



EMERGING TECH RESEARCH

Launch Report: Enterprise Fintech

VC trends and emerging opportunities

Q4
2022





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Fintech vertical overview

The financial technology (fintech) industry is currently one of the most well-funded spaces, with a wide range of investment opportunities. The sector is comprised of products and services that help businesses and consumers transact, budget, borrow, lend, and invest, and is enabled by the ongoing development of new software, apps, application program interfaces (APIs), and cloud technologies.

Innovation within financial services has continued for several decades—with early examples including the development of the electronic fund transfer system, automated teller machines, and credit cards. Further innovation was spurred following the global financial crisis (GFC), as financial institutions (FIs) came under extreme pressure and some consumers lost trust in banks, resulting in the creation of alternative methods to store and obtain money. However, much of the modern fintech development today has been spurred by the COVID-19 pandemic.

In the two years following the pandemic's peak, consumer spending habits have shifted online, causing both consumers and businesses to become more reliant on, and comfortable with, conducting financial services solely through online channels and mobile applications. Many fintechs benefited during this time due to low interest rates, while trillions of dollars in government stimulus were deployed to consumers and businesses, leading to a jump in spending and debt repayments.¹ Capital markets simultaneously witnessed an influx of deployed capital, allowing banks, brokerages, and other trading intermediaries to generate significant revenue growth from fees on higher trading volumes.

These circumstances have led to quicker adoption of digitized financial products and services, such as mobile payment methods, digital banking, and online lending. During this time, numerous factors that have revolutionized the fintech industry have surfaced. These include the emergence of banking and payments-as-a-service providers, which have partnered with banks to streamline payments, create a digital bank from scratch, and launch financial services; the emphasis on mobile and low-friction consumer experiences; the shift from a paper to digital industry, which enabled fintechs to inexpensively serve more customers at scale; and growing total addressable markets (TAM) and profit margins.

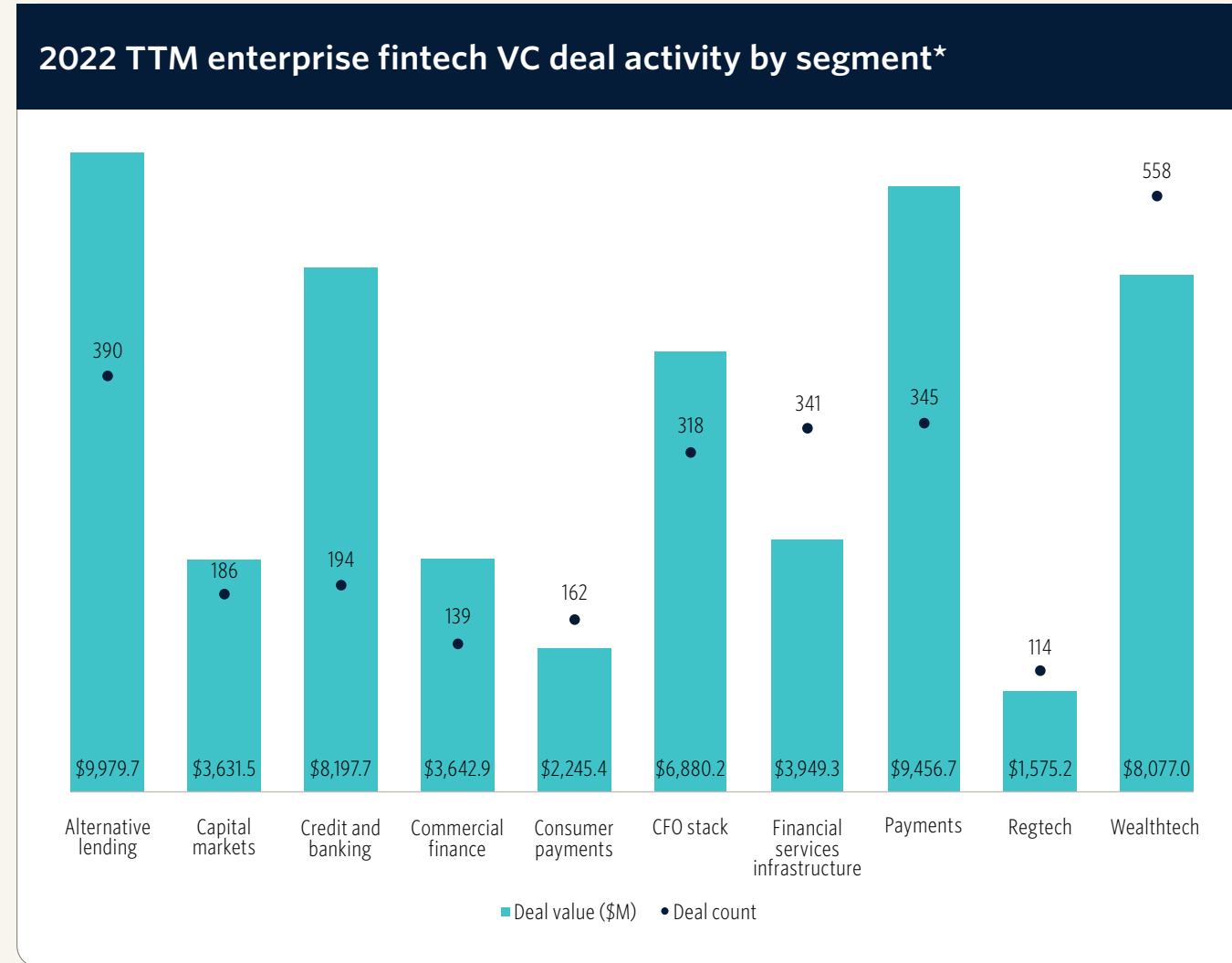
Despite ongoing challenges in the broader macroeconomic environment, FIs and fintech companies are still investing in the development of enhanced technologies. For example, embedded finance and banking as a service (BaaS) continue to present large opportunities for growth. Open banking and open finance—the enablement of fintech companies to access consumer financial data at different FIs through the use of APIs—have increasingly come into focus for investors, driven by both the desire to create better consumer products and regulations intended to boost innovation and competition. Technologies undertaking fraud prevention and regulatory matters relating to Know Your Customer (KYC) and Anti Money Laundering (AML) have witnessed growing use cases, driven by an uptick in bad actors and fraudulent activity. These opportunities coincide with several other important disruptive forces affecting the financial services ecosystem, including real-time payments and transaction settlement, cognitive financial services, and core banking migration—upgrading of legacy back-end banking systems.

Note: Companies in our fintech segment are currently under review and have been reclassified to provide a more accurate representation of the sector. Our definition of fintech companies now excludes cryptocurrencies, digital assets, and insurance technology (insurtech), which may result in different numbers in our data versus previous publications.

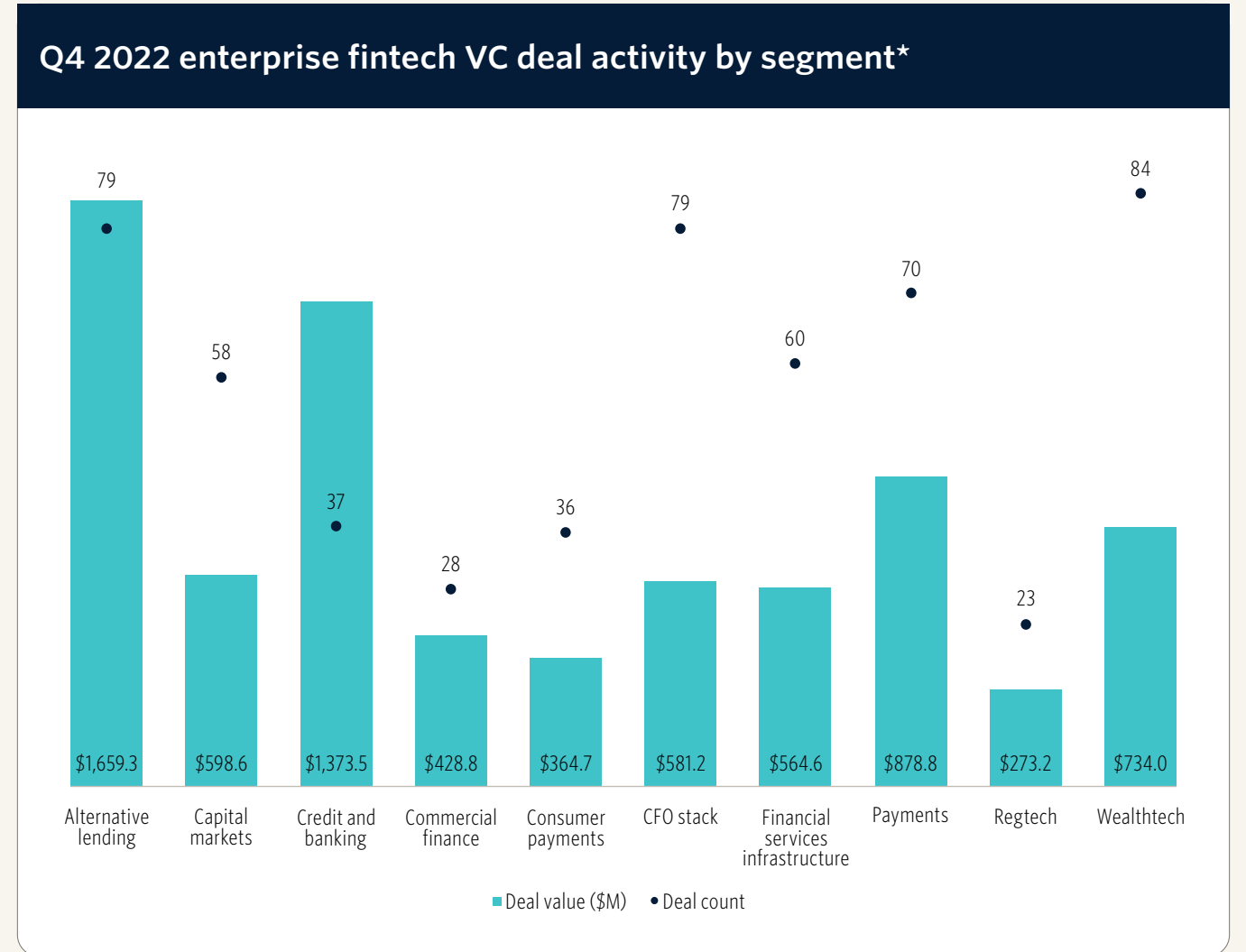
¹: ["Where \\$5 Trillion in Pandemic Stimulus Money Went," New York Times, Alicia Parlapiano, et al., March 11, 2022.](#)



FINTECH VERTICAL OVERVIEW



Source: PitchBook | Geography: Global | *As of December 31, 2022



Source: PitchBook | Geography: Global | *As of December 31, 2022



Fintech VC activity

Venture capitalists invested \$57.6 billion globally into enterprise and consumer fintechs in 2022, representing a 40.7% YoY decline from the record \$97.2 billion in 2021. Capital was raised across a total of 2,747 deals in 2022, an 18.1% YoY decline compared to 3,356 in 2021. Q4 saw the lowest deal value and deal count of 2022, following successive declines in both metrics throughout the year. \$7.5 billion in venture capital was raised in Q4 2022, representing a 68.6% YoY decline and a 31.8% quarter-over-quarter (QoQ) decrease. Deal count stood at 554 deals for the quarter, representing a 32.0% YoY decline but just a 1.4% QoQ decline. While these stark declines are indicative of the broader macroeconomic challenges that persisted throughout 2022, fintech continues to be one of the most well-funded VC-backed industries. Notably, both VC deal value and deal count in 2022 remained above pre-pandemic levels, suggesting investors continue to see long-term opportunities within the sector.

Notable fintech deals in 2022 include:

- [Trade Republic](#), a retail trading platform, raised a \$1.2 billion Series C at a \$5.3 billion post-money valuation.
- [Checkout.com](#), a rival to [Stripe](#), raised a \$1.0 billion Series D at a \$40.0 billion post-money valuation.

- [Klarna](#), a buy now, pay later (BNPL) platform, raised an \$800.0 million late-stage round at a \$6.7 billion post-money valuation.
- [Scalapay](#), a BNPL provider, raised a \$692.0 million Series B at a \$1.9 billion post-money valuation.
- [Tryllian](#), a consumer-facing digital bank, raised \$414.6 million in equity and convertible debt funding at a \$1.5 billion post-money valuation.

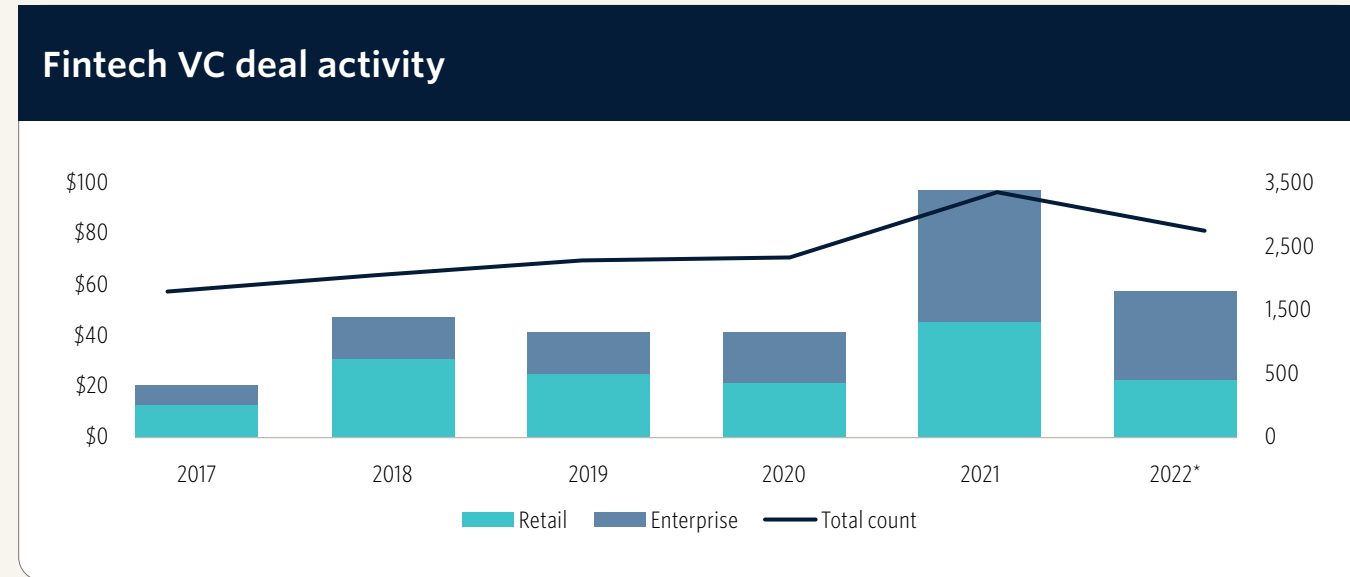
Changes in median pre-money valuations for VC-backed companies varied in 2022. Unsurprisingly, the median pre-money valuation for venture growth companies decreased 27.3% YoY to \$505.0 million, reflecting the scarce appetite for exits. Late-stage median pre-money valuations witnessed a lesser decline of 4.6% YoY, ending at \$80.0 million for the year.² Median pre-money valuations for early-stage and angel and seed companies remained solid in 2022, increasing 21.9% YoY to \$41.5 million and 34.6% YoY to \$9.4 million, respectively.

Fintech venture exits plummeted in 2022, as market conditions remained volatile and valuations continued to drop. Exit value totaled \$23.8 billion in 2022, representing a steep 91.0% YoY decline. The change is the result of a record number of fintech companies exiting via IPOs in 2021, which grounded to a halt in the first quarter of 2022. Valuations continue to level-set, with collective exit value now roughly in-line with that of the previous five years—excluding 2021.

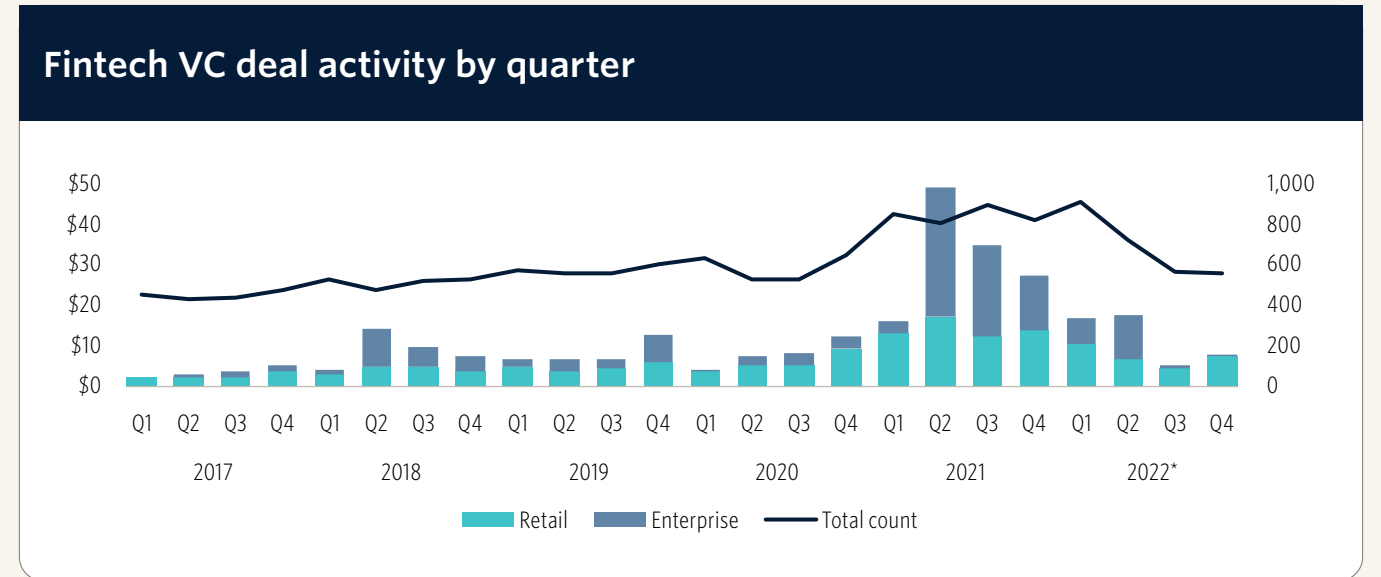
²: Note: PitchBook defines the venture growth stage as any financing that is Series E or later or any VC financing of a company that is at least 7-years-old and has raised at least six VC rounds.



