankable TAM growth – market grows in-line with GDP; pricing power adds 3-4% to growth**

CRA's Revenue Market Share



Global Corporate Issuance

$bn



Source: Company reports, SEC, Autonomous analysis.

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CRAs – Strong Value Proposition for Ratings

- **Credit Ratings allow issuers to optimize cost of funding, leads to significant savings**
- **Investors and intermediaries value the third-party opinion, allows for establishing thresholds for credit risk and investment guidelines**
- **For an issuer: Cost of Rating = $1-3 million, Savings from Rating = $15 million +**

Illustrative Impact of Adding a Credit Rating

Example: 5-year $500 million corporate bond

NOT RATED BY MOODY'S		RATED BY MOODY'S
$500,000,000	Bond	$500,000,000
1.20%	5-Yr US Treasury Bond Rate	1.20%
500	Option Adjusted Spread (bps)[1]	435
6.20%	Interest Rate	5.55%
= $31,000,000	Annual Interest Payments	= $27,750,000
5 years	Term	5 years
= $155,000,000	Total Interest Expense over the Term	= $138,750,000

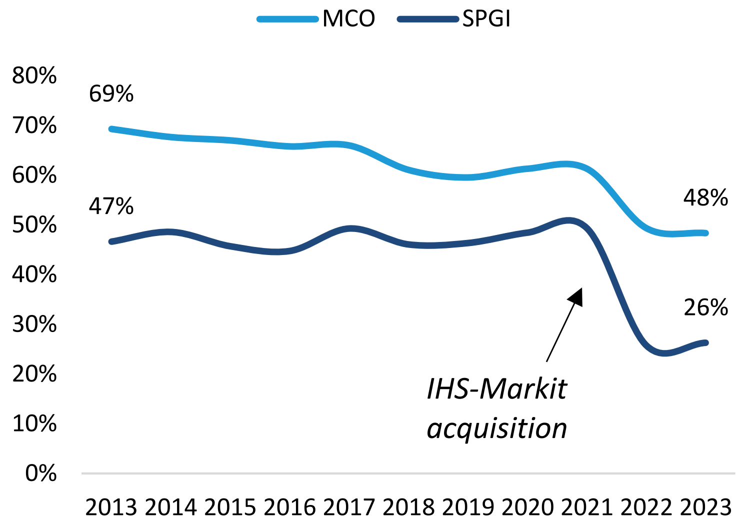
Over $16 million in total interest expense vs. cost of rating

Source: Company reports, Autonomous analysis.

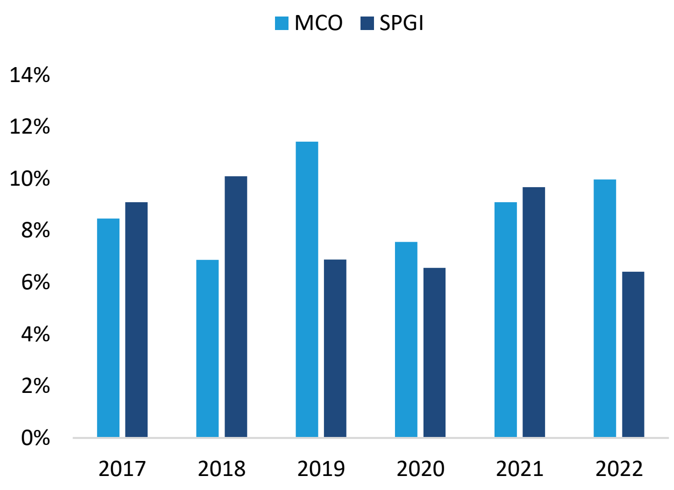
CRAs – Diversifying Outside Ratings

- **Ratings importance for S&P and Moody's has declined**
- **Companies have diversified to high growth data businesses that provide stability/visibility in revenues**

Ratings Revenue as % Total



Non-Ratings Organic Revenue Growth



Medium-Term Outlook:
Moody's: 10%+
S&P: 7-9%

Source: Company reports, Autonomous analysis.

CRAs – Strong Collection of Data/Information Businesses

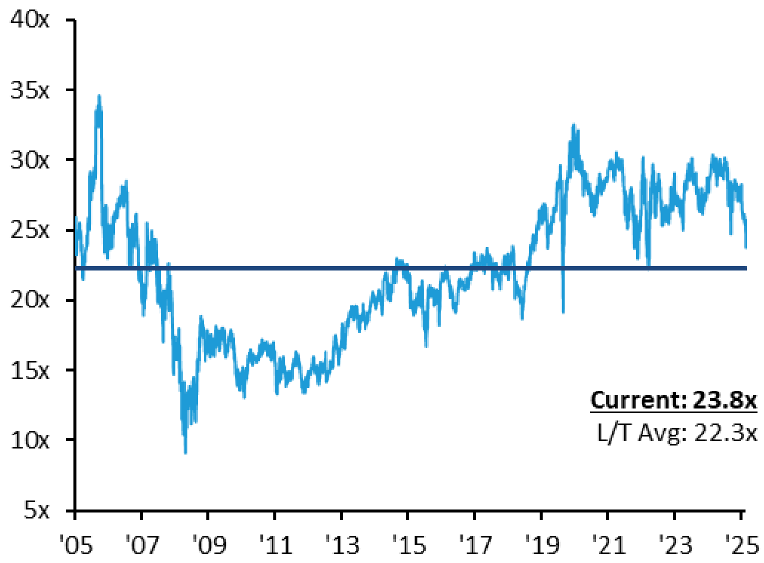
Business	Revenue ($mil) 2021	% Non-Ratings	% Total	CAGR	Business Description	Client Base
S&P Global						
Markets Intelligence	$3,890	46%	31%	9%	S&P Capital IQ and SNL (Market Intelligence platforms), sector-focused news, and third-party research	Investment managers Private Equity Investment banks Corporates & Gov't
Commodity Insights	$1,669	20%	13%	3%	Price assessments (Oil, Gas, Power), energy data and insights, advisory and transactional services	Brokers & Exchanges Traders & Risk Managers Geoscientists/engineers
Mobility	$1,246	15%	10%	18%	New and used vehicle sales (Carfax), Vehicle history reports, VIN Solutions	Car Makers Market Agencies Consumers
Indices	$1,253	15%	10%	15%	S&P 500, real time data, custom calculation fees and index development	Investment managers ETF Sponsors Exchanges, trading desks
Engineering Solutions	$391	5%	3%	7%	Standards, codes and specifications, consulting services	Engineers Research & Development
Total	**$8,449**	**-**	**68%**	**10%**		
Moody's						
Decision Solutions	$1,011	42%	16%	11%	Screening and insights (KYC), Lending and Origination (Insurance underwriting), Portfolio Management (asset-liability management)	Banks Insurance companies
Research and Insights	$697	29%	11%	7%	Economic forecasts and scenarios, Credit and ESG research, 10mn+ climate scores, consumer and corporate risk models and analytics	Credit investors Investment banks
Data and Information	$698	29%	11%	9%	Data feeds from MIS ratings process, data on 425mn+ public and private entities, private firm financial statements, entity ownership and hierarchical links	Credit investors Investment banks Insurance companies
Total	**$2,406**	**-**	**39%**	**9%**		

Source: Company reports, Autonomous analysis.

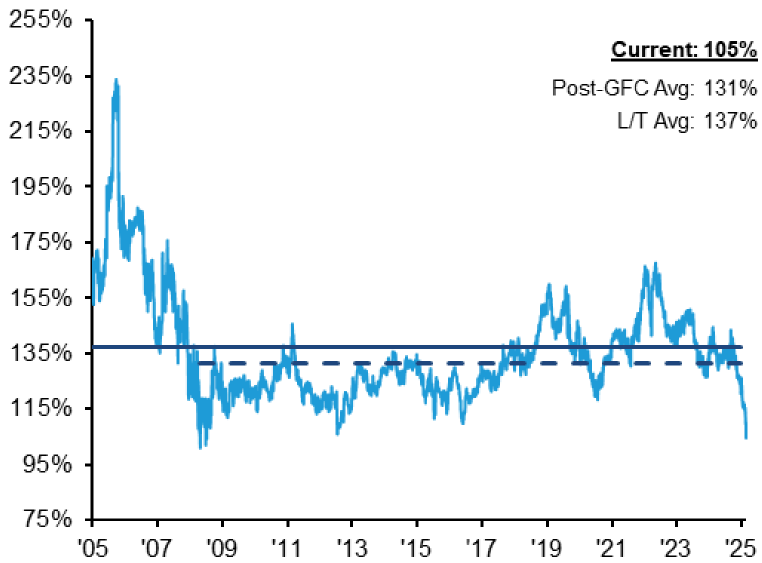
CRAs – Valuation

- ***Valuations are healthy, embedding trough levels of issuance***

Information Services – Historical NTM P/E



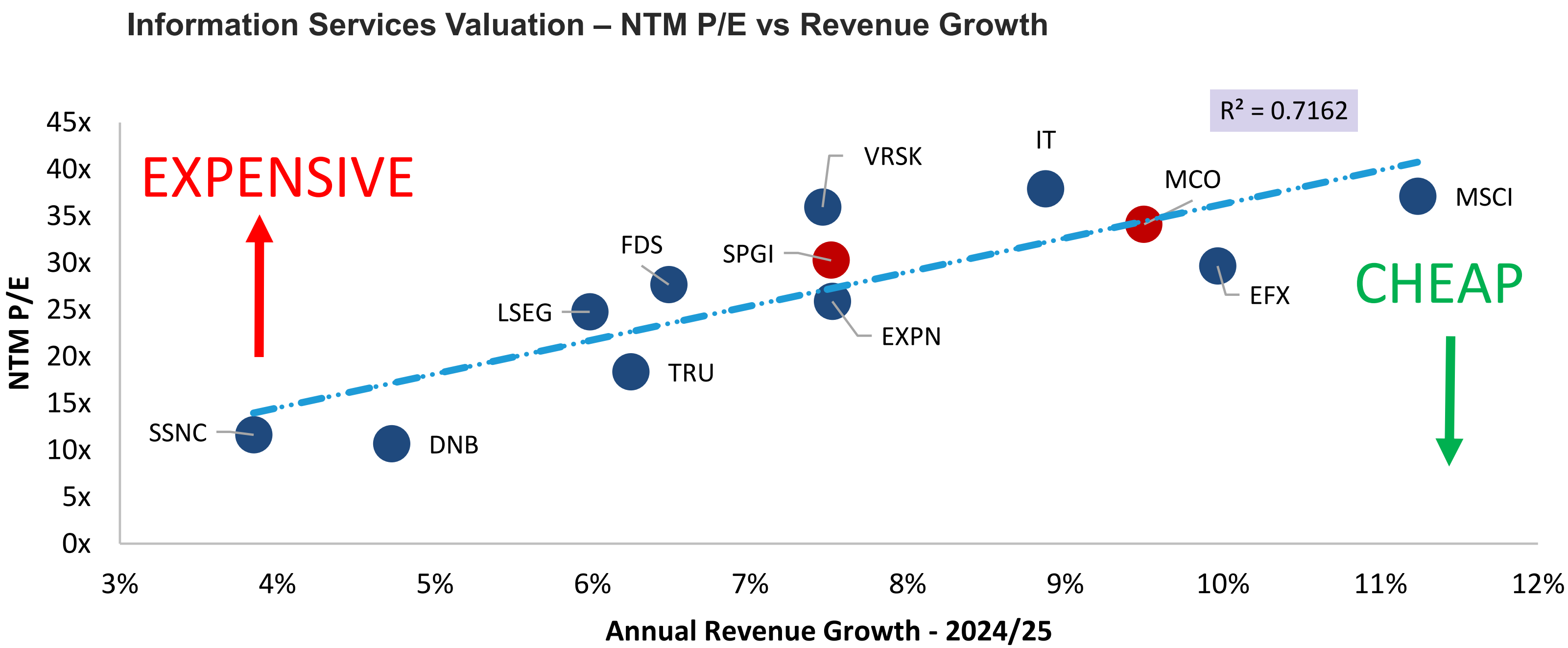
Information Services – Historical Relative P/E



Based on median of SPGI, MCO, ICE, NDAQ, LSEG, MSCI, FDS and MORN. Source: Bloomberg, Autonomous.

CRAs – Valuation – Depends on Top-line

- ***Revenue growth typically dictates a higher valuation***



Source: Bloomberg, Autonomous.

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Financial Information Services – What We Like in the Sector

OUTPERFORM

- Nasdaq (NDAQ) – $108 PT
  - Our thesis – undervalued Info Services pivot. We are Outperform on NDAQ shares. Following the transformational acquisitions of Adenza and Verafin, Nasdaq has successfully pivoted from a securities exchange to a true FinTech, with a strong recurring growth profile. Its Solutions businesses (Capital Access Platforms and Financial Technology) now comprise ~70% of operating profit and are expected to grow at 8-11% over the medium-term. As management continues to execute on its transformation, we believe valuation can improve to be more in-line with Information Services peers.

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Autonomous University

Financial Information Services

Kelsey Zhu

Kelsey Zhu – Comp Sheet

Company	Ticker	Autonomous Rating	Price Target		Price (Local Curr) 10/9/2025	Market Cap ($mm)	EV ($mm)	P/E 2025E	P/E 2026E	EV/ EBITDA 2025E	EV/ EBITDA 2026E	Div Yield (%) 2025E	FCF Yield % 2025E	FCF Yield % 2026E
Coverage Companies														
Verisk	VRSK US EQUITY	Outperform	$331.00	$	241.27	33,709	36,509	34.3x	31.1x	21.0x	18.8x	0.8%	3.3%	3.5%
Factset	FDS US EQUITY	Outperform	$436.00	$	283.08	10,702	11,906	16.3x	16.3x	13.0x	12.8x	1.5%	6.1%	6.1%
MSCI	MSCI US EQUITY	Outperform	$636.00	$	558.30	43,193	47,474	32.7x	29.5x	25.0x	22.8x	1.3%	3.3%	3.6%
Equifax	EFX US EQUITY	Neutral	$242.00	$	233.25	28,876	33,717	30.8x	25.9x	17.4x	15.3x	0.8%	3.2%	4.1%
Experian	EXPN LN EQUITY	Outperform	£43.00	£	35.36	43,132	47,919	30.6x	27.0x	18.0x	16.2x	1.3%	3.0%	3.6%
FICO	FICO US EQUITY	Underperform	$1,047.00	$	1,708.77	41,017	43,578	56.4x	45.7x	39.6x	31.8x	0.0%	1.8%	2.4%
TransUnion	TRU US EQUITY	Neutral	$92.00	$	79.00	15,389	20,008	18.7x	16.3x	12.5x	11.2x	0.6%	4.0%	5.8%
Average								31.4x	27.4x	20.9x	18.4x	0.9%	3.5%	4.1%
Median								30.8x	27.0x	18.0x	16.2x	0.8%	3.3%	3.6%

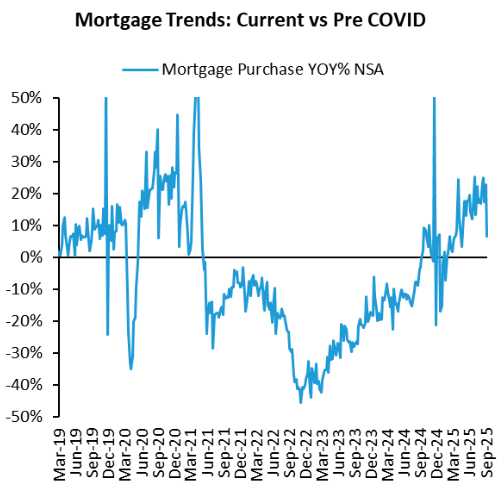
Source: Bloomberg, Autonomous analysis. As of 10/9/2025.

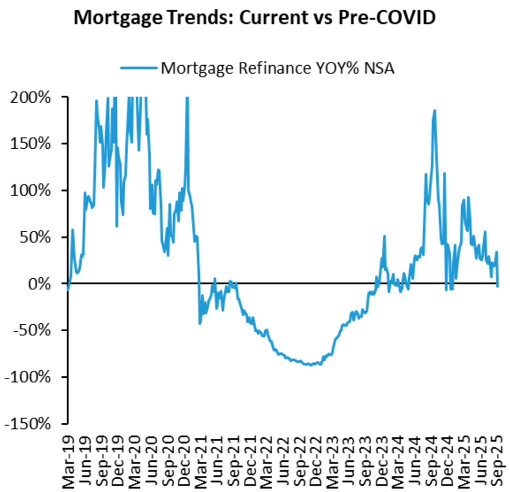
Summary of Our Stock Calls

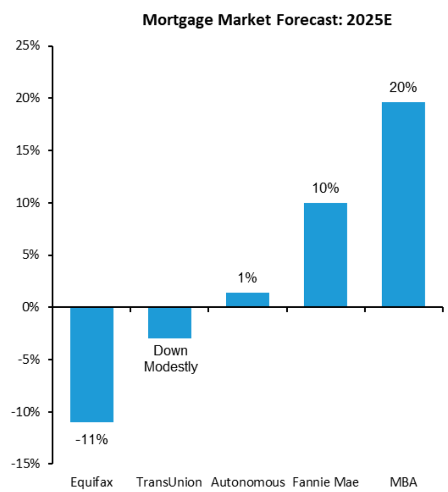
Company	Rating & PT	Stock Rating & Thesis
TransUnion (TRU US)	**Neutral (PT=$92)**	While we continue to believe TRU will be a key beneficiary in a consumer credit cycle upturn, 2025 will likely see limited upside based on our conservative forecasts on consumer credit origination growth. India, which will continue to be a key growth driver in the medium-term, faces decelerating consumer credit growth in 2025 due to RBI's cooling measures.
Equifax (EFX US)	**Neutral (PT=$242)**	We are unlikely to see a mortgage market recovery through 2027. The extended mortgage down cycle will lkely translate to limited pricing power, lower outperformance, and weigh on margins for EWS. In the Talent vertical, EFX is faced with headwinds in “white collar” hiring activities. In the Government vertical, we believe EFX faces unique near-term challenges related to social benefit program changes and government budgeting issues.
Experian (EXPN LN)	**Outperform (PT=£4,300p)**	Experian is the largest and most diversified name in our coverage with the least exposure to a consumer credit cycle. The company has invested in a number of strategic growth drivers in the past that we believe will contribute to accelerated growth in the next few years, including Ascend/PowerCurve, insurance marketplace/consumer services, and verification services.
FICO (FICO US)	**Underperform (PT=$1,047)**	We see limited pricing power for FICO in the mortgage space as lenders can now choose to underwrite a mortgage loan using just VantageScore 4.0. We believe any future price hikes will likely drive meaningful share loss in mortgage. In non-mortgage verticals, we believe FICO stands to lose share to VantageScore (which impacts FICO's pricing power as well). At the current valuation multiple, we continue to believe FICO's stock looks unattractive from a risk/ reward perspective.

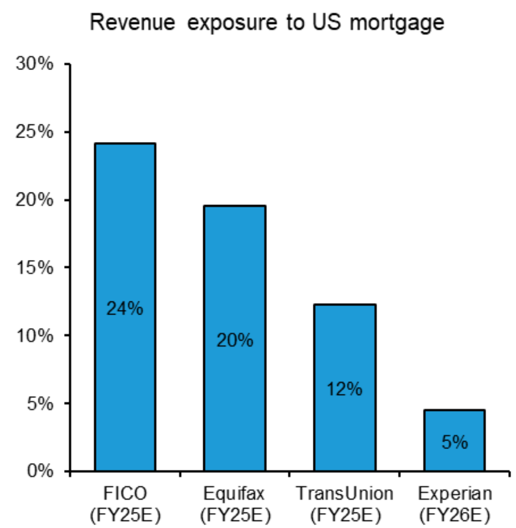
Source: Bloomberg, Autonomous analysis

Key debates on the sector the last few years centered around mortgage volume growth trajectory







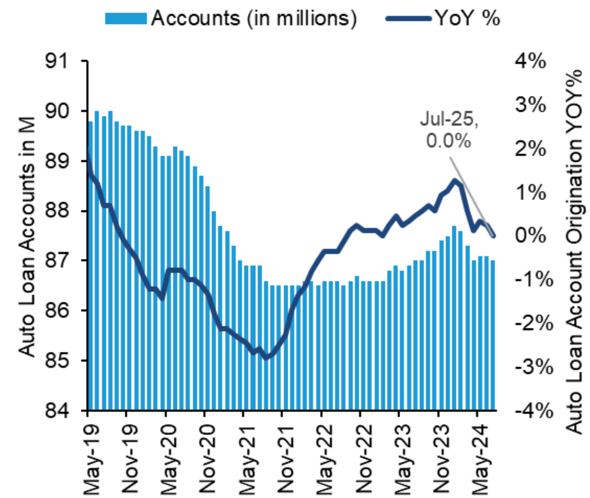


Source: Bloomberg, MBA, Autonomous analysis

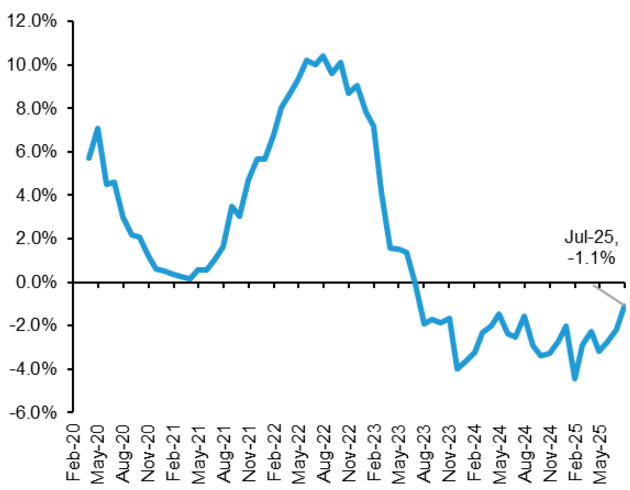
Concerns around US macro, rising delinquency rates, and soft consumer credit origination trends have also weighed on stocks

Private Label Credit Card Delinquency Rates (60+ days)

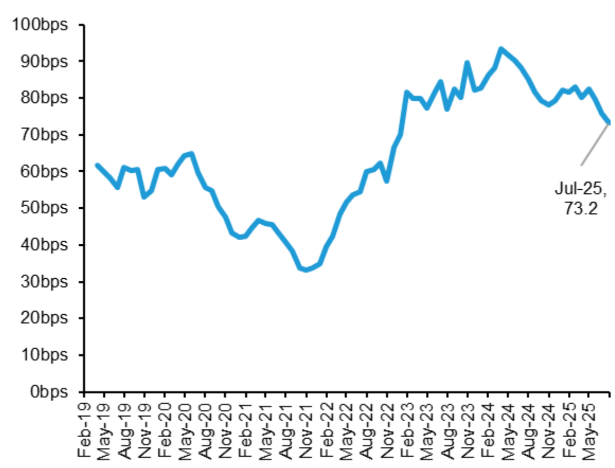
Auto Finance (Loan & Lease) Accounts



Total Number of Consumer Finance Accounts Y/Y Growth

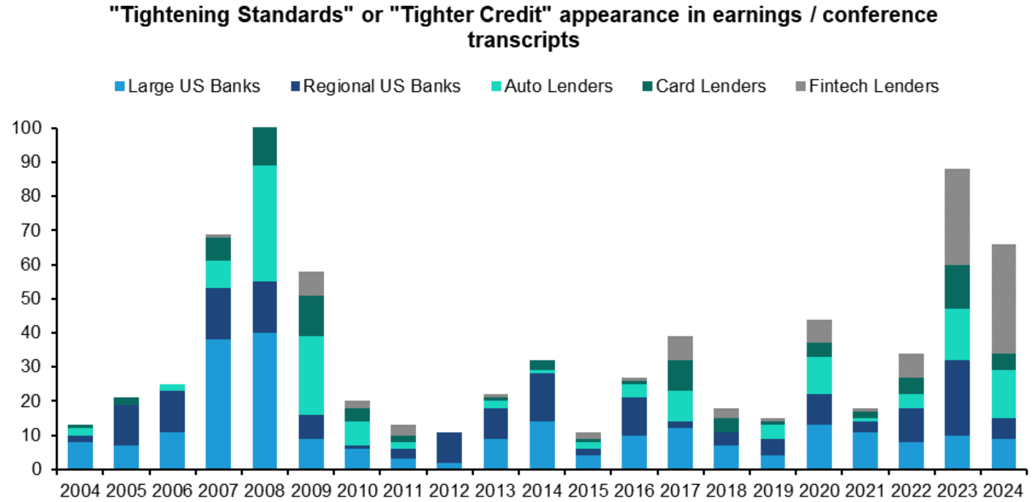


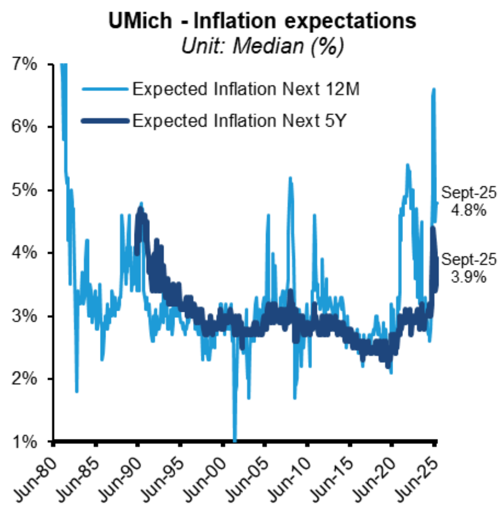
Consumer Finance Write-off Rates
Accounts terminated in Bankruptcy or Severe Derogatory status

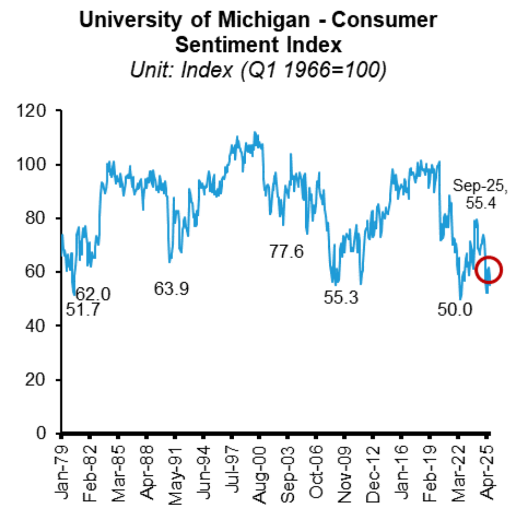


Source: Equifax, Autonomous analysis

Concerns around US macro, rising delinquency rates, and soft consumer credit origination trends have also weighed on stocks (cont'd.)







Source: Bloomberg, University of Michigan, Autonomous analysis

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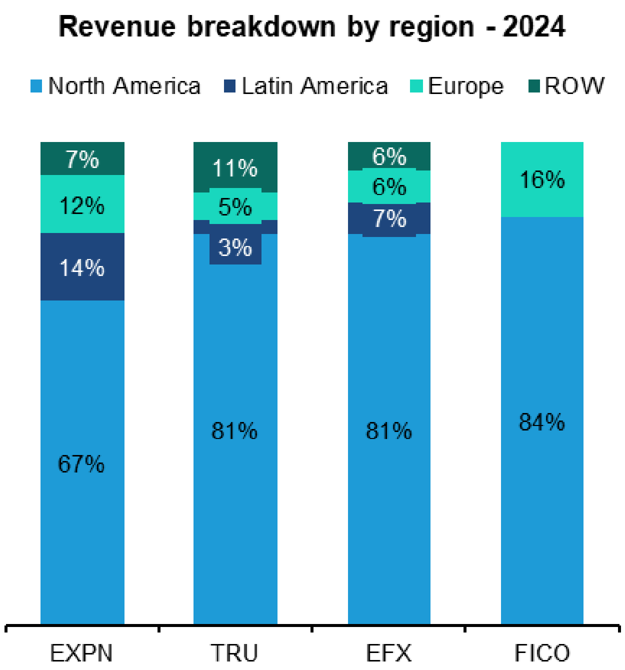
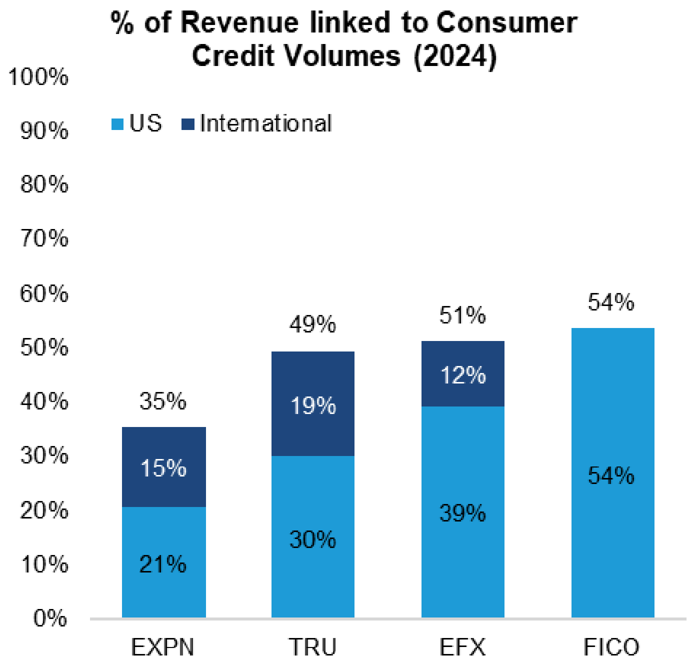
Since the GFC, the bureaus have all diversified their revenue streams and are thus less impacted by a US recession

Experian is the most diversified company in our coverage



FICO has the most exposure to US consumer credit trends



Source: Company disclosure, Autonomous analysis

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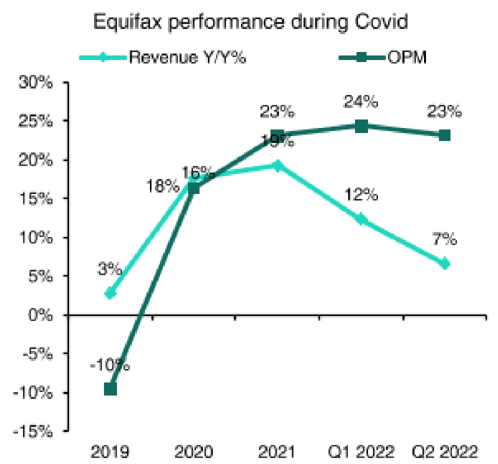
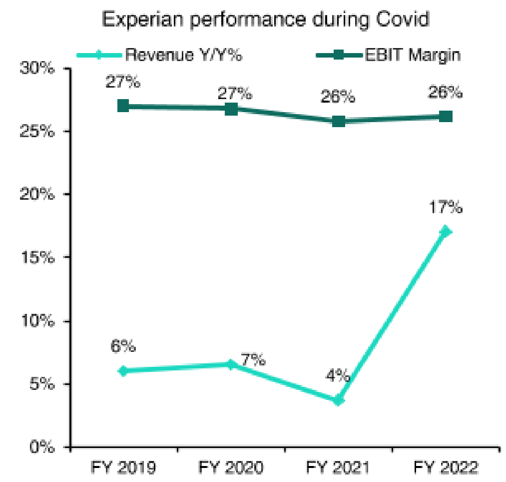
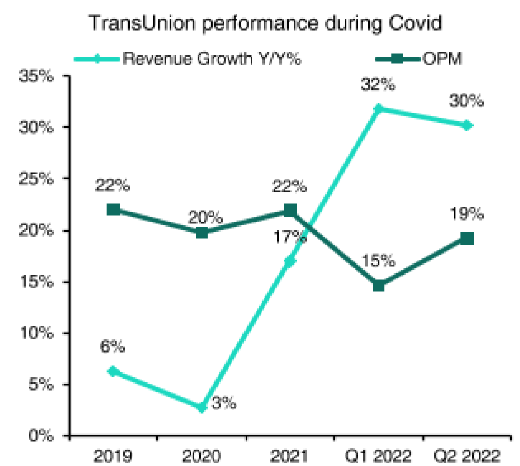
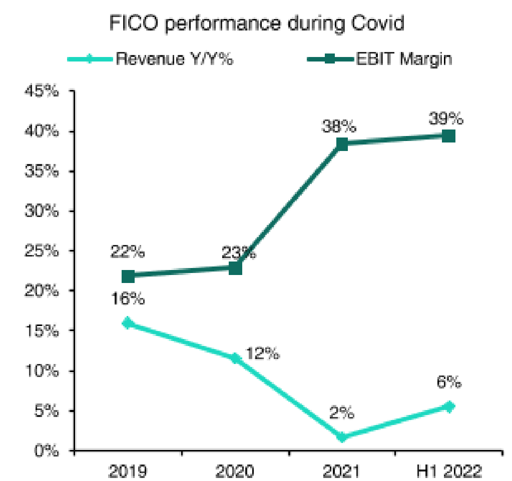
A more diversified revenue base protected the companies in the most recent recession





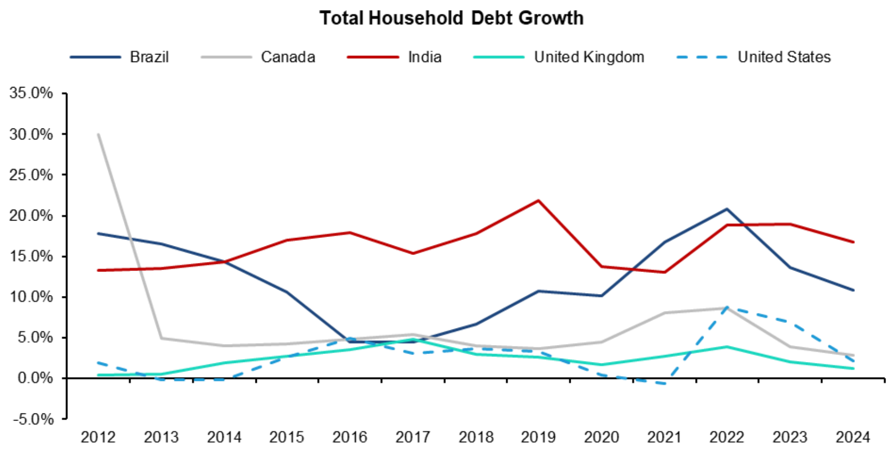


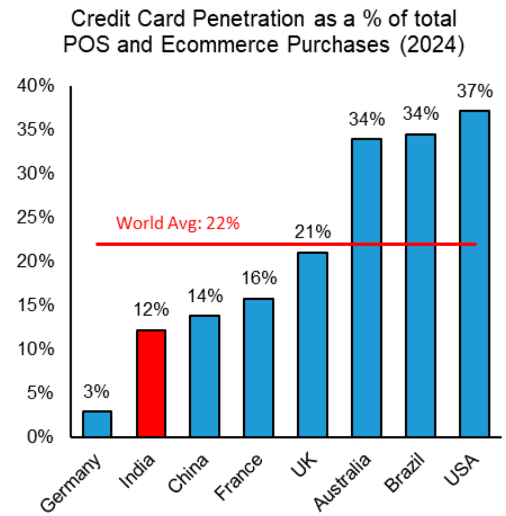


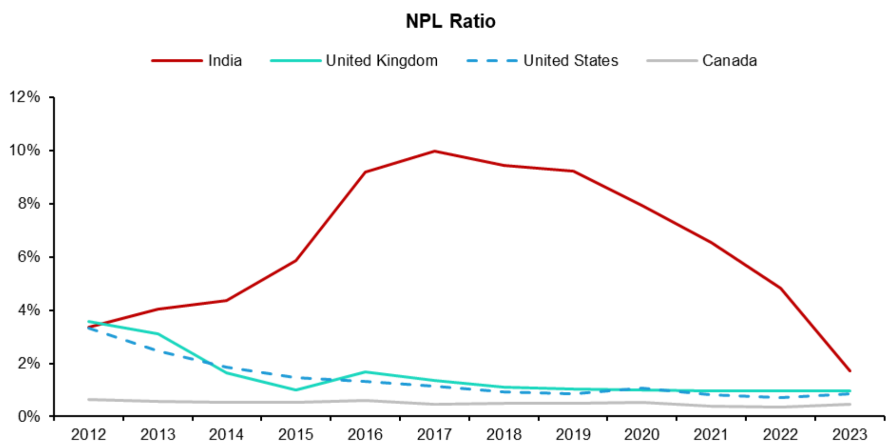
Source: Company data, Autonomous analysis

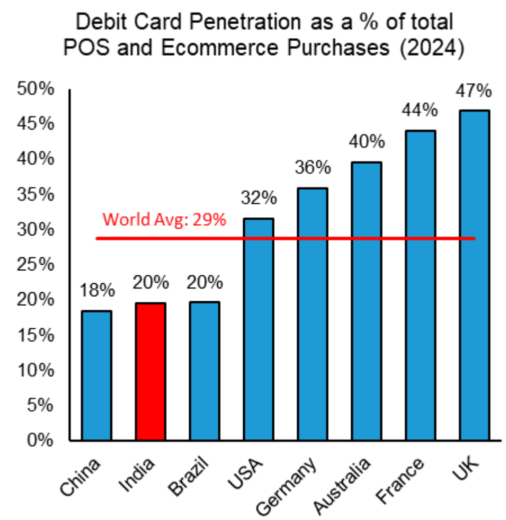
Key Growth Driver #1: Expanding into Emerging Markets

India: fast growth in consumer credit, high NPL, low household credit penetration rate









Source: BIS, Worldpay FIS Report, Reserve Bank of India, Autonomous Global Banks Tracker, Autonomous analysis

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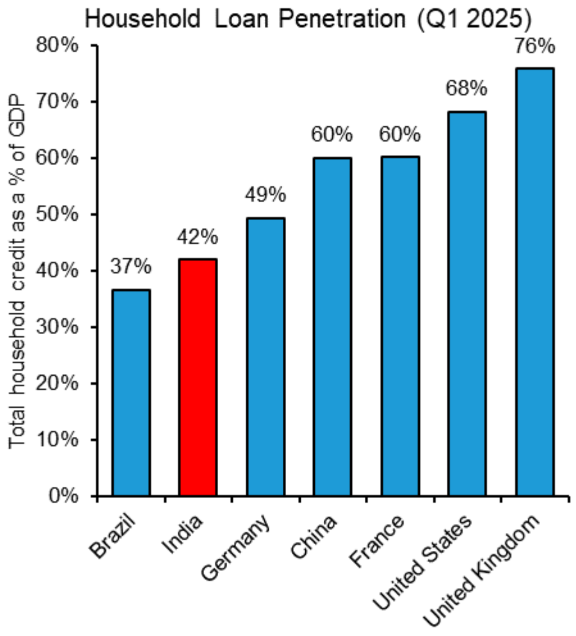
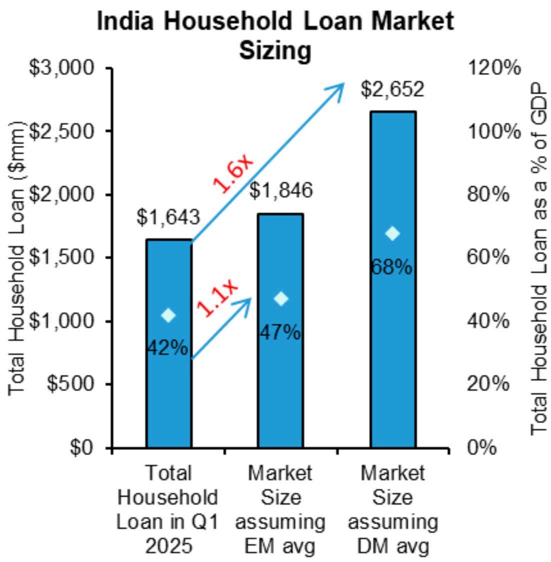
India: We believe TAM for credit bureaus should increase substantially from its current level over the long-term

India household loan penetration rate is trailing behind developed markets



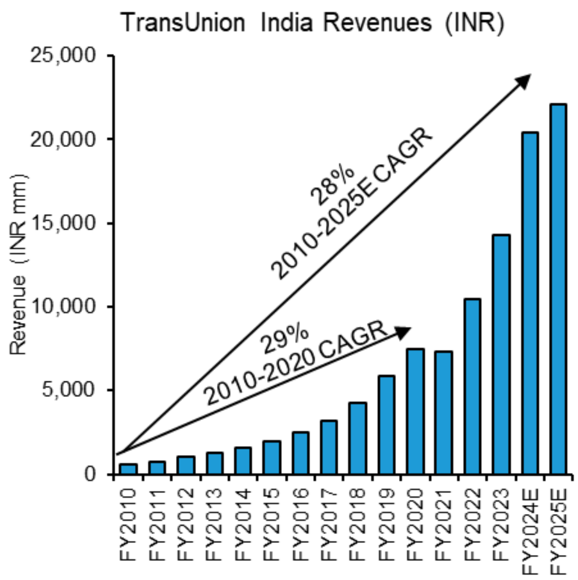
India's total household loan market could expand meaningfully as consumer credit penetration rate continues to grow



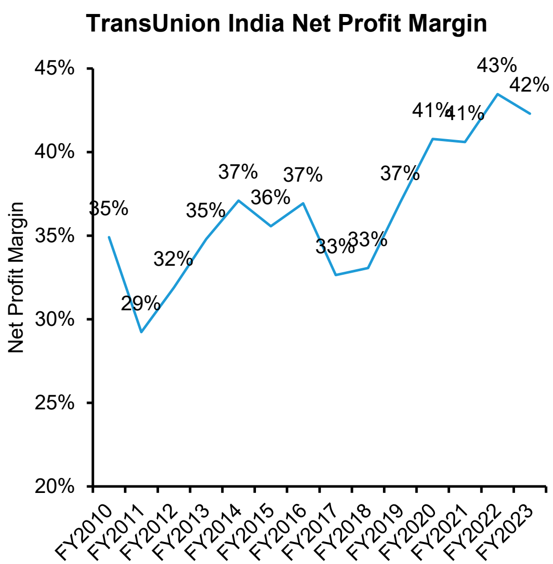
Source: BIS, Autonomous analysis and estimates

TransUnion is the key beneficiary of India's market expansion as the company is a market leader with ~80% market share

TransUnion has been able to grow revenues in India by 28% CAGR from 2010 to 2025E...

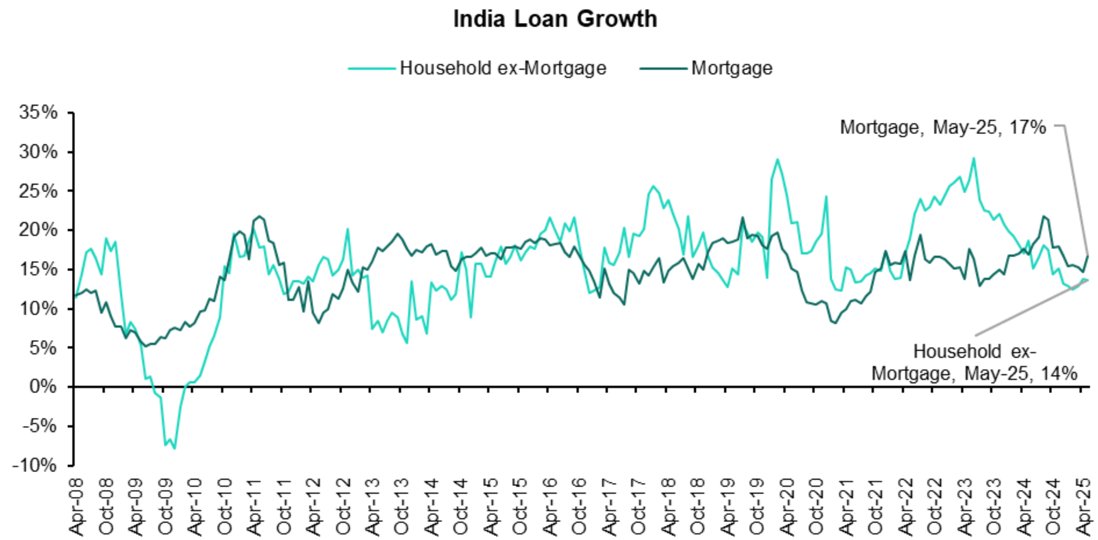


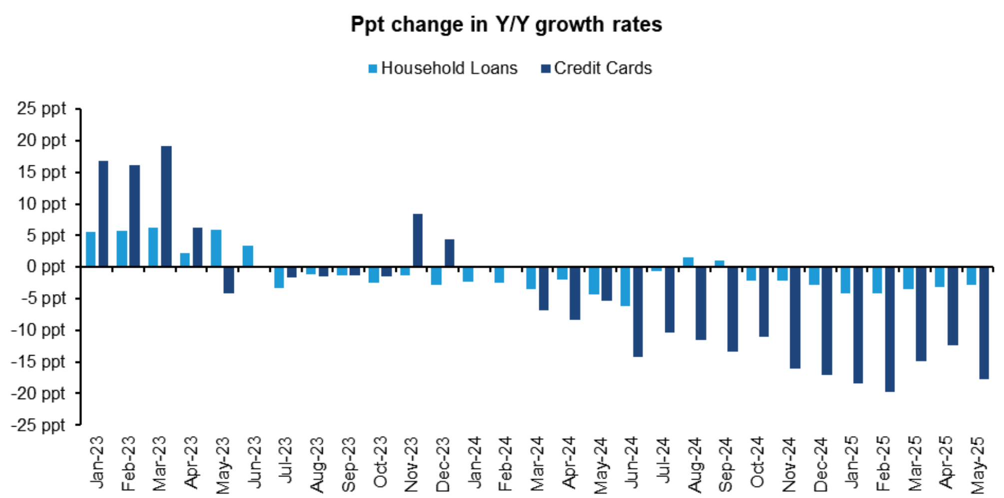
...while expanding net margin by 750bps (2013 – 2023)



Source: Ministry of Corporate Affairs, Autonomous analysis
Note: India's fiscal year ends on March 31

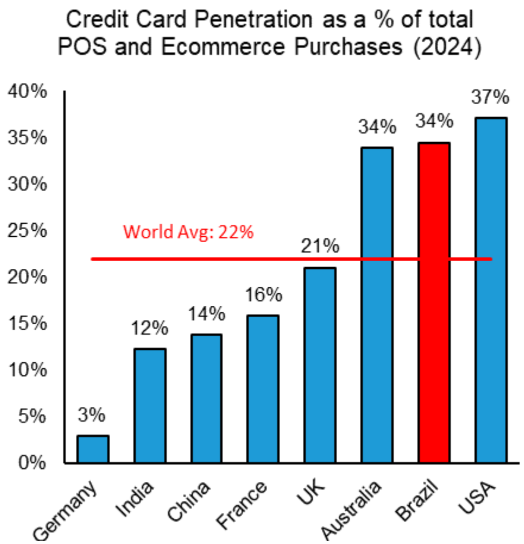
However, in 2024 and 2025, India consumer credit market faced unique challenges. RBI's cooling actions in 2023, along with macro concerns and tariffs have all resulted in slower growth

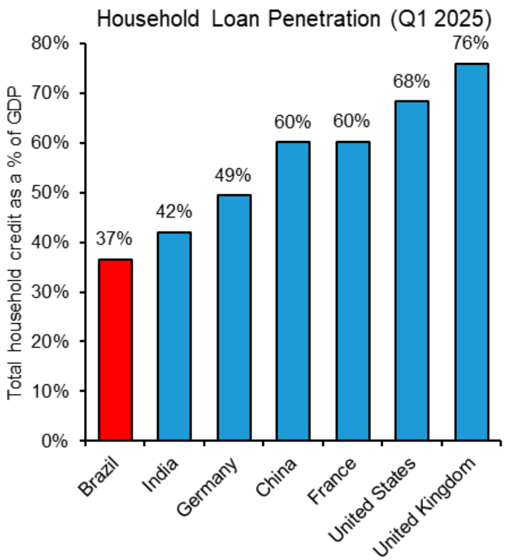


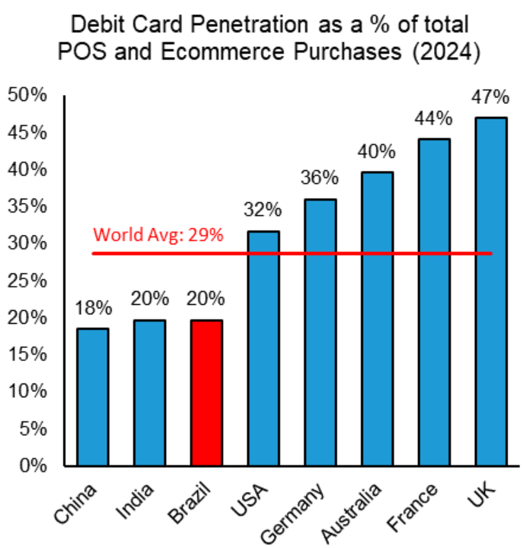


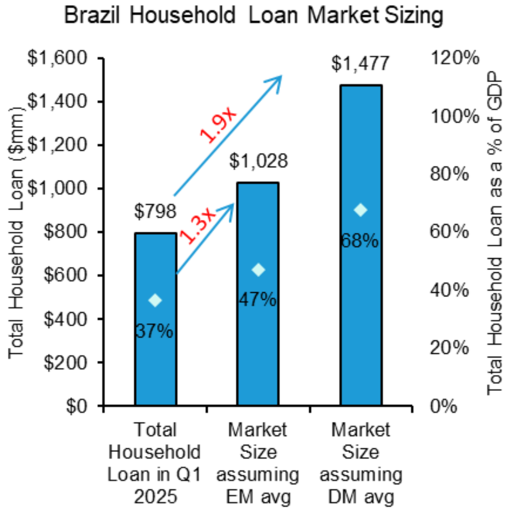
Source: Reserve Bank of India, Autonomous analysis

Brazil: Similar to India, we expect household loan market size to almost double, benefiting the credit bureaus in our coverage







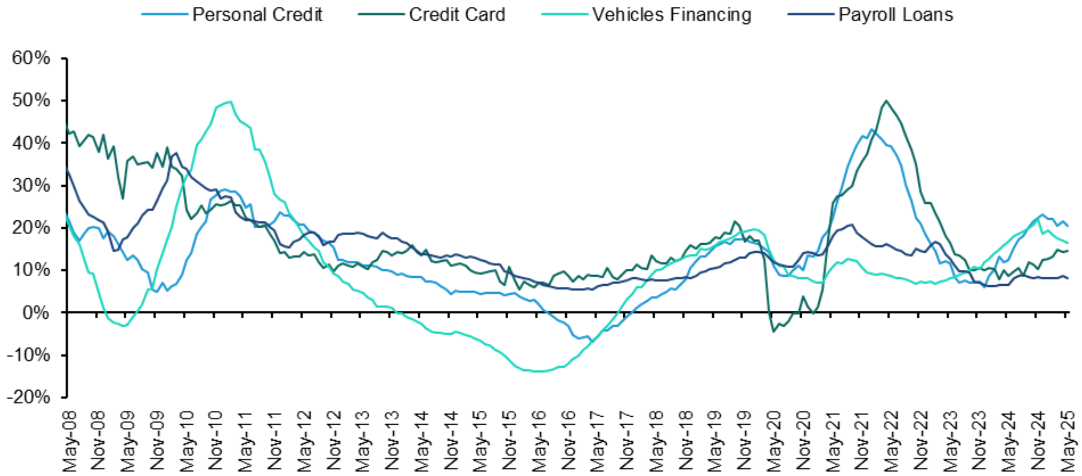


Source: BIS, Worldpay FIS Report, Brazilian Central Bank, Autonomous Global Banks Tracker, Autonomous analysis

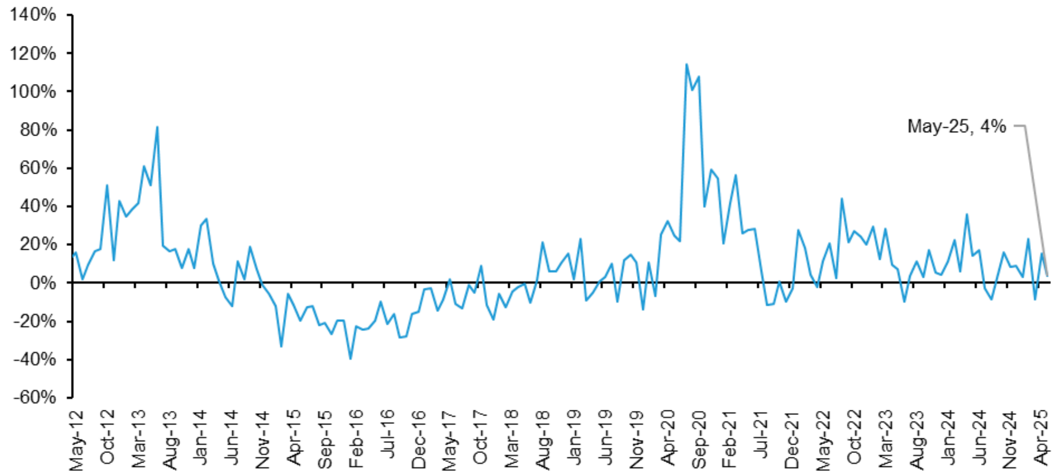
AUTONOMOUS UNIVERSITY

Brazil faces its own macro challenges in 2025, leading to slower origination growth

Brazilian Consumer Credit Y/Y%



Brazil Household Credit Origination Y/Y%

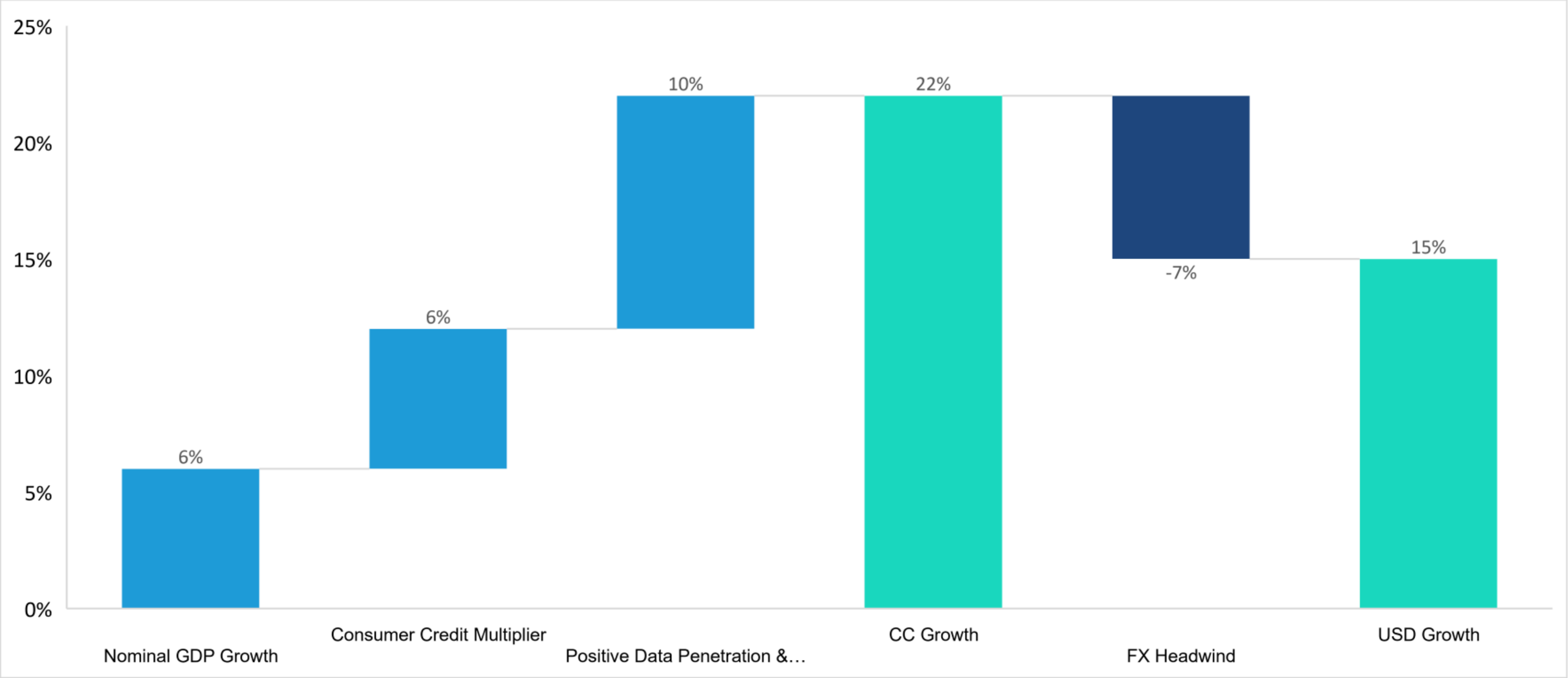


Source: Brazilian Central Bank, Autonomous analysis

AUTONOMOUS UNIVERSITY

Experian is the key beneficiary of Brazil's market expansion as the company is a market leader with ~70% market share

We estimate Brazil's market revenue will grow by ~15% CAGR in a normalized environment



Source: Autonomous analysis and estimates

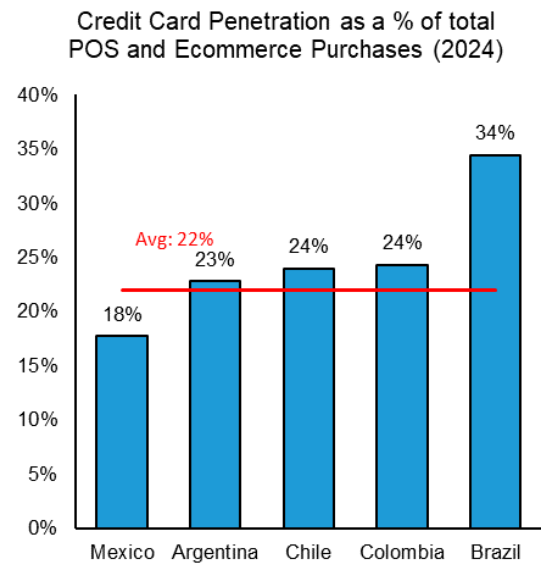
AUTONOMOUS UNIVERSITY

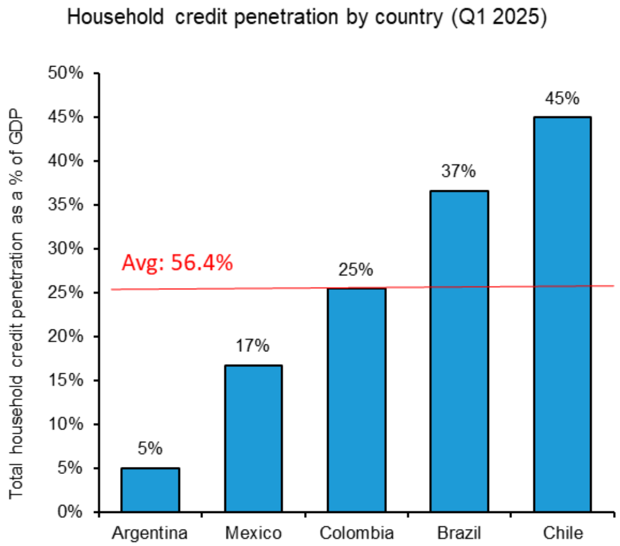
We see lots of growth opportunities in other LATAM countries besides Brazil; Experian is most levered to this

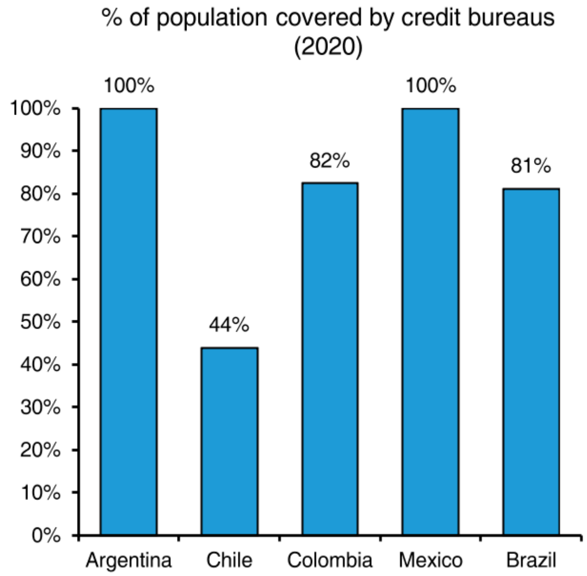
Rest of Latin American countries are trailing behind Brazil on credit card penetration rates

Argentina, Colombia and Mexico are still trailing behind Brazil in terms of household loan penetration

Chile, Colombia and Brazil still has room to go in terms of credit bureau population coverage







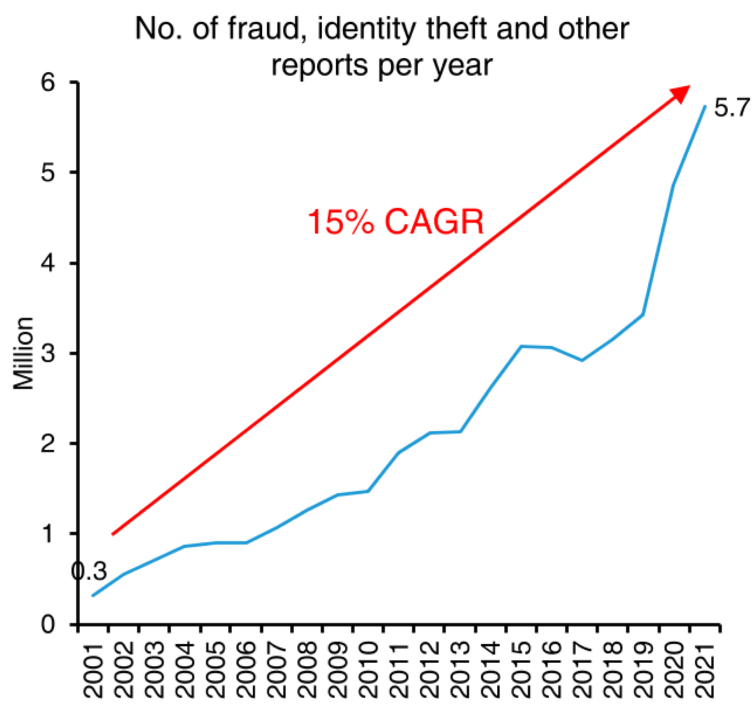
Source: Worldpay FIS Report, World Bank, Autonomous analysis

AUTONOMOUS UNIVERSITY

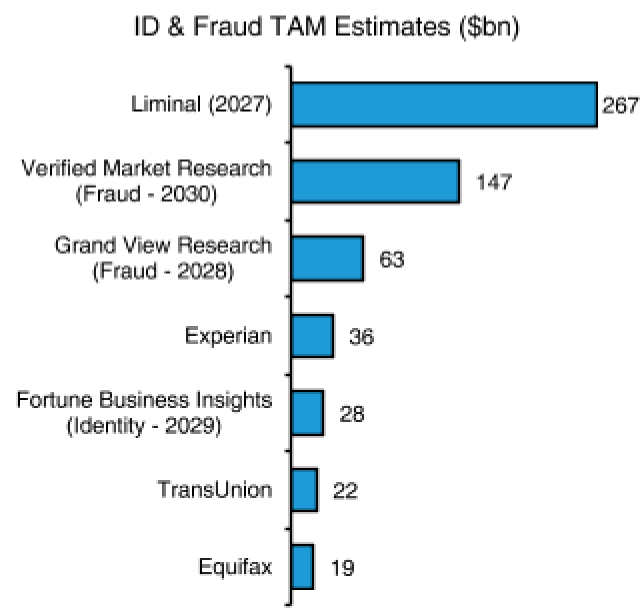
Key Growth Driver #2: Expanding into New Verticals

Our coverage companies have a portfolio of products targeting identity theft, identity verification, identity protection, and fraud detection and prevention

The number of identity theft and fraud reports have increased by 15% CAGR over the last 20 years



Market sizing for identity & fraud TAM ranges from $20 to $200+ billion



Source: FTC, Company disclosure, channel checks with industry experts, Liminal, Autonomous analysis

AUTONOMOUS UNIVERSITY

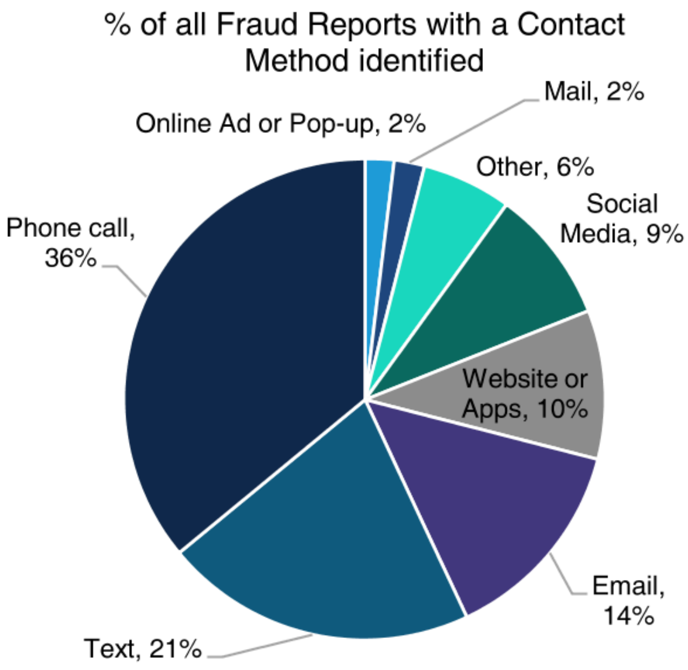
The identity and fraud ecosystem

TransUnion plays in three "golden cogs" (Mobile identity & device management, eIDs & Identity Networks, data aggregator) and three enablers (user and entity behavior analytics, identity verification, and identity graphing and resolution).

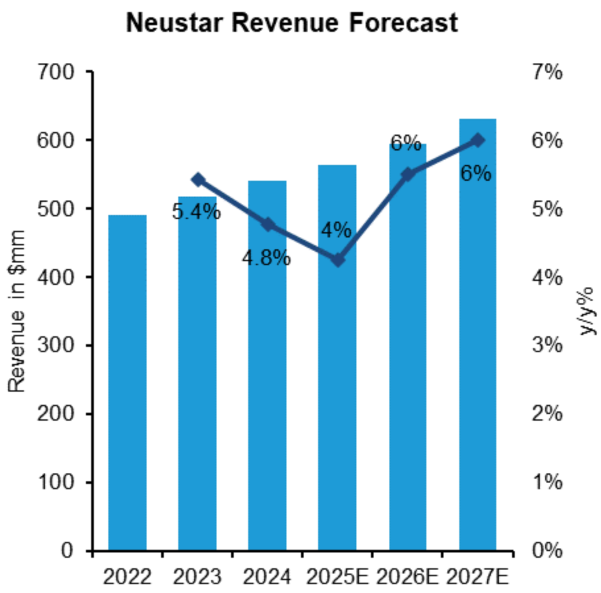
Source: Liminal, Autonomous analysis

We believe identity & fraud will be a key growth driver for TransUnion going forward, aided by its acquisitions of Neustar and Sontiq

Phone calls still represent 36% of total fraud reports (2021)



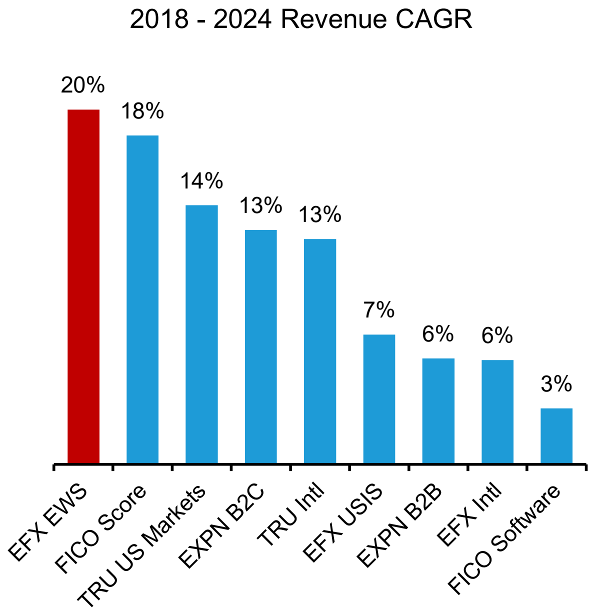
We expect to see mid single digit revenue growth in Neustar in 2025E-2027E



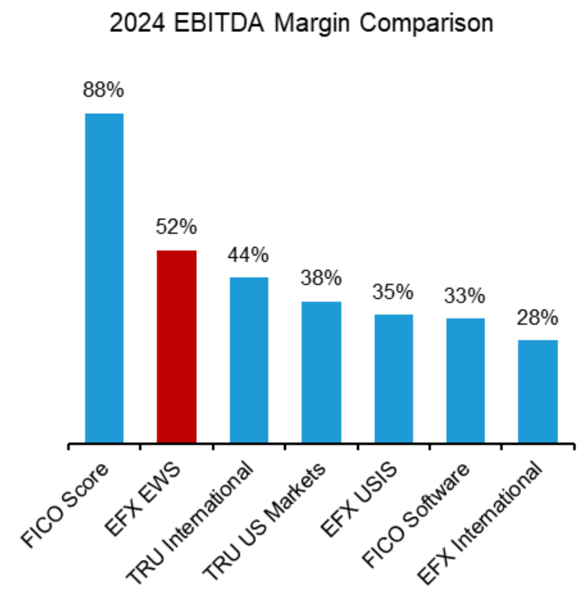
Source: FTC, Company data, Autonomous analysis and estimates

Equifax's workforce solutions is arguably the best asset in our coverage

Workforce solutions has the highest growth rates amongst all the segments of our coverage companies...