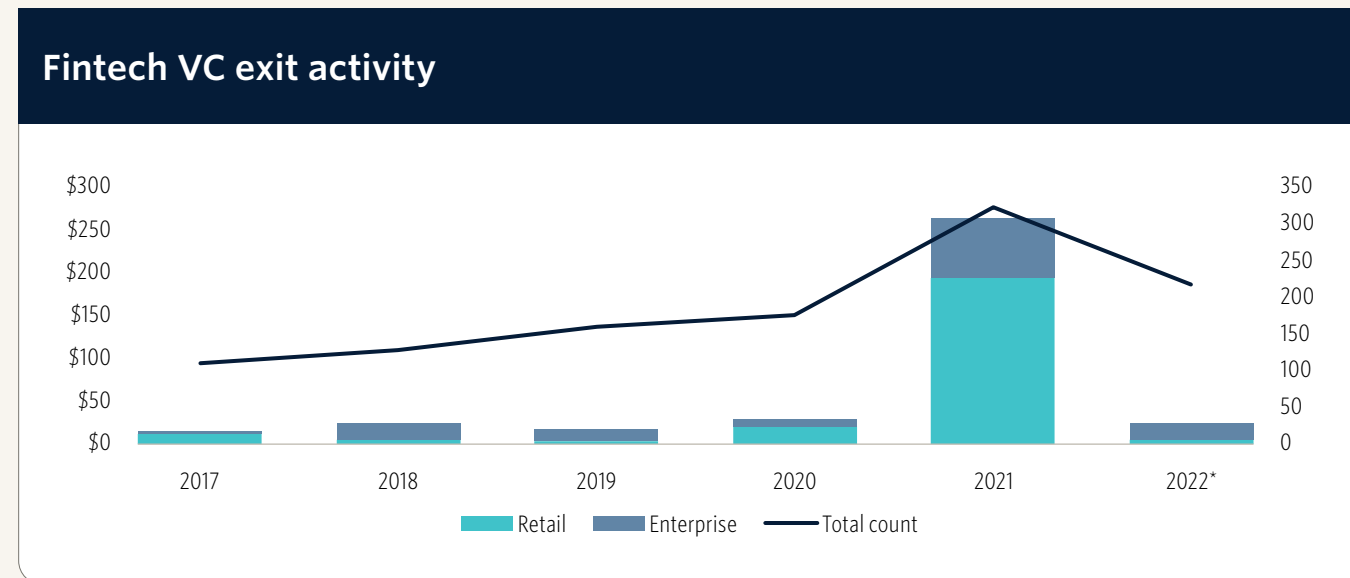
FINTECH VC ACTIVITY



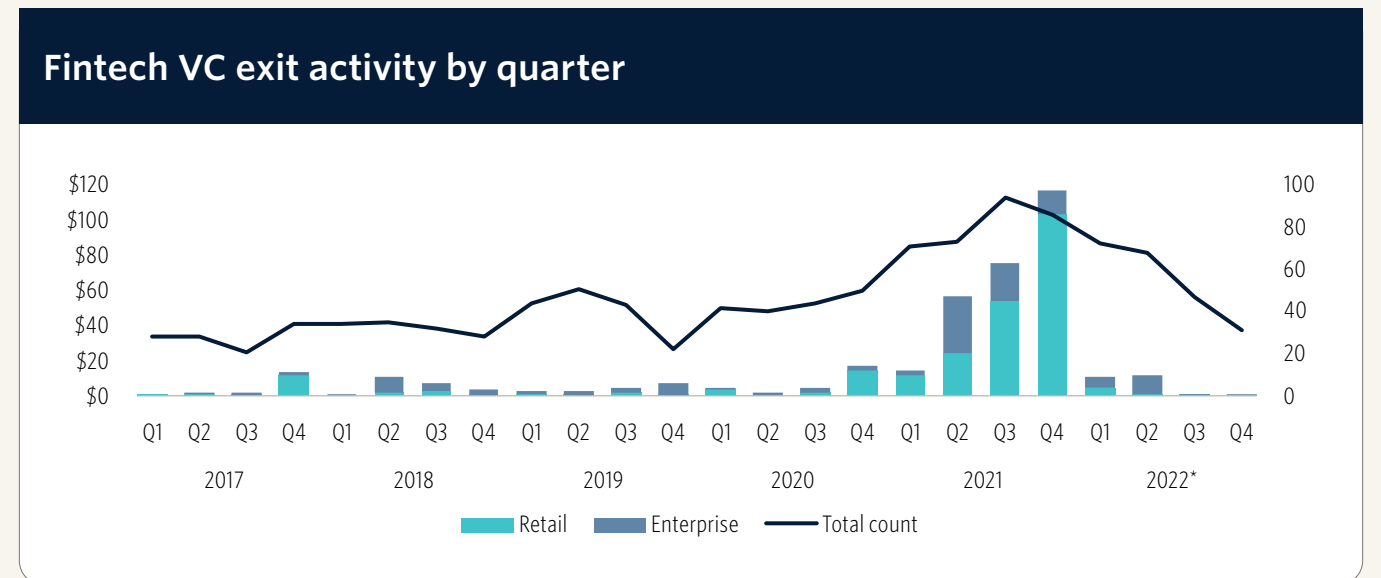
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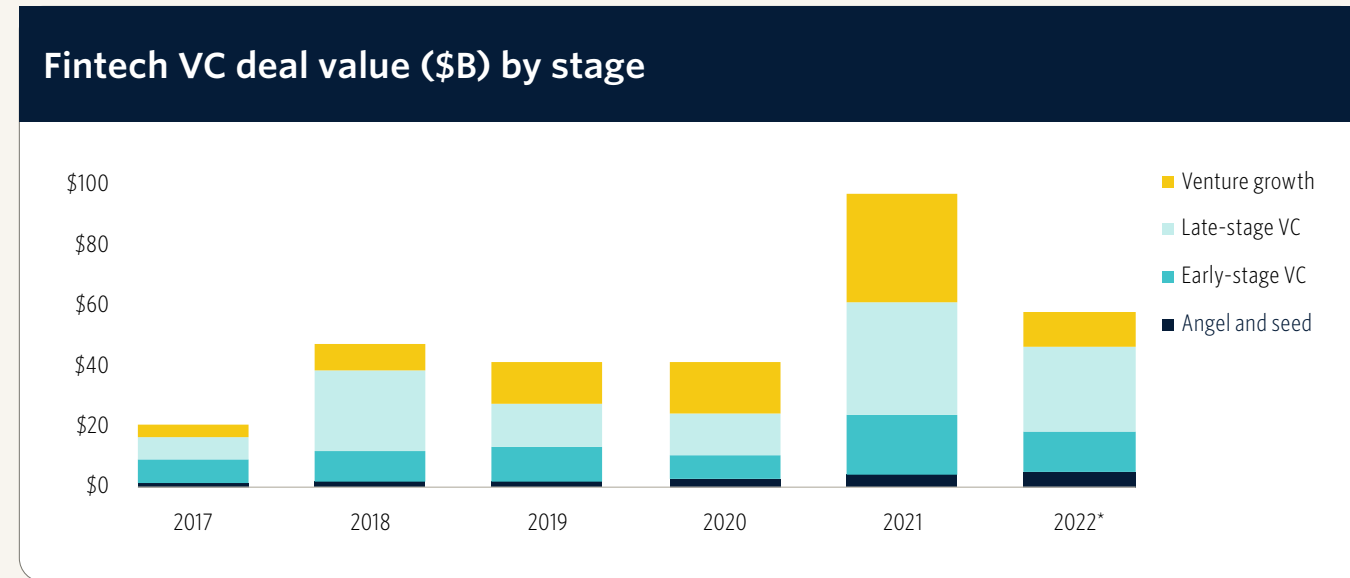
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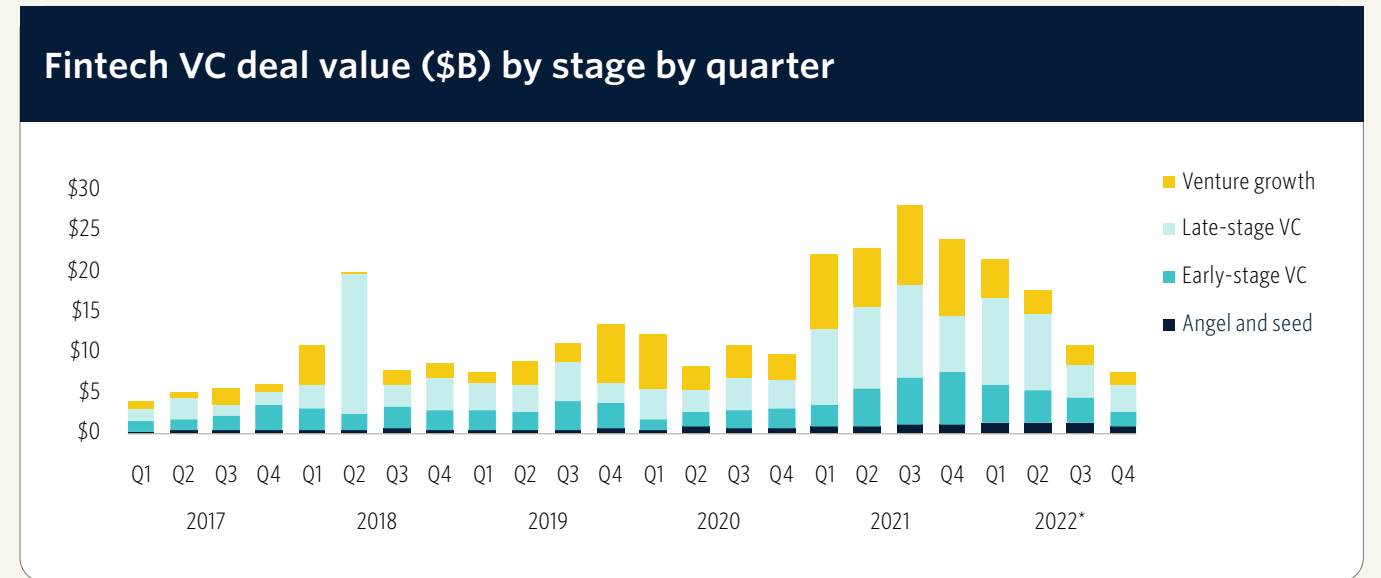
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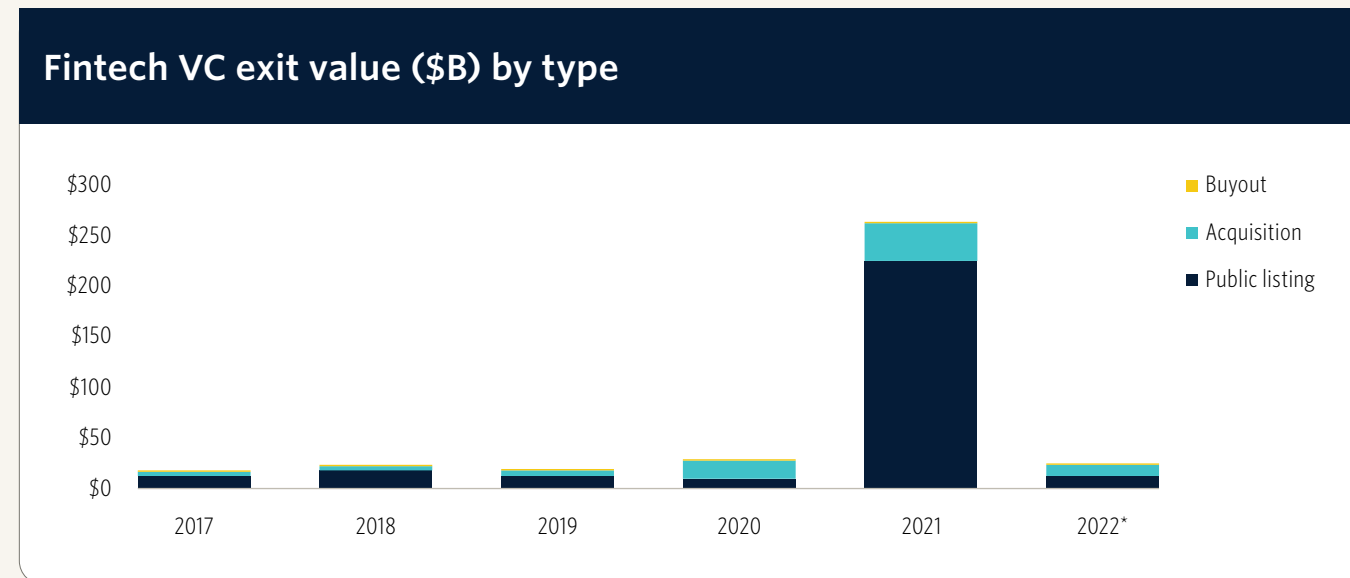
FINTECH VC ACTIVITY



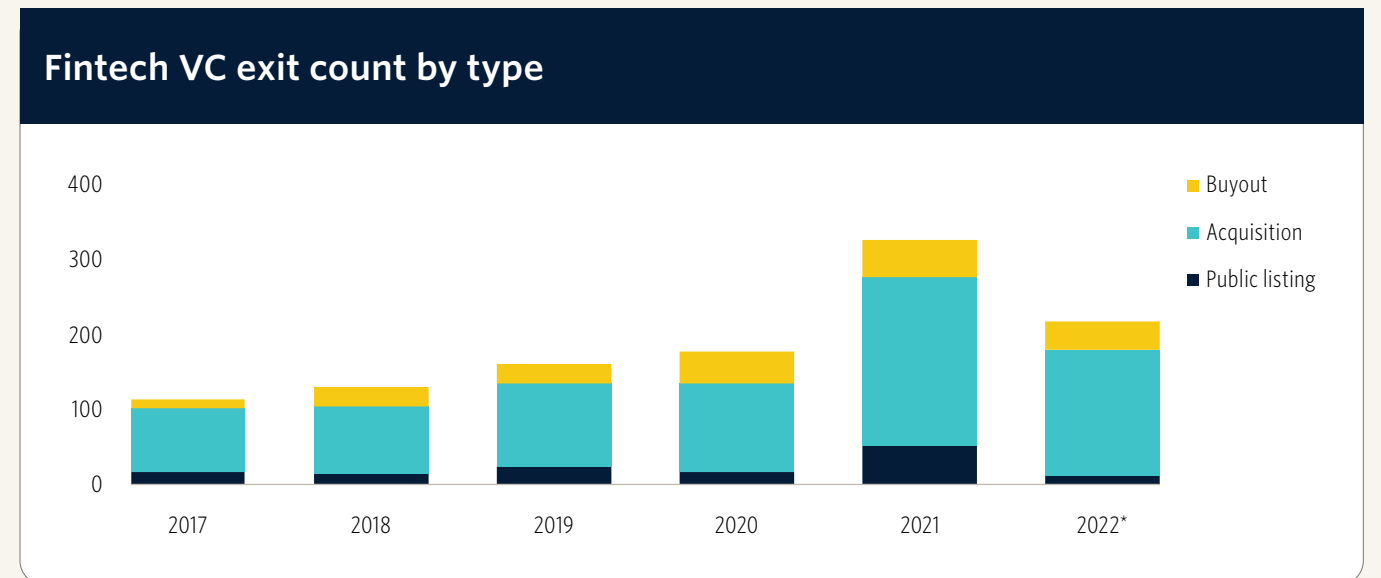
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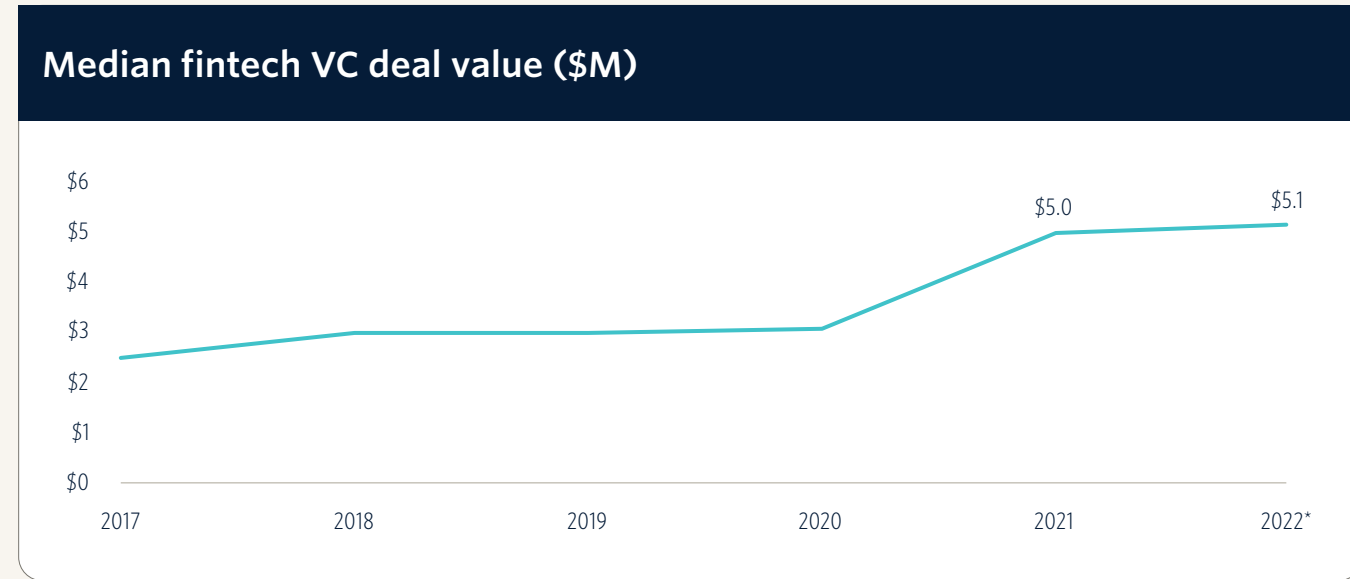
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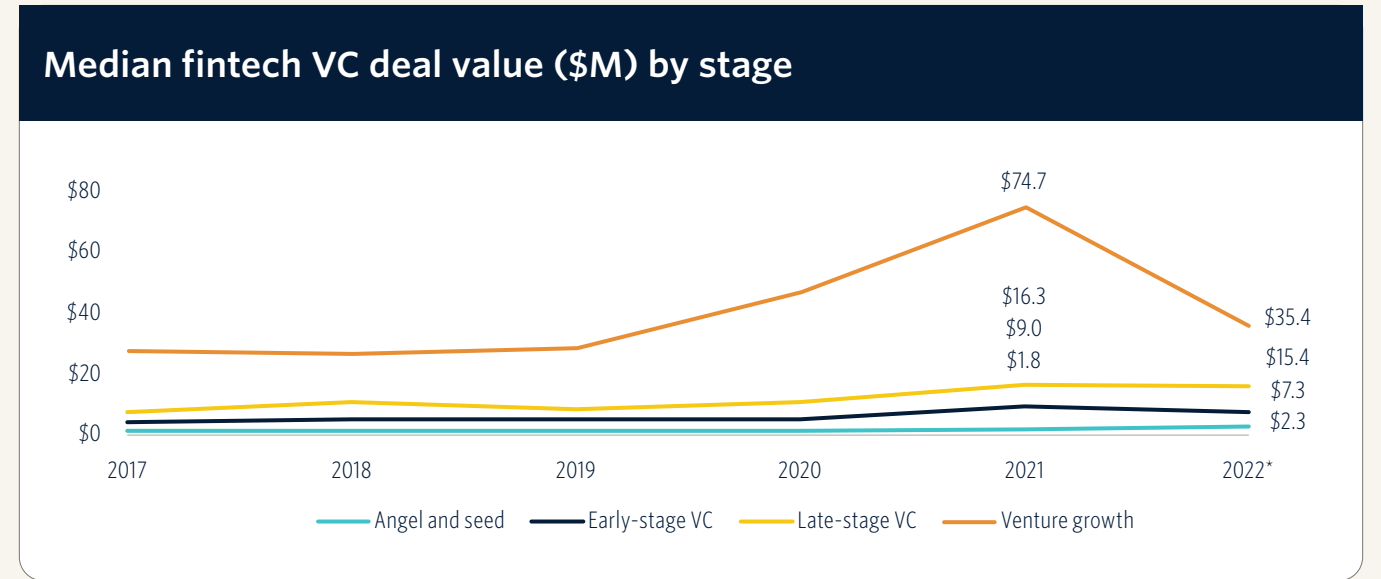
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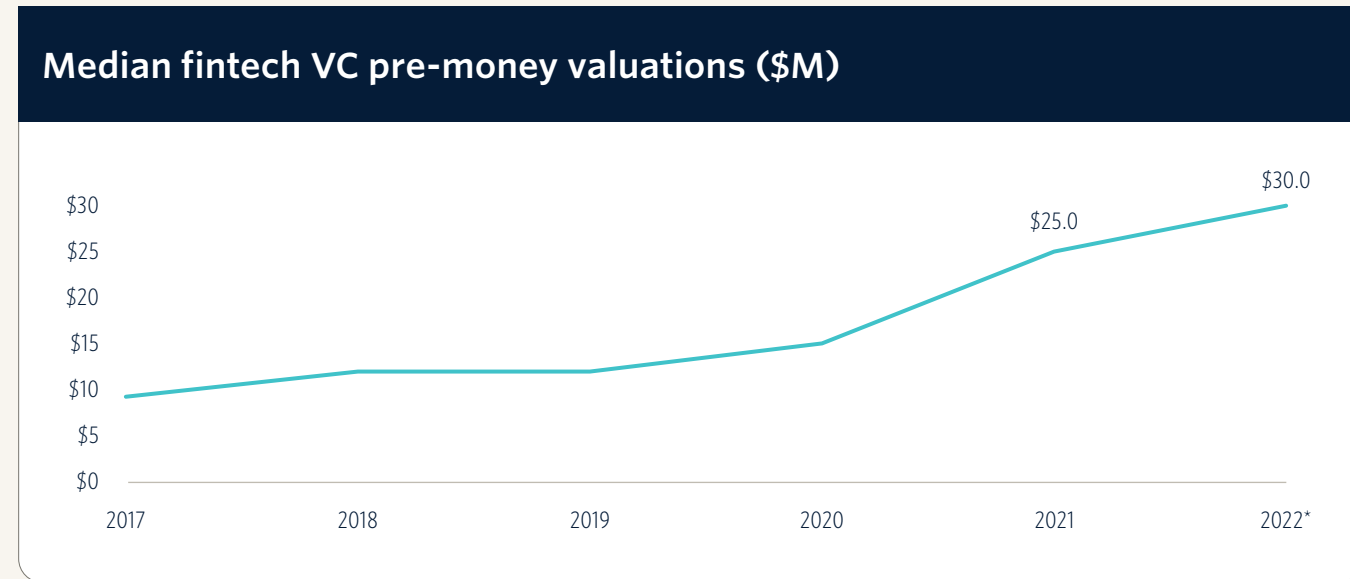
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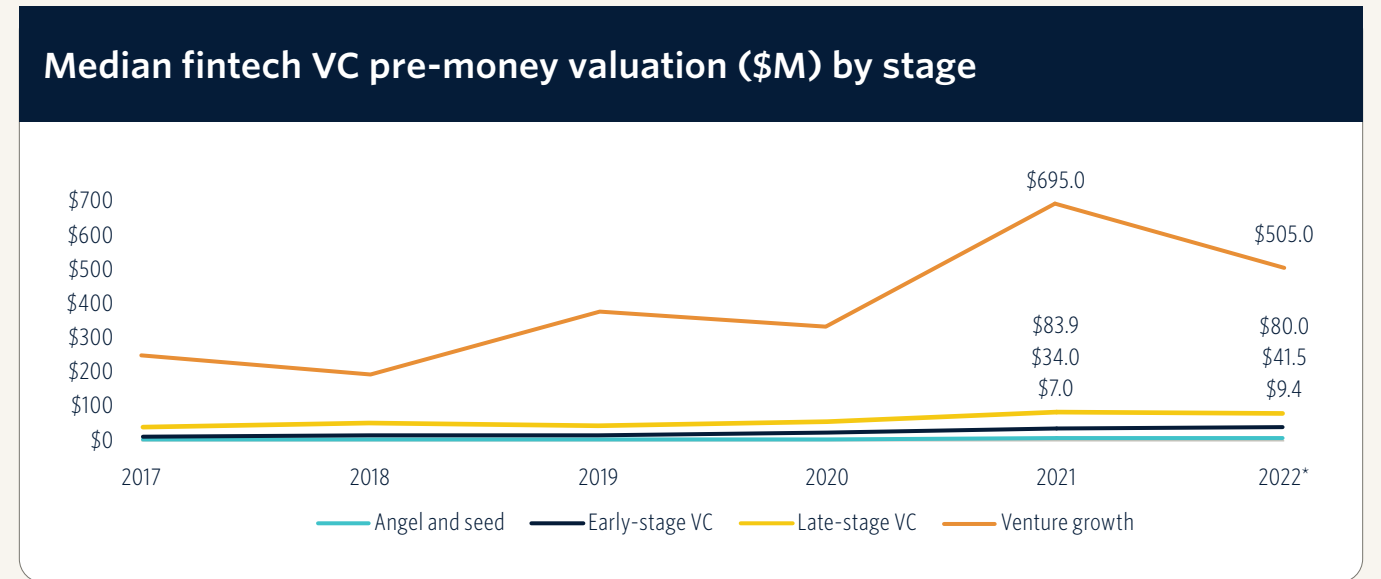
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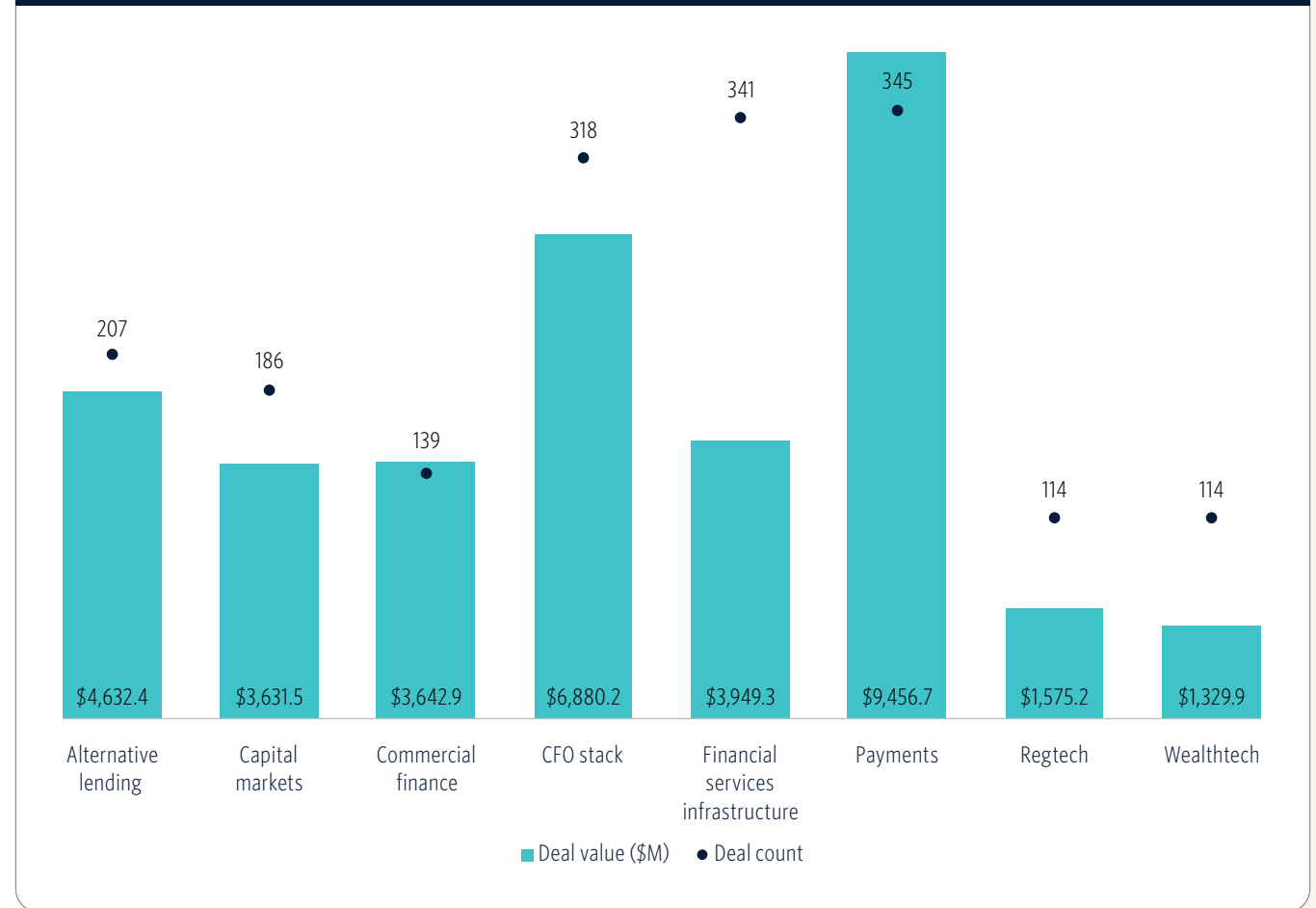
Enterprise fintech vertical overview

We now break out the fintech industry into two segments: retail and enterprise. Retail fintech provide products and services direct to consumer, while enterprise fintech companies function on the commercial side and cater to businesses, including small and medium-size businesses (SMBs), banks, and other financial institutions. This report focuses on the enterprise fintech vertical.

The enterprise fintech landscape continues to present ample investment opportunities. Though VC has been more concentrated toward retail fintech in previous years, B2B fintechs have become increasingly attractive given their rapidly developing use cases and massive addressable markets. This is evident in the higher share of VC allocated toward enterprise fintechs in 2022. Whereas seasoned enterprise fintechs such as [PayPal](#), [Stripe](#), and [Block](#)—previously known as Square—started by focusing on payments, modern day enterprise fintechs are dedicated to solving a manifold of complex financial issues affecting multiple industries including banking, capital markets, compliance, enterprise architecture, fraud, financial reporting, lending, payments, and wealth management.

In the last two years, enterprise fintechs in the US have benefited significantly from low costs of capital, accelerated shifts toward digital spending, and government-injected stimulus. Favorable economic conditions and secular tailwinds boosted the revenue growth of consumer-facing companies, which in turn translated into higher top lines for enterprise fintechs that provide software, platforms, and infrastructure to those retail fintechs. Furthermore, the pandemic-

TTM enterprise fintech VC deal activity by segment*



Source: PitchBook | Geography: Global | *As of December 31, 2022



ENTERPRISE FINTECH VERTICAL OVERVIEW

induced acceleration of online spending and branchless banking generated remarkable value for fintechs that helped to facilitate digital payments and optimize invoicing and billing. Within North America alone, 82% of small businesses reported shifting how their business sends and receives payments.³

While fintech investors have quickly adopted a more cautious tone—driven by collapsing public valuations of high-growth, low-profit companies, higher interest rates, inflationary pressures, and normalizing consumer credit—enterprise fintechs are now attracting capital due to their essential use cases and large TAMs. For example, paper checks still account for 50% of payments made between businesses, which leaves a vast market to be addressed.⁴ Further, fintechs that assist with accounts payable and accounts receivable automation, expense management, and non-dilutive financing could witness higher demand as more businesses prioritize cost savings and efficiencies.

Within capital markets, FIs and asset managers are likely to seek additional methods that help generate higher returns, reduce structural costs, and enable alternative sources of capital. In addition, technologies specializing in the aggregation, privacy, and security of data will remain top of mind for businesses as the Consumer Financial Protection Bureau (CFPB) inches closer to rulemaking for open finance, and consumers continue to demand more personalized financial products. Regulatory technology (Regtech) offerings could come further into the spotlight given heightened regulatory actions, the growing focus on data protection, and the uptick in fraud associated with economic downturns. Both FIs and non-financial institutions, which use an array of software tools, will require modern infrastructure to implement these new solutions and improve efficiency and scale; this leaves ample opportunities for startups that provide BaaS, enterprise architecture upgrades, and application programming interfaces (APIs).

3: "Mastercard Study Shows COVID-19 a Catalyst for Digital B2B Payments Adoption," Mastercard, Sandra Benjamin, August 25, 2020.

4: "Why Embedded Finance Has the Potential to Reshape B2B Payments," PYMNTS, September 16, 2022.

Q4 2022 TTM enterprise fintech VC deal activity by segment*



Source: PitchBook | Geography: Global | *As of December 31, 2022



Enterprise fintech VC activity

In 2022, enterprise fintechs globally raised \$35.1 billion in venture capital, representing a 32.1% YoY decline from the record \$51.7 billion raised in 2021. Venture capital was deployed across 1,764 deals in 2022, which was 13.1% lower YoY compared to the 2,031 deals in 2021. Deal value declined consecutively each quarter in 2022, with deal value reaching \$4.2 billion in Q4. This represents a decline of 65.9% on a YoY basis and 37.2% on a QoQ basis. Notably, VC funding for enterprise fintechs has not seen levels this low since Q4 2019, highlighting ongoing caution from investors. In terms of quarterly deal count, venture capital was deployed across 375 deals in Q4, which was 22.7% less YoY but unchanged versus Q3. Despite 2022's sharp decline in VC activity, venture funding in the enterprise fintech segment remains well above levels prior to 2021. We believe this signifies the abundance of opportunities that have surfaced in the B2B fintech ecosystem. Moreover, venture capital deployed into enterprise fintechs has now surpassed levels seen for retail fintechs—48.2% of total fintech VC was raised by enterprise fintechs in 2020, compared to 60.9% in 2022.

Notable enterprise fintech deals in 2022 include:

- [Checkout.com](#), a rival to [Stripe](#), raised a \$1.0 billion Series D at a \$40.0 billion post-money valuation.
- [Ramp](#), an expense management platform, raised a \$748.3 million Series C at an \$8.1 billion post-money valuation.

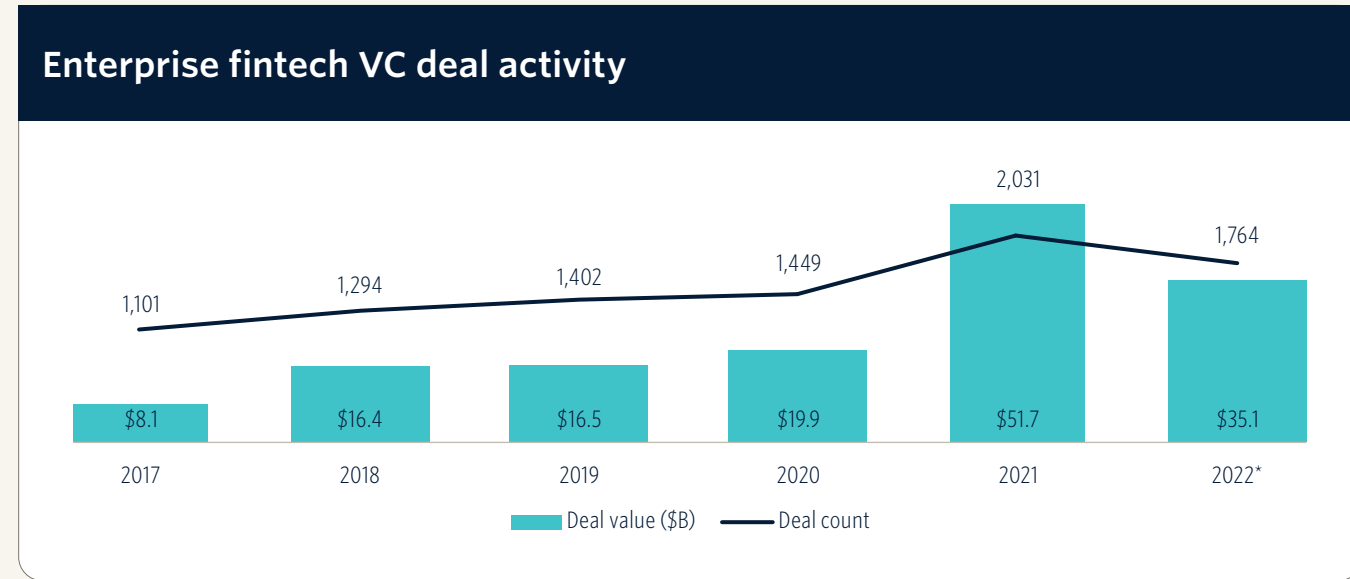
- [SumUp](#), a payments platform developer, raised a \$626.6 million late-stage round at an \$8.5 billion post-money valuation.
- [Qonto](#), a corporate expense management platform, raised a \$549.8 million Series D at a \$5.0 billion post-money valuation.
- [SaltPay](#), an aggregated payment solutions provider, raised a \$500.0 million Series C at a \$1.0 billion post-money valuation.

The median pre-money valuation for VC-backed enterprise fintechs increased 6.8% YoY, reaching \$30.0 million in 2022. This suggests that B2B fintech opportunities have remained attractive for investors, which may partly be due to the heightened caution surrounding B2C fintech business models such as BNPL and consumer-facing neobanks. Median pre-money valuations increased across all deal stages, with angel and seed, early stage, and late stage growing YoY by 31.8%, 4.3%, and 6.0% to \$10.0 million, \$39.5 million, and \$79.4 million, respectively. Surprisingly, venture growth median pre-money valuations rose by 14.6% YoY, reaching \$573.0 million.

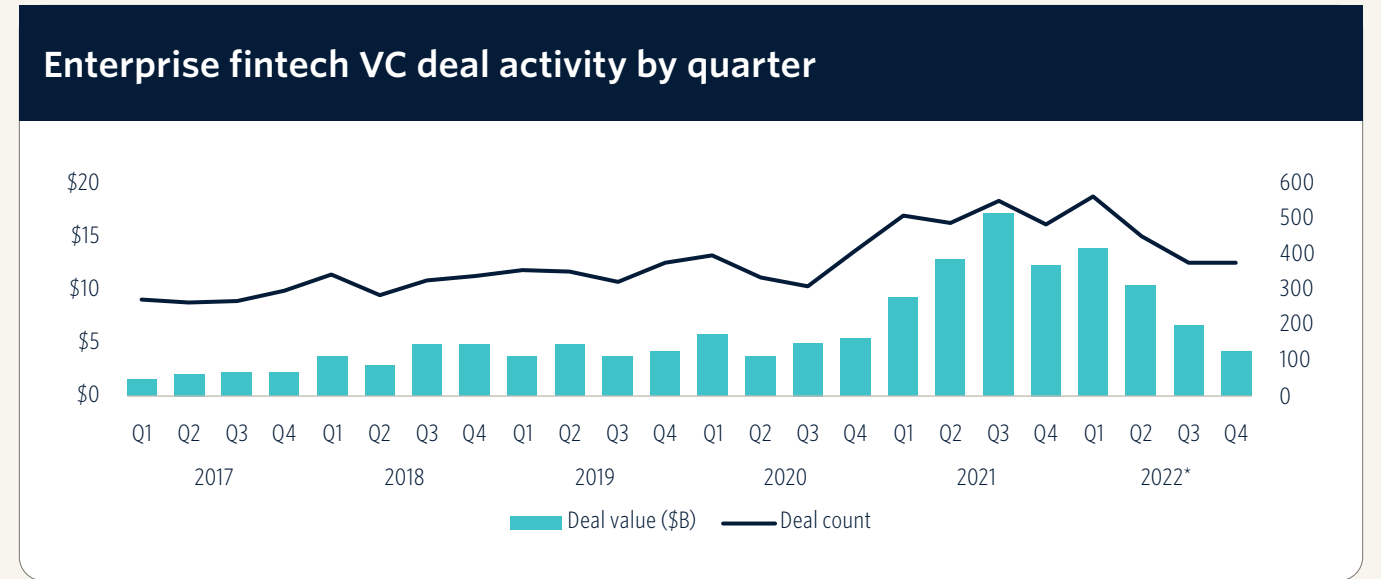
Venture exit value for enterprise fintechs declined by 74.3% YoY to \$18.1 billion in 2022, reflecting muted exit activity within the overall fintech space. A total of 151 exits were recorded in 2022, representing a 27.8% YoY decline from 2021. We expect exit activity for both enterprise and retail fintechs to remain hushed in the near term.



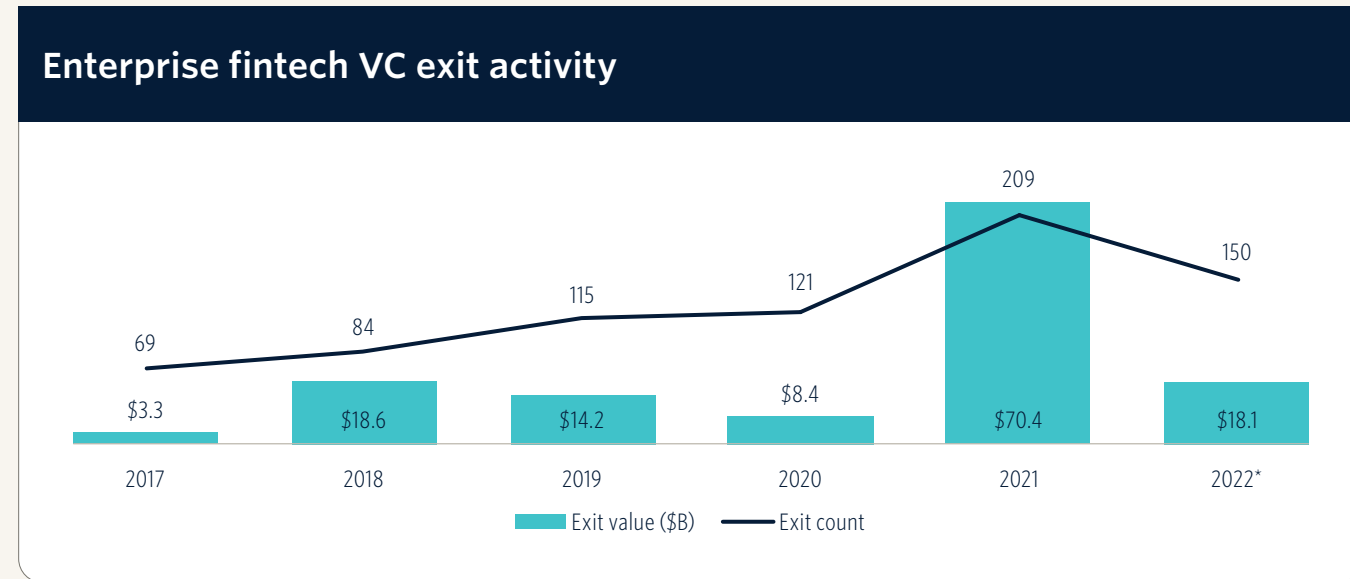
ENTERPRISE FINTECH VC ACTIVITY



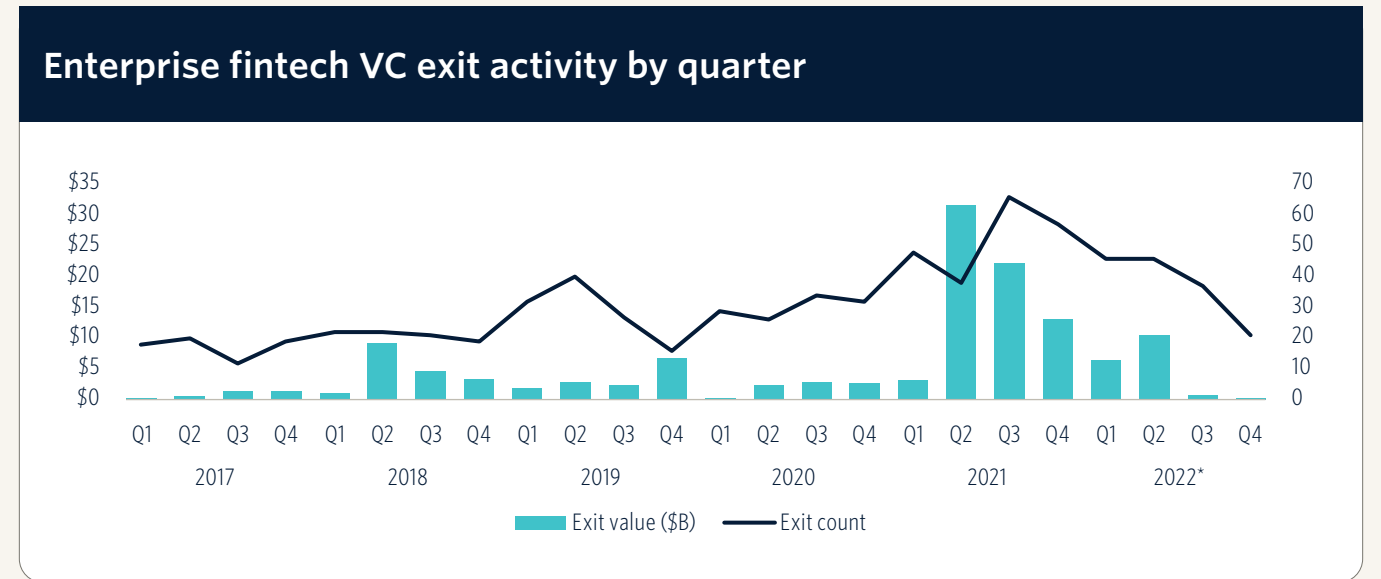
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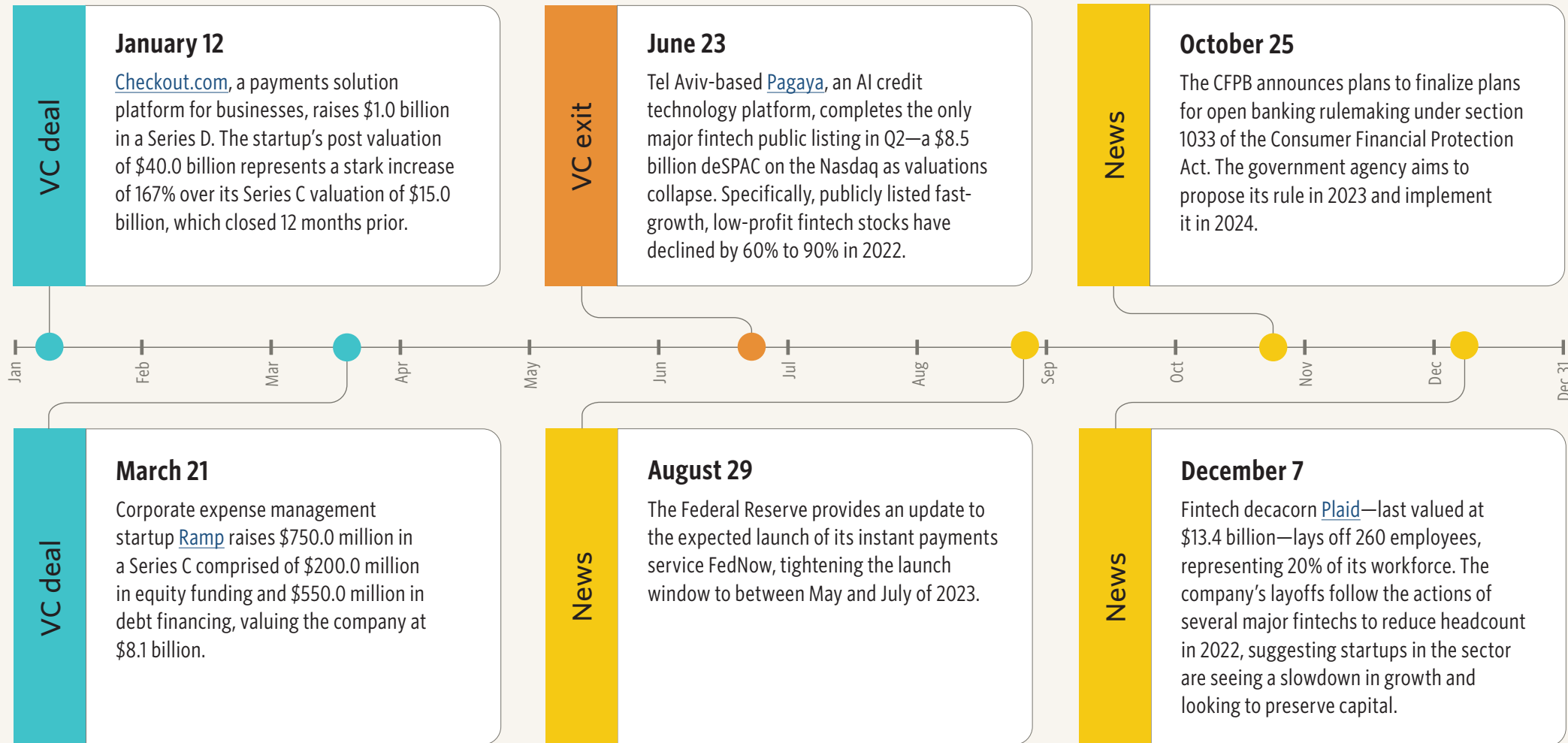
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Source: PitchBook | Geography: Global | *As of December 31, 2022



2022 timeline



Q4 VC deal count summary

375
total deals in Q4

0.0%
QoQ growth in deal count

-22.7%
YoY growth in deal count

Q4 VC deal value summary

\$4.2B
total deal value in Q4

-37.2%
QoQ growth in deal value

-65.9%
YoY growth in deal value



Enterprise fintech landscape

- 1 Alternative lending
- 2 Capital markets
- 3 CFO stack
- 4 Commercial finance
- 5 Financial services infrastructure
- 6 Payments
- 7 Regtech
- 8 Wealthtech

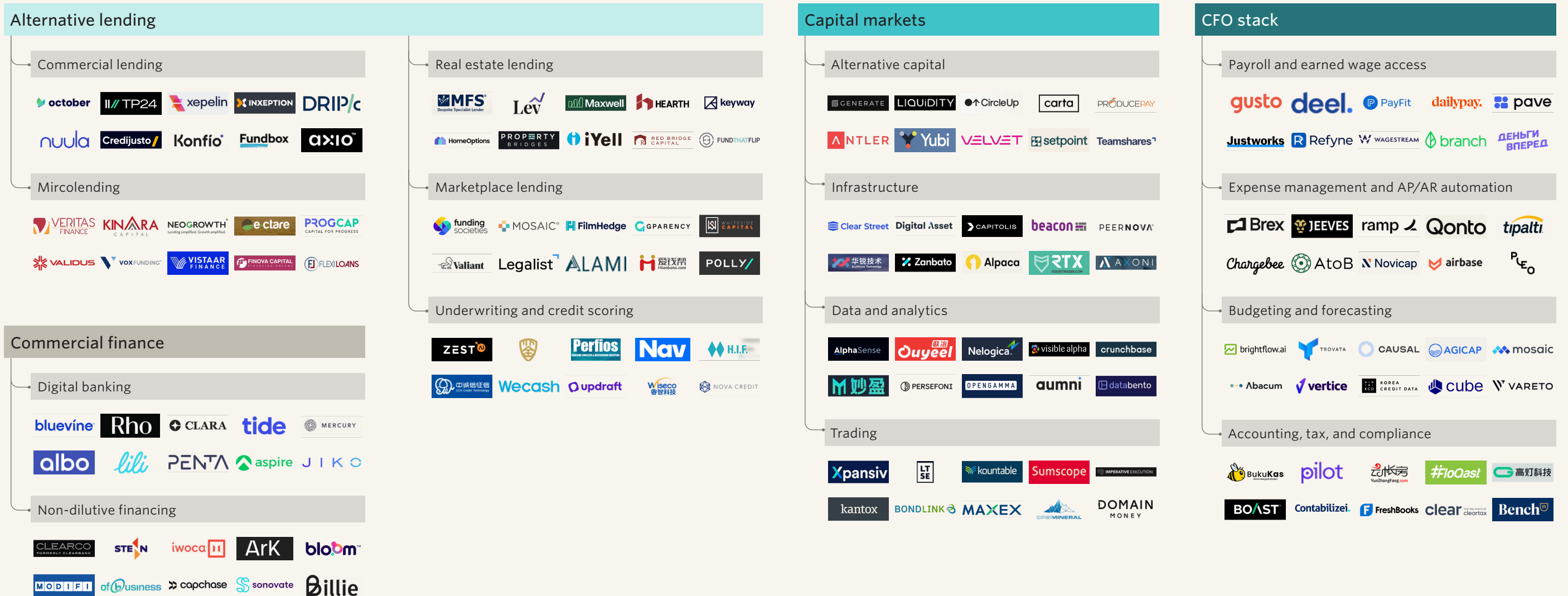




Enterprise fintech VC ecosystem market map

Click to view the interactive market map on the PitchBook Platform.

Market map is a representative overview of venture-backed or growth-stage providers in each segment. Companies listed have received venture capital or other notable private investments.

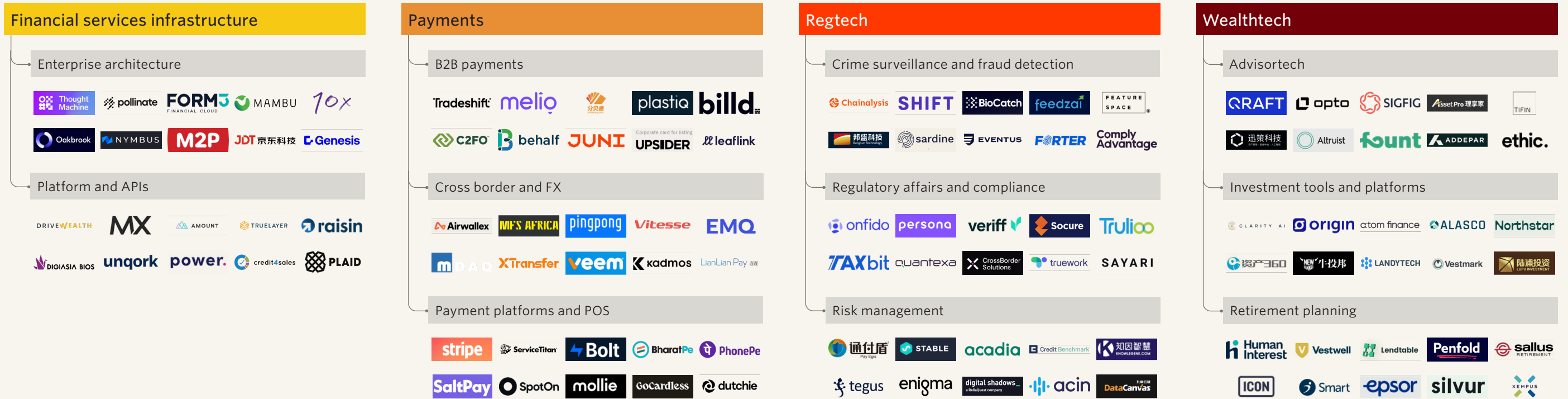




Enterprise fintech VC ecosystem market map

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Segment overview

Alternative lending

Alternative lenders continue to grow their share of loan originations, though their nontraditional underwriting models are likely to be stress tested in a slow-growth environment.

Financial services infrastructure

Opportunities within financial white-label platforms and embedded finance expand further as APIs become increasingly pivotal for fintech.

Capital markets

Capital markets platforms continue to remain key in providing better methods to maximize portfolio returns, reduce operational costs, deliver new ways of raising funds, and visualize data.

Payments

B2B payments remain complex and have made progress in becoming streamlined, but are yet to achieve the seamless and automated experiences witnessed in B2C.

CFO stack

CFOs and finance teams continue to demand platforms beyond Excel that can optimize financial management, scale with their businesses, and integrate with other software.

Regtech

Rising fraud and inefficient legacy KYC and AML processes give way to advanced transaction monitoring and identity verification solutions.

Commercial finance

Revenue-based financing products expand their use cases and become bundled in neobank offerings as part of the next phase for non-dilutive finance.

Wealthtech

Next-generation advisor solutions are addressing client demands for more engaging experiences, alternative assets, and customized solutions.



Alternative lending

Overview

The alternative lending segment in our enterprise fintech vertical consists primarily of nonbank companies or platforms that provide a range of loans and underwriting services to businesses. This excludes companies that offer non-dilutive forms of capital for startups such as revenue-based financing, which we instead include in our [commercial finance segment](#). Unlike many traditional lenders, alternative lending providers often cater to small and credit-underserved businesses, that sometimes have little-to-no credit history, smaller revenue streams, and higher risk profiles. To do so, these companies typically utilize artificial intelligence & machine learning (AI & ML), data mining, and predictive modeling technologies to assess financial statements, bank statements, business assets, and customer reviews.

Alternative lenders have some clear advantages over banks. They often have fewer capital requirements and lack the costs associated with legacy infrastructure—such as physical branches—allowing them to offer a lower cost for certain products. Additionally, alternative lenders often provide low-friction delivery of lending services, enabling faster application processes and deployment of funding versus traditional lenders. For example, companies such as [Fundbox](#), [Funding Circle](#), and [OnDeck](#) are typically able to provide credit decisions within minutes and funding within a day. This addresses the uncertainty surrounding time to funding, which is the most frequently cited pain point for small and mid-size enterprises (SME) globally.⁵ Beyond fast application processing and availability of funding, enterprise fintechs are adding more products and solutions. [Bluevine](#), for example, offers checking accounts, bill pay services, and access to insurance policies in addition to its business loan offerings.