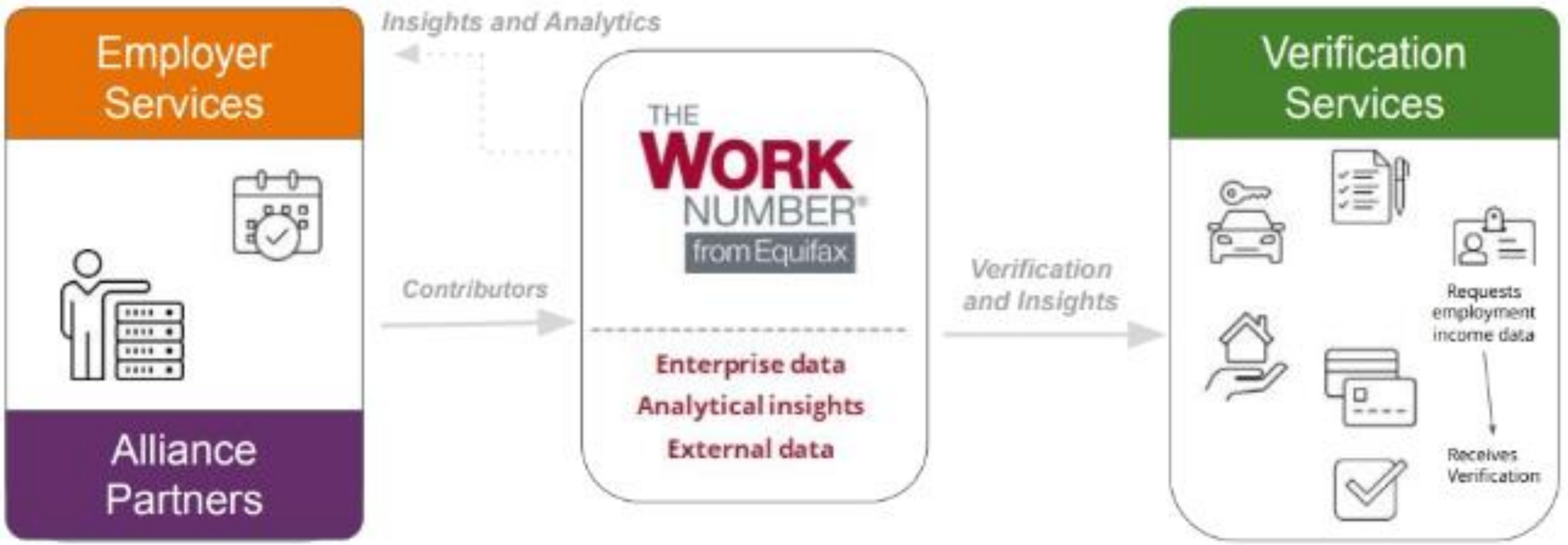


...along with the second highest EBITDA margin in this universe



Source: Company data, Bloomberg, Autonomous analysis

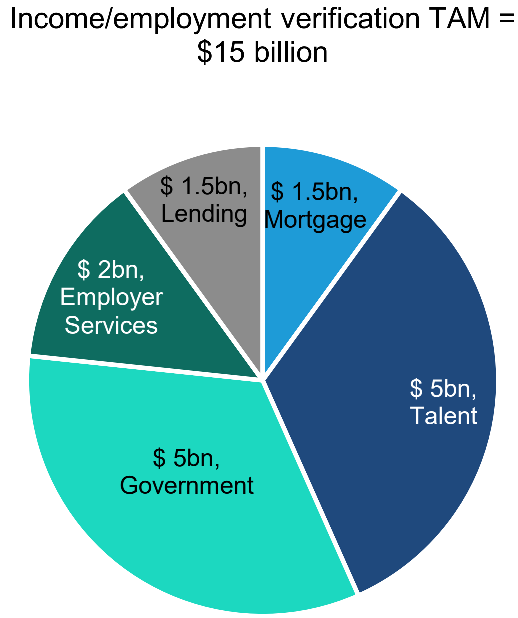
EFX's Workforce Solutions Business Model Explained



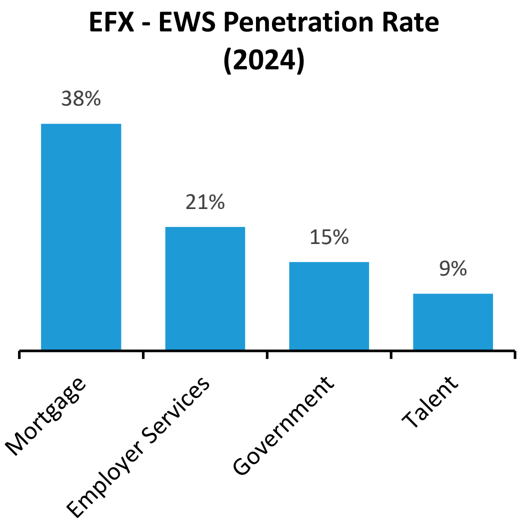
Source: Company presentation

In the last decade, mortgage was a key growth driver for Workforce Solutions; however, talent and government verticals will drive growth going forward

Management guided for $15bn TAM for the verification market; the biggest components are government and talent (both $5bn)



Equifax has the highest penetration in mortgage (38%); while penetration rate remains low in other verticals (talent solutions: less than 10%)

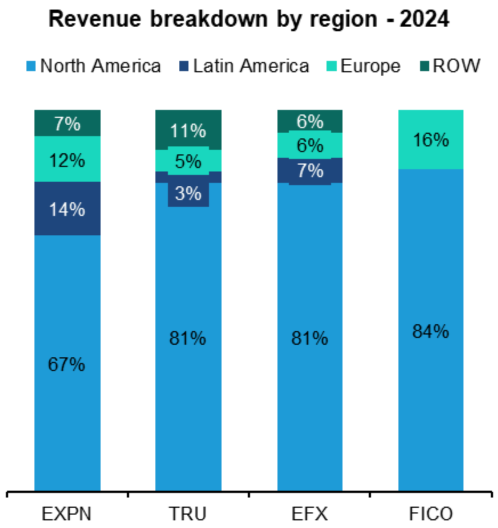


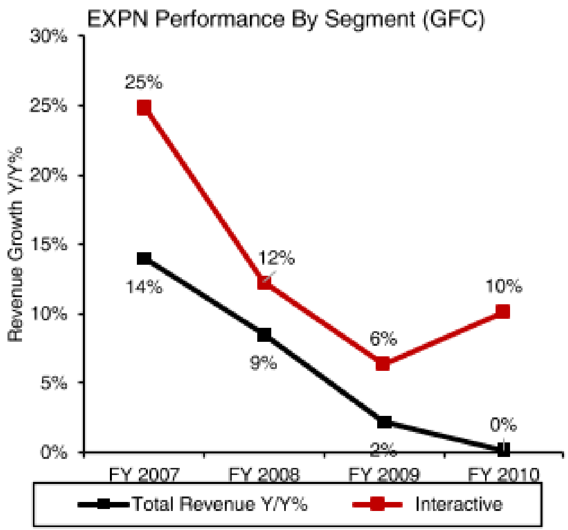
Source: Company disclosure, Autonomous analysis and estimates

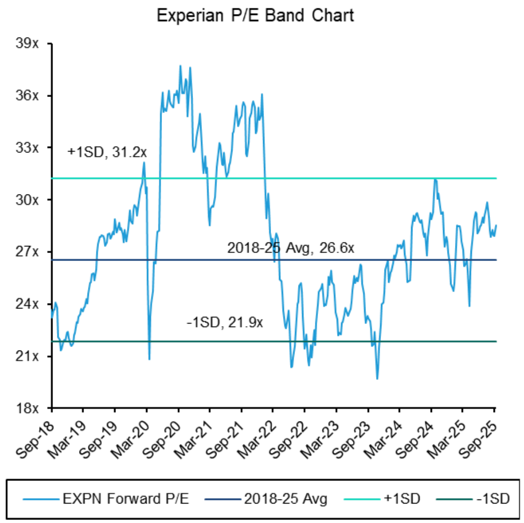
We rate EXPN.LN Outperform; EFX, TRU Neutral; FICO Underperform

AUTONOMOUS
UNIVERSITY

We rate EXPN OP. Experian is the most defensive/diversified name in our coverage and benefits from secular growth drivers including Ascend/Power Curve, consumer services, and verification services







Source: Company data, Autonomous analysis and estimates

Our PT is £4,300p, we expect Experian to achieve 10% revenue CAGR and 18% EPS growth CAGR from FY2025-FY2028E

Experian (EXPN)

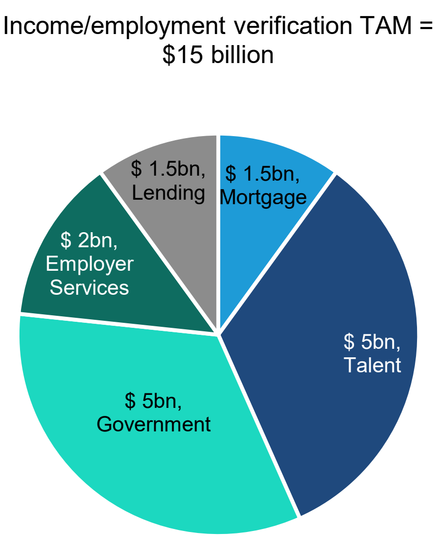
Income Statement

(US$mm)	FY2022	FY2023	FY2024	FY2025	FY2026E	FY2027E	FY2028E	'25-'28E CAGR
Net Revenue	**6,288**	**6,619**	**7,097**	**7,523**	**8,327**	**9,186**	**10,105**	**10%**
Revenue Growth (Y/Y)	*17.1%*	*5.3%*	*7.2%*	*6.0%*	*10.7%*	*10.3%*	*10.0%*	
Total Operating Expenses	4,919	5,354	5,403	5,730	6,171	6,756	7,365	
Operating Profit (As reported)	**1,416**	**1,265**	**1,694**	**1,793**	**2,156**	**2,430**	**2,740**	**15%**
Operating Margin	23%	19%	24%	24%	26%	26%	27%	
Benchmark EBITDA	**2,129**	**2,276**	**2,449**	**2,630**	**3,120**	**3,414**	**3,724**	**12%**
EBITDA Margin	33.9%	34.4%	34.5%	35.0%	37.5%	37.2%	36.9%	
Benchmark EBIT	**1,645**	**1,794**	**1,928**	**2,083**	**2,366**	**2,640**	**2,950**	**12%**
EBIT Margin	26.2%	27.1%	27.2%	27.7%	28.4%	28.7%	29.2%	
Total Non-Operating Income (Expenses)	31	(91)	(143)	(244)	(188)	(126)	(126)	
Interest Income	184	63	18	21	21	72	72	
Investment Income (loss)	(28)	(17)	(1)	2	2	3	3	
Other Non-operating Income (expense)	0	0	0	0	0	0	0	
Profit Before Taxes	**1,447**	**1,174**	**1,551**	**1,549**	**1,968**	**2,304**	**2,614**	**19%**
Income Tax Expense (Gain)	(296)	(401)	(348)	(379)	(512)	(599)	(680)	
Net Income Attributable to Noncontrolling Interests	2	3	4	4	2	3	3	
Net income attributable to noncontrolling interests	**1,165**	**770**	**1,199**	**1,166**	**1,454**	**1,702**	**1,931**	**18%**
Net Margin	18.5%	11.6%	16.9%	15.5%	17.5%	18.5%	19.1%	
Basic EPS (US$)	$1.27	$0.84	$1.31	$1.28	$1.59	$1.86	$2.11	
Diluted EPS (US$)	**$1.26**	**$0.84**	**$1.30**	**$1.27**	**$1.58**	**$1.85**	**$2.09**	**18%**

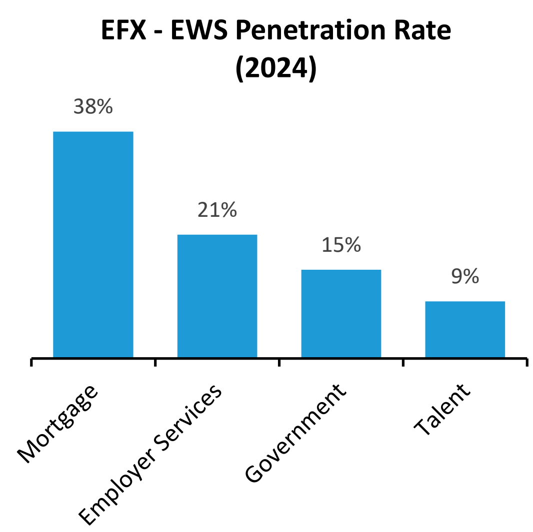
Source: Company data, Autonomous analysis and estimates

We rate EFX Neutral. We don't expect a mortgage market recovery in the next three years; however, we do like EFX's dominant market positioning in verification services

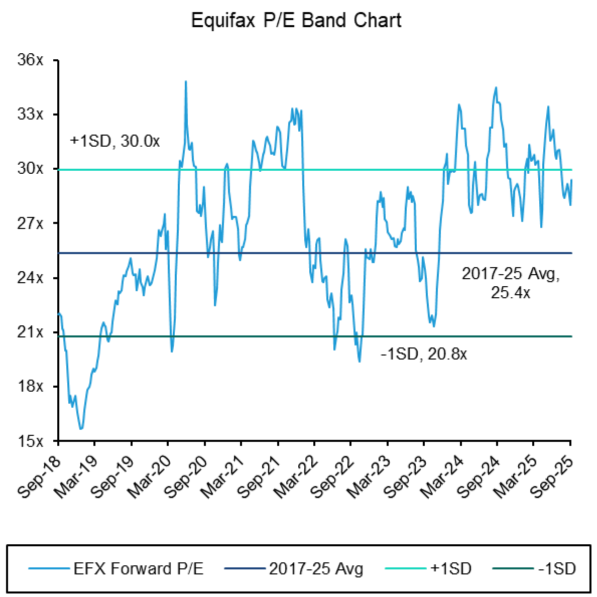
Income/Employment verification has a TAM of $15 billion…



…and EFX currently sees low penetration rate in Talent and Government verticals



Stock is trading above its historical averages



Source: Bloomberg, Company data, Autonomous analysis and estimates

Our PT is $242, we expect Equifax to achieve 7% revenue CAGR and 13% EPS growth CAGR from 2024-2027E

Equifax (EFX.US)

Income Statement

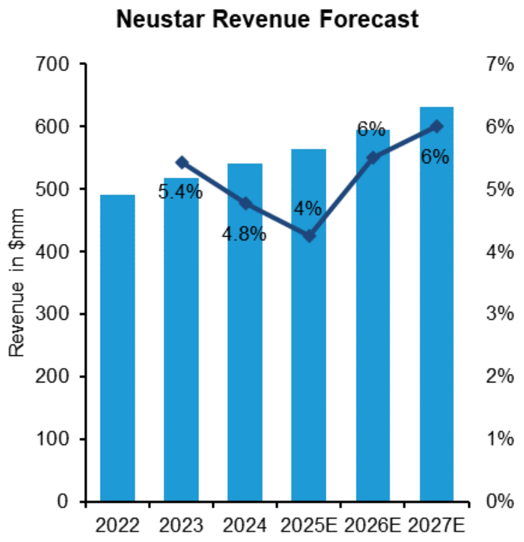
(US$mm)	2022	2023	2024	2025E	2026E	2027E	'24-'27E CAGR
Net Revenue	**5,122**	**5,265**	**5,681**	**6,000**	**6,406**	**6,884**	**7%**
Revenue Growth (Y/Y)	*4.0%*	*2.8%*	*7.9%*	*5.6%*	*6.8%*	*7.5%*	
EWS	2,326	2,316	2,434	2,561	2,752	2,976	**7%**
USIS	1,658	1,720	1,893	2,039	2,190	2,352	**7%**
International	1,139	1,229	1,354	1,400	1,465	1,557	**5%**
Cost of Goods Sold	2,177	2,335	2,519	2,652	2,831	3,043	
Gross Profit	**2,945**	**2,930**	**3,162**	**3,348**	**3,575**	**3,842**	**7%**
Gross Profit Margin	57.5%	55.6%	55.7%	55.8%	55.8%	55.8%	
Total Operating Expenses	1,889	1,996	2,120	2,185	2,236	2,281	
Sales & Marketing, General & Admin	1,329	1,386	1,450	1,463	1,514	1,560	
Depreciation and Amortization	560	611	670	722	722	722	
Operating Profit (EBIT)	**1,056**	**934**	**1,042**	**1,164**	**1,339**	**1,560**	**14%**
Operating Margin	21%	18%	18%	19%	21%	23%	
Adj. EBITDA	**1,722**	**1,694**	**1,836**	**1,927**	**2,061**	**2,282**	**8%**
Adj. EBITDA Margin	33.6%	32.2%	32.3%	32.1%	32.2%	33.1%	
Total Non-Operating Income (Expenses)	(126)	(216)	(232)	(206)	(207)	(195)	
Interest Expense	(183)	(241)	(229)	(211)	(210)	(195)	
Other Non-operating Income (expense)	57	25	(2)	(8)	0	0	
Profit Before Taxes	**930**	**718**	**811**	**957**	**1,132**	**1,366**	**19%**
Income Tax Expense (Gain)	(229)	(166)	(203)	(253)	(300)	(362)	
Net Income Attributable to Noncontrolling Interests	4	6	3	5	6	7	
Net income attributable to noncontrolling interests	**696**	**545**	**604**	**700**	**826**	**997**	**18%**
Net Margin	13.6%	10.4%	10.6%	11.7%	12.9%	14.5%	
GAAP - Basic EPS (US$)	$5.69	$4.44	$4.88	$5.67	$6.91	$8.62	
GAAP - Diluted EPS (US$)	**$5.65**	**$4.40**	**$4.83**	**$5.63**	**$6.85**	**$8.54**	**21%**
Adj. Diluted EPS (US$)	**$7.56**	**$6.71**	**$7.28**	**$7.44**	**$8.64**	**$10.38**	**13%**

Source: Company data, Autonomous analysis and estimates

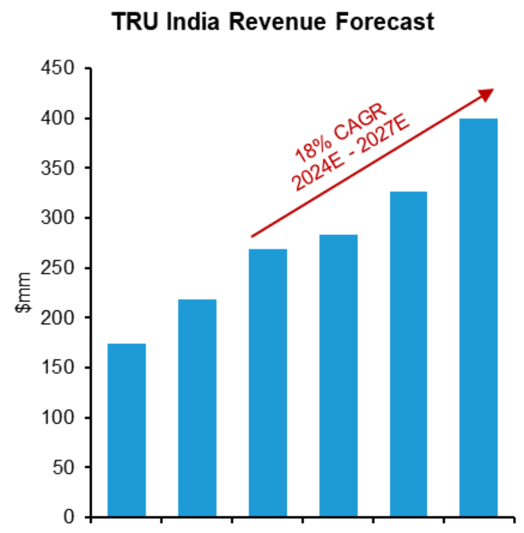
AUTONOMOUS UNIVERSITY

We rate TRU Neutral. While we believe in the long-term growth potential of Identity & Fraud and India consumer credit markets, TRU faces unique near-term challenges from US and India macro

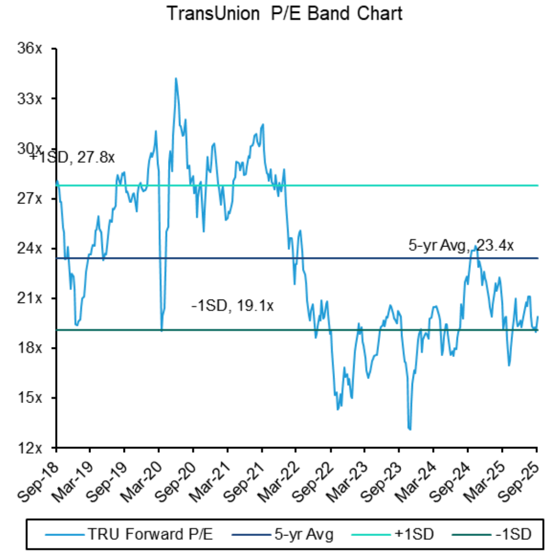
Through Neustar and Sontiq, TRU has the largest revenue exposure to ID & fraud in our coverage - a market with a sizeable TAM and attractive growth potential



TransUnion is the market leader in India, which will lead international market growth over the next few years



The stock is currently trading at close to 1SD below its historical average levels



Source: Ministry of Corporate Affairs, Company data, Autonomous analysis and estimates

AUTONOMOUS UNIVERSITY

Our PT is $92, we expect TransUnion to achieve 8% revenue CAGR and 11% EPS growth CAGR from 2024-2027E

Transunion (TRU.US)

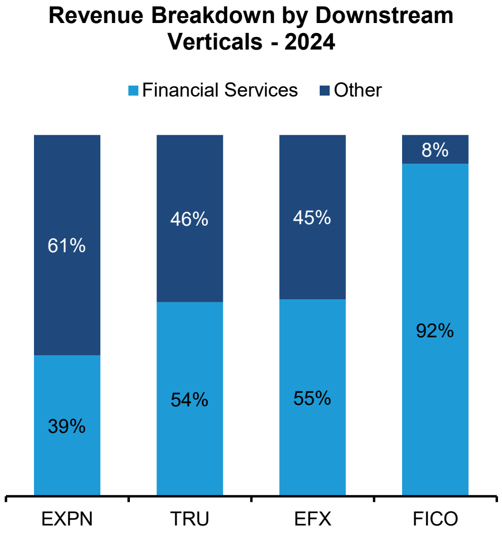
Income Statement

(US$mm)	2022	2023	2024	2025E	2026E	2027E	'24-'27E CAGR
Net Revenue	**3,710**	**3,831**	**4,184**	**4,512**	**4,934**	**5,317**	**8%**
Revenue Growth (Y/Y)	*23.3%*	*3.3%*	*9.2%*	*7.8%*	*9.3%*	*7.8%*	
Cost of Goods Sold	1,385	1,440	1,673	1,854	2,034	2,192	
Gross Profit	**2,325**	**2,392**	**2,511**	**2,658**	**2,899**	**3,125**	**8%**
Gross Profit Margin	62.7%	62.4%	60.0%	58.9%	58.8%	58.8%	
Total Operating Expenses	1,698	2,263	1,844	1,827	1,886	1,965	
Sales and Marketing	1,179	1,325	1,266	1,256	1,292	1,362	
General and Admin	519	938	578	570	595	603	
Operating Profit (EBIT)	**626**	**129**	**667**	**831**	**1,013**	**1,160**	**20%**
Operating Margin	17%	3%	16%	18%	21%	22%	
Adj. EBITDA	**1,347**	**1,343**	**1,506**	**1,631**	**1,749**	**1,915**	**8%**
Adj. EBITDA Margin	36.3%	35.1%	36.0%	36.2%	35.4%	36.0%	
Total Non-Operating Income (Expenses)	(243)	(274)	(266)	(189)	(167)	(131)	
Interest Income	5	21	29	35	54	91	
Interest Expense	(231)	(288)	(265)	(233)	(241)	(241)	
Investment Income (loss)	13	16	18	19	20	20	
Other Non-operating Income (expense)	(30)	(23)	(47)	(11)	0	0	
Profit Before Taxes	**383**	**(145)**	**401**	**642**	**846**	**1,029**	**37%**
Income Tax Expense (Gain)	(119)	(45)	(99)	(170)	(224)	(273)	
Net Income Attributable to Noncontrolling Interests	15	15	18	20	27	33	
Net income attributable to noncontrolling interests	**266**	**(206)**	**284**	**452**	**594**	**723**	**37%**
Net Margin	7.2%	-5.4%	6.8%	10.0%	12.0%	13.6%	
Basic EPS (US$)	$1.38	($1.07)	$1.46	$2.32	$3.05	$3.71	
Diluted EPS (US$)	**$1.38**	**($1.07)**	**$1.45**	**$2.29**	**$3.01**	**$3.67**	**36%**
Adj. Diluted EPS (US$)	**$3.62**	**$3.37**	**$3.92**	**$4.20**	**$4.63**	**$5.32**	**11%**

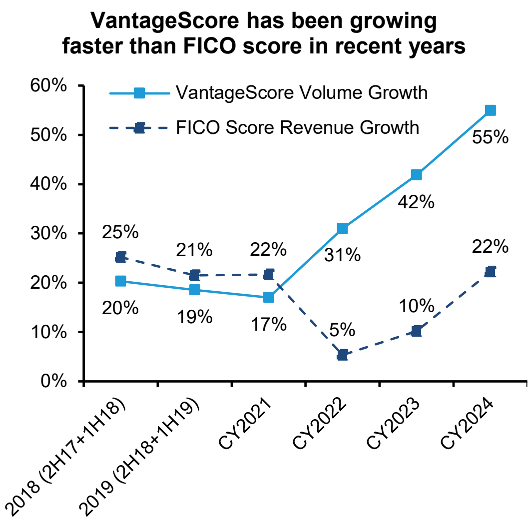
Source: Company data, Autonomous analysis and estimates

FICO is our most counter-consensus call. With skyrocketing expectations, the stock looks unattractive particularly from a risk/reward perspective

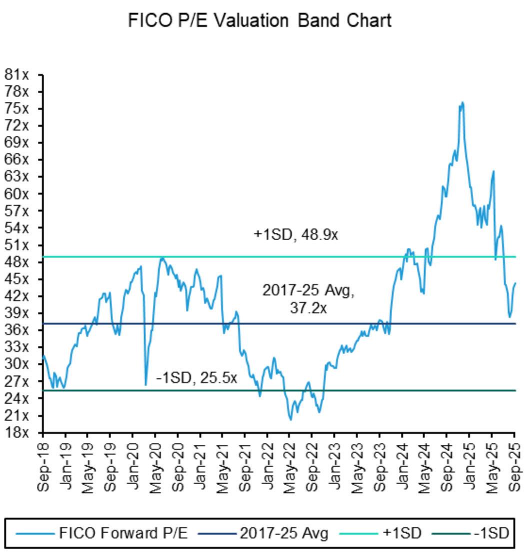
FICO has the largest revenue exposure to Financial Services in our coverage



FICO continues to lose share to VantageScore in the credit card vertical



The stock looks expensive compared to both its historical average level and other info services peers



Source: MBA, Bloomberg, Company data, Autonomous analysis and estimates

AUTONOMOUS
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Our PT is $1,047, we expect FICO to achieve 15% revenue CAGR and 22% EPS growth CAGR from FY2024-FY2027E

FICO (FICO.US)

Income Statement

(US$mm)	2022	2023	2024	2025E	2026E	2027E	'24-'27E CAGR
Net Revenue	**1,377**	**1,514**	**1,718**	**1,984**	**2,489**	**2,594**	**15%**
Revenue Growth (Y/Y)	*4.6%*	*9.9%*	*13.5%*	*15.5%*	*25.5%*	*4.2%*	
Cost of Goods Sold	302	311	348	364	456	477	
Gross Profit	**1,075**	**1,203**	**1,369**	**1,619**	**2,033**	**2,117**	**16%**
Gross Profit Margin	78.1%	79.4%	79.7%	81.6%	81.7%	81.6%	
Total Operating Expenses	533	560	636	713	800	810	
Selling, general and administrative	384	401	463	523	561	561	
R&D	147	160	172	191	239	250	
Amortization	2	1	1	0	0	0	
Operating Profit (EBIT)	**542**	**643**	**734**	**906**	**1,234**	**1,307**	**21%**
Operating Margin	39%	42%	43%	46%	50%	50%	
Adj. EBITDA	**668.3**	**780.8**	**904**	**1,091**	**1,454**	**1,536**	**19%**
Adj. EBITDA Margin	48.5%	51.6%	52.6%	55.0%	58.4%	59.2%	
Total Non-Operating Income (Expenses)	(71)	(89)	(92)	(134)	(146)	(147)	
Interest Expense	(69)	(96)	(106)	(130)	(146)	(147)	
Other Non-operating Income (expense)	(2)	6	14	(4)	0	0	
Profit Before Taxes	**471**	**554**	**642**	**772**	**1,087**	**1,159**	**22%**
Income Tax Expense (Gain)	98	124	129	151	272	290	
Net Income Attributable to Noncontrolling Interests	0	0	0	0	0	0	
Net income	**374**	**429**	**513**	**621**	**816**	**869**	**19%**
Net Margin	27.1%	28.4%	29.9%	31.3%	32.8%	33.5%	
Basic EPS (US$)	$ 14.34	$ 17.18	$ 20.78	$ 25.58	$ 34.20	$ 36.76	
Diluted EPS (US$)	$ 14.18	$ 16.93	$ 20.45	$ 25.23	$ 33.79	$ 36.31	
Adj. diluted EPS (US$)	**$ 17.22**	**$ 19.71**	**$ 23.74**	**$ 29.07**	**$ 40.28**	**$ 43.14**	**22%**

Source: Company data, Autonomous analysis and estimates

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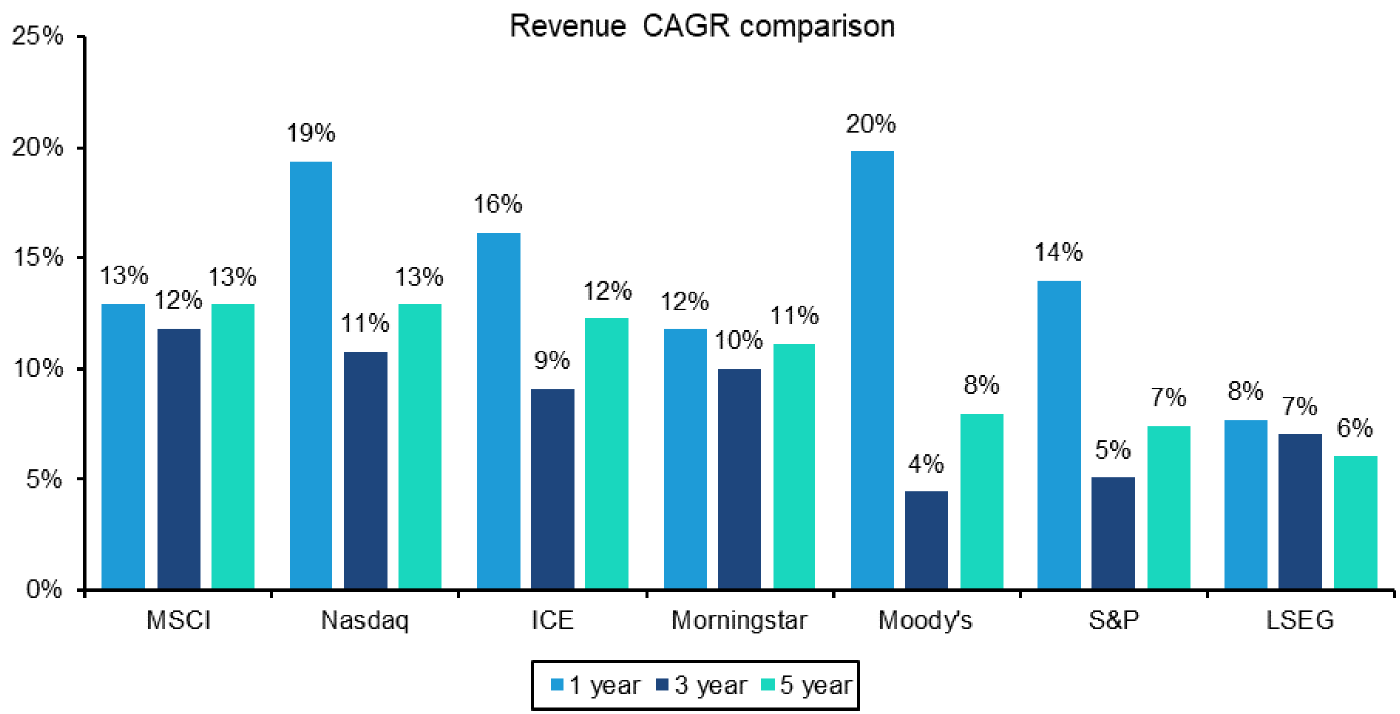
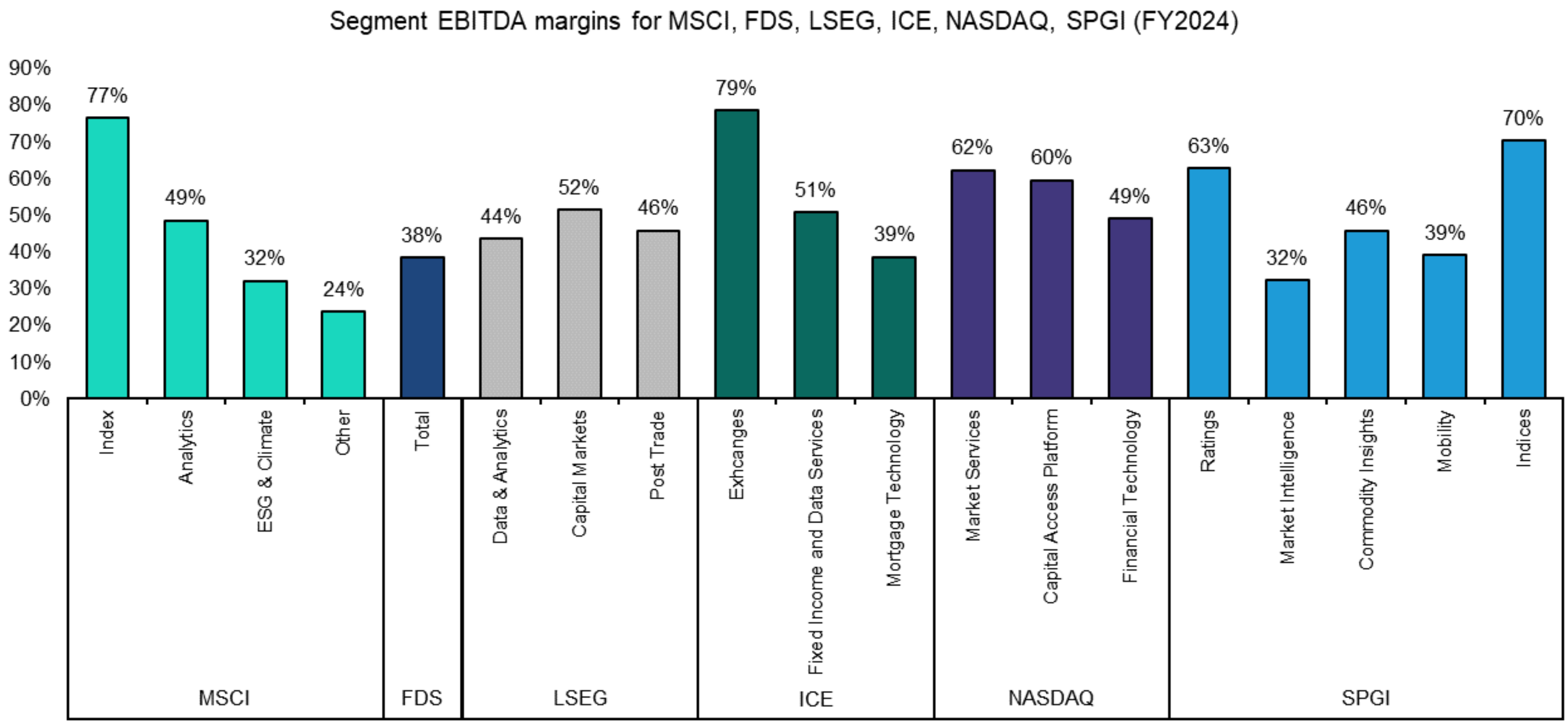
We rate both MSCI & FDS Outperform

MSCI has been one of the most consistent growers in info services



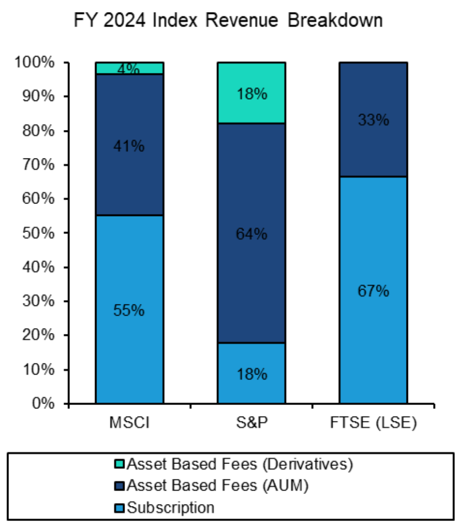
Source: Company data, Autonomous analysis

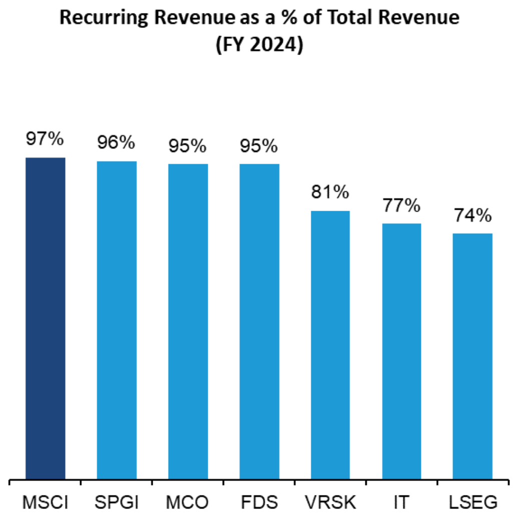
With ~77% EBITDA margin for its index business, MSCI has one of the highest profit margins across the information services space

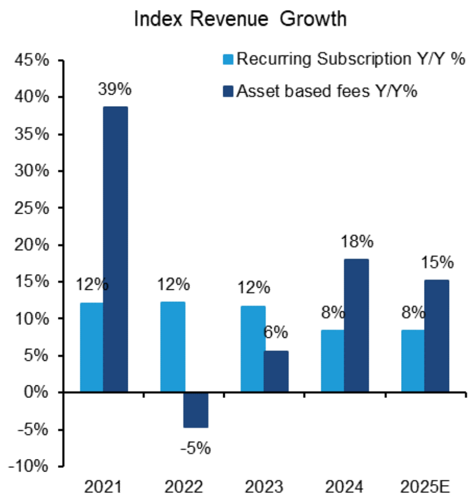


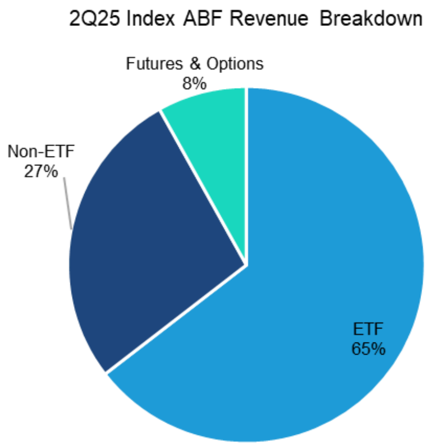
Source: Company data, Autonomous analysis

The index business is one of the most attractive assets in the financial information services space, attributable to its largely subscription-based model which leads to largely recurring revenues, high profit margins, and sustainable growth supported by the active to passive shift.





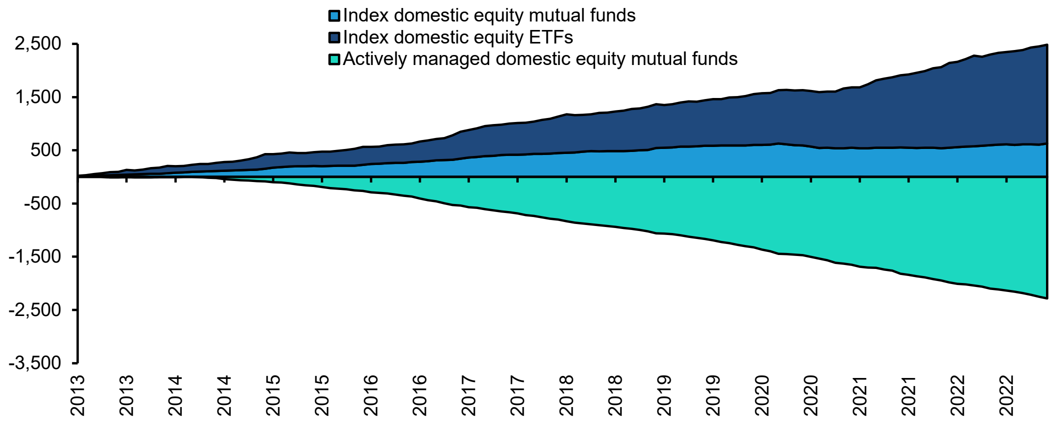


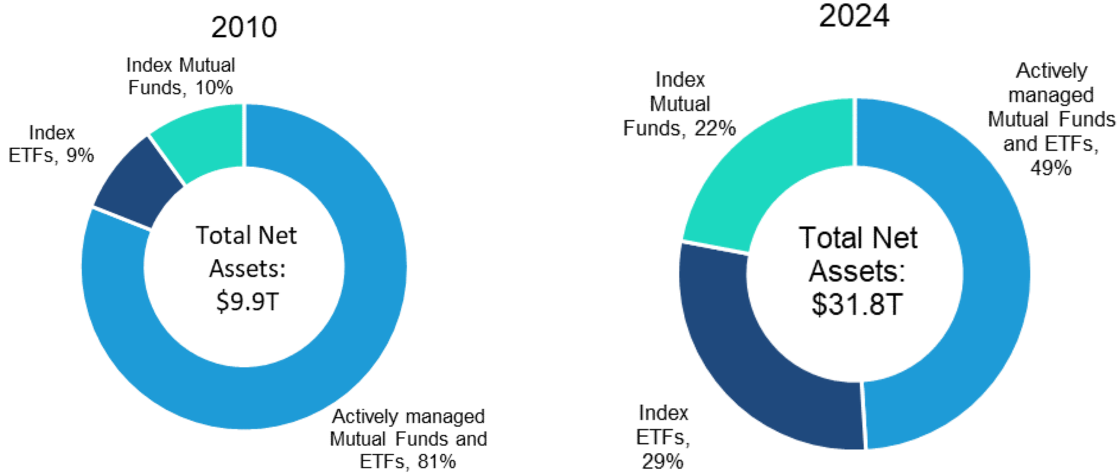


Source: Company data, Autonomous analysis

MSCI has been a key beneficiary of the shift from active to passive investing; we expect this trend to continue in the next 5 to 10 years

Equity ETFs have gained inflows at the cost of active equity funds ($ bn)



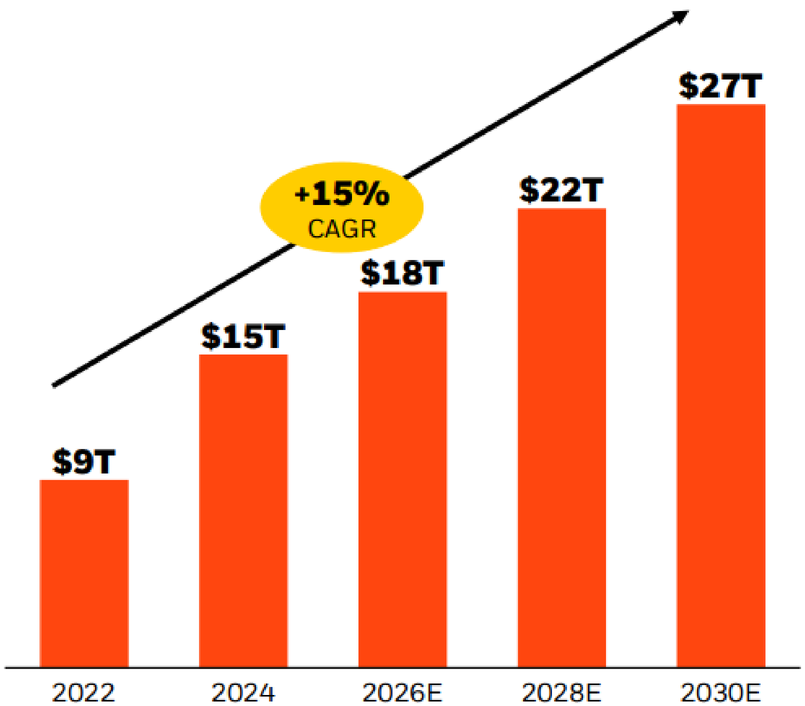


Source: ICI, Autonomous analysis

Sizing the market - BlackRock expects the ETF market to expand materially from its current levels by 2030E

The ETF industry is undergoing rapid growth and transformation

ETF Industry projected to grow to $27T by 2030[1]...



...powered by the growth of indexing and new segments

ETFs still account for a small proportion of global markets

6% of total global public markets[2]

10% of global equity market[2]

2% of global fixed income market[2]

We expect significant growth ahead for newer segments

4x Expected growth of global active ETF AUM[3]

2x+ Expected growth of global fixed income ETF AUM[3]

Source: BlackRock, Autonomous analysis

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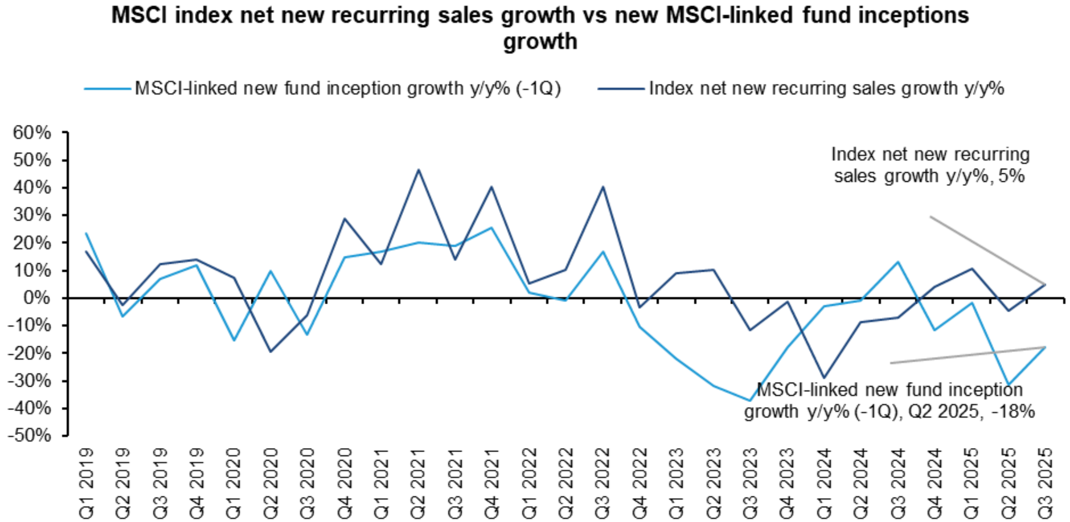
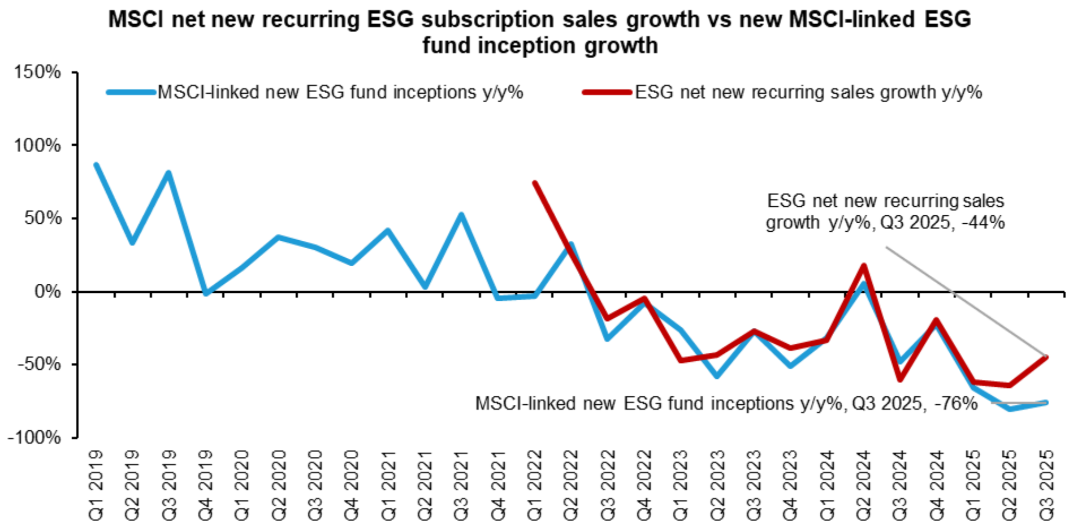
We find that new fund formation is a key driver of MSCI's new recurring sales growth for both Index and ESG segments





Source: Morningstar, Autonomous analysis

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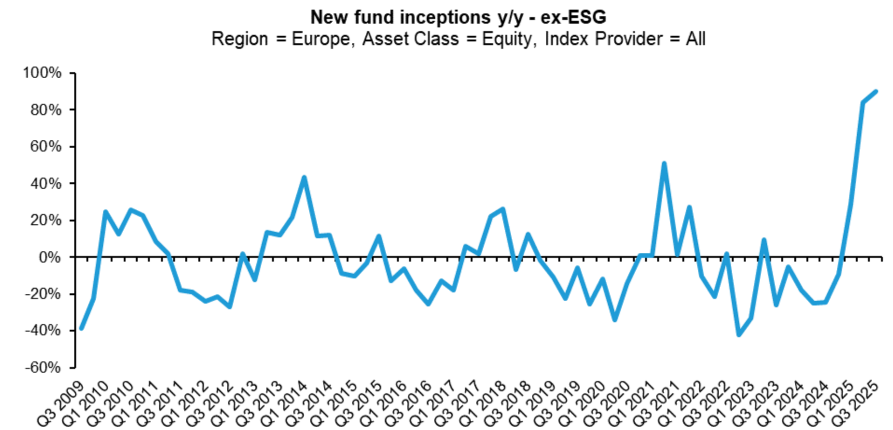
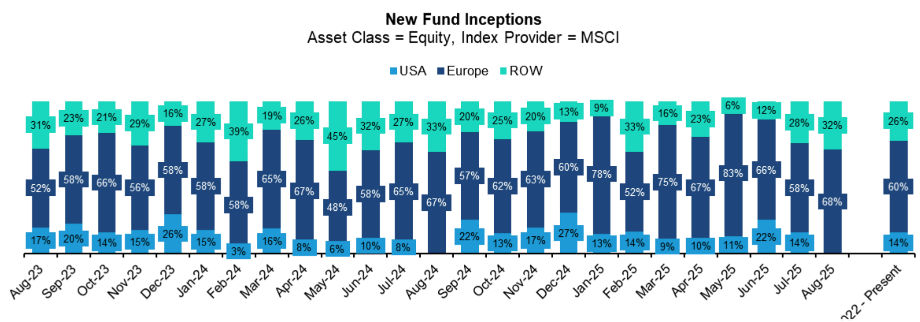
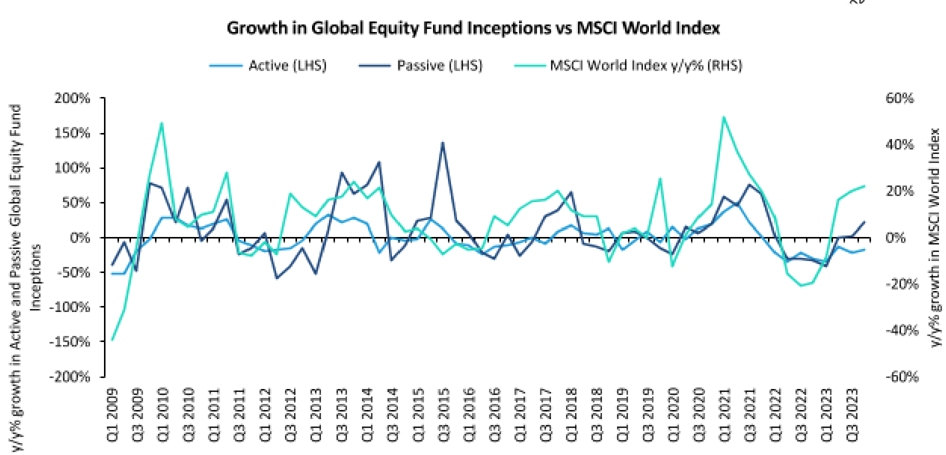
MSCI is over-indexed to European new fund formation trends, which faced unique headwinds since 2022; however, we've seen green shoots in 2025







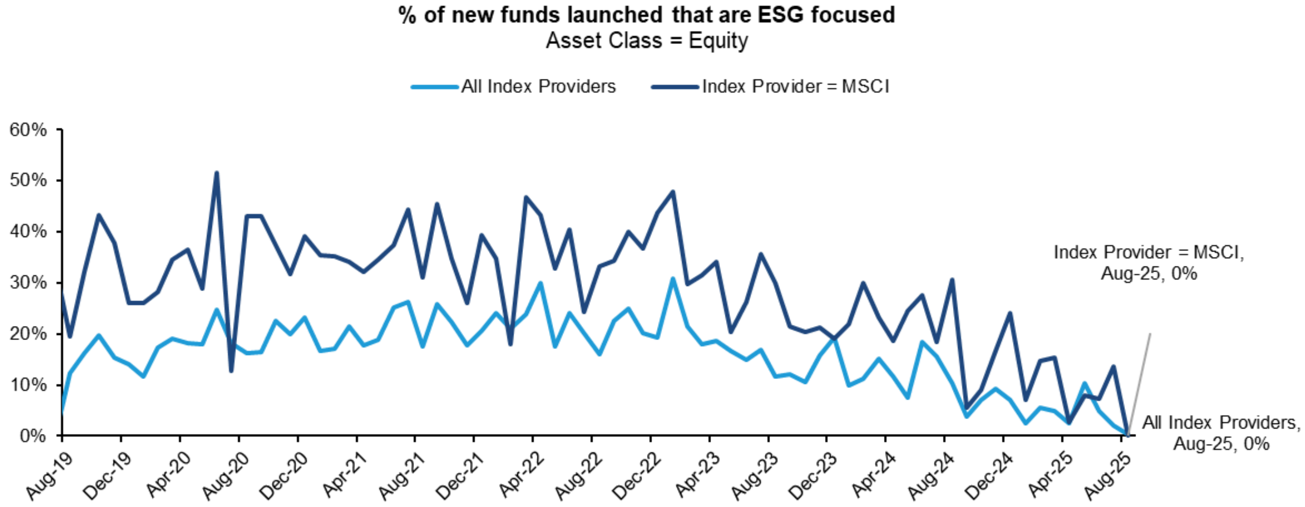
Source: Morningstar, Autonomous analysis

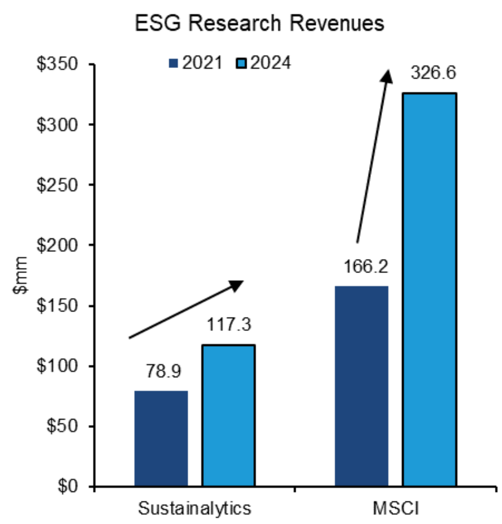
ESG has been politicized in the US and we've seen some "anti-ESG" regulatory actions in the past few years…

State	Bill	Status	Type (Investment Restriction Targeted)
Arizona	State Investment Policy Statement	Enacted Aug 2022	No ESG Investment - Regulation
Arizona	HB 2473	Engrossed in House 2/2022	Boycott Bill – Firearms
California			
Connecticut			
Florida	S.B.A Resolution	Enacted Aug 2022	No ESG Investment - Regulation
Hawaii			
Idaho	S.B. 1405	Enacted July 2022	No ESG Investment - Bill
Idaho	H.B. 737	Introduced March 2022	Boycott Bill – Energy, Mining, Production Agriculture, Commercial Timber
Indiana	Attorney General Advisory Opinion	Issued Sep 2022	No ESG Investment - Position Statement
Indiana	H.B. 1224 S.B. 397	Introduced Jan 2022	Boycott Bill – Energy
Indiana	H.B. 1409 S.B. 397	Introduced Jan 2022	Boycott Bill – Firearms
Kentucky	S.B. 205	Enacted April 2022	Boycott Bill – Fossil Fuel Energy
Kentucky	H.B. 123	Introduced Jan 2022	Boycott Bill – Firearms
Louisiana	State Treasurer Letter	Issued October 2022	No ESG Investment - Position Statement
Louisiana	H.B. 978	Engrossed in House June 2022	Boycott Bill – Firearms
Louisiana	H.B. 25	Referred to Committee March 2022	Boycott Bill – Energy
Minnesota	H.F. 4574 S.F. 4441	Introduced March and April 2022	Boycott Bill – Energy,Mining, ProductionAgriculture, ProductionLumber
Missouri	State Treasurer Press Release	Issued October 2022	No ESG Investment - Position Statement
Missouri	S.B. 1048	Introduced April 2022	Boycott Bill – Firearms
North Dakota	S.B. 2291	Enacted March 2021	No ESG Investment - Bill
Ohio	H.B. 297	Referred to committee May 2021	Boycott Bill – Firearms
Oklahoma	H.B. 2034	Enacted May 2022	Boycott Bill – Fossil Fuel Energy
Oklahoma	H.B. 3144	Passed House, Read in Senate May 2022	Boycott Bill – Firearms
Pennsylvania	H.B. 2799	Referred to committee Sep 2022	No ESG Investment Bill
South Carolina	H.B. 4996	Referred to committee Feb 2022	Boycott Bill – Energy
South Dakota	S.B. 182	Introduced Feb 2022	Boycott Bill – Firearms
Texas	S.B. 13	Enacted May 2021	Boycott Bill – Fossil Fuel Energy
Texas	S.B. 19	Enacted June 2021	Boycott Bill – Firearms
Utah	H.B. 312	House Filed March 2022	Boycott Bill – Fossil FuelEnergy
West Virginia	S.B. 262	Enacted March 2022	Boycott Bill – Fossil Fuel Energy
Wyoming	H.B. 0236	Enacted July 2021	Boycott Bill – Firearms

Source: Morgan Lewis, Autonomous analysis

…leading to meaningful declines in ESG new fund formation trends. However, MSCI continues to achieve growth (and is growing faster than its core competitor)





Source: Bloomberg, BCG, PwC, Bernstein's ESG Team, Autonomous analysis

Our PT is $636, we expect MSCI to deliver 10% revenue growth CAGR from 2024 to 2027E and 13% EPS growth CAGR

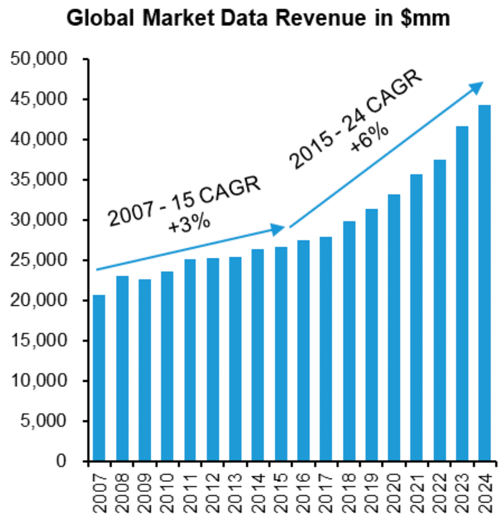
MSCI (MSCI.US)

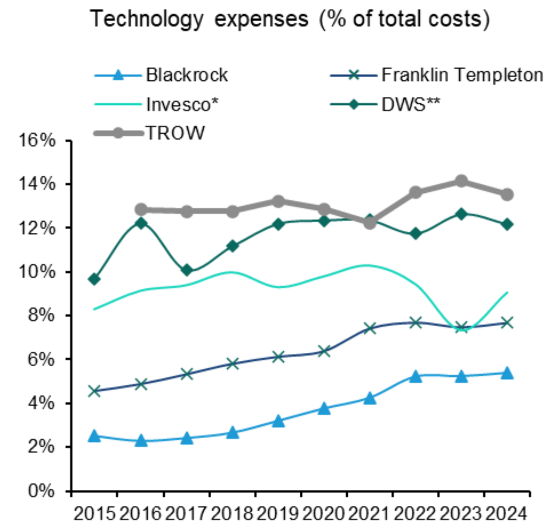
Income Statement

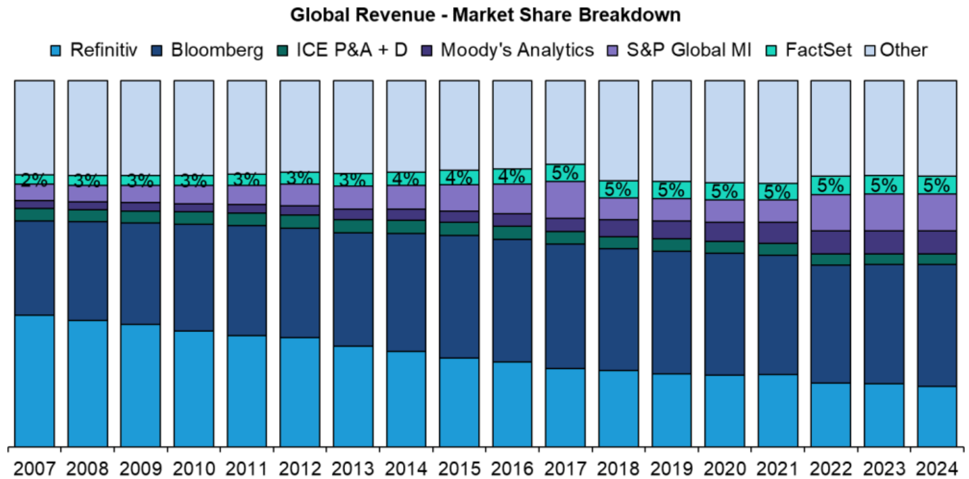
(US$'millions)	2020	2021	2022	2023	2024	2025E	2026E	2027E	'24-'27E CAGR
Net Revenue	**1,695**	**2,044**	**2,249**	**2,529**	**2,856**	**3,118**	**3,409**	**3,691**	**10%**
Revenue Growth (Y/Y)	*8.8%*	*20.5%*	*10.0%*	*12.5%*	*12.9%*	*9.2%*	*9.3%*	*8.3%*	
Cost of Goods Sold	292	359	404	447	514	555	607	657	
Gross Profit	**1,404**	**1,685**	**1,844**	**2,082**	**2,342**	**2,563**	**2,802**	**3,034**	**10%**
Gross Profit Margin	82.8%	82.4%	82.0%	82.3%	82.0%	82.2%	82.2%	82.2%	
Total Operating Expenses	519	612	637	698	813	865	895	946	
Sales and Marketing	216	243	265	276	291	318	344	369	
Product and Technology	101	112	107	132	159	176	170	185	
General and Admin	115	148	147	154	182	178	188	203	
Operating Profit (EBIT)	**885**	**1,073**	**1,208**	**1,385**	**1,529**	**1,698**	**1,908**	**2,087**	**11%**
Operating Margin	52%	52%	54%	55%	54%	54%	56%	57%	
Adj. EBITDA	**972**	**1,197**	**1,330**	**1,523**	**1,716**	**1,891**	**2,100**	**2,277**	**11%**
Adj. EBITDA Margin	57.3%	58.6%	59.1%	60.2%	60.1%	60.6%	61.6%	61.7%	
Total Non-Operating Income (Expenses)	(199)	(215)	(164)	(16)	(172)	(199)	(214)	(173)	
Interest Income	5	1	12	34	21	20	42	73	
Interest Expense	156	160	172	187	186	208	244	244	
Other Non-operating Income (expense)	(47)	(56)	(4)	(6)	(8)	(11)	(12)	(1)	
Profit Before Taxes	**686**	**858**	**1,044**	**1,369**	**1,356**	**1,499**	**1,694**	**1,915**	
Income Tax Expense (Gain)	84	132	173	220	247	275	309	349	
Net income attributable to controlling interests	**602**	**726**	**871**	**1,149**	**1,109**	**1,225**	**1,385**	**1,565**	
Net Margin	35.5%	35.5%	38.7%	45.4%	38.8%	39.3%	40.6%	42.4%	
Basic EPS (US$)	$7.19	$8.80	$10.76	$14.45	$14.09	$15.87	$18.25	$20.65	
Diluted EPS (US$)	$7.12	$8.70	$10.72	$14.39	$14.05	$15.84	$18.23	$20.63	
Adj. Diluted EPS (US$)	**$7.83**	**$9.95**	**$11.45**	**$13.52**	**$15.20**	**$16.96**	**$19.27**	**$21.67**	**13%**

Source: Company data, Autonomous analysis and estimates

Growth rates for global demand for market data and analytics have doubled in the last ten year; FactSet has doubled its market share since the GFC in the global market data space

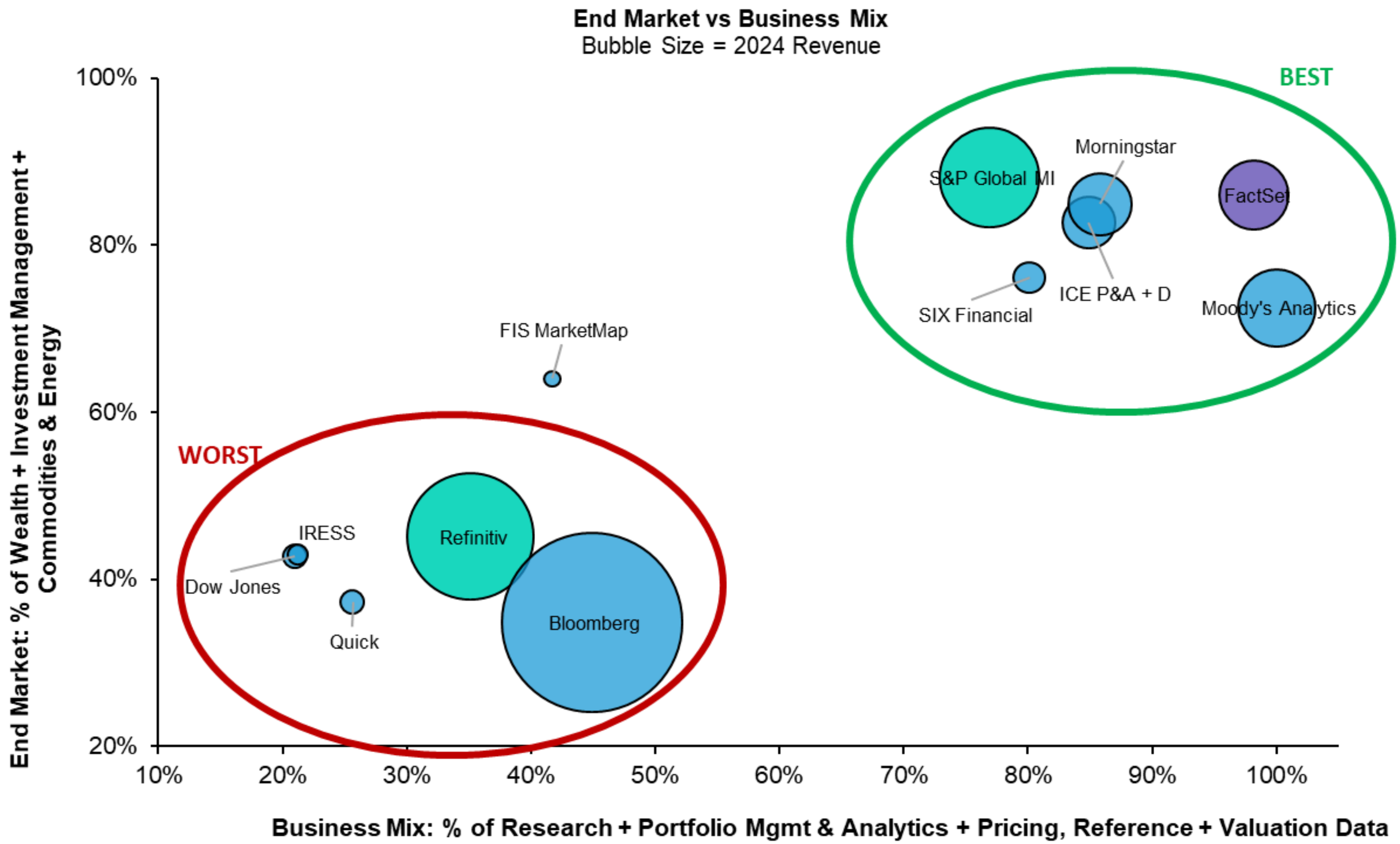






Source: Burton Taylor, Company data, Autonomous analysis

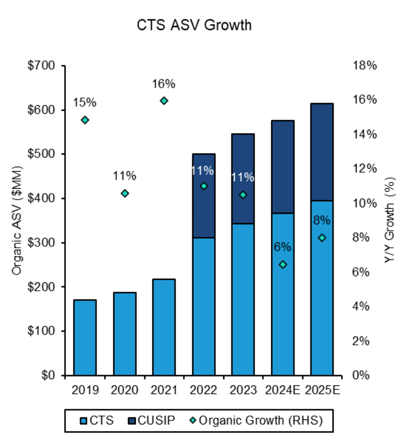
FactSet's winning strategy for the last decade: right place, right time

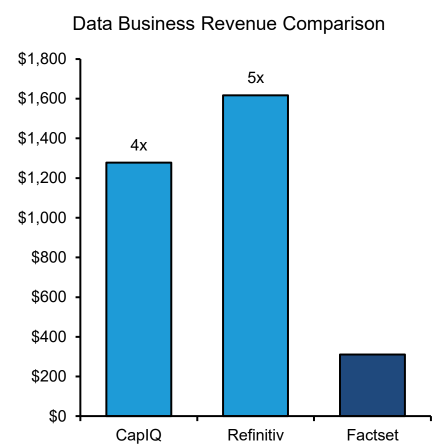


Relates to FY 2022 and Burton Taylor classifications which may differ from company classification

Source: Burton Taylor, Autonomous analysis estimates

More than just a workstation — CTS is the future





Source: Company data, Company presentation, Autonomous analysis

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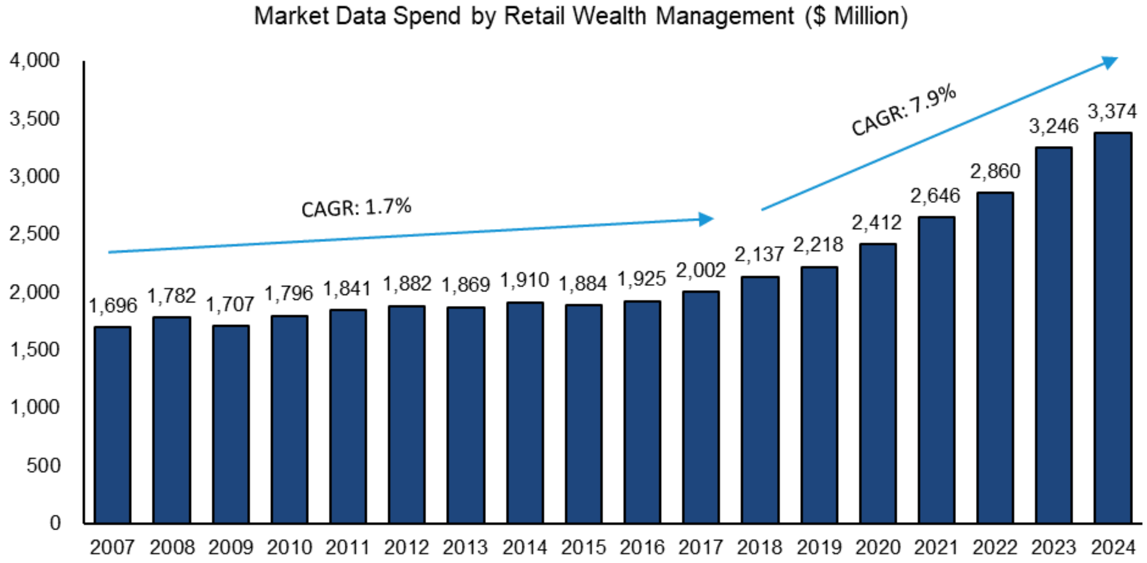
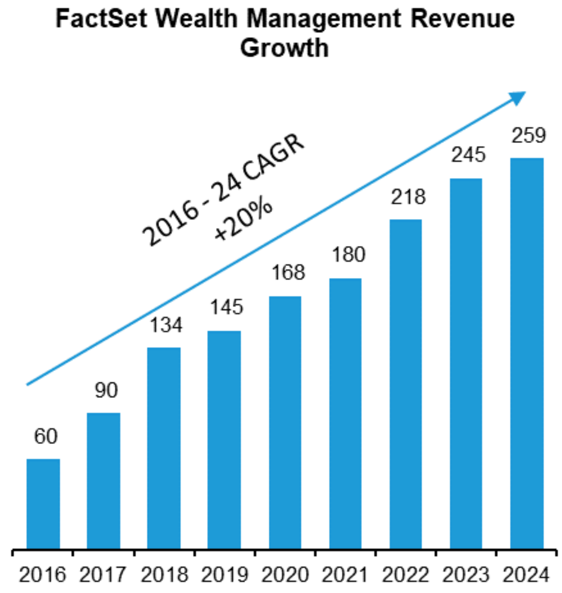
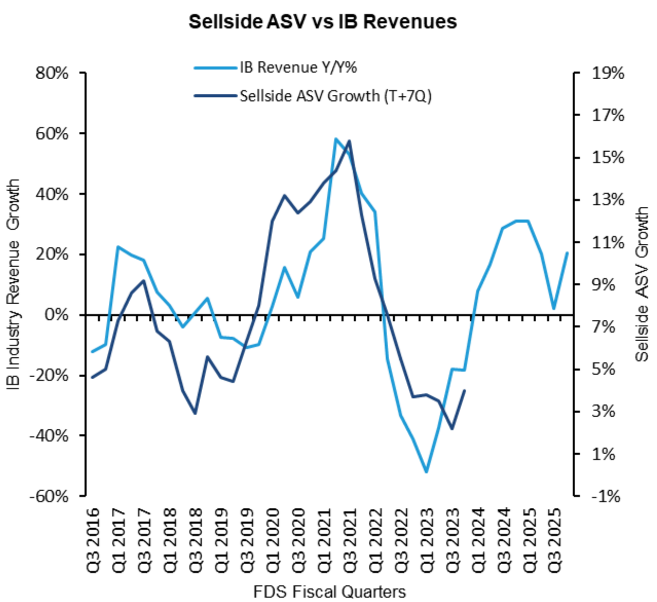
Wealth management is a key growth driver for FactSet; we believe the company will continue to see double-digit growth in this segment

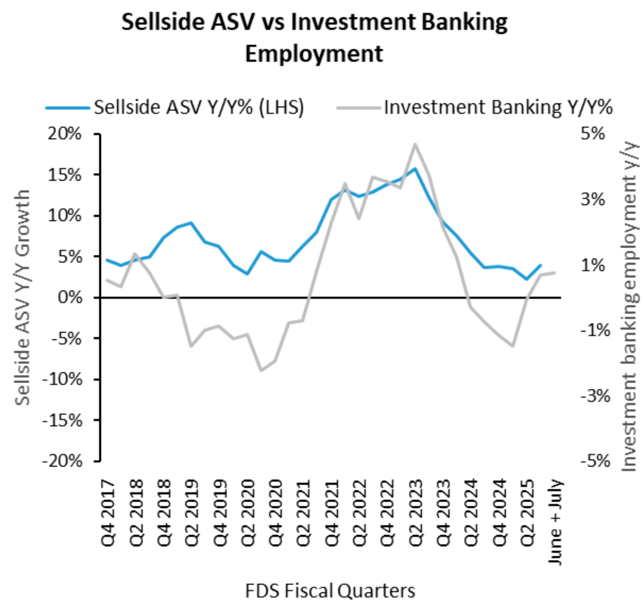


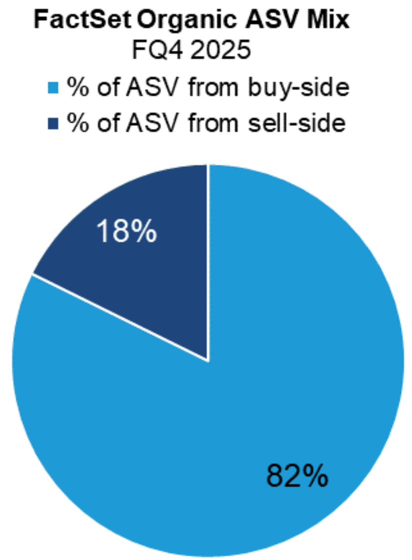


Source: Burton Taylor, Company data, Autonomous analysis

Research & Advisory — Sellside ASV growth faced headwind from investment banking hiring activities in the last few years. However, we believe FactSet will be a key beneficiary of a cap markets upcycle







Source: Autonomous IB Industry Tracker, Company data, Autonomous analysis

Our PT is $436, we expect FDS to deliver 6% revenue growth CAGR from FY2025 to FY2027E and 7% EPS growth CAGR

FactSet (FDS.US)

Income Statement

(US$'000)	2020	2021	2022	2023	2024	2025	2026E	2027E	'25-'27E CAGR
Net Revenue	**1,494**	**1,591**	**1,844**	**2,086**	**2,203**	**2,322**	**2,447**	**2,591**	**6%**
Revenue Growth (Y/Y)	*4.1%*	*6.5%*	*15.9%*	*13.1%*	*5.6%*	*5.4%*	*5.4%*	*5.9%*	
Cost of Goods Sold	695	786	871	973	1,012	1,098	1,183	1,253	
Gross Profit	**799**	**805**	**973**	**1,112**	**1,191**	**1,224**	**1,264**	**1,338**	**5%**
Gross Profit Margin	53.5%	50.6%	52.8%	53.3%	54.1%	52.7%	51.6%	51.6%	
Total Operating Expenses	359	331	497	483	490	476	511	504	
Sales and Marketing	343	331	433	457	485	476	511	504	
Asset impairments	17	0	64	26	5	0	0	0	
Operating Profit (EBIT)	**440**	**474**	**475**	**629**	**701**	**748**	**753**	**834**	**6%**
Operating Margin	29%	30%	26%	30%	32%	32%	31%	32%	
Adj. EBITDA	**534**	**561**	**624**	**777**	**848**	**935**	**938**	**1,043**	**6%**
Adj. EBITDA Margin	35.7%	35.2%	33.8%	37.2%	38.5%	40.3%	38.4%	40.2%	
Total Non-Operating Income (Expenses)	(13)	(6)	(32)	(45)	(50)	(27)	(46)	(34)	
Interest Expense	10	6	30	58	66	56	58	58	
Other Non-operating Income (expense)	(3)	(0)	(2)	8	2	22	(0)	(0)	
Profit Before Taxes	**427**	**468**	**444**	**584**	**652**	**721**	**707**	**800**	**5%**
Income Tax Expense (Gain)	(54)	(68)	(47)	(116)	(114)	(124)	(131)	(148)	
Net income attributable to noncontrolling interests	**373**	**400**	**397**	**468**	**537**	**597**	**576**	**652**	**5%**
Net Margin	25.0%	25.1%	21.5%	22.4%	24.4%	25.7%	23.5%	25.2%	
Basic EPS (US$)	$9.84	$10.54	$10.49	$12.26	$14.11	$15.74	$15.26	$17.28	
Diluted EPS (US$)	$9.67	$10.35	$10.25	$12.04	$13.91	$15.55	$15.10	$17.10	
Adj. Diluted EPS (US$)	**$10.87**	**$11.20**	**$13.43**	**$14.65**	**$16.45**	**$16.98**	**$17.43**	**$19.43**	**7%**

Source: Company data, Autonomous analysis and estimates

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Insurance

Wes Carmichael

Wes Carmichael

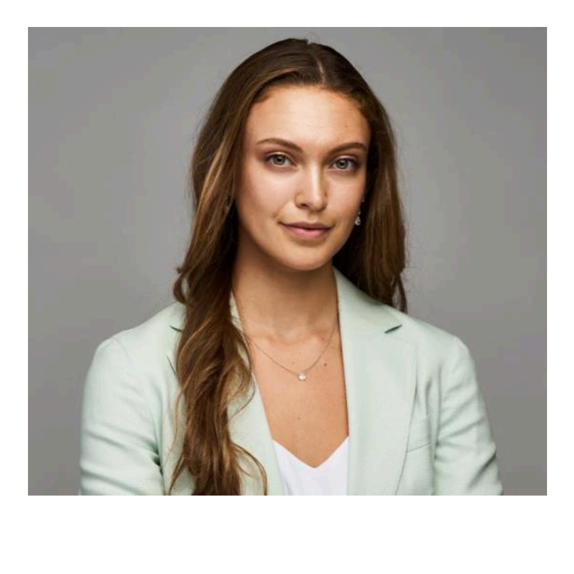
US Life Insurance, Senior Analyst

Wes joined Autonomous in 2023 and has worked in the US Insurance sector since 2014, both on the corporate and sell side. Prior to Autonomous, Wes' sell side career included experience at Wells Fargo, UBS, Credit Suisse, Piper Jaffray, and Sterne Agee. He also previously worked at Fidelity & Guaranty Life with broad responsibilities in investor relations, capital management, and M&A. Wes has a BBA in Finance from Texas Christian University and is a CFA charterholder.

Katie Sakys

US P&C Insurance, Senior Associate

Katie Sakys is a Senior Research Associate at Autonomous Research on the US P&C Insurance team. Prior to joining Autonomous in 2020, Katie completed Bernstein's summer internship program in 2019. During her education, Katie assisted with research in behavioral finance at HBS and interned at the Kamehameha Schools Bishop Estate's Financial Assets Division, where she helped develop the Estate's Emerging Markets portfolio strategy focusing on China A-shares. Katie earned a BA in Economics and History of Art and Architecture from Harvard.