5: [“How Banks Can Reimagine Lending to Small and Medium-Size Enterprises,” McKinsey & Company, Juan Antonio Bahillo, et al., May 24, 2022.](#)

We break up the enterprise alternative lending segment as follows:

Commercial lending: Loans provided to businesses, including term loans, revolving loans, and working capital financing.

Microlending: Small loans provided to businesses, which are frequently issued in developing countries or through peer-to-peer (P2P) lending models.

Real estate lending: Loans to businesses that are collateralized by residential or commercial real estate, including mortgages, commercial real estate loans, rent-to-own financing, and various new real estate financing models.

Marketplace lending: Loans to businesses obtained through P2P lending platforms connecting borrowers with investors.

Underwriting and credit scoring: Technologies that automate loan underwriting and new credit-scoring methodologies to assess the risk of a borrower.

Industry drivers

Large addressable market: Startups in this space target a large, untapped base of borrowers due to banks' typical unwillingness to lend to small businesses with little-to-no credit history, smaller revenue streams, and higher risk profiles.



ALTERNATIVE LENDING

Better underwriting data available: The increased availability and real-time access to alternative underwriting data has enabled these lenders to underwrite borrowers with limited credit, as well as change underwriting standards based on real-time fluctuations in bank account flows.

Lower regulatory barriers: The alternative lending space is less regulated for nonbank lenders, thereby allowing these companies to enter the market and scale more quickly.

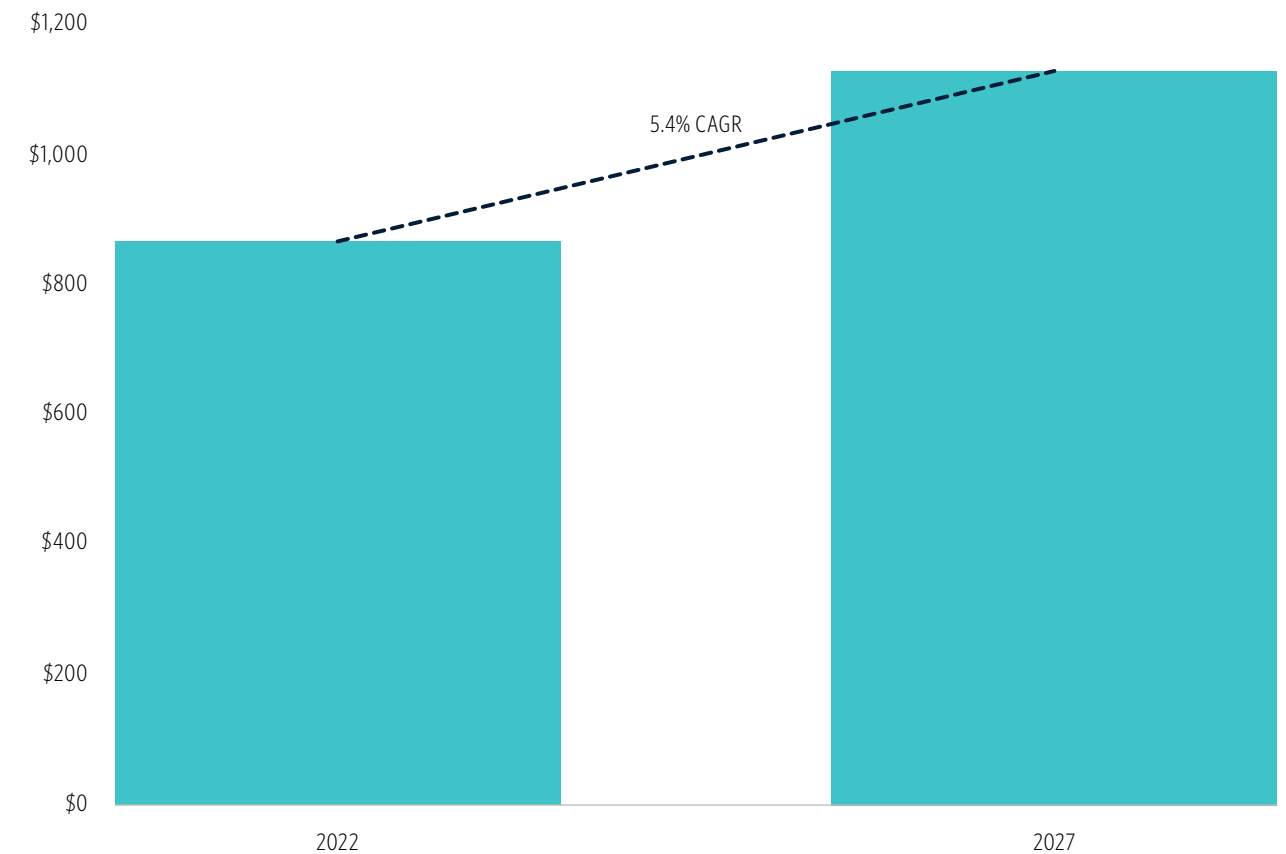
Historically low interest rates: While interest rates have recently risen in response to inflationary pressures, rates have remained at historic lows relative to the past five decades, thus leading to higher capital availability and borrowing among businesses.

New fintech tools and solutions: Today's growing suite of fintech tools and solutions has empowered fintechs to run key functions such as identity verification, KYC, and AML faster, at cheaper cost, and at scale.

Market size

Based on our estimates, US small business loan balances reached a size of \$866.8 billion in 2022. This estimate accounts for loans made to SMBs and small and medium-size enterprises (SMEs) by alternative lenders, banks, and members of credit unions, and excludes Small Business Administration-backed loans offered via the Paycheck Protection Program. We expect these originations to grow at a 5.4% CAGR, reaching \$1.1 trillion in 2027.

Alternative lending market size estimate (\$T)*



Sources: Federal Reserve, Board of Governors of the Federal Reserve System, Small Business Administration, PitchBook Estimates
Geography: US | *As of December 31, 2022



ALTERNATIVE LENDING

Business model

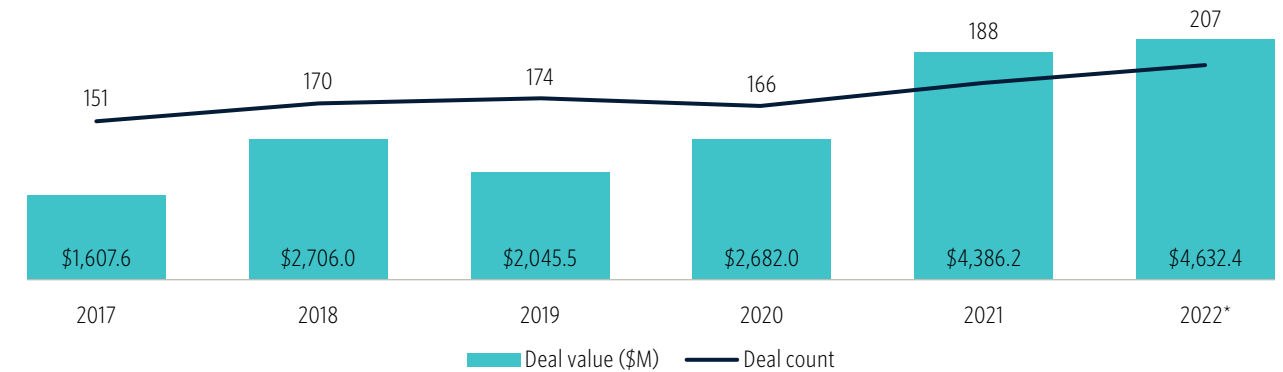
Companies in the space monetize principally by selling loans at a gain and by charging interest and origination fees. Marketplace or P2P lenders similarly generate additional revenues via take-rates or commission fees.

VC activity

B2B alternative lenders raised \$4.6 billion across 207 deals in 2022, representing a 5.6% and 10.1% YoY increase from the \$4.4 billion and 188 deals in 2021, respectively. All segments saw a rise in deal value in 2022, minus commercial lending, which saw a 27.0% YoY decline, but still had the highest deal value at \$1.8 billion. Notably, deal value for marketplace lending increased by 218.4% YoY, driven primarily by the \$294.0 million Series C and \$200.0 million Series D rounds from [Funding Societies](#) and [Mosaic](#), respectively. The underwriting and credit scoring category witnessed the second highest growth in deal value, with a 48.2% YoY increase driven by the \$131.0 million Series A from [Updraft](#), \$70.0 million Series C from [Perfios](#), \$65.0 million Series C from [Trusting Social](#), and \$52.0 million Series F from [Zest AI](#).

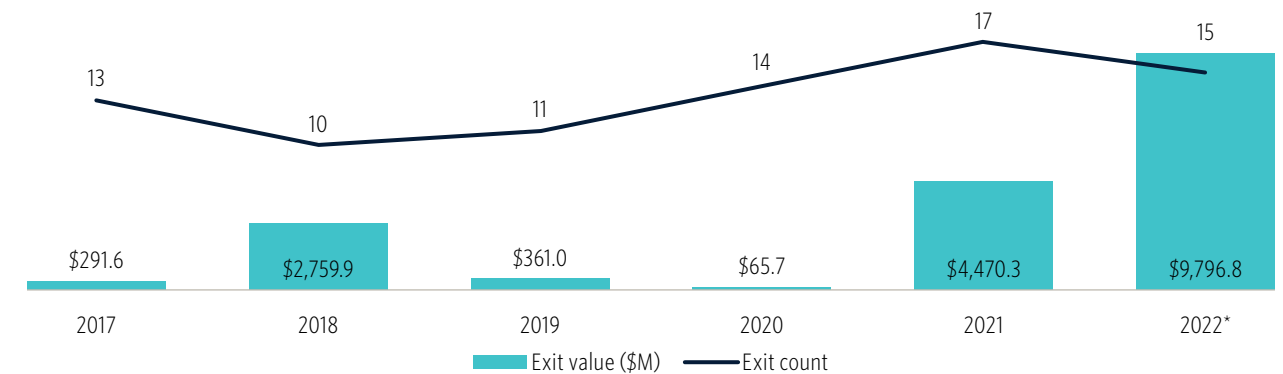
Exit value for alternative lenders increased by 4.9% YoY in 2022, with the two most notable being the \$8.5 billion public listing of AI credit scoring and lending platform [Pagaya](#), and the acquisition of real estate lending platform [SimpleNexus](#) by cloud banking provider [nCino](#) for \$933.6 million. Looking ahead, businesses taking out loans may have a harder time affording rates and avoiding delinquency in an economic down cycle. We believe this concern will continue to surround the alternative lending segment over the near term, thereby reducing deal and exit activity.

Alternative lending VC deal activity



Source: PitchBook | Geography: Global | *As of December 31, 2022

Alternative lending VC exit activity



Source: PitchBook | Geography: Global | *As of December 31, 2022



ALTERNATIVE LENDING

Key alternative lending VC deals over the past year*

Company	Close date (2022)	Subsegment	Stage	Deal value (\$M)	Lead investor(s)	Valuation step-up
Market Financial Solutions	March 21	Real estate lending	N/A	\$398.0	N/A	N/A
Funding Societies	February 15	Marketplace lending	Series C	\$294.0	SoftBank Investment Advisers	N/A
Inxeption	February 16	Commercial lending	Series E	\$275.0	Schonfeld Strategic Advisors	3.8x
Oxyzo	March 23	Commercial lending	Series A	\$237.1	Alpha Wave Global, Tiger Global Management	3.8x
Market Financial Solutions	November 2	Real estate lending	N/A	\$226.2	N/A	N/A
Mosaic	July 1	Marketplace lending	Series D	\$200.0	Affinity Partners (Miami), Bank J. Safra Sarasin	N/A
Lev	May 5	Real estate lending	Series B	\$170.0	Cross River Digital Ventures, Parker89	N/A
Market Financial Solutions	August 15	Real estate lending	N/A	\$151.0	N/A	N/A
Updraft	December 19	Underwriting and credit scoring	Series A	\$131.0	Auluk Investments, Faber Capital, LC Nueva Investment Partners, National Westminster Bank	N/A
Xepelin	May 2	Commercial lending	Series B	\$111.0	Avenir Growth Capital, Kaszek	N/A

Source: PitchBook | Geography: Global | *As of December 31, 2022



ALTERNATIVE LENDING

Key alternative lending VC exits over the past year*

Company	Close date (2022)	Subsegment	Exit value (\$M)	Exit type	Acquirers/index	Valuation step-up
Pagaya	June 23	Underwriting and credit scoring	\$8,500.0	Reverse merger	EJF Acquisition	N/A
SimpleNexus	January 7	Real estate lending	\$933.6	M&A	nCino	N/A
PEG Africa	September 6	Commercial lending	\$200.0	Buyout/LBO	African Infrastructure Investment Managers, Bamboo Capital Partners, Bboxx, MacKinnon, Bennett & Company, Stichting DOEN	N/A
Credit Kudos	March 21	Underwriting and credit scoring	\$150.0	M&A	Apple	N/A
Xpedize	March 16	Marketplace lending	\$13.2	M&A	Clear (India)	3.6x
Finaho	March 5	Commercial lending	N/A	M&A	Cleaq	N/A
Babyloan	June 10	Marketplace lending	N/A	M&A	Lendahand	N/A
CampusLogic	April 19	Marketplace lending	N/A	Buyout/LBO	Blackstone, Ellucian, Vista Equity Partners	N/A
Bonify	December 19	Underwriting and credit scoring	N/A	Buyout/LBO	EQT, Schufa Holding, TeamBank (Germany)	N/A
Taulia	February 10	Commercial lending	N/A	M&A	SAP	N/A

Source: PitchBook | Geography: Global | *As of December 31, 2022



ALTERNATIVE LENDING

Opportunities

New underwriting models and methodologies: Alternative lenders are focused on making significantly faster credit decisions for consumers while providing services that are entirely online and more automated compared with traditional banks. New methods for assessing the credit risk of a borrower have boosted much of this disruption. Specifically, some alternative lenders utilize AI and new credit-scoring algorithms to look beyond historical credit risk data and analyze forward-looking factors such as financial habits, stability, and resilience. There are a growing number of startups such as [Pagaya](#), [Zest AI](#), and [Applied Data Finance](#), that offer these credit risk assessment technologies to other lenders. Utilizing these new assessment models allows lenders to gain a more holistic view of the applicant and can lead to increased credit acceptance without increased risk.

Unserved global SME market: SMEs currently present a large addressable market for enterprise alternative lenders, as they remain underserved by traditional banks. Historically, underwriting SMBs was often too expensive for traditional banks. Digital lenders, on the other hand, underwrite with software that instantly peers into and assesses a loan applicant's bank account. Still, financing flows to small businesses grew at a slower rate on average compared with financing flows to large businesses over the past several years, according to the Federal Reserve (the Fed).⁶ Furthermore, the TAM increases significantly when looking at a global lens. Worldwide, SMEs make up roughly 90% of businesses;⁷ yet, a majority encounter difficulty in getting approved for banks loans given the nascency of their businesses and outdated risk assessment models used by banks. The multifariousness across small businesses, including the varying types of business models, pain points, and utilization of funds, often make it more difficult for banks to assess SMEs and provide them with solutions that best fit their needs. This is especially evident in developing countries, which have an unmet financing need of \$5.2 trillion annually.⁸

6: "Availability of Credit to Small Businesses," Board of Governors of the Federal Reserve System, October 2022.

7: "Small and Medium Enterprises (SMEs) Finance," The World Bank, n.d., accessed February 15, 2023.

8: Ibid.



ALTERNATIVE LENDING

Risks and considerations

Growth susceptible to credit cycles and rising rates: As alternative lending relies heavily on debt investors instead of traditional consumer deposits, less capital will likely be available during an economic downturn. As a two-sided market, marketplace lending requires a sufficient pool of investors and borrowers, and with a potentially shrinking pool of investors, these lenders could struggle to survive as loans go unfunded. Nontraditional underwriting models of alternative lenders have also not been tested through cycles, which could result in higher default rates or less willingness among investors to supply capital. In addition, total loan originations and accepted applications may soften as alternative lenders tighten requirements and seek higher-quality borrowers. This trend is already occurring and may continue throughout 2023, as indicated by the -22.1% YoY decline in new commercial and industrial (C&I) loan balances in Q3 2022.⁹

Regulatory environment may change: Traditional providers of consumer and commercial loans are subject to extensive laws and regulations—for example, data security, privacy, and money laundering laws—from state, federal, and other consumer protection agencies. We believe that there is a modestly lower compliance and capital threshold for marketplace and alternative lending businesses, which could change due to politics, especially if these products cause significant harm to consumers or investors. New or increased regulations could pose a significant barrier to entry for scrappy startups that lack the time and resources to ensure compliance.

High competition and saturated marketplace: We believe smaller players in the space may struggle to obtain market share, as lending products are inherently difficult to differentiate beyond pricing. Furthermore, while alternative lenders have gained market share from incumbent banks, credit unions, and other traditional lenders, this space is becoming crowded. For example, well-known players like [PayPal](#), [Block](#), and [Shopify](#) already offer loans to small businesses. Other alternative lenders, such as [Kabbage](#)—which was acquired by [American Express](#)—are being bought by large fintech competitors, making it increasingly difficult for smaller alternative lenders to compete at scale.

⁹: [“Small Business Lending Declines as Loan Demand Softens,” Federal Reserve Bank of Kansas City, Dustyn DeSpain and Emily Robinson, December 22, 2022.](#)



Capital markets

Overview

The capital markets segment is comprised of startups that help banks, asset managers, corporations, and other FIs and intermediaries maximize returns, improve strategic capabilities, and streamline fund flow processes. The industry is primarily composed of large institutional firms that engage in the buying and selling of securities, such as public equities, private equity, debt, bonds, and other assets for businesses, individuals, and governments.

Startups within the capital markets space cater to investment banks, public accounting firms, corporate issuers, traders, exchanges, brokers, and clearinghouses. Technologies in this segment include high-speed trading systems, transaction routers, AI & ML-based algorithms, advanced analytics platforms, and middle- and back-office software that optimize order execution, capital issuance, and post-trade processing. We believe investments into these upgrades will continue, especially as incumbents shift from a relationship-based business to a more technology-driven service. Other technologies deal with providing access to alternative assets, market data, and analytical tools.

Some of the largest markets include open-market asset exchange systems such as the New York Stock Exchange or Shanghai Stock Exchange, which have market capitalizations of trillions of dollars. Correspondingly, ensuring the smooth functioning of these markets is a complex process that involves utilizing a range of global technologies and networks to establish quick and compliant transactions. These processes typically involve the facilitation and settlement of trades and capital exchanges between multiple parties. Some of these transactions have historically been intricate and time consuming, often taking multiple days to settle.

Furthermore, many FIs rely on antiquated systems to process and monitor their financial transactions. Within North American markets alone, 81% of brokers and banks utilize manual processes or outdated in-house systems for post-trade management,¹⁰ leaving them more susceptible to errors, inefficiencies, and higher operational costs. Capital market participants will likely remain under pressure to modernize their tech stacks to recognize cost efficiencies and deliver higher returns from investments. Our view is reinforced by the slow-growth top lines and range-bound return on investments for large global banks following the GFC, which remain hindered by new capital and regulatory requirements.

We break the capital markets segment into four categories:

Alternative capital: Platforms and services that enable the access, issuance, and management of capital and credit from nontraditional sources, including capitalization table management software, crowdfunding platforms, and software-as-a-service (SaaS) securitization.

Infrastructure: Companies using blockchain, APIs, and other integration technologies to streamline the flow of funds within the capital markets—including speeding up settlements, increasing transaction security, and simplifying primary issuances.

Data & analytics: Applications that allow capital market participants to access and understand trade-related data, including equities, fixed-income, derivatives, commodities, and currencies.

Trading: Platforms and exchanges that facilitate the transactions of various assets, including securities, commodities, and currencies.

¹⁰: [“The Move to T+1: A Business Case for Automating the Middle Office,” Firebrand Research, November 2022.](#)



CAPITAL MARKETS

Industry drivers

Slowing revenues: Capital market institutions are seeing decelerating revenue growth as they reach maturity and mirror nominal GDP. Additionally, the business of M&A continues to be reserved for the largest banks, capital requirements are increasing for depositories, and institutions are dealing with growing regulatory fees.

Focus on cost optimization: FIs are emphasizing technologies that can eliminate inefficiencies and reduce costs.

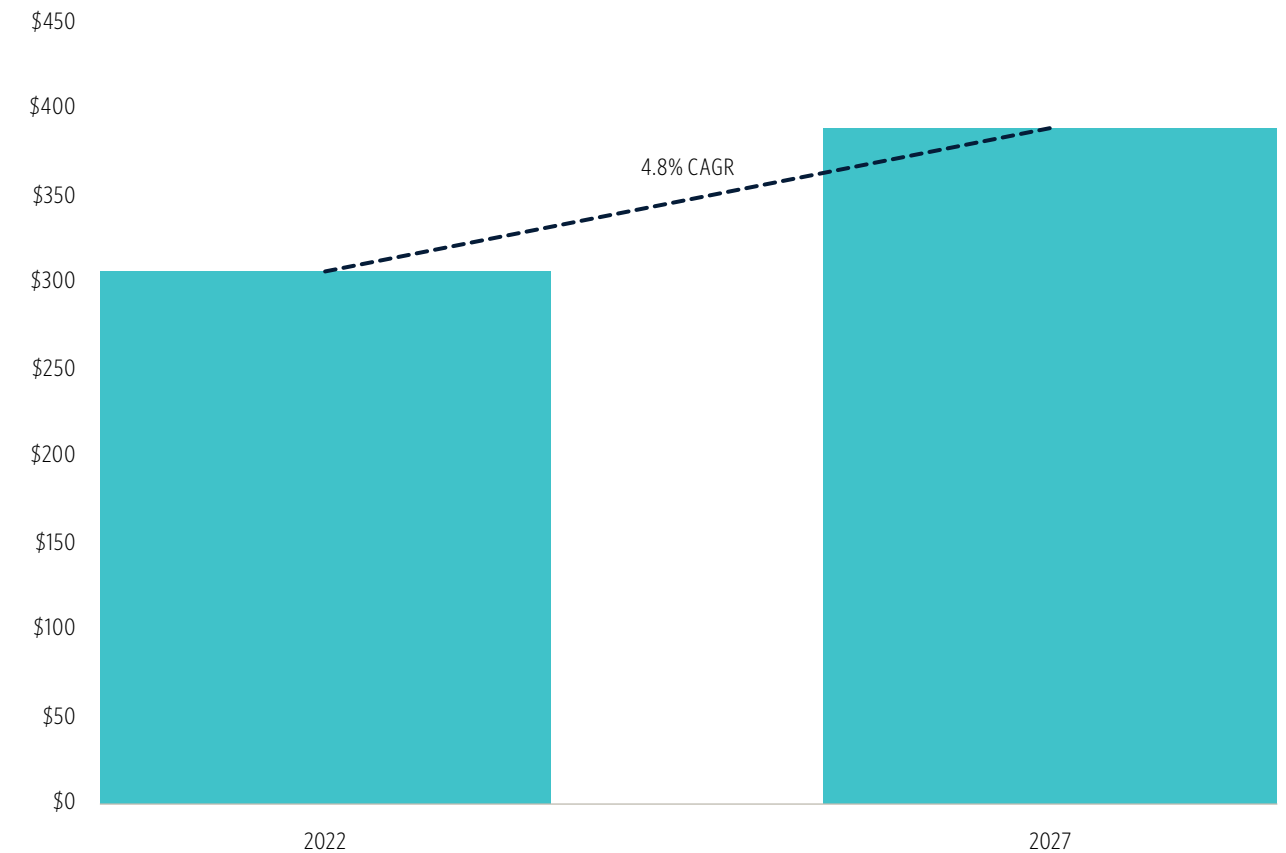
Expanding regulatory requirements: Incumbents are proactively seeking emerging technologies that can enhance regulatory compliance capabilities with improved transparency and reporting.

Increased competition: The fintech era has unleashed a wave of competition from boutiques and nonbanks that use technology to provide services at lower prices or reduce internal costs.

Market size

Capital markets infrastructure providers (CMIPs) are the intermediaries within the capital markets and include trading venues, interdealer brokers, clearing houses, information services and technology providers, securities depositories, and servicing firms. We estimate the CMIPs market size—based on global revenues—reached \$306.9 billion in 2022 and predict it will grow to \$388.9 billion by 2027, at a 4.8% CAGR.

Capital markets market size estimate (\$B)*



Sources: McKinsey, Accenture, PitchBook Estimates | Geography: Global | *As of December 31, 2022



CAPITAL MARKETS

Business model

Businesses within this segment monetize principally through licensing fees for software, cloud-based SaaS, and/or transactional-related spreads and fees, such as percentage per trade or per dollar.

VC activity

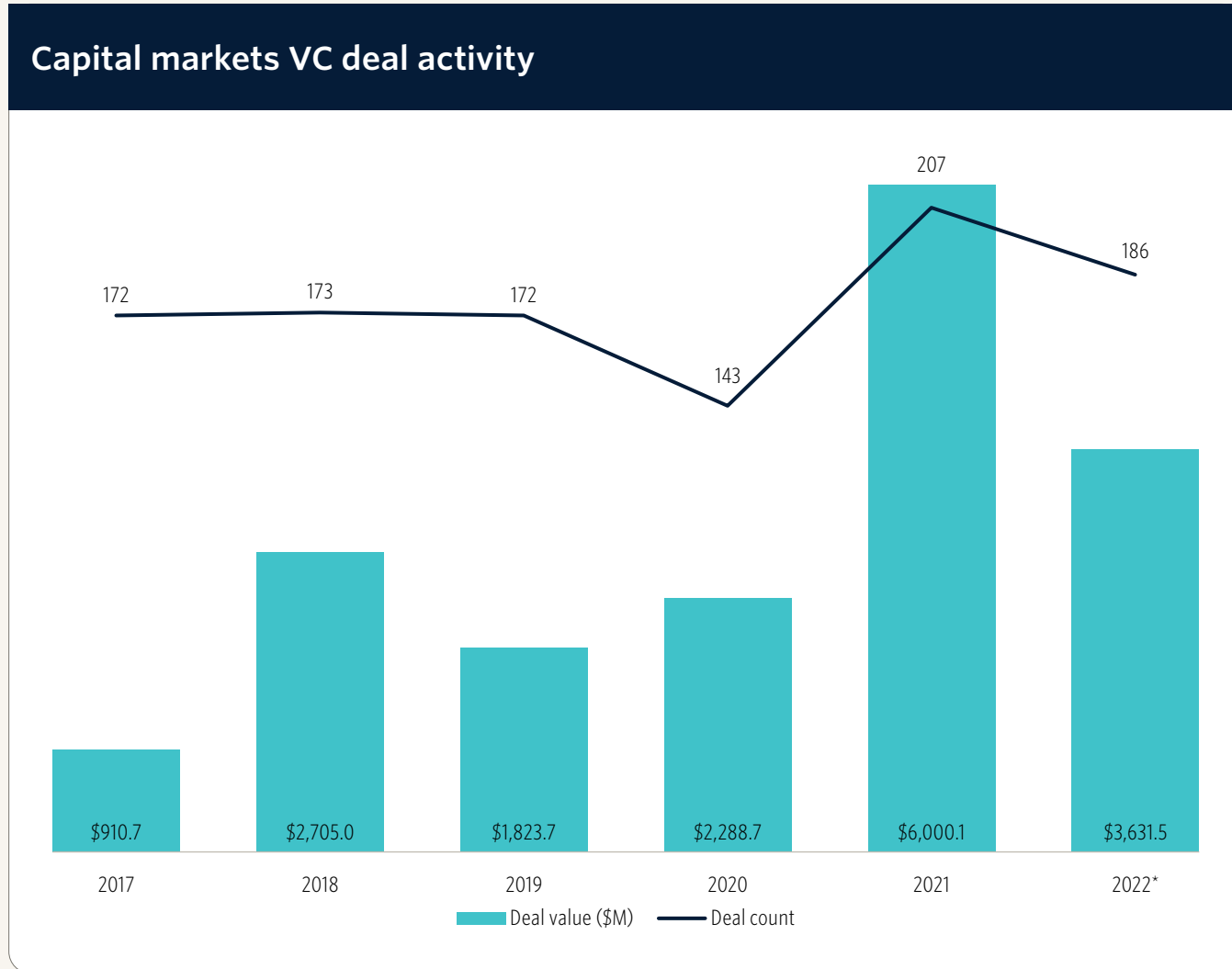
Capital markets fintechs raised \$3.6 billion across 186 deals in 2022, representing a 39.5% and 10.1% YoY decrease from the \$6.0 billion and 207 deals in 2021, respectively. The decline was primarily driven by the alternative capital subsegment, which saw deal value decline 55.5% YoY. Deal value in the infrastructure and trading segments declined by 28.4% and 18.0% YoY, respectively, while deal value for data & analytics rose by 22.3% YoY. Despite the considerable decline in venture capital, deal value remains at record highs compared to historic years, with the

exception of 2021. Accordingly, some notable 2022 deals include the \$475.0 million late-stage round for alternative capital firm [LIQUIDITY Group](#); the \$225.0 million Series D from financial data platform [AlphaSense](#); the \$200.0 million early-stage deal from stock options marketplace [Velvet](#); the \$165.0 million Series B from clearing and settlement platform [Clear Street](#); and the \$165.0 million Series C from environmental, social, and governance (ESG) data analytics platform [Deepki](#).

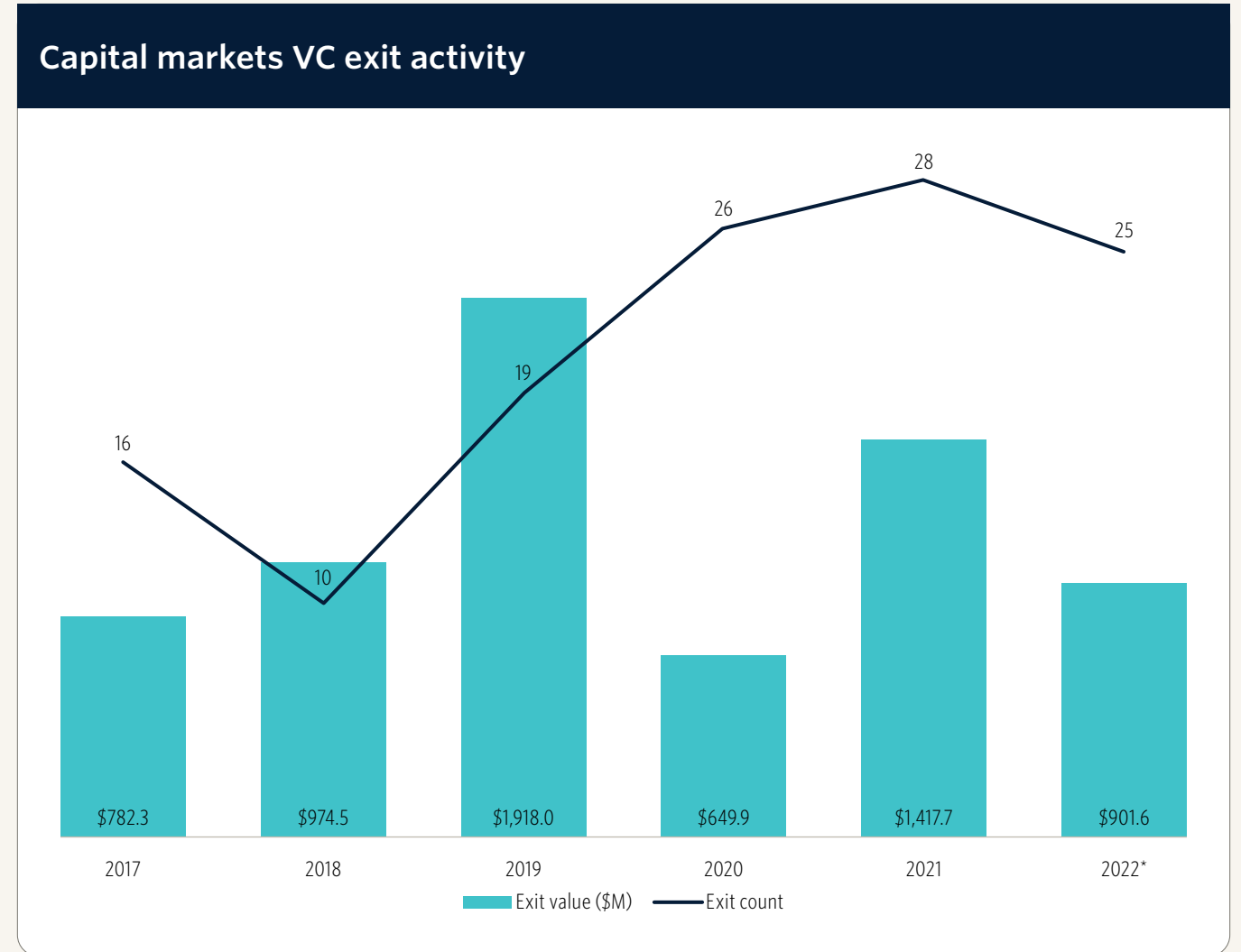
Exit value saw a 36.4% YoY increase to a total of \$901.6 million in 2022. These were almost entirely comprised of acquisitions, with the largest including the \$330.0 million acquisition of sustainable investments company [Greenbacker Group](#) by sustainable infrastructure provider [Greenbacker Renewable Energy Company](#); the \$275.1 million acquisition of futures exchange [FairX](#) by crypto exchange [Coinbase](#); and the \$185.0 million acquisition of capital market insights platform [Sentio](#) by financial data platform [AlphaSense](#). Notably, these acquisitions took place in H1 2022. As capital markets firms continue to see pressure from market volatility, we expect exit activity in this segment to remain constrained in 2023.



CAPITAL MARKETS



Source: PitchBook | Geography: Global | *As of December 31, 2022



Source: PitchBook | Geography: Global | *As of December 31, 2022



CAPITAL MARKETS

Key capital markets VC deals over the past year*

Company	Close date (2022)	Subsegment	Stage	Deal value (\$M)	Lead investor(s)	Valuation step-up
LIQUiDITY Group	April 5	Alternative capital	N/A	\$475.0	Apollo Global Management, MUFG Innovation Partners	N/A
AlphaSense	May 20	Data & analytics	Series D	\$225.0	Viking Global Investors	N/A
Velvet	February 11	Alternative capital	N/A	\$200.0	Yolo Ventures	N/A
Deepki	March 31	Data & analytics	Series C	\$165.0	Highland Europe, One Peak Partners	N/A
Clear Street	April 29	Infrastructure	Series B	\$165.0	Prysm Capital	2.4x
Kingstar Fintech	June 6	Infrastructure	Series D	\$148.9	N/A	N/A
Yubi	March 6	Alternative capital	Series B	\$137.0	B Capital Group, Dragoneer Investment Group, Insight Partners	N/A
Teamshares	October 28	Alternative capital	Series D	\$130.2	N/A	1.8x
Capitolis	March 22	Infrastructure	Series D	\$110.0	9Yards Capital, Canapi Ventures, SVB Capital	3.0x
LTSE	July 7	Trading	Series C	\$103.4	N/A	N/A

Source: PitchBook | Geography: Global | *As of December 31, 2022



CAPITAL MARKETS

Key capital markets VC exits over the past year*

Company	Close date (2022)	Subsegment	Exit value (\$M)	Exit type	Acquirers/index	Valuation step-up
Greenbacker Group	May 23	Alternative capital	\$330.0	M&A	Greenbacker Renewable Energy Company	N/A
FairX	February 1	Trading	\$275.1	M&A	Coinbase	N/A
Sentio	May 11	Data & analytics	\$185.0	M&A	AlphaSense	N/A
Blue Water Financial Technologies	September 22	Infrastructure	\$101.0	M&A	Voxtur	N/A
League Network	April 30	Alternative capital	\$6.0	M&A	N/A	0.2x
Redcrow	April 6	Alternative capital	\$4.5	Buyout/LBO	Alira Health, Creadev	N/A
Kentaa	June 15	Alternative capital	N/A	M&A	iRaiser	N/A
Fidap	August 22	Data & analytics	N/A	M&A	Nexla	N/A
open.exchange	February 24	Data & analytics	N/A	M&A	Squirro	N/A
Ethos ESG	September 21	Data & analytics	N/A	Buyout/LBO	ACA Group, Genstar Capital	N/A

Source: PitchBook | Geography: Global | *As of December 31, 2022



CAPITAL MARKETS

Opportunities

Emergence of alternative trading exchanges: Private markets have grown significantly in the last decade, with AUM increasing 32.4% to \$9.8 trillion YoY as of June 2021. This contrasts with public markets, as private equity net asset value grew 14 times since 2000, compared to the total market cap of public companies, which grew four times over the same period.¹¹ Institutions have resultingly begun seeing greater opportunities for private securities, leading to a rise in new trading platforms and exchanges tailored toward private assets. Examples of institutions capitalizing on these opportunities include Nasdaq's acquisition of [SecondMarket](#) in 2015—now known as [Nasdaq Private Market](#)—[Carta](#)'s launch of its secondaries exchange CartaX in 2021, seed-stage startup [Caplight](#)'s launch of its private asset exchange for institutional investors, and [Forge Global](#)'s merger with [SharesPost](#) in 2020. These trends coincide with the increasing demand for alternative assets from retail investors, as noted in our [Q3 2022 Retail Fintech Report](#).

Other exchanges are providing better disclosures and protections for investors. [LTSE](#) (long-term stock exchange), which completed its \$103.4 million Series C in July 2022, provides an alternative route for companies to list publicly and focuses on providing users of its exchange with long-term value, more voting power, and greater disclosures on ESG metrics. [IEX](#) (Investor's Exchange) aims to ensure trades are executed at the most recent prices and protects investors from trading when prices become unstable. Notably, [MEMX](#) (Member's Exchange), founded by several large financial institutions, was launched in 2020 to provide traders with lower fees, greater transparency, and simplified execution of orders.

Blockchain and other technologies optimizing clearing and settlement: Though post-trade infrastructure has gone through several iterations of technological advancements over the past decade, many clearing and settlement processes remain suboptimal. Current post-trade reconciliation processes have progressed from paper-based to digitized systems, allowing settlement times to advance from a standard of five business days (T+5) to two business days (T+2). This T+2 standard was adopted by Europe in 2014, followed by North America and several leading Asia-Pacific markets in 2017. While technologies exist in present day to facilitate a single business day (T+1) or same-day (T+0) settlement, nearly all major markets have yet to fully adopt a T+1 settlement cycle aside from India, which only recently advanced its settlement period standard in January 2023.¹² Within the US, the Securities and Exchange Commission (SEC) has already proposed moving to a T+1 cycle for equities; implementation, however, will not take effect until May 2024.¹³

Moving to shorter settlement cycles could reduce risk relating to counterparties, credit, and market volatility, as well as costs associated with margins that are required to be posted with clearinghouses. Yet, further compression of settlement cycles across all markets remains a challenge due to complexities with legacy systems and the scale of industry-wide changes that will need to be made. Distributed ledger technology (DLT) has recently emerged as one potential solution to address shortening settlement cycles. Currently, 88% of capital markets participants are exploring or developing use cases for DLT, blockchain, or digital assets, and 54% of participants believe a DLT-based market infrastructure could reduce post-trade processing costs by 10% to 30%.¹⁴

12: ["Indian Stock Markets Migrating to T+1 Settlement Cycle From Friday," The Economic Times, January 27, 2023.](#)

13: ["SEC Finalizes Rules to Reduce Risks in Clearance and Settlement," U.S. Securities and Exchange Commission, February 15, 2023.](#)

14: ["Market Participants Believe Shorter Settlement Cycles are on the Horizon, Citi Survey Shows," Citi, November 2, 2022.](#)

11: ["Private Markets Rally to New Heights: McKinsey Global Private Markets Review 2022," McKinsey & Company, Gabriel Morgan Asaftei, et al., March 2022.](#)



CAPITAL MARKETS

Several key partnerships indicate capital markets institutions are exploring post-trade infrastructure upgrades. [Axoni](#), developer of distributed ledger infrastructure, has a partnership with the [Depository Trust & Clearing Corporation](#) (DTCC) to help re-platform the entity's credit derivatives trading and settlement platform. The startup has also partnered with the Office of the Comptroller of the Currency and [Blackrock](#) to experiment with upgrading infrastructure relating to securities lending and equity swaps. Similarly, startup [R3](#) has partnered with the DTCC to develop Project Ion, an alternative settlement platform leveraging DLT. Numerous other startups, such as [Symbiont](#), [Clearmatics](#), and [SETL](#)—acquired by embedded fintech services platform [Colendi](#)—are utilizing blockchain and DLT to enhance trading and settlement infrastructures. Additional startups and opportunities relating to blockchain networks and infrastructure tools are further explored in our [Q3 2022 Launch Report: Crypto](#).

Growing emphasis for sustainable investments: Sustainable investment approaches are starting to make their way to the forefront for financial institutions. This has largely been due to rising stakeholder demand for ESG investment commitments, coupled with increased regulatory scrutiny on climate-risk reporting. Furthermore, while financed emissions—greenhouse gas emissions (GHG) relating to investment, lending, and underwriting activities—are currently reported on a voluntary basis in the US, we expect heightened disclosure requirements, given recent proposed climate disclosure rules from the SEC and the European Banking Authority.¹⁵

FIs are likely to evaluate their financed emissions as a starting point for understanding their carbon footprints, given financed emissions are currently 700 times higher on average compared to a FI's direct emissions.¹⁶ However, data relating to emissions is often unavailable and unreliable due to inconsistencies across carbon accounting standards and variability of asset types. In our view, these underlying issues and trends create substantial market opportunities for fintechs. For example, [Emmi](#), which completed its Series A in 2022, provides institutions with engines that can help measure, monitor, and manage carbon emissions from investments and lending. Similarly, early-stage startup [Cooler Future](#) allows investment managers to analyze the sustainability impacts of their portfolios and is currently developing the capabilities to evaluate impacts from private asset classes. Additional opportunities within this space are highlighted within our [Q2 2022 Launch Report: Carbon & Emissions Tech](#) under the “Carbon tech” segment.

¹⁵: “Financial Institutions are Pledging to Lower Carbon Footprints. Here's What You Need to Know About Financed Emissions,” PWC, n.d., accessed February 15, 2023.

¹⁶: “Finance Sector's Funded Emissions Over 700 Times Greater Than Its Own,” CDP, April 28, 2021.



CAPITAL MARKETS

Risks and considerations

Legacy systems difficult to upgrade: Though many banks and incumbent capital markets institutions have begun upgrading their tech stacks and integrating modern software in recent years, the process is often slow, meticulous, and cumbersome. Often, these systems are large, complex, and in-house, making them difficult to upgrade and integrate with new products. Startups designing their software for quick onboarding and low-friction integration will, nevertheless, need to remain cognizant of the various types of internal legacy systems that incumbents are still operating on.

Lean expense mandates leading to higher selectivity: While capital markets players pursue software and platforms that help optimize costs and generate higher returns, these institutions likely won't adopt new technology en masse, as financial companies typically limit spending. IT departments also have limitations on how many projects they undertake. As a result, we expect FIs to be stricter in screening for new technologies. New entrants and more nascent competitors that cater to a single product solution may consequently encounter difficulties taking share.

Complexity and risk management leads to longer sales cycles: The implementation of new technology in a legacy and regulated environment presents numerous obstacles. Fintechs within this space will need to navigate regulations and the intricacies of many FIs, resulting in prolonged decision-making and onboarding processes, lengthened sales cycles, and higher barriers to entry. Capital markets institutions must also consider security, compliance, and reputational risks. Without proper vendor risk management, these firms may be less inclined to adopt new solutions, creating an obstacle for fintechs without proper risk controls. Long procurement cycles from capital markets incumbents could create additional difficulties for startups, leaving sales cycles to be more secular.



CFO stack

Overview

Companies in the CFO stack segment assist CFOs, CEOs, and finance teams with managing their businesses. Correspondingly, these technologies are utilized by businesses to better grasp how they are performing and to subsequently develop optimized business strategies. Startups in this space typically offer products in the form of software, though some companies offer financing—such as for earned wage access (EWA)—and help track payments. Products and services developed by these fintechs aid with a wide range of functions, including managing cash flows, storing and analyzing data, budgeting and forecasting, expense management, accounting, financial reporting, handling payroll, automating billing processes, and enhancing internal workflows.

The CFO stack has meaningfully progressed in recent years, but companies are still experiencing pain points in how they reconcile data across multiple systems, manage cashflows in real time, optimize workflows, and develop tailored financial planning & analysis (FP&A) methods. Still, challenges arise as most legacy software do not communicate with other components of the CFO stack, eliciting complexities for data tie-outs. This has generated demand for new technologies that enable low-friction connectivity through application programming interfaces (APIs) and can create a single-source database for various business metrics.

Technologies dedicated to accounting and payroll teams are also emerging to better track expenses and enable employee benefits. Well-known startups within this space, such as [Brex](#) and [Ramp](#), have enabled businesses to issue business credit cards to employees with custom spending limits, which simultaneously submit payments to an online platform and permit real-time approval

of expenses and automated billing management. Other startups, such as [DailyPay](#) and [Rain](#), offer integrations with human capital management and payroll companies, providing scalable platforms that can manage wages. Notably, these startups provide EWA services, enabling employees to access their accrued but unpaid wages outside of their respective fixed payroll cycles.

We break this segment out into four categories:

Accounting, tax, & compliance: Platforms and technologies that help automate accounting processes, tax documentation, and auditing procedures, and/or enable corporations to stay in compliance with accounting and tax regulations.

Budgeting & forecasting: Technologies that assist companies, FP&A groups, and FinOps teams with tracking and storing financial data, budgeting and forecasting corporate financial statements, and optimizing cloud costs.

Expense management & AP/AR automation: Software and platforms that help manage and automate the spending, tracking, approval, and management of corporate spending, invoices, accounts payables, and accounts receivables.

Payroll & earned wage access: Companies that help corporations automate payroll processes such as onboarding, processing, and paying, as well as enable flexible and on-demand payment options for employees.



CFO STACK

Industry drivers

Paradigm shift in CFO role: CFOs are evolving further into organization-wide leaders that develop business strategies and collaborate in driving change. The progression requires CFOs to work horizontally across business units and see enterprise-wide data beyond financials.

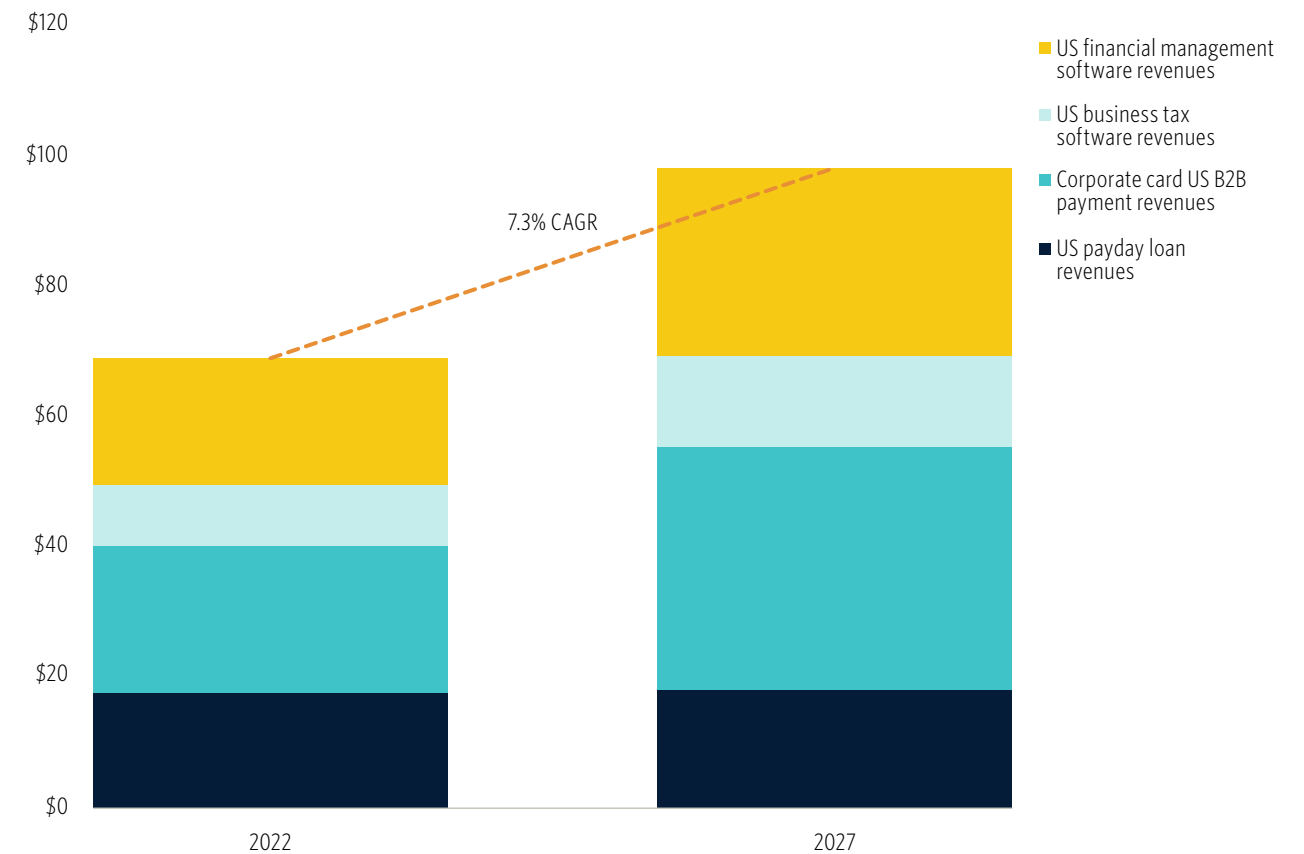
Boom in APIs: Increased digitization across consumer and enterprise functions combined with the explosion in SaaS applications has popularized API development and usage. The wider utilization of APIs has enabled the development of new products that can easily integrate with other databases and platforms.

Businesses seeking leaner operating costs: Macroeconomic uncertainty and the recent shift toward profitability have given rise to higher needs for optimized expense management and forecasting tools and platforms. Relatedly, startups and small businesses will also require sharper analytics and forecasts.

Rise in remote working: Hybrid working practices that arose from the COVID-19 pandemic are creating demand for technologies that enable better collaboration across teams and functions.