Autonomous University

Insurance

Wes Carmichael

Autonomous University

US Property & Casualty Insurance

Source: State Farm (not covered), GEICO (not covered), Farmers (not covered), Progressive (covered)

P&C Comp Sheet

AUTONOMOUS

Data as of 10/13/2025

P&C Insurance Summary			Equity					Adjusted P/E	P/BV	Dividend Yield	Buyback Yield
	Ticker	Rating	Market Cap	Share Price	Target Price	YTD Performance	Upside	2026E	2026E	2026E	2026E
American International Group	AIG	Outperform	$45.9 bn	$82.79	$92	13.7%	13.0%	10.7x	1.1x	2.3%	7.2%
Chubb	CB	Outperform	$113.5 bn	$284.70	$310	3.0%	8.9%	11.1x	1.6x	1.4%	2.6%
Hartford Financial	HIG	Outperform	$36.7 bn	$130.63	$148	19.4%	14.8%	9.7x	1.8x	1.8%	4.6%
The Travelers Co.	TRV	Outperform	$61.8 bn	$274.29	$313	13.9%	12.7%	10.8x	1.7x	1.7%	4.4%
W.R. Berkley	WRB	Outperform	$29.7 bn	$78.40	$77	34.9%	(1.8%)	16.3x	2.5x	1.3%	0.3%
Average Commercial Lines							**9.5%**	**11.7x**	**1.8x**	**1.7%**	**3.8%**
Allstate	ALL	Underperform	$54.9 bn	$208.46	$197	8.1%	(5.5%)	9.5x	2.5x	-	2.7%
Progressive	PGR	Outperform	$141.8 bn	$241.90	$300	2.9%	24.1%	15.2x	3.1x	0.2%	0.1%
Average Personal Lines							**9.3%**	**12.3x**	**2.8x**	**0.2%**	**1.4%**
Goosehead Insurance	GSHD	Outperform	$2.6 bn	$69.70	$115	(31.3%)	86.5%	27.3x	-	-	-
Lemonade	LMND	Underperform	$3.7 bn	$50.30	$30	37.1%	(46.3%)	-26.4x	-	-	-
Trupanion	TRUP	Outperform	$1.8 bn	$42.33	$58	(12.2%)	37.0%	120.2x	-	-	-
Average Insurtech							**25.7%**	**40.3x**	-	-	-
Arch Capital Group	ACGL	Underperform	$34.6 bn	$92.64	$88	0.3%	(5.0%)	10.6x	1.3x	-	2.0%
Everest Group	EG	Underperform	$14.7 bn	$351.43	$327	(3.0%)	(7.0%)	5.9x	0.8x	-	2.4%
RenaissanceRe	RNR	Outperform	$12.3 bn	$261.10	$268	4.9%	(6.9%)	7.3x	1.0x	-	4.9%
Average Reinsurance							**(0.1%)**	**7.9x**	**1.1x**	-	**3.1%**
Arthur J. Gallagher	AJG	Outperform	$77.7 bn	$303.04	$334	6.8%	10.3%	21.9x	3.3x	0.9%	0.0%
Aon	AON	Underperform	$78.0 bn	$361.57	$337	0.7%	(6.8%)	19.3x	7.6x	0.9%	2.6%
Marsh McLennan	MMC	Neutral	$101.4 bn	$206.25	$196	(2.9%)	(3.5%)	20.4x	5.4x	1.8%	1.5%
Ryan Specialty	RYAN	Underperform	$14.7 bn	$55.68	$53	(13.2%)	(4.8%)	22.3x	10.5x	0.0%	0.0%
Willis Towers Watson	WTW	Outperform	$32.8 bn	$336.66	$383	7.5%	14.8%	17.1x	3.6x	1.1%	4.6%
Average Insurance Brokerage							**2.2%**	**19.9x**	**6.5x**	**1.0%**	**2.0%**
Average All P&C Insurance							**7.5%**	**18.3x**	**3.2x**	**1.2%**	**2.7%**

Source: Bloomberg, Autonomous Research

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P&C Insurance Overview & Autonomous Coverage

US P&C Insurance

- Primarily protection products (damage or loss of property, legal liability, etc.)
- Policy duration varies by coverage; typically, shorter w/ greater claims uncertainty
- Uncertainty requires larger equity cushions and more liquid, short-term investments
- Returns driven primarily by underwriting performance and are less macro-sensitive

Defensive versus other financial stocks

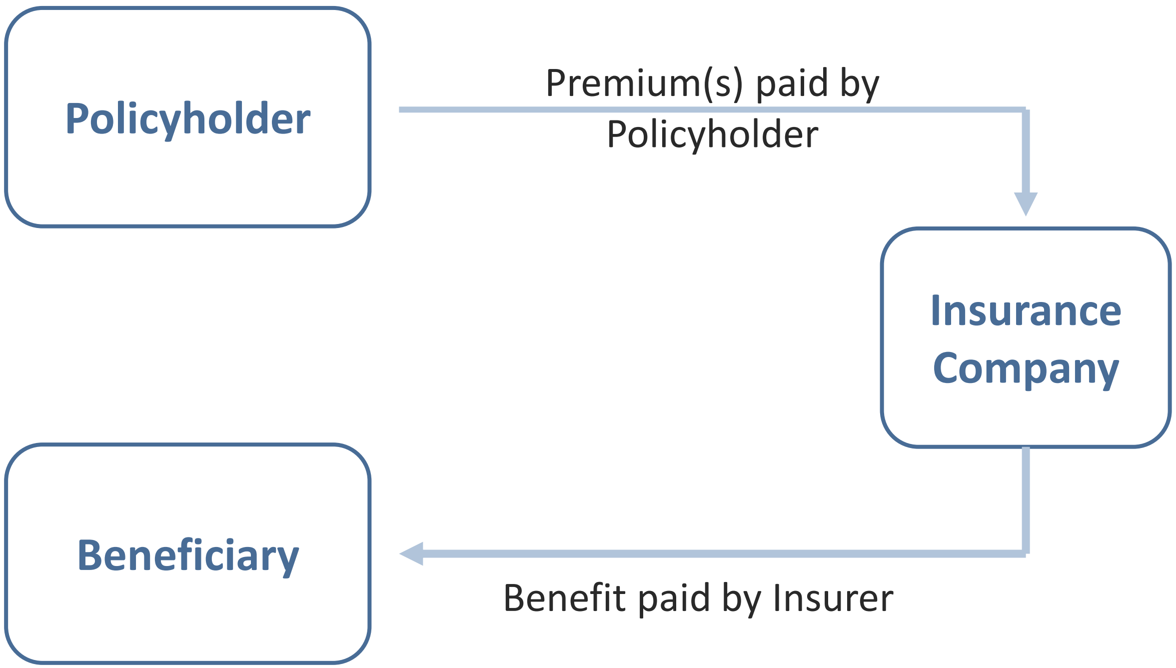
Autonomous Coverage

Ticker	Company	Rating	Target
AIG	American Intl. Group	OP	$92
AJG	Arthur J. Gallagher & Co.	OP	$334
CB	Chubb Limited	OP	$310
GSHD	Goosehead Insurance	OP	$115
HIG	Hartford Financial	OP	$148
PGR	Progressive Corp	OP	$300
RNR	RenaissanceRe Holdings Ltd	OP	$268
TRUP	Trupanion, Inc.	OP	$58
TRV	The Travelers Co.	OP	$313
WRB	W.R. Berkley Corp	OP	$77
WTW	Willis Towers Watson PLC	OP	$383
MMC	Marsh McLennan	N	$196
ACGL	Arch Capital Group	UP	$88
ALL	Allstate Corp.	UP	$197
AON	Aon PLC	UP	$337
EG	Everest Re Group	UP	$327
LMND	Lemonade, Inc.	UP	$30
RYAN	Ryan Specialty Holdings, Inc.	UP	$53

Source: Autonomous Research; as of 10/13/25

What is Insurance?

Simple Insurance Cash Flow Illustration

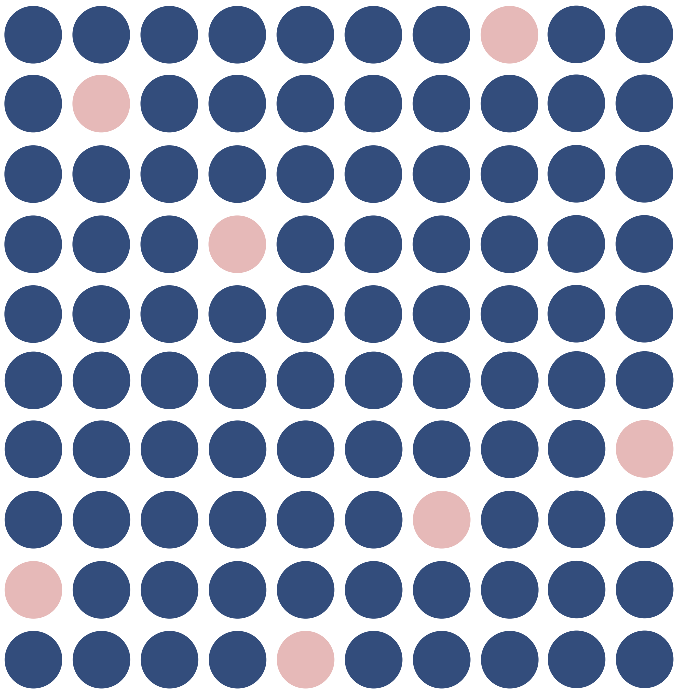


 Source: Autonomous Research

Illustrating Insurance

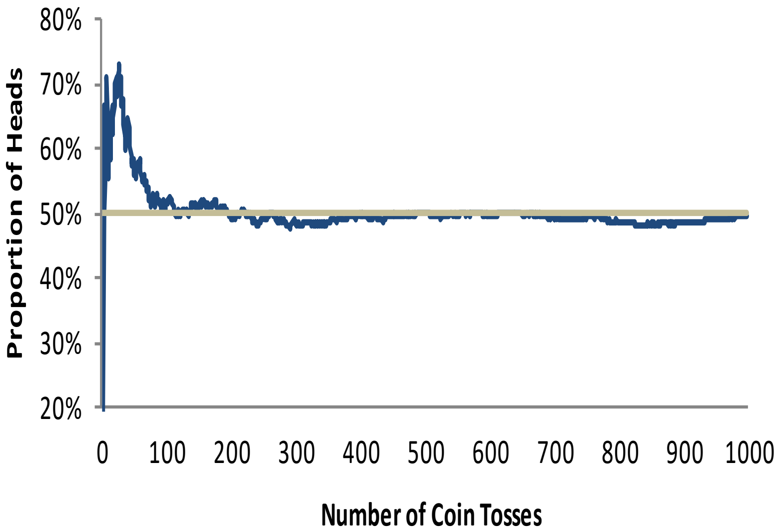
Risk Pooling Illustration

Both blue and red dots pay premiums, but only the red dots file a claim



Law of Large Numbers Illustration

More tosses of a coin, more likely a 50/50 heads to tails split



Source: Autonomous Research

The Insurance Value Chain

Underwriting → Distribution → Asset Management

Distribution Channels

- Captive agents
- Independent agents (IA)
- Independent marketing organizations (IMO)
- Insurance brokers
- Banks & broker-dealers
- Direct to consumer (DTC)

Asset Managers

- In-house
- Third-party

 Source: Autonomous Research

How Do Insurers Make Money?

Underwriting Earnings (Protection Products)

Earned Premiums

Losses & Expenses
- Paid losses
- Loss adjustment expense
- Policy acq. costs

Underwriting Earnings

Spread Earnings (Investment Products)

Net Investment Income

Expenses
- Interest credited
- Commissions
- OpEx

Spread Based Operating Earnings

Fee Earnings (Distribution / Asset Management)

Fee Revenue

Expenses
- Commissions
- OpEx

Fee Based Operating Earnings

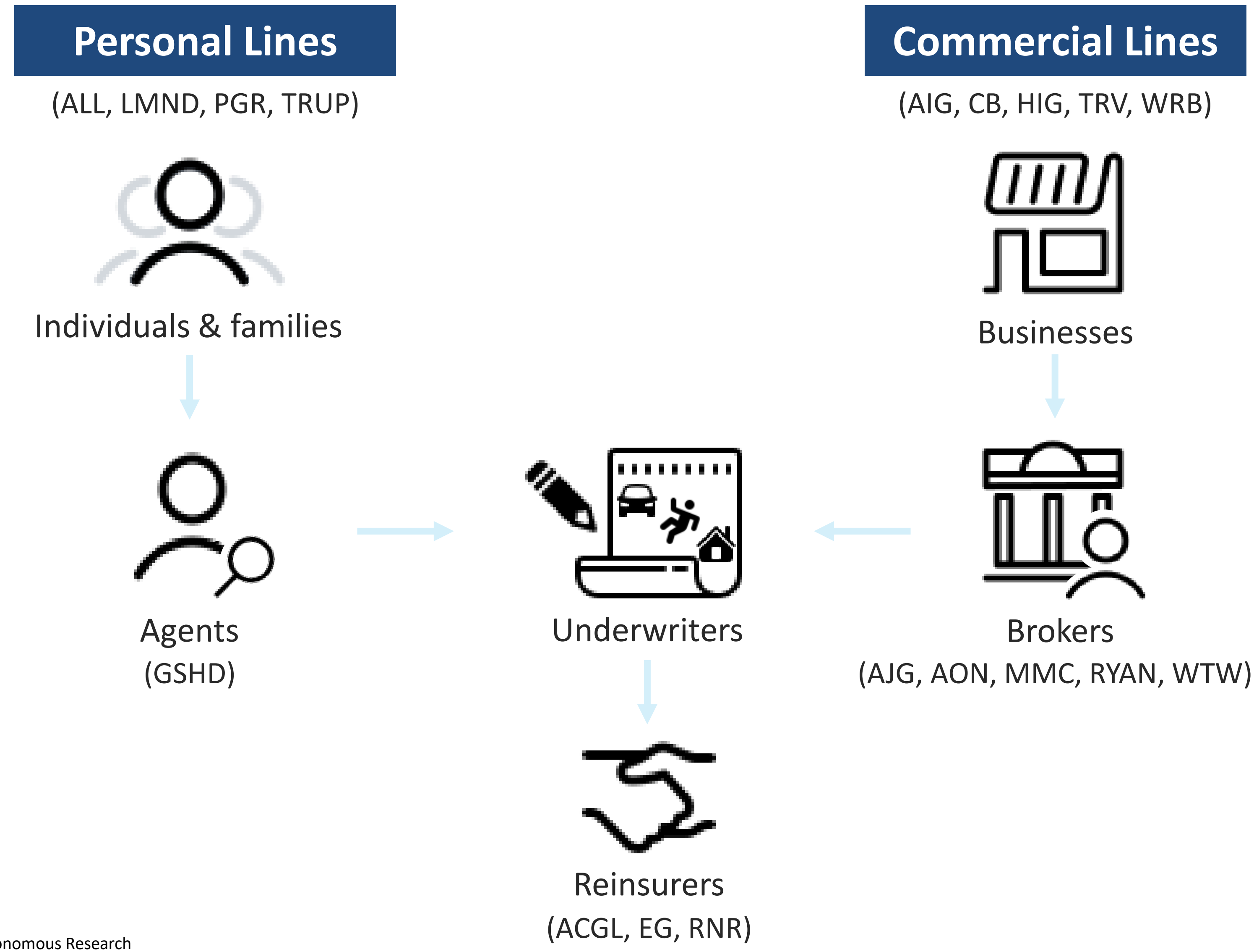
Source: Autonomous Research

P&C Insurance Coverage Matrix

	Personal	Commercial
Property	• Auto Physical Damage • Homeowners • Jewelry & Valuable Items • Motorcycles, Boats • Pets	• Business Property • Catastrophe (Hurricane/Quake) • Inland Marine
Liability	• Auto Bodily Injury • Personal Umbrella	• General Liability • Workers Compensation • Directors & Officers • Errors & Omissions

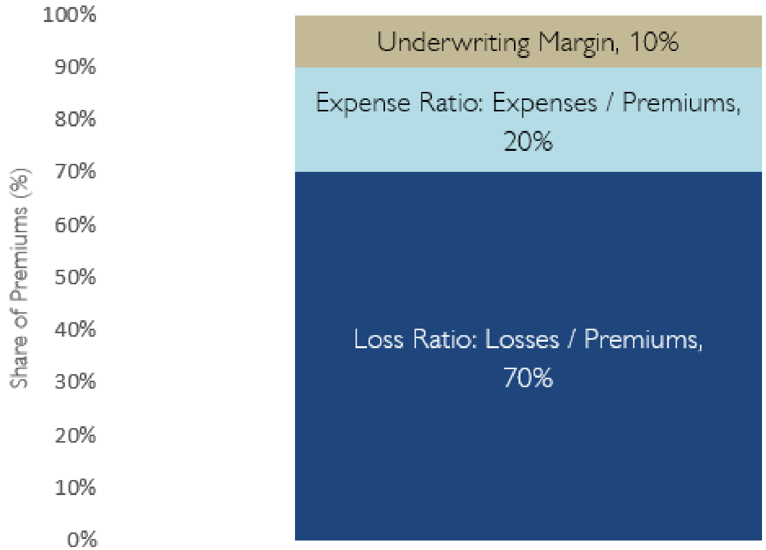
Source: Autonomous Research

Property vs. Commercial Lines Distribution Channels



Source: Autonomous Research

Illustrative P&C Insurance Earnings Model



Underwriting Margin = 1 – Combined Ratio

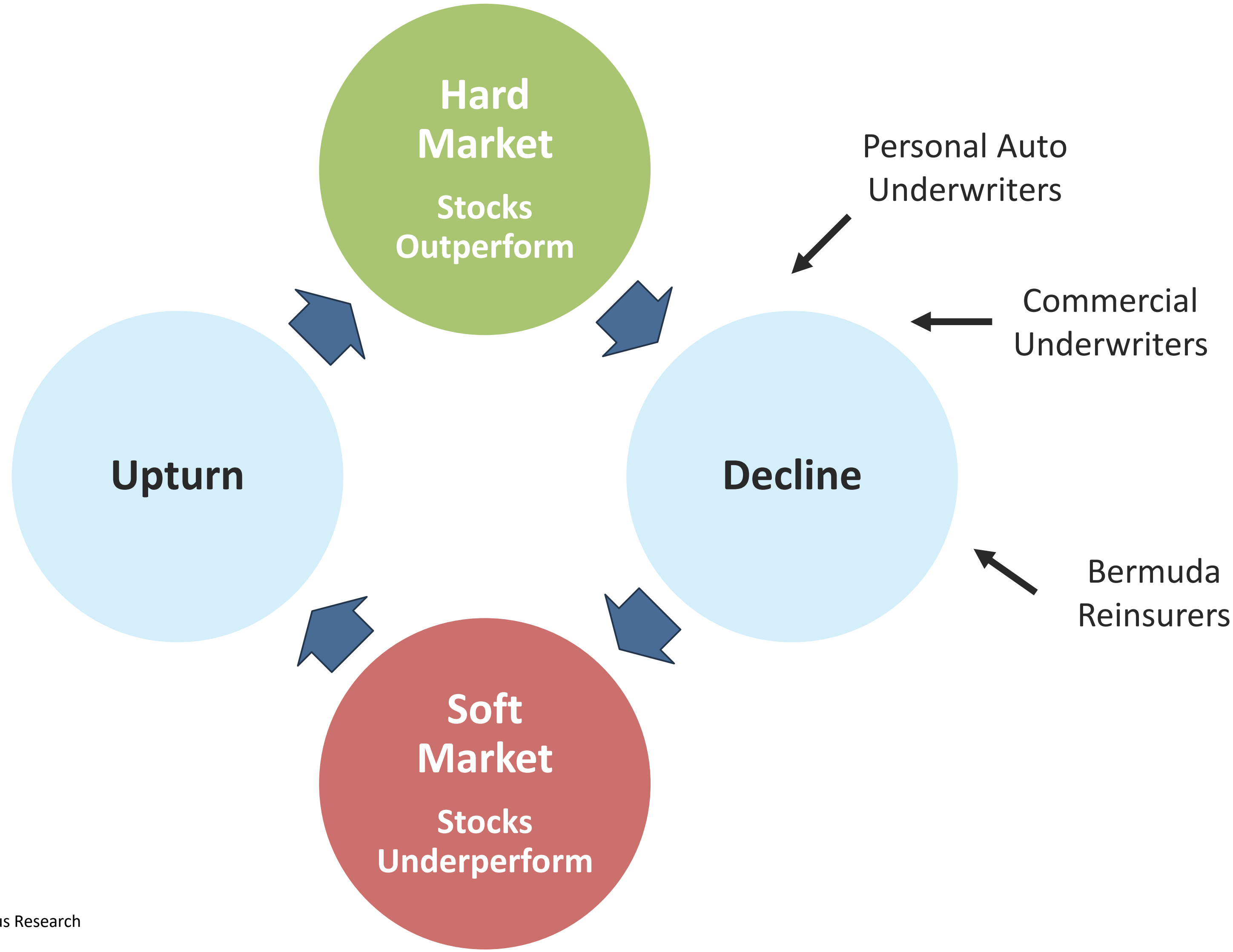
$$\text{Combined Ratio} = \frac{(\text{Losses} + \text{Expenses})}{\text{Premiums}}$$

P/C Pre-Tax Underwriting Contribution + **P/C Pre-Tax Investment Income Contribution** = **P/C After-Tax Income Contribution**

Company	U/W Margin	x	NPE / Avg SE	=	P/T UW ROE	P/T NII Yield	x	IA / Avg SE	=	P/T NII ROE	P/T PC ROE	Effective Tax	A/T PC ROE
Cml Diversified	8.0%		50.0%		4.0%	3.8%		200%		7.5%	11.5%	21.0%	9.1%
Specialty Cml	9.0%		93.8%		8.4%	3.0%		250%		7.5%	15.9%	21.0%	12.6%
Personal Writers	5.0%		200.0%		10.0%	2.7%		300%		8.0%	18.0%	21.0%	14.2%
Reinsurance	13.0%		60.0%		7.8%	2.5%		200%		5.0%	12.8%	15.0%	10.9%

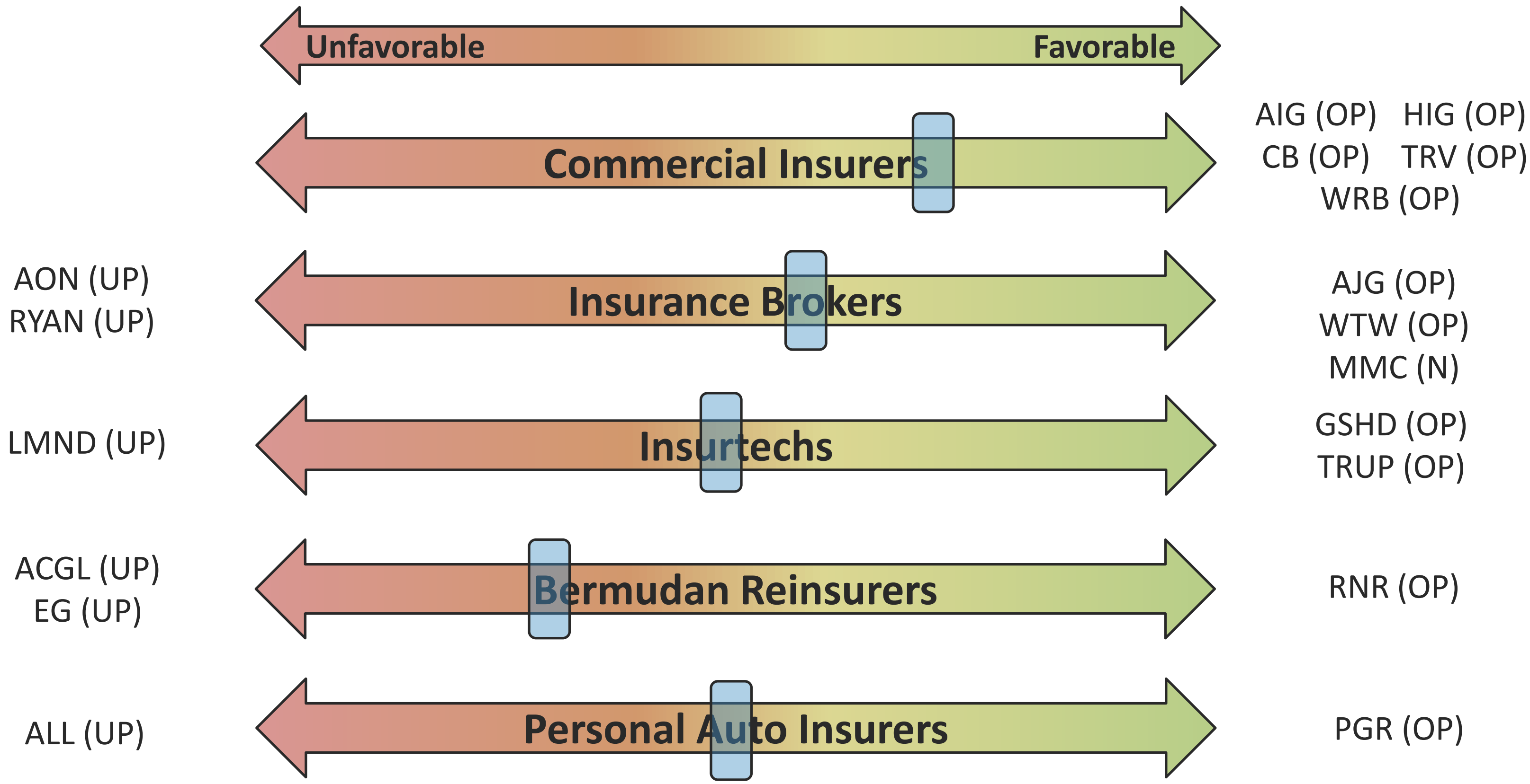
Source: Autonomous Research

Laying Out the P&C Market Cycle



Source: Autonomous Research

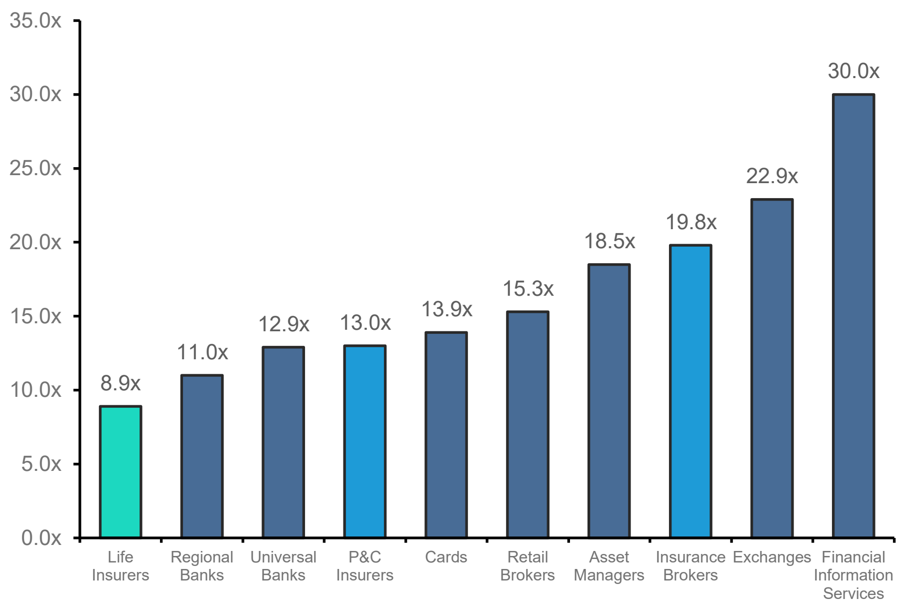
Ratings: We Continue to Prefer Underwriters & Insurance Brokers



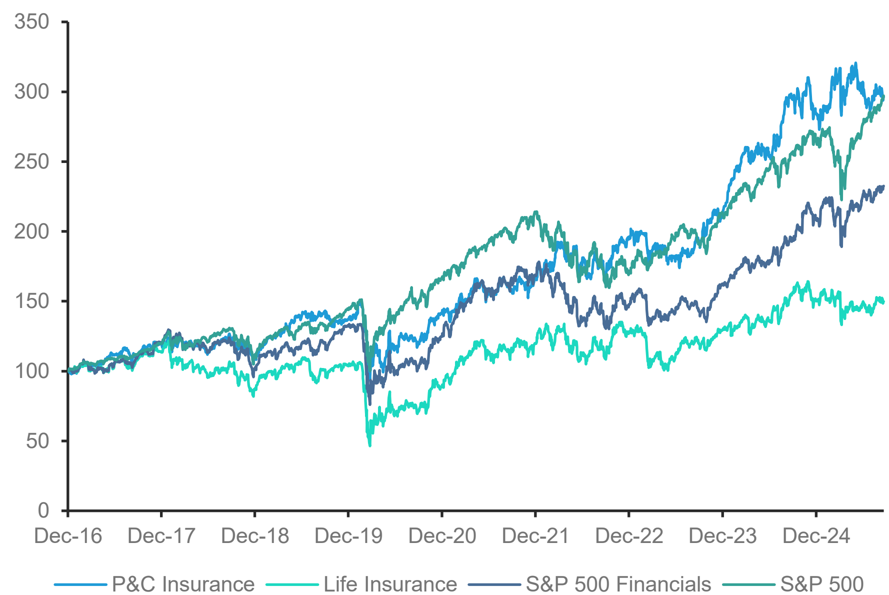
Source: Autonomous Research, as of 10/13/2025

Valuation: P&C and the Insurance Brokers at a Premium to Life

2025 Price-to-Earnings
Mean P/E Multiple



Insurance Industry Absolute Performance
Indexed to 12/31/2016



Source: Bloomberg, Autonomous Research; as of 10/13/2025

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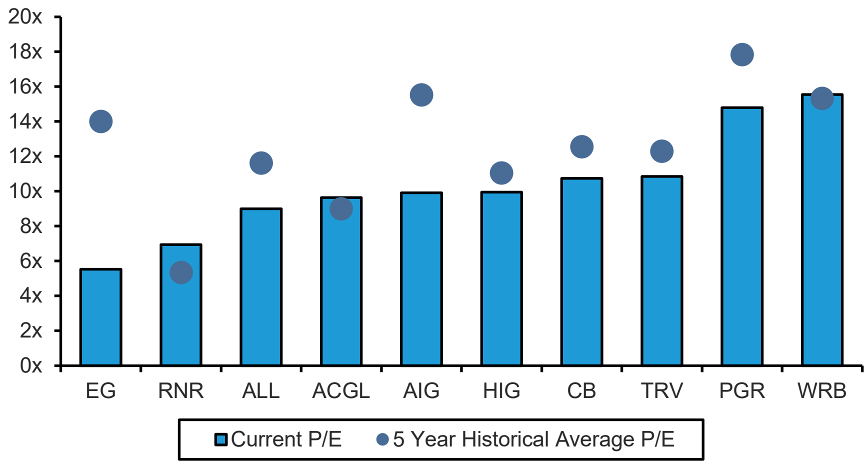
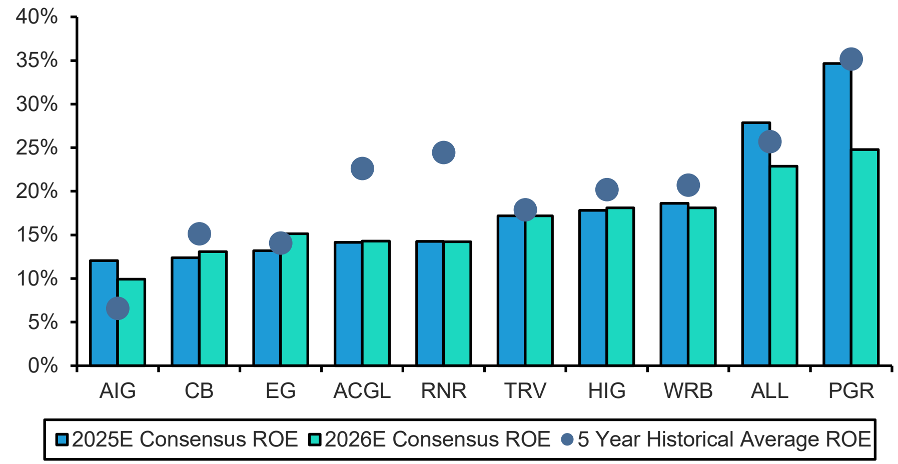
P&C Valuation Frameworks Differ by Subgroup

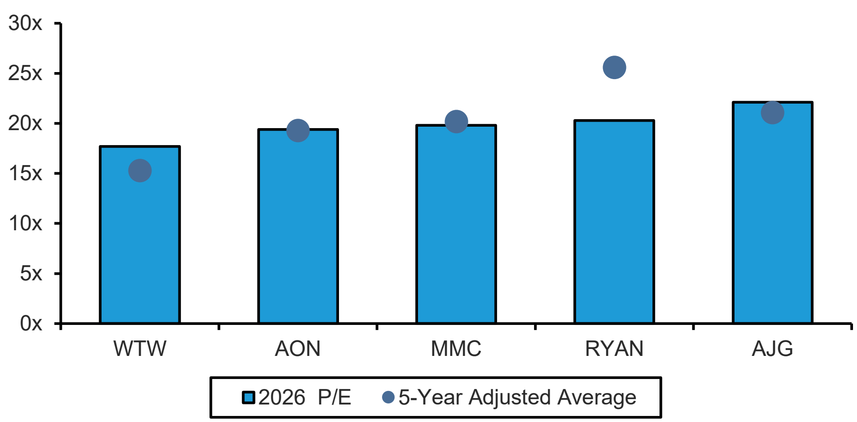
Underwriter P/E: Trading At Low End of Historical Range



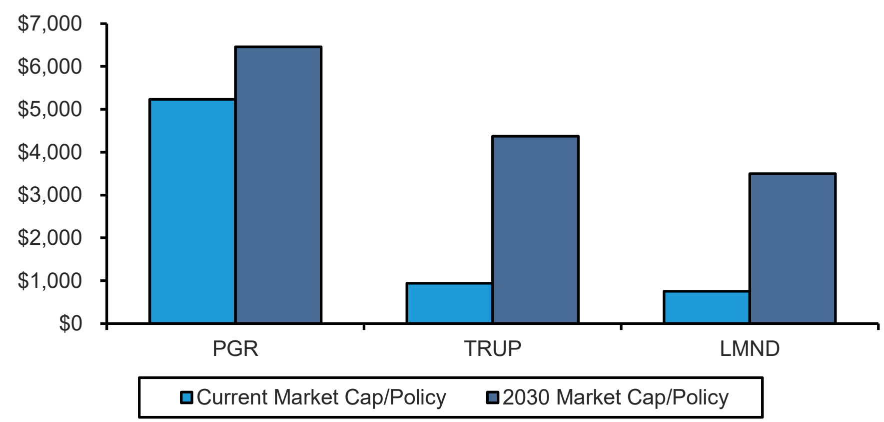
Underwriter ROE: Coming Off Peak ROE Growth



Broker P/E: Trading in-line with Historical Values



Insurtech Mkt. Cap/Policy: Growing Policy Value vs. PGR



Source: Autonomous Research

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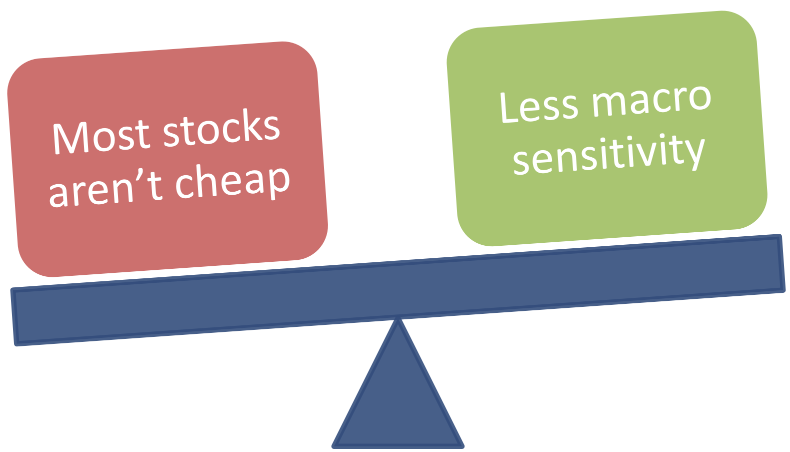
US P&C Insurance: Pick Your Financials Poison

P&C offers pricey defense



Source: Autonomous Research

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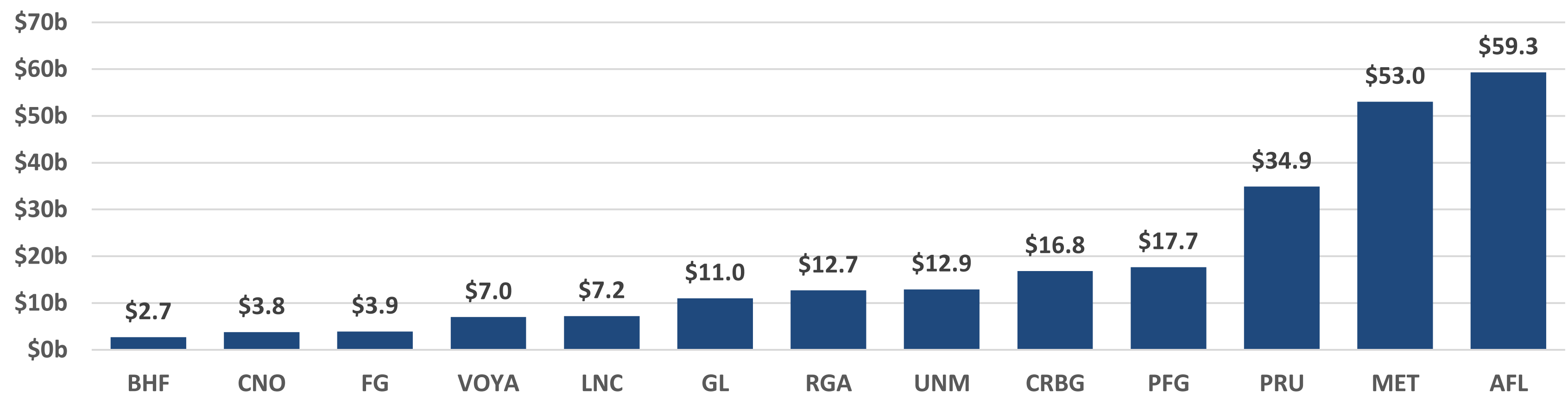
US Life Insurance

Source: Aflac, MetLife, Voya

Life Comp Sheet

Company	Ticker	Rating	Current Price	Price Target	% to Target	Mkt Cap ($m)	Dividend Yield	Price / Earnings 2024	Price / Earnings 2025E	Price / Earnings 2026E
Aflac	**AFL**	UP	$110.95	**$95**	(14.4%)	59,340	2.1%	15.4x	16.1x	15.2x
Brighthouse Financial	**BHF**	N	$47.28	**$52**	10.0%	2,702	0.0%	2.2x	2.7x	2.2x
CNO Financial	**CNO**	N	$39.28	**$44**	12.0%	3,807	1.7%	9.9x	10.5x	9.0x
Corebridge Financial	**CRBG**	OP	$31.26	**$43**	37.6%	16,839	3.2%	7.4x	7.0x	5.6x
F&G Annuities & Life	**FG**	N	$29.17	**$35**	20.0%	3,928	2.9%	6.8x	7.9x	5.0x
Globe Life	**GL**	OP	$136.00	**$164**	20.6%	11,016	0.8%	11.0x	9.4x	9.1x
Lincoln National	**LNC**	N	$38.04	**$43**	13.0%	7,212	4.8%	5.4x	4.9x	4.8x
MetLife	**MET**	OP	$79.77	**$92**	15.3%	53,049	2.8%	9.8x	9.2x	7.8x
Principal Financial	**PFG**	N	$79.42	**$86**	8.3%	17,692	3.9%	11.4x	9.5x	8.5x
Prudential Financial	**PRU**	UP	$99.13	**$105**	5.9%	34,894	5.4%	7.9x	7.2x	6.8x
Reinsurance Group	**RGA**	OP	$191.99	**$224**	16.7%	12,689	1.9%	9.6x	9.0x	7.7x
Unum Group	**UNM**	OP	$75.85	**$99**	30.5%	12,918	2.3%	9.0x	9.0x	8.1x
Voya Financial	**VOYA**	OP	$72.60	**$87**	19.8%	7,000	2.5%	10.0x	8.2x	7.1x
Average					**15.0%**	**18,699**	**2.6%**	**8.9x**	**8.5x**	**7.5x**
Median					**15.3%**	**12,689**	**2.5%**	**9.6x**	**9.0x**	**7.7x**

US Life Coverage by Market Cap ($bn)



Source: Bloomberg, Autonomous Research; Data as of 10/13/25

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US Life Insurance: Pick Your Financials Poison

Life Insurance

- Industry has its roots in protecting against specific risks, such as death or disability
- Over time, more of the focus has shifted to savings products such as annuities, increasing sensitivity to interest rates & equity markets
- Liabilities tend to have long durations (10+ years) and policies generally can't be repriced
- Investment income is a significant driver of earnings, and life insurers tend to have high asset leverage

Ticker	Company	Rating	Target
CRBG	Corebridge Financial	OP	$43
GL	Globe Life Inc	OP	$164
MET	MetLife Inc	OP	$92
RGA	Reinsurance Group of Am.	OP	$224
UNM	Unum Group	UP	$99
VOYA	Voya Financial	OP	$87
BHF	Brighthouse Financial	UP	$52
CNO	CNO Financial	N	$44
FG	F&G Annuities & Life	N	$35
LNC	Lincoln National	N	$43
PFG	Principal Financial Group	N	$86
AFL	Aflac Inc	UP	$95
PRU	Prudential Financial	UP	$105

Source: Autonomous Research; as of 10/13/25

Life Companies Provide Protection Against 3 General Risks

Mortality

- Whole Life
- Term Life
- Group Life
- Life Reinsurance

Morbidity

- Disability
- Critical Illness
- Dental & Vision
- Hospital Indemnity
- Long-Term Care

Longevity

- Annuities
- Pension Risk Transfer

Source: Autonomous Research

Many Insurers Also Offer an Array of Retirement Savings Products

Worksite

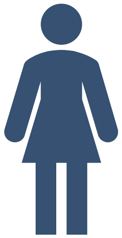
- 401(k) - Corporate
- 403(b) – Tax-Exempt
- 457 – Gov't
- Pooled employer plans

Individual

- Fixed annuities
- Indexed annuities
- Variable annuities
- Structured VA

Services

- Asset management
- Wealth management
- Plan recordkeeping



Source: Autonomous Research

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How Do Life Insurers Make Money?

Underwriting Earnings (Protection Products)

Earned Premiums − **Losses & Expenses** = **Underwriting Earnings**

Losses & Expenses
- Paid losses
- Loss adj. expense
- Policy acq. costs

Spread Earnings (Investment Products)

Net Investment Income − **Expenses** = **Spread Based Operating Earnings**

Expenses
- Interest credited
- Commissions
- OpEx

Fee Earnings (Distribution / Asset Management)

Fee Revenue − **Expenses** = **Fee Based Operating Earnings**

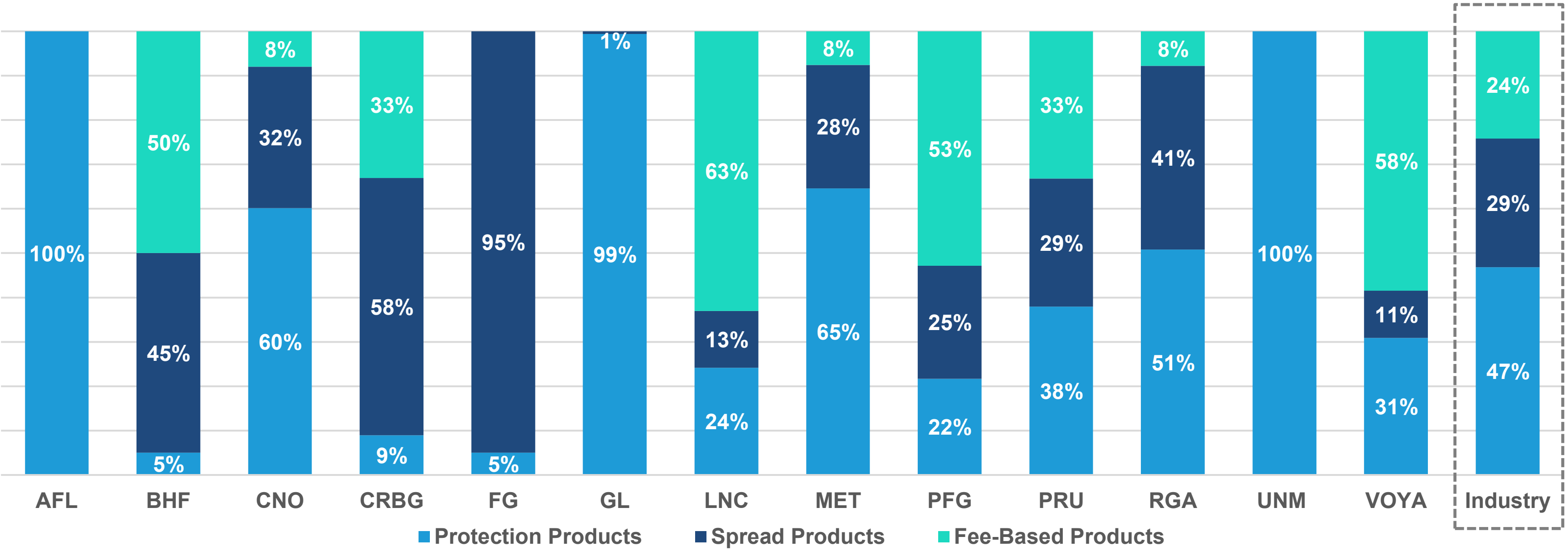
Expenses
- Commissions
- OpEx

Source: Autonomous Research

Earnings Mix Differs Widely by Company…

Companies operate in many different product lines

- Balance sheet intensity and risks vary across product types
- Investors pay varying multiples based on risks companies are writing, preferring less capital and balance sheet intensive business, generally
- More simple underwriting/protection products generally garner higher multiples in public markets



Source: Company reports, Autonomous Research

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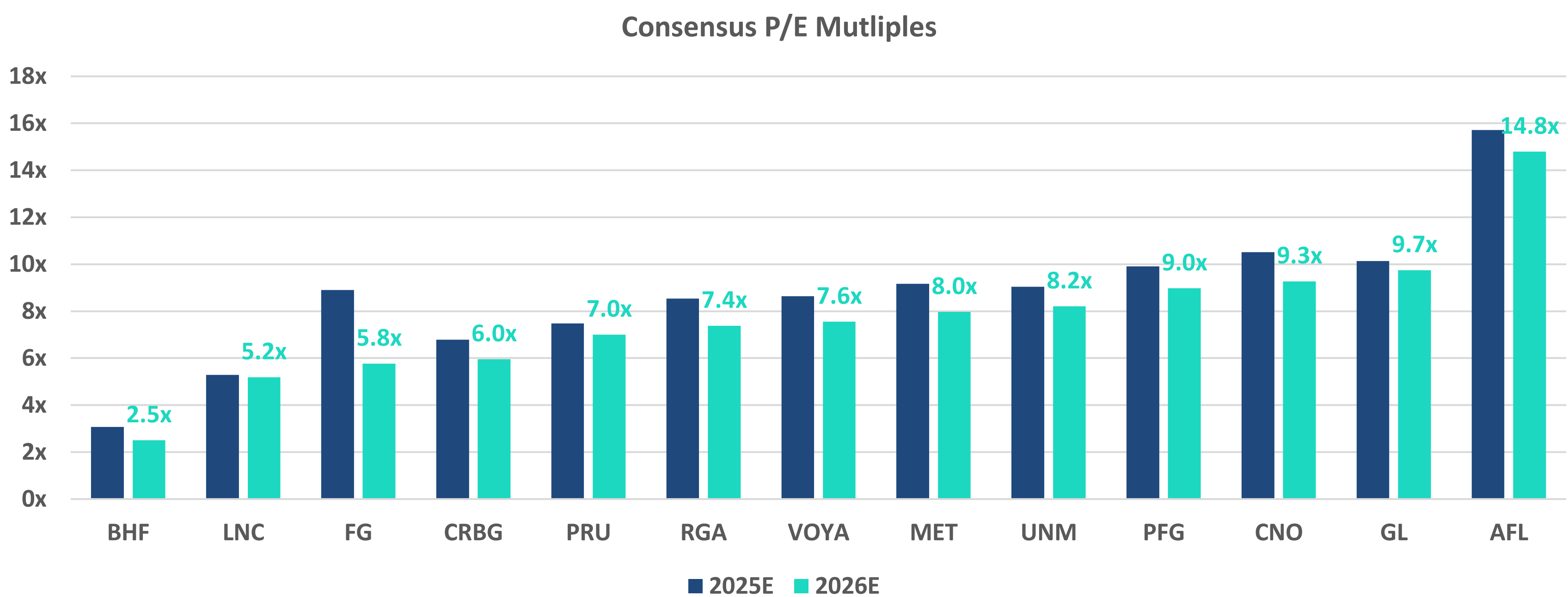
…And There's A Wide Valuation Disparity Among Stocks

Among public companies, multiples vary widely, whether measured on price-to-earnings, price-to-book, or price-to-free cash flow

➢ On consensus 2025 EPS, BHF trades at a P/E of 3x, while AFL is 16x



 Source: Bloomberg, Autonomous Research; as of 10/13/25

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The Sector Presents Opportunities and Challenges

Some attractive opportunities…

- Aging U.S. population with significant wealth and need for guaranteed lifetime income as well as additional accumulation products
- Life insurance ownership levels in the U.S. are below other developed countries. Protection gap is particularly notable in middle/lower income groups
- The direct-to-consumer sales evolution remains in its infancy

…but also a lot of challenges

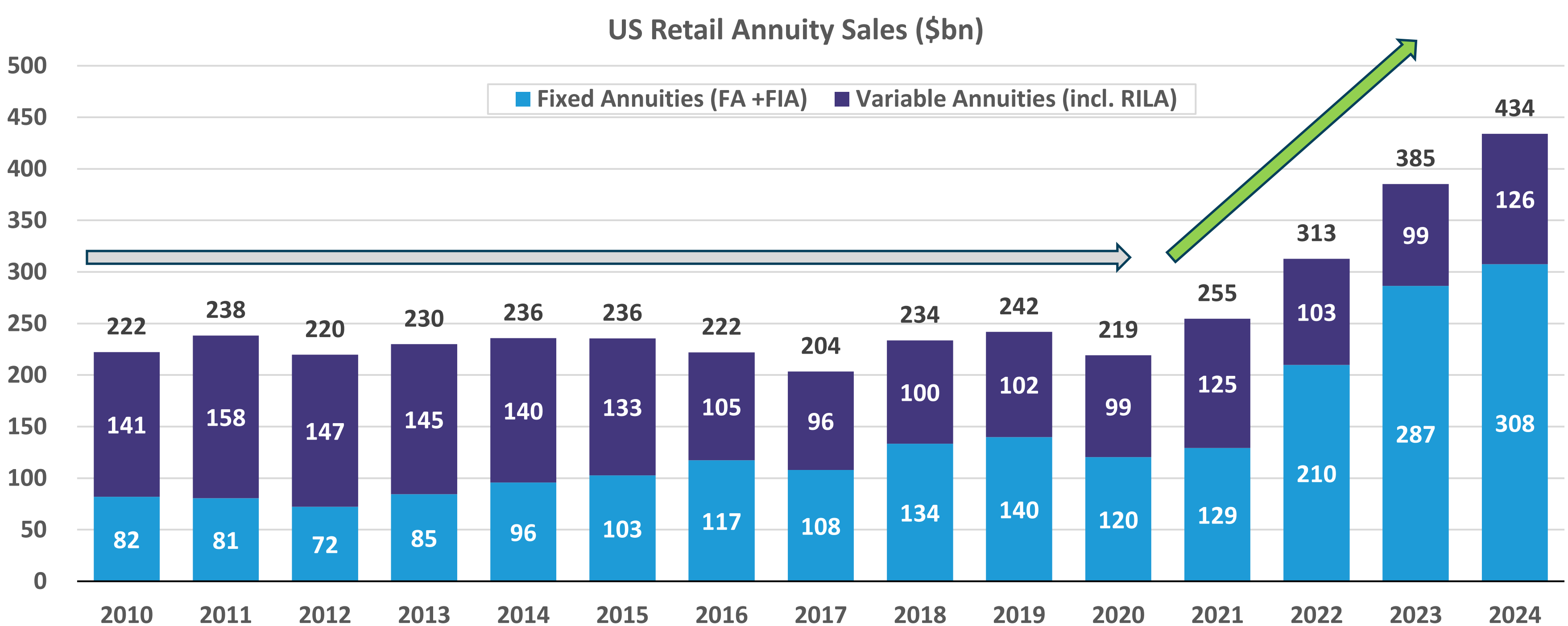
- Life insurance products are "sold not bought"
- The products are often very complicated & confusing
- Customers like guarantees, insurers don't want to offer; low interest rates hurt consumer value
- Potential shortage of distribution as existing insurance agents retire and fewer new recruits enter industry
- The long-duration nature of many liabilities have resulted in a number of negative "surprises" for the industry, tarnishing the reputation of some products

Source: Autonomous Research

Annuity Sales Have Exploded and So Have New Entrants into Life

Higher interest rates and demographics are pushing retirement sales higher

- The number of Americans turning 65 is expected to balloon over the next 25-30 years
- The ability for insurance to gather trillions of dollars of assets has attracted alternative asset managers to the space, such as Apollo's Athene, KKR's Global Atlantic, and many other smaller players



 Source: LIMRA, Autonomous Research

The Sector Takes a Detective

The sector's complicated and technical nature may frustrate some…

- Investors need to contend with multiple accounting regimes (GAAP, Statutory, International Standards)
- Macroeconomic variables play a big role in earnings emergence over time
- Flawed actuarial assumptions have caused company "blow ups", sending stocks south

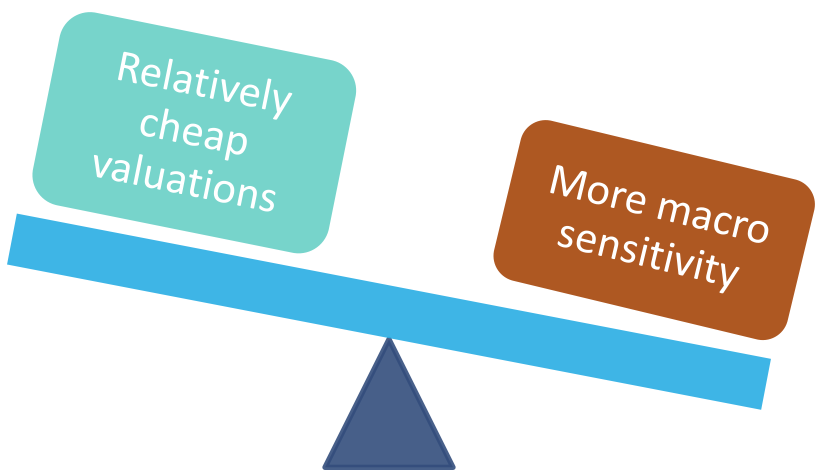
…but also presents opportunities for those willing to dig

- Tons of data to analyze exists for those willing to roll up their sleeves
- Events generally unfold over time, potentially rewarding patient investors

Source: Autonomous Research

US Life Insurance: Pick Your Financials Poison

Life can be a "value" play



Source: Autonomous Research

Top Picks – Be Selective, Idiosyncratic

Life Insurance

- **Unum** for an idiosyncratic remixing story with significant multiple upside
  - Executed a significant reinsurance transaction earlier this year to offload long-term care liabilities
  - Core business is executing solidly, generating high-teens/low 20%s ROE
  - Ample excess capital flexibility allows for significant upside/support from buybacks

P&C Glossary

- **Catastrophe:** A significant loss event that causes $25mm or more in insured property losses and affects a significant number of policyholders and insurers as determined by Verisk's Property Claims Services (PCS) unit.
- **Combined Ratio:** GAAP measure of the percentage of each premium dollar an insurer spends on claims and expenses. A combined ratio below 100% indicates an underwriting profit.
- **Incurred Losses:** The sum of claims paid to policyholders during the current period plus changes to loss reserves from the previous period.
- **Incurred But Not Reported Losses (IBNR):** An estimate of the liability for loss-generating events that have taken place but have not yet been reported to the insurer. The sum of IBNR losses plus incurred losses provides an estimate of the total eventual liabilities for losses during a given period.
- **Loss Ratio:** GAAP measure of the percentage of each premium dollar an insurer spends on claims.
- Loss Reserves: Funds from premiums set aside for the future payment and adjustments of incurred losses on claims that not yet been reported or settled. Outstanding reserves are recorded as an asset with an offsetting liability on an insurer's balance sheet.
- **Reinsurance:** A contractual agreement that transfers some or all of the potential costs of insured loss exposures from policies written by one insurer to another insurer.
- **Reserve Development:** An increase or decrease in incurred claims and claim adjustment expenses as a result of re-estimations of claims reserves. Loss reserve development may be related to prior accident year reserves or current calendar year reserves.
- **Underlying Combined Ratio:** Non-GAAP measure of the percentage of each premium dollar an insurer spends on claims and expenses, excluding the effects of catastrophes and prior year reserve re-estimates. Also referred to as the accident year combined ratio (AYCR).
- **Underlying Loss Ratio:** Non-GAAP measure of the percentage of each premium dollar an insurer spends on claims, excluding the effects of catastrophes and prior year reserve re-estimates. Assesses an insurer's underwriting discipline. Also referred to as the accident year loss ratio (AYLR) or attritional loss ratio.
- **Underwriting:** The process of selecting insureds, pricing coverage, determining insurance policy terms and conditions, and then monitoring the underwriting decisions made.

 Source: Autonomous Research

Life Glossary

- **Annuity:** Basic purpose is to convert a lump-sum payment into a recurring stream of guaranteed retirement income payments for either a defined period or the policyholder's life.
- **Asset leverage:** Invested assets / shareholder's equity. This metric provides a measure of how sensitive an insurer's book value and capital is to investment losses. Historically, companies with higher leverage have tended to underperform in down credit cycles.
- **DAC:** Represents capitalized policy acquisition expenses, primarily the commission paid at the time of the sale. Commissions are amortized over the life of the policy with the amortization rate set at day one as a percent of estimated gross profits of the policy. Estimated gross profits are based on a series of assumptions. Every year, the insurance company "unlocks" these assumptions by truing up actual versus expected experience. This unlocking impacts the amount of DAC remaining on the balance sheet. Certain products do not unlock. We view DAC as a real asset with economic value and include in calculating tangible book value.
- **Defined contribution retirement:** Retirement savings plans that require the participant to make a defined contribution on a periodic basis. The participant controls investment allocation decisions. Also known as a 401(k) plan. Compares to a defined benefit plan or a pension plan where the plan provider makes the investment allocations and provides a defined benefit to the participant.
- **Fixed annuity:** Policyholder's deposit goes into the insurance company's general account and the insurance company promises to pay a fixed crediting rate for a specified time period (typically 3-7 years). The insurer makes money on the spread between the investment yield and the crediting rate. Typically viewed as a safe investment vehicle and are often compared to bank CDs. They tend to look attractive when the yield curve is steep given crediting rates are normally tied to the 5-7 year part of the curve.
- **Fixed indexed annuity:** Policyholder's crediting rate is based on a percentage of the performance of an underlying market index. If the index appreciates, the policyholder receives either a % of the upside or the full upside to a certain cap. If the index declines, the policyholder receives zero credit and their account value remains flat. Low risk way to gain exposure to market appreciation for the policyholder and are relatively low risk to the insurer as they use call options on the index to pay the crediting rate.
- **Reserves:** Liabilities established upon the issuance of an insurance policy and reflect the expected value of future obligations. Backed by financial assets and represent the primary liability on the insurer's balance sheet.
- **Variable annuity:** Policyholder's deposit is invested in mutual funds that the policyholder has discretion over for allocation. The account value goes up / down with the investment performance of the funds and in a vanilla form, has no principal protection. The insurance company charges a fee that is a % of account value. Guarantees offered by the insurance company increase the product's attraction to consumers but carry additional risk to the insurance company.

Source: Autonomous Research

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Credit

Jesse Rosenthal

Jesse Rosenthal

US Credit, Senior Analyst

Jesse joined Autonomous in 2025 as Senior Analyst covering financials credit with a specific focus on the banking sector. Jesse has over 15 years of experience in publishing credit research across the ratings and capital structure spectrums, having most recently led the U.S. Financials team at CreditSights. Jesse holds a BA in Economics from Wesleyan University.

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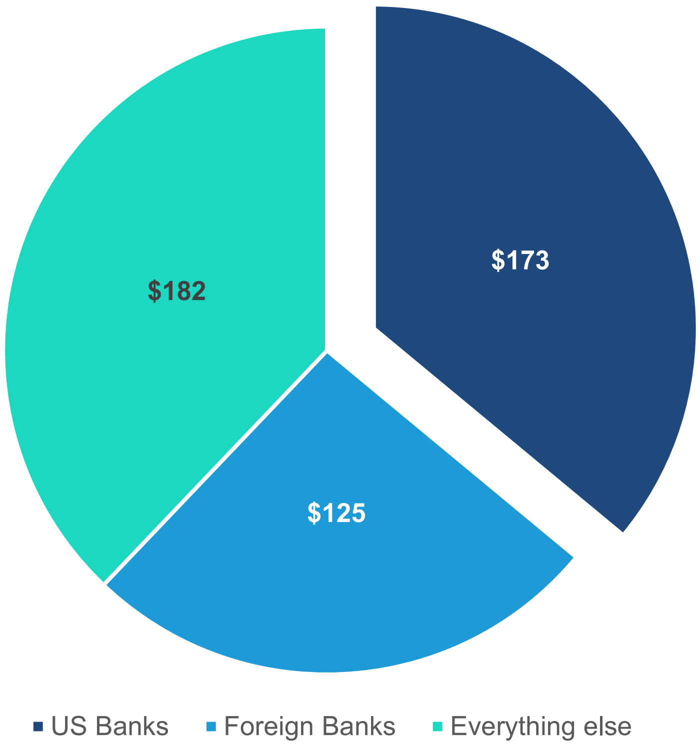
Credit – Bank Preferreds

Jesse Rosenthal

Market Stats

US Banks nearly 40% of the ~$480 bn USD preferred market



Top 10 Issuers

Issuer	Amt. Out ($ bn)
Bank of America	**$26.8**
JPMorgan	**20.0**
Citigroup	**19.6**
Fairfax Financial	19.3
Wells Fargo	**17.4**
HSBC	16.3
Goldman Sachs	**14.8**
UBS	14.8
BNP	14.3
AT&T	13.0

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Source: Autonomous Research, Bloomberg

Preferreds: Role in Bank Capital Structures

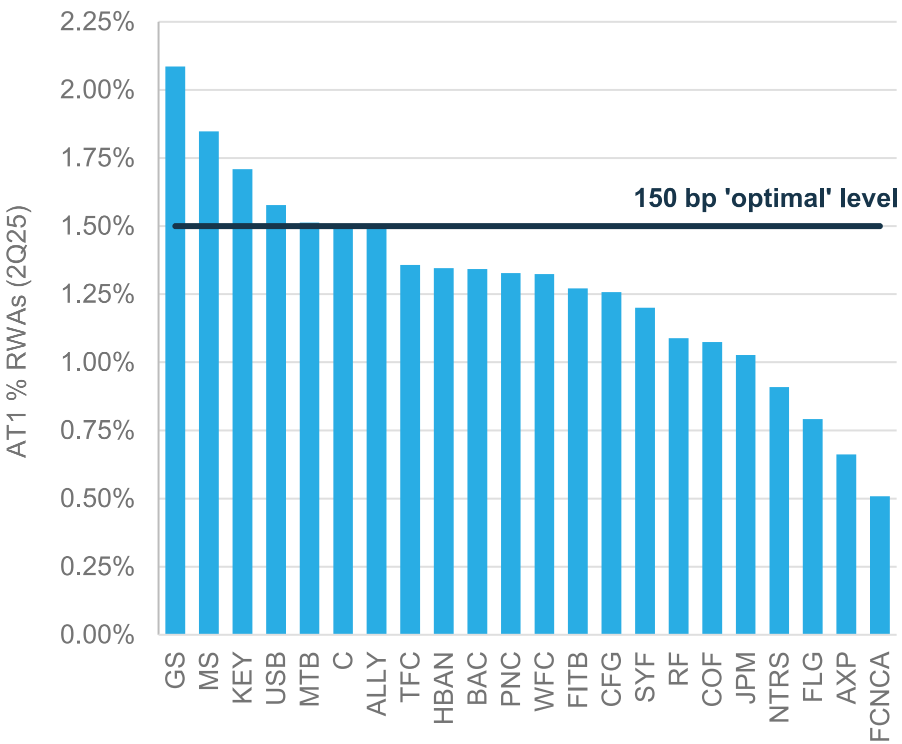
Meets a regulatory need

- Banks are subject to an array of capital requirements using Tier 1 capital as the numerator
- Preferreds are the only type of Tier 1 qualifying capital (besides common), often called Additional Tier 1 capital or 'AT1'
- The Tier 1 capital requirement is set at 150 bp on top of CET1 for all banks
    - A perfectly optimized capital structure—utilizing the least possible amount of common equity—would have AT1s at 1.5% of risk-weighted assets*

Capital Treatment	Instrument
Total Loss Absorbing Capacity (TLAC)	Senior unsecured bonds
Tier 2 capital	Subordinated debt
Tier 1 capital	**Preferred stock**
Common Equity Tier 1 capital	Common stock

*Source: Autonomous Research. *assuming risk-based capital is the binding constraint*

Current AT1 Positions Mostly Well-Below Allowable Amount



Very few banks are close to 'optimal'

- GS and MS more managing toward Supplementary Leverage Ratio (SLR) than risk-based capital
- The Basel III endgame proposed in July 2023 would have increased capital requirements by ~19% via higher RWAs
- Banks responded by hoarding capital in preparation for the denominator increase
- Getting ahead of the changes meant *current* excess CET1 positions ballooned
- If capital stacks are just going to be suboptimal for a while due to 'pre-funding' Basel III, why not save some money on preferred dividends?

Source: Autonomous Research, S&P Capital IQ Pro, FFIEC

Preferred Characteristics and How That Translates to the Market

Requirements for regulatory treatment

- Perpetual – cannot have a stated maturity date
- Discretionary dividends– issuers must be able to skip dividend payments
- Non-cumulative dividends – if issuers skip payment, missed dividends do *not* accrue
- Non-call period minimum – must have at least 5 years until the first call date when issued
- No step-ups – reset rates cannot be structured to incentivize an issuer call
- Structured as preferred *stock:*
    - Banks pay preferred dividends on an after-tax basis
    - Investors receive Qualified Dividend Income (QDI)

Market characteristics

- Issued as both fixed-rate and variable-rate instruments
- $25 par and $1000 par, targeting retail and institutional markets, respectively
- Typically issued with a 5Y or 10Y non-call period; issuers can usually call at each ensuing dividend date
- Most variable-rate preferreds reset off 5Y Treasuries, once every 5 years
    - Smaller portion SOFR-based
- Prices off a combination of factors:
    - Spread over senior
    - Upfront dividend rate
    - Backend spread (set by upfront rate)

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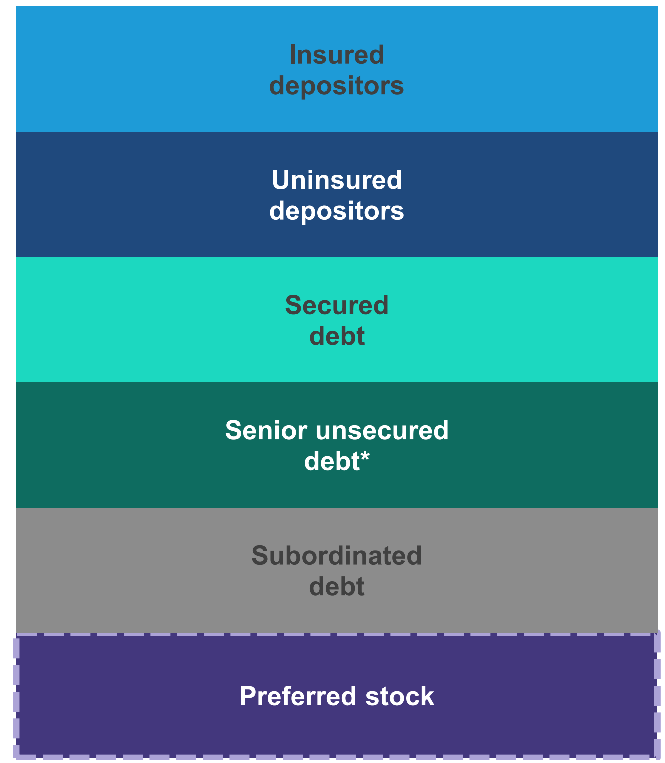
Source: Autonomous Research

Main Risks for Investors

Risk Factors

- **Structural subordination**
  - Deeply subordinated and sitting right above common equity in the capital structure
  - Recovery chances are typically slim to none
  - Reflected in credit ratings typically ~3 notches lower than senior unsecured
- **Deferral risk**
  - Issuers have the ability to skip paying the preferreds in times of stress
  - Non-cumulative requirement for Tier 1 lowers the price floor
- **Risk asset correlation**
  - Lower ratings and inherent negative convexity contribute to a high correlation with risk assets in sell-offs
  - Preferreds historically more correlated with equities than bank bonds



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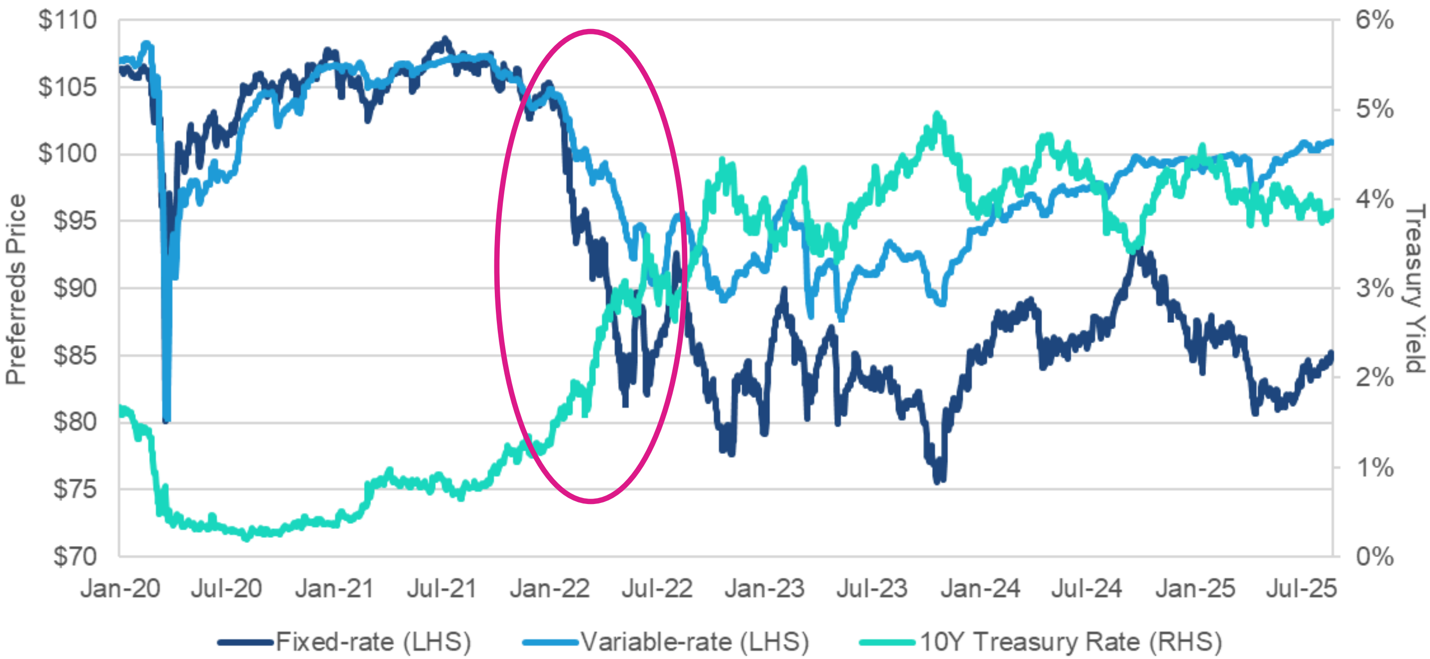
*Source: Autonomous Research *pari passu with other general unsecured claims*

Pay Attention to Extension

Extension risk: banks choosing not to redeem a preferred after the initial non-call period

- Call calculus is largely around refinancing economics—can the bank issue a new preferred at a lower rate than the one it would be redeeming?
- Issuers and investors are on either side of the call option: banks will extend when investors want to be extended, and call when investors want to be extended
- Perpetual nature can mean large price swings when extension risk spikes—instead of trading like investors will get their money back at the call date, now it trades like investors will *never* get their money back



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Source: Autonomous Research, Bloomberg

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Capital Markets, Alts & Asset Managers

Christian Bolu & Patrick Davitt

Christian Bolu

US Capital Markets & Rating Agencies,
Senior Analyst

Prior to transferring to Autonomous Research, Christian covered US capital markets at Bernstein since 2017. He previously worked in Credit Suisse's Investment Bank strategy department and as a senior analyst in Credit Suisse's Equity Research division.

Patrick Davitt

US Asset Managers & Alts,
Senior Analyst

Patrick joined Autonomous in 2012 from Bank of America Merrill Lynch, where he spent nine years covering broker-dealers and alternative asset managers. Prior to that, he spent two years in Merrill Lynch's Investment Banking analyst program. Patrick holds a BBA in Finance & Accounting from Southern Methodist University's Cox School of Business.

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Brokers

Christian Bolu

Brokers – Session Overview

- Capital Markets Overview
- Institutional Brokers Business Mix
- Institutional Brokers Valuation
- Wealth Management Business Mix
- Wealth Management Valuation
- What We Like in the Sector

Capital Markets Comp Sheet

	Ticker	Mkt Cap ($bn)	Rating	Price Target	Upside to PT	Price / Earnings 2026	Price / Earnings 2027	Price / BV	Price / TBV	Price / Sales 2026	Price / Sales 2027	Div Yield
Institutional Brokers												
Goldman Sachs	GS	$245	Outperform	$960	24%	14.6x	13.0x	2.2x	2.3x	4.1x	3.9x	2.1%
Morgan Stanley	MS	$249	Neutral	$170	9%	16.0x	14.4x	2.5x	3.2x	3.5x	3.3x	2.6%
Retail Brokers												
LPL Financial	LPLA	$26	Neutral	$372	14%	14.7x	11.8x	-	-	1.3x	1.2x	0.4%
Charles Schwab	SCHW	$175	Underperform	$88	-6%	17.3x	14.7x	-	-	6.8x	6.2x	1.2%
Raymond James Financial	RJF	$33	Neutral	$182	10%	14.0x	12.5x	-	-	2.1x	2.0x	1.3%
Neo Brokers												
Robinhood	HOOD	$135	Outperform	$170	12%	70.0x	60.8x	15.2x	16.2x	26.6x	23.5x	-
Coinbase Global	COIN	$104	Underperform	$350	-10%	55.5x	48.1x	8.3x	9.2x	12.2x	11.6x	-
Financial Exchanges												
Cboe Global Markets	CBOE	$25	Neutral	$268	11%	23.4x	21.9x	-	-	10.4x	10.0x	1.1%
CME Group	CME	$97	Outperform	$322	21%	23.4x	22.2x	-	-	14.4x	13.6x	4.3%
Intercontinental Exchange	ICE	$91	Outperform	$197	24%	20.9x	18.8x	-	-	8.7x	8.2x	1.3%
Nasdaq	NDAQ	$52	Outperform	$108	20%	24.5x	21.9x	-	-	9.5x	8.8x	1.2%
MarketAxess	MKTX	$6	Neutral	$182	6%	21.0x	18.4x	-	-	6.9x	6.3x	1.8%
Tradeweb	TW	$24	Outperform	$127	18%	28.6x	25.9x	-	-	10.4x	9.5x	0.5%
Information Services												
Moody's	MCO	$88	Neutral	$502	2%	31.4x	27.9x	-	-	10.8x	10.0x	0.8%
S&P Global	SPGI	$152	Neutral	$562	16%	25.3x	22.5x	-	-	9.4x	8.7x	0.9%
	Total	**$1,505**		**Average**	**12%**							

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Source: Bloomberg, Autonomous estimates and analysis. As at 10/9/2025.

US Capital Markets Value Chain

- Investment Banks

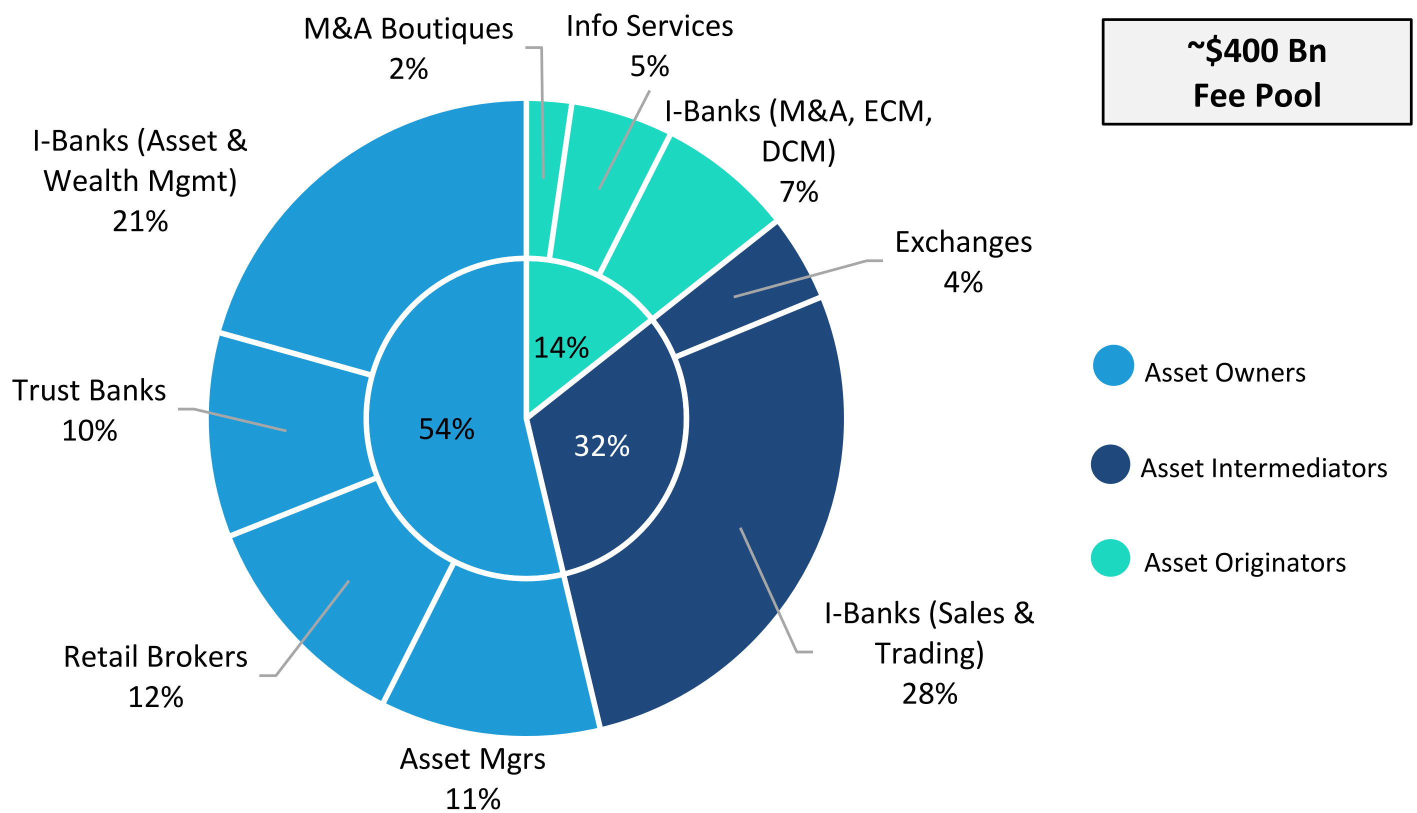
- M&A Boutiques
- Info. Services (incl. Rating Agencies)

- Exchanges
- Market Makers

- Financial Data Firms
- Asset/Wealth Managers

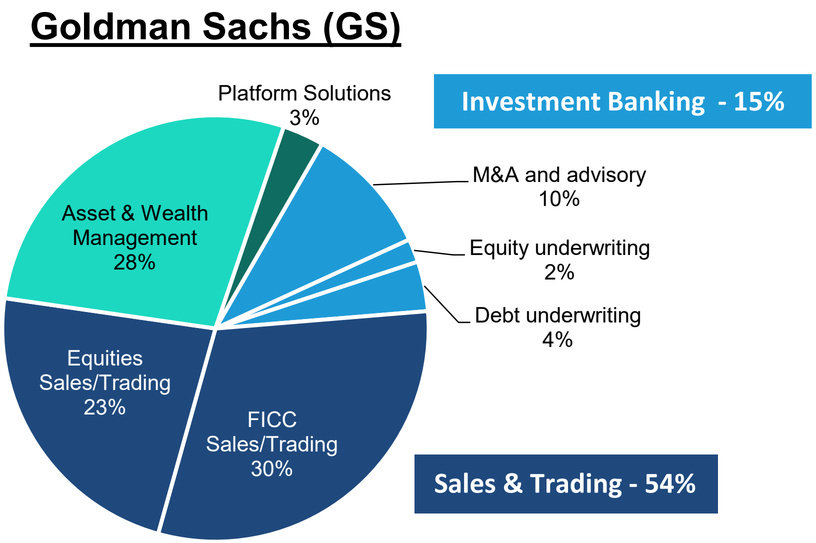
Originators ⟷ Intermediators ⟷ Owners

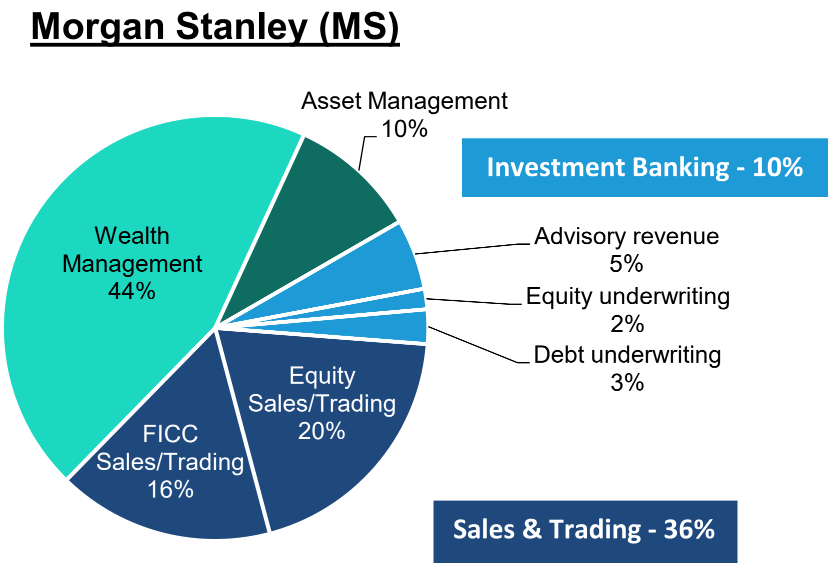
US Capital Markets Revenues



Source: Bloomberg, Autonomous estimates and analysis. Based on data from publicly available companies.

Institutional Brokers – Revenue Mix





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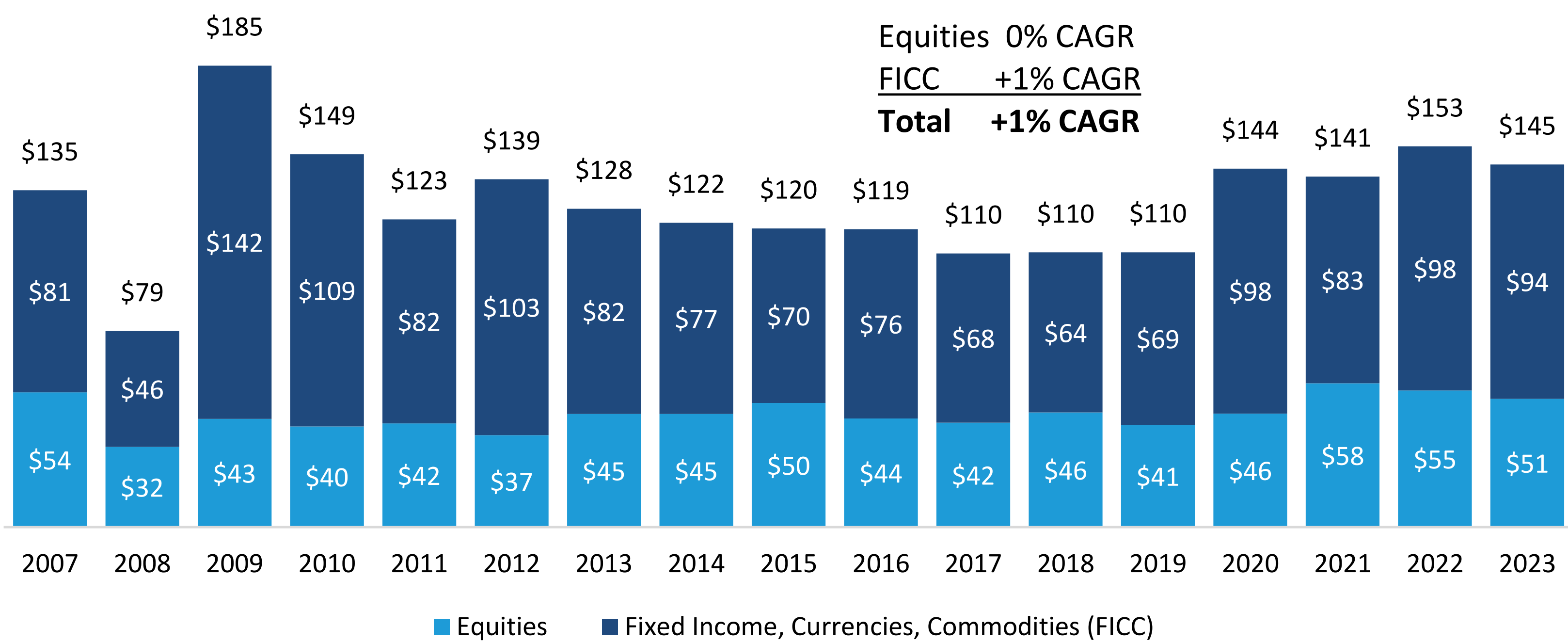
Source: Company reports, Autonomous.

Sales & Trading – Where Are We in the Cycle?

- ***Sales & Trading at investment banks is the largest business in capital markets***
- ***Post 2009 GFC Fee pools were stagnant owing to 1) Regulation causing firms to rethink risk taking, 2) Lower volatility at times (mostly ZIRP) and 3) market share loss to pure-play exchanges***
- ***Post COVID fee pools have recovered owing to 1) Increase in debt outstanding 2) Higher interest rates / volatility 3) Easing of regulatory burden***



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Source: Coalition, Autonomous.

Sales & Trading – Global I-Banks Are in Growth Mode

Global I-Banks Balance Sheet (Y/Y)

In 2020 all Global Investment Banks grew their balance sheet
(first time this has happened since 2006)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Goldman Sachs	19%	34%	-21%	-4%	7%	1%	2%	-3%	-6%	1%	0%	7%	2%	7%	17%	26%	-2%	14%	9%
Morgan Stanley	25%	-7%	-35%	14%	5%	-7%	4%	7%	-4%	-2%	3%	5%	0%	5%	25%	6%	-1%	1%	13%
Bank of America	13%	18%	6%	23%	2%	-6%	4%	-5%	0%	2%	2%	4%	3%	3%	16%	12%	-4%	4%	8%
Citigroup	26%	16%	-11%	-4%	3%	-2%	0%	1%	-2%	-6%	4%	3%	4%	2%	16%	1%	5%	0%	9%
JPMorgan Chase	13%	16%	39%	-7%	4%	7%	4%	2%	7%	-9%	6%	2%	4%	2%	26%	11%	-2%	6%	17%
Barclays	8%	23%	67%	-33%	8%	7%	-5%	-11%	1%	-18%	8%	-7%	0%	1%	18%	3%	9%	-2%	8%
BNP Paribas	14%	18%	22%	-1%	-3%	-2%	-3%	-5%	15%	-4%	4%	-6%	5%	6%	15%	6%	1%	-3%	10%
Deutsche Bank	60%	21%	14%	-32%	27%	14%	-7%	-20%	6%	-5%	-2%	-7%	-9%	-4%	2%	0%	1%	-2%	7%
HSBC Holdings	24%	27%	7%	-6%	4%	4%	5%	-1%	-1%	-9%	-1%	6%	1%	6%	10%	-1%	0%	3%	6%
RBS	12%	111%	30%	-29%	-14%	4%	-13%	-22%	2%	-22%	-2%	-8%	-6%	4%	11%	-2%	-8%	-4%	6%
Société Générale	15%	12%	5%	-9%	11%	4%	6%	-3%	8%	2%	2%	-6%	3%	4%	6%	1%	1%	5%	0%
UBS	23%	5%	-6%	-32%	9%	8%	-9%	-17%	-6%	-12%	-2%	2%	2%	1%	16%	-1%	-1%	55%	-3%
Total	**19%**	**21%**	**-1%**	**-12%**	**4%**	**3%**	**-1%**	**-6%**	**2%**	**-7%**	**2%**	**0%**	**1%**	**3%**	**15%**	**5%**	**-1%**	**3%**	**11%**
o/w US Banks	**20%**	**17%**	**-23%**	**3%**	**4%**	**-1%**	**3%**	**0%**	**0%**	**-4%**	**3%**	**3%**	**3%**	**3%**	**20%**	**10%**	**-1%**	**5%**	**12%**
o/w EU Banks	**18%**	**24%**	**15%**	**-20%**	**4%**	**5%**	**-4%**	**-10%**	**4%**	**-9%**	**1%**	**-3%**	**0%**	**3%**	**10%**	**1%**	**-1%**	**1%**	**9%**

Source: S&P Cap IQ, Autonomous.

Sales & Trading Overview

- ***Sales & Trading – market making and financing activities***
  - ***Drivers – volumes, volatility, spreads***

Sales & Trading	Products	Rev ($Bn)	%	3-Yr CAGR
Fixed Income, Currencies, & Commodities (FICC)				
G10 Rates	Government Bonds; Swaps; Vanilla Options; Short Term Interest Rates/Money Markets; Repurchase Agreements; Exotic & Structured; Municipal Finance (Primary/Secondary)	$20	24%	1%
G10 FX	Spot; Forward; Options	$9	10%	2%
Macro		**$28**	**34%**	**1%**
Credit	Investment Grade; Loan Trading; High Yield and Distressed; Exotic & Structured; Emerging Market Credit	$17	20%	17%
Securitisation	Asset Backed Securities; Commerical Mortgage Backed Securities; Residential Mortgage Backed Securities; CDOs	$17	20%	17%
Spread		**$34**	**41%**	**17%**
EM Macro	Rates; Foreign Exchange	$14	16%	2%
Commodities	Power & Gas; Metals; Coal; Agriculture	$8	9%	29%
EM & Commodities		**$21**	**26%**	**9%**
Equities				
Cash Equities	Direct Market Access, Program Trading; Shares & Block Trades	$11	19%	7%
Equity Derivatives	Convertiables (Secondary); Flow Derivatives; Corproate Derivatives; Structured Products	$23	39%	16%
Prime Services	Synthetic Financing; Prime Brokerage	$20	35%	3%
Futures & Options	Equities; Fixed Income	$4	6%	-3%

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Source: Coalition, Autonomous analysis. Based on 2021 revenue

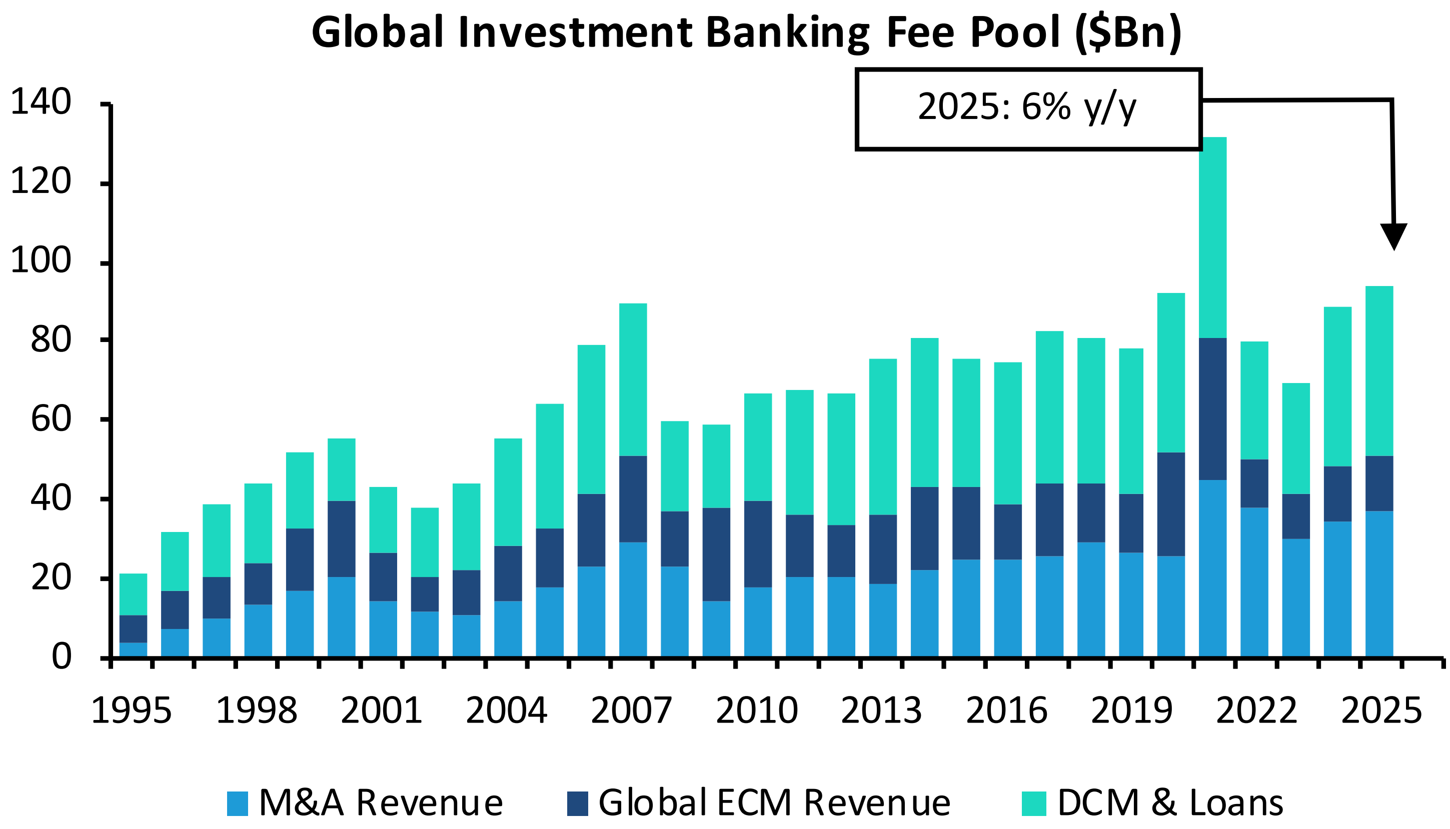
Investment Banking Overview

- ***Investment Banking – Advisory (M&A), Equity Capital Markets (ECM), Debt Capital Markets (DCM)***
  - ***M&A Drivers – CEO confidence, global macroeconomic conditions***
  - ***ECM Drivers – Valuation levels (higher the better), volatility (lower the better)***
  - ***DCM Drivers – Financing needs, interest rates (lower the better), spreads (tighter the better)***

Investment Banking	Products
Advisory	Mergers & Acquisitions (M&A), Restructuring advisory, etc.
Equity Capital Markets (ECM)	Initial Public Offerings (IPOs), Follow-on Offerings, Rights Issues, Convertibles (Primary)
Debt Capital Markets (DCM)	New Bond issuance, Loans, Securitized Products

Source: Coalition, Autonomous.

Investment Banking – Where Are We in the Cycle?



Source: Dealogic, Autonomous.

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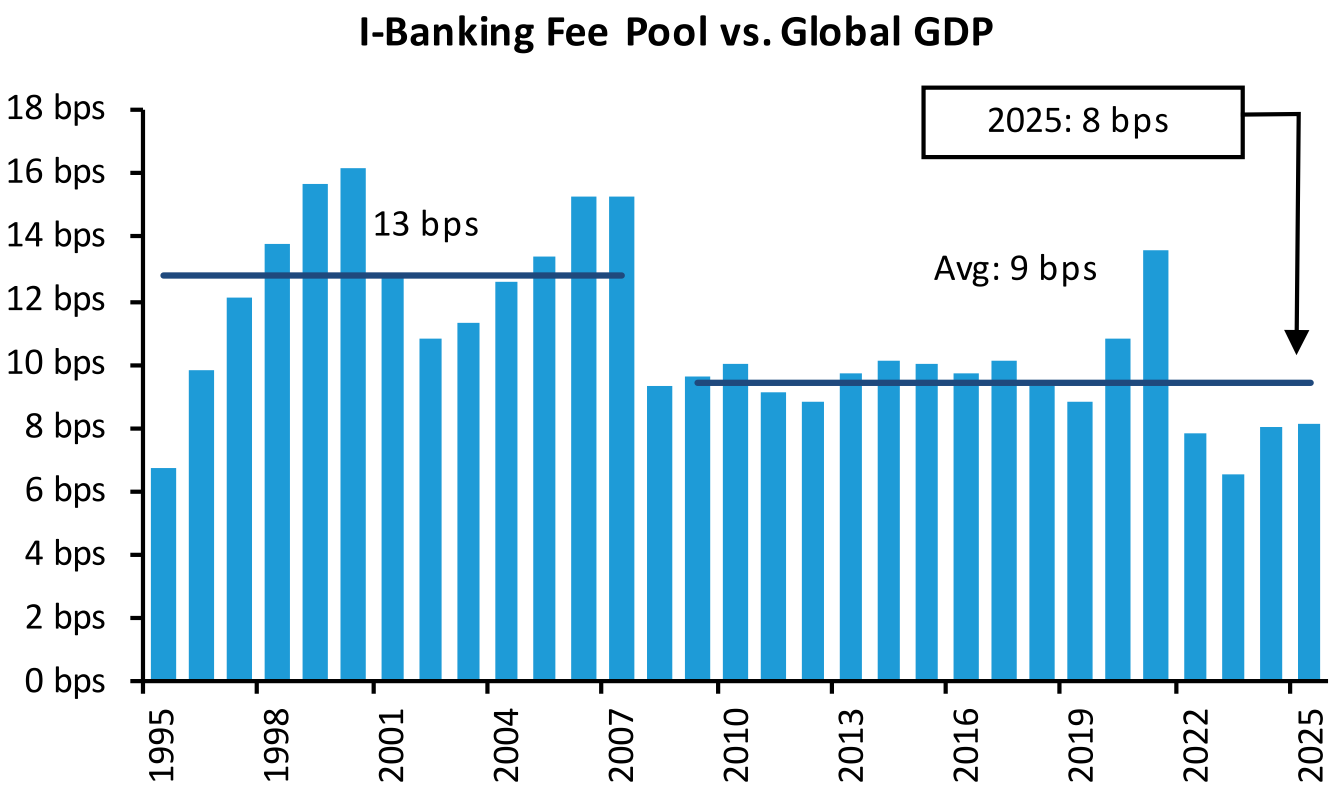
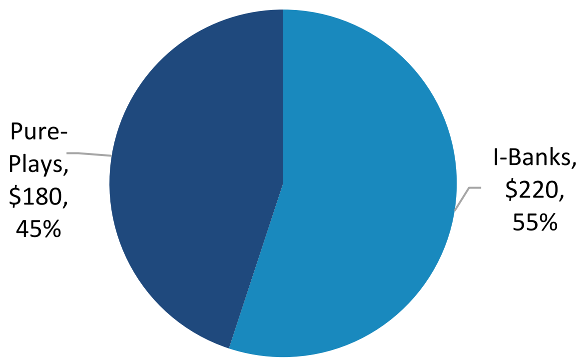
Investment Banking – Where Are We in the Cycle?



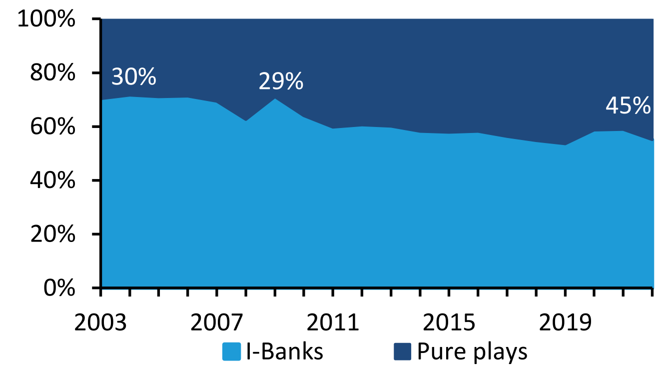
Source: Dealogic, IMF, Autonomous.

Structural Picture – Value Migration

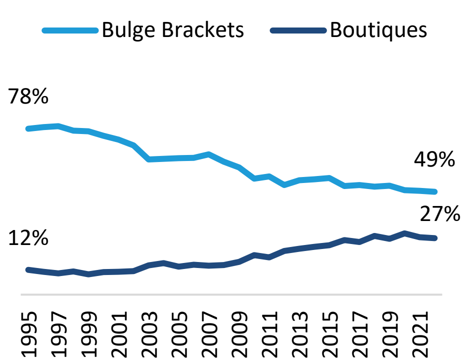
Pure-Plays ~45% of U.S. Capital Markets Revenues
U.S. Capital Markets Revenue Mix, FY 2022, $Bn



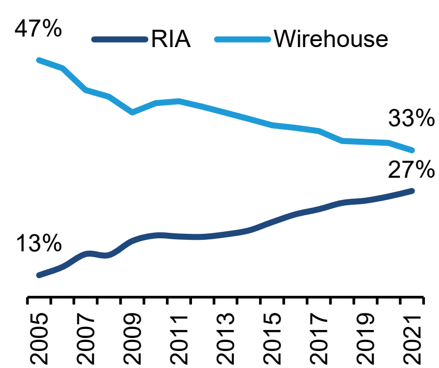
Pure-Plays Have Gained Significant Market Share Over the Last Two Decades
U.S. Capital Markets Revenue Mix, % of Total



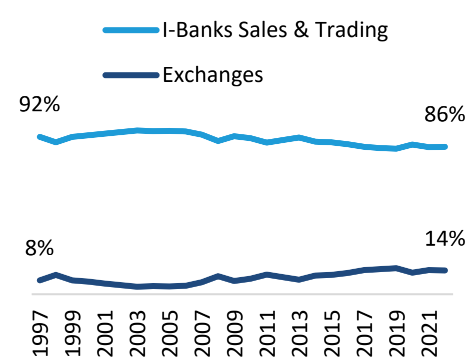
Global I-Banks Have Lost M&A Market Share to Boutiques
M&A Advisory Revenue Share



U.S. Banks Have Lost Wealth Mgmt Share to RIAs
U.S. Wealth Mgmt Client Asset Share



Trading Activity Shifting to Exchanges
Transaction Revenues Share



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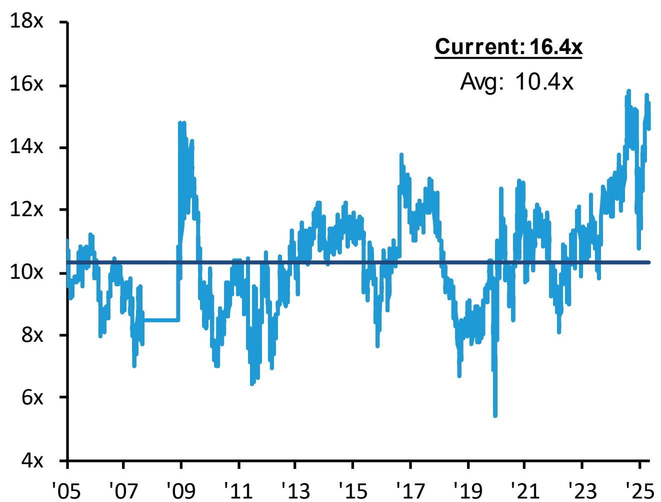
Source: Dealogic, Cerulli, BIS, Bloomberg, Company reports, Autonomous analysis.

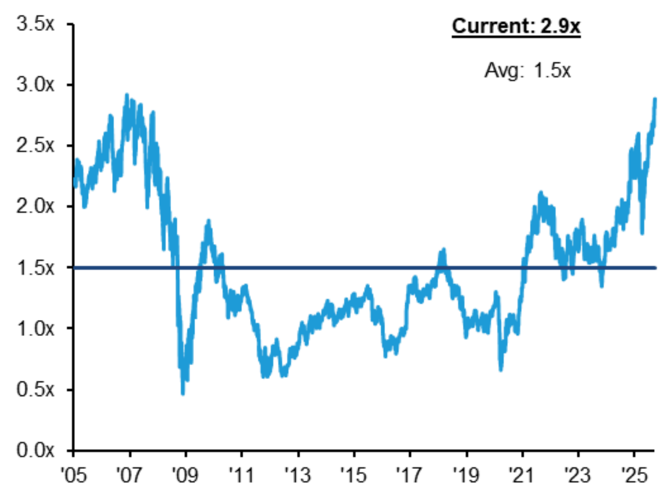
Institutional Brokers - Valuation

- ***Valuation reflects industry optimism - P/E and P/TBV currently at historical highs***

Institutional Brokers– Historical NTM P/E



Institutional Brokers – Historical P/TBV

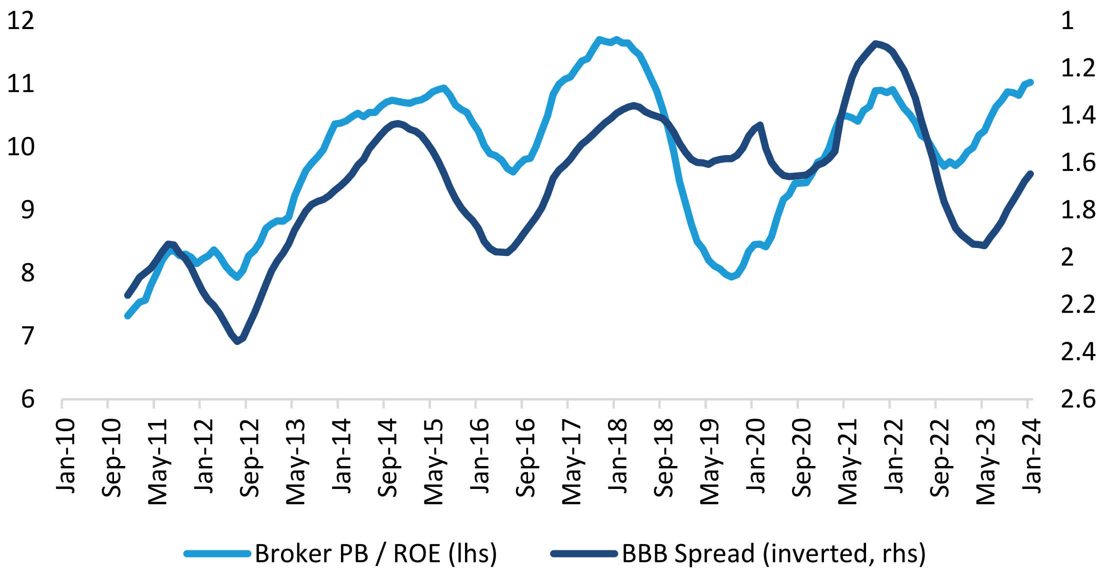


Based on average of GS, MS. Source: Bloomberg, Autonomous.

Institutional Brokers - Valuation

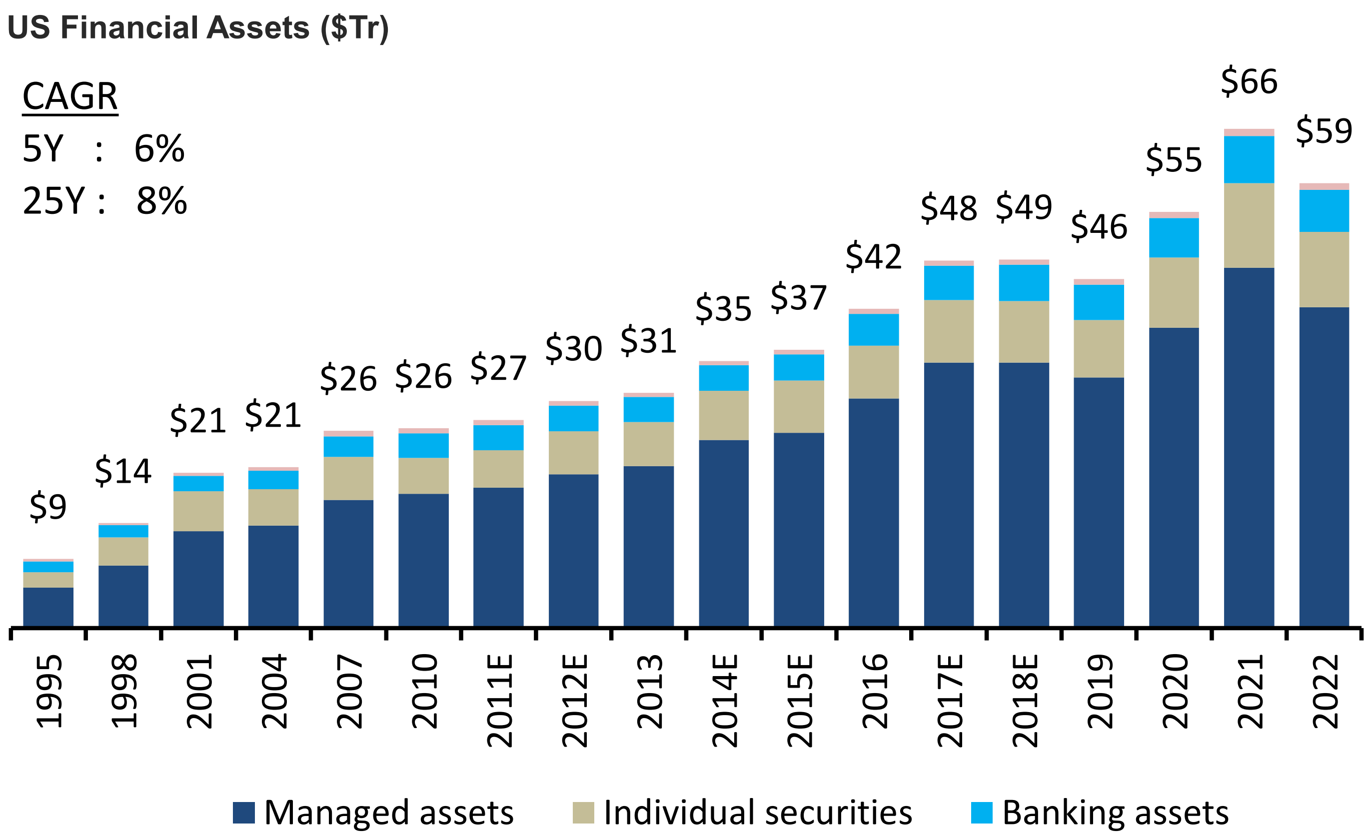
- ***Broker stocks are tightly correlated to credit spreads***

Global Institutional Brokers– P/B-to-ROE vs. US Corporate BBB spreads



Source: Bloomberg, Autonomous.

Retail Brokers – Wealth Management



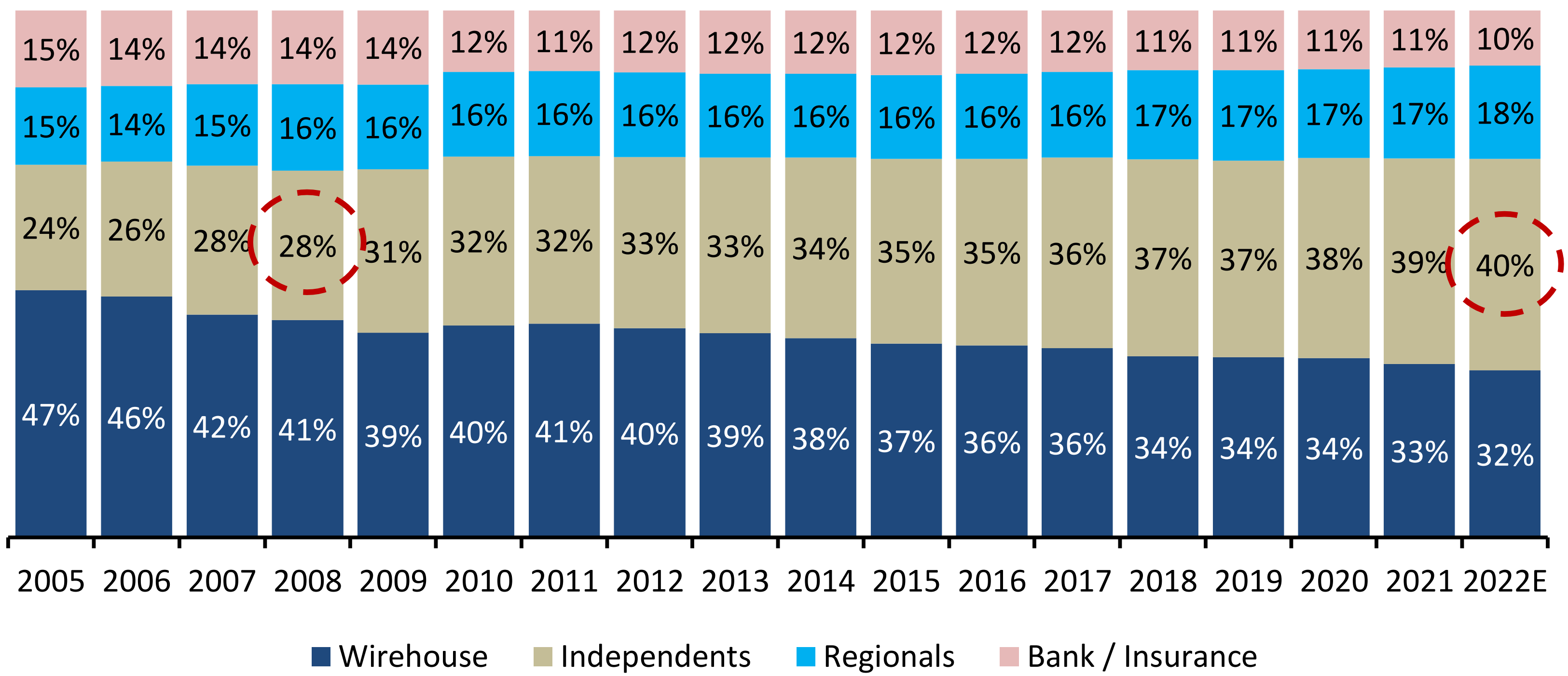
Source: Cerulli Lodestar, Autonomous.

Primary Channels of Investment Advice

Advisor Driven				Direct
Employee		Independent		
Wirehouse	National / Regional Broker/Dealer	Independent Broker/Dealer (IBD)	Registered Investment Advisor (RIA)	Direct
Morgan Stanley Bank of America Merrill Lynch Wells Fargo UBS	**Raymond James** Edward Jones Stifel	**LPL Financial** Commonwealth Financial Cadaret Grant	*Custodians:* **Charles Schwab** Fidelity	**Charles Schwab** Fidelity Robinhood

Source: Autonomous.

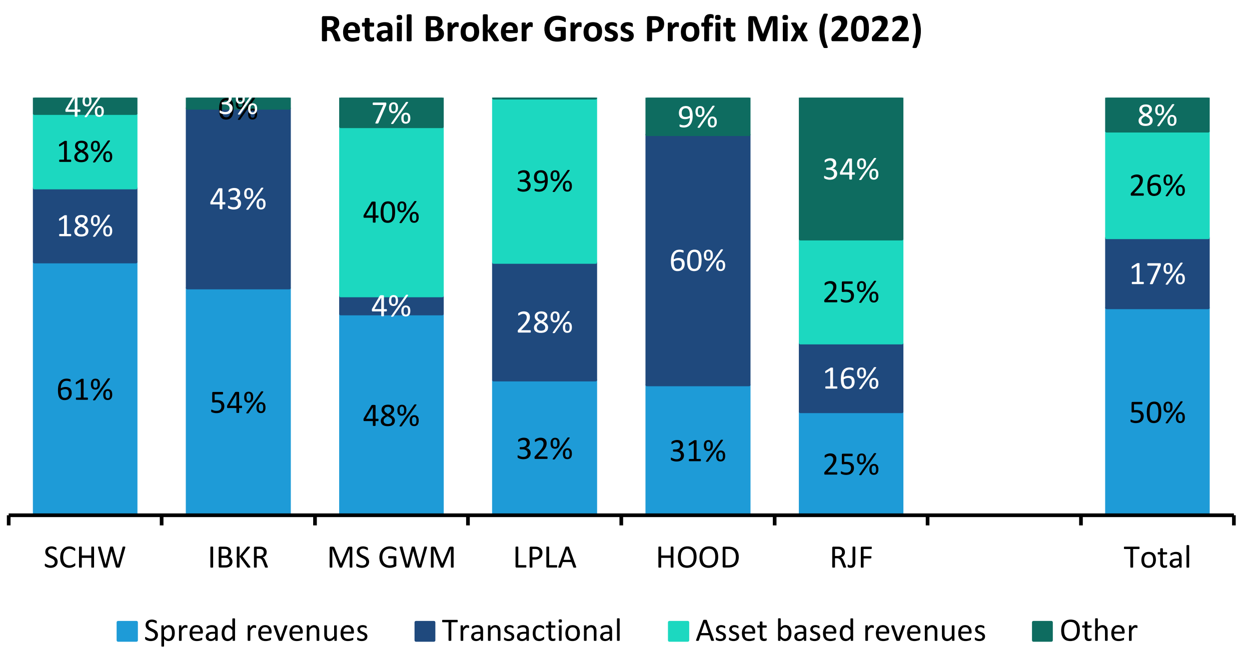
Wealth Management Market Share by Channel



Source: Cerulli Lodestar, Autonomous.

Wealth Management Business Mix

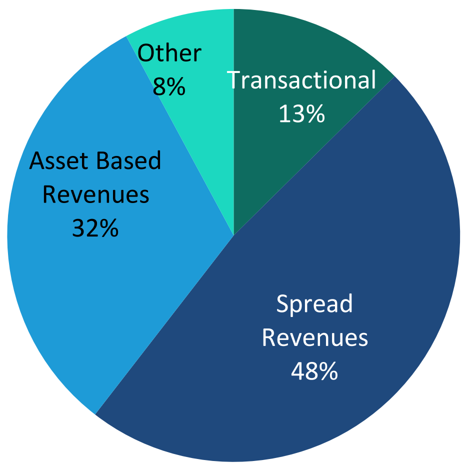
- ***How do wealth managers make money?***
  - ***<u>Spread Revenues</u> – Net Interest Income; fees earned on investing client cash less amount paid***
  - ***<u>Transactional Revenues</u> – Commissions earned when clients trade***
  - ***<u>Asset-Based Fees</u> – Fees earned as percentage of client asses held in managed products***



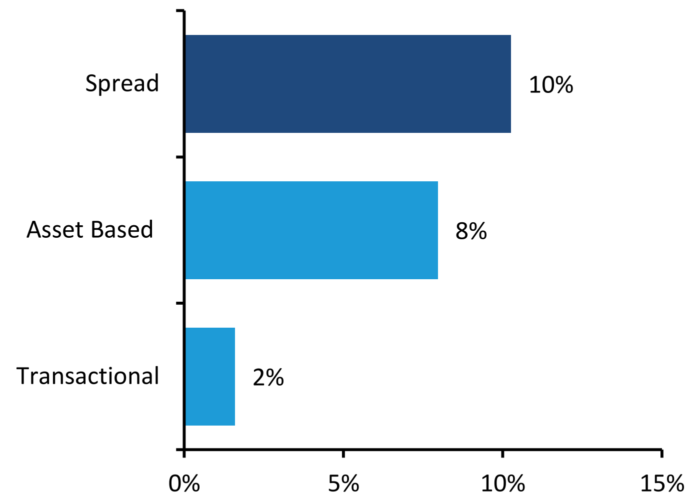
Source: Company filings and Autonomous estimates and analysis. Gross profit represents revenues less advisor payout. MS advisor payout based on Autonomous estimates. Spread revenue include net interest income, money market fee and third-party sweep fees.

Wealth Management Business Mix

US Wealth Managers Revenue Mix (Avg, FY 2022)



US Wealth Managers – 5-Yr Revenue CAGR

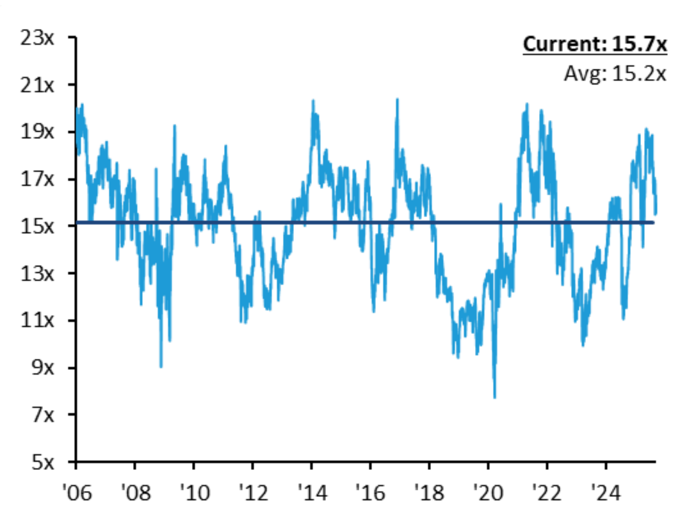


AMTD, ETFC, LPLA, RJF, SCHW, MS GWM. For MS, LPLA & RJF based on gross profit (revenues less advisor payout). Source: Company reports, Autonomous analysis.

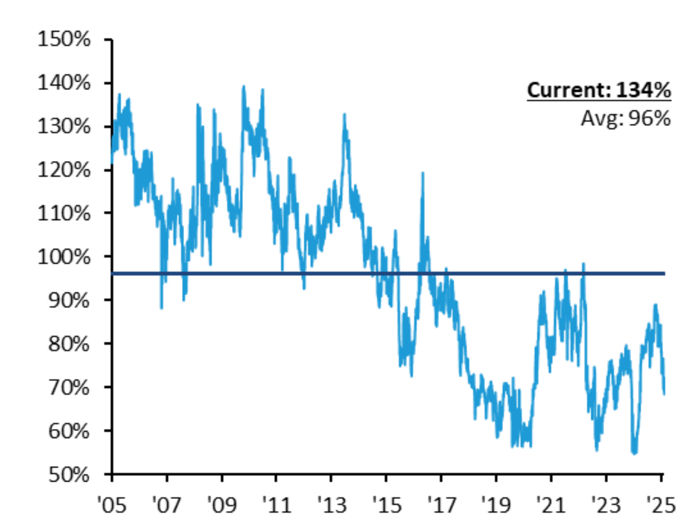
Retail Brokers – Valuation

- ***Valuation reflects mixed industry outlook – rates no longer a tailwind, economic uncertainty***
- ***Relative valuations remain depressed***

US Retail Brokers– Historical NTM P/E



US Retail Brokers – Historical Relative P/E

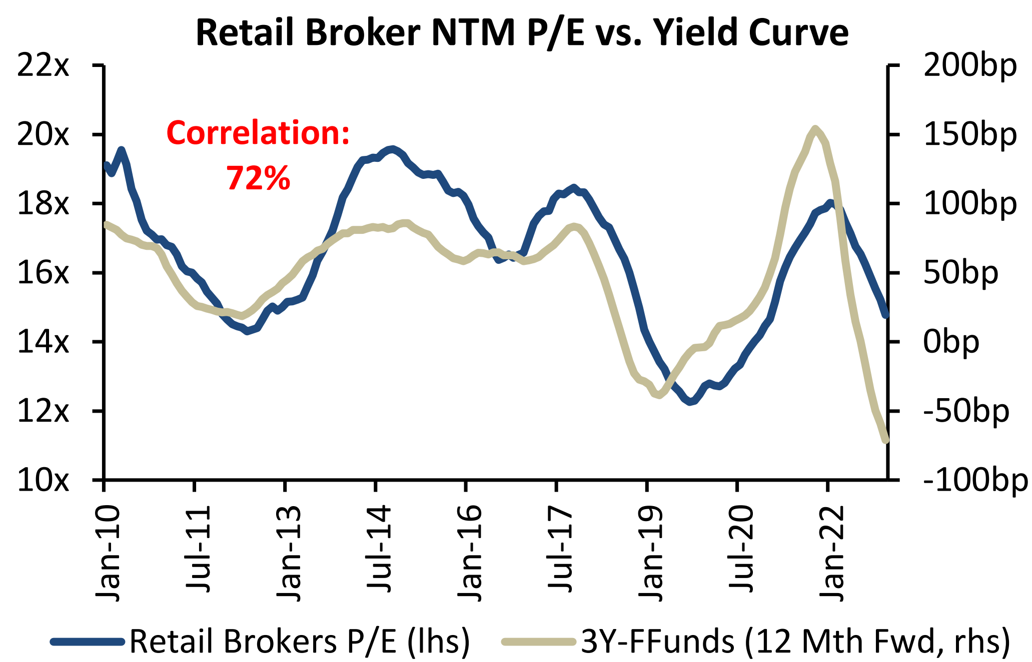


Based on median of LPLA, RJF, SCHW, and SF. Source: Bloomberg, Autonomous.

Retail Brokers – Valuation

- ***Retail broker stocks are tightly correlated to the yield curve***
- ***Yield curve remains inverted, thus retail broker multiple expansion unlikely***

Retail Brokers – P/E vs. Yield Curve



Based on median of LPLA, RJF, SCHW, and SF. Source: Bloomberg, Autonomous.

Brokers / Retail Brokers – What We Like in the Sector?

OUTPERFORM

Goldman Sachs (GS) – Playing the capital markets recovery

We are Outperform rated on GS shares. We believe GS is best positioned to benefit from a pickup in capital markets activity from cycle lows, as well as meaningful operating leverage following a period of strategic narrowing (disposal of non-core businesses / historical principal investments).

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Asset Managers

Patrick Davitt

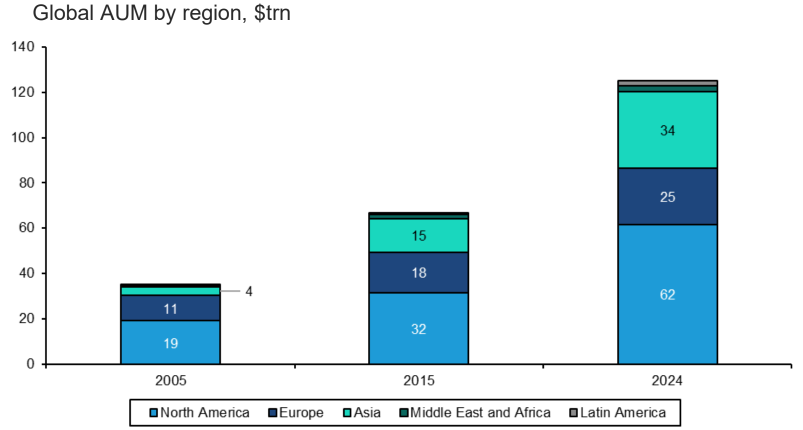
Asset Manager Coverage

	Ticker	Rating	Price	Price Target	Price Return	cap ($bn)	AUM ($bn)	Market cap % of 2Q25 AUM	2025E P/E	2026E P/E
Traditional Asset Managers										
AMG	AMG	UP	231	220	-4.7%	$6.6	$771	0.9%	9.4x	8.0x
BlackRock	BLK	OP	1,132	1,260	11.3%	$184.8	$12,528	1.5%	23.7x	21.2x
Federated Hermes	FHI	OP	51	56	9.7%	$4.0	$846	0.5%	11.0x	10.5x
Franklin Resources	BEN	UP	23	20	-11.8%	$11.8	$1,612	0.7%	10.7x	9.1x
Invesco	IVZ	N	22	22	-2.1%	$10.0	$2,001	0.5%	12.4x	9.5x
Janus Henderson	JHG	UP	42	40	-4.4%	$6.5	$457	1.4%	11.2x	9.6x
T. Rowe Price	TROW	UP	101	89	-12.3%	$22.3	$1,677	1.3%	10.8x	10.1x
Alternative Asset Managers										
Apollo	APO	OP	118	170	43.8%	$68.0	$840	8.1%	15.3x	12.9x
Ares	ARES	OP	141	177	25.6%	$46.0	$572	8.0%	28.1x	22.1x
Blackstone	BX	UP	154	131	-14.8%	$189.9	$1,211	15.7%	30.6x	23.6x
Blue Owl	OWL	OP	15	25	61.9%	$23.9	$284	8.4%	18.6x	15.1x
Carlyle Group	CG	OP	56	67	19.4%	$20.3	$465	4.4%	13.6x	11.6x
KKR & Co.	KKR	N	118	138	17.1%	$105.0	$686	15.3%	22.9x	17.4x

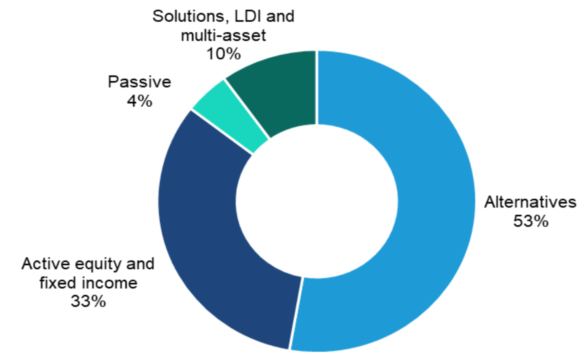
Source: Bloomberg, Autonomous Analysis. Prices as of 10/10/25.

Sector Overview

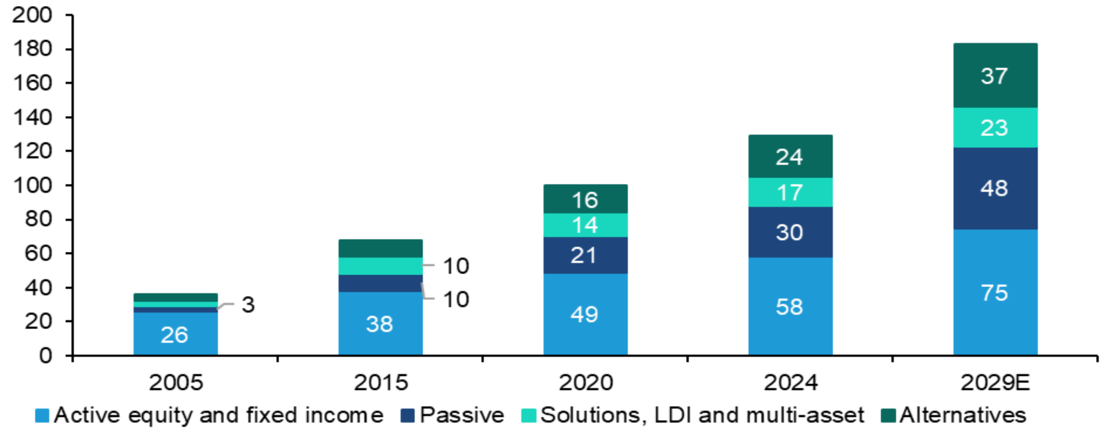
N. America continues to account for a plurality of global AUM



2024 global asset management revenues by asset class



Global AUM ($trn) by asset class – there is a shift to passive and alternatives

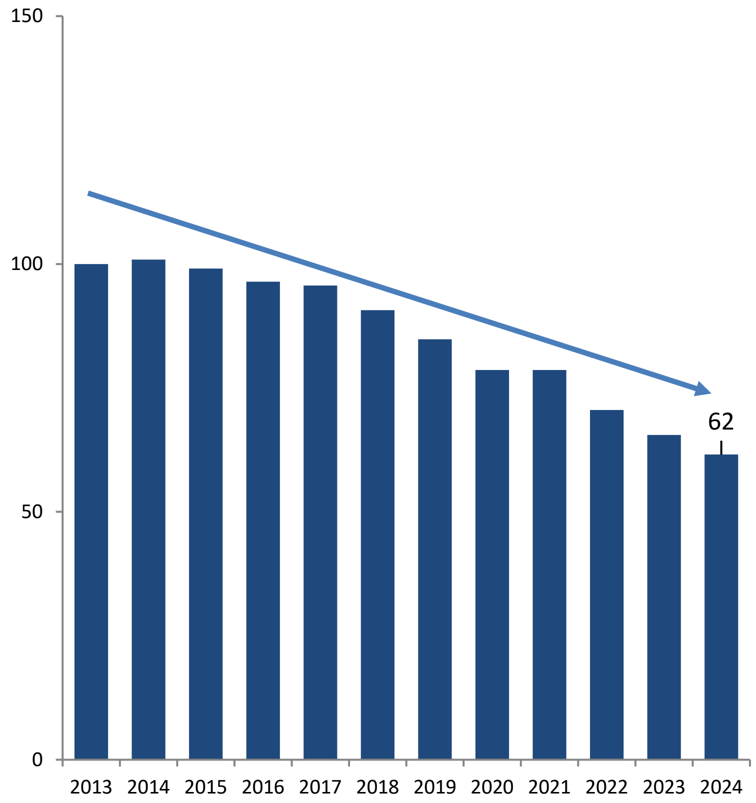


Source: BCG, Autonomous Analysis

A Tale of Two Cities: Traditional Malaise vs. Alternatives Growth

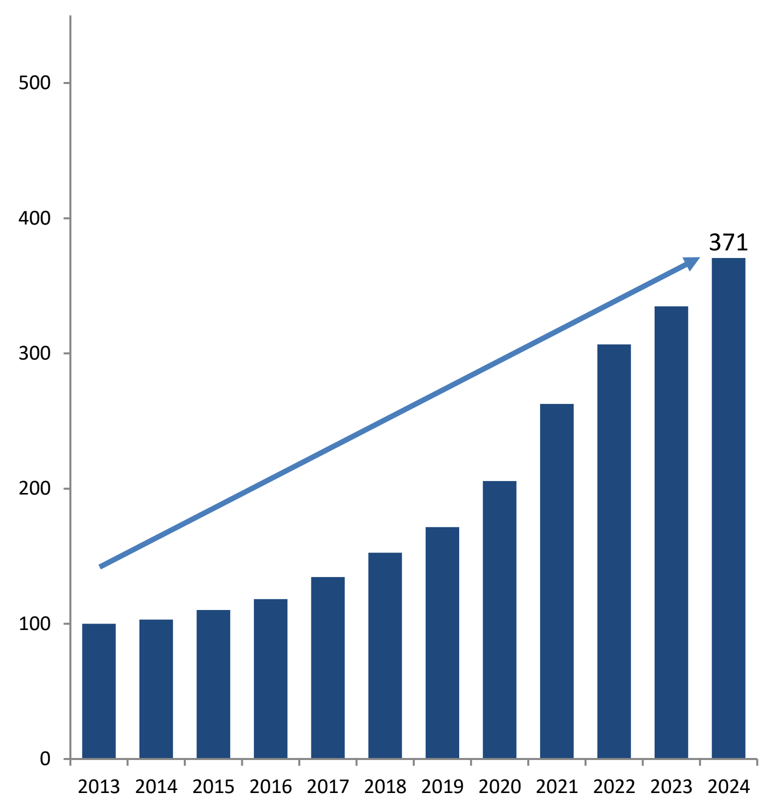
Indexed traditional asset manager AUM growth (ex-market)

100 = Organic AUM on 31 Dec 2013



Indexed alternative asset manager fee-paying AUM growth

100 = Organic AUM on 31 Dec 2013



Without the market, the traditional asset managers in our coverage would have lost 38% of their AUM since 2013, while the public alternatives have more than tripled.

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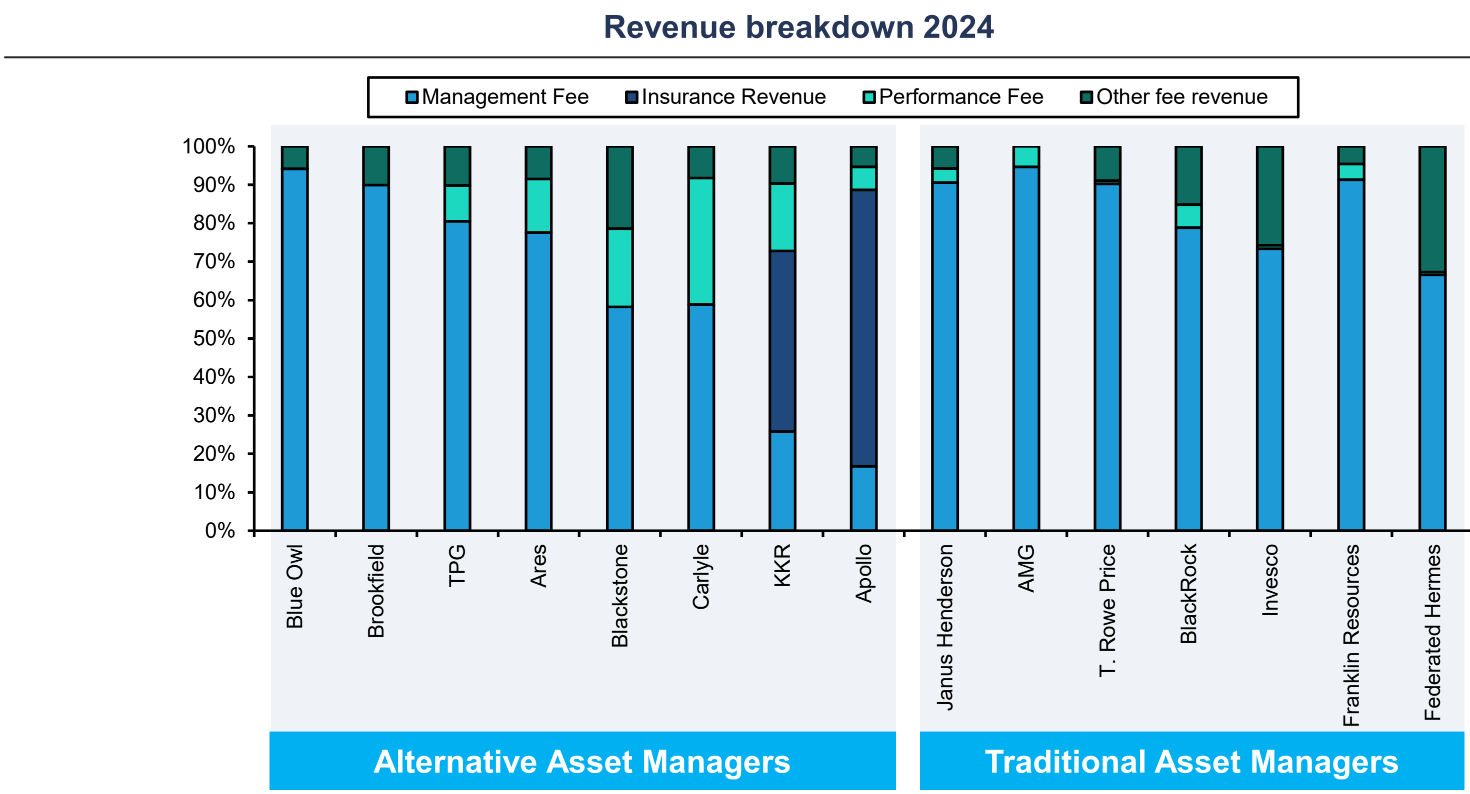
Alternatives include APO, ARES, BX, CG and KKR; Traditionals include AMG, BEN, FHI, IVZ, JHG and TROW - We exclude BLK here given its large passive component
Source: Company Reports, Autonomous Analysis

How Do Asset Managers Make Money?

- Management fees (recurring and high quality)
- Performance fees (sporadic and lower quality) – managers pass on to employees to help valuation
- Other (transaction fees, technology services, insurance income, and distribution fees)



 Source: Company Reports, Autonomous Analysis

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How Do Asset Managers Make Money?

Management fees the core of all earnings builds

Management Fees ($) = Fee rate (%) x Average Fee-Paying Assets Under Management

Components of AUM growth:

- Gross sales
- Gross redemptions/ withdrawals
- Client distributions
- Investment performance
- FX impact

Organic growth calculation:

$$\frac{\text{Gross sales – gross redemptions}}{\text{Beginning AUM}}$$

<u>What is Fee-Paying Assets Under Management (“FPAUM”)?</u>

- Alternatives charge management fees on FPAUM. Managers in the US will also report AUM, which includes other components such as committed capital and market performance where fees are not charged
- Managers of typical closed-end funds will receive catch-up fees from investors who enter after a fund has been activated (e.g. if a fund is activated in July 2022, investors who enter in January 2023 also have to pay management fees for the period July-December 2022)

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How Do Asset Managers Make Money?

Performance fees – Hedge Fund-like

Performance fees = max [Δ Net asset value (NAV) x performance fee rate, 0]

- Often subject to a **high water mark**. A fund's high water mark is the greatest value it has had. If performance subsequently turns negative, performance fees are not paid until the fund has recovered to its high water mark level. This prevents paying for performance twice.
- Hurdle rates may also be utilised. For example, a fund has a hurdle rate of 8%. During 2022 its NAV increases to $110mn from $100mn, i.e. achieving a return of 10%. The manager can charge performance fees at a rate of 20%.
    - Under a **soft hurdle rate**, as long as the fund returns ≥8%, performance fees can be charged on all profits. In our example, the manager would receive €2mn of performance fees (20% x $10mn).
    - Under a **hard hurdle rate**, performance fees can only be charged on the profit that exceeds the hurdle rate. In our example, the manager would receive €0.4mn of performance fees (20% x $2mn).
- Becoming less common among hedge funds but still used by other asset managers. For example, Mediolanum currently requires +11% market performance to achieve its hurdle rate and HWM.

Man Group – performance fee eligible AUM at high-water mark and approximate fee rates as of 1H23

					Of which H1 crystallisation			Of which H2 crystallisation			Approximate Fee Rates	
	PF	Distance from high-water mark			Distance from high-water mark			Distance from high-water mark				
$bn	Eligible AUM	At or Above	Within 5%	More than 5%	At or Above	Within 5%	More than 5%	At or Above	Within 5%	More than 5%	Hurdle	Rate
AHL Alpha	8.9	4.7	4.2	-	1.5	4.2	-	3.2	-	-	0%	15-20%
AHL Dimension	6.0	6.0	-	-	-	-	-	6.0	-	-	0%	15-20%
AHL Evolution	5.1	0.1	0.9	4.1	0.1	0.6	4.1	-	0.3	0.1	0%	20%
GLG absolute return	5.6	4.6	0.9	0.1	0.6	-	-	4.1	0.9	0.1	0%	20%
Other alternatives	22.0	4.9	10.3	6.8	1.2	3.8	3.5	3.0	6.9	3.5	0%	15-20%
Long-only	14.5	5.2	3.4	5.9	0.5	0.2	-	4.6	3.2	5.9	Relevant benchmark	10-20%
Total	**62.1**	**25.5**	**19.7**	**16.9**	**3.9**	**8.8**	**7.6**	**20.9**	**11.3**	**9.6**		

Source: Man Group

How Do Asset Managers Make Money?

Performance fees and investment income – Private Equity-like

Private Equity-like Performance fee calculation

Performance fee = Value of portfolio sold ($) – (Value of portfolio sold ($)÷Multiple of invested capital - MOIC (X)) x Carry rate (10% - 20%)

- **Value of portfolio sold:** Market value of all fund positions sold, also known as "distributed capital", with proceeds returned to clients ("Limited Partners"). The performance fee is deducted from these proceeds before returned.
- **Multiple on invested capital (MOIC):** In order to calculate the performance fee or "carry" the manager gets to keep, a MOIC must be calculated. It is quite simple the market value of the position divided by the amount of capital originally invested.
- **Carry rate:** This is the negotiated performance fee rate agreed to when the client is committed, usually in the 10% to 20% range (depending on strategy).

Investment income calculation

Investment Income = Value of investments sold ($) - (Value of investments sold ($) ÷Multiple of invested capital - MOIC (X))

- **Value of investments sold:** Market value of all balance sheet positions sold. The manager or GP ("General Partner") usually co-invests with the Limited Partners, so this value will typically ebb and flow with the "value of portfolio sold" highlighted above. As this capital is the GP's (and yours as a shareholder), there is no carry rate and 100% of the gain will flow through the income statement.

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How Do Asset Managers Make Money?

Insurance Spread Income

- Apollo and KKR have acquired life insurance companies to add a more stable base of assets ("retirement services").
- This makes asset management more asset intensive.
- So, on top of the management fees the asset manager receives for managing these assets, the parent will now also earn the spread between the portfolio's yield and the promised yield to the retirees.

Net investment spread ($) = (Asset Yield (%) x Average Insurance Assets Under Management) – Cost of funds – Operating Expenses

Components of AUM growth:

- Inflows (Sales, Reinsurance, Funding agreements, Pension Risk Transfers, etc.)
- Outflows (Benefit payments, Withdrawals, Funding agreement repurchases, lapses, etc.)
- Investment performance

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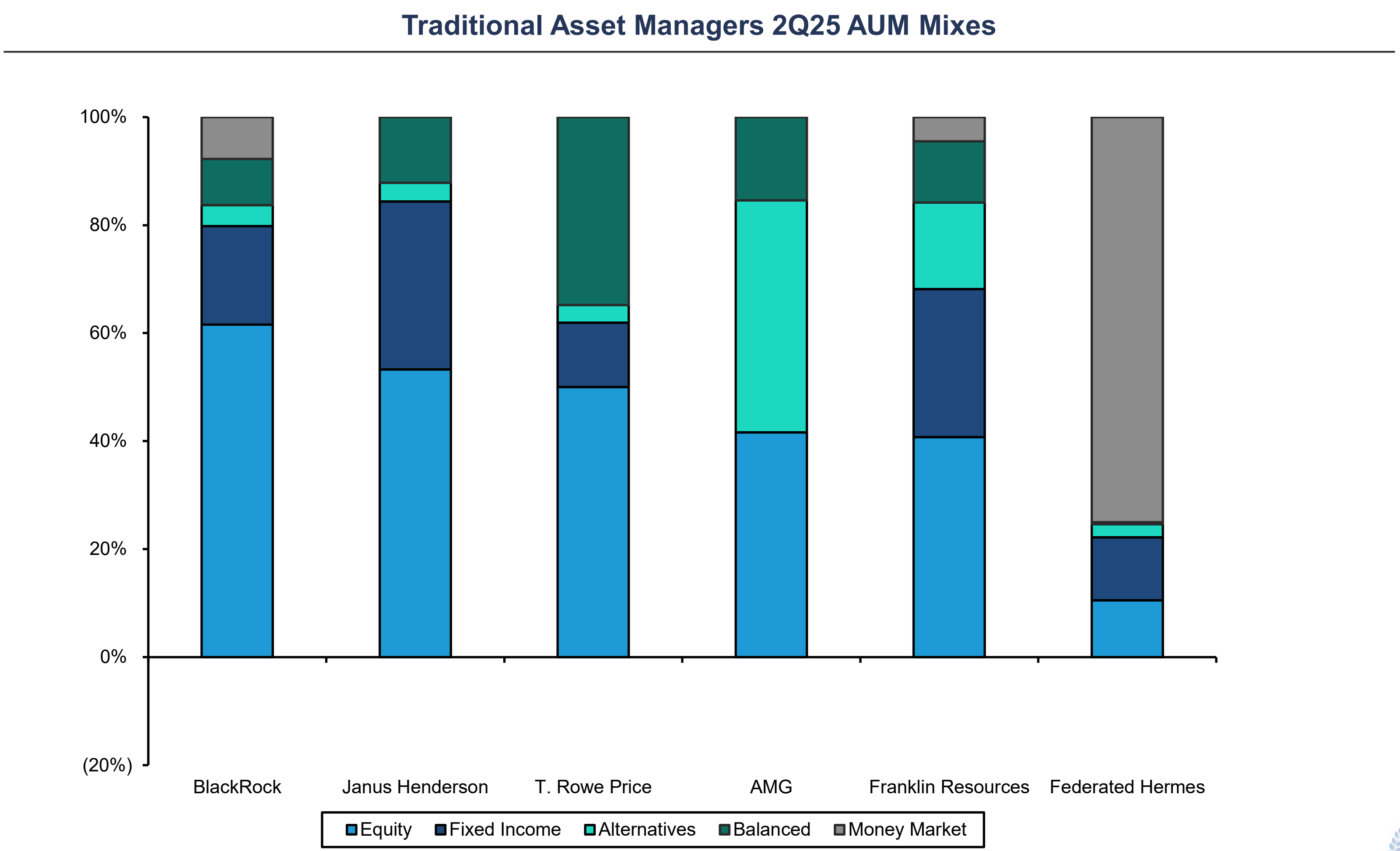
Traditional Asset Managers

Traditional Manager AUM Mixes



Source: Company Reports, Autonomous Analysis

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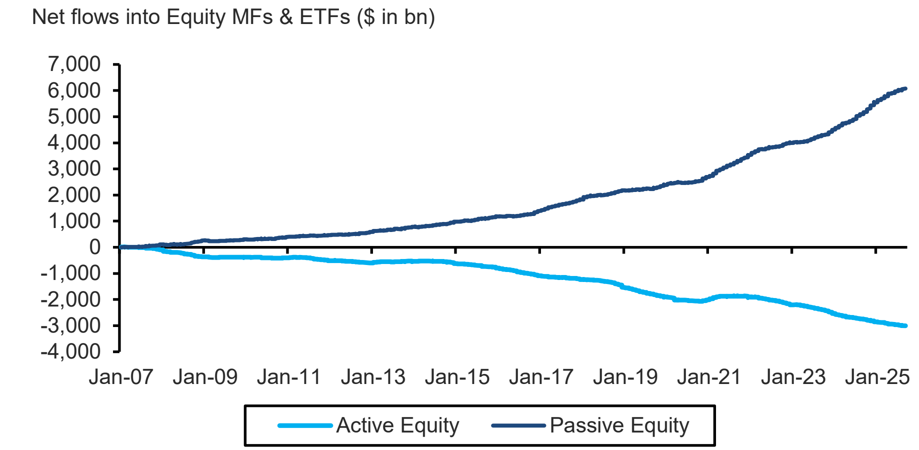
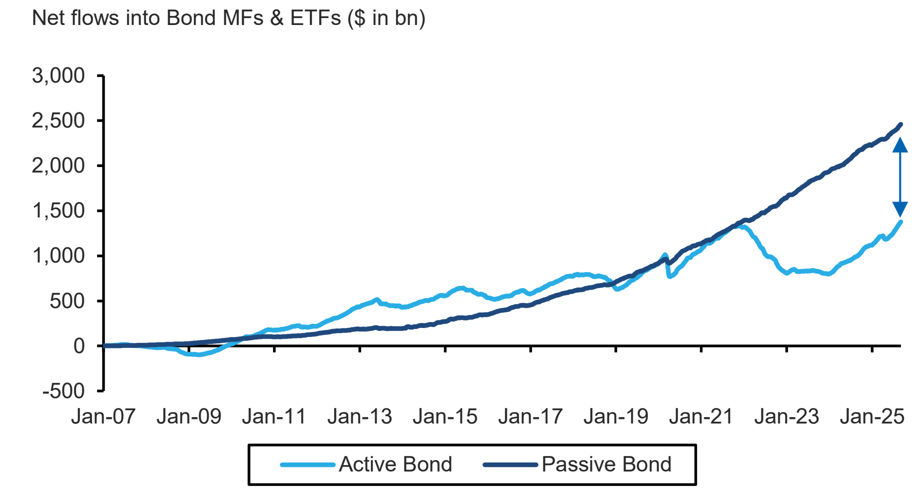
Why Divergence? Passive Dominating…And It's Spreading

Equity flows continue on long trend of passivication



Active bond funds held their own until 2022 bond bust



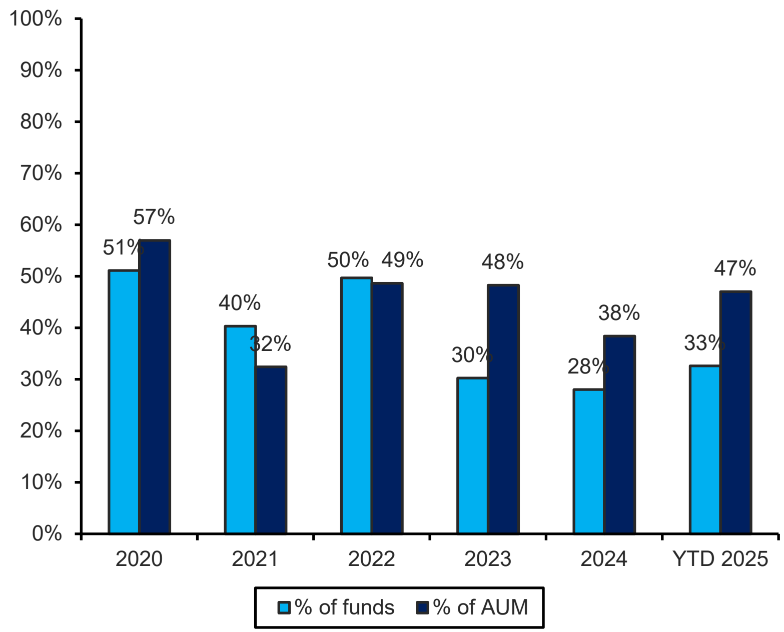
- Early 2019 active equity flow recovery quickly faltered, and we expect equity flows will continue to shift into passive products given poor active performance, fee differential and use for portfolio construction.
- We do not see ~50% of mutual fund and ETF AUM being in passive products as a tipping point.
- Active bond flows have followed since 2022 bond bust, but signs of stabilization.
- More liquid ETFs and scaled private assets open risk of more "barbelling".