Household incomes under pressure: Inflationary pressures are weighing in on consumer wealth and reducing levels of discretionary income, bolstering the appeal of EWA services.

CFO stack market size estimate (\$B)*



Sources: Bankrate, Intuit, PitchBook Estimates | Geography: Global | *As of December 31, 2022



CFO STACK

Market size

We estimate total revenues in the US CFO stack market reached \$68.9 billion in 2022. We segment the market by EWA loan revenues, corporate payment credit card revenues, tax software subscription revenues, and financial management software (FMS) subscription revenues. Based on our estimates, credit card revenues from business payments and FMS subscription revenues provide the largest addressable markets. We forecast the total US market will reach \$97.9 billion in revenues by 2027, growing at a CAGR of 7.3%.

Business model

Companies within this segment generally operate via SaaS models and recognize revenues through subscription fees. Startups within the EWA and expense management spaces monetize partly through interchange fees generated from spending volumes on corporate credit cards and wage-loaded debit cards. Additionally, EWA providers can charge fees when employees choose to access funds, either by directing the cost to the employee or employer.

VC activity

CFO stack companies raised \$6.9 billion across 318 deals in 2022, representing a 23.7% and 17.2% YoY decrease from the \$9.0 billion and 384 deals in 2021, respectively. Declines were significant across the account, tax & compliance, payroll & EWA, and expense management & AP/AR automation categories, which saw deal values decline YoY by 47.3%, 30.8%, and 15.4%,

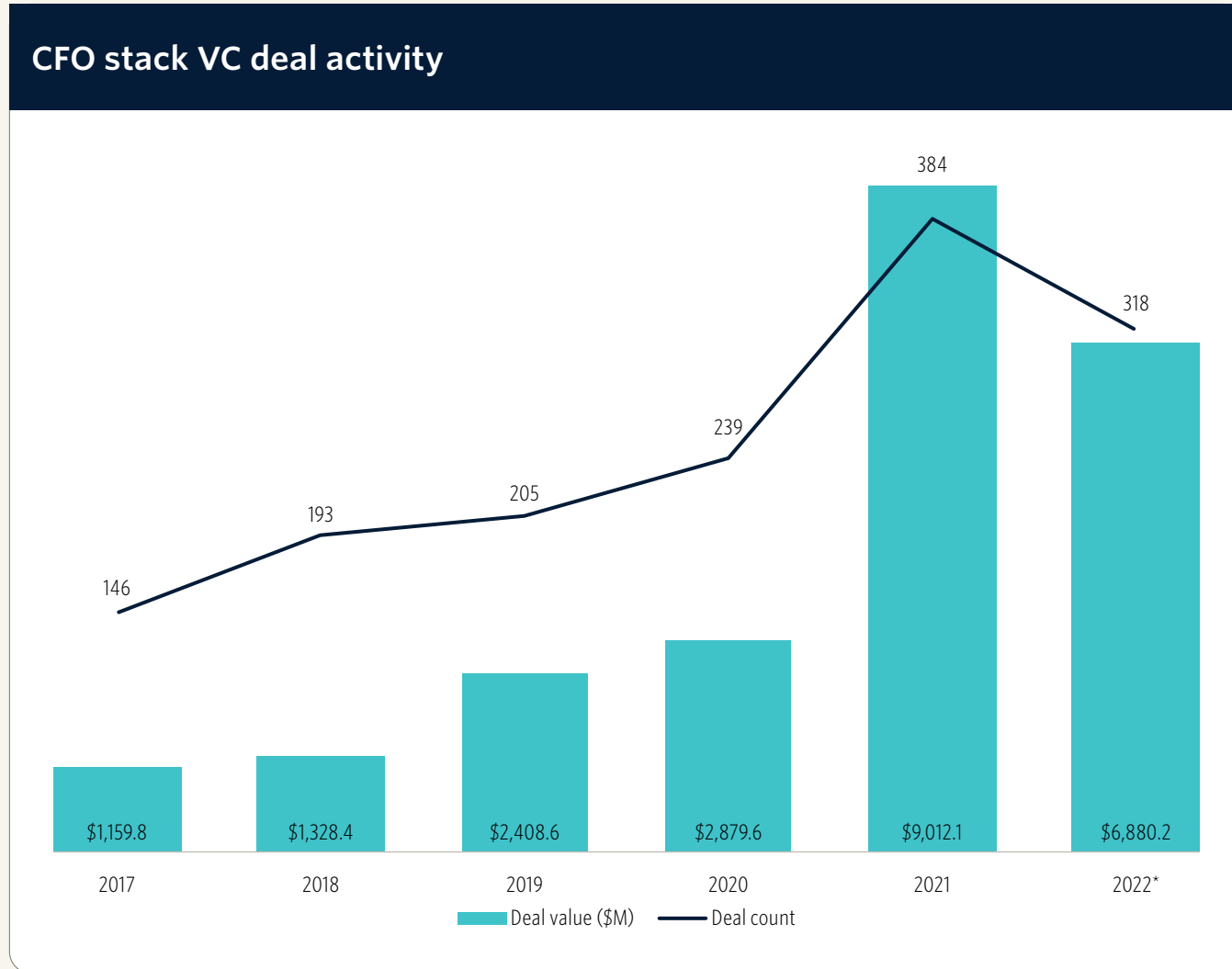
respectively. Budgeting & forecasting companies remained a bright spot, however, with deal value growing 28.5% YoY. Looking at the bigger picture, VC deal activity in this segment remains significantly ahead of pre-2021 levels, with 2022 deal values ending 105.9% higher compared with 2020. Expense management & AP/AR automation companies continue to command the highest amount of VC funding within the CFO stack segment compared with other categories, which has remained the case for the past five years.

Large deals from 2022 include the \$748.3 million Series C, \$549.8 million Series D2, and \$300.0 million Series D from expense management platforms [Ramp](#), [Qonto](#), and [Brex](#), respectively. Other notable deals belonged to expense payroll software provider [PayFit](#)'s \$287.2 million Series E, revenue management platform [ChargeBee](#)'s \$250.0 million Series H, and payroll and HR platform [Gusto](#)'s \$230.0 million Series E. While these top deals are categorized under the late and venture growth stages, a substantial number of companies in this segment that closed deals this year still fall under early stage, providing opportunities for investors that fund Series A and Series B rounds.

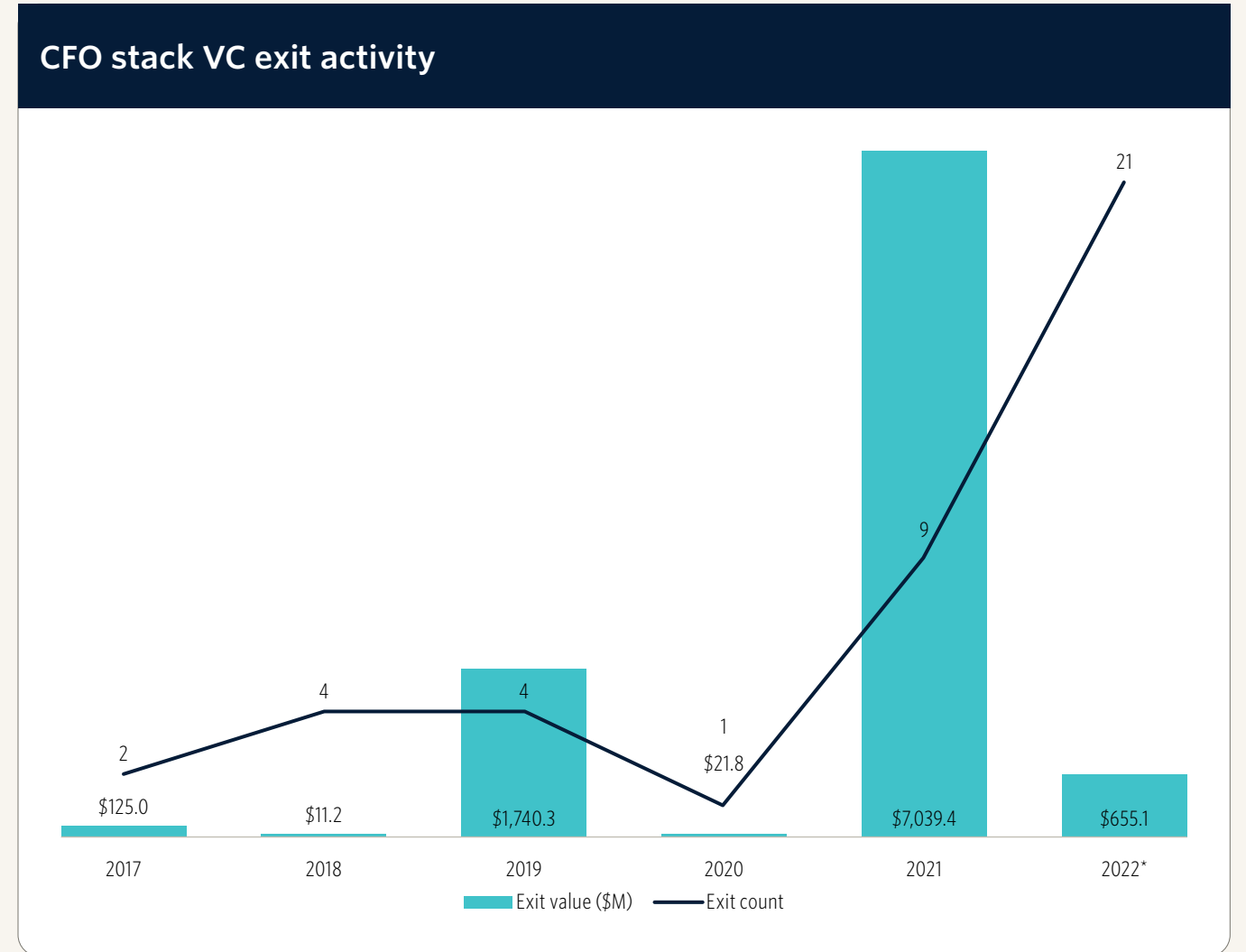
Exit value declined 90.6% YoY in 2022 to \$655.1 million following a record year in 2021. Notably, 2021's exit value was primarily driven by the IPO of accounts payable automation developer [AvidXChange](#) at a \$4.2 billion exit value, and the acquisition of spend management platform [Divvy](#) by expense automation provider [Bill.com](#) for \$2.3 billion. 2022 brought few exits in this segment, with the largest being payment suite provider [Paystand](#)'s \$500.0 million acquisition of collections automation platform [Yaydoo](#) and expense management platform [Brex](#)'s \$90.0 million acquisition of budgeting and forecasting platform [Pry Financials](#).



CFO STACK



Source: PitchBook | Geography: Global | *As of December 31, 2022



Source: PitchBook | Geography: Global | *As of December 31, 2022



CFO STACK

Key CFO stack VC deals over the past year*

Company	Close date (2022)	Subsegment	Stage	Deal value (\$M)	Lead investor(s)	Valuation step-up
Ramp	April 1	Expense management & AP/AR automation	Series C	\$748.3	Founders Fund	2.0x
Qonto	January 10	Expense management & AP/AR automation	Series D	\$549.8	TCV, Tiger Global Management	5.0x
Brex	January 11	Expense management & AP/AR automation	Series D2	\$300.0	Greenoaks Capital Partners, TCV	1.5x
PayFit	January 5	Payroll & earned wage access	Series E	\$287.2	General Atlantic	3.2x
ChargeBee	February 1	Expense management & AP/AR automation	Series H	\$250.0	Sequoia Capital, Tiger Global Management	2.5x
Gusto	May 12	Payroll & earned wage access	Series E	\$230.0	Dragoneer Investment Group, T. Rowe Price	N/A
Spendesk	January 18	Expense management & AP/AR automation	Series C	\$215.6	General Atlantic, Tiger Global Management	4.8x
Jeeves	February 28	Expense management & AP/AR automation	Series C	\$180.0	Tencent Investment	4.3x
Wagestream	April 13	Payroll & earned wage access	Series C	\$175.0	Smash Ventures	N/A
Lummo	January 19	Accounting, tax, & compliance	Series C	\$144.7	Sequoia Capital India, Tiger Global Management	2.2x

Source: PitchBook | Geography: Global | *As of December 31, 2022



CFO STACK

Key CFO stack VC exits over the past year*

Company	Close date (2022)	Subsegment	Exit value (\$M)	Exit type	Acquirers/index	Valuation step-up
Yaydoo	May 2	Expense management & AP/AR automation	\$500.0	M&A	PayStand	N/A
Pry Financials	March 17	Budgeting & forecasting	\$90.0	M&A	Brex	N/A
Cashforce	June 15	Budgeting & forecasting	\$31.9	M&A	TIS	N/A
Mikatus	June 30	Accounting, tax, & compliance	\$15.7	M&A	Freee	0.5x
Stratumn	March 21	Accounting, tax, & compliance	\$7.8	M&A	Sia Partners	N/A
Paynas	August 22	Payroll & earned wage access	\$1.7	M&A	valU BNPL	N/A
Gesplan	April 2	Budgeting & forecasting	\$8.1	M&A	Totvs	N/A
Accrualify	August 3	Expense management & AP/AR automation	N/A	M&A	FleetCor Technologies	N/A
Nomo	June 30	Accounting, tax, & compliance	N/A	M&A	Talenom	N/A
Finmark	November 16	Budgeting & forecasting	N/A	M&A	Bill.com	N/A

Source: PitchBook | Geography: Global | *As of December 31, 2022



CFO STACK

Opportunities

Next-generation planning and forecasting tools: Financial planning remains a key function for any business. Even so, finance teams continue to be somewhat dependent on isolated spreadsheet processes, which can be complex and lack integrations, as well as advanced functionality. Teams using traditional spreadsheets may face collaboration challenges without a centralized workflow platform, and this can often create version-control errors. Further compounding these issues, closing procedures can be divided across numerous departments, data may be scattered within multiple systems, and ever-changing reporting and forecasting needs typically outpace the rate at which legacy financial planning platforms can adapt.

Still, 64% of businesses rely on spreadsheets for forecasting & budgeting functions,¹⁷ highlighting a significant market opportunity. Additionally, the market remains ripe for SME-targeted software, as incumbents such as [Adaptive Insights](#)—acquired by [Workday](#)—[Anaplan](#), and [Oracle](#) primarily cater to large enterprises. Startups such as [Digits](#), which closed a \$65 million Series C in March 2022, are beginning to take share in this market. [Digits](#) offers a real-time finance and accounting platform for small businesses and enables live collaboration and analysis of data, allowing companies to shave hours off of their book-closing procedures. Similar startups such as [DataRails](#), which closed a \$50.0 million Series B in March 2022, and [Trovata](#), which closed a \$27.0 million Series B in May 2022, are finding success in this space.

Real-time expense management: Expense management and spending control for businesses has historically been a tedious and sluggish process. Reimbursement policies are often buried in unread handbooks, leading to employee unawareness of spending and re-compensation

¹⁷: [“Finance/Accounting Tech Stack Survey 1Q23,” The SAAS CFO, 2023.](#)

procedures. Additionally, employees and entrepreneurs typically hold the burden of having to front business expenses with their own savings, usually with personal cards or bank accounts.

Further exacerbating this issue are the extensive lag times between the point of transaction and the time of reimbursement. This is because processes followed by payroll teams can be drawn-out with multiple steps—transactions need approval, receipts must be saved and submitted into non-user-friendly platforms, payments need to be scheduled, and errors usually need to be manually reconciled. Currently, two out of three US employees use their own money for work expenses, and 45% of US employees encounter personal cash flow challenges due to reimbursement lag times.¹⁸ Lack of proper spending controls gives rise to fraud, as expense reimbursement fraud accounts for 11% of fraud for large businesses and 21% for small businesses.¹⁹

Companies such as [Brex](#), [Ramp](#), and [TripActions](#) are leading the way in combatting these issues by allowing expense policies to be embedded within their physical and digital corporate cards, effectively denying out-of-policy transactions in real time at the point-of-purchase. Spend data is additionally captured on integrated platforms, allowing for live transaction visibility and automated reconciliations. Other well-known companies gaining momentum within this space include [Airbase](#), [Emburse](#), [Zact](#), and [Divvy](#)—acquired by [Bill.com](#).

Automated e-invoicing and VAT processing: Growing demand for automated invoice processing technologies has emerged as an increasing number of businesses migrate from paper to digital invoices. Usage of electronic invoices (e-invoices) has grown, as these invoices are structured in a computer-readable format. This allows for quicker processing, diminished manual work, and

¹⁸: [“America’s Invisible Bank: The Real Cost to Employees,” Conferma Pay, 2019.](#)

¹⁹: [“Report to the Nations: 2018 Global Study on Occupational Fraud and Abuse,” ACFE, 2018.](#)



CFO STACK

reduced booking errors. Furthermore, countries such as France, Spain, and Poland have mandated the adoption of e-invoicing for businesses by 2024, which will additionally apply to the electronic transmissions of value-added tax (VAT) and sales tax reports.²⁰ This follows similar requirements from several European and Latin American countries, which mandate both e-invoicing and VAT reporting requirements. Often, this is because invoices can only be sent to buyers following a tax authority's approval. Real-time VAT reporting thus compliments e-invoicing, as it allows governments to more accurately forecast VAT income and identify cases of fraud early on.

As such, we expect companies that provide automated invoicing and accounting solutions will remain beneficial for businesses, especially those operating in countries that use VAT or sales tax. Several startups are already developing solutions for these aforementioned issues. For example, early-stage startup [Accountflow](#) provides plug-and-play cloud accounting services that integrate with a business' existing enterprise resource planning systems and banks, helping to automate invoices and VAT reports. [Fonoa](#), which completed its \$60.0 million Series B in May 2022, helps businesses identify correct tax treatments, calculate taxes, and report tax transactions to authorities in real-time. [Wrebit](#), a startup that caters to small business owners, provides automated cloud accounting, invoicing, and VAT reporting functions through a mobile app.

Expansion through complimentary products and services: We believe there is significant cross-selling and product expansion opportunities for companies in this space. Financial data aggregated by CFO stack companies provide significant insight into a business' cash flows, balance sheet, and overall financial health. Resultingly, financial products such as lending and insurance can be easily integrated as complimentary products to SaaS offerings. For example, companies that assist with FP&A functions may also be able to recommend or offer appropriate working capital or bridge loans. Startups like [Brex](#) have been pursuing this strategy, as they now offer business accounts, bill pay services, and venture debt funding in addition to its corporate cards. Similarly, late-stage startup [Jeeves](#) offers revolving lines of credit and revenue-based financing in addition to expense management services and corporate cards.

Risks and considerations

Spreadsheets still king: Fintechs in this segment will need to demonstrate proof of concept that their products are required beyond Excel, which is still a well-functioning product. Spreadsheets have existed for over four decades, and many businesses continue to default to Excel or Google Sheets as a base tool for finance planning. Finance teams additionally have difficulty experimenting with new tools beyond spreadsheets, as most analysts are already familiar with

²⁰: ["France to Implement New VAT e-Invoicing Requirements From 1 July 2024," EY, September 19, 2022.](#)



CFO STACK

Excel and are wary of potential disruptions to book-closing deadlines. It is unlikely that next-generation CFO software will render spreadsheets obsolete; rather, startups that witness the most success are likely to be those that can integrate seamlessly with Excel by enabling easy data extraction and collaboration.

Pure-play interchange models may not suffice: Business models for modern expense management solutions have not been battle-tested through economic downturns, as many of these companies only began emerging within the past half-decade. Many fintechs that enable real-time expense management through the issuance of business cards derive a majority of their income through interchange fees. The viability of this business model has yet to be proven, however, as highlighted by the majority of digital banks—also known as neobanks. This issue is evidenced by [Brex](#)'s decision to expand into subscription revenue streams in 2022 via the launch of its Brex Empower software. Furthermore, the company has recently cut off services to brick-and-mortar SMBs who lack “professional” funding to better serve larger enterprises, which are typically more profitable customers.

Regulatory environment uncertain for EWA: The earned wage access sector is still in its early days and thus has not been subject to the same regulatory strictness surrounding banks and traditional lenders. Currently, policymakers have questioned whether early-wage payments should be treated as a form of lending. The CFPB has become increasingly involved and indicated it would look to issue further guidance following its recent termination of a sandbox approval order it granted for EWA provider [PayActiv](#) in 2020. The approval order—which provided [PayActiv](#) temporary safe harbor from liabilities under the Truth in Lending Act and Regulation Z—was first considered for termination after [PayActiv](#) falsely suggested the CFPB endorsed its EWA products. Ultimately, the order was nullified at [PayActiv](#)'s request in order for the company to make swift adjustments to its fee models.²¹ Further regulatory scrutiny could come from US states, as EWA offerings could potentially clash with state wage laws. Still, there has not been a clear regulatory framework established.

²¹: [“CFPB Rescinds Special Regulatory Treatment for Payactiv,” CFPB, June 30, 2022.](#)



Commercial finance

Overview

The commercial finance segment is comprised of companies that provide a range of financial services to businesses, including digital banking, capital funding, and non-dilutive financing. Products include business checking and savings accounts, corporate cards, invoice factoring, revenue-based financing (RBF), SaaS financing, venture debt, and BNPL for business transactions. We segregate non-finance companies offering non-dilutive lending products from our alternative lending segment, as the fundamental structure of these products often differ from those of traditional loans. This is due to the terms of their issuance—venture debt solely following venture capital, for example—and how they are repaid. Current non-dilutive funding models provide capital that is paid back from a percentage of a business' future revenues, a portion of SaaS receivables, or invoices that were purchased at a discount. Startups within this space are disrupting the VC equity-investment model, as well as traditional lenders.

Historically, small businesses and startups seeking funding have been limited to selling equity or taking out traditional loans. While available to startups since the 1970s, venture debt did not evolve into a popular mode of financing until the years following the GFC. As an influx of both startups and private credit lenders began to enter the market, interest rates and loan terms became more favorable for venture debt in recent years. Fintechs are further capitalizing on growing demand for non-dilutive financing by employing modern underwriting methods that enable startups to secure capital with less friction, cheaper rates, quicker approvals, and less bias. Some loan approvals can be determined in minutes as borrowers securely share data from their financial suite. As a result, predictive modeling technologies can quickly analyze data from bank accounts, payment platforms, invoices, and marketing accounts.

Many of these non-dilutive financing products are additionally offered by digital banks—also known as neobanks or challenger banks. They have become increasingly popular for consumers in recent years, however, the low-friction process of opening accounts with neobanks has also attracted a growing number of business customers. In addition, neobanks geared toward businesses offer several advantages over traditional banks. Operating costs saved from forgoing physical branches is often passed to the customer, and merchants seeking funding can receive credit more quickly. Perhaps the greatest advantage of commercial neobanks is their ability to seamlessly integrate into a company's finance stack, enabling services such as automated accounting flows and cash flow forecasting. Our commercial finance segment is grouped into two categories:

Digital banking: SMB banking services that are delivered wholly online or via a mobile application.

Non-dilutive financing: Companies that enable businesses to acquire capital without forfeiting equity, which is typically done through RBF, invoice factoring, venture debt, SaaS financing, and enterprise-specific BNPL models.

Industry drivers

Equity funding levels: Both valuations and venture investments have declined, leading some startups to seek alternative forms of financing that may prevent down-rounds.

Increased private credit appetite: Our [Q4 2022 Venture Monitor](#) shows that 2022 marks the fourth consecutive year that venture debt surpassed \$30 billion in value. Furthermore, an increasing number of fintechs are enabling retail investors to invest or partake in venture debt offerings as consumer demand for alternative assets continues to rise.



COMMERCIAL FINANCE

Rising digital adoption: The continued migration of personal financial services to online channels is changing how businesses spend and borrow, creating an opportunity for new providers to gain market share. New banking infrastructure has enabled these services, allowing decreased development costs and increased speed to market for new product launches.

APIs driving bank interconnectivity: Increasingly mainstream usage of APIs has enabled digital banks to securely access the financial metrics of businesses with ease and launch products that compliment other areas of a business' financial software suite. Importantly, tech stacks and infrastructure tools powering neobanks are typically more modern than those of incumbents, allowing for quicker deployment of these new products and services.