Source: EPFR, Morningstar, Autonomous Analysis

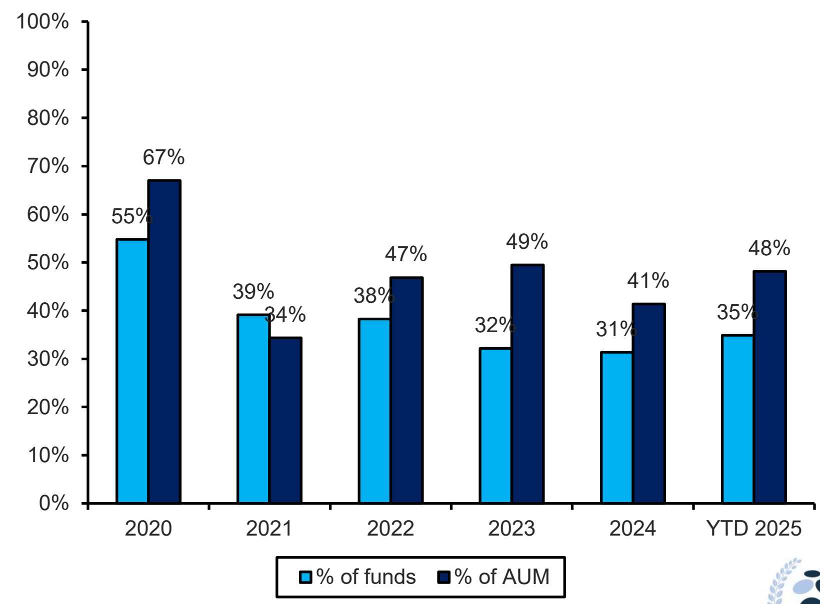
Why? Active Equity Performance Consistently Middling-to-Bad

- In the US 28% of active equity funds and 38% of AUM we track outperformed benchmarks in 2024, mostly in-line with the recent trend.
- The picture is similar globally, but non-US managers have more distribution moats than US.

U.S. Equity mutual funds outperforming respective benchmarks



Global Equity mutual funds outperforming respective benchmarks



Source: Morningstar, Autonomous Analysis

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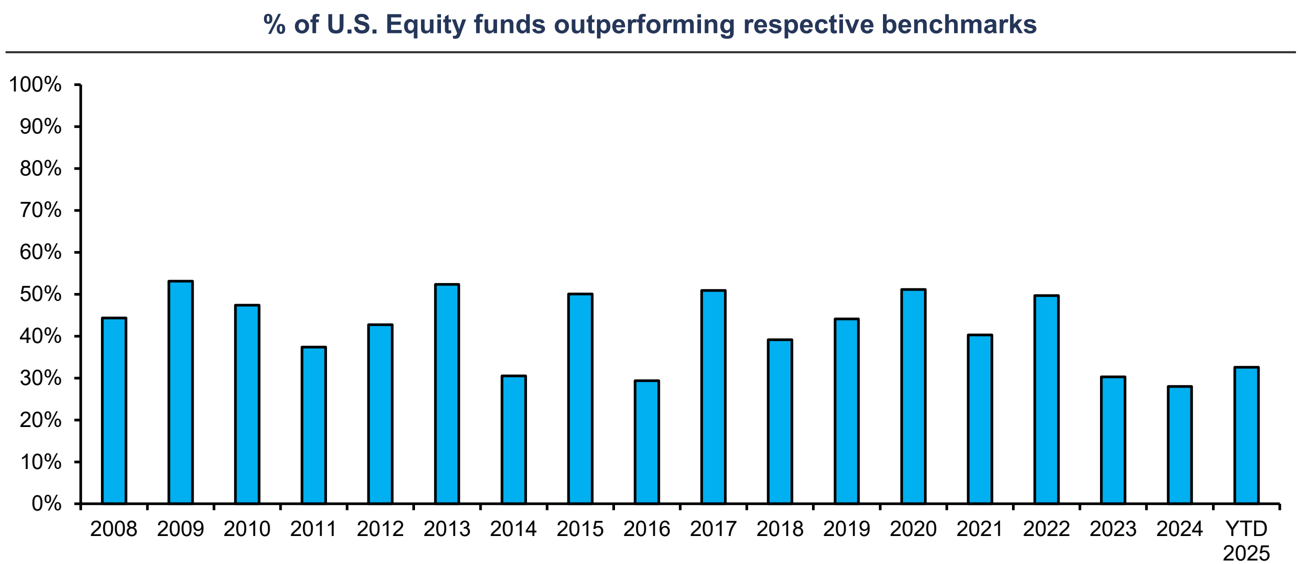
Active Equity Coming Back? Not So Fast

- The press keeps trying to push the narrative that active equity managers are having some sort of performance renaissance.
- But, with still only 28% of funds outperforming benchmarks in 2024, we are skeptical that this is enough to shift the flow narrative.
- In fact, this is still very much in the same range as the last 15-years. So, we believe active equity outflows will persist, regardless of market directions.



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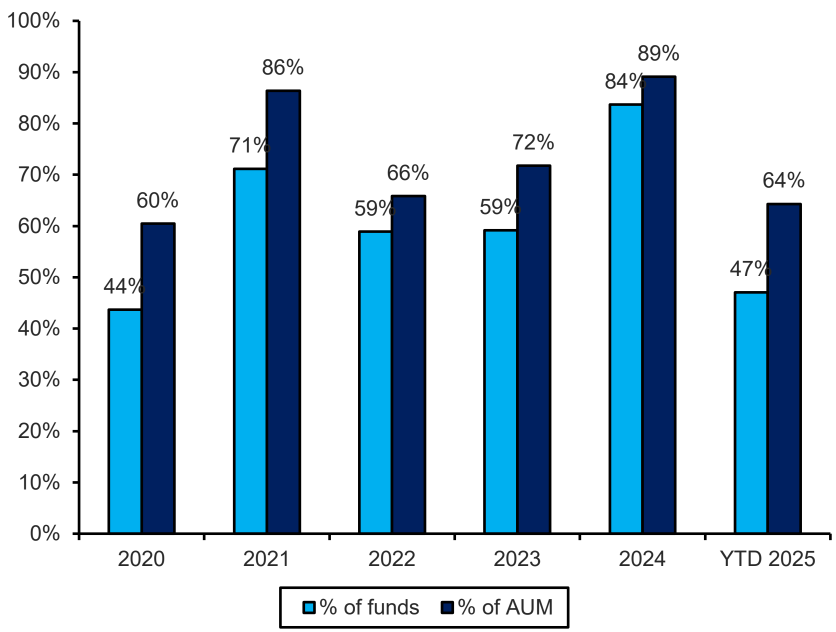
Source: Morningstar, Autonomous Analysis

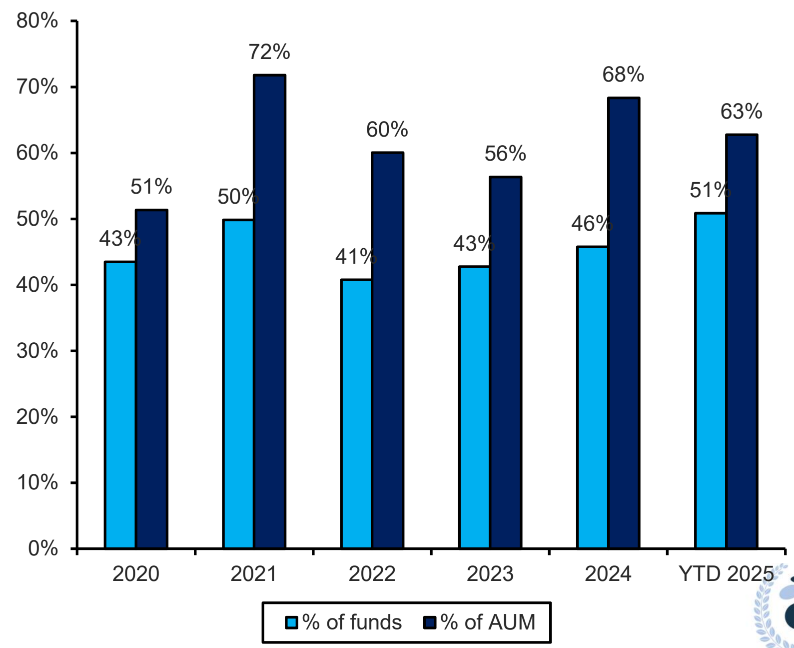
But Hope for Active Bonds?

- In the US, active Bond fund performance improved significantly in 2024 with 84% of active funds outperforming benchmarks.
- Globally, Bond performance looks better versus last year but still lags the US with only 46% of active funds outperforming benchmarks in 2024.

U.S. Bond mutual funds outperforming respective benchmarks

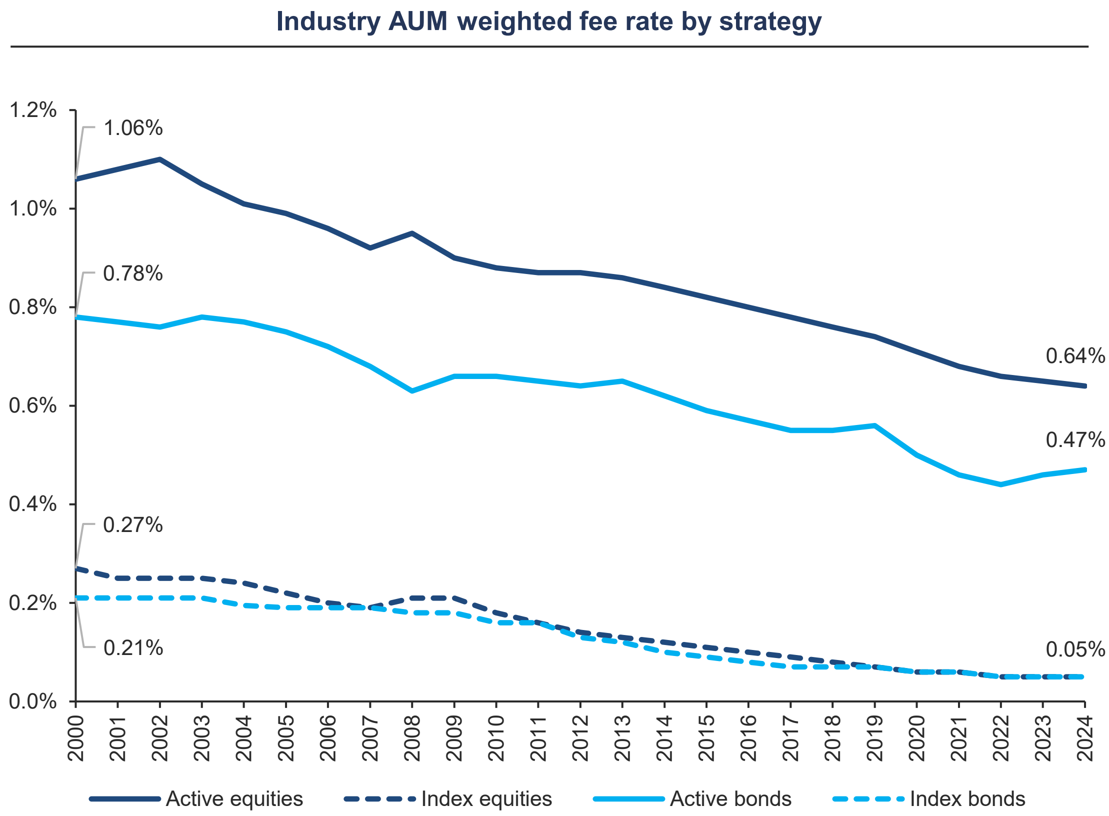


Global Bond mutual funds outperforming respective benchmarks



Source: Morningstar, Autonomous Analysis

The Fee Rate Gap With Passive Funds Has Barely Budged



	Equity Fee Gap	Bond Fee Gap
2000	0.79%	0.57%
2001	0.83%	0.56%
2002	0.85%	0.55%
2003	0.80%	0.57%
2004	0.77%	0.58%
2005	0.77%	0.56%
2006	0.76%	0.53%
2007	0.73%	0.49%
2008	0.74%	0.45%
2009	0.69%	0.48%
2010	0.70%	0.50%
2011	0.71%	0.49%
2012	0.73%	0.51%
2013	0.73%	0.53%
2014	0.72%	0.52%
2015	0.71%	0.50%
2016	0.70%	0.49%
2017	0.69%	0.48%
2018	0.68%	0.48%
2019	0.67%	0.49%
2020	0.65%	0.44%
2021	0.62%	0.40%
2022	0.61%	0.39%
2023	0.60%	0.41%
2024	0.59%	0.42%

Would you pay a 9-13x fee premium for benchmark in-line performance? When active funds are 60bps higher than passive, just beating benchmark is not enough

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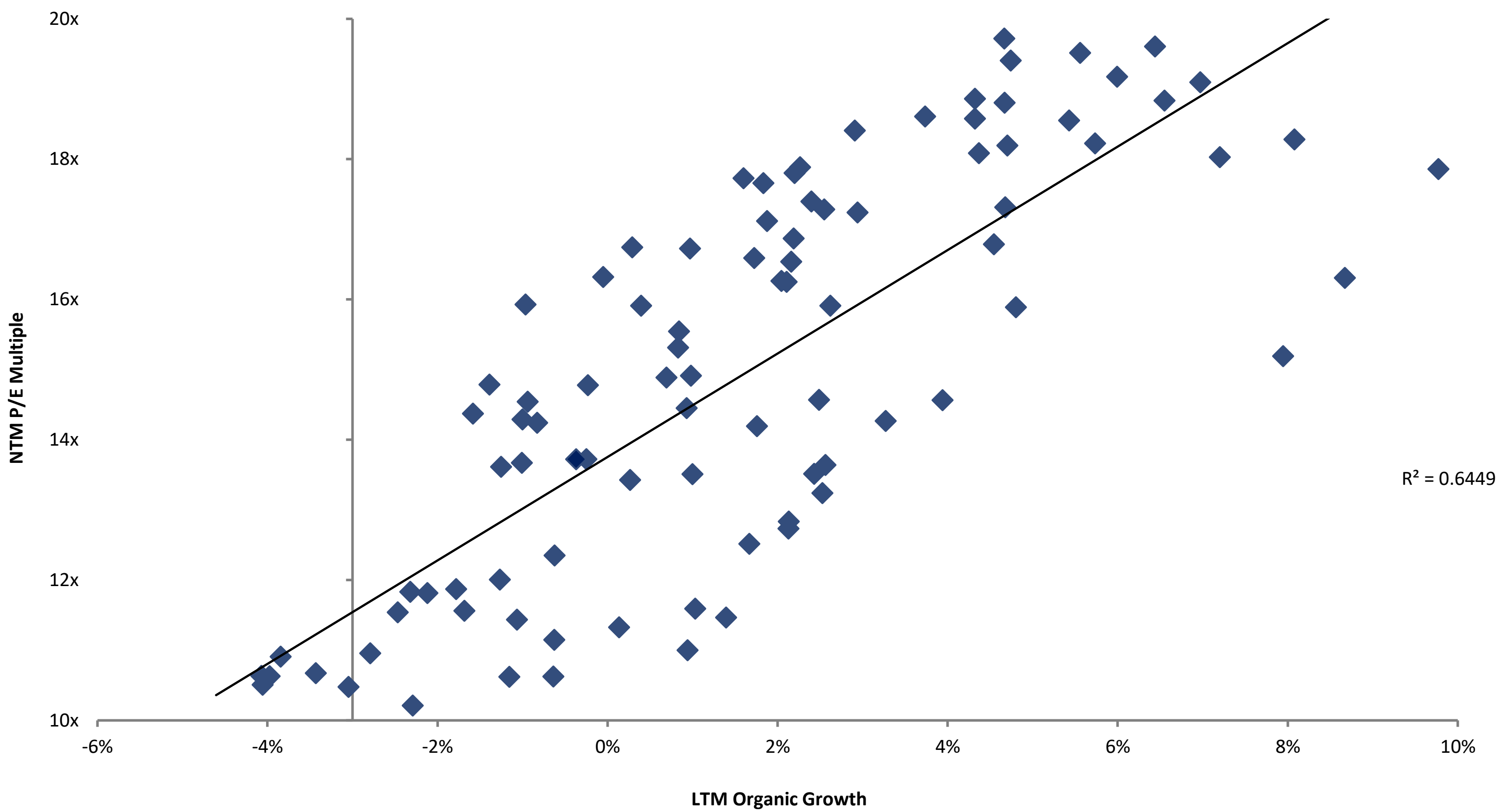
Source: ICI Factbook, Autonomous Analysis

Organic Growth is THE Key Driver of Asset Manager Value

Group average NTM P/E multiple vs Organic growth

1Q 2001 to 1Q 2025



Group includes AMG, BEN, BLK, FHI, IVZ, JHG and TROW
Source: Factset, Company Reports, Autonomous Analysis

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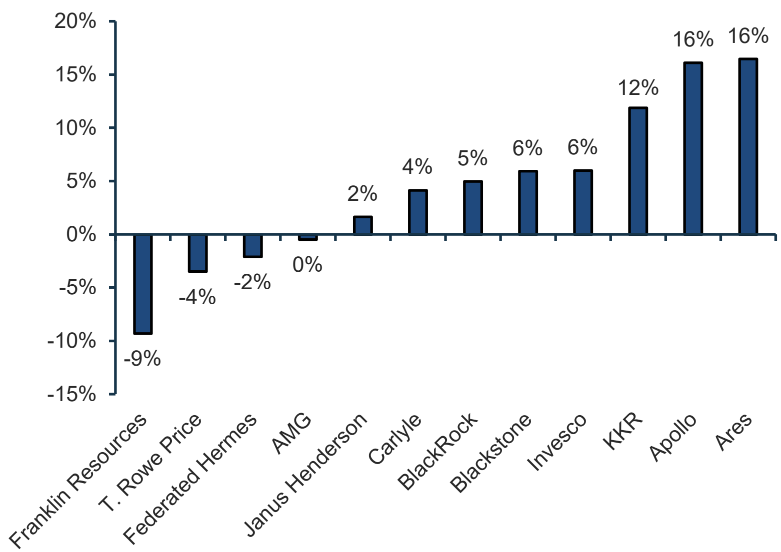
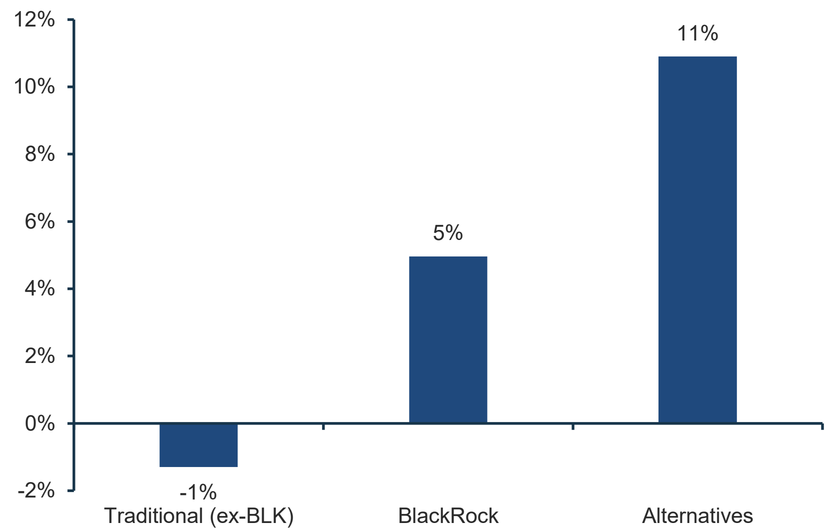
Organic Growth Divergence Drives Valuation Disparities…

- Reported flow data through December shows the still wide gap between traditional manager and alternative manager fortunes.
- The average alternative manager in our coverage generated +11% organic growth against the traditional at outflow of -1%. Given continued demand for passives, particularly with a big shift to bond ETFs, BlackRock posted a steady +5%.

LTM Long-term Organic Growth



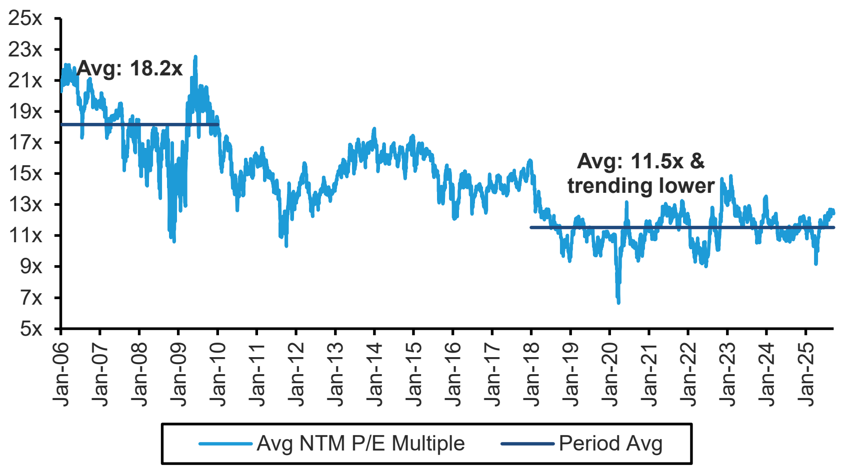
Average LTM Long-term Organic Growth



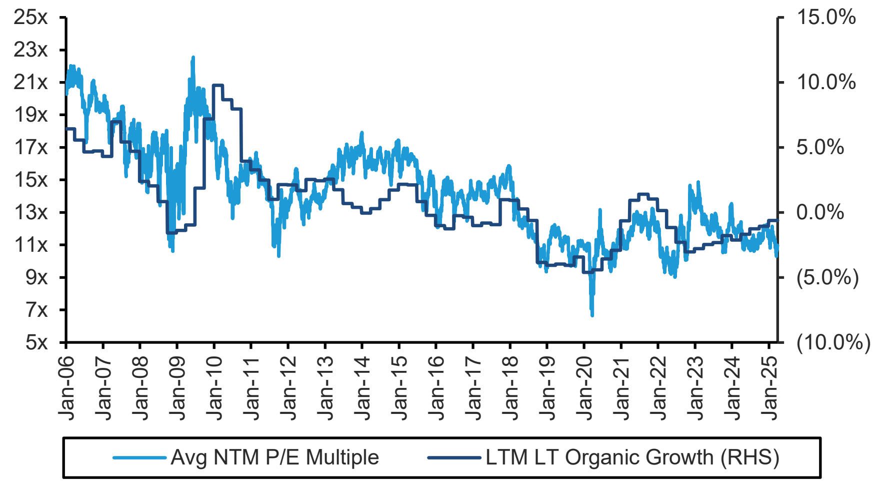
Alternatives include APO, ARES, BX, CG and KKR; Traditionals include AMG, BEN, FHI, IVZ, JHG and TROW
Source: Company Reports, Autonomous Analysis

…So, Through That Lens, The Traditionals Are Not So Cheap

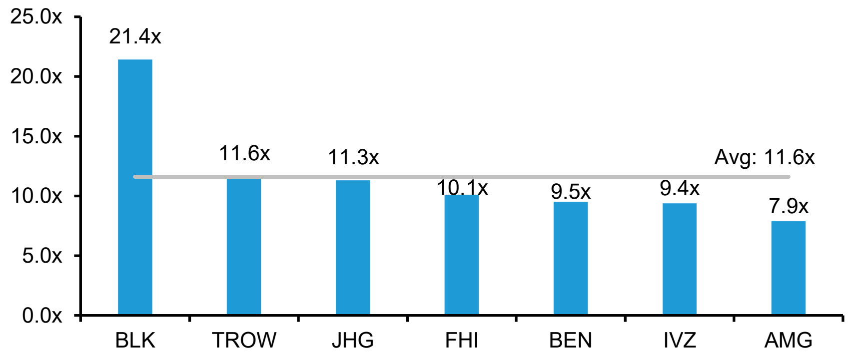
Valuations have collapsed…



…but steady continuation of long-term trend



LTM average of NTM P/E



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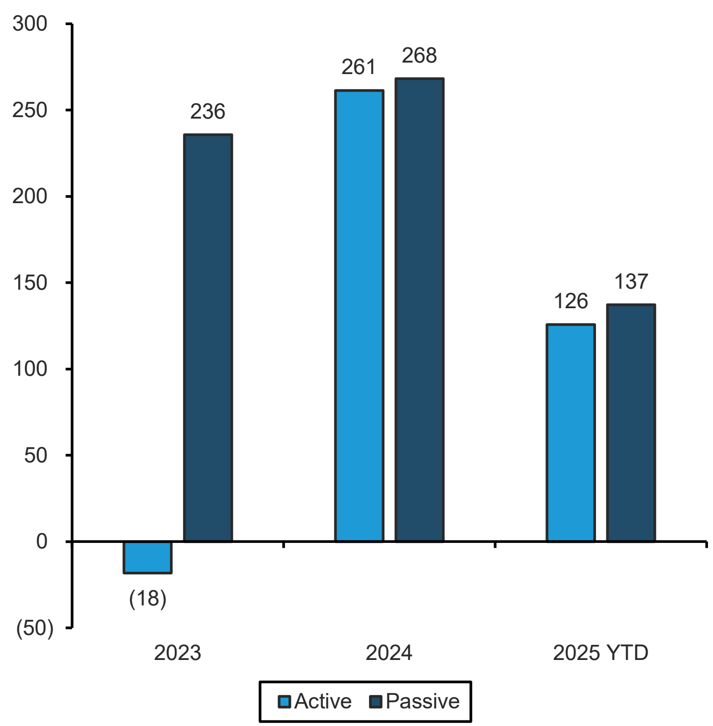
Source: Bloomberg, Autonomous Analysis

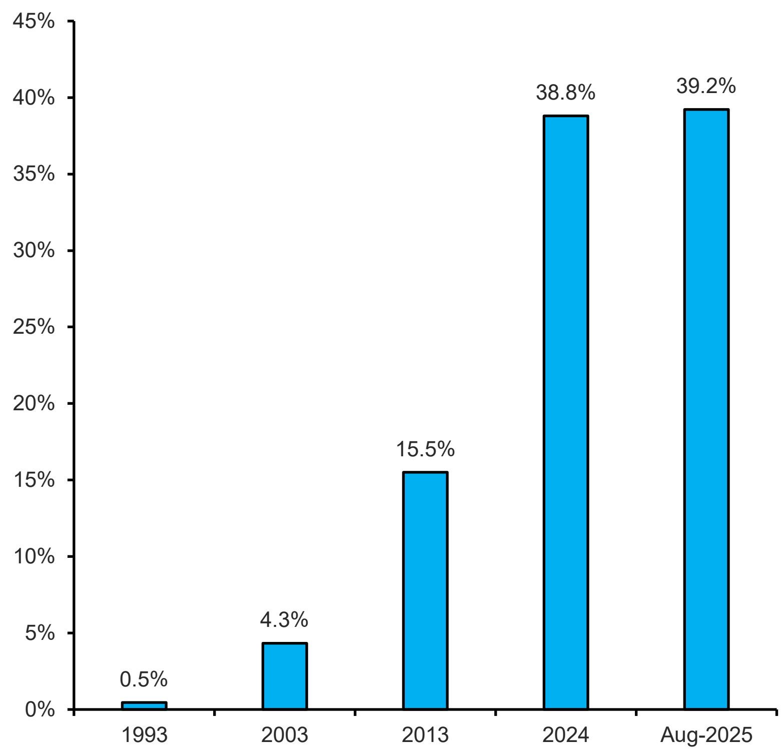
Greenshoots? Potential Bond Boost Coming

- Early signs that active can make a comeback, but passive still winning

Active vs passive bond flows ($bn)



% of US bond fund AUM in passive



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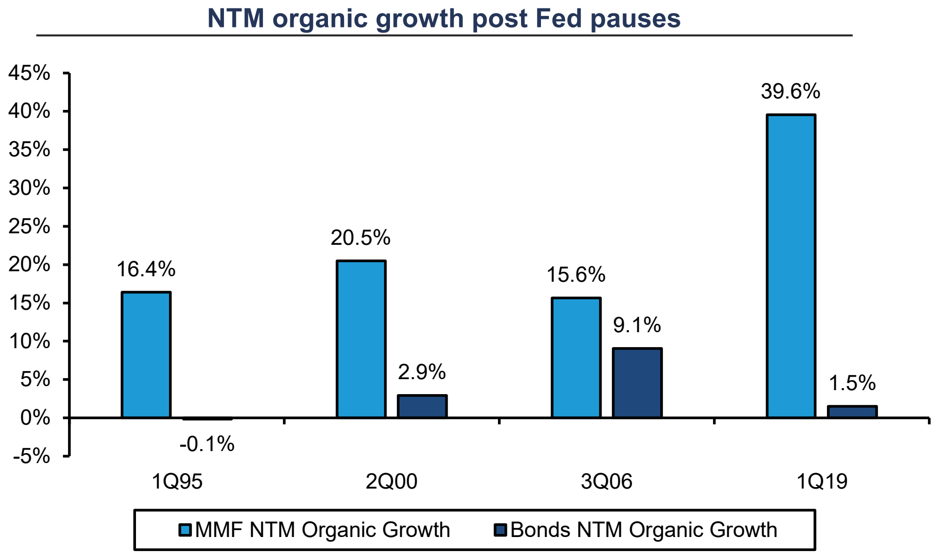
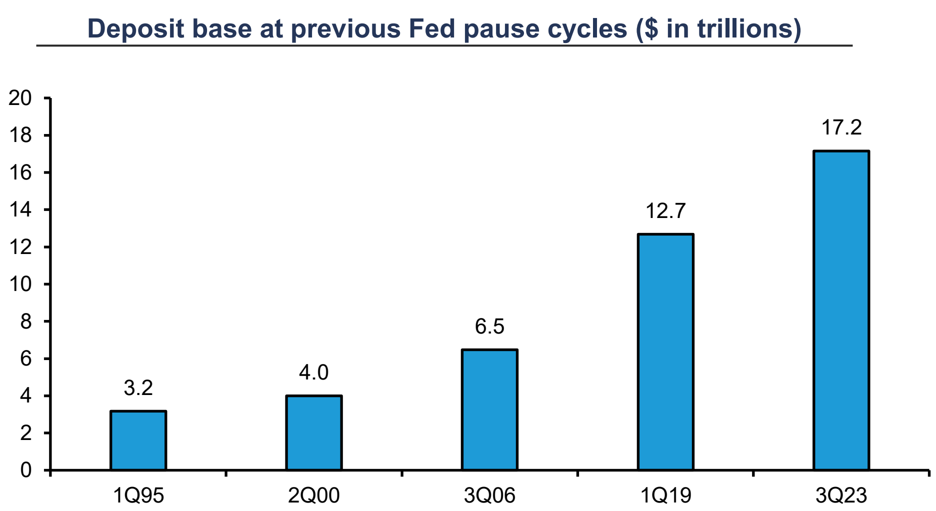
Source: Morningstar, Autonomous Analysis

Greenshoots? $17 Trillion in Deposits





- Expectations of bonds pulling money from MMFs post-Fed pause, seems unfounded.
- Acceleration seen in both MMFs and bond inflows post previous Fed pauses in 1995, 2000, 2006 and 2019.
- With $17 trillion+ sitting in deposits, most earning near-0 yields, we expect the uptick in bonds to come from deposits rather than money funds
  - Historical MMF flows post Fed-pauses has tracked at 5-10% of deposit balances, creating potential for ~$1 trillion to further flow into money funds

Source: FDIC Quarterly banking profile, Morningstar, Autonomous Analysis

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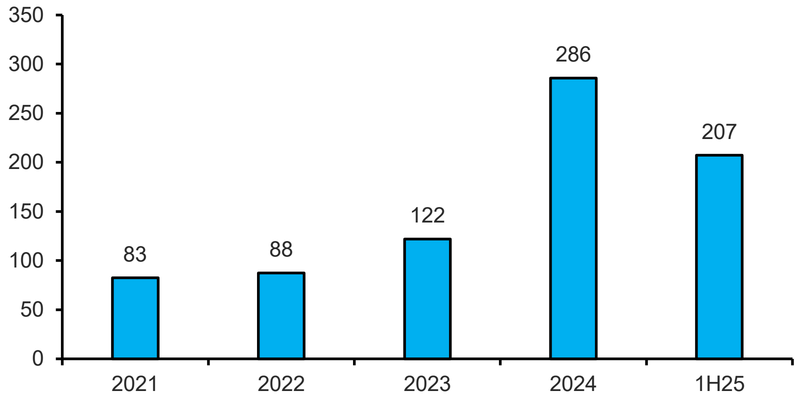
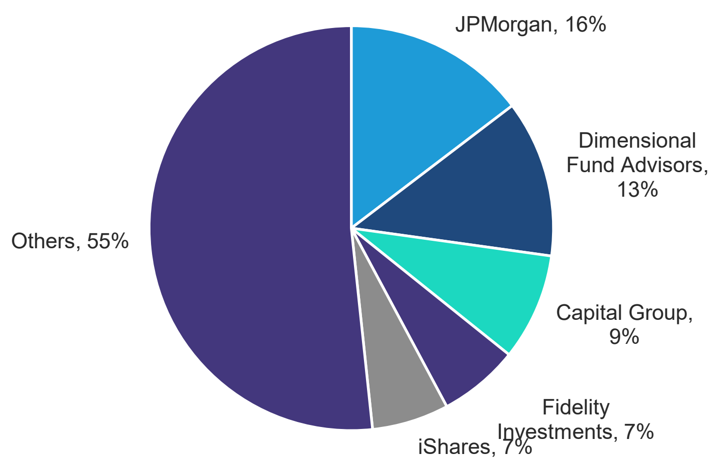
Greenshoots? Active ETFs and Alternatives Expansion

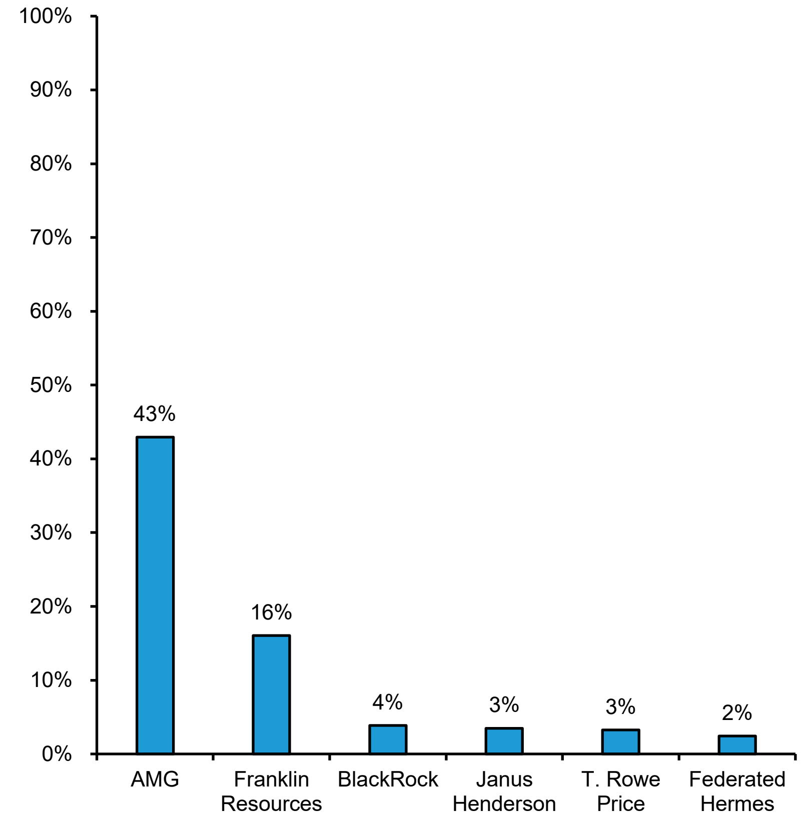
Active ETF flow ($bn)



Active ETF flow share has gone to select managers



Alternative AUM as % of total AUM (2Q25)

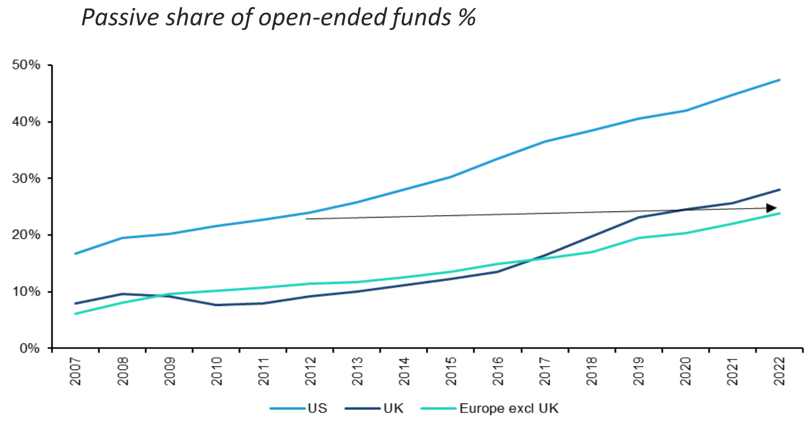


Source: Morningstar, Company Reports, Autonomous analysis

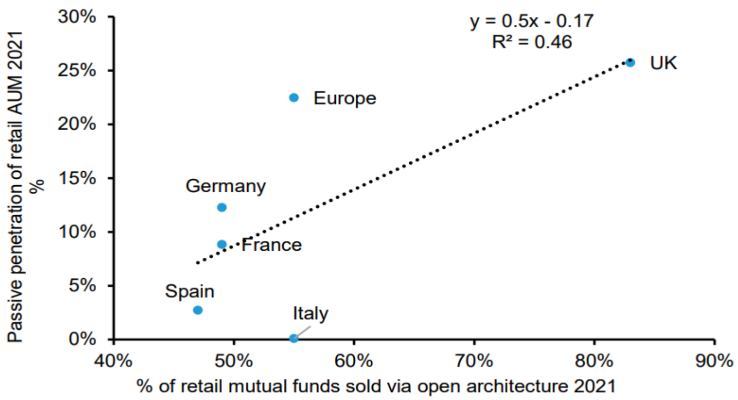
Greenshoots? Picture Better in Europe, But Convergence Risk

- Passivication is about 10 years behind, with captive distribution and use of retrocession fees helping to provide a moat
- However, penetration much higher in more affluent client segments such as private banks and those who utilize IFAs
- European Retail Investment Strategy falls short of a full ban but direction of travel over next 5-10 years is clear
    - Staged approach with review in 3 years
    - Greater transparency around the payment of inducements
    - Value for money benchmarks
    - One product offered that does not include unnecessary and complex features
- UK Consumer Duty – broad nature giving investors concern, who is the next SJP?

Europe is c.10yrs behind the US on passivication



Distribution models have a large impact on passive penetration



Note: tax structures that penalise investors who chose an ETF not available as a mutual fund, likely explains the low passive penetration in Spain.

Source: Europe Distribution 2022, Broadridge 2022 06 Europe Distribution 360, Morningstar, Company reports, Autonomous Analysis

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Traditionals: Valuations Cheap, But Fundamentals Support This

Key Positives/Opportunities

- Strong balance sheets provides capital flexibility
- Cheap relative valuations
- Strong cash flow generation relative to other financial services peer groups
- Bond bonanza coming?

Primary Concerns/Debates

- Heightened fee focus leading to fee cuts, negative mix shift, and an acceleration in revenue yield pressure
- Ongoing shift to passive investments, alternatives taking share
- Need to invest in technology, distribution and comp means managers have little expense flex
- Earnings dependency on markets after 10-year bull market
- Will passivication in bonds go way of equities?

Bottom Line: Fundamentals for most traditional managers are still por, mostly supporting lower valuation levels.

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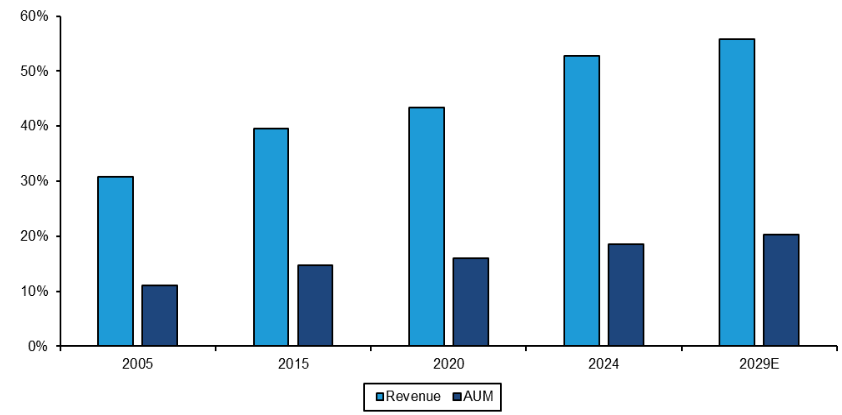
Source: Autonomous Analysis

Alternative Asset Managers

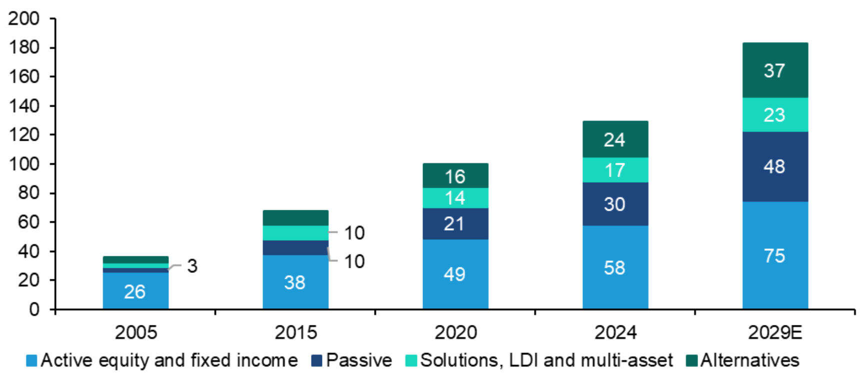
Alternative Asset Tailwinds Largely Still Intact

- Total alts CAGR (2023-29E) of +9%-11%, greater than for traditional assets (passive +8%-10%, active +5%).
- Largest players are taking share
- Alternative products are also higher margin and subject to less competitive fee pressure
- Most polls suggest private credit and infrastructure still most in demand by clients
- AI boom is providing significant upside boost for infrastructure

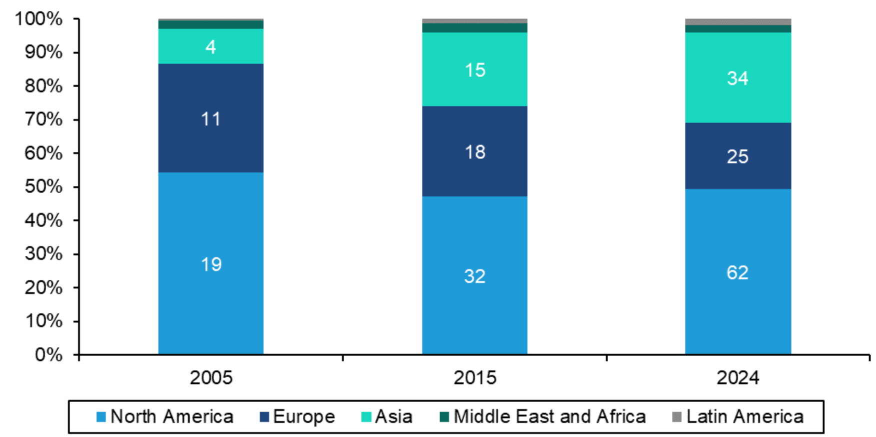
Alternatives share of global AUM and revenue is increasing



Alternatives and passive taking share



North America remains the largest market (AUM split)



Source: BCG, Preqin

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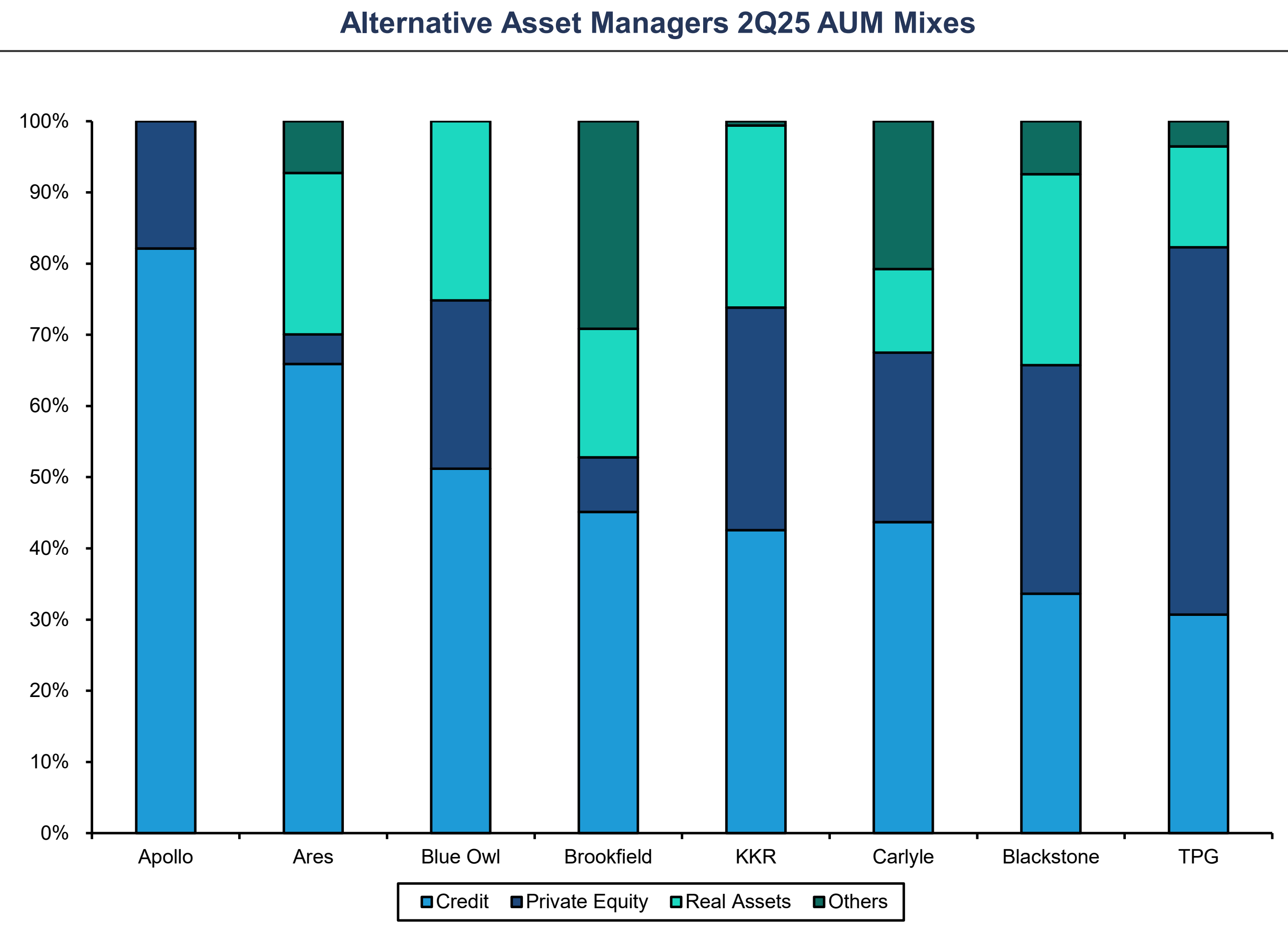
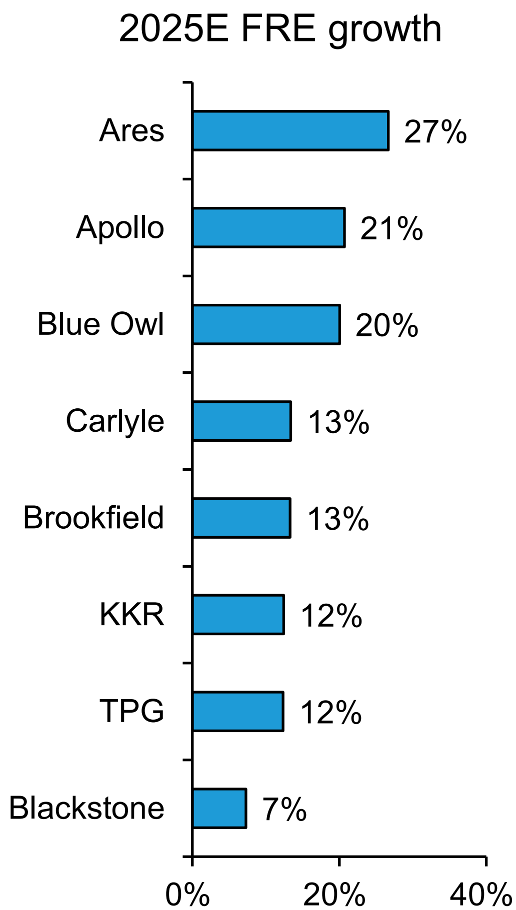
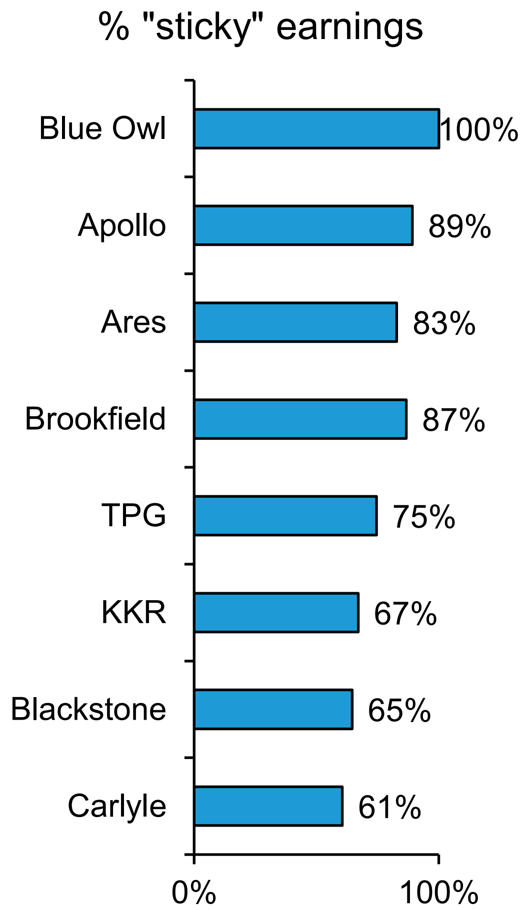
Alternative Manager AUM Mixes

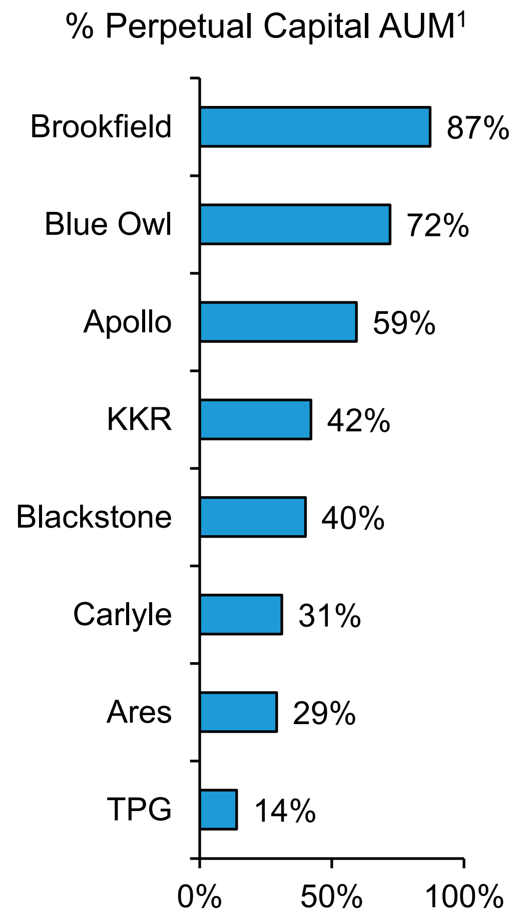


Source: Company Reports, Autonomous Analysis

Alternative Manager Key Metrics







1 Fee-Earning AUM for Brookfield and Carlyle
Note: “Sticky” earnings are defined as management-fee driven FRE + Insurance spread earnings
Source: Company reports, Bloomberg, Autonomous Analysis

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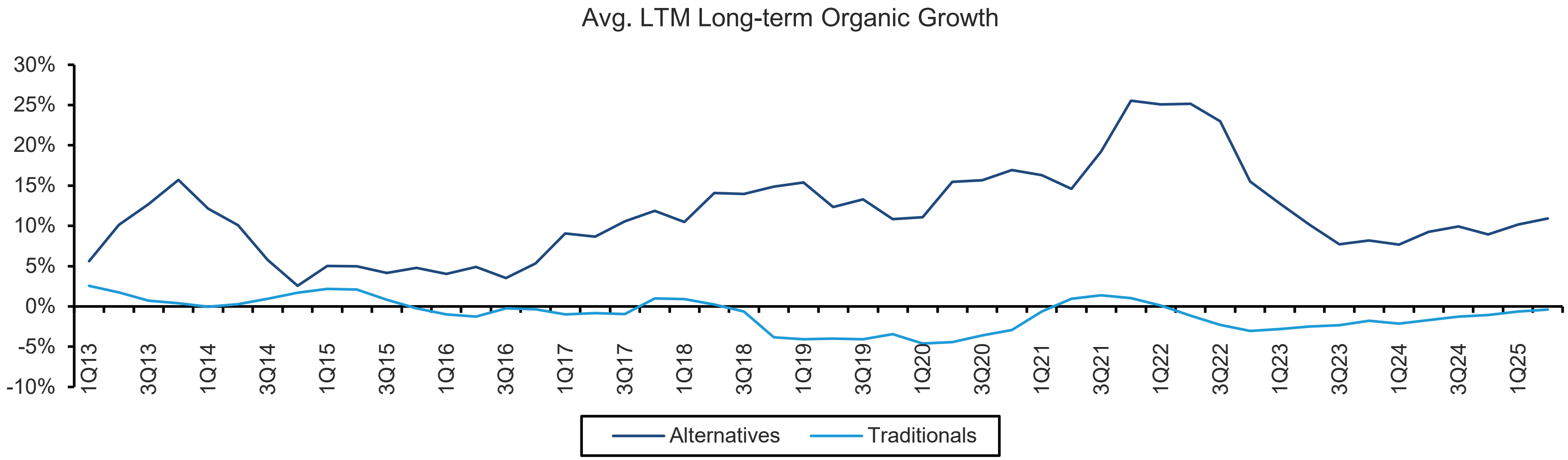
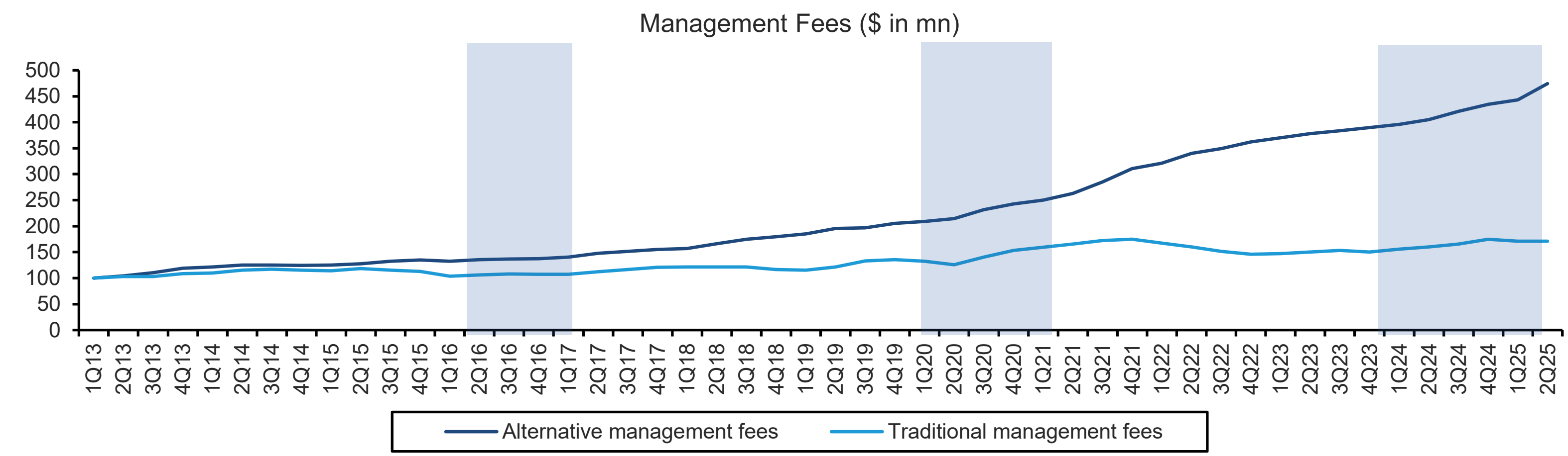
Fee-Earnings Are Stickier, But Also Growing More Consistently

Alternative organic growth consistently much higher



And alt management fees *go up* through market pullbacks



Alternatives include APO, ARES, BX, CG and KKR; Traditionals include AMG, BEN, BLK, FHI, IVZ, JHG and TROW

Source: Company Reports, Autonomous Analysis

Why This Fee Disparity With Traditional Managers? SCADs of Cash!

- Sticky: Most alternative strategies have 5+ year lock-ups, so cannot have outflows/redemptions when markets turn south.

- Committed: Most alternative strategies charge management fees on committed capital, which is not marked-to-market so does not move when markets collapse.

- Aggressive: Alternative managers are among the most fearless investors when there is "blood on the Street," aggressively deploying capital into distressed markets. This accelerates the need for new fundraises (and thus higher fee-earnings).

- Dry powder: To the extent there are strategies where fees are not charged on committed capital, many others charge on an invested basis (usually credit strategies). So, when credit assets are distressed, this money can be quickly deployed, which increases fee-earnings despite lower market valuations.

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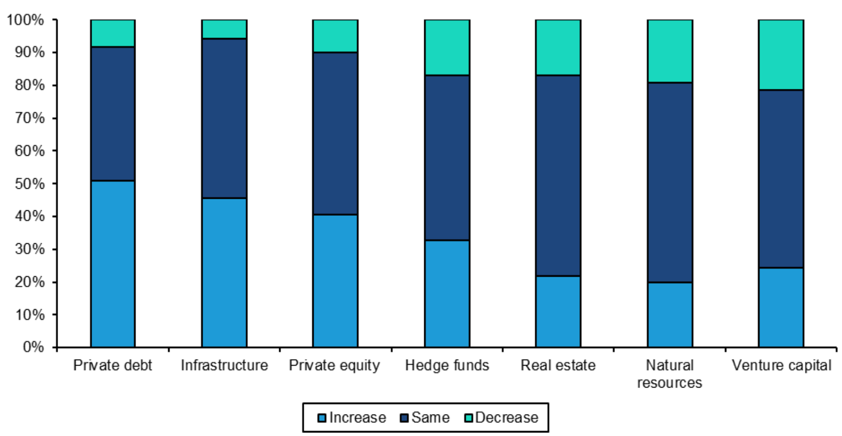
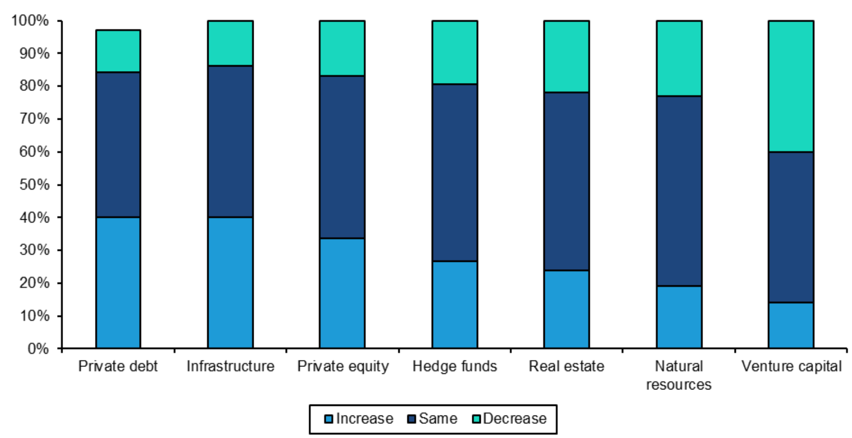
Fundraising: Near-Term Headwinds, But Long-Term Tailwinds

- Near term challenges for PE fundraising as number of investors are overallocated and slow down in exits reduces redeployment capital
- However: European institutional and private wealth investors less impacted
  - Regulatory changes likely to support: UK pensions, Solvency 2
  - FOMO on recession vintages – LPs trying to increase allocations where possible
- Fundraising also likely to be concentrated amongst large, experienced funds:
  - Want to work with fewer managers who can offer range of asset classes/ products

Investors' planned changes to asset allocations over the longer term



Investors' planned changes to capital commitments next 12 months



Source: Bain, Preqin

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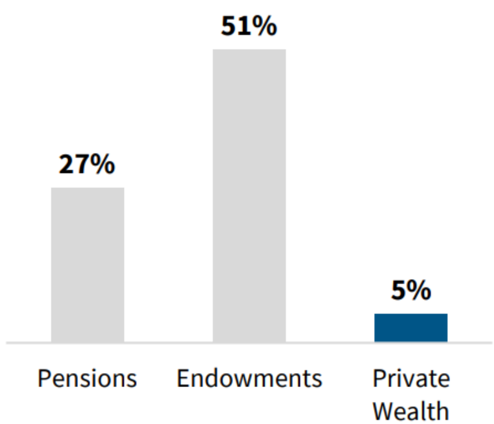
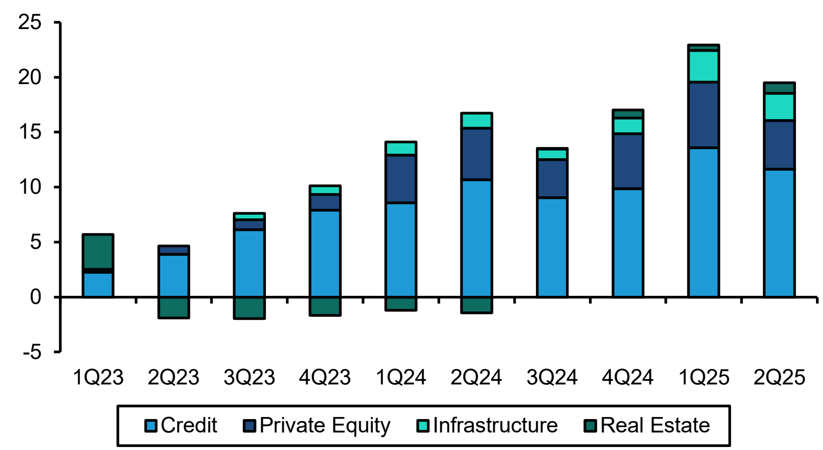
Private Wealth – The Next Frontier

- Private wealth in alternatives could reach **$13trn by 2032** (Bain), with **$5-10trn in private markets** (Partners Group)
- Compared to their institutional counterparts, private wealth investors have **greater headroom** before reaching their current allocation limits and are also looking to increase these targets further.
- Private wealth products, especially evergreen funds are complex to offer, with managers having to b**alance subscriptions, redemptions and distributions,** whilst maintaining a fully invested and diversified portfolio. As well as experience of **operating such funds**, we think incumbents benefit in a world where distributors are seeking to work with **fewer manufacturers and look for trusted partners** when filling product gaps.

Wealth allocations to alternatives well below legacy clients



Flows to alternative funds for retail are surging ($ in bn)

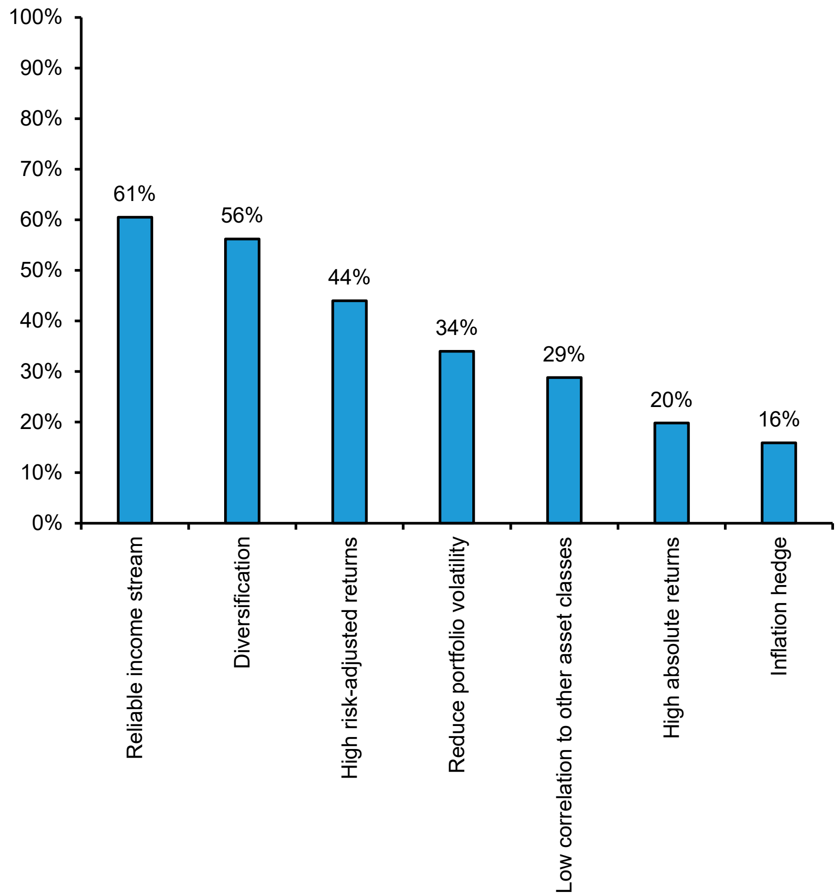


Note excludes annuity flows of KKR and Apollo, who are uniquely placed to develop retirement products for the private wealth channel.