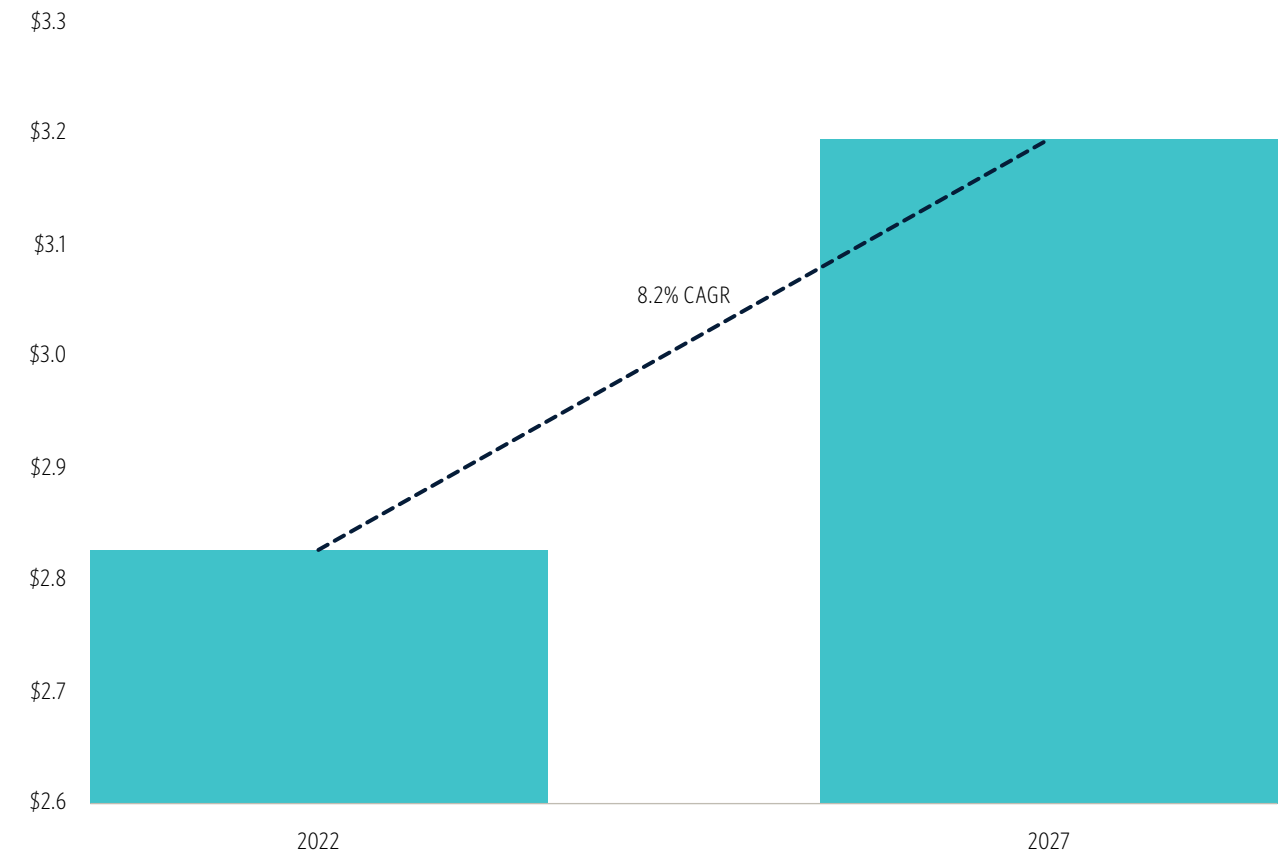
Market size

As of December 2022, businesses in the US had \$2.8 trillion outstanding in loan balances. We believe RBF providers and neobanks will grow their share of commercial loan originations as they continue to scale and acquire new enterprise customers. Based on our estimates, US C&I loan originations are expected to grow at an 8.2% CAGR, reaching \$3.2 trillion by 2027.

Business model

Neobanks catering to businesses generate revenues from account fees, transaction and interchange fees, monthly subscription charges, interest on revolving credit accounts, and invested income from deposits. Notably, some neobanks have begun to expand into lending, allowing for higher net interest margins.

Commercial finance market size estimate (\$T)*



Sources: Board of Governors of the Federal Reserve System, PitchBook Estimates
Geography: Global | *As of December 31, 2022



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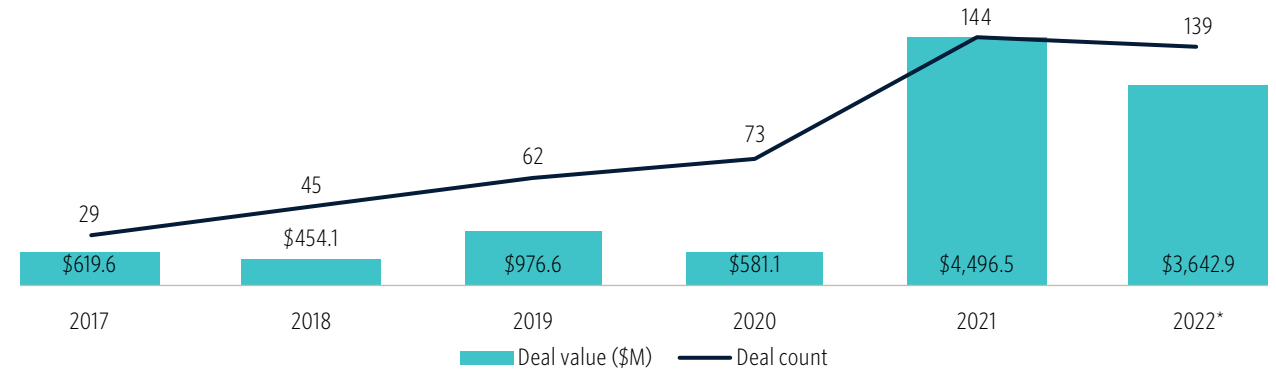
Non-dilutive finance providers monetize in various ways. RBF and SaaS financing providers collect interest from borrower revenues. Invoice factoring companies generate interest or gains from invoice payments by purchasing invoices at a discount. Commercial BNPL lenders partner with both buyers and sellers, collecting revenues from interchange/transaction fees, late fees, and sometimes interest. Venture debt issuers make money from interest, origination fees, prepayment penalties, and warrants. Interest rates on venture debt are typically higher than those of traditional loans due to higher associated risk and are usually repaid in shorter time periods of 12 to 24 months.

VC activity

Commercial finance companies raised \$3.6 billion across 139 deals in 2022, representing a 19.0% and 3.5% YoY decline from the \$4.5 billion and 144 deals in 2021, respectively. Funding levels in commercial finance were primarily driven by non-dilutive finance startups, which began emerging in 2021. Deal value for non-dilutive finance startups declined 16.5% YoY in 2022, but overall deal value in the category remains materially ahead of pre-2021 levels. In a similar vein, VC activity for B2B neobanks was down 27.6% YoY, but ended the year higher than pre-2021 levels. Notable commercial finance deals from 2022 include RBF provider [Bloom](#)'s \$306.0 million Series A, creatives funding platform [Spotter](#)'s \$200.0 million Series D, and non-dilutive finance platform [Arc Technologies](#)' \$181.0 million Series A.

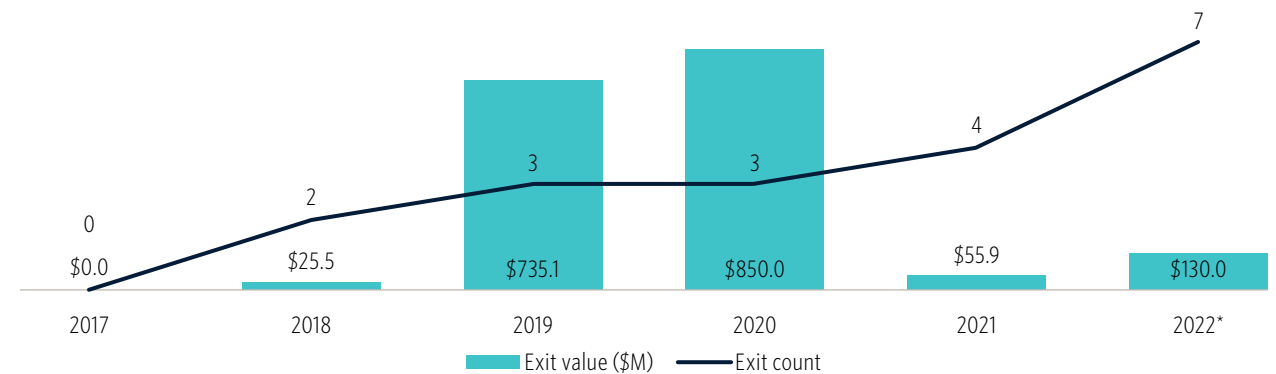
Exit value increased 132.8% YoY in 2022 to \$130.0 million, with notable deals including business payment platform [Plastiq](#)'s acquisition of B2B neobank [Nearside](#)—formerly known as Hatch—and non-dilutive finance provider [Pipe](#)'s acquisition of media and entertainment financing startup [Purely Capital](#). Given the disappointing 2022 performance of publicly listed B2C neobanks [Dave](#), [MoneyLion](#), and [SoFi](#), we expect public listing exits will continue to be depressed for B2B neobanks in the near term.

Commercial finance VC deal activity



Source: PitchBook | Geography: Global | *As of December 31, 2022

Commercial finance VC exit activity



Source: PitchBook | Geography: Global | *As of December 31, 2022



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Key commercial finance VC deals over the past year*

Company	Close date (2022)	Subsegment	Stage	Deal value (\$M)	Lead investor(s)	Valuation step-up
Bloom	May 16	Non-dilutive finance	Series A	\$306.0	Credo Capital Partners	N/A
Spotter	February 16	Non-dilutive finance	Series D	\$200.0	SoftBank Group	1.5x
Scramble	July 26	Non-dilutive finance	N/A	\$189.4	N/A	N/A
Arc Technologies	August 17	Non-dilutive finance	Series A	\$181.0	Left Lane Capital, NFX	N/A
Ark Kapital	April 19	Non-dilutive finance	N/A	\$180.6	Phoenix Court	N/A
Wayflyer	February 1	Non-dilutive finance	Series B	\$155.0	DST Global, QED Investors	4.4x
Outfund	April 27	Non-dilutive finance	Series A	\$149.7	1818 Venture Capital, Force Over Mass Capital, PostFinance AG - Corporate Venture Capital, Tribe Capital	N/A
Silvr	February 8	Non-dilutive finance	Series A	\$147.4	N/A	5.6x
Founderpath	August 9	Non-dilutive finance	N/A	\$145.0	Forbright, Singh Capital Partners	N/A
Novo	September 23	Digital banking	Series B	\$125.0	GGV Capital, Stripes	6.5x

Source: PitchBook | Geography: Global | *As of December 31, 2022



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Key commercial finance VC exits over the past year*

Company	Close date (2022)	Sugsegment	Exit value (\$M)	Exit type	Acquirers/index	Valuation step-up
Nearside	November 1	Digital banking	\$130.0	M&A	Plastiq	0.4x
Purely Capital	February 23	Non-dilutive finance	N/A	M&A	Pipe	N/A
Tranch	July 1	Non-dilutive finance	N/A	M&A	Better	N/A
Upside	November 1	Non-dilutive finance	N/A	M&A	Ampla	N/A
Reqr	January 11	Non-dilutive finance	N/A	M&A	Levenue	N/A
Oyster Financial	October 25	Digital banking	N/A	M&A	Yaydoo	N/A
Lume Health	September 14	Digital banking	N/A	Buyout/LBO	Collaborative Fund, Thoma Bravo, Vivian Health	N/A

Source: PitchBook | Geography: Global | *As of December 31, 2022



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Opportunities

Revenue-based finance variations: Given the nature of their business models, SaaS startups typically burn cash as they scale and secure larger streams of recurring revenues. This has made SaaS companies a popular choice for RBF providers. [Pipe](#) and [Capchase](#) are two of the largest fintechs that have found success in this space, reaching post-valuations in their last venture rounds of \$2.0 billion and \$780.0 million, respectively. However, use cases for RBF are rapidly expanding beyond SaaS financing, as evidenced by [Pipe](#)'s acquisition of media and entertainment startup [Purely Capital](#). The acquisition allows [Pipe](#) to provide upfront capital to producers, rights owners, and distributors within the media in exchange for future revenues from licensing contracts with streaming services and broadcasters, which typically have long terms and slow quarterly payouts.

Similarly, late-stage startup [Spotter](#) has raised nearly \$1.0 billion to provide upfront capital to YouTubers in exchange for new ad revenues from old videos—a method also referred to as catalog licensing. Fintechs such as [Arc](#) are also deploying new hybrid funding options that bridge traditional venture debt and RBF. Specifically, [Arc](#)'s Advance Plus RBF offering allows a six-month grace period in which principal payments are not required—similar to traditional venture debt—but is free of warrants or covenants.²² Other variants of RBF are emerging within the Web3 space, such as [Royal Markets](#)' non-fungible token platform, which allows artists and creators to receive upfront royalty revenue in exchange for selling a percentage of their future streaming rights to fans.

²²: "Premium Growth Capital With Longer Term & No-Repayment Period," [Arc](#), n.d., accessed February 15, 2023.

Commercial BNPL: While BNPL options have rapidly become mainstream for consumer products and services, solutions for commercial transactions have yet to be fully explored. In our view, BNPL has the potential to become a widely used tool in the world of commercial transactions, given that companies have used trade credit for decades. Specifically, businesses providing trade credit typically offer net 30/60/90 payment terms, allowing purchasers to pay their invoices at the end of either 30, 60, or 90 days. This is common as 50% of businesses prefer to buy on invoice,²³ and trade credit is the third most popular financing tool used by small businesses after lines of credit and credit cards.²⁴

Still, a gap exists in the market as 57% of business invoices are paid late.²⁵ BNPL providers offer an additional advantage over trade credit as sellers receive cash immediately—a drastic improvement from the average 53 days sales outstanding (DSO) for businesses. BNPL also helps commercial sellers simplify the checkout processes by automating credit checks and payments. The commercial BNPL space is being targeted by startups like [Billie](#), which raised \$100.0 million in equity funding for its Series C in October 2021, and [Mondu](#), which closed its \$43.0 million Series A in May 2022. Notably, [Billie](#) is currently engaged in a partnership with well-known retail BNPL firm [Klarna](#), which has allowed [Billie](#) to materially expand its customer base. Recent deals that closed in January 2023 highlight investor interest in this space, including [Tranch](#)'s \$100.0 million seed equity and debt financing deal, and [Sprinque](#)'s €6.0 million seed round, which we further analyze in our [Q1 2023 PitchBook Analyst Note: Takeaways from Recent E-Commerce Deal Activity](#).

²³: "A Quick Guide to B2B e-Commerce Payment Methods," [Biller](#), September 1, 2022.

²⁴: "2022 Report on Employer Firms," [Small Business Credit Survey](#), Ann Marie Wiersch, et al., May 6, 2022.

²⁵: "12 Actionable Invoicing Tips for B2B eCommerce Websites (From Experts)," [OroCommerce](#), Erika Rykun, December 13, 2022.



COMMERCIAL FINANCE

Neobanking for SMEs: The popularity of neobanks has exploded in recent years, accelerated by increased digital adoption caused by the COVID-19 pandemic. However, an estimated 5% of digital banks have achieved profitability;²⁶ and some are likely running short on runway, as we noted in our [2023 Industry and Technology Outlook](#). Nevertheless, this has created growing levels of scrutiny over the neobank business model. We believe the commercial market offers neobanks an opportunity to overhaul their existing strategies and achieve profitable bottom lines. Compared to consumers in the retail market, SMBs and enterprises typically transact in larger sizes and require working capital credit lines, payments services, expense management solutions, and automated invoicing solutions. In essence, this creates the potential for additional and larger revenue streams.

[Starling](#), a UK-based startup, is an example of a neobank that has materially benefited from pursuing the commercial market. As of December 2022, [Starling](#) has recognized over €250 million in pre-tax profits for the year, a sharp increase from the €32.1 million in pre-tax profits it reported for the year ending March 2022. Much of this can be attributed to its growth in the SME market, where it now holds 520,000 small business accounts—or close to a 9% market share. [Starling](#) provides business accounts, business loans, bill management, and a SaaS cloud banking platform. Importantly, [Starling](#) demonstrates that catering to SMEs also opens additional cross-selling opportunities for neobanks. Other emerging challenger banks that serve businesses, including [Novo](#), [Mercury](#), and [Found](#), offer additional products beyond business accounts—such as venture debt, cash management platforms, billing and invoice automation, expense management, and bookkeeping software.

²⁶: [“Less Than 5% of the World’s 400 Neobanks are Profitable,” Fintechnews Singapore, June 27, 2022.](#)



COMMERCIAL FINANCE

Risks and considerations

Repayment risks for RBF: As revenue-based financing providers do not issue a fixed interest schedule, their repayments can be inconsistent in terms of timing and size. In addition, these loans are often unsecured and only repaid if the borrower generates revenue. In a low growth environment, businesses are likely to experience a decline in revenues, leading to longer repayment periods for RBF lenders.

Regulatory scrutiny increasing: There is currently limited regulation surrounding revenue-based finance products, which could invite heavier scrutiny from policymakers as the sector continues to grow. Currently, some US states—including New York, California, Virginia, and Utah—have enacted policies that require RBF providers to clearly disclose deal terms, fees, and payment schedules. In a similar vein, BNPL products tailored toward consumers have witnessed growing regulatory scrutiny due to a lack of transparency. Increased regulation for consumer BNPL products could lead to similar requirements for the commercial BNPL industry.

Trade credit poses a barrier to BNPL adoption: The adoption of BNPL may encounter resistance from the purchaser side in commercial transactions, as these parties have become accustomed to the concept of trade credit. Some BNPL solutions still require buyers to pay in installments, which

can be more restrictive to cash flow compared to net terms, where the full payment is due at the end of a specified period. Commercial BNPL solutions will thus need to overcome the hurdle of displacing trade credit usage, provide extended terms in addition to installment payment options, or be offered in harmony with net terms.

Bank charters still a challenge for neobanks: It is often difficult for neobanks to obtain a banking license, as it is both time consuming and costly, especially within the US. This has been evidenced by the application withdrawals from [Monzo](#) and [N26](#) for the US, [Revolut](#) for Canada, and [Starling](#) for Ireland. Furthermore, neobanks that have successfully acquired licenses, such as [Varo](#), still have lengthy adjustment periods in which they need to build their balance sheets. While neobanks can earn solid spreads from originating through partner banks and tapping into the asset-backed security (ABS) market, not holding a bank charter can still expose neobanks to funding risks should the ABS market experience a slowdown. Still, the ABS market has proven to be resilient during downturns and can be stimulated by the Fed. In the wake of the GFC, for example, the Fed introduced the Term Asset-Backed Securities Loan Facility, which facilitated new issuance in the ABS market and mitigated disruption of credit to households and small businesses.



Financial services infrastructure

Overview

Financial services infrastructure companies provide the underlying technologies that can be utilized by banks, fintechs, and non-financial companies to support the facilitation of modern banking services and embedding of financial products such as payments, digital wallets, and risk management. Technologies within this segment also help legacy FIs modernize their mainframe-based infrastructures by providing upgraded solutions to core banking—back-end systems utilized by banks to perform key functions such as maintaining customer accounts, processing transactions, and updating financial records. Products offered in this segment include cloud-native architectures and core as a service, infrastructure modernization services, BaaS, APIs, and white-label API platforms.

The demand for modern back-end technology has increased as fintechs and traditional FIs seek to reduce costs, increase speed, scale, and iterate more quickly. In addition, the emergence of various new financial products and services in the past decade, many of which are nascent, digital, and interconnected, have steered banks toward building modern systems that can integrate with other platforms. As products are being digitized, fintechs are seeking out “as-a-service” companies that can power their tech stacks to achieve quick time to market, while legacy FIs are looking to upgrade their monolithic architectures to adapt. However, modernizing core banking systems has been a challenge for banks, as the rigid mainframe cores they rely on are powered by coding languages from the 1960s. Startups developing solutions in this space thus have a significant opportunity. We expect investments for modern back-end technologies to materially increase as financial products continue to evolve and more nonfinancial companies enter the sector.

Financial services infrastructure companies fall under the following subsegments:

Enterprise architecture: This category comprises startups helping FIs upgrade and manage their tech stacks, including core banking and middleware, whose legacy systems may face issues adopting new applications that are necessary for changing business, economic, and regulatory environments.

Platforms & APIs: These applications typically connect nonbank providers with banks, credit unions, and other FIs to offer banking services to end customers or access financial data. Some of these fintech companies also provide direct workflow software or white-label applications to banks.

Industry drivers

Rapidly evolving banking industry: The fintech industry is undergoing significant changes, with banking becoming digital, new products being introduced, and consumer expectations shifting. Banks are now moving toward an environment where products need to be custom tailored to consumers, data needs to be processed in real time rather than in batches, financial services are being embedded, and offerings need to be interoperable with each other. To adapt, FIs will need to adopt a next-generation core banking system that incorporates agility, DevOps, cloud computing, and APIs. A large gap remains to be filled in this market, given that 40% of FIs are still operating with technology systems designed over 40 years ago.²⁷

²⁷: [“How Blend Helps Financial Institutions Transform Their Tech Stack,” Blend, March 10, 2021.](#)



FINANCIAL SERVICES INFRASTRUCTURE

Push toward open banking: The movement toward open banking has continued to gain momentum in countries across the world, either naturally or through regulatory mandates. Within the US, the CFPB plans to introduce open banking rulemaking under section 1033 of the Consumer Financial Protection Act in 2023, with the goal of implementing its policies by 2024. This follows the EU's open banking policies, also known as the Revised Payment Services Directive (PSD2), which went into effect in 2019.²⁸ The growing standardization of API usage to access financial data gives rise to a broader ecosystem where products and services can be offered from a company directly, or through a third-party company's channels. Enterprise architectures will thus need to communicate with each other.

Monetization of APIs: API development initially surged in response to open banking regulations, and many institutions are now seeing the benefits APIs can provide to their core banking systems. Banks are now realizing cost savings by upgrading their back-end systems, and fintech's infrastructure providers are helping companies rapidly launch products and improve their tech stacks. With large banks currently allocating roughly 14% of their IT budget to APIs and 81% of banks believing APIs are a priority for business and IT functions,²⁹ it remains clear that APIs have become essential to the financial ecosystem.

Fintech expanding to all sectors: An increasing number of nonbanks are entering the fintech space, allowing financial products and services to no longer be restricted to banks. Notable examples include [Apple](#) releasing a credit card with [Goldman Sachs](#), [Walmart](#) developing in-

house neobanking and BNPL services, [Uber](#) and [Lyft](#) processing payments via [Stripe](#) and [PayPal](#), and [Shopify](#) deriving over 50% of its revenues from financial services. Platforms and APIs that enable financial services to be universally launched by companies in all industries will become increasingly critical as use cases for embedded finance expand and nonbanks look to diversify via new revenue streams.

Emphasis on data security: As data sharing becomes normalized, banks and fintechs will need to employ proper controls and security protocols to protect consumer data. This will require the encryption and/or tokenization of data that is static and in use, along with new multifactor verification methods, fraud prevention technologies, and compliance tools. Legacy systems will have to adapt accordingly in order to implement these solutions and protect against new threats.

ESG goals: As greater emphasis continues to be placed on carbon footprints, banks have been looking for opportunities to work toward their ESG goals. Switching from a physical data center to a cloud-native core is an effective way to reduce energy usage. Banks who adopt cloud-based infrastructures are able to reduce emissions by over 90% compared to their on-premise alternatives.³⁰

²⁸: "CFPB Kicks Off Personal Financial Data Rights Rulemaking," CFPB, October 27, 2022.

²⁹: "APIs in Banking: From Tech Essential to Business Priority," McKinsey Digital, Lukas Everding, et al., January 19, 2023.

³⁰: "Banking Can Harness Cloud Technology to Hit Net Zero. Here's How," World Economic Forum, Kalliopi Chioti, November 24, 2022.



FINANCIAL SERVICES INFRASTRUCTURE

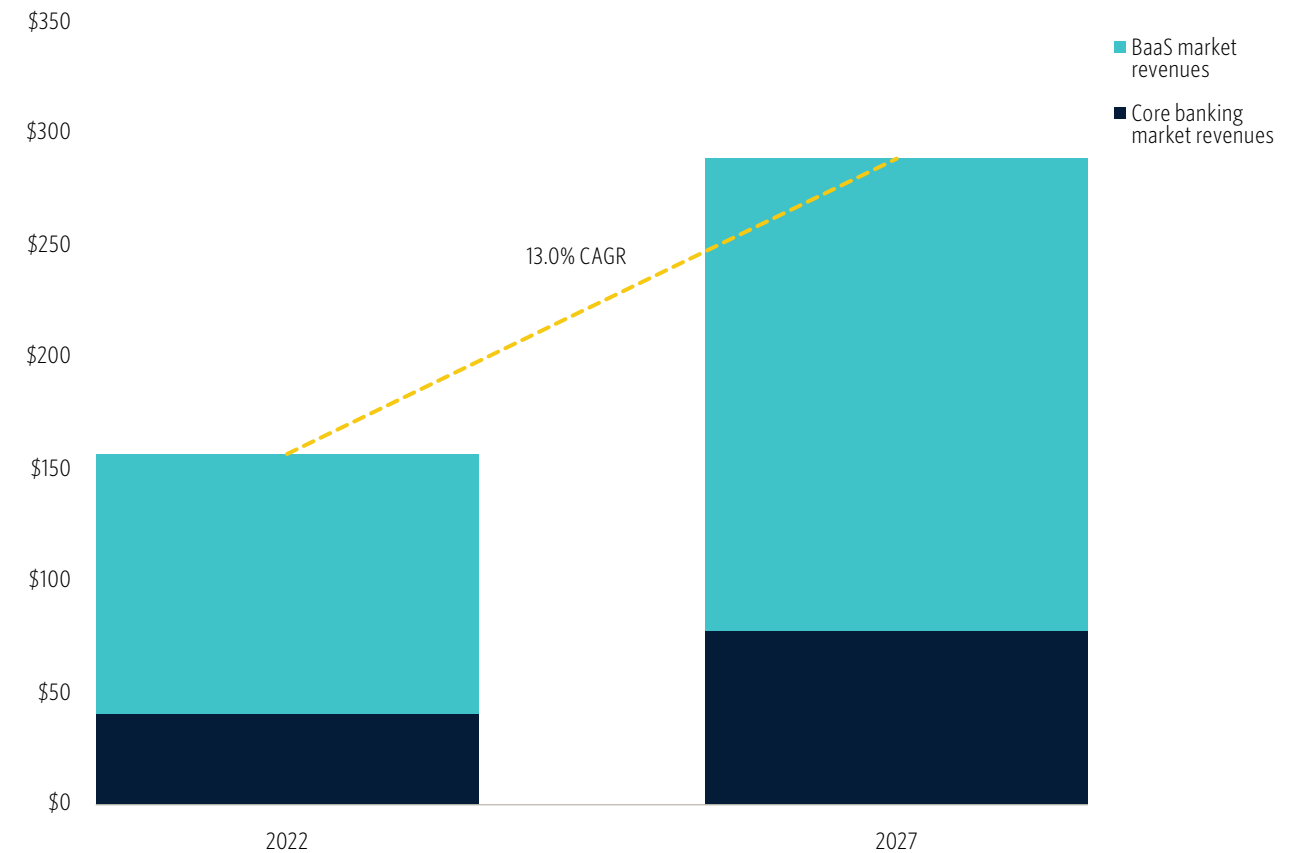
Market size

We estimate global revenues for financial services infrastructure companies reached \$156.8 billion in 2022, comprised by \$40.6 billion in revenues from the core banking market and \$116.3 billion in revenues from the BaaS market. We expect IT expenditures will continue growing as FIs prioritize innovation and integrating modern technologies with their back-end systems. Furthermore, this ongoing movement toward financial interconnectivity should create additional opportunities within the embedded finance and BaaS space. We forecast total revenues in this segment to grow at a 13.0% CAGR, reaching \$288.9 billion by 2027.