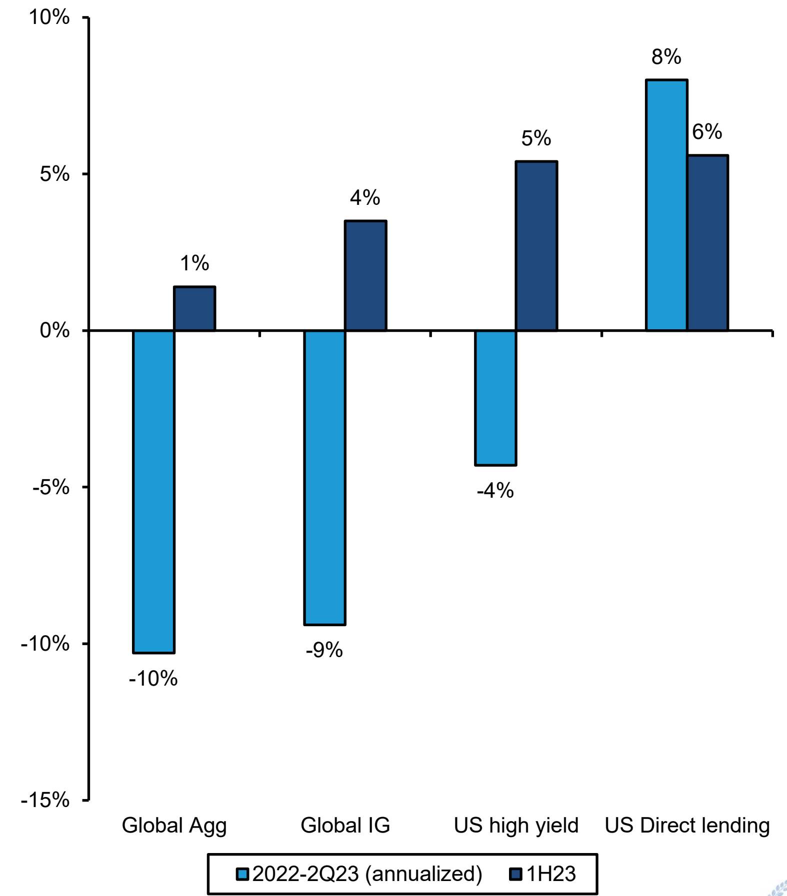
Source: UBS Global Family Office Report 2023, Preqin, Company reports, Autonomous Analysis

Private Credit is Much More Than Just a Rate Bet For Investors

Investors' main reasons for investing in private credit



Total Return (%) this hiking cycle[1]



1 Bloomberg Barclays Global Aggregate Index, Bloomberg Barclays Global IG Corporate Index, ICE BofA US High Yield Index, Cliffwater Direct Lending Index

Source: Bloomberg, Preqin, Autonomous Analysis

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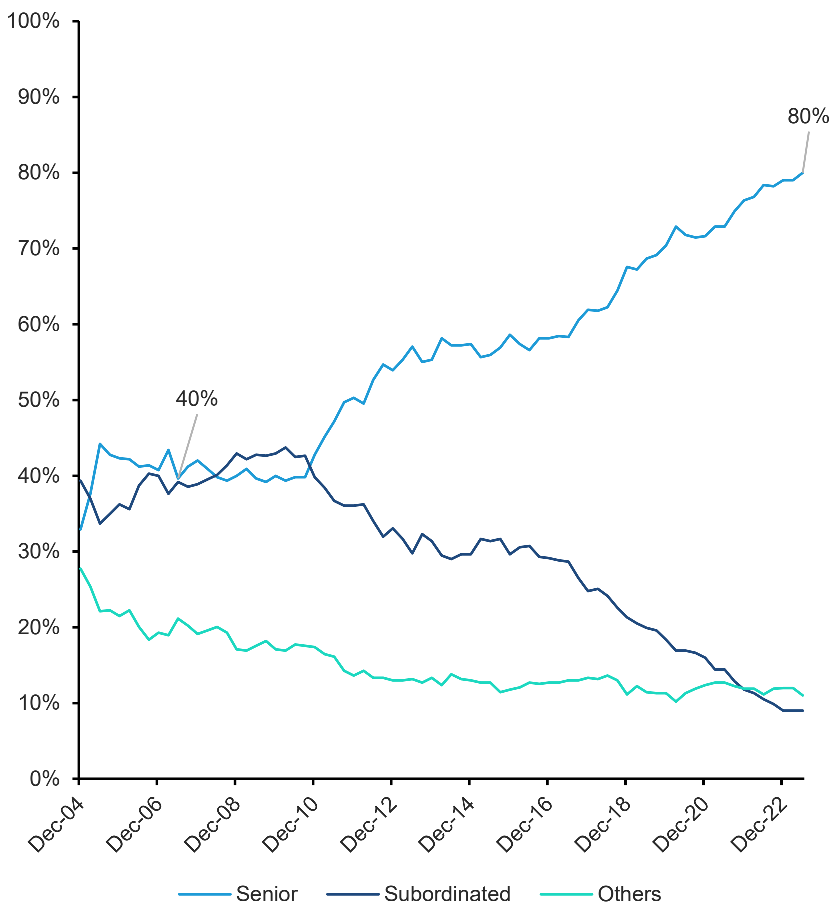
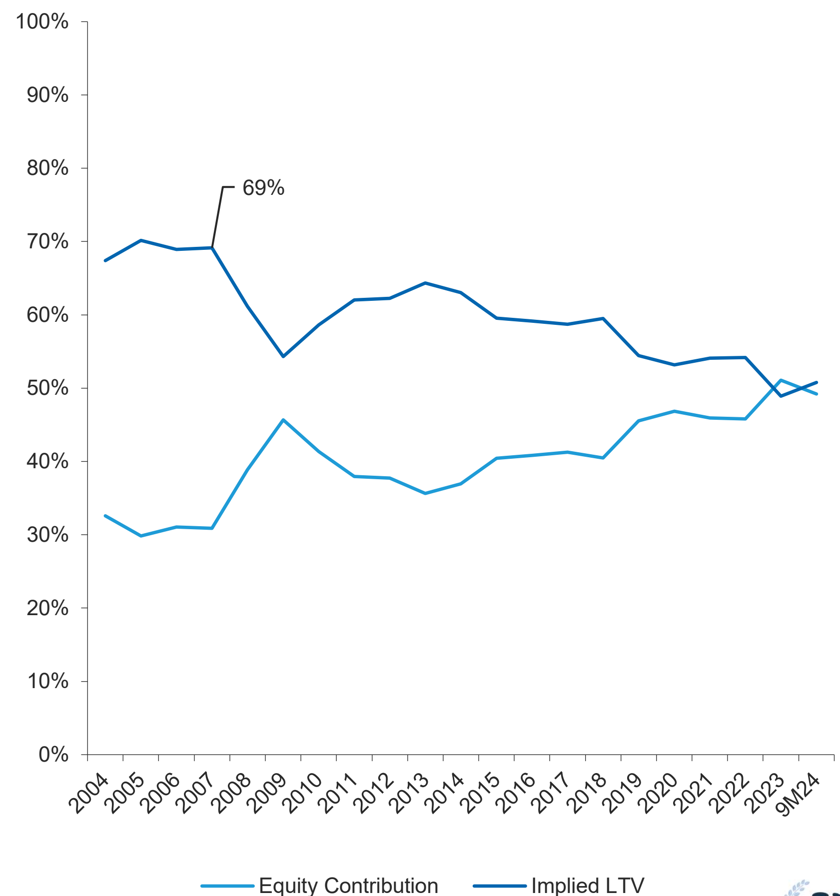
Credit Risk is Significantly Lower Than GFC, With a Higher Proportion of Senior Loans Subordinated by Larger Equity Contributions

Percentage of Senior Loans in CDLI



Equity Contribution to LBOs



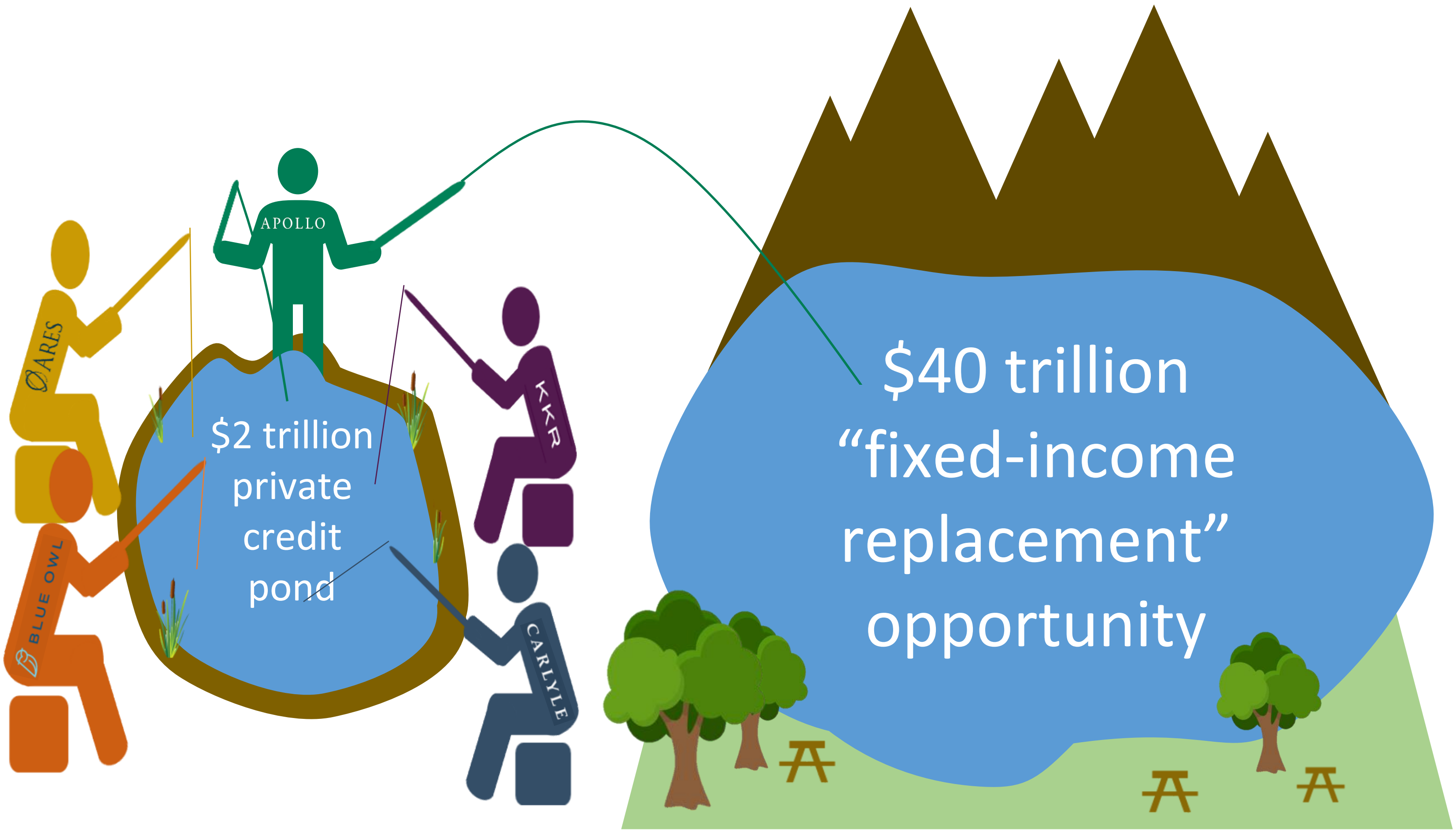
CDLI refers to Cliffwater Direct Lending Index
Source: Cliffwater Direct Lending Report, LCD LBO quarterly review, Autonomous Analysis

Structural Shifts in Banking Continue to Open New Growth Paths

Post-GFC	2012-2017	2018-2021	Today
Bank Regulation and Shrinking Balance Sheet	Middle Market Direct Lending and Specialty Finance Disintermediation	Large Cap Corporate Direct Lending and Bank Syndication Disintermediation	Asset-Backed Finance Disintermediation
Non-bank lenders were no longer seen as the last resort option for capital	The opportunity for non-bank lenders accelerated in these asset categories	Private credit experienced a shift to large cap corporate direct lending	Banks have faced further limitations in their origination capabilities

Source: : SIFMA, JP Morgan,, Financial Stability Board report

“Private Credit” Expanding to “Fixed-Income Replacement”



Source: : Apollo, Autonomous Research

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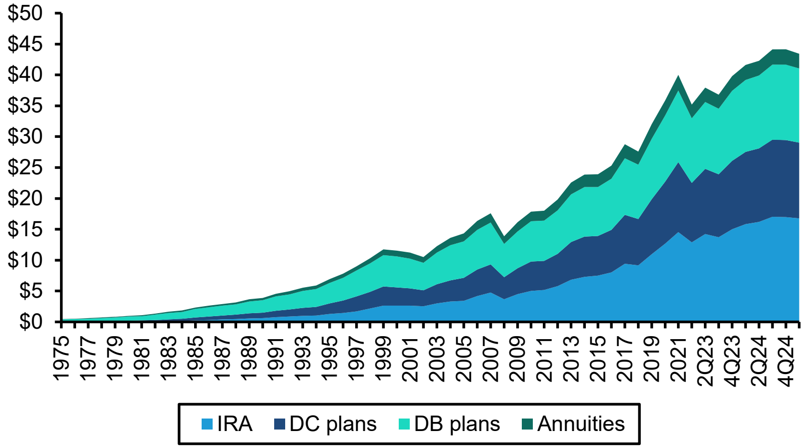
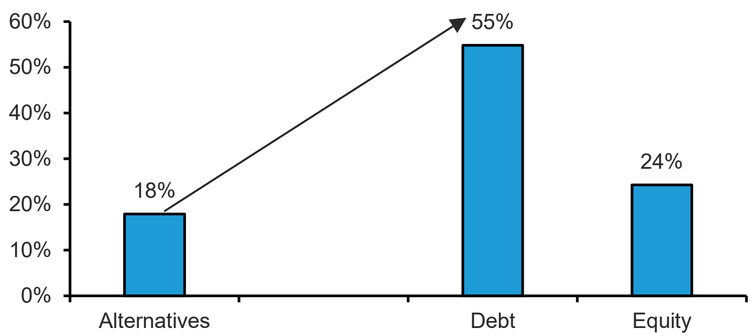
“Fixed-Income Replacement” Provides 4x+ Expansion Opportunity

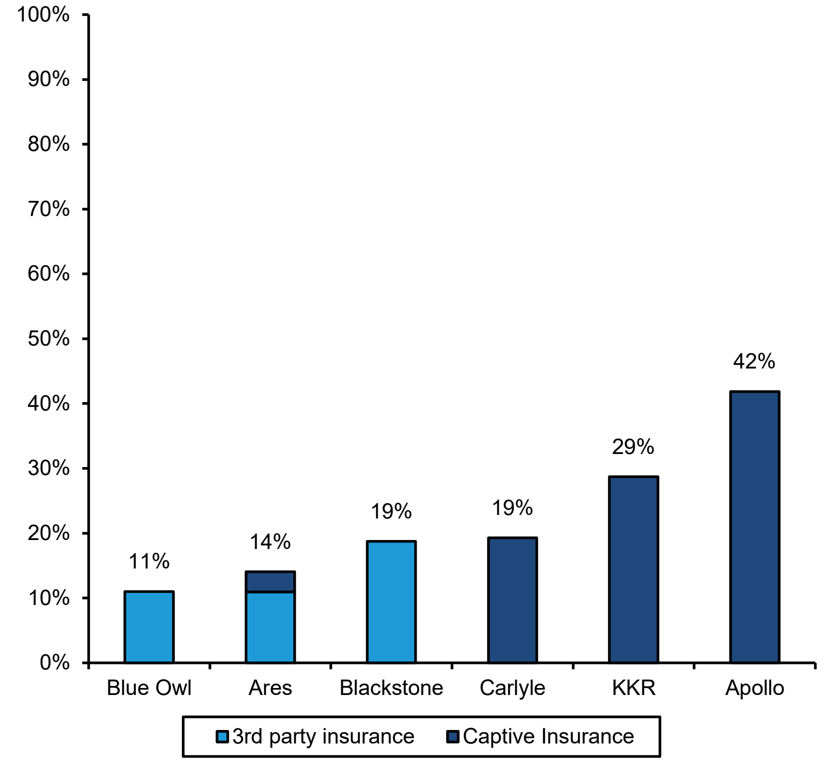
US Retirement assets ($tn)



DB plan asset allocation of select Fortune 1000 companies



Insurance AUM as % of total AUM 4Q23[1]



1 Blue Owl as of Investor day 2022, Carlyle insurance AUM is only Fortitude AUM
Source: Investment Company Institute, Willis Towers Watson, Company Reports, Autonomous Analysis

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Alternatives: Secular Tailwinds Blowing, But Macro Uncertainty

Key Positives/Opportunities

- Strong organic growth continues as firms expand, launch step-out strategies, and demand from new constituents ramps up
- Management fees largely locked-up and immune from market pullbacks
- Significant re-valuation opportunity out of the next credit cycle
- Index inclusion, broader ownership

Primary Concerns/Debates

- Macro, macro, macro: You are buying a levered portfolio of risk assets late-cycle
- Market concerned that public alternative managers are proxy for risky assets
- Increasing exposure to more market sensitive fee-earnings
- Is private equity mature, low growth now?

Bottom Line: Most alternative managers continue to grow 15-25%+/year, creating significant valuation ballast amid macro concerns.

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In Conclusion…

- No sign of end to equity passivication trend in US, with increasing risk of Euro "catch-up"

- "Barbelling" between passive and alternatives expanding to retirement, retail, and bond allocations, further exacerbating risk to traditional asset managers and adding to tailwind for alternatives

- Alternatives demand remains high and is still increasing, with significant increases in allocations from insurance, retail, and non-US investors

- Macro concerns and client allocation plans suggest private credit and infrastructure still best positioned for outperformance relative to private equity and real estate

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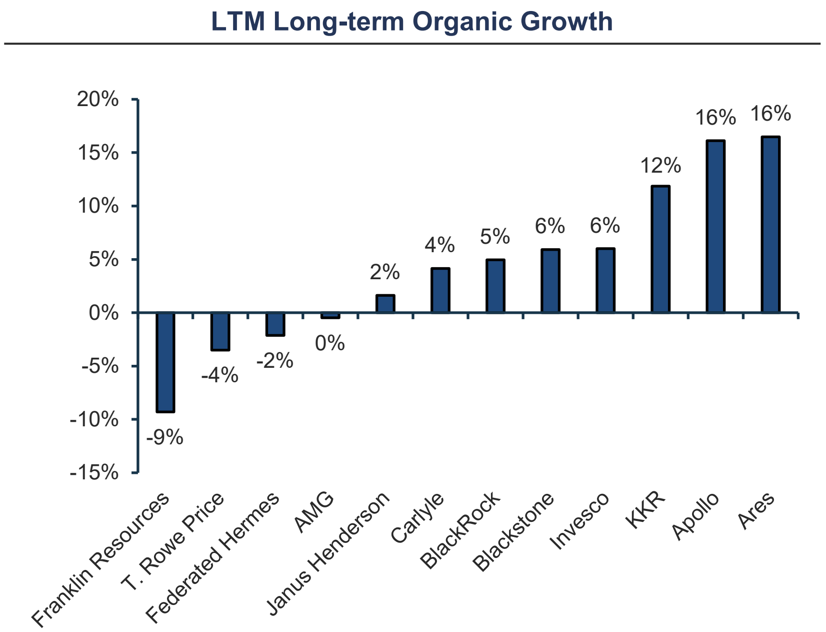
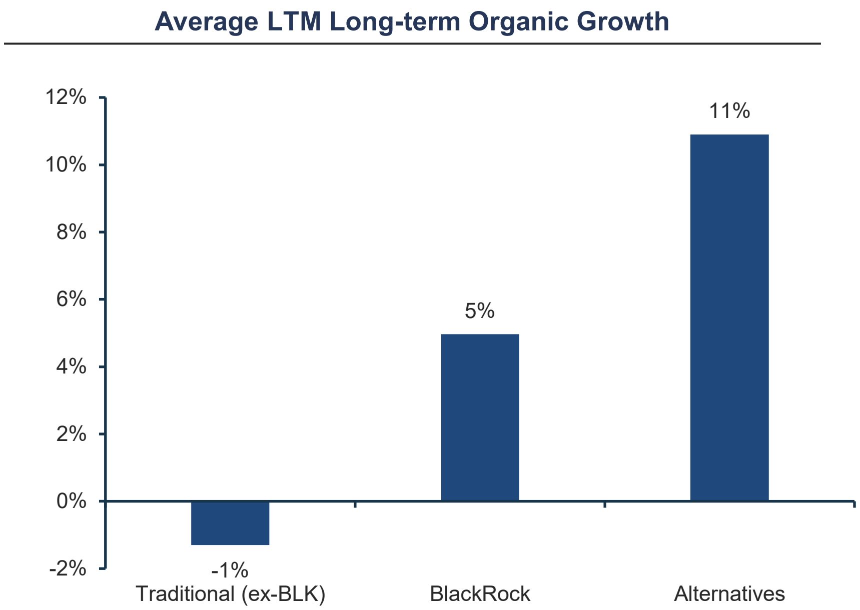
It All Comes Back to Organic Growth…

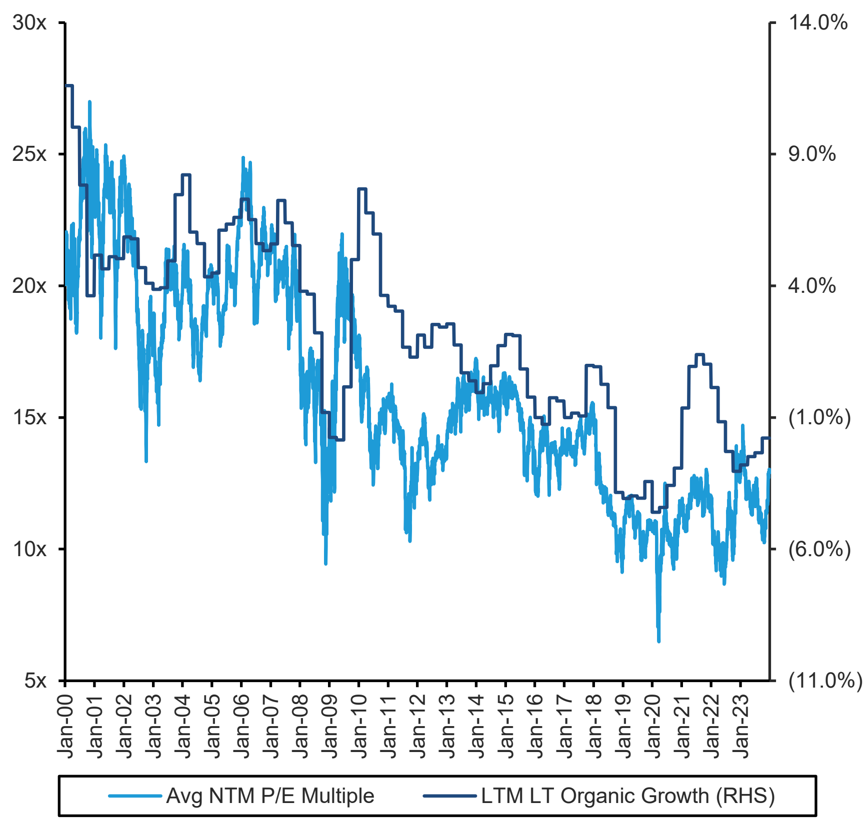




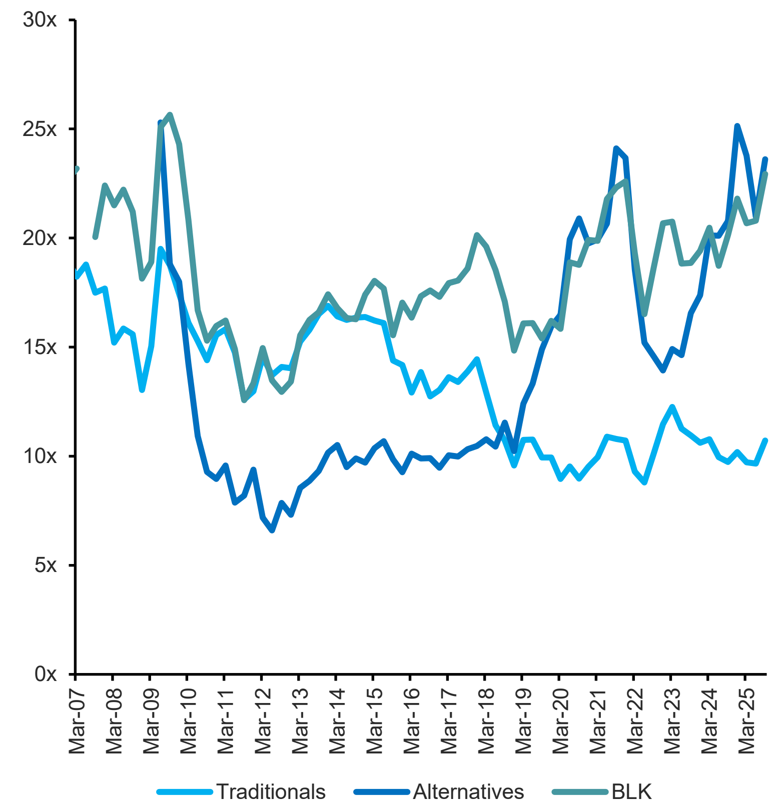
Alternatives include APO, ARES, BX, CG and KKR; Traditionals include AMG, BEN, FHI, IVZ, JHG and TROW
Source: Company Reports, Autonomous Analysis

...So, Traditional Valuation Decay Against Alternative Rise

Avg NTM P/E multiple vs LTM long-term organic growth for traditional managers



Avg NTM P/E for traditional and alternative managers



Alternatives include APO, ARES, BX, CG and KKR; Traditionals include AMG, BEN, BLK, FHI, IVZ, JHG and TROW
Source: Factset, Company Reports, Autonomous Analysis

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Top Picks

- With that in mind, our top long picks are:
  - Ares (OP) & Blue Owl (OP): Both have very similar attributes and thesis: High FRE contribution and best-in-class growth; private credit and infrastructure plays
  - Apollo (OP): Private credit leader and best pure play on global retirement income theme
  - BlackRock (OP): Only standalone play on passive + alts growth
- Our top short picks are:
  - T. Rowe Price (UP): Active equity outflows infecting retirement channel, with growing threat from "silver tsunami" shift to income; insurance and alts taking share
  - Franklin Resources (UP): Significant back book of large active mutual funds with unending secular outflows, with potential for significant AUM losses from ongoing Western affiliate legal woes

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US Payments & Global FinTech

Ken Suchoski & Rahul Jindal

Ken Suchoski

US Payments & FinTech,
Senior Analyst

Ken joined Autonomous in 2016 and has been covering payments and processing companies for almost a decade. Prior to joining Autonomous, Ken was an equity research associate at Janney Montgomery Scott covering REITs and an equity research analyst at First Eagle Investment Management's family office. Ken started his career in portfolio analytics at First Eagle, servicing institutional clients invested in the Global Value strategy. He received his Bachelor of Arts with a major in Economics from Middlebury College and is a CFA charterholder.

Rahul Jindal

Global FinTech Strategist,
Senior Analyst

Rahul joined Autonomous in 2022 and covers the FinTech sector. Prior to Autonomous, he spent three years at Capital One Financial in the Corporate Development team, leading M&A transactions and strategic partnerships. Before Capital One, Rahul served technology and advanced industry clients at McKinsey & Company, and started his career at Rolls-Royce plc. He is a graduate of the University of Virginia and Georgetown University.

Autonomous University

Payments & FinTech

Ken Suchoski

Comp Sheet

Autonomous Research US Payments & Processors Valuation Sheet

10/8/2025									EV/Gross Profit				EV/Adj. EBITDA w/ SBC				P/E w/ SBC				EV/NOPAT w/ SBC				EV/NOPAT w/ SBC		Revenues	Gross Profit	Adj. EPS
	Rating	Price Target	Last Price	Upside/ Downside (%)	Target multiple	Multiple type	EV ($bn)	ND/EBITDA 2024E	2023	2024	2025	2026	2023	2024	2025	2026	2023	2024	2025	2026	2023	2024	2025	2026	NTM	NTM in 12M	CAGR '24-'26	CAGR '24-'26	CAGR '24-'26
Core Processors/Acquirers																													
FIS	OP	$92	$69	34%	17.5x	EV/NOPAT	42.5	2.6x	nm	11.1	11.3	10.6	nm	10.2	9.8	9.2	14.5	13.1	11.9	10.8	nm	17.4	15.4	14.1	14.7	13.6	4%	2%	10%
FI	OP	$165	$128	29%	16.0x	EV/NOPAT	98.6	3.0x	9.7	8.9	8.1	7.3	12.0	10.7	9.7	9.0	16.9	14.5	12.7	11.1	18.1	15.3	14.6	13.6	14.2	13.1	8%	10%	14%
GPN	OP	$100	$89	13%	10.5x	EV/NOPAT	36.3	3.0x	5.5	5.1	4.9	4.7	8.8	8.2	7.9	7.6	9.1	8.0	7.3	6.2	12.3	11.3	10.9	10.3	10.6	10.0	3%	4%	14%
JKHY	UP	$143	$150	-5%	20.0x	EV/NOPAT	10.9	-0.1x	12.1	11.6	10.3	9.7	15.5	15.2	13.3	12.4	28.3	27.1	22.9	21.7	26.6	26.4	22.6	21.7	22.5	21.0	7%	9%	12%
PYPL	UP	$64	$76	-16%	11.0x	EV/NOPAT	71.0	-0.2x	5.2	4.8	4.6	4.4	11.5	9.2	9.7	9.2	19.8	16.3	14.4	12.8	16.1	14.6	13.3	13.0	13.6	13.2	7%	5%	13%
Average								**1.6x**	**8.1**	**8.3**	**7.8**	**7.3**	**11.9**	**10.7**	**10.1**	**9.5**	**17.7**	**15.8**	**13.8**	**12.5**	**18.3**	**17.0**	**15.3**	**14.6**	**15.1**	**14.2**	**6%**	**6%**	**13%**
Median								**2.6x**	**7.6**	**8.9**	**8.1**	**7.3**	**11.7**	**10.2**	**9.7**	**9.2**	**16.9**	**14.5**	**12.7**	**11.1**	**17.1**	**15.3**	**14.6**	**13.6**	**14.2**	**13.2**	**7%**	**5%**	**13%**
Emerging Acquirers																													
TOST	OP	$44	$37	19%	36.0x	EV/NOPAT	20.6	4.6x	24.7	17.3	13.2	10.5	nm	nm	58.4	37.0	nm	nm	72.5	48.9	na	nm	79.4	51.7	68.7	42.1	22%	29%	152%
FOUR	UP	$78	$80	-3%	13.5x	EV/NOPAT	10.8	4.7x	16.5	11.7	7.7	5.6	26.8	17.6	12.1	9.5	23.8	18.0	14.7	11.3	33.7	40.5	19.3	14.7	15.4	13.7	39%	44%	26%
XYZ	UP	$49	$81	-40%	3.4x	EV/NOPAT	47.4	-0.9x	6.3	5.3	4.7	4.1	91.8	27.0	20.7	15.9	nm	41.6	32.0	23.5	na	25.9	26.4	20.2	24.6	19.0	13%	14%	33%
Average									**12.7**	**9.2**	**6.9**	**5.5**	**59.3**	**22.3**	**33.3**	**19.3**	**23.8**	**29.8**	**37.7**	**24.9**	**33.7**	**33.2**	**41.7**	**27.2**	**36.2**	**24.9**	**21%**	**24%**	**55%**
Median									**11.4**	**8.5**	**6.2**	**4.9**	**59.3**	**22.3**	**31.3**	**15.3**	**23.8**	**29.8**	**31.7**	**19.7**	**33.7**	**33.2**	**26.4**	**21.1**	**24.6**	**19.0**	**17%**	**20%**	**30%**
Networks																													
V	OP	$397	$354	12%	29.0x	EV/NOPAT	698.7	0.2x	21.0	19.0	16.9	15.2	30.6	28.0	25.3	21.3	39.3	34.1	29.7	26.2	37.8	33.8	30.2	27.3	28.9	25.9	12%	12%	14%
MA	OP	$634	$582	9%	32.0x	EV/NOPAT	538.7	0.6x	21.5	19.1	16.5	14.6	35.1	31.1	26.6	23.6	49.5	37.7	35.0	30.7	40.9	35.1	33.6	31.2	33.1	29.4	14%	14%	11%
Average/Median									**21.2**	**19.1**	**16.7**	**14.9**	**32.9**	**29.5**	**26.0**	**22.4**	**44.4**	**35.9**	**32.4**	**28.4**	**39.4**	**34.5**	**31.9**	**29.3**	**31.0**	**27.6**	**13%**	**13%**	**12%**
Fleet																													
CPAY	OP	$396	$293	35%	16.0x	EV/NOPAT	25.2	2.0x	8.6	8.1	7.2	6.4	12.4	11.7	10.4	9.2	17.4	15.4	13.9	11.9	17.8	17.0	14.9	13.1	14.0	12.4	12%	13%	14%
WEX	UP	$154	$158	-2%	14.0x	EV/NOPAT	10.1	4.4x	6.4	6.4	6.4	6.1	10.4	9.5	9.9	9.7	12.6	11.9	11.6	10.1	17.1	14.3	15.6	14.4	15.0	14.2	3%	2%	9%
Average/Median									**7.5**	**7.2**	**6.8**	**6.2**	**11.4**	**10.6**	**10.2**	**9.4**	**15.0**	**13.7**	**12.8**	**11.0**	**17.4**	**15.7**	**15.3**	**13.7**	**14.5**	**13.3**	**8%**	**7%**	**11%**
Software																													
NCNO	N	$32	$26	23%	85.0x	EV/NOPAT	3.2	1.3x	11.3	9.9	9.0	8.0	nm	nm	61.1	43.0	nm	nm	nm	82.0	nm	nm	78.9	55.8	62.0	49.8	9%	11%	107%
BILL	OP	$59	$53	11%	33.0x	EV/NOPAT	5.7	-2.1x	5.5	4.8	4.3	3.9	nm	nm	nm	nm	nm	nm	nm	nm	na	nm	na	nm	N/A	214.8	11%	11%	44%
FLYW	OP	$16	$13	23%	15.0x	EV/NOPAT	1.4	-2.4x	5.5	4.5	3.8	3.3	nm	nm	35.9	22.8	nm	nm	nm	26.9	na	nm	58.3	31.3	38.7	26.7	20%	16%	na
Average									**7.4**	**6.4**	**5.7**	**5.1**	**na**	**na**	**48.5**	**32.9**	**na**	**na**	**na**	**54.5**	**na**	**na**	**68.6**	**43.6**	**50.3**	**97.1**	**13%**	**13%**	**75%**
Median									**5.5**	**4.8**	**4.3**	**3.9**	**na**	**na**	**48.5**	**32.9**	**na**	**na**	**na**	**54.5**	**na**	**na**	**68.6**	**43.6**	**50.3**	**49.8**	**11%**	**11%**	**75%**

Source: Autonomous Research, Bloomberg, company reports

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What is Payments and FinTech?

Payments represent the transfer of money or value from one party to another in exchange for goods, services, or debts.

There are the networks…

VISA · mastercard · AMERICAN EXPRESS · DISCOVER

…the issuer processors… FIS · fiserv.

…the back-end processors…

stripe · adyen · globalpayments · Braintree

… the front-end acquirers…

PayPal · clover · toast · Square · lightspeed

…and the POS/gateways.

Verifone · ingenico GROUP

Fintech is technology that improves and/or automates fundamental functions provided by financial services.

Some fintechs are lenders… SoFi · Upstart

…others help with wealth management…

Robinhood · Betterment · coinbase

…some do embedded finance… shopify · ramp

Revolut · Dave **…others help with personal finance …**

…some assist with banking…

$ CashApp · chime · nubank

PLAID · affirm · Klarna. **…the rest enhance payments.**

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Source: McKinsey, Plaid, Autonomous Research

Footnote: This is an over-simplification as many companies take on multiple roles

Why Invest in Payments and FinTech?

Payments and fintech are a global and growing opportunity

Long-term secular growth with innovations in tech

Opportunity in new flows (B2B, G2C, etc.)

Drives financial inclusion

Low capital intensity/high ROIC

Source: Autonomous Research

History of Payments

People have transacted with each other for millenniums now…

Barter economy

Money economy; paying with cash and check

Card payments

Source: Bloomberg, USA Today, Forbes

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... and it's only gotten more convenient for consumers

1949: Founding of Diners' Club

1958: The Fresno credit card drop

1968 – 1976: Visa, as we know it, is born

"This endless compression of float, whether of money, information, technology or for that matter anything else, can be described as the disappearance of "change" float, ***the time between what was and what is to be, between past and future."*** *– Dee W. Hock*

Source: Diners Club International, The Business Journal, Visa

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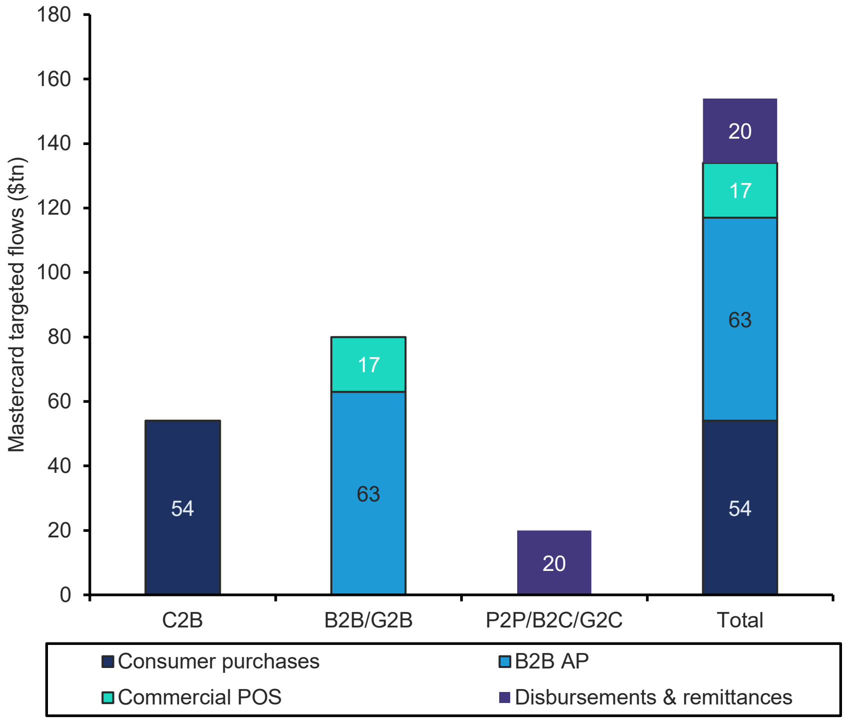
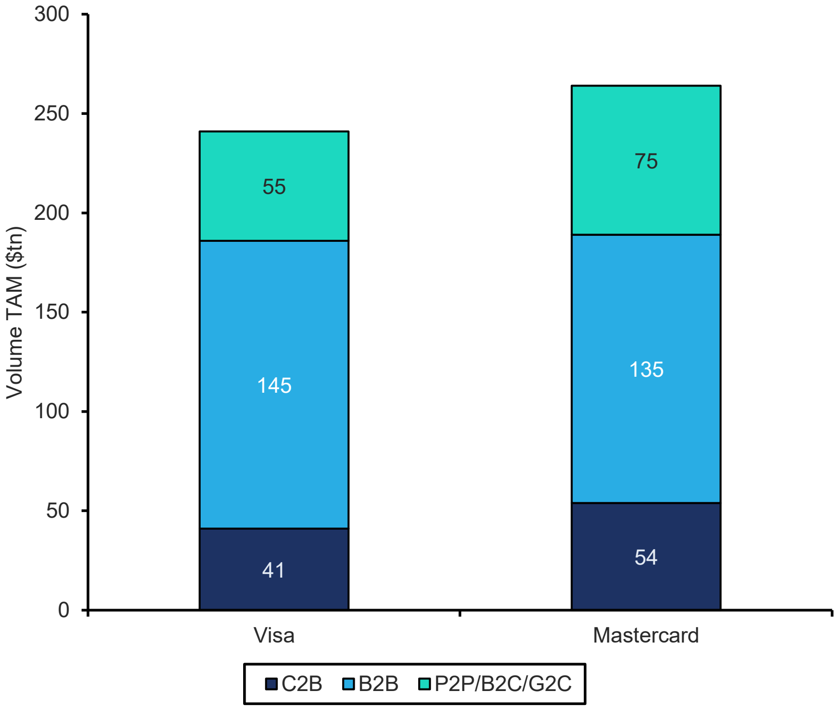
The volume opportunity is more than just consumer payments

Consumer payments represent less than half of the addressable flows today…



… and less than 20% of the global payment flows more broadly.

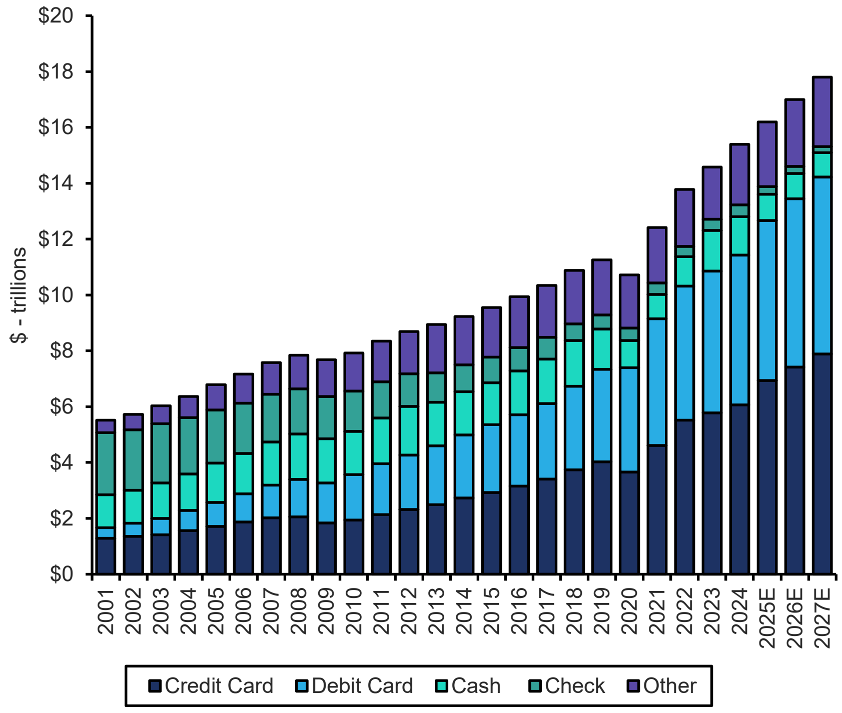


Source: Mastercard, Visa, Autonomous Research

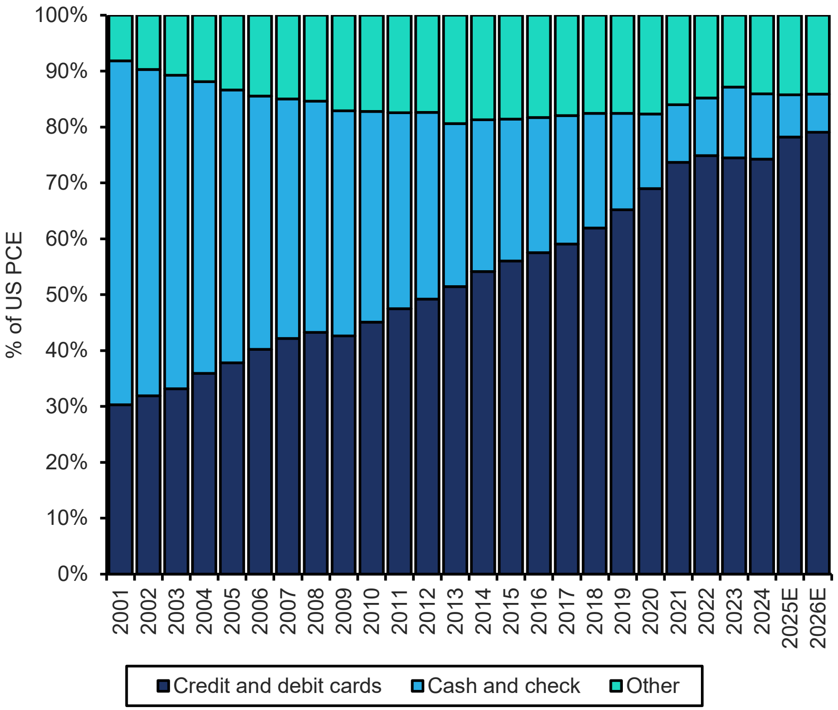
Cash to Card Shift

There has been a secular shift from cash to card

Credit and debit cards have been driving PCE purchases in the US…



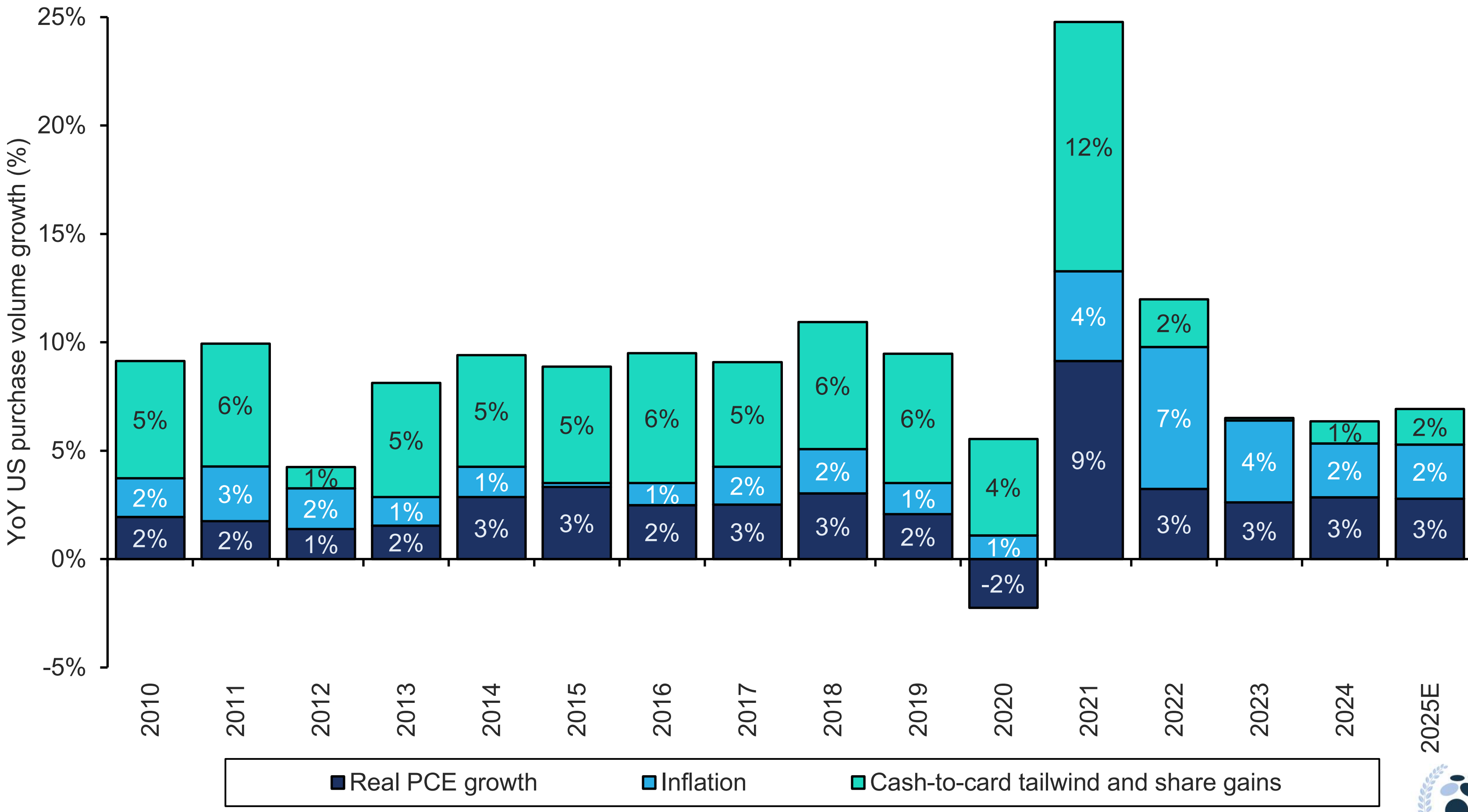
…accounting for ~70% of total PCE purchases in 2024, up from 30% in 2001



Source: Nilson, Worldpay Global Payments Report, Company data, Autonomous Research

Growth Drivers

Volume growth driven by real PCE growth, inflation, and cash to card shift

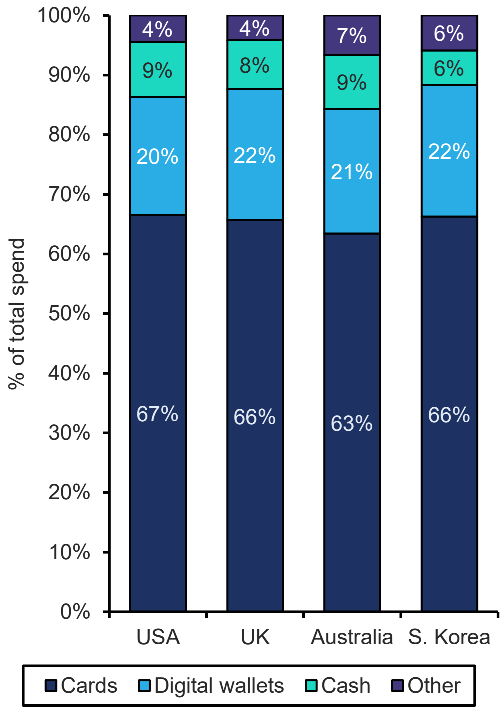


Source: Company data, Federal Reserve Bank of St. Louis, Autonomous Research

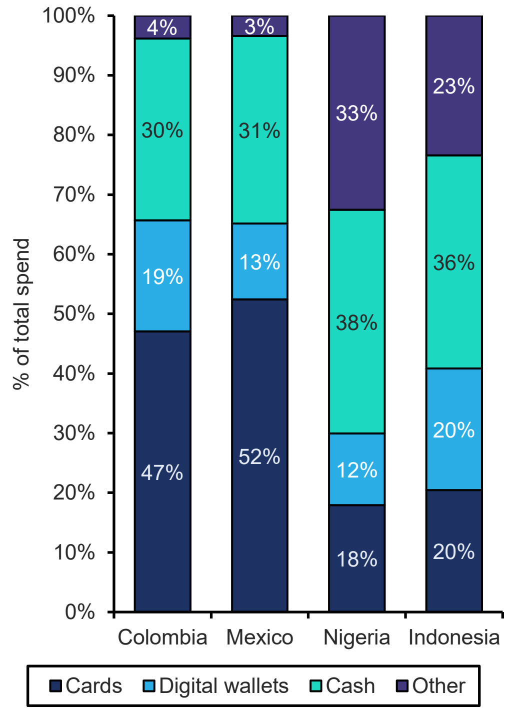
Card Penetration by Region

There’s still a lot of cash out there

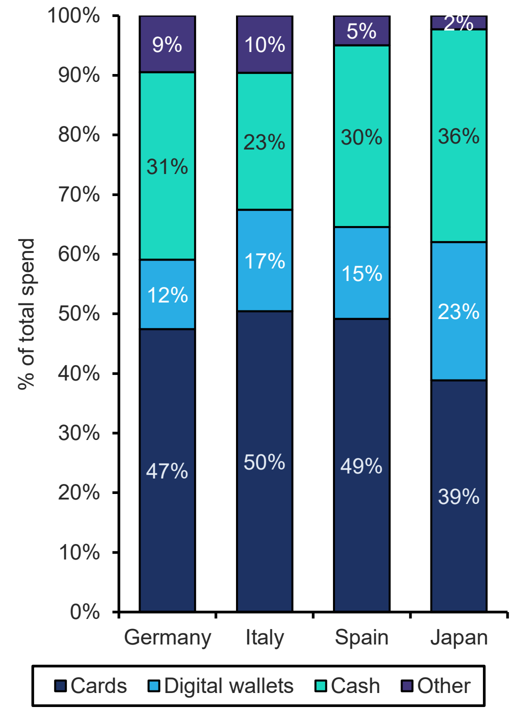
Developed markets tend to favor card payments...



... while cash remains more prevalent in **emerging markets...**



... although **exceptions** to this trend certainly exist.



Source: Worldpay by FIS, Global Payments Report, Autonomous analysis

Footnote: Data as of 2024

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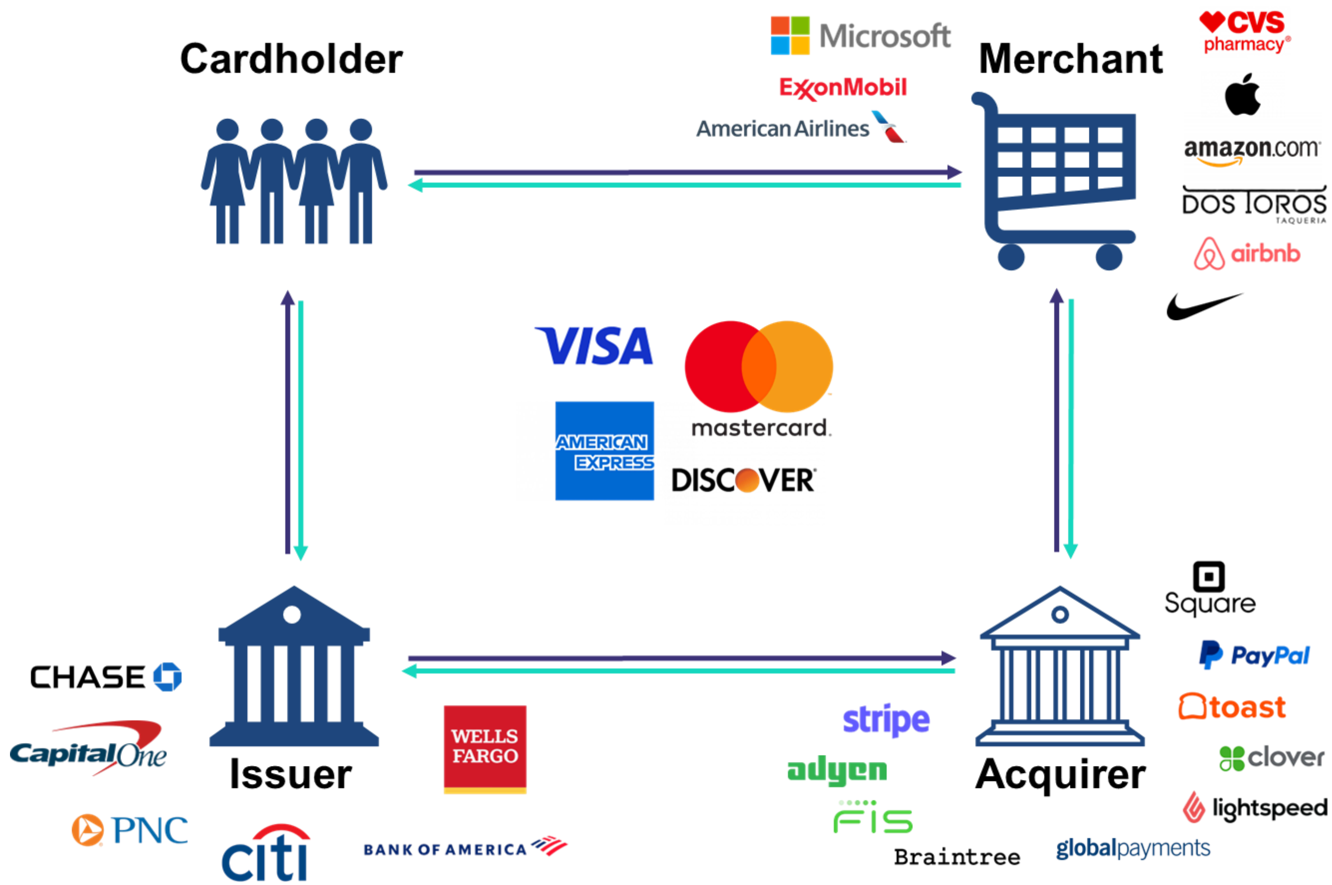
How Do Payments Work?

Networks connect the nodes in the 4-party payment model

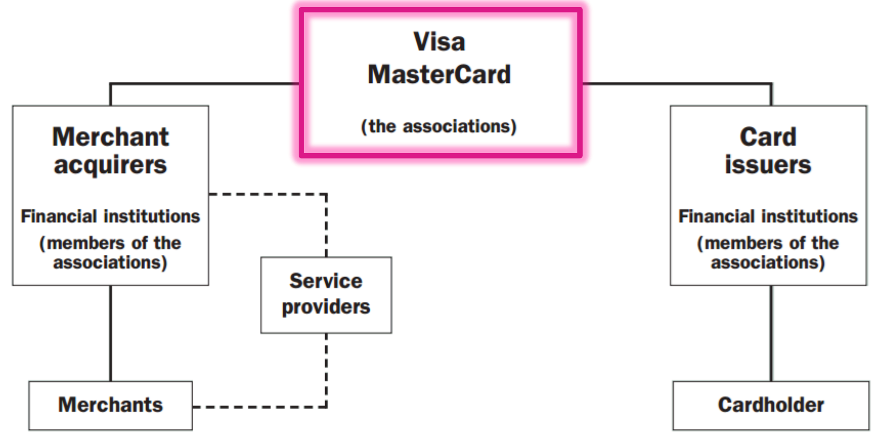


Source: Autonomous, company websites

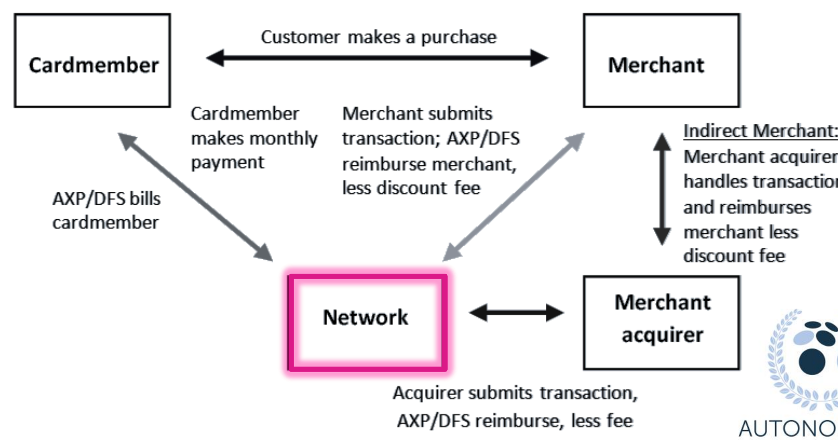
How Do Networks Work?

Networks solve the "Many to Many" problem

The basic flow of an **open loop credit transaction**



Typical **closed-loop transaction** (e.g., Amex, Discover)



Source: Company websites, Autonomous Research

Responsibilities Across the Payment Value Chain

POS/Gateway	Front-end acquirers	Back-end processors	Issuer processors	Networks
MAIN TASKS				
Captures the card data, communicates authorization request outcome to the merchant	Processes the authorization request, provides risk management and other value-added services	Processes the settlement batches	Authorizes transactions, communicates with settlement entities, maintains a system of record	Facilitates data exchange between the acquirer and issuer

SELECT EXAMPLES

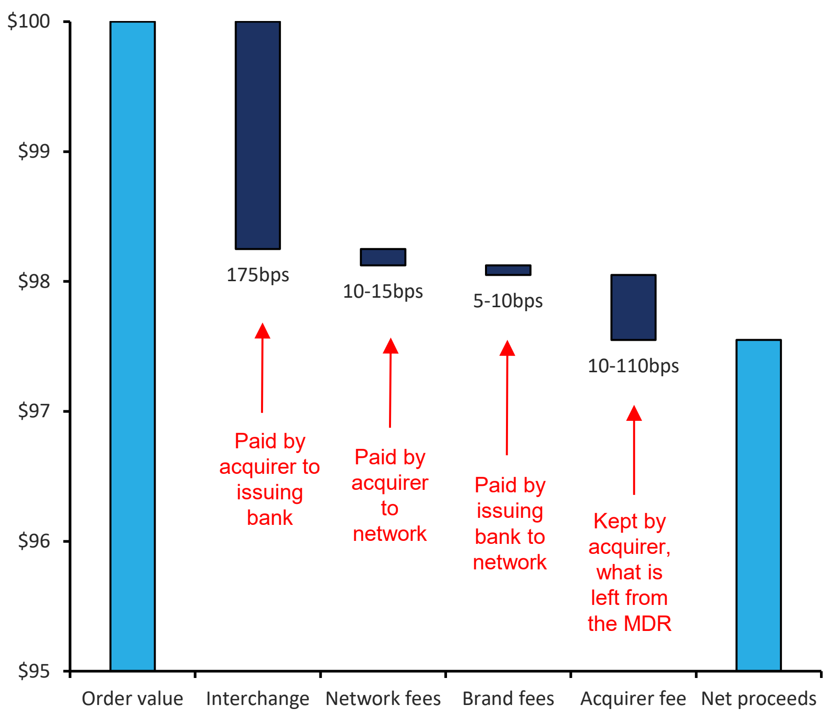
POS/Gateway	Front-end acquirers	Back-end processors	Issuer processors	Networks
Verifone, Ingenico				
Square, Toast, Clover, Shift4, Lightspeed	Square, Toast, Clover, Shift4, Lightspeed			
Worldpay, First Data		Paymentech		
PayPal, Braintree, Adyen, Stripe, Global Payments, Nuvei	PayPal, Braintree, Adyen, Stripe, Global Payments, Nuvei	PayPal, Braintree, Adyen, Stripe, Global Payments, Nuvei		
			TSYS, Fiserv, Jack Henry, FIS	
				Visa, Mastercard

Source: Company data, Autonomous Research

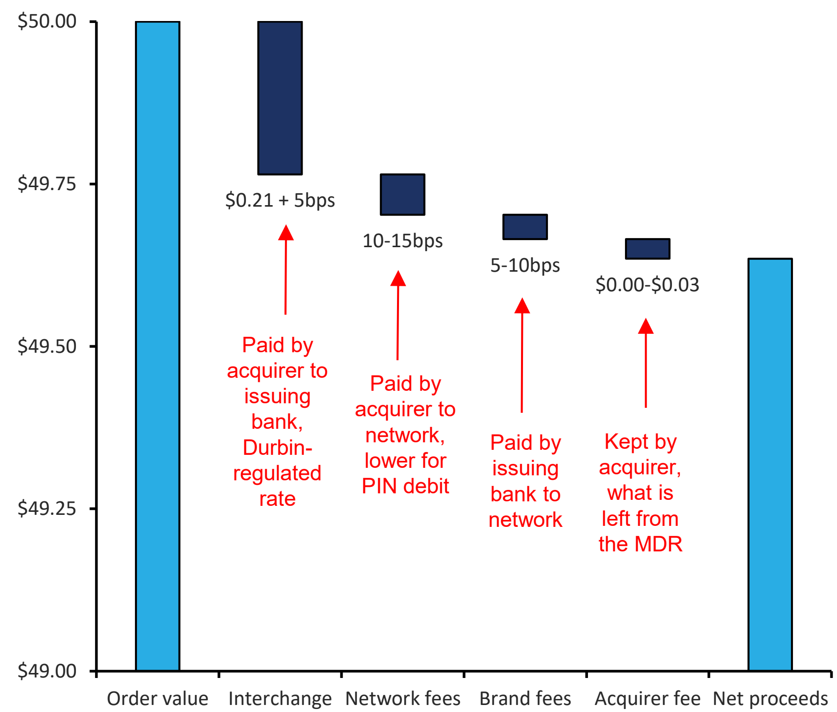
Who Gets Paid and How?

Participants typically clip a percentage of the payment volume

Fee breakdown of an unbundled credit transaction



Fee breakdown of an unbundled, regulated debit transaction



Source: Nilson, Autonomous Research

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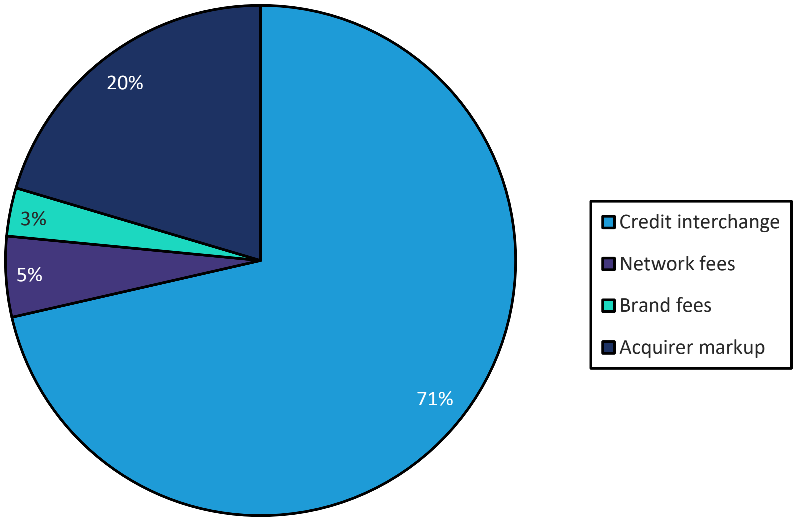
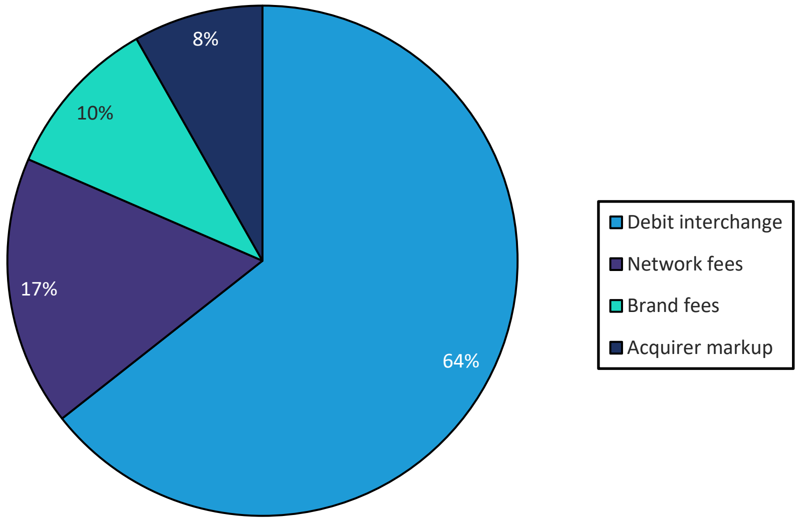
Who Gets Paid and How?

Higher risk = higher expected return

Average profit pool of a credit transaction



Average profit pool of a debit transaction



Source: Nilson, Autonomous Research

Profit Pool By End Market

There is higher profitability down market in the acquiring industry

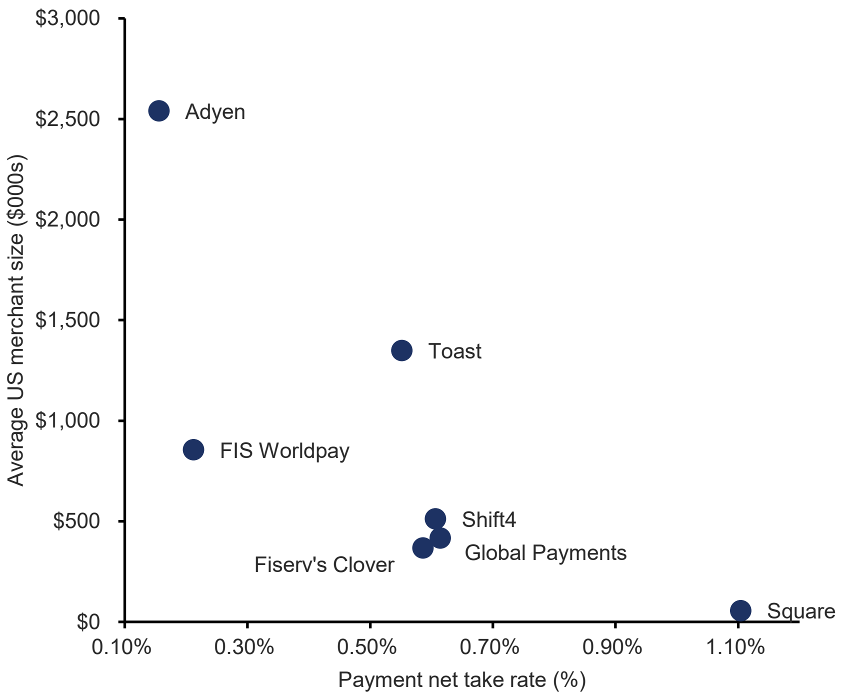
Segment	Est. # of businesses	Est. credit/debit dollar volume	Est. net revenue
Mega - business	125	$1,562bn	$0.5bn
Large	50,000	$750bn	$1.1bn
Mid -size	185,000	$462bn	$2.3bn
Small business	7mn	$350bn	$2.6bn
Micro business	20mn	100 - 300bn	$0.8 -$2.2bn

Source: Autonomous Research

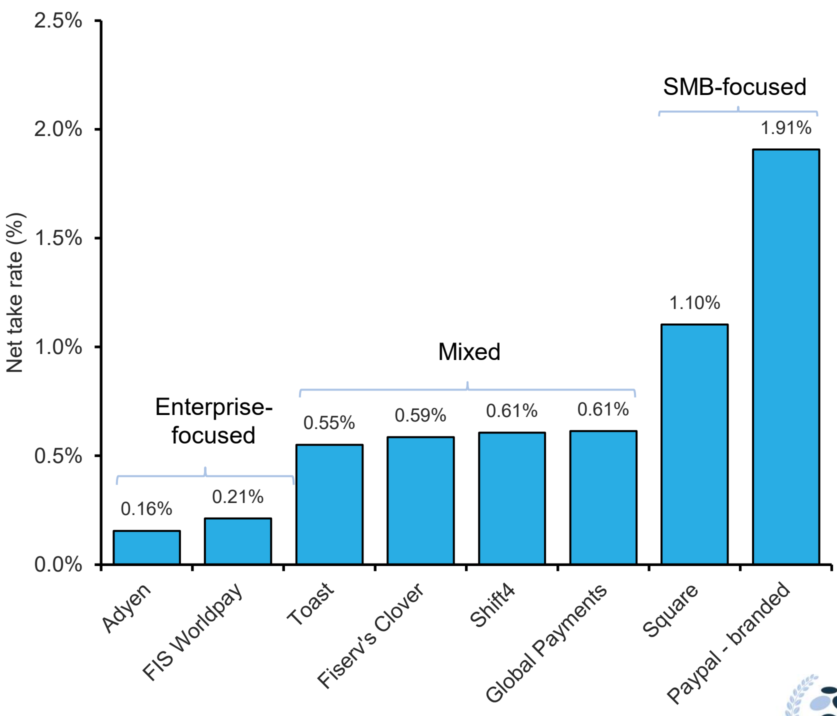
Acquirer Take Rates

Merchant size and type of service are meaningful factors in take rate

Acquirers tend to earn more favorable net take rates serving smaller merchants



Players focused on back-end processing earn a lower spread than those that provide customer-facing solutions



Source: Company reports, Nilson, Autonomous Research

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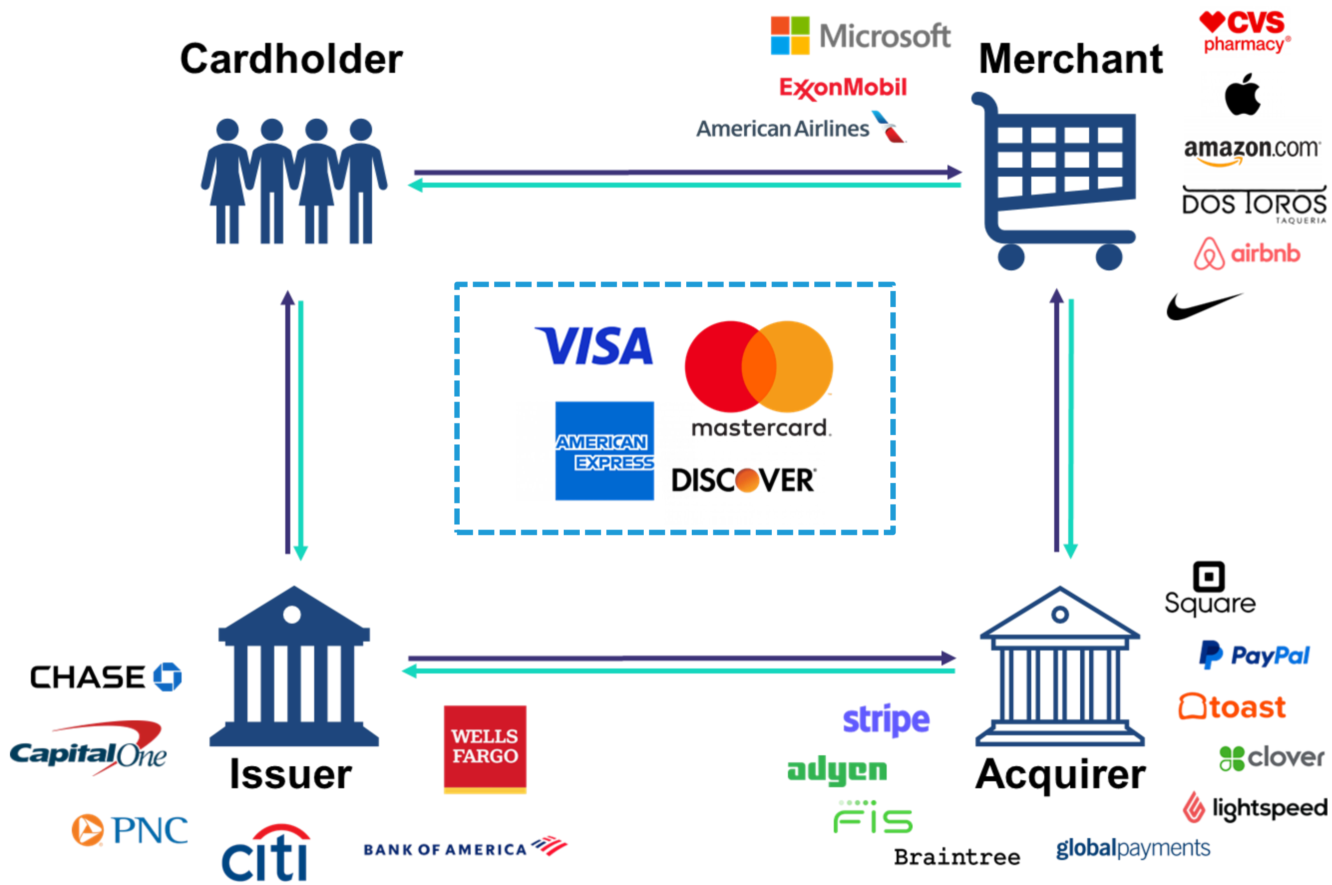
Sub-Sectors

Networks



Source: Autonomous, company websites

Networks

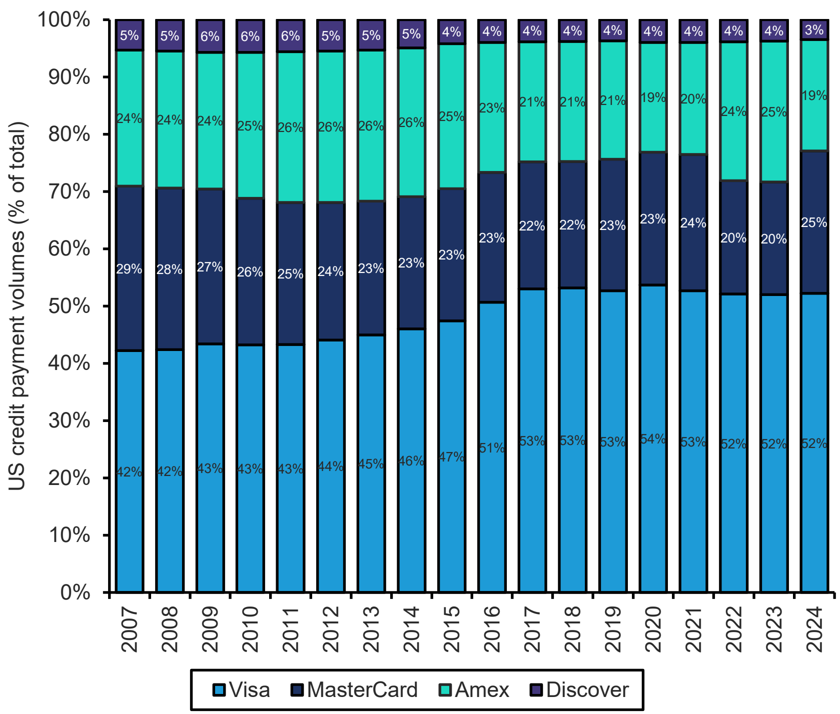
Revenue growth algo	Volumes (nominal PCE, share gains) x take rate (pricing on service yield, transaction fees, FX volatility) Value-added services
Operating margins	Very high (60-70%), benefiting from collective investment
Financial risk	Low as the networks are toll operators clipping a small fee on each transaction
Business risk	Low from consumer habituation to cards, merchant reach; left tail risks and regulation
Valuation	(25-35x), varies depending on growth

Source: Bloomberg, Autonomous Research

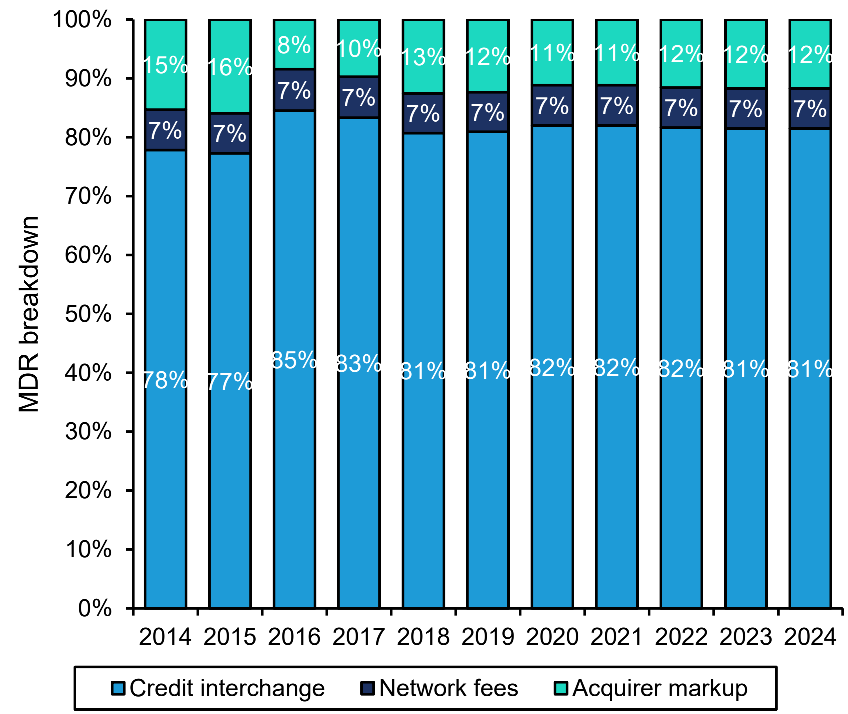
Networks

Network fundamentals have remained steady over the past decade

Networks' market shares have remained stable…



… as have the networks' share of MDR



Source: Nilson, Electronic Payments Coalition, Company data, Autonomous Research

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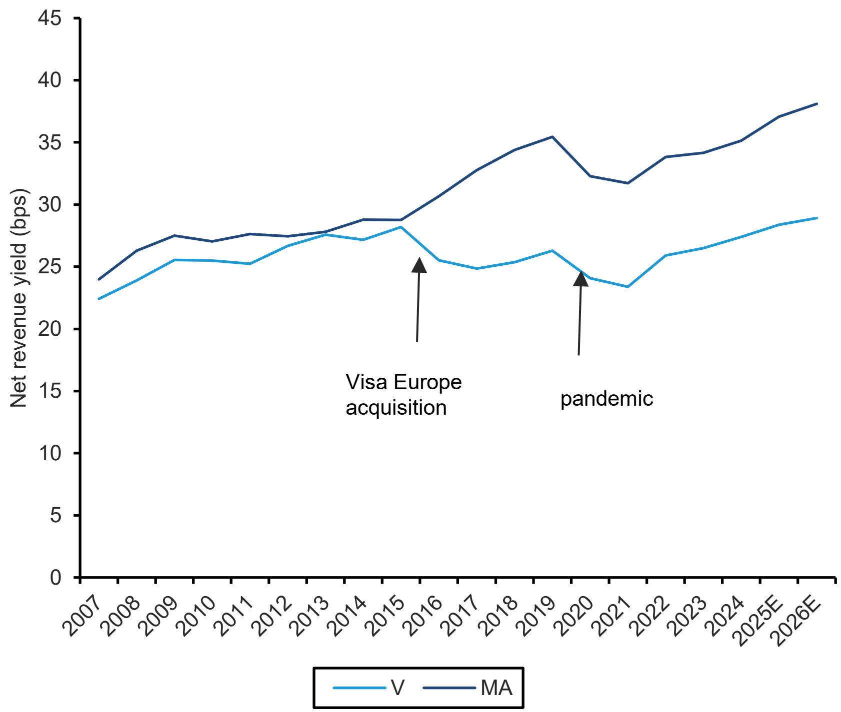
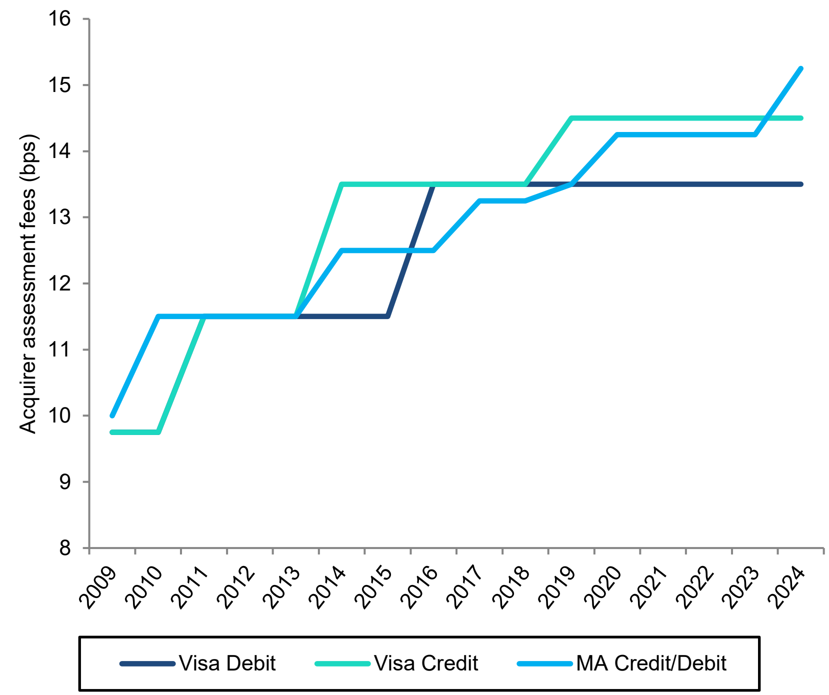
The networks have demonstrated continued pricing power over time

Net revenue yield (revenue divided by volume) continues to increase



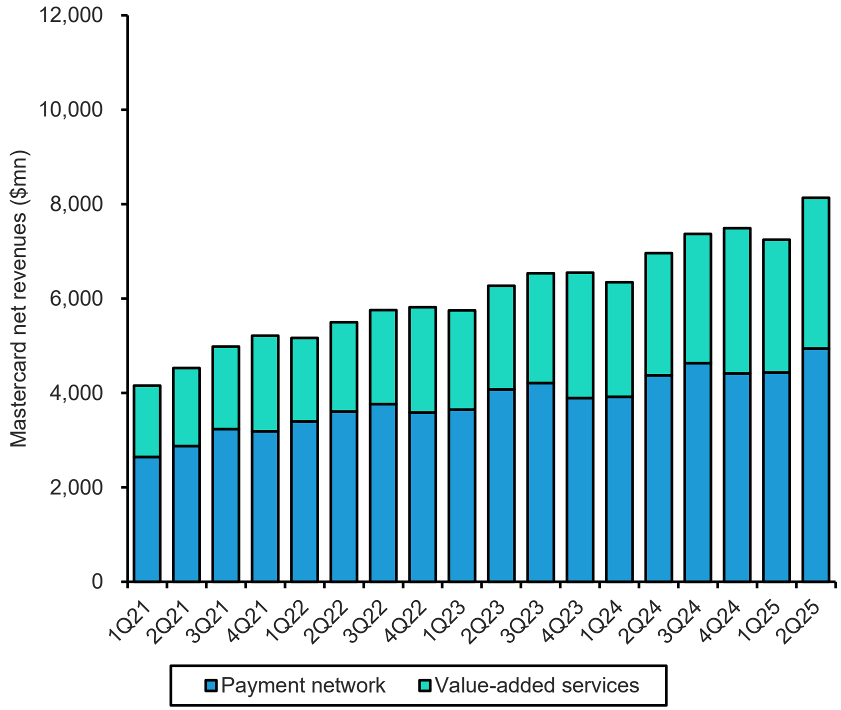
The networks have pricing power and have a history of increasing acquirer assessment fees



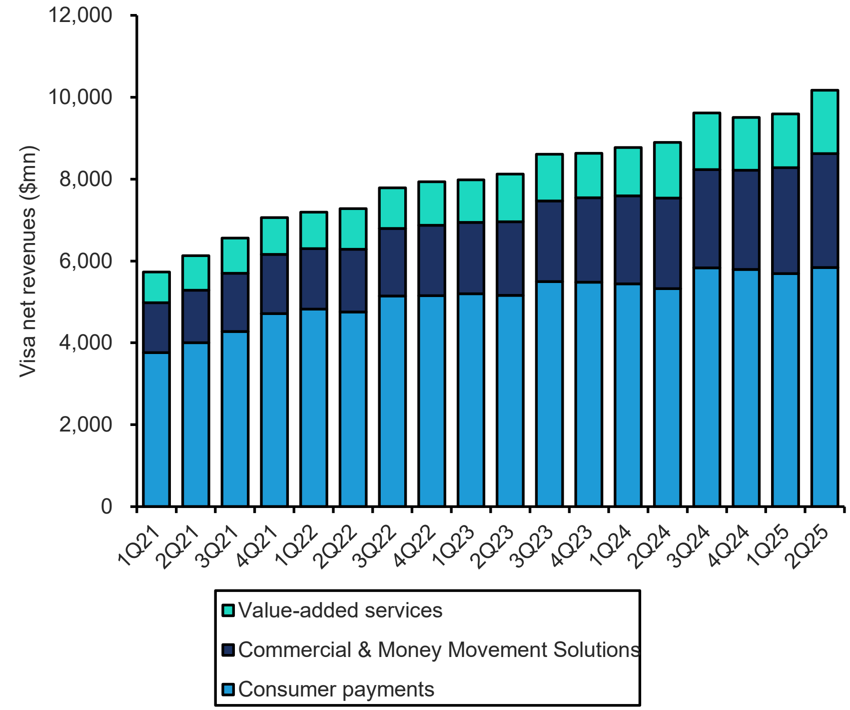
Source: Company data, Autonomous Research

Value-added services and new flows are extending the growth runway

While Mastercard has started building out its services footprint earlier...

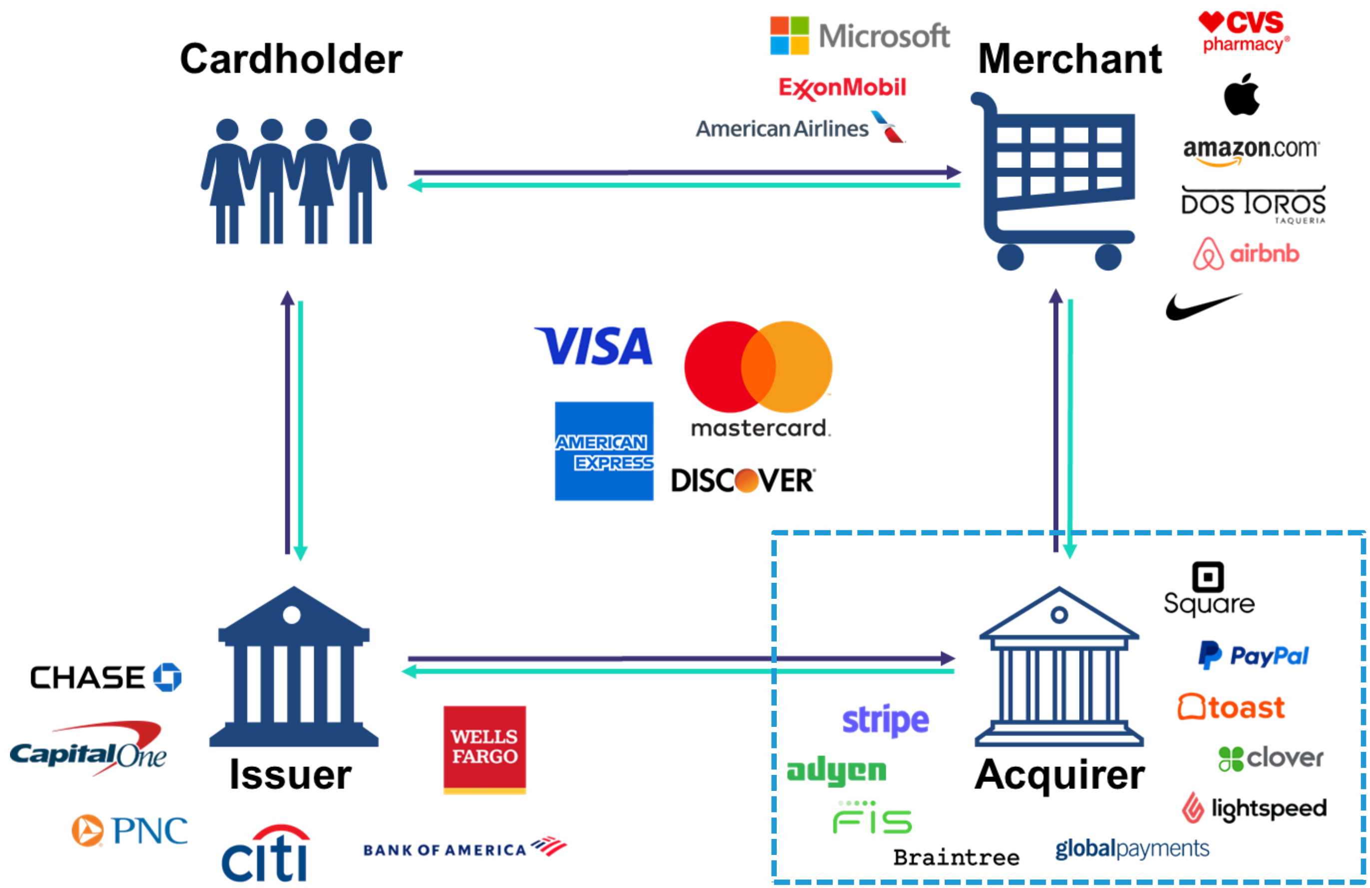


... Visa is now catching up and is also benefiting from its push into New Flows (e.g., B2B, P2P, G2C, etc.)



Source: Company data, Autonomous Research

Acquirers / Processors



Source: Company websites, Autonomous Research

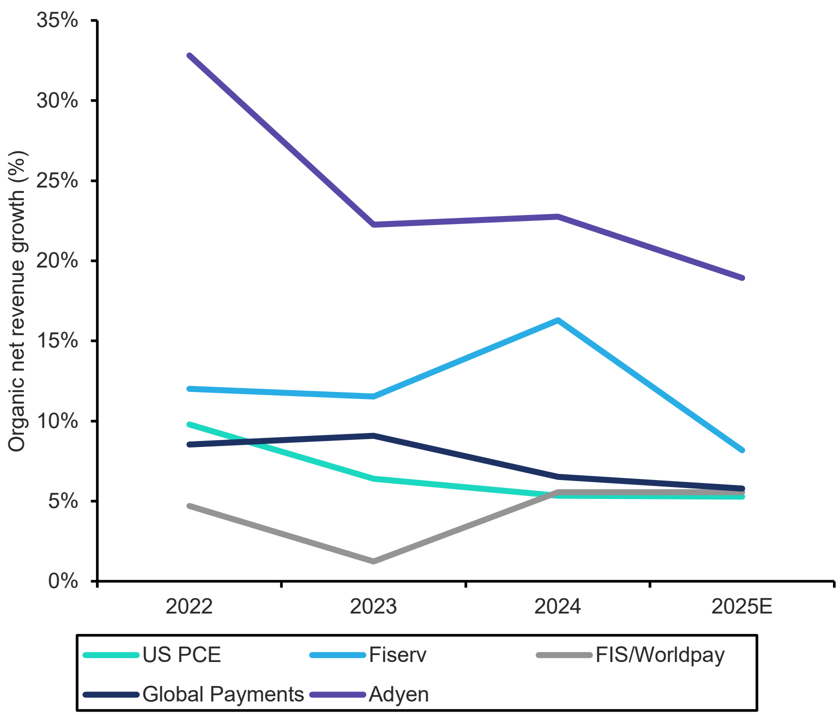
Acquirers / Processors

Revenue growth algo	Volumes (nominal PCE, share gains) x take rate (pricing, VAS, product)
Margins	High (30-50%), dependent on scale
Financial risk	Limited, on the hook if a merchant goes bankrupt
Business risk	Mixed – depends on switching costs & competitive dynamic
Valuation	Very wide range (10-30x), varies based on growth, business quality, and competitive narrative

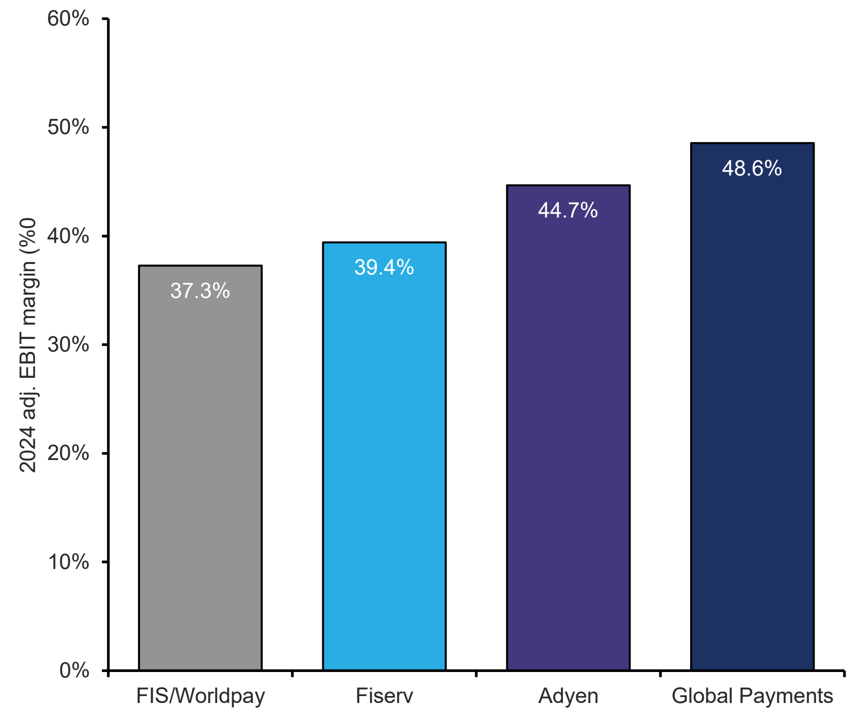
Source: Bloomberg, Autonomous Research

Acquirers / Processors

Organic growth has decelerated closer to US PCE growth



Margins range from high-30s to high-40s



Source: Company data, Autonomous Research

Note: EBIT margin calculations include stock-based comp as a real expense.

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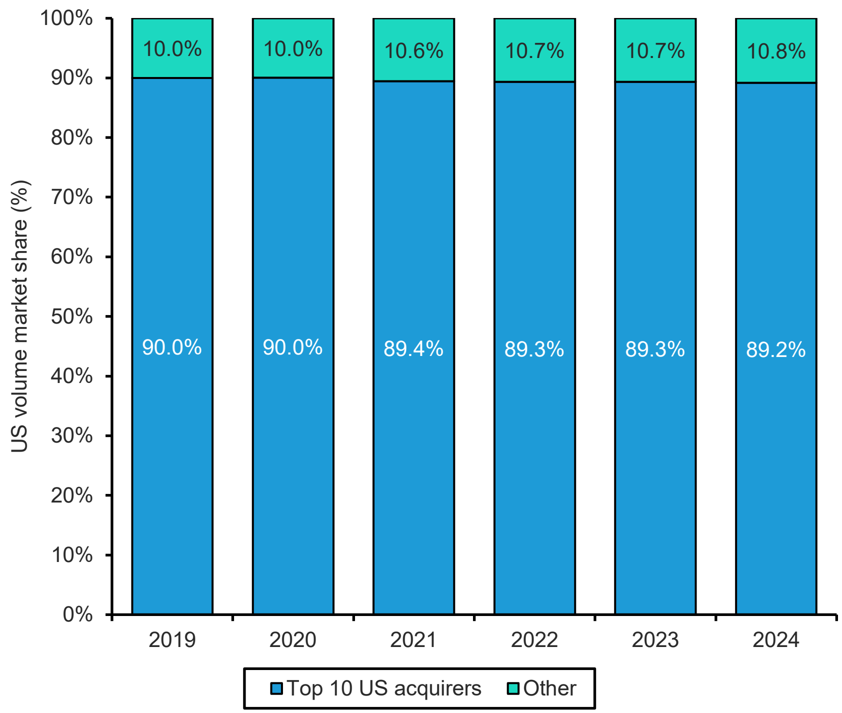
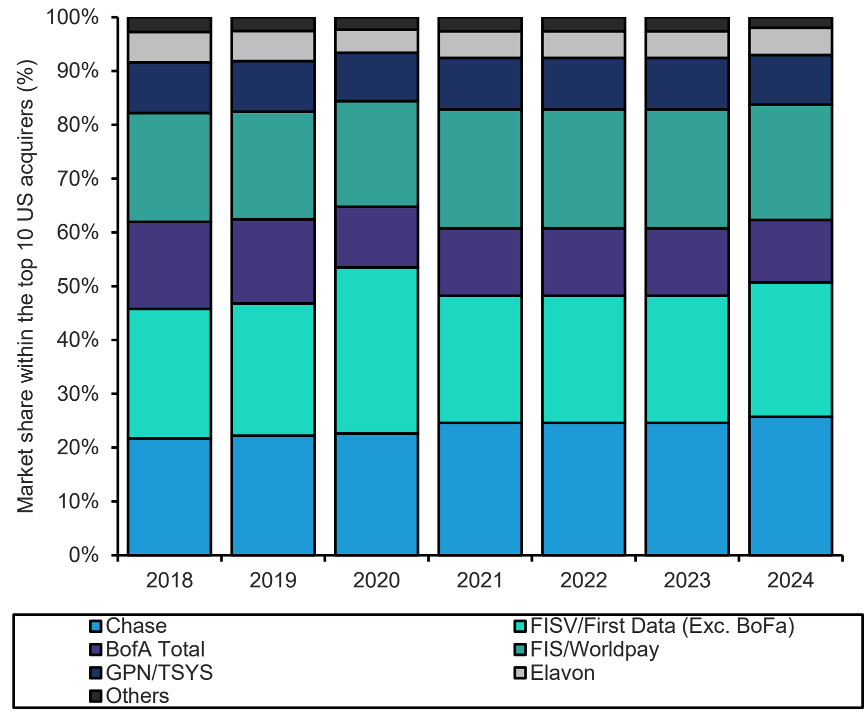
Acquirers / Processors – US Market Share

US acquiring market share



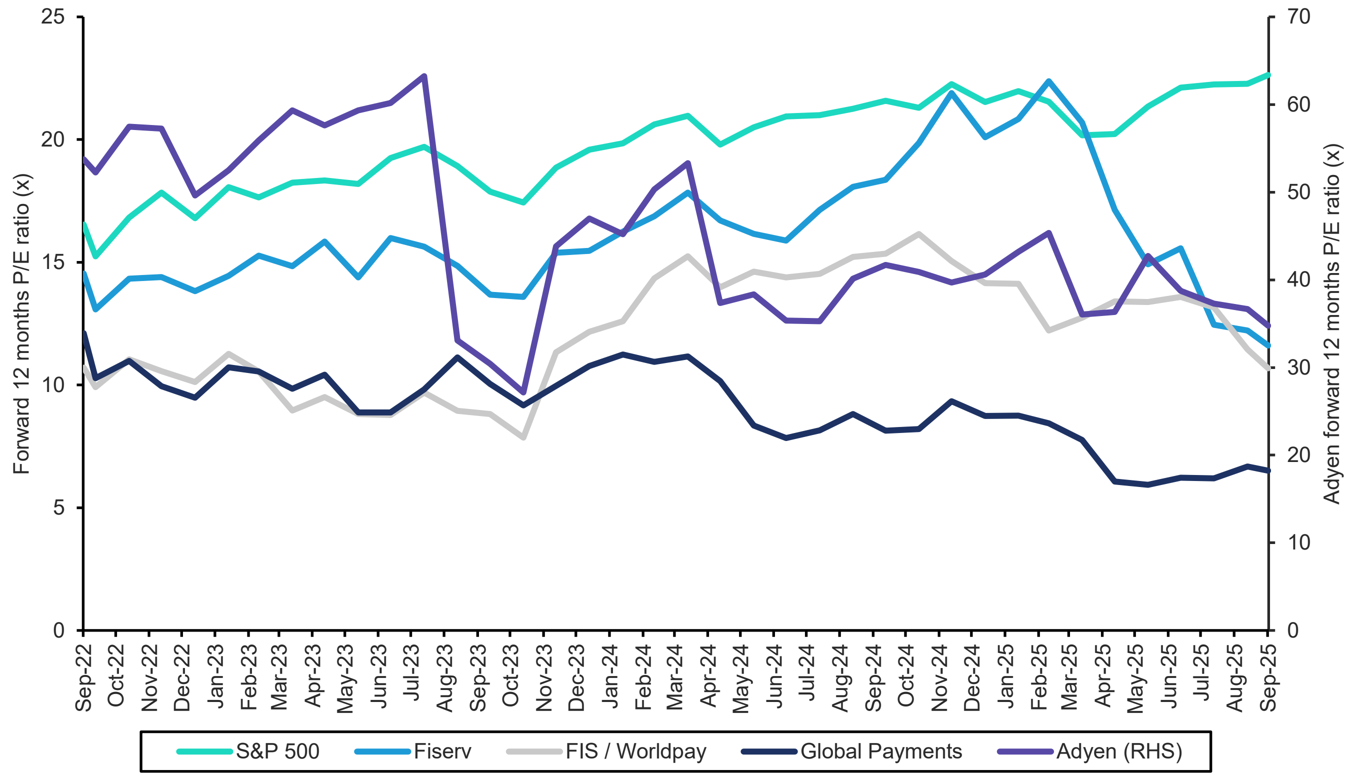
JP Morgan & Fiserv are the largest providers



Source: Company data, Nilson

Acquirers / Processors

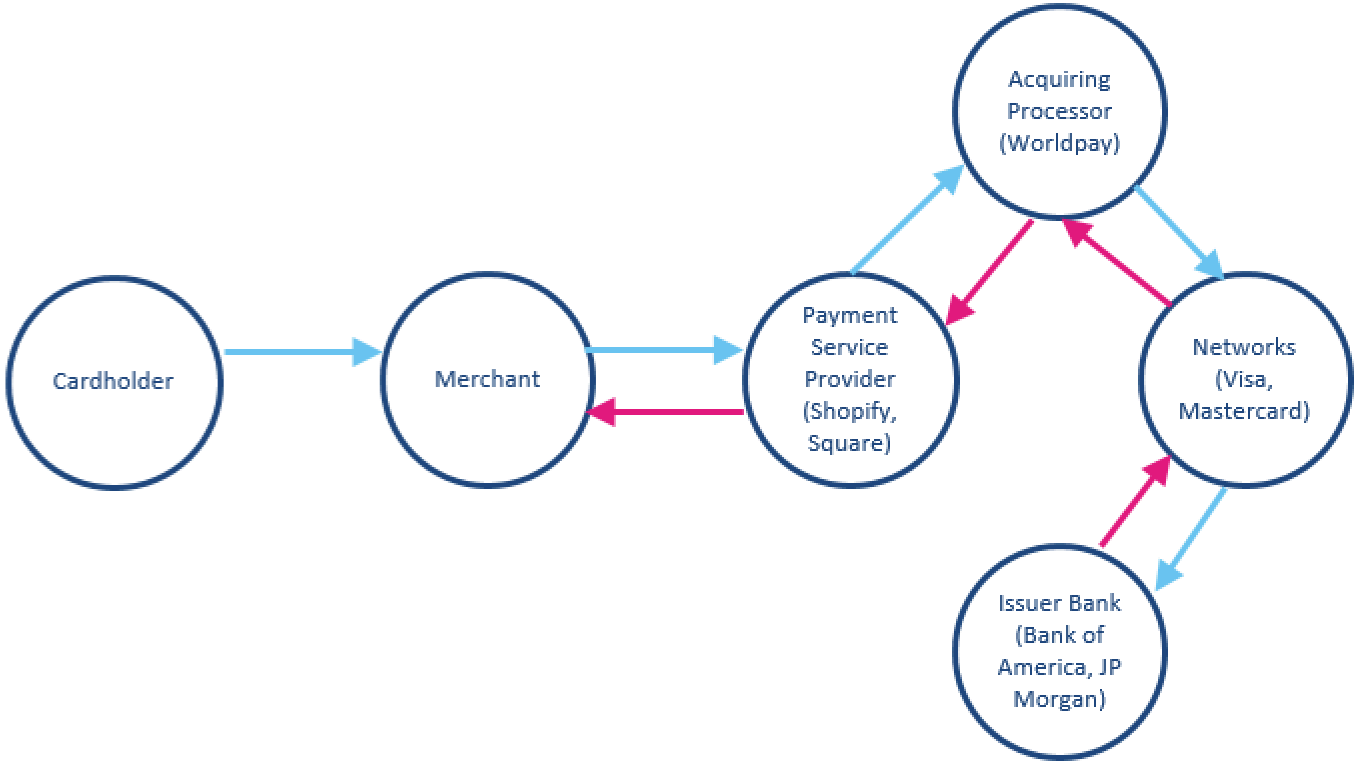
Valuation – comparison of acquirer players



Source: Bloomberg

Note: P/E's are based on consensus adjusted EPS estimates

Software Vendors / Payment Service Providers



Source: Autonomous Research

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Software Vendors / Payment Service Providers

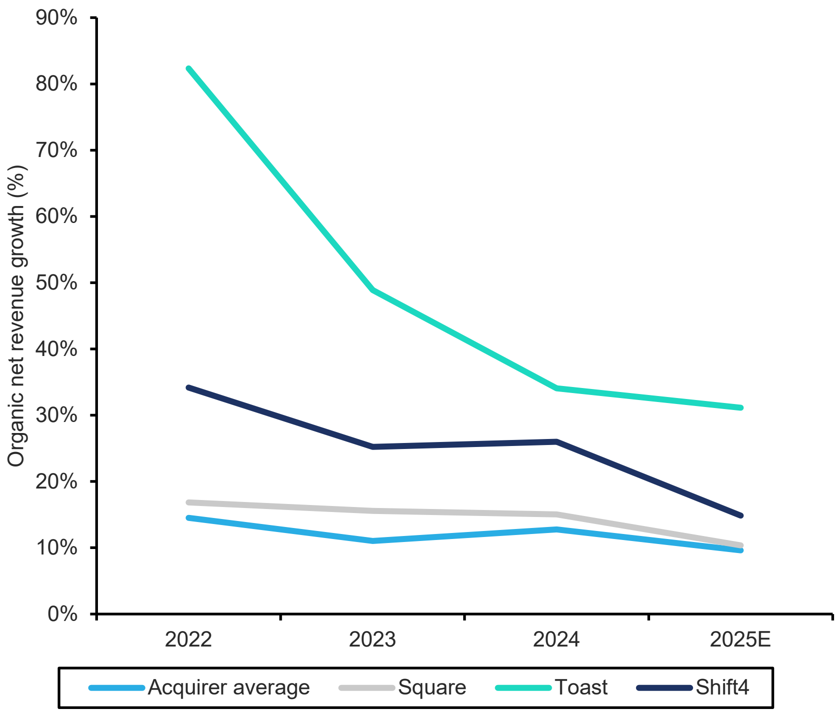
clover Square toast SHIFT4

Revenue growth algo	Volumes (nominal PCE, merchant adds) x take rate (pricing) Software subscription fees (net adds, # of modules, pricing) Other value-added services (working capital, payroll, etc.)
Margins	Low (negative to mid 20s%), elevated R&D investment/customer acquisition costs, land grab for market share
Financial risk	Limited but lending to merchants
Business risk	Moderate (higher switching costs than acquirers due to software)
Valuation	Generally high (>30x 2025E P/E's)

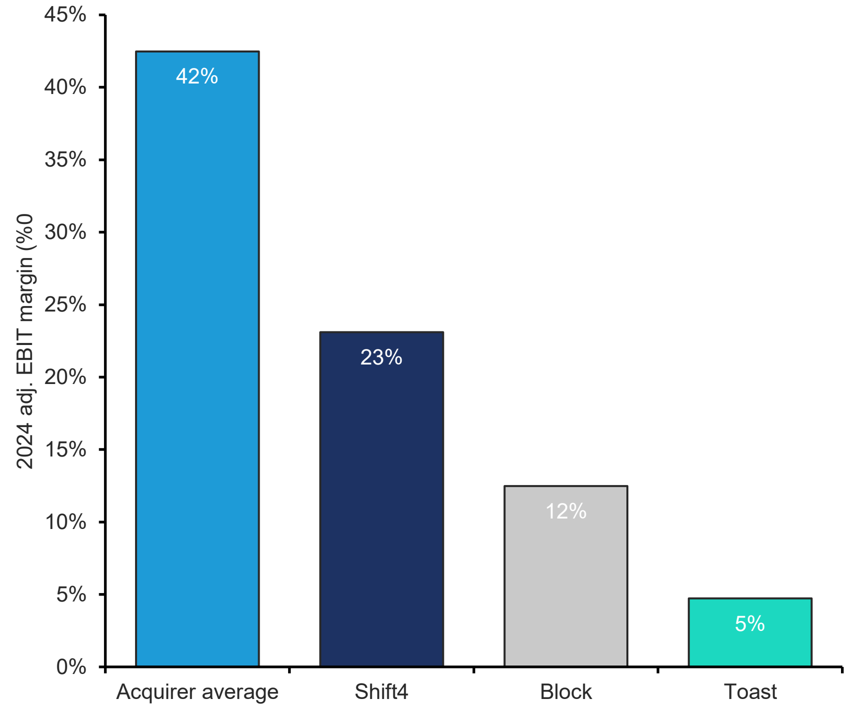
Source: Bloomberg, Autonomous Research

Software Vendors / Payment Service Providers

Organic net revenue growth



Margins range from single digits to mid 20s



Source: Company data, US Census Bureau, Autonomous Research

Note: 'Acquirer average' is the average of Adyen, FIS, Fiserv, and Global Payments. Toast data show recurring gross profit and Square data show gross profit ex Afterpay. EBIT margin calculations include stock-based comp as a real expense.

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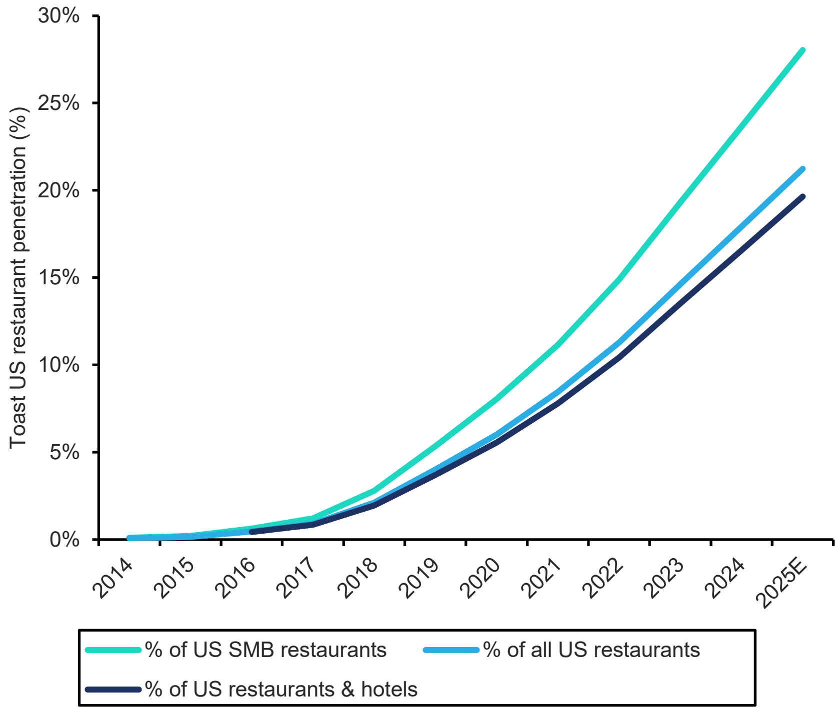
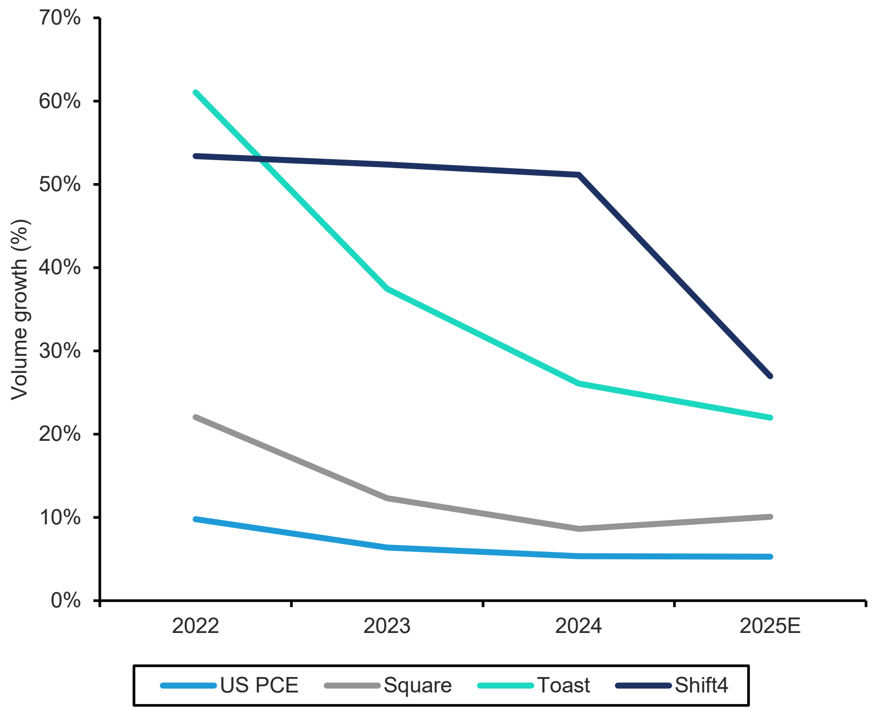
Software Vendors / Payment Service Providers

Toast's penetration into US restaurants



Trends in volume growth have diverged



Source: Company data, Autonomous Research

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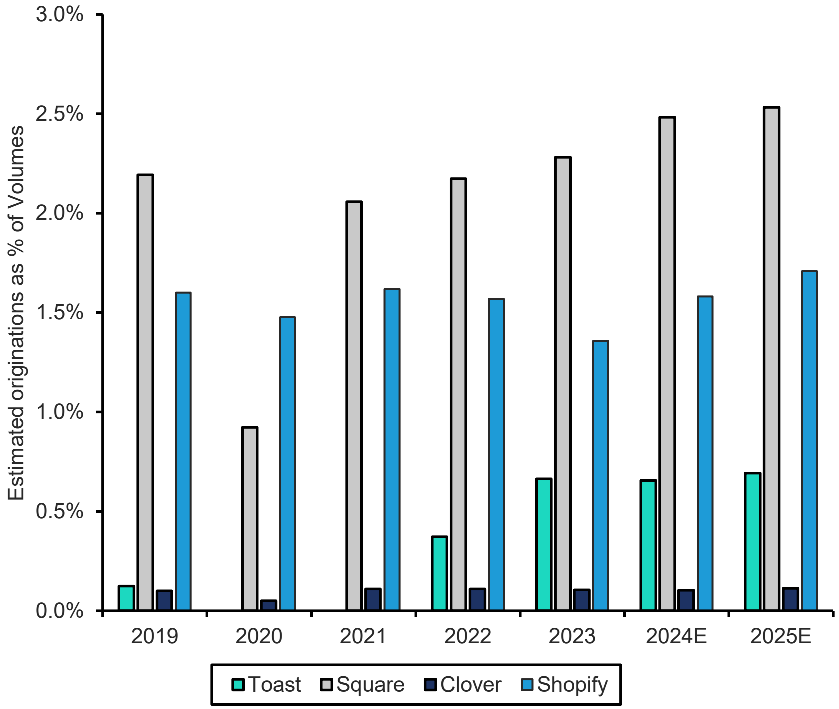
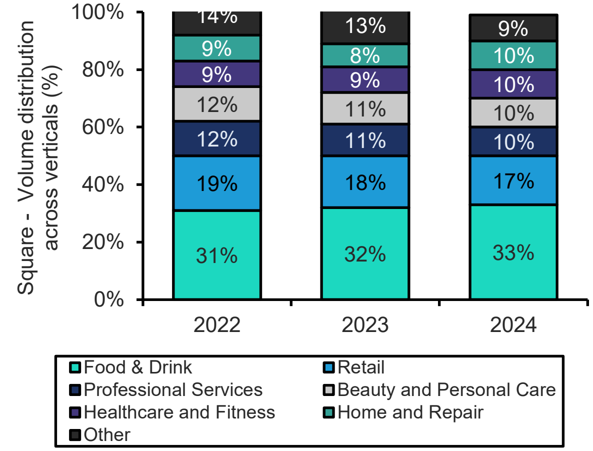
Software Vendors / Payment Service Providers

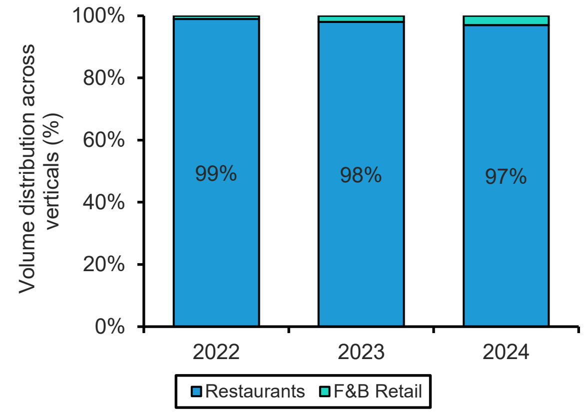
Software vendors are pushing into lending



Square serves multiple verticals (horizontal)



Toast primarily caters to the restaurant vertical



Source: Company data, Autonomous Research

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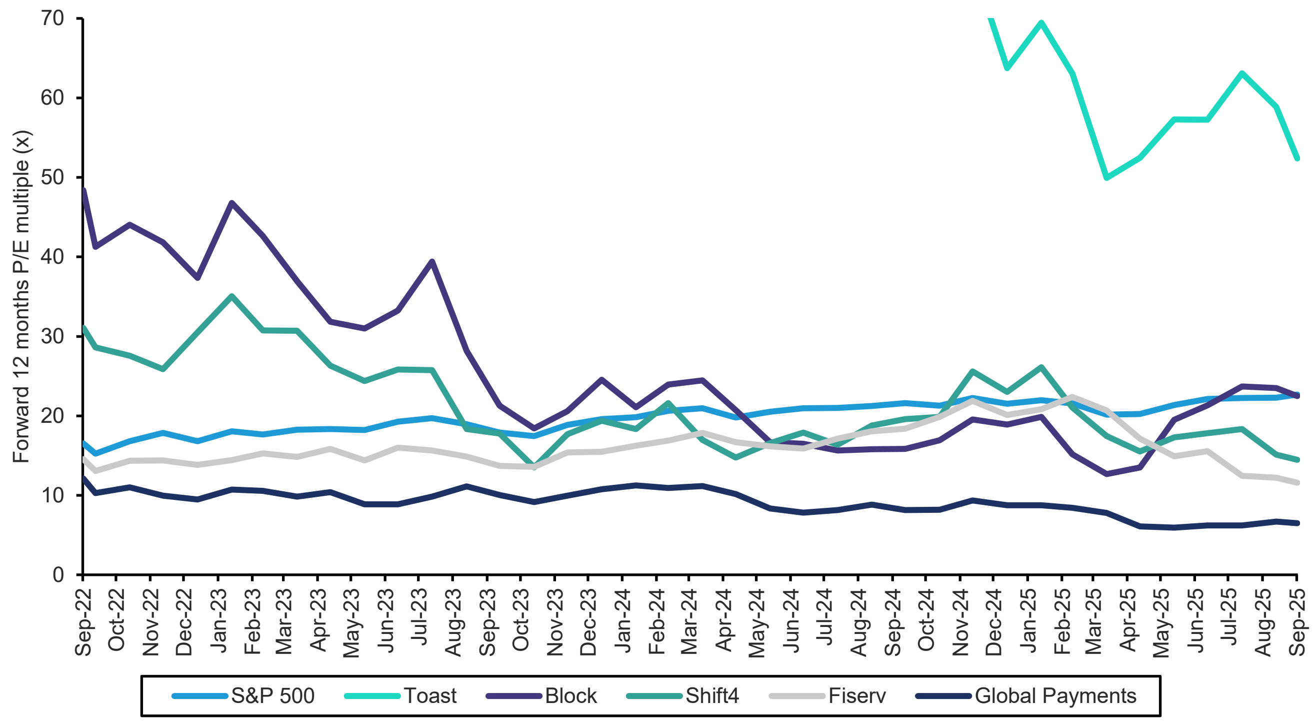
Software Vendors / Payment Service Providers

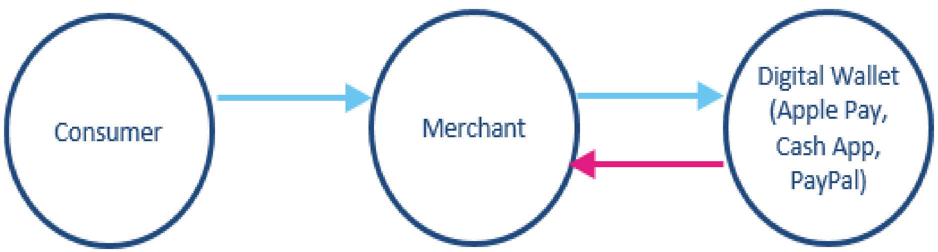
Valuation – comparison of acquirer players



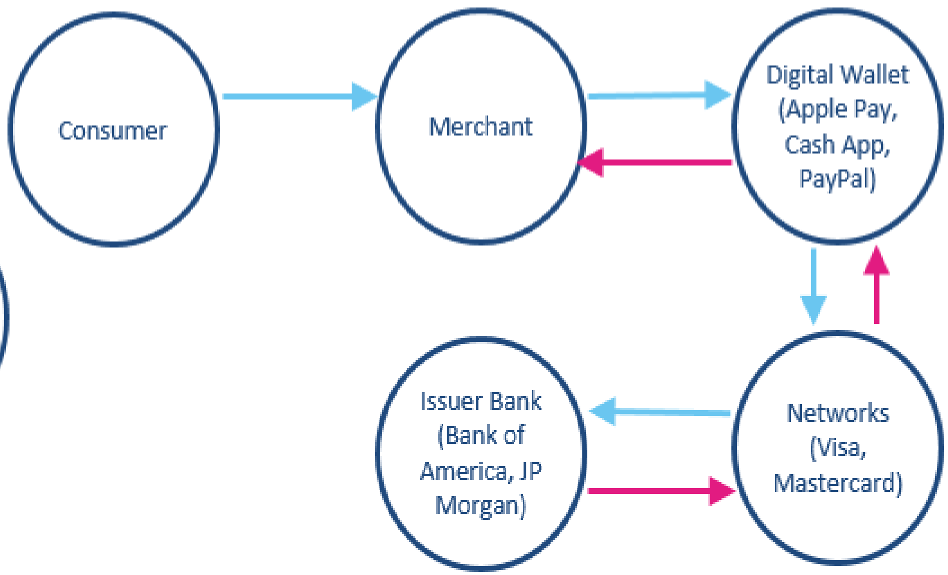
Source: Bloomberg, Autonomous Research

Digital Wallets / Peer-To-Peer Payments

Payment flow if the consumer pays using stored balance



Payment flow if the consumer pays using a connected card



Source: Autonomous Research

Note: Above we show the payments flow assuming the digital wallet has a direct integration w/ the merchant. Often an acquirer provides that integration, further complicating the payments flow.

Digital Wallets / Peer-To-Peer Payments

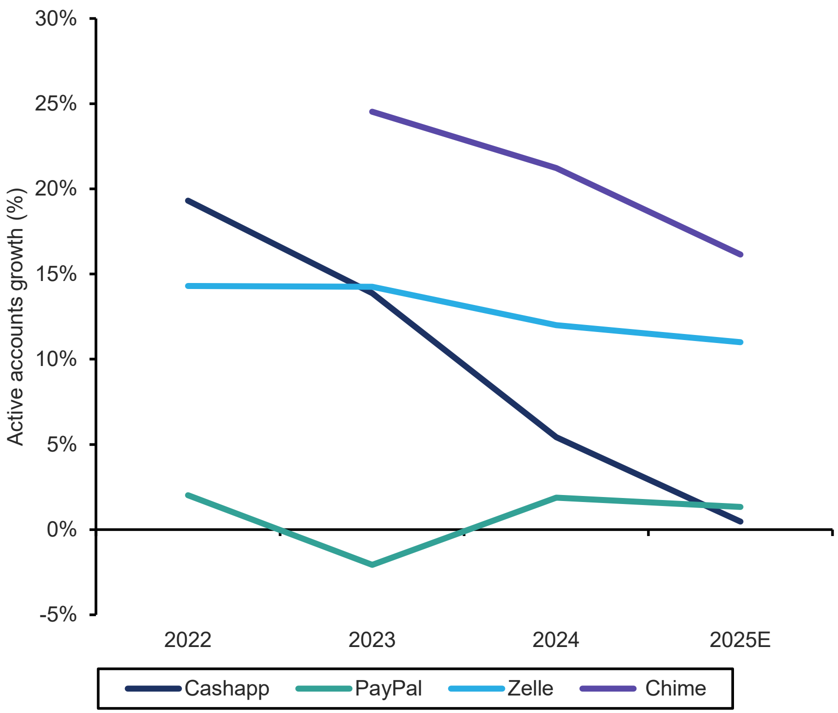
CashApp

Revenue growth algo	Users x ARPU (product adoption such as debit cards, instant transfer, lending, interest income etc.)
Margins	Wide range, depends on customer acquisition costs / scale
Financial risk	Limited, outside of lending
Business risk	Moderate (low switching costs but can build network effects; debit interchange)
Valuation	PayPal: 12x 2025E P/E

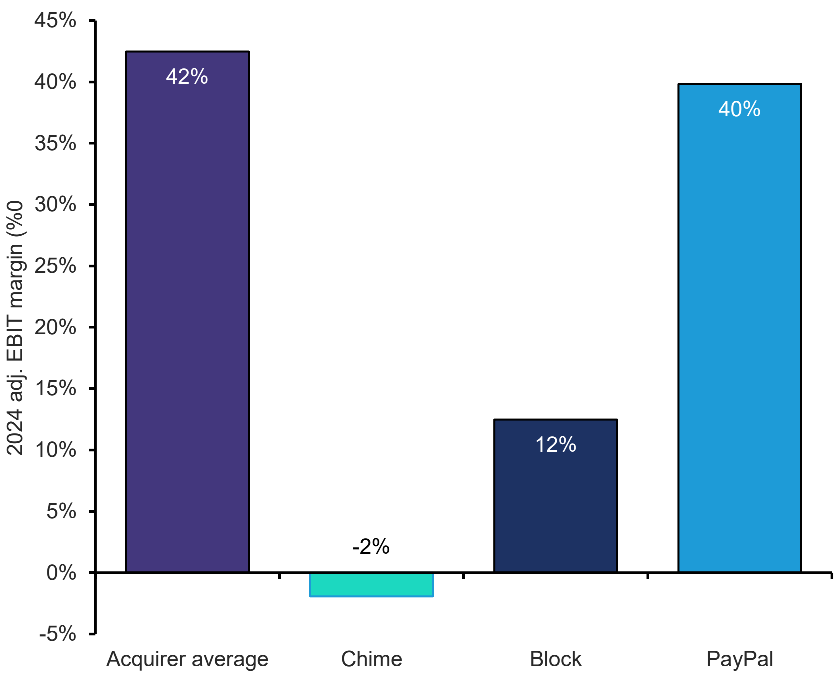
Source: Bloomberg, Autonomous Research

Digital Wallets / Peer-To-Peer Payments

Active account growth has been mixed



Margins fall within a wide range, depends on customer acquisition costs / scale



Source: Company data, eMarketer, Autonomous Research

Note: 'Acquirer average' is the average of Adyen, FIS, Fiserv, and Global Payments. EBIT margin calculations include stock-based comp as a real expense. Cash App gross profit growth exclude BTC sales.

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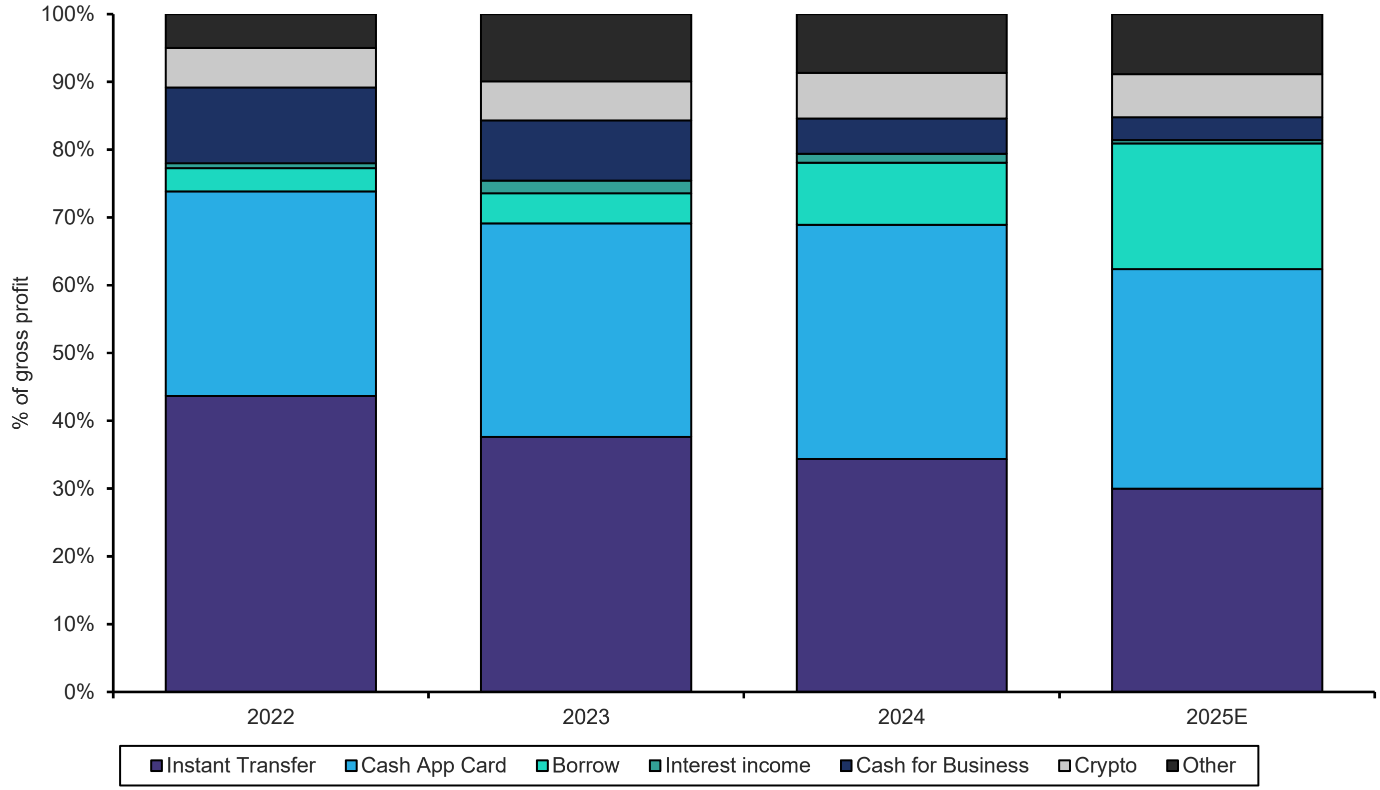
Digital Wallets / Peer-To-Peer Payments

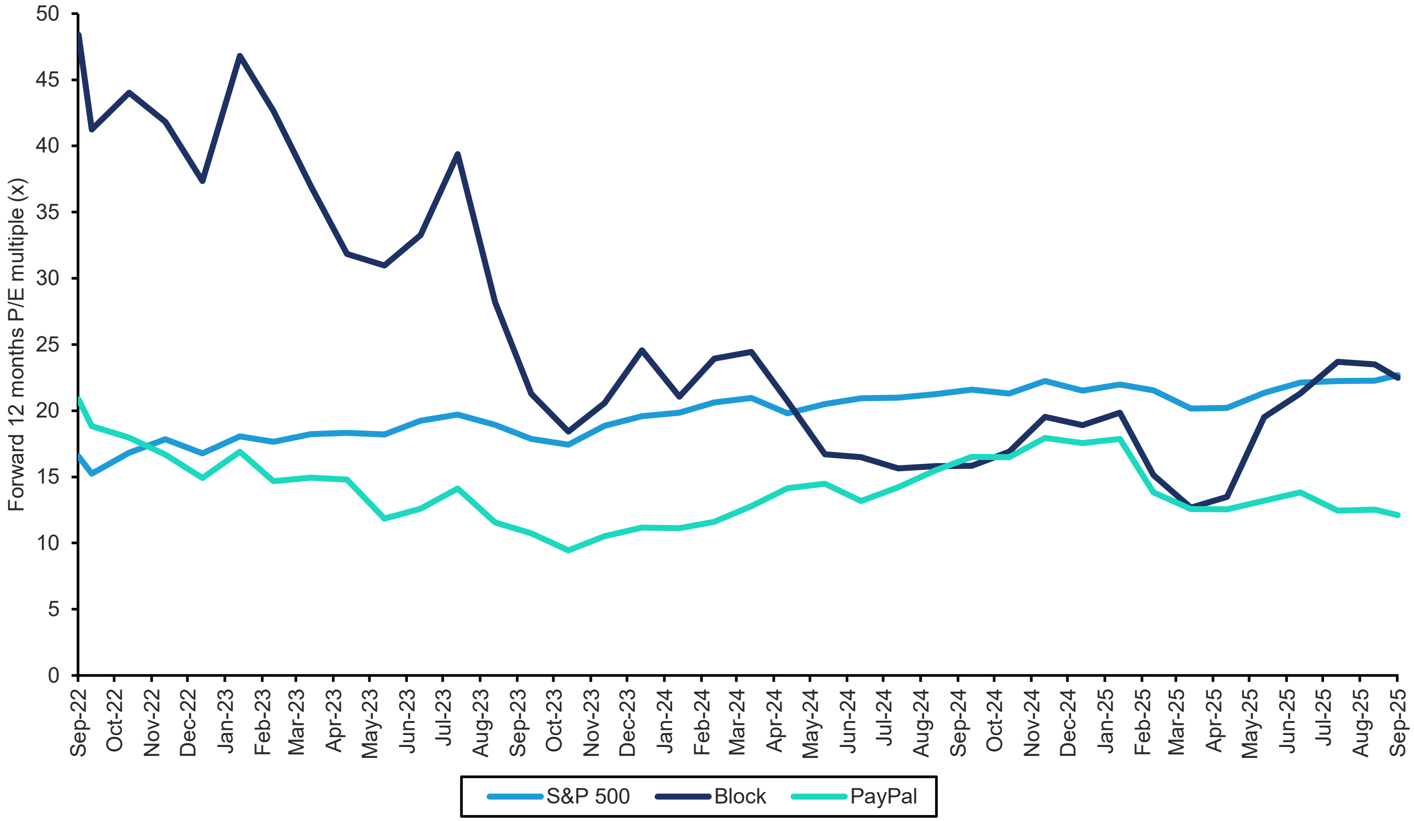
Cash App gross profit mix by function



Source: Company reports, Autonomous Research

Digital Wallets / Peer-To-Peer Payments

Valuation – comparison of acquirer players



Source: Bloomberg, Autonomous Research

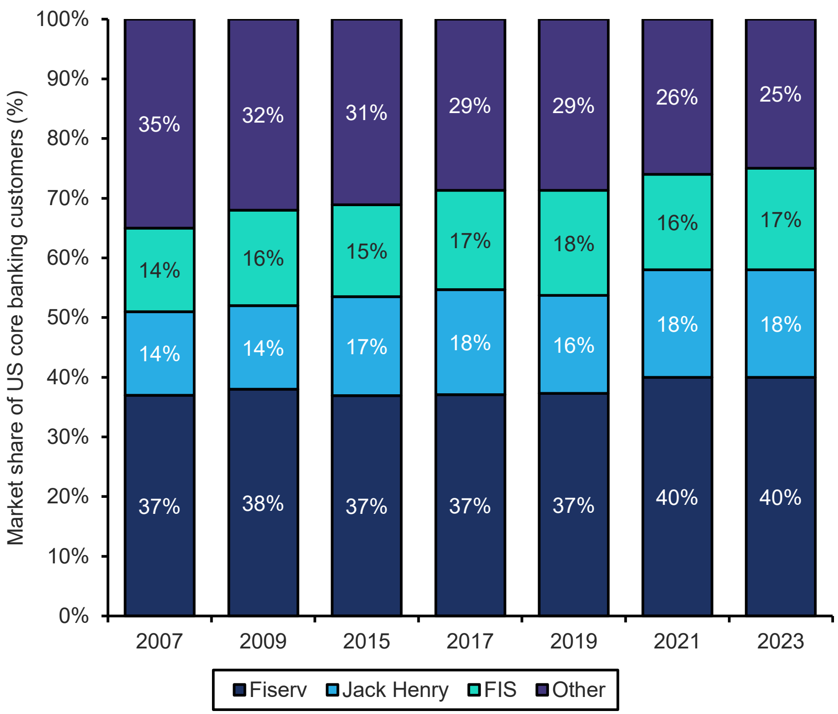
Core Processors (FIS, Fiserv, Jack Henry)

Revenue growth algo	Customers (# of banks and credit unions) x ARPU (product adoption, net pricing,)
Margins	High (30-50%), dependent on scale
Financial risk	Limited, outside of lending
Business risk	Moderate (high switching costs combined with economies of scale in R&D, some competition)
Valuation	Somewhat wide range (10-25x), varies based on growth and business quality

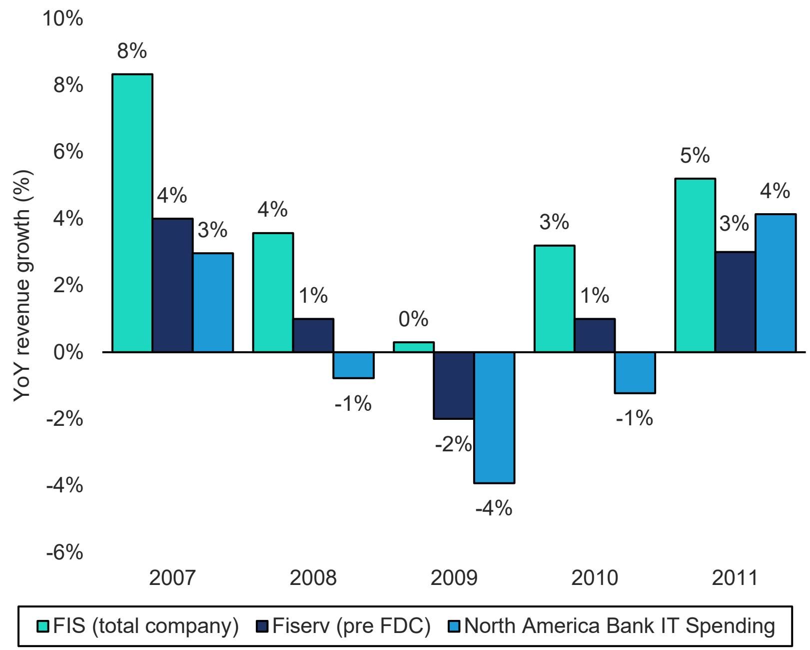
Source: Bloomberg, Autonomous Research

Core Processors (FIS, Fiserv, Jack Henry)

Core processing market share has been more stable over the last decade than acquiring...



... with a more defensive business model that's generally tied to account and transaction growth instead of volumes.



Source: Company data, FedFis, Autonomous Research

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B2B Payments

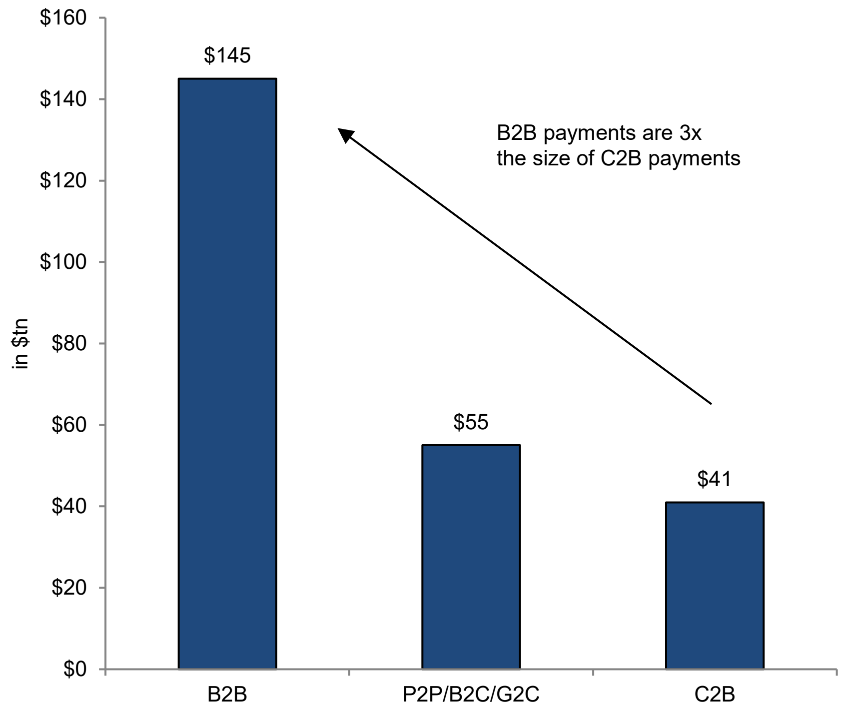
bill Corpay wex

Revenue growth algo	Volume (GDP plus shift to digitize payments) x take rate (pricing, interchange) Subscription platform fees (software adoption, pricing) Interest income (customer funds x interest rates)
Margins	Varies depending on maturity
Financial risk	Limited, risk from lending/credit losses from fleet cards, FX
Business risk	Low (High switching costs, can build network effects)
Valuation	Varies - fleet operators trade at LDDs, while AP Automation providers trade higher

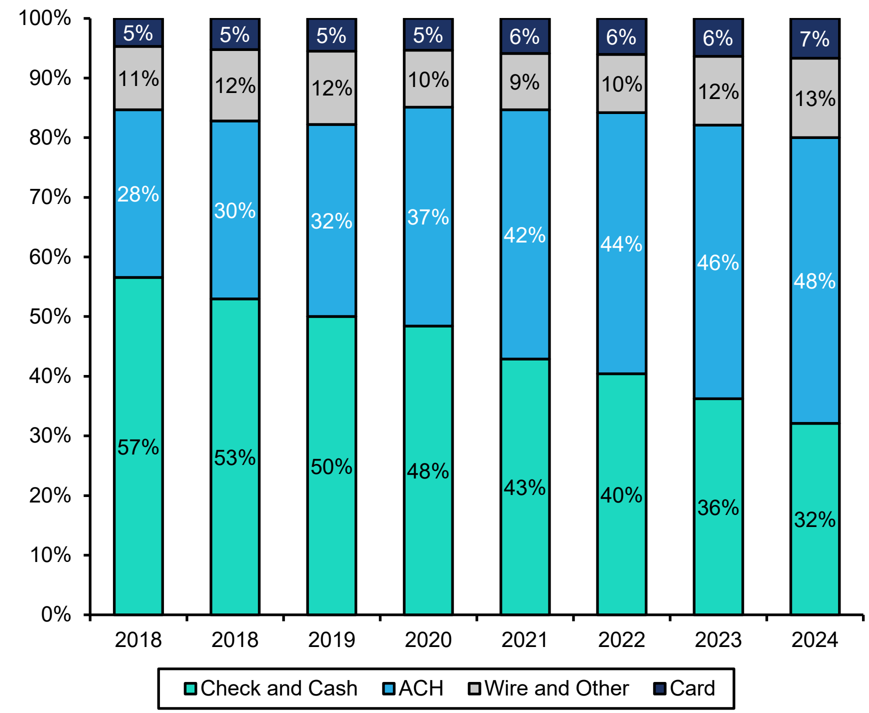
Source: Bloomberg, Autonomous Research

B2B Payments

B2B payments are 3x the size of C2B payments ($ of volume)



Cash and check transactions still make up a large portion of B2B payments



Source: Company data, Autonomous Research

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B2B Payments

Players in the B2B payments space typically focus on either AP or AR automation

Source: Company websites, Autonomous Research

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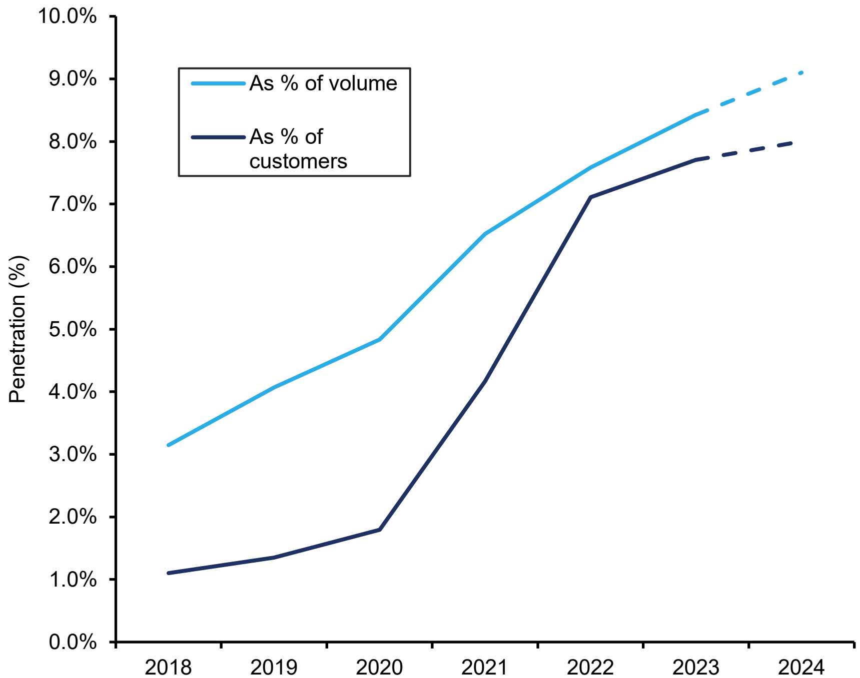
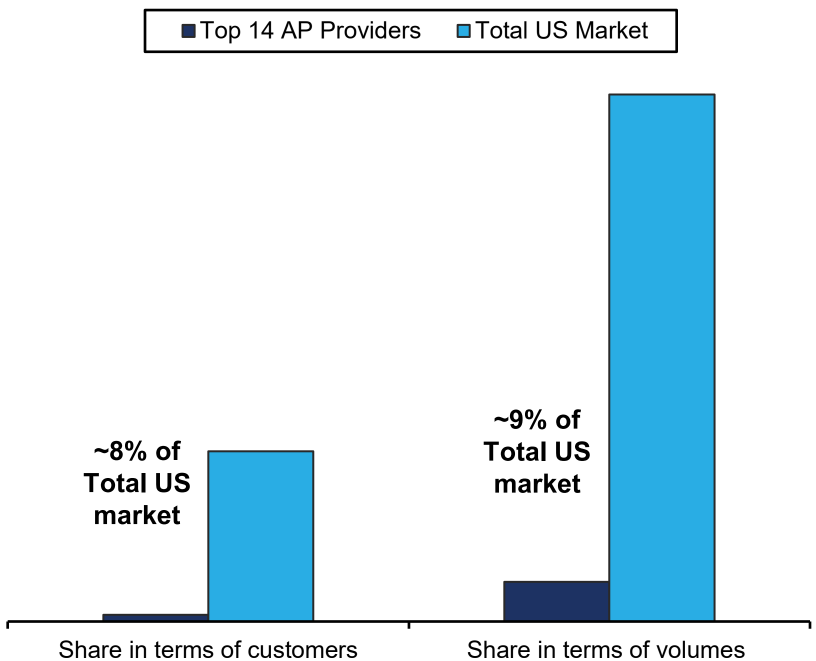
B2B Payments

We estimate that market share of the 14 largest AP automation providers has increased over the last few years…



… but it is still in the single-digits range both in terms of customers and on volumes



Source: Company data, Autonomous Research

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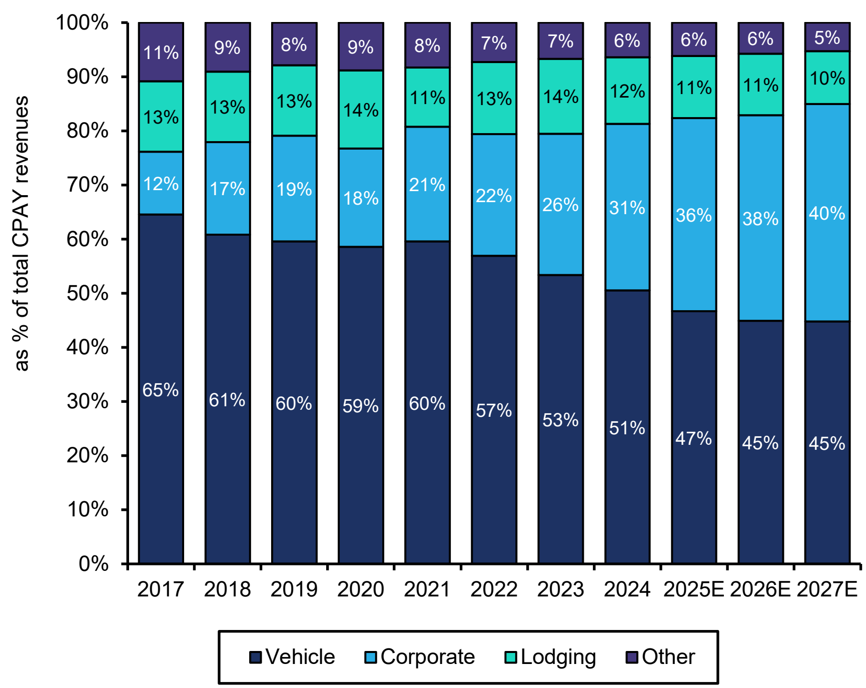
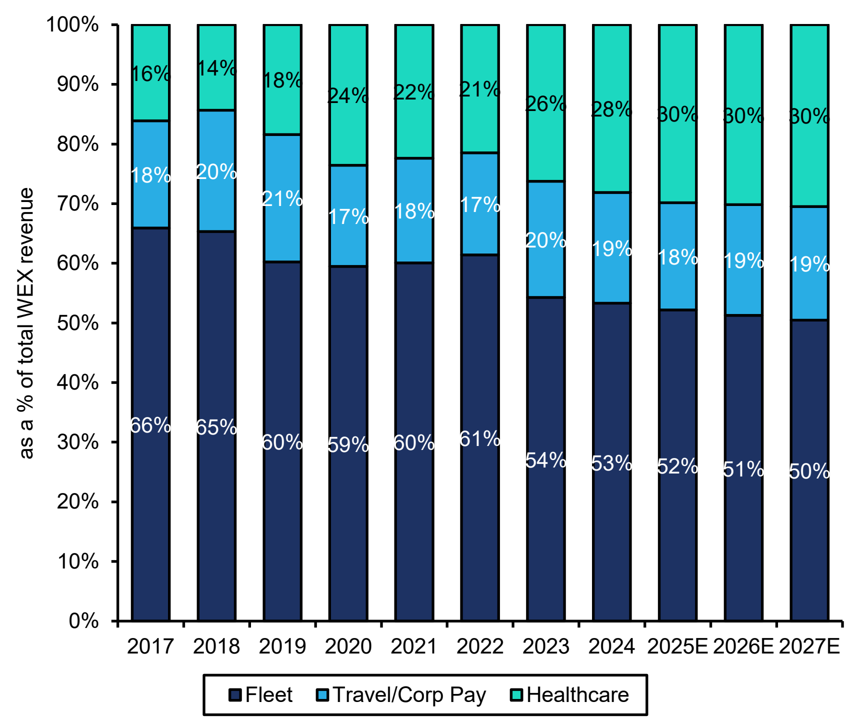
B2B Payments – Fleet Cards

Fuel card companies are moving away from fleet cards and towards corporate payments

Corpay revenue mix



WEX revenue mix



Source: Company data, Autonomous Research

And Many More...

PLAID

Brex

lightspeed

PAYCHEX

d·local

EBANX

Payoneer

Airwallex

ADP

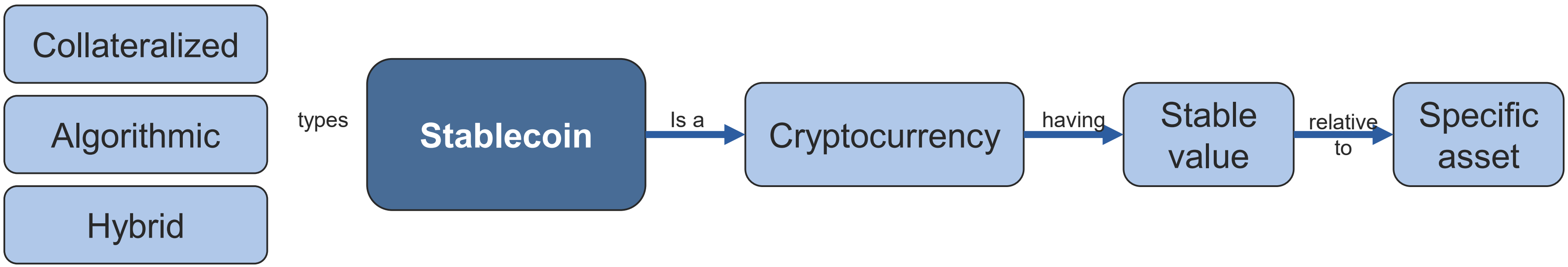
ramp

FINIX

paylocity

MARQETA

Stablecoins



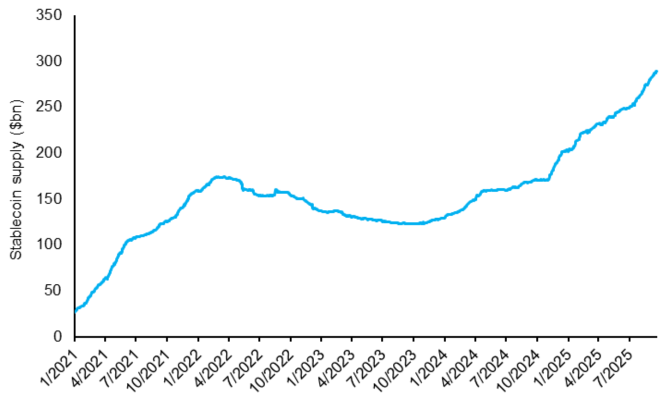
- A type of **digital asset**
- Designed to maintain **a stable value relative to something else** (fiat currency like the US dollar or other assets like gold)
- **Other digital currencies** like bitcoin **are volatile.** Hard to use and transact in bitcoin as a medium of exchange or unit of account because it's so volatile
- **Backing and Collateralization -** Stablecoins are usually backed by reserves of assets

- **Issuance and Redemption -** Users can exchange fiat currency/other cryptocurrencies for the stablecoin at a fixed rate or redeem their stablecoins for the underlying asset

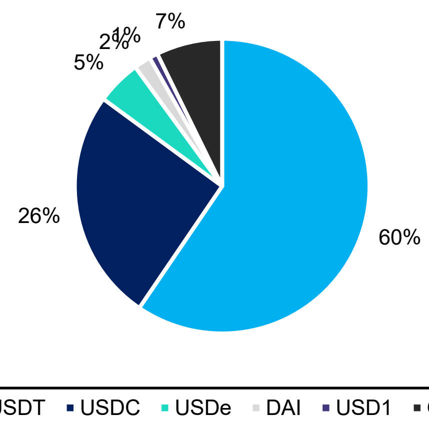
Source: Company reports, Autonomous Research

Stablecoins Gaining Traction in Digital Asset Trading and DeFI

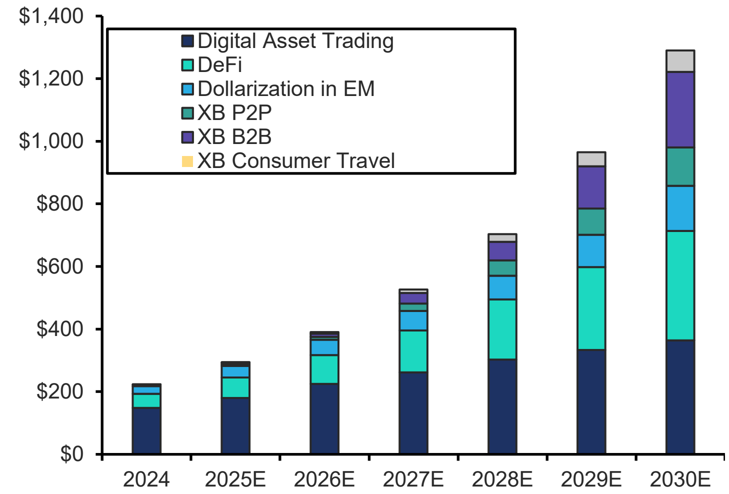
Stablecoin supply has picked up in 2025



USDT & USDC still control most of the market



But we estimate most of the adoption in the medium term will be related to digital asset and DeFi use cases



Source: Coinmarketcap, Artemis, Autonomous Research

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Main Takeaways

- Payments is a growth industry
- Low capital intensity = high ROIC and solid FCF generation
- Sub-sectors vary in quality; look for sustainable competitive advantages
- Specialists are winning (leading with software and attaching payments/other financial services)
- Many payment companies are good inflation hedges (growth tied to nominal PCE growth and some have pricing power)
- Public investment universe is big; more IPOs to come

Comp Sheet

Autonomous Research US Payments & Processors Valuation Sheet

10/8/2025									EV/Gross Profit				EV/Adj. EBITDA w/ SBC				P/E w/ SBC				EV/NOPAT w/ SBC				EV/NOPAT w/ SBC		Revenues	Gross Profit	Adj. EPS
	Rating	Price Target	Last Price	Upside/ Downside (%)	Target multiple	Multiple type	EV ($bn)	ND/EBITDA 2024E	2023	2024	2025	2026	2023	2024	2025	2026	2023	2024	2025	2026	2023	2024	2025	2026	NTM	NTM in 12M	CAGR '24-'26	CAGR '24-'26	CAGR '24-'26
Core Processors/Acquirers																													
FIS	OP	$92	$69	34%	17.5x	EV/NOPAT	42.5	2.6x	nm	11.1	11.3	10.6	nm	10.2	9.8	9.2	14.5	13.1	11.9	10.8	nm	17.4	15.4	14.1	14.7	13.6	4%	2%	10%
FI	OP	$165	$128	29%	16.0x	EV/NOPAT	98.6	3.0x	9.7	8.9	8.1	7.3	12.0	10.7	9.7	9.0	16.9	14.5	12.7	11.1	18.1	15.3	14.6	13.6	14.2	13.1	8%	10%	14%
GPN	OP	$100	$89	13%	10.5x	EV/NOPAT	36.3	3.0x	5.5	5.1	4.9	4.7	8.8	8.2	7.9	7.6	9.1	8.0	7.3	6.2	12.3	11.3	10.9	10.3	10.6	10.0	3%	4%	14%
JKHY	UP	$143	$150	-5%	20.0x	EV/NOPAT	10.9	-0.1x	12.1	11.6	10.3	9.7	15.5	15.2	13.3	12.4	28.3	27.1	22.9	21.7	26.6	26.4	22.6	21.7	22.5	21.0	7%	9%	12%
PYPL	UP	$64	$76	-16%	11.0x	EV/NOPAT	71.0	-0.2x	5.2	4.8	4.6	4.4	11.5	9.2	9.7	9.2	19.8	16.3	14.4	12.8	16.1	14.6	13.3	13.0	13.6	13.2	7%	5%	13%
Average								**1.6x**	**8.1**	**8.3**	**7.8**	**7.3**	**11.9**	**10.7**	**10.1**	**9.5**	**17.7**	**15.8**	**13.8**	**12.5**	**18.3**	**17.0**	**15.3**	**14.6**	**15.1**	**14.2**	**6%**	**6%**	**13%**
Median								**2.6x**	**7.6**	**8.9**	**8.1**	**7.3**	**11.7**	**10.2**	**9.7**	**9.2**	**16.9**	**14.5**	**12.7**	**11.1**	**17.1**	**15.3**	**14.6**	**13.6**	**14.2**	**13.2**	**7%**	**5%**	**13%**
Emerging Acquirers																													
TOST	OP	$44	$37	19%	36.0x	EV/NOPAT	20.6	4.6x	24.7	17.3	13.2	10.5	nm	nm	58.4	37.0	nm	nm	72.5	48.9	na	nm	79.4	51.7	68.7	42.1	22%	29%	152%
FOUR	UP	$78	$80	-3%	13.5x	EV/NOPAT	10.8	4.7x	16.5	11.7	7.7	5.6	26.8	17.6	12.1	9.5	23.8	18.0	14.7	11.3	33.7	40.5	19.3	14.7	15.4	13.7	39%	44%	26%
XYZ	UP	$49	$81	-40%	3.4x	EV/NOPAT	47.4	-0.9x	6.3	5.3	4.7	4.1	91.8	27.0	20.7	15.9	nm	41.6	32.0	23.5	na	25.9	26.4	20.2	24.6	19.0	13%	14%	33%
Average									**12.7**	**9.2**	**6.9**	**5.5**	**59.3**	**22.3**	**33.3**	**19.3**	**23.8**	**29.8**	**37.7**	**24.9**	**33.7**	**33.2**	**41.7**	**27.2**	**36.2**	**24.9**	**21%**	**24%**	**55%**
Median									**11.4**	**8.5**	**6.2**	**4.9**	**59.3**	**22.3**	**31.3**	**15.3**	**23.8**	**29.8**	**31.7**	**19.7**	**33.7**	**33.2**	**26.4**	**21.1**	**24.6**	**19.0**	**17%**	**20%**	**30%**
Networks																													
V	OP	$397	$354	12%	29.0x	EV/NOPAT	698.7	0.2x	21.0	19.0	16.9	15.2	30.6	28.0	25.3	21.3	39.3	34.1	29.7	26.2	37.8	33.8	30.2	27.3	28.9	25.9	12%	12%	14%
MA	OP	$634	$582	9%	32.0x	EV/NOPAT	538.7	0.6x	21.5	19.1	16.5	14.6	35.1	31.1	26.6	23.6	49.5	37.7	35.0	30.7	40.9	35.1	33.6	31.2	33.1	29.4	14%	14%	11%
Average/Median									**21.2**	**19.1**	**16.7**	**14.9**	**32.9**	**29.5**	**26.0**	**22.4**	**44.4**	**35.9**	**32.4**	**28.4**	**39.4**	**34.5**	**31.9**	**29.3**	**31.0**	**27.6**	**13%**	**13%**	**12%**
Fleet																													
CPAY	OP	$396	$293	35%	16.0x	EV/NOPAT	25.2	2.0x	8.6	8.1	7.2	6.4	12.4	11.7	10.4	9.2	17.4	15.4	13.9	11.9	17.8	17.0	14.9	13.1	14.0	12.4	12%	13%	14%
WEX	UP	$154	$158	-2%	14.0x	EV/NOPAT	10.1	4.4x	6.4	6.4	6.4	6.1	10.4	9.5	9.9	9.7	12.6	11.9	11.6	10.1	17.1	14.3	15.6	14.4	15.0	14.2	3%	2%	9%
Average/Median									**7.5**	**7.2**	**6.8**	**6.2**	**11.4**	**10.6**	**10.2**	**9.4**	**15.0**	**13.7**	**12.8**	**11.0**	**17.4**	**15.7**	**15.3**	**13.7**	**14.5**	**13.3**	**8%**	**7%**	**11%**
Software																													
NCNO	N	$32	$26	23%	85.0x	EV/NOPAT	3.2	1.3x	11.3	9.9	9.0	8.0	nm	nm	61.1	43.0	nm	nm	nm	82.0	nm	nm	78.9	55.8	62.0	49.8	9%	11%	107%
BILL	OP	$59	$53	11%	33.0x	EV/NOPAT	5.7	-2.1x	5.5	4.8	4.3	3.9	nm	nm	nm	nm	nm	nm	nm	nm	na	nm	na	nm	N/A	214.8	11%	11%	44%
FLYW	OP	$16	$13	23%	15.0x	EV/NOPAT	1.4	-2.4x	5.5	4.5	3.8	3.3	nm	nm	35.9	22.8	nm	nm	nm	26.9	na	nm	58.3	31.3	38.7	26.7	20%	16%	na
Average									**7.4**	**6.4**	**5.7**	**5.1**	**na**	**na**	**48.5**	**32.9**	**na**	**na**	**na**	**54.5**	**na**	**na**	**68.6**	**43.6**	**50.3**	**97.1**	**13%**	**13%**	**75%**
Median									**5.5**	**4.8**	**4.3**	**3.9**	**na**	**na**	**48.5**	**32.9**	**na**	**na**	**na**	**54.5**	**na**	**na**	**68.6**	**43.6**	**50.3**	**49.8**	**11%**	**11%**	**75%**

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Top Picks – Go For High-Quality Names With a Wide Moat

Outperforms:

Visa and Mastercard
- Secular growth story – consumer payments but also new flows
- Mix shift to VAS - helps revenue growth and diversifies revenue stream
- Dominant moat – less competitive pressure leads to expanding yields

Corpay
- Mix shift towards Corporate Payments (more durable and less cyclical than Fleet cards)
- Steady, double-digit organic revenue growth company
- Trading at an attractive valuation of low-double digits on next year's P/E

Underperforms:

Jack Henry
- Mounting competition and pricing pressure
- Accelerating consolidation in the low- to mid-tier banking space
    - Tailwind in the near-term from high margin deconversion fees
    - Headwind in the long-term as it results in a client loss
- Trades at a steep premium to peers (~25x FY26 FCF)

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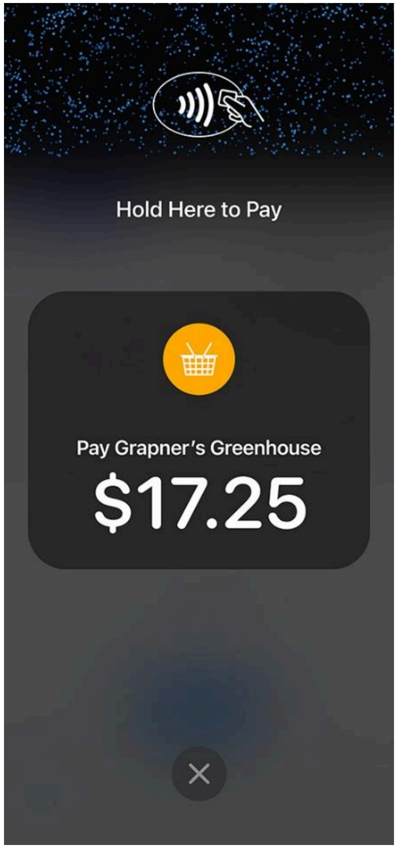
Autonomous University

Global FinTech

Rahul Jindal

What is FinTech?

FinTech is the universe of companies that solve the financial needs of consumers and businesses, using new technologies (such as the cloud infrastructure, AI / ML, decentralized ledgers etc.), in lieu of reliance on physical infrastructure and manual processes.



Source: Apple website

The FinTech Landscape

Emerging business models in financial services
(global capital raised since 2015)

Alternative Lending
$65B

- Algorithmic lending
- Revenue based lending
- DeFi Lending

Digital Assets*
$76B

- Wallets and exchanges
- Services and infrastructure
- Layer 1 and scaling
- Other

Payments
$120B

- Payment platforms
- B2B Payments
- Payroll and AP/AR
- Cross border and FX

Consumer Finance
$140B

- Debit and P2P
- Wallets and super apps
- Loyalty and rewards

Retail credit and banking
$46B

- NeoBanks
- Credit and BNPL

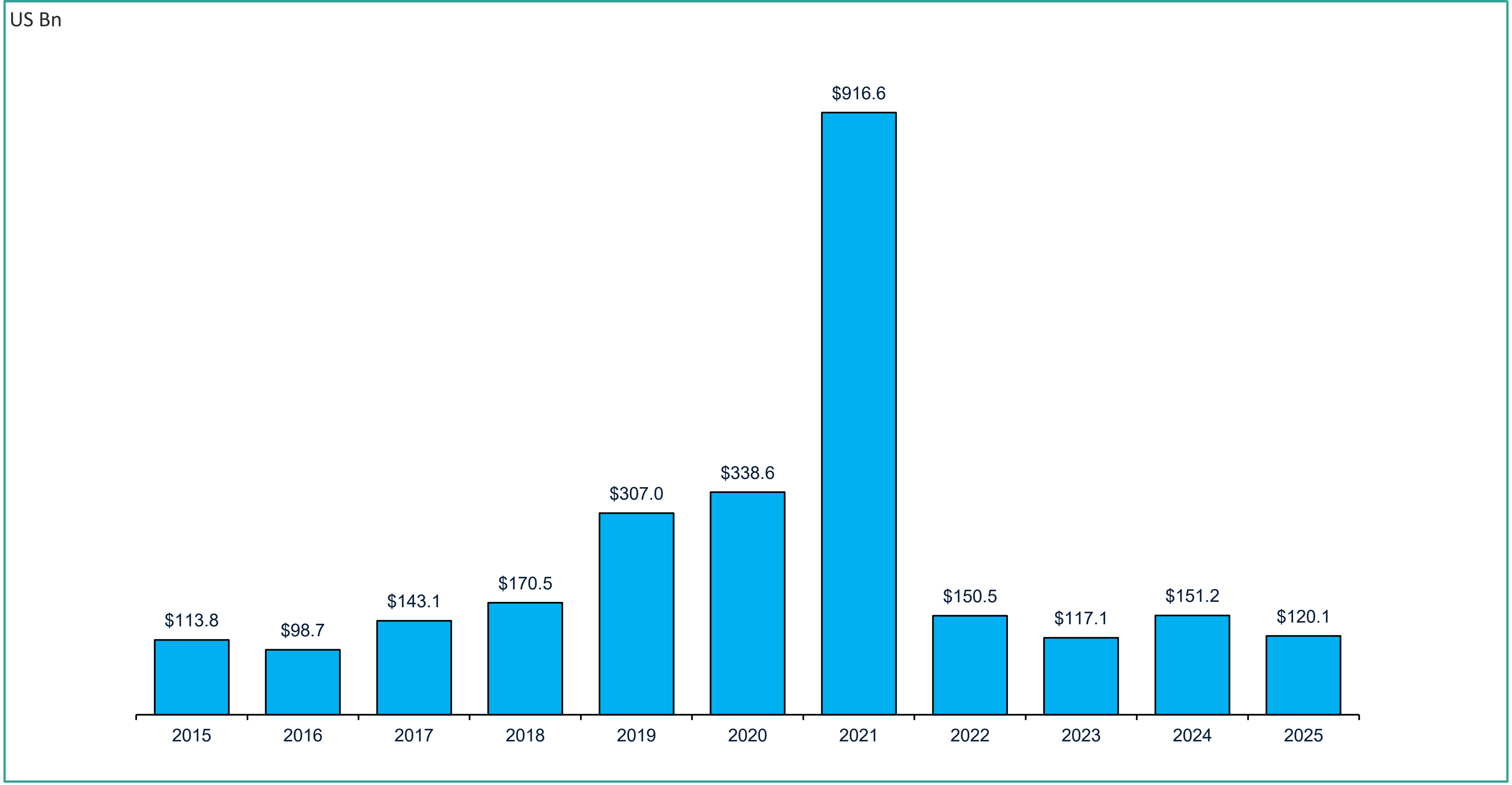
WealthTech
$54B

- Brokerage
- Digital Advisory
- Other

Source: PitchBook, Autonomous analysis

Exits Were Particularly Weak, But Picking-Up Now

Overall US VC Exit activity



Note: Data as of June 30th, 2025
Source: Pitchbook, Autonomous Analysis

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Down Rounds Reverting Back to the 10-Year Average

Note: Data as of June 30sth 2025.
Source: Pitchbook, Autonomous Analysis

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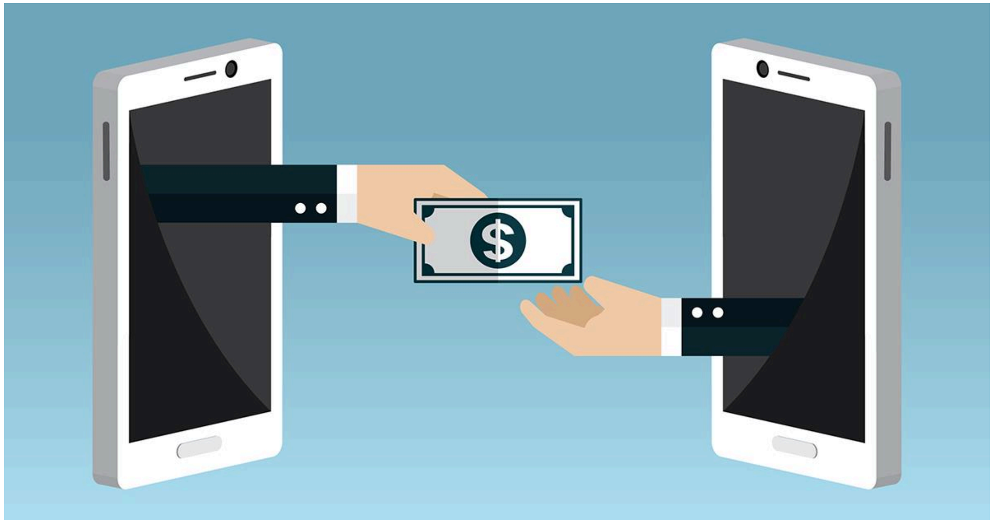
What Are "Digital Lenders"?

"Digital lenders are financial institutions or platforms that provide loans through online or mobile-based applications, using technology to streamline the lending process."

Main Features of Digital Lenders

- Fast loan approval process
- Minimal paperwork required
- Accessible via mobile apps
- Flexible loan repayment options
- Alternative credit scoring methods
- 24/7 availability and support
- Lower operational costs



Source: Company website, Autonomous analysis.

Two Types of FinTech Lenders

Core FinTech Lenders

Digital Credit Originators	Third party underwriting, Scoring, and Sale	Buy-Now-Pay-Later
Best Egg, SoFi, LendingClub, MoneyLion, Upstart	AVANT, blend, PAGAYA, ZEST AI	affirm, afterpay, Klarna.

Ancillary Lenders

Personal Financial Management Solutions	NeoBanks	Wealth Management and Trading
Bankrate, credit sesame	chime, Dave, MoneyLion, Varo, Revolut	Depository Trust Companies (DTC)

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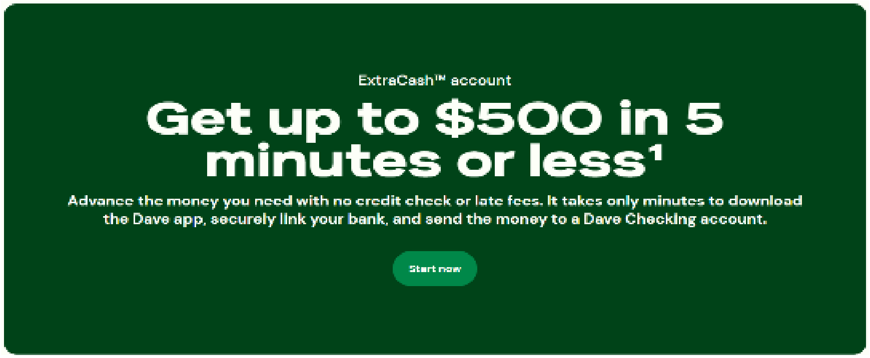
Source: Autonomous analysis.

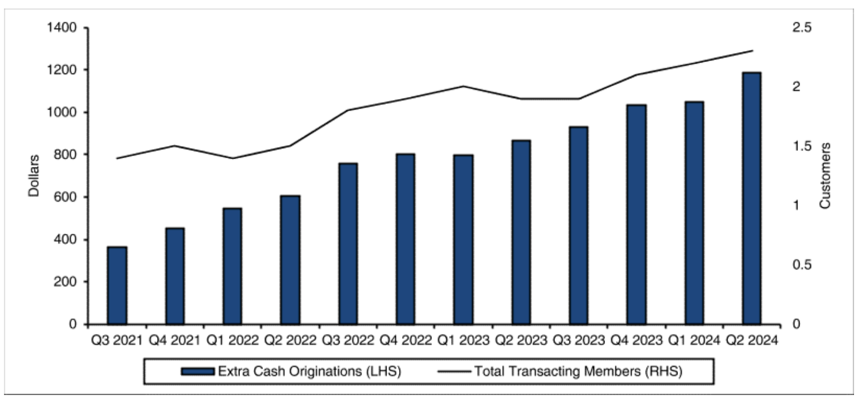
Case Study – Dave

Dave Extra Cash Marketing



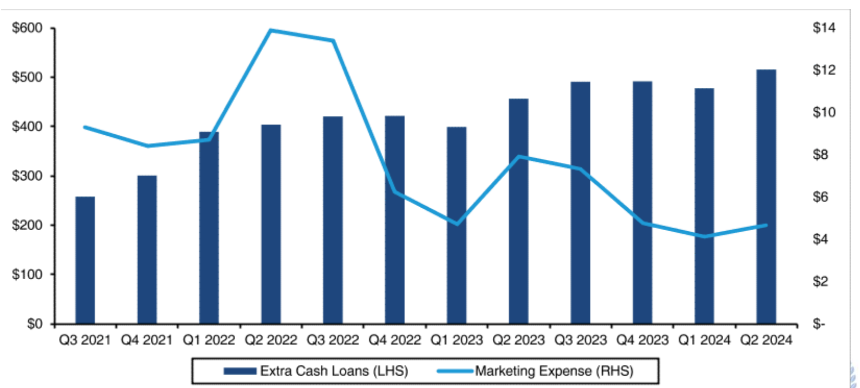
Dave Origination Analysis

US Bn (LHS), Customer Mn (RHS)



Dave Marketing Expense Analysis

USD per transacting member



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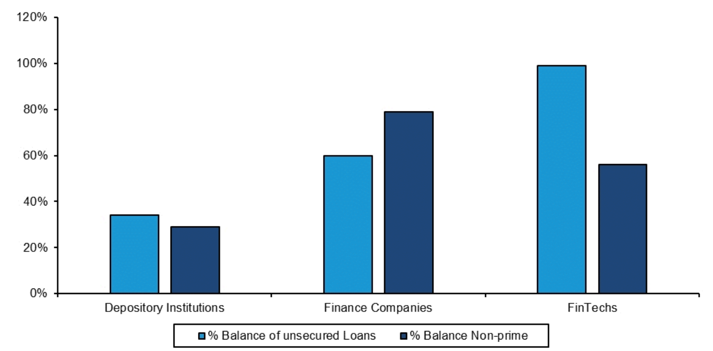
Source: Company disclosure and website, Autonomous analysis.

The Unsecured Lending Landscape is Changing, With FinTechs Taking a Larger Portion (And Consequently Risks)

FinTech Holdings Across Personal Loan Sectors

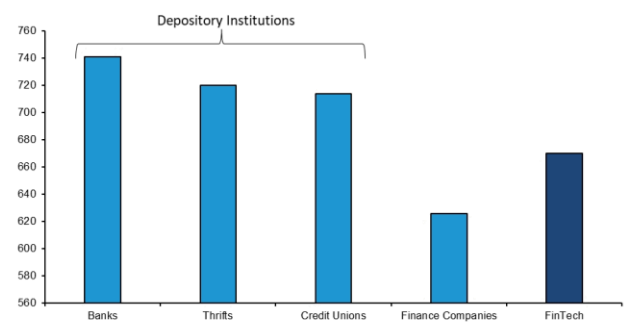
	FinTech Lenders I	Depository Institutions II	Finance Companies III	Total Unsecured IV
Outstanding Balance (billion $)	49.6	74.5	18	142
Number of Accounts (million)	7.6	9	4.2	20.8
Balance per Account (median)	4,371	4,154	2,613	3,877
Median Loan Maturity (years)	2.3	2.5	1.4	2.2
Account Monthly Payment (median)	200	210	164	195
Borrower Equifax Risk Score (median)	673	711	607	677
Borrower Age (median)	45	47	48	46
Share Balance Fixed Rate (%)	72	53	12	54
Share Balance Nonprime (%)	56	39	88	51
Delinquency (%)	3.38	1.89	7.01	3.06

Balance of Unsec. Loans and Non-Prime Loans by Lender



Median Credit Score by Lender Type

Personal Loan Holdings, by Sector



Source: Federal Reserve Bank of New York, Consumer Credit Panel (CCP)/Equifax, Autonomous analysis. Data as of Q4 2022.

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Neobanks Business Model

Single Pain Point

Neobanks often led with a single pain point (e.g. paying wages up to three days earlier than traditional banks, easier peer-to-peer transfers, no overdraft fees etc) and attempted to scale the business into full banks with a digital-first experience and a complete suite of margin contributive products.

Banking Charter

Most of the Neobanks have not obtained a banking charter, which is often tedious, expensive and time-consuming. Leveraging their modern tech-stack, they have been able to outsource their balance sheet operations to smaller (chartered) banks, which hold and insure customers' deposits.

Technology Stack

A modern technology stack and digital experience have allowed Neobanks to acquire, in theory, a competitive advantage, significantly speeding up common operations such as opening accounts, managing basic banking activities, and reaching customers previously under-served (or ignored entirely) by traditional finance. Neobanks also aspire to a lower cost-income (efficiency) ratio as they are light on physical infrastructure such as branches and built entirely on the public cloud and a microservices environment.

Private Capital

Backed by private capital, including venture capital, venture debt, and non-traditional investors (NTIs), Neobanks have continued to attract financing at high valuations projecting above average returns as they concentrate on large Total Addressable Markets (TAMs), and point to their superior customer experience, and lower infrastructural cost base.

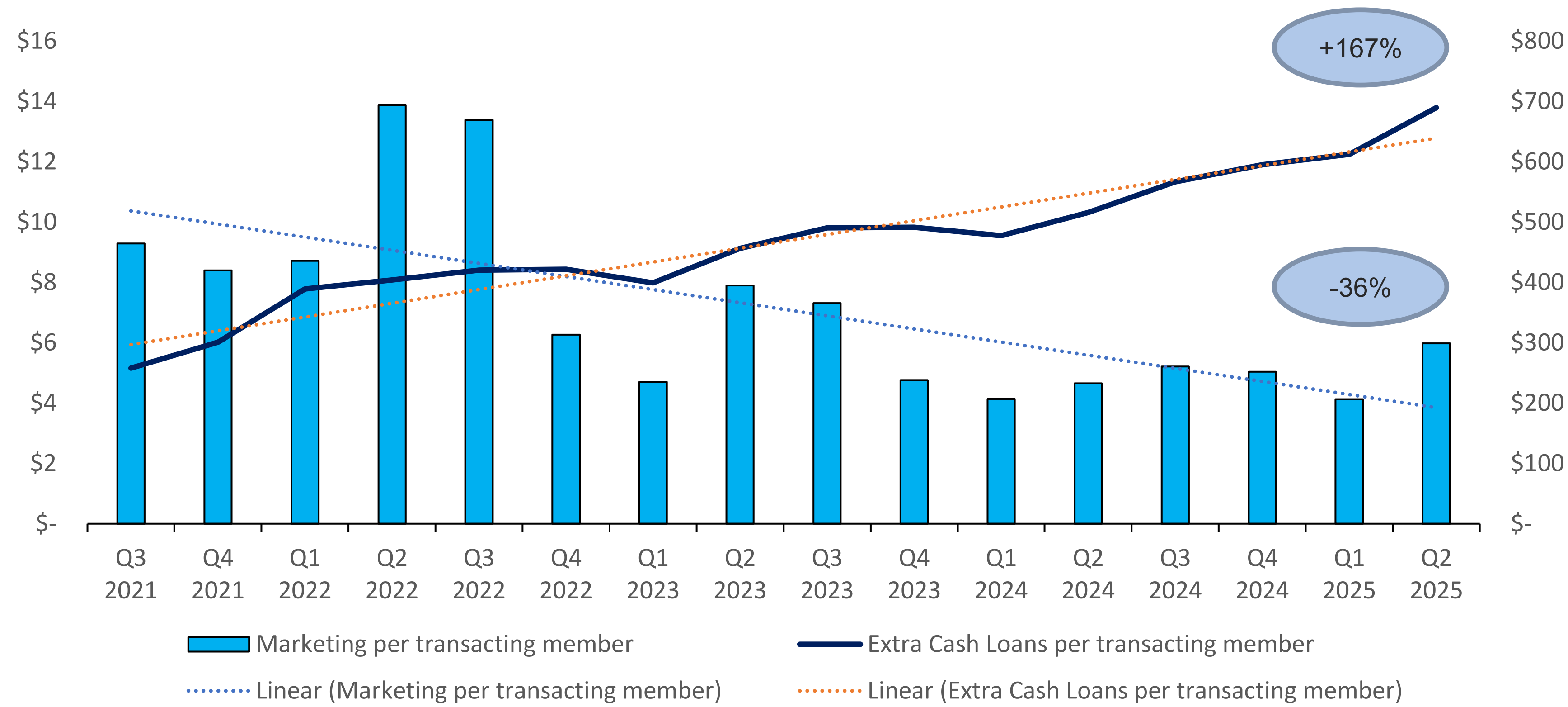
Revenue Sources

Neobanks have relied on interchange and other fees as a major source of revenue, in contrast to traditional banks which earn on a broader range of banking services including lending, account maintenance, credit card interchange, wealth management, and transfers, etc., in addition to debit interchange. Due to their size (<$10bn in banking assets if licensed, or if their partner bank has $10B in banking assets), Neobanks are exempt from the Durbin interchange rates, and can extract nearly twice the revenue on debit card transactions.

Source: Autonomous analysis.

Case Study: Dave (NeoBank) CAC on Marketing and Lending

Comparing the CAC per transacting customer, and ExtraCash Lending product



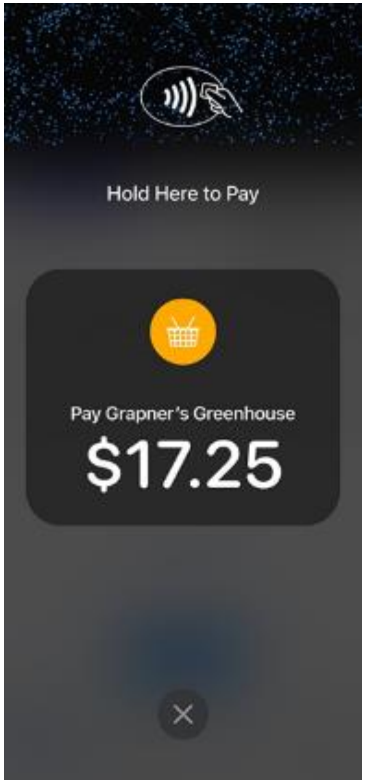
Source: Company disclosures, Autonomous analysis

What Are "Payments"?

"Payments refer to the transfer of money or value from one party to another in exchange for goods, services, or to fulfill an obligation. Payments can be made using various methods."

Main Features of Payments Tech

- Enabling quick and easy transactions
- Inclusion of security tools like encryption, authentication and fraud protection
- Increased global reach with online and cross-border payments solutions
- UX / digital-native platforms
- Cross-device availability



Source: Company website, Autonomous analysis.

Technology Components of the Tech Stack

Tech stack

The standardized technologies components for each of the elements of the tech stack

Tech stack		Capabilities	Tech Elements					
Security		Endpoint protection & IAM	Threat detection	Identity & access mgmt	Cyber	AML / KYC	Fraud	
SW infrastructure & apps	Apps	Enterprise & consumer apps	Merchant apps	Self-service portal / UI	Service providers	Aggregators	Digital Wallet solutions	Micro-UI components
		Analytics and visualization	Data orchestration	Hadoop	Machine learning			
	Enablement platform	API management	API publishing and discovery	Tokenization / authentication	API analytics / reporting	Developer tools/ portal		
		App engine	SDK	Search & query	User authentication	Algorithms engine	Rules engine	
		Tokenization	Token Issue	Device ID	Token LCM	De-tokenization		
	Processing	Rails	Card networks	P2P	Blockchain	SWIFT	ACH	
		Processing Capability	Authentication	Real time	VAS	Open arch.		
	Cloud infra-structure	Data processing	Protocol normalization	Data caching / storing	Data validation	Data logging	Security, VAS and ML	
		Data storage	Relational DB	Non-relational DB	Operational data stores	Data backup & DWH	Data indexing	Orchestration & security
Connectivity		Backhaul	Cellular	Wired				
		Local	Wifi	BT	NFC	802.15.4 (Zigbee)		
Hardware		Devices/ Packaging	Mobile devices	Custom	POS			
		On-device software	SDK	HDK	OS	API		
		Board-level components	Processors	Sensors / AFE	Modem	Actuators		

Source: Autonomous analysis.

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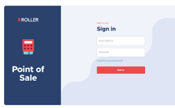
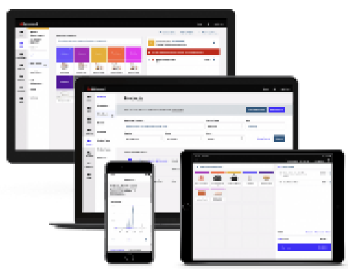
Elements of the Consumer Payments Tech Stack

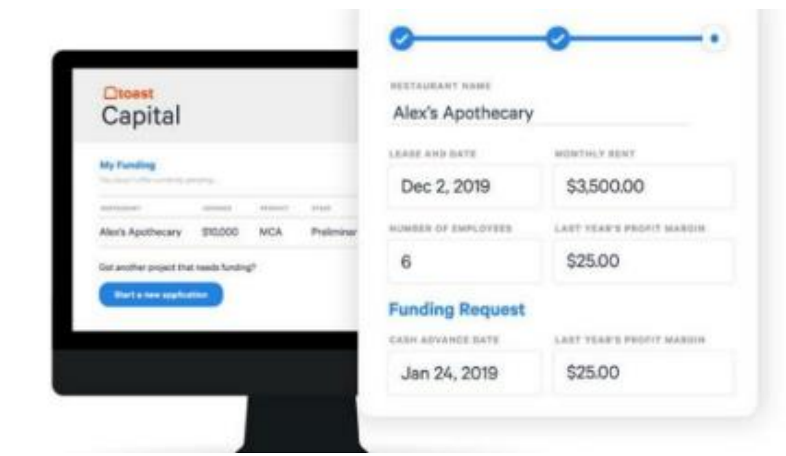
Example of POS	Elements of Tech Stack	Description of the elements
	Security	**The fourth layer of the stack:** This is the part of the stack that manages all the security elements, such as password protection for the POS, and threat detection (e.g. fraud)
	SW infrastructure & apps: Apps; Enablement platform; Processing; Cloud infrastructure	**The third layer of the stack:** This combines all the software, processing technology, apps and other types of software solutions used by the POS
	Connectivity	**The second layer of the stack:** This is the connectivity such as the Wi-Fi that for example a POS uses to connect to the internet to process payments
	Hardware	**The first layer of the stack:** This is the hardware such as POS systems at the store level to accept payments

Source: Company website, Autonomous analysis.

Case Study: Toast's Vertical-Focused Approach for Restaurants

- **Toast is capturing more of the tech stack within a specific vertical, being the expert in restaurants**
- **Integrated a POS with omni-channel payments and have expanded into ancillary services such as Kitchen Display System (KDS) – which displays and manages orders in the kitchen linked directly to the POS and online ordering:**
  - Toast Capital (working capital loans to merchants)
  - Toast PayCard (a debit card which provides real-time earned-wage access to restaurant employees)
  - Toast TakeOut (an alternative to Uber Eats and DoorDash).

Toast Capital



Toast PayCard

Toast TakeOut

Source: Company website, Autonomous analysis.

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Vertical Specialists Case Study: Toast's Moves North on the Tech Stack

Tech stack		Capabilities	Tech Elements					
Security		Endpoint protection & IAM	Threat detection	Identity & access mgmt	Cyber	AML / KYC	Fraud	
SW infrastructure & apps	Apps	Enterprise & consumer apps	Merchant apps	Self-service portal / UI	Service providers	Aggregators	Digital Wallet solutions	Micro-UI components
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SW infrastructure & apps	Enablement platform	API management	API publishing and discovery	Tokenization / authentication	API analytics / reporting	Developer tools/ portal		
SW infrastructure & apps	Enablement platform	App engine	SDK	Search & query	User authentication	Algorithms engine	Rules engine	
SW infrastructure & apps	Enablement platform	Tokenization	Token Issue	Device ID	Token LCM	De-tokenization		
SW infrastructure & apps	Processing	Rails	Card networks	P2P	Blockchain	SWIFT	ACH	
SW infrastructure & apps	Processing	Processing Capability	Authentication	Real time	VAS	Open arch.		
SW infrastructure & apps	Cloud infra-structure	Data processing	Protocol normalization	Data caching / storing	Data validation	Data logging	Security, VAS and ML	
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Connectivity		Backhaul	Cellular	Wired				
Connectivity		Local	Wifi	BT	NFC	802.15.4 (Zigbee)		
Hardware		Devices/ Packaging	Mobile devices	Custom	POS			
Hardware		On-device software	SDK	HDK	OS	API		
Hardware		Board-level components	Processors	Sensors / AFE	Modem	Actuators		

Toast's moves up-stack

Toast's core capabilities

Source: Autonomous analysis.

What is Wealthtech?

> Wealthtech refers to the use of digital tools and automation to enhance wealth management, investment and financial planning services.

Main Features of Wealthtech

- Disintermediation of brokerage firms
- Democratizing access to financial markets
- Fee compression due to increased competition
- Increased product innovation due to greater (retail) demand
- Better user experience with digital-native platforms
- Seamless availability throughout devices
- Increased efficiency and access bypassing legacy channels

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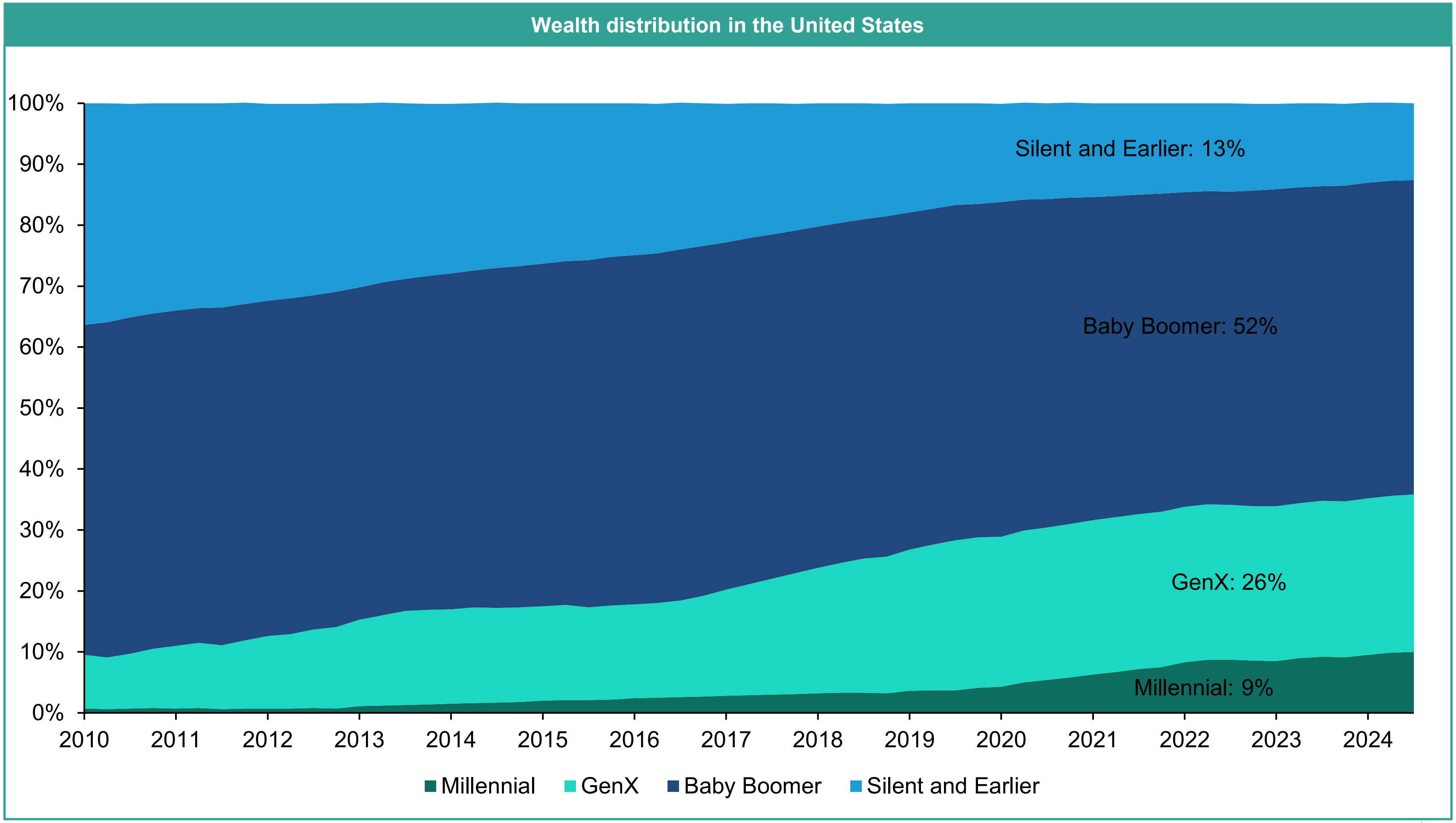
Source: Autonomous analysis.

The Largest Transfer of Wealth is Underway



Note: Data as of September 30th, 2024
Source: Federal Reserve Bank, Autonomous Analysis

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Shifts in Wealth Management and Their Links to Technology

Industry shifts	Demographic shifts	Economic shifts	Competitive shifts
Impact on business model	Demand for superior UX, including account consolidation and combination of self- and professionally-managed assets.	Margin contraction from pricing pressure and cost increase. Commonly adopted "cash-centric" model under pressure.	Initial WealthTech offerings are becoming "table stakes". We expect M&A opportunities for incumbents and large WealthTech players.
Impact on tech stack	Tech stacks must facilitate integration across accounts and handle the complexity of asset diversification demanded by millennials and Gen X.	Necessitates nimble technology infrastructure to enable low-cost scalable business. Attempts to 'patch up' legacy systems will struggle.	Benefits of product innovation and M&A will only be reaped if Tech Stacks can integrate acquisition technology.

Source: Autonomous analysis.

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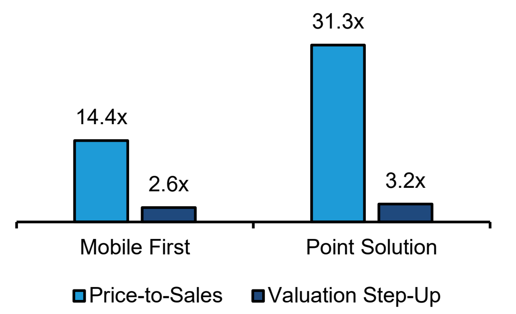
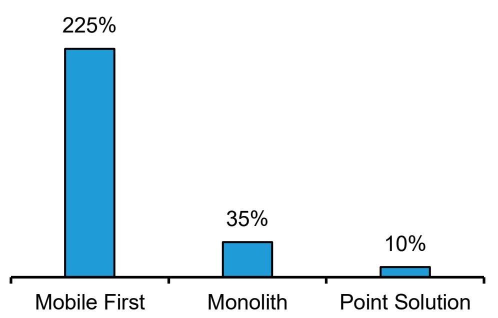
Our Outlook

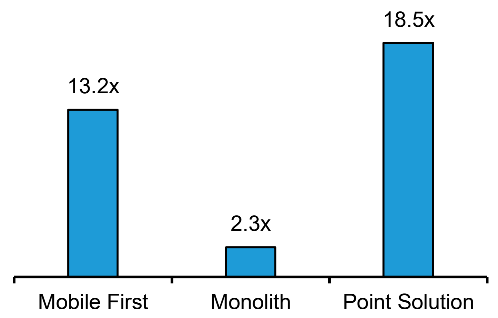
Performance of private archetypes



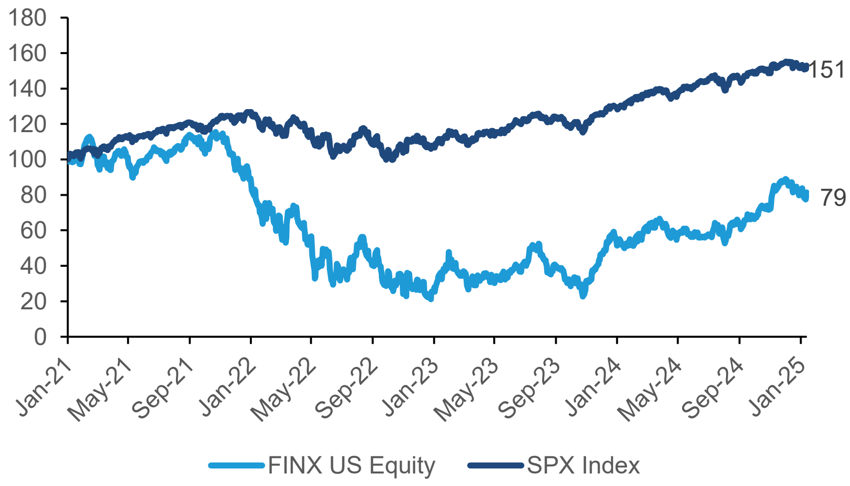
Public archetype performance over last 2 yrs



Average price-to-sales ratio of archetypes



FINX FinTech index vs S&P performance



In the near future, we believe that companies classed as "Point-Solutions" will likely attract capital and steeper valuations in the private markets, reversing a trend whereby a majority of the capital previously flowed to brokerage providers and DTC apps.

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Source: Pitchbook, Bloomberg, Autonomous analysis.

What is a Digital Asset?

"A digital asset is an asset which operates on a decentralized information system, holds value, is governed by standardized rules, and can be used for a series of financial and non-financial applications."

Main Features of Digital Assets

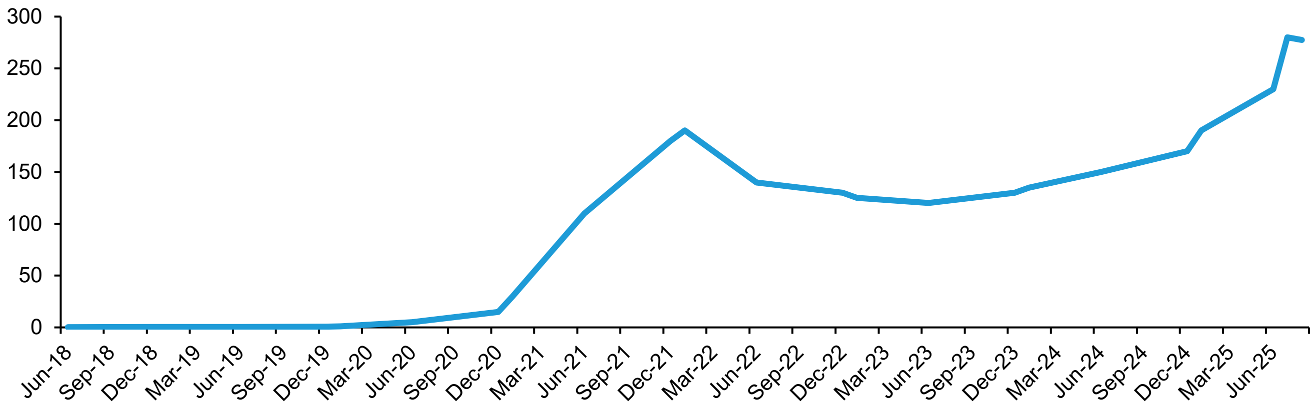
- Decentralized ecosystem
- Rules are open and auditable coordinated by users
- Permissionless
- Store of value
- Store of information
- Equivalency to fiat currency

An illustration of the penetration today of digital assets; charities such as Save The Children accept bitcoin as donations.

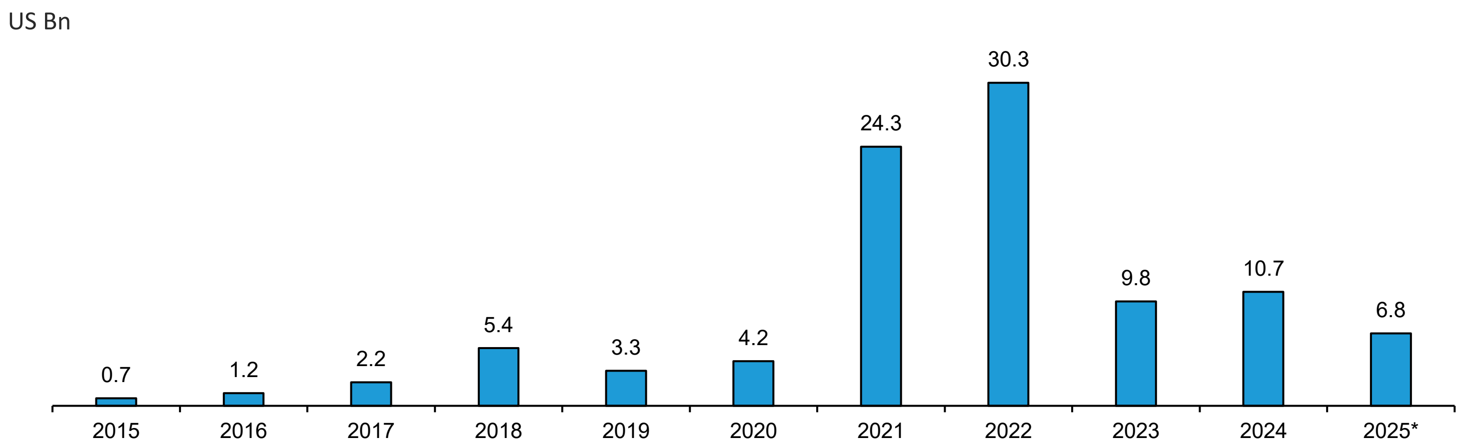
Source: Autonomous analysis, reporting from Savethechildren.org

A Second Look at Digital Assets

Stablecoin Market Cap



Crypto VC deal activity



Note: Data as of June 30th, 2025

Source: The Chamber of Digital Commerce, PitchBook, Autonomous Analysis

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Reframing the Conversation: Foundational Elements of a New Infrastructure

Information system

- Quality of information in the system
- Reconciliation processes
- Security in exchange

Rules based monetary system

- Store of value
- Means of exchange
- Unit of account

Payments and exchange for online business

- Replaces abstraction layers around archaic systems
- Interconnections with developing demand
- Native currency for the internet

Decentralized: distributed nodes mediate activity and rules enforcement

Open-source ledger: rules are open and auditable, coordinated by users

Programmable: rules and permissions around transactions can be set

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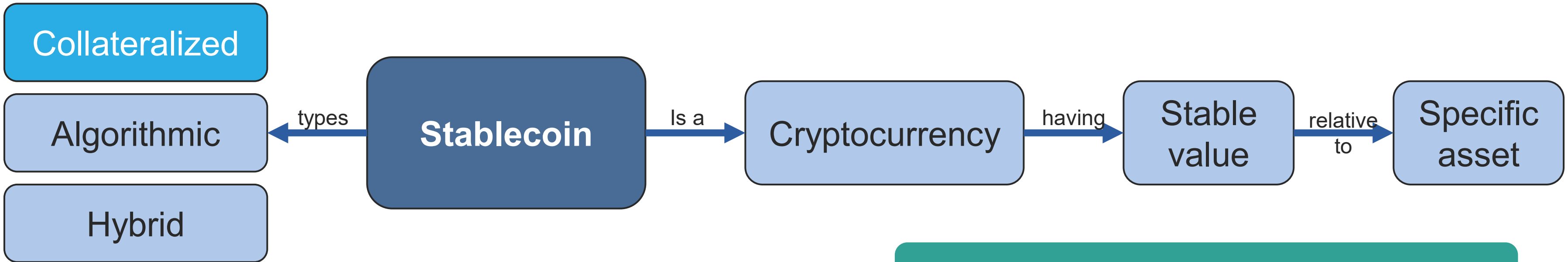
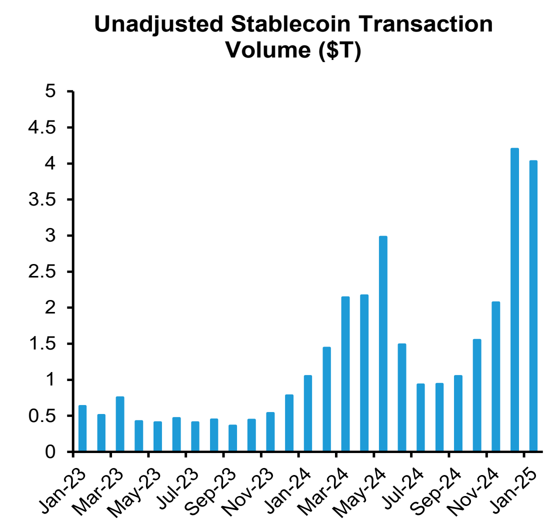
Source: Autonomous analysis.

What is a Stablecoin?



Stablecoin Transactions



Source: Autonomous Analysis.

The Blockchain is a Data, Exchange, and Asset Monetization Infrastructure

Exchange of goods	• A native currency built for digital commerce and transactions that allows the seller and the buyer to traverse online and offline commerce with low transaction costs
Facilitate store of value safely	• Fundamental scarcity limit built-in at the base layer • Hedge against inflation, confiscation, tariffs and rule alterations
Enable new build and innovation	• Open source designed in to allow innovation across the stack • Scaling limited only by chain consensus
Store of records and rules	• Auditable by anyone, participant or not • Perfectly reconcilable ledger, secured by the network and logged within each transaction.

Source: Autonomous analysis.

Use Cases for a Digital Asset

Potential use cases for TradFi		Adoption cases	TradFi adoption timeline estimated
Exchange and Access	Trackable exchange of goods and services	Payment rails, exchanges, inter-linkages, off-ramp / on-ramp facililation, brokerage, custody.	3-12 months
Asset / Labor monetization	Fractional tracking of assets and labor effort	Mortgages, liens, titles, proof-of-work stored on blockchain	12-18 months
Web3	Protocol management, asset transference, "earn" for browsing	Royalties, licences, tradable NFTs, tickets, gaming applications on blockchain	18-36 months
Infra / Supply Chain	Supply chain information, tracking, and means of exchange.	BOMs, trade finance, bill of lading, transfer pricing, insurance, IoT, contracts, aftermarket services on blockchain	36-48 months
DeFi	Banking & lending, asset management, insurance, derivatives	Distributed lending, new leveraged asset creation, derivatives, private credit, synthetic products etc.	36-48 months

Source: Autonomous analysis.

Stitching It All Together – Commonly-Used Terms and Translation

Commonly used terms	Use case translation in traditional finance
Decentralized Autonomous Organization (DAO)	Mechanism of governance – setting rules and compliance
Tokenization	A means of conversion, and encryption
Tokens (e.g. NFTs)	A unique identifier of each asset / fractional ownership
Stablecoins	A pegged unit of exchange
Bitcoin, Ethereum, XRP (Ripple) etc.	Crypto currencies without a peg

Source: Autonomous analysis.

Summary of Digital Assets Use Cases

Use Case Category	Use Case	Estimated impact (average savings per transaction)	Time of maturity	Winners	Disrupted / Disintermediated
Exchange and Access	**Domestic payments**	0.96%	3-12 months	- Network - Issuers - On and off ramp	- Acquiring bank - Possibly issuer margins
	Cross-Border Remittances and B2B	3.59%	3-12 months	- Remittance providers - Non-correspondent banks - FX Intermediaries	- SWIFT - ACH - Correspondent banks
	Loyalty Solutions and Programmable Money	2.33%	3-12 months	- Merchants	- Issuers - Martechs - CLO / Affiliate Rails
	Improved Authentication Rates	1.60%	3-12 months	- Issuers - Merchants	- Networks - Acquirers - Payment processors
Asset / Labor monetization	**Fractional Property Ownership, Titles and Title insurance**	3.00%	12-18 months	- BDCs - Real Estate Investment Firms (REITs) - Private credit firms	- Title companies - Banks - Real estate firms
	Proof of work and instant payments for the gig economy	0.25%	12-18 months	- Gig economy workers - Content creators	- Payroll processors - Embedded payment providers
	Debt issuance	0.08%	12-18 months	- Treasury department - Corporate bond issuers	- Banks - Traditional bond markets
Web3	**IAM Tokens (Identity & Access Management)**	0.05%	12-18 months	- Identity verification providers - Enterprises	- Centralized authentication models
	NFTs for Digital Art, Collectibles, royalties, and gaming tokens	12.50%	18-36 months	- Customers - Artists	- Ticket vendors - Art galleries - Auction houses - Copyright agencies - Traditional asset management firms - Insurance providers - Music labels - Streaming platforms - Collecting societies
Infra / Supply chain	**Automated financial agreements, supply chain verification, and legal and compliance documents**	2.30%	36-48 months	- Compliance firms - Regulatory agencies - Logistics providers - Customs agencies - Retailers	- Financial intermediaries - Brokers - Law firms - Logistics data processors and aggregators
	Tokenized deposits	2.25%[1]	36-48 months	- Bank treasury clients - Institutional investors - Commercial banking platforms - Corporate treasurers	- Legacy corresponding banking networks - Multi-step settlement providers - Manual reconciliation system providers
DeFi	**Decentralized P2P lending, and cryptocurrency collateral**	To be determined	36-48 months	- Sub-prime and near-prime borrowers	- Traditional banking network

1. *Assuming a $100 transaction*

Source: Autonomous Analysis

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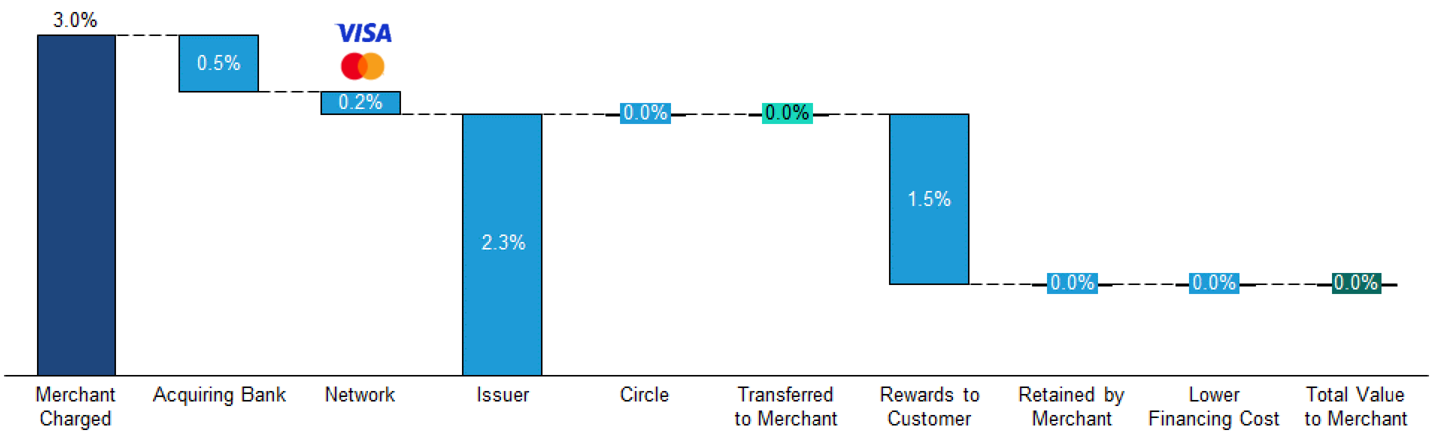
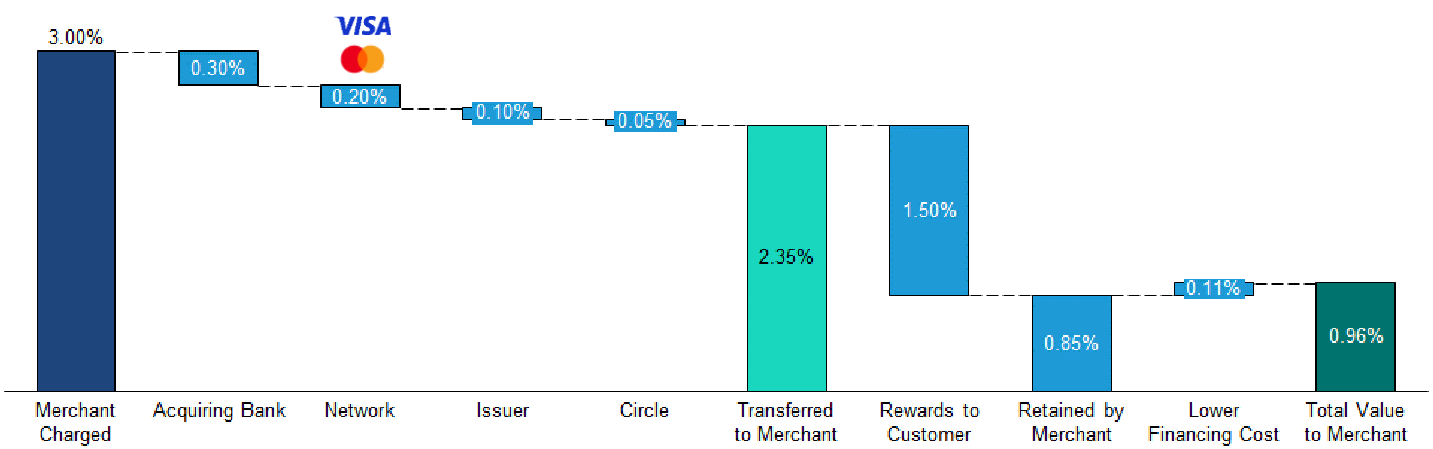
Domestic Payments – Stablecoins Potential Savings

Traditional Rails Economics



Stablecoin Rails Economics



Source: Autonomous Analysis

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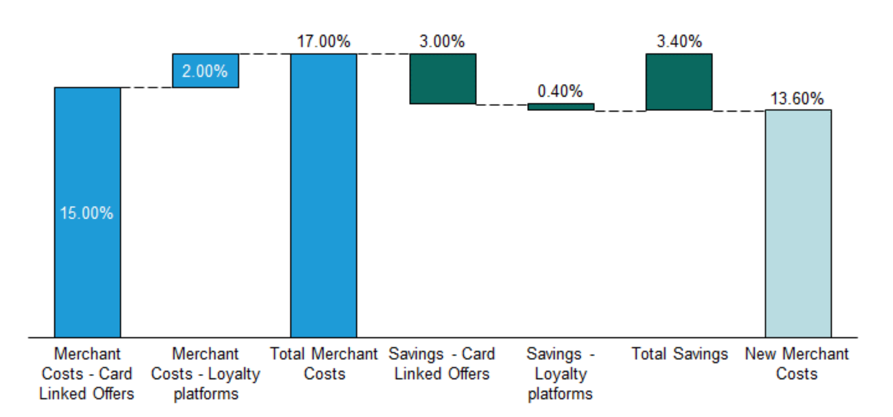
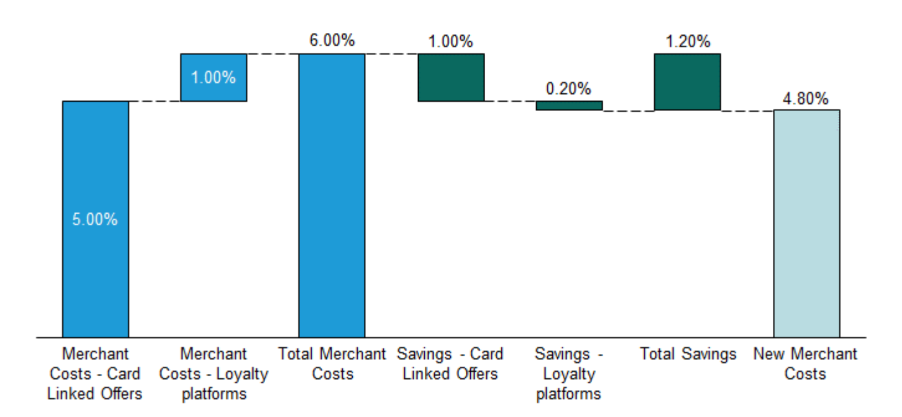
Loyalty Solutions – Stablecoins Potential Savings

Stablecoins solve loyalty program challenges by enabling instant rewards, boosting engagement, and cutting management costs through transparent transaction tracking.

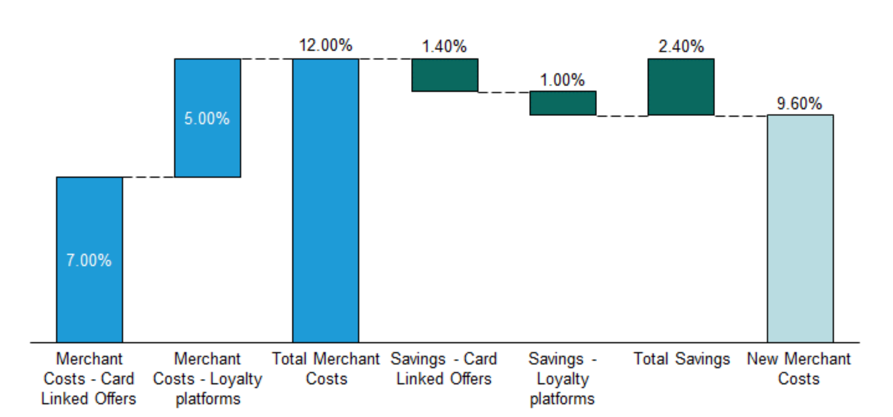
Loyalty Solutions Economics – Retail



Loyalty Solutions Economics – Gas / Grocery



Loyalty Solutions Economics – Travel

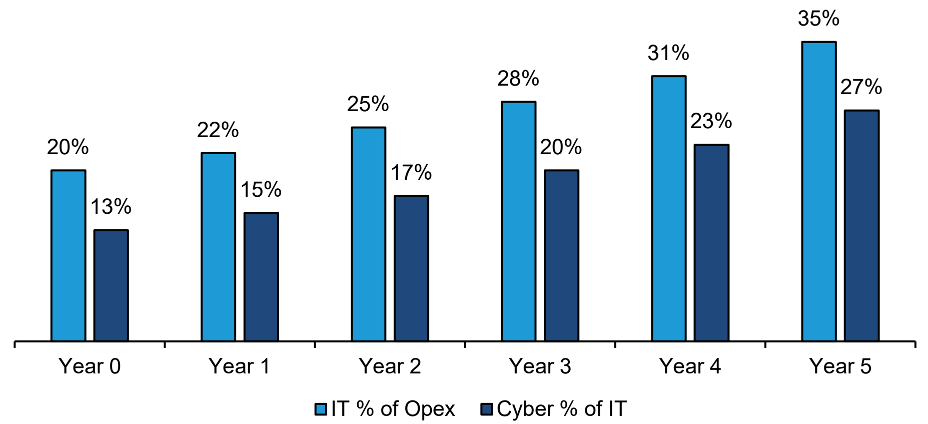


Note: Midpoint savings
Source: Autonomous Analysis

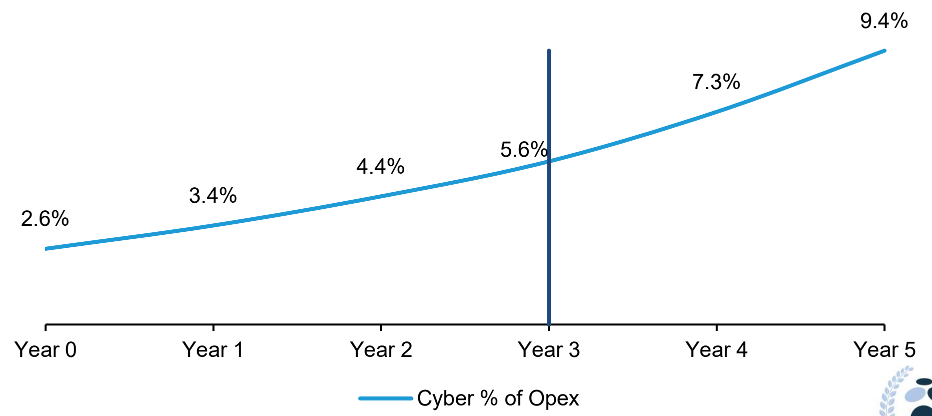
Cybersecurity – It Is Going to Get More Expensive, Quickly

- Fintechs and financial services companies rely on several layers of data inputs, and inter-connected service providers. The growing risk and impact of cyber crime in financial services and the use of AI is making security more expensive
- We project that the total spend on cybersecurity is likely to double in three years, from 2.6% of IT spend to 5.2% - and could have an impact on the bottom line for fintechs especially in payments, neobanking, and lending.

Forecast of IT Budget as % of Opex vs. Cybersecurity Spend as a % of IT budget



Projection of the cost allocated for cyber as a % of overall opex spend



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Source: McKinsey, Gartner, PWC, IANS Research, Autonomous analysis.

Global FinTech

The Autonomous FinTech product spans global strategy work, including insights on crypto regulation and the valuation trends for the private FinTechs, as well as company specific reports on some of the most interesting names in the space with read across to the rest of our coverage.

Fintech Network Access

- Payment Orchestration: A Look at an Emerging Trend in the Payments Industry
- Inside the Mind of a Payments Regulator
- Cryptocurrency Regulation: Identifying What Matters
- Global Fintech: Understanding Private Market Valuations
- Fintech Spotlight: A Conversation with Silverflow
- A Closer Look at Expense Management: A Conversation with Ramp
- Fintech Series: Raisin CEO - Unique Insights on Deposit Betas
- EM Fintech discussion with Dave Nagle
- Unstable Stablecoins - Part 1: A Conversation with Circle
- Unstable Stablecoins - Part 2: A Conversation with Silvergate

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Thank you for coming!

I. REQUIRED DISCLOSURES

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On April 1, 2024, Société Générale (SG) and AllianceBernstein, L.P. (AB) completed a transaction that created a new joint venture in which their respective cash equities and research businesses operate in a new business combination. Although their respective ownership percentages in the joint venture differ between North America and the rest of the world, the creation, production and publication of research is handled collaboratively on a global basis across the two research brands, "Bernstein" and "Autonomous". Unless specifically noted otherwise, for purposes of these disclosures, references to Bernstein's "affiliates" relate to both SG and AB and their respective affiliates.

RATINGS DEFINITIONS, BENCHMARKS AND DISTRIBUTION

EQUITY RATINGS DEFINITIONS

Bernstein brand

The Bernstein brand rates stocks based on forecasts of relative performance for the next 12 months versus the S&P 500 for stocks listed on the U.S. and Canadian exchanges, versus the Bloomberg Europe Developed Markets Large and Mid Cap Price Return Index (EDM) for stocks listed on the European exchanges and emerging markets exchanges outside of the Asia Pacific region, versus the Bloomberg Japan Large and Mid Cap Price Return Index USD (JP) for stocks listed on the Japanese exchanges, and versus the Bloomberg Asia ex-Japan Large and Mid Cap Price Return Index (ASIAX) for stocks listed on the Asian (ex-Japan) exchanges -unless otherwise specified.

The Bernstein brand has three categories of ratings:

- Outperform: Stock will outpace the market index by more than 15 pp
- Market-Perform: Stock will perform in line with the market index to within +/-15 pp
- Underperform: Stock will trail the performance of the market index by more than 15 pp

Coverage Suspended: Coverage of a company under the Bernstein research brand has been suspended. Ratings and price targets are suspended temporarily, are no longer current, and should therefore not be relied upon.

Not Rated: A rating assigned when the stock cannot be accurately valued, or the performance of the company accurately predicted, at the present time. The covering analyst may continue to publish research reports on the company to update investors on events and developments.

Not Covered (NC) denotes companies that are not under coverage.

Bernstein brand stock ratings are based on a 12-month time horizon.

Autonomous brand – common stocks

The Autonomous brand rates common stocks as indicated below. As our benchmarks we use the Bloomberg Europe 500 Banks And Financial Services Index (BEBANKS) and Bloomberg Europe Dev Mkt Financials Large and Mid Cap Price Ret Index EUR (EDMFI) index for developed European banks and Payments, the Bloomberg Europe 500 Insurance Index (BEINSUR) for European insurers, the S&P 500 and S&P Financials for US banks and Payments coverage, S5LIFE for US Insurance, the S&P Insurance Select Industry (SPSIINS) for US Non-Life Insurers coverage, and the Bloomberg Emerging Markets Financials Large, Mid and Small Cap Price Return Index (EMLSF) for emerging market banks and insurers and Payments. Ratings are stated relative to the sector (not the market).

The Autonomous brand has three categories of common stock ratings:

- Outperform (OP): Stock will outpace the relevant index by more than 10 pp
- Neutral (N): Stock will perform in line with the market index to within +/-10 pp
- Underperform (UP): Stock will trail the performance of the relevant index by more than 10 pp

Coverage Suspended: Coverage of a company under the Autonomous research brand has been suspended. Ratings and price targets are suspended temporarily, are no longer current, and should therefore not be relied upon.

Not Rated: A rating assigned when the stock cannot be accurately valued, or the performance of the company accurately predicted, at the present time. The covering analyst may continue to publish research reports on the company to update investors on events and developments.

Those denoted as 'Feature' (e.g., Feature Outperform FOP, Feature Under Outperform FUP) are our core ideas.

Not Covered (NC) denotes companies that are not under coverage.

Autonomous brand common stock ratings are based on a 12-month time horizon.

Autonomous brand – preferred stocks

The Autonomous brand has three categories of preferred stock ratings:

- Outperform (OP): The total return of the preferred instrument is expected to outperform preferred securities of other issuers operating in similar sectors or rating categories over the next six months.
- Neutral (N): The total return of the preferred instrument is expected to perform in line with preferred securities of other issuers operating in similar sectors or rating categories over the next six months.
- Underperform (UP): The total return of the preferred instrument is expected to underperform preferred securities of other issuers operating in similar sectors or rating categories over the next six months.

Autonomous preferred stock ratings are based on a 6-month time horizon.

AUTONOMOUS CREDIT RESEARCH

Where this report contains investment recommendations for credit instruments, as defined in article 3(1)(35) of the Market Abuse Regulation, the information below is presented to comply with its disclosure requirements.

The report may also include reference(s) to published opinions by other Autonomous or Bernstein analysts covering the equity securities of the issuer(s) referenced herein. Please note an investment recommendation for credit instruments published by the author(s) of this report may differ from the published view of the analyst covering equity securities for the issuer(s) contained in this report and vice versa.

CREDIT RATINGS DEFINITIONS

The Autonomous brand has three categories of credit ratings:

- Credit Outperform (C-OP): The total return of the Reference Credit Instrument is expected to outperform the credit spread of bonds of other issuers operating in similar sectors or rating categories over the next six months.
- Credit Neutral (C-N): The total return of the Reference Credit Instrument is expected to perform in line with the credit spread of bonds of other issuers operating in similar sectors or rating categories over the next six months.
- Credit Underperform (C-UP): The total return of the Reference Credit Instrument is expected to underperform the credit spread of bonds of other issuers operating in similar sectors or rating categories over the next six months.

Autonomous credit ratings are based on a 6-month time horizon.

A list of all investment recommendations produced by the author(s) of this report alongside credit ratings history are available upon request.

It is at the sole discretion of the Firm as to when to initiate, update and cease research coverage. The Firm has established, maintains and relies on information barriers to control the flow of information contained in one or more areas (i.e. the private side) within the Firm, and into other areas, units, groups or affiliates (i.e. public side) of the Firm

DISTRIBUTION OF EQUITY RATINGS/INVESTMENT BANKING SERVICES

Rating	Market Abuse Regulation (MAR) and FINRA Rule 2241 classification	Count	Percent	Count*	Percent*
Outperform	BUY	620	51.07%	112	18.06%
Market-Perform (Bernstein Brand) Neutral (Autonomous Brand)	HOLD	420	34.60%	81	19.29%
Underperform	SELL	174	14.33%	19	10.92%

* These figures represent the number and percentage of companies in each category to whom Bernstein and Autonomous provided investment banking services.
As of September 30, 2025. All figures are updated quarterly.

CONFLICTS OF INTEREST

Christian Bolu maintains long positions in various crypto currencies.

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