Business model

Revenues are typically derived through license and subscription fees, transaction fees, revenue share agreements, and consumption—or “pay-as-you-go”—fees. Companies offering APIs utilize the consumption fee model by charging a cost per API call.

Financial services market size estimate (\$B)*



Sources: FedFis, Fiserv, Marqeta, Adyen, Stripe, PitchBook Estimates
Geography: Global | *As of December 31, 2022



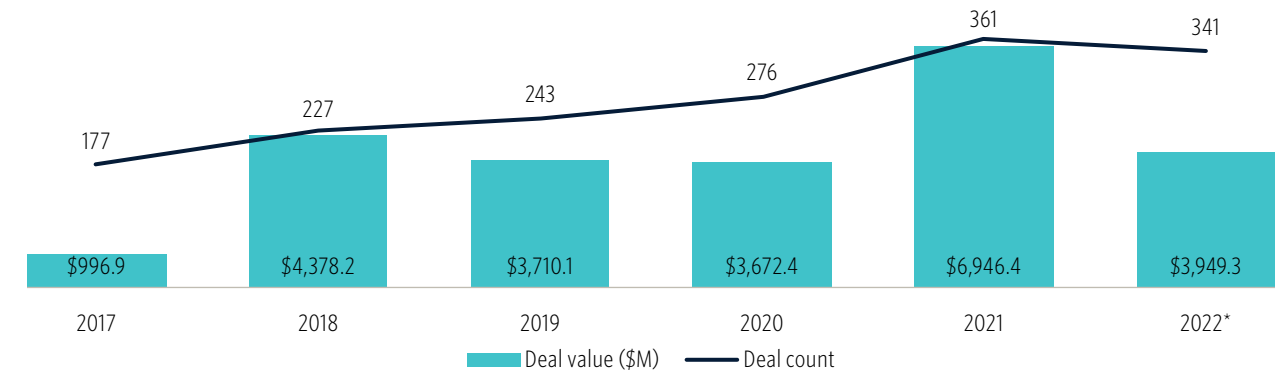
FINANCIAL SERVICES INFRASTRUCTURE

VC activity

Financial services infrastructure companies raised \$4.0 billion across 341 deals in 2022, representing 43.1% and 5.5% YoY declines from the \$7.0 billion and 361 deals in 2021, respectively. This decline was consistent in all categories, with enterprise architecture deal value down 45.3% YoY, and platforms & API deal value down 41.5% YoY. Notable deals this year include the \$271.9 million Series C from low-code application platform [Genesis](#), the \$189.2 million late-stage round from embedded finance platform [Oakbrook Finance](#), and the \$161.8 million Series D from cloud banking provider [Thought Machine](#).

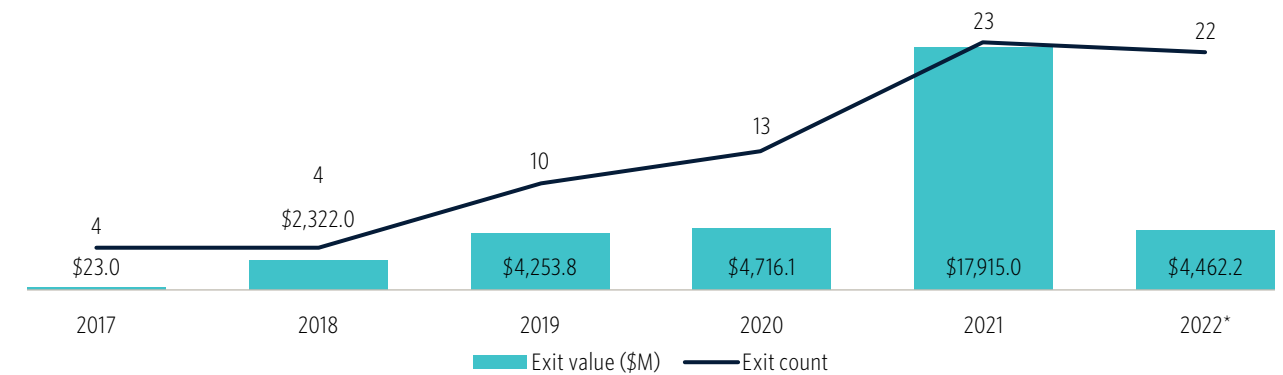
Exit value in this segment declined by 75.1% YoY to \$4.5 billion in 2022. The largest acquisition was [Visa's](#) \$2.1 billion acquisition of open banking platform [Tink](#), though other notable exits were seen from neobank [SoFi's](#) \$915.4 million acquisition of cloud banking platform [Technisys](#), incumbent [Fiserv's](#) \$672.0 million acquisition of cloud banking platform [Finxact](#), and neobank [MoneyLion's](#) \$440.0 million acquisition of embedded finance provider [Even Financial](#). These deals all took place in the first four months of 2022, while few acquisitions took place in Q4—the most notable of which was lending platform [MeridianLink's](#) \$65.0 million acquisition of mortgage software provider [OpenClose](#)—showcasing how exit activity slowed throughout the year.

Financial services infrastructure VC deal activity



Source: PitchBook | Geography: Global | *As of December 31, 2022

Financial services infrastructure VC exit activity



Source: PitchBook | Geography: Global | *As of December 31, 2022



FINANCIAL SERVICES INFRASTRUCTURE

Key financial services infrastructure VC deals over the past year*

Company	Close date (2022)	Subsegment	Stage	Deal value (\$M)	Lead investor(s)	Valuation step-up
Genesis	July 27	Enterprise architecture	Series C	\$271.9	Tiger Global Management	N/A
Oakbrook Finance	March 17	Enterprise architecture	N/A	\$189.2	N/A	N/A
Thought Machine	May 18	Enterprise architecture	Series D	\$161.8	Temasek Holdings	2.1x
Codat	June 1	Platforms & APIs	Series C	\$107.5	J.P. Morgan Growth Equity Partners	N/A
Unit	May 17	Platforms & APIs	N/A	\$99.3	Insight Partners	4.4x
Bud	October 12	Platforms & APIs	Series B	\$80.0	TDR Capital	N/A
Check	February 16	Platforms & APIs	Series C	\$75.0	Stripe	3.7x
Sharegain	February 15	Platforms & APIs	Series B	\$67.2	WestCap	N/A
Moneyhub	December 19	Platforms & APIs	N/A	\$66.7	Legal & General Group UK Pension and Assurance Fund, Lloyds Banking Group	N/A
Fidel API	April 6	Platforms & APIs	Series B	\$65.0	Bain Capital Ventures	N/A

Source: PitchBook | Geography: Global | *As of December 31, 2022



FINANCIAL SERVICES INFRASTRUCTURE

Key financial services infrastructure VC exits over the past year*

Company	Close date (2022)	Subsegment	Exit value (\$M)	Exit type	Acquirers/index	Valuation step-up
Tink	March 10	Platforms & APIs	\$2,131.1	M&A	Visa	2.8x
Technisys	March 3	Enterprise architecture	\$915.4	M&A	Merger/acquisition	N/A
Finxact	April 1	Enterprise architecture	\$672.0	M&A	Fiserv	2.1x
EVEN Financial	February 17	Platforms & APIs	\$440.0	M&A	MoneyLion	2.2x
AMTD Digital	July 15	Platforms & APIs	\$102.1	IPO	N/A	N/A
Setu	June 23	Platforms & APIs	\$70.0	Buyout/LBO	Pine Labs	N/A
OpenClose	November 3	Enterprise architecture	\$65.0	M&A	MeridianLink	N/A
StreetShares	April 1	Platforms & APIs	\$57.9	M&A	MeridianLink	N/A
YES.com	August 7	Platforms & APIs	N/A	M&A	Verimi	N/A
Finiata	May 4	Platforms & APIs	N/A	Buyout/LBO	Manta Ray Ventures	N/A

Source: PitchBook | Geography: Global | *As of December 31, 2022



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Opportunities

Modern core banking solutions: Legacy core systems are often unable to incorporate new enterprise architecture designs such as microservices and service mesh. Functions in monolithic architectures were designed to be tightly coupled, making it difficult to upgrade certain aspects of a core system without affecting the entire architecture. Fintechs such as [Finxact](#), [Skaleet](#), and [10x Banking](#) have helped banks tackle this problem by providing various approaches to updating their infrastructures; examples include targeting sections of the core to be replaced via APIs and an orchestration layer, creating a parallel system where a cloud-native core is combined with a bank's existing core, or building out a completely new core. Other companies such as [Thought Machine](#) and [nCino](#) provide cloud-native core banking platforms that enable FIs to quickly build and launch a suite of products, including banking applications, digital wallets, lending, treasury management, and other retail banking services. Notably, these offerings are not restricted solely to legacy institutions. Fintechs are also building out optimal infrastructures as highlighted by [Thought Machine's](#) client list, which includes neobank [C6](#), personal finance super app [M1](#), and digital wallet developer [Curve](#), among many others.

BaaS and embedded finance: Use cases for BaaS have rapidly expanded over the past decade, driven partly by challenger banks' need to partner with chartered banks to offer checking accounts. As the process for obtaining a bank charter is exceedingly cumbersome, neobanks often seek out a partner bank to provide underlying banking services, essentially creating the need for BaaS. Furthered with the advancement of APIs, BaaS is becoming increasingly prevalent. Banks are providing their services to neobanks, lenders, fintechs, and nonbanks as they launch embedded financial services into their products.

BaaS providers that are developing their own proprietary APIs are often regional or community banks such as [The Bancorp](#), [Cross River Bank](#), and [Green Dot](#). However, larger banks have demonstrated their willingness to enter this space if the scaling opportunities are lucrative, such as with [Goldman Sachs](#) issuing [Apple's](#) credit cards. Other startups have developed platforms that allow customers to embed services from a network of partners. This model allows businesses to avoid striking their own deals with partner banks, building out a full banking core, and expending resources on compliance matters. Fintechs such as [Bond](#), [Railsr](#), and [Unit](#) offer these BaaS models and effectively allow their customers to focus on developing the front-end customer experience. Notably, some BaaS providers, such as [Galileo](#) and [Synapse](#), can also be hired by the partners to manage their financial services and API integrations.

We continue to believe embedded finance is an untapped opportunity within the fintech industry. We have seen continued momentum in the space in Q1 2023 with the announcement of Marqeta's acquisition of white-labeled credit card platform [Power](#) for \$275.0 million, and BaaS startup [Treasury Prime's](#) \$40.0 million Series C.

Embedded products beyond banking: More white-label platforms are dissecting different areas of the tech stack and allowing users to offer products beyond standard banking services. [Stripe](#) is one of the most well-known companies offering payment facilitation (PayFac) as a service, but other startups such as [Tilled](#) have entered the space. Similarly, [Bambu](#) enables FIs and asset managers to build wealth management platforms and their own robo-advisory solutions. Fintechs such as [Fego](#) are permitting companies to embed personal financial management products such as expense tracking, credit monitoring, and budget recommendations. [Upvest](#) provides white-label investment and savings solutions, while [Adena Software](#) allows its users to launch crypto exchanges. Further,



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startups [Check](#) and [Zeal](#) offer API-based payroll as a service, which embed wage processing, tax services, and hiring management. We expect additional “as-a-service” providers to emerge as API integration becomes standard with back-end systems and as additional companies continue to explore new revenue streams through embedded finance.

Cognitive banking: The advancement of open banking unlocks an abundance of opportunities to combine AI & ML technologies with massive datasets. For banks, this means enhanced credit risk assessments, better personalized consumer products and experiences, and next-level fraud monitoring. Numerous fintechs are demonstrating the viability of combining AI and APIs, such as [Zest AI](#) and [Pagaya](#). These companies utilize AI & ML technologies to analyze thousands of data points in real time and integrate with loan origination systems via APIs. Open banking platform [Bud](#), which closed its \$80.0 million Series B in October 2022, similarly utilizes AI to transform large API-gathered datasets into actionable insights for better lending decisions, personal financial management, and carbon impacts relating to spending. Other fintechs such as [Finicity](#)—acquired by [Mastercard](#)—and [Ducit AI](#) offer a suite of APIs on their open banking platforms that incorporate AI for credit risk and underwriting models, fraud detection, AI chatbots, and payment routing.

Risks and considerations

High-friction upgrading processes: Over 85% of the core banking market within the US is captured by legacy providers [Finastra](#), [FIS](#), [Fiserv](#), [Jack Henry](#), and [CSI](#).³¹ While this leaves room for new entrants to take market share, banks still encounter several hurdles when looking to upgrade their architecture. Generally, bank IT departments are often more focused on keeping an existing system running rather than prioritizing the integration of new technologies. In addition, legacy

systems are complex and difficult to upgrade without affecting other functionalities and disrupting workflows for IT specialists and systems engineers. This can lead legacy FIs to continue acquiring their services from legacy providers.

No one-size-fits-all BaaS model: Neobanks have typically partnered with regional or community banks due to the Durbin Amendment’s cap on interchange fees for banks with over \$10 billion in assets. As a result, striking partnerships and deriving profits on already razor-thin interchange margins is a much less lucrative business model for large banks. While these legacy banks have the reputation and size to partner with larger firms, it remains difficult to conclude whether BaaS can be profitable for them. For example, [Goldman Sachs](#) has differing unit economics compared to smaller and more nimble banks, resulting from higher operating expenses and retained credit risk from partners such as [Apple](#) and [General Motors](#). The path to profitability for BaaS models is thereby likely to vary depending on the size and products offered by a bank.

Regulatory complexities: Regulatory agencies and policymakers have continued to keep a strict watch on the open banking landscape, as data sharing can expose sensitive consumer information. In the EU, PSD2 and the General Data Protection Regulation (GDPR)—which aims to minimize data sharing to the best extent possible and protect consumer privacy—have created a difficult environment to remain in compliance. Separately, within the US, the CFPB’s upcoming open banking rules will try to prevent the monopolization of an open banking infrastructure. This could create additional complexities for large market players such as [Plaid](#) and [MX](#).

³¹: “U.S. Banking KFPI Report,” FedFis, n.d., accessed February 15, 2023.



Payments

Overview

The enterprise payments segment is comprised of startups developing tools and services for facilitating B2B money transfers. Solutions in this category focus on various parts of the payments value chain, including accepting, authorizing, billing, collecting, processing, and settling. In order to address the pain points associated with B2B payments, startups are developing new payment processing products and platforms, automation services, integrations with new payment rails, cross-border payment solutions, and embeddable products. Companies that provide solutions for payroll processing, corporate expense management, and accounts receivable and accounts payable automation are included under our [CFO stack segment](#).

Historically, banks, large card networks such as [Visa](#) and [Mastercard](#), nonbank incumbents including [Western Union](#) and [MoneyGram](#), and other scaled processors such as [FIS](#) and [Global Payments](#) have dominated payment-related services. However, these incumbent services are often costly and sometimes lack flexibility. This has created an entry point for fintechs to develop modern payment solutions that enable direct and quick payment at lower costs.

Payment technologies have evolved markedly over the past decade. However, new low-friction payment experiences have been somewhat much more prevalent in the consumer space; B2B payments have material gaps to fill. Issues of speed and inflexibility arise due to the complex and often manual nature of B2B payments. Compared to consumer payments, which can be authorized in real time and settled in a matter of days, business payments are structured in a variety of

ways—such as invoices, purchase orders, and contracts—and can take months to process and settle. In addition, business payment terms are often dependent on various types of businesses, resulting in custom invoices that are unstandardized. Many B2B payments are also manual, as paper checks still account for roughly 50% of business payments.³² We believe there is significant opportunity in the enterprise payments space considering the large number of pain points still needing to be addressed. We break the enterprise payments segment into three categories:

B2B payments: Services that facilitate transactions between businesses—ACH transfers, wire transfers, and new digitized alternative forms of traditional paper checks and cash.

Cross-border & FX: Companies that facilitate cross-border transactions, including currency exchange services that allow businesses to settle with local currencies.

Payment platforms & POS: Payment-accepting services, including payment processing software and APIs, online gateways, physical card terminals, and omnichannel payments.

Industry drivers

Changing POS technology: Merchants have responded to Europay, Mastercard, and Visa (EMV) requirements and the growing consumer adoption of new payment methods and wallets by upgrading their POS technologies with systems that accept various methods of payments, including contactless payment methods such as mobile pay and QR codes.

³²: [“Why Embedded Finance Has the Potential to Reshape B2B Payments,” PYMNTS, September 16, 2022.](#)



PAYMENTS

Demand for personalization: Sellers are concentrating on customer retention as demand for more personalized experiences continues to grow. 73% of B2B buyers currently want a personalized experience similar to B2C,³³ where past orders and preferences are tracked, more relatable products are recommended, custom terms are streamlined, and one-to-one communication is enhanced.

Digitized payments: The COVID-19 pandemic has resulted in accelerated utilization of digital payment methods for both businesses and consumers. Since the pandemic, 71% of businesses have made efforts to move to more digitized payments.³⁴

E-commerce expansion: E-commerce has rapidly grown, rising from 15% of total retail sales in 2019 to 22% in 2022.³⁵ This has created the need for advanced online payment platforms that enable businesses to easily process checkouts, accept payments, track transactions, manage returns, prevent fraud, and seamlessly integrate with in-store payment systems.

Embedded finance: 88% of companies that embed financial products witness increased consumer engagement.³⁶ As a result, many organizations have begun enhancing consumer payment experiences. This has resulted in the development of new technologies that can seamlessly process consumer payments at the exact moment of the transaction.

Increasingly interconnected economy: The growing level of products and services produced and sold on a global scale in addition to the increasing number of businesses expanding across borders has created additional need for advanced cross-border payment technologies.

Reduced fees: Merchants have started switching to lower-cost payment processing services, which are easier to utilize than the highly institutionalized traditional payment processing methods.

Market size

We estimate the global volume of B2B payments reached \$135.0 trillion in 2022, which includes transfers made by checks, bank wires, ACH, real-time payment (RTP) networks, and physical and virtual cards. We forecast volumes will reach \$187.8 trillion in 2027, representing a CAGR of 6.8%.

Business model

Various business types exist within the payments segment, including payment facilitators, merchant acquirers, card issuers, payment infrastructure platforms, institutional foreign exchanges, and international money transfer providers. Typically, these payment companies earn

³³: ["The Need for B2B Personalization is Growing: What You Should Be Doing to Create an Unforgettable Account Experience," Hushly, James Kessinger, June 23, 2022.](#)

³⁴: ["Reimagining Business Payments: How Digital Lockboxes Unlock AR Efficiencies," PYMNTS, January 2022.](#)

³⁵: ["Here's Why E-Commerce Growth Can Stay Stronger for Longer," Morgan Stanley, June 14, 2022.](#)

³⁶: ["Embedded Finance," Plaid, Accenture, 2021.](#)



PAYMENTS

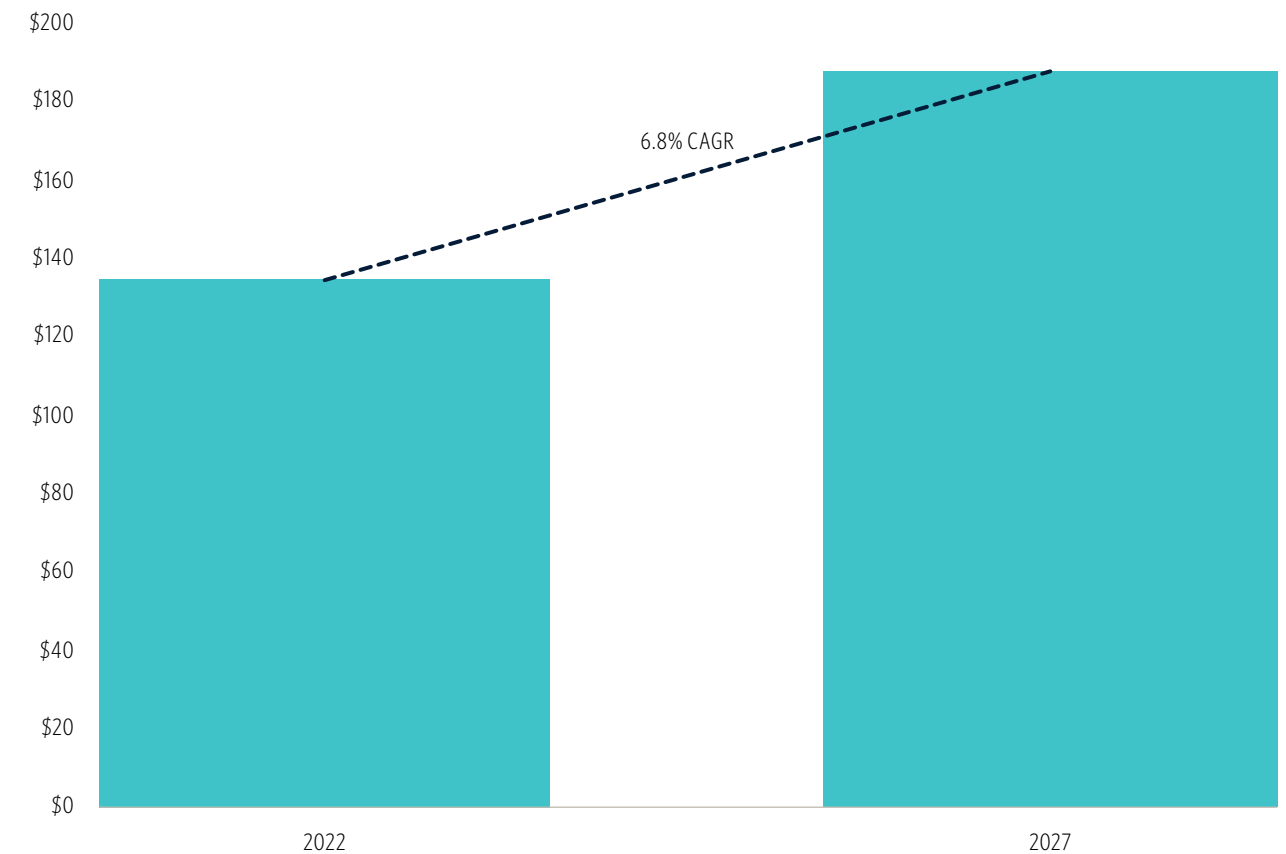
revenue through usage-based fees, which are charged as a fixed amount and/or percentage of a transaction. The industry standard for this fee ranges from 2% to 3%. Other revenue streams can flow from sales of POS hardware and software, charges from API calls, and recurring fees from platform subscriptions.

VC activity

VC activity was the highest for B2B payments compared to any other enterprise fintech segment. The segment raised \$9.5 billion across 345 deals in 2022, representing 37.8% and 29.6% YoY declines from the \$15.2 billion and 490 deals in 2021, respectively. Cross border and FX companies saw the largest decline, with deal value declining 60.0% YoY. The B2B payments and payment platforms & POS categories followed with 40.3% and 34.1% YoY declines in deal value, respectively. There were several large deals in this segment, with the most notable including [Stripe](#) competitor [Checkout.com](#)'s \$1.0 billion Series D, payments platform [SumUp](#)'s \$602.9 million late-stage round, aggregated payment solutions provider [SaltPay](#)'s \$500.0 million Series C, and service management software [ServiceTitan](#)'s \$365.0 million Series H.

Exit activity declined significantly in this segment, with exit value down 95.0% YoY in 2022. Exits primarily consisted of acquisitions, with the largest belonging to payment processing company [Shift4 Payments](#)' \$575.0 million acquisition of payment service provider [Finaro](#), global payments firm [Paysafe](#)'s \$441.0 million acquisition of secure payments platform [SafetyPay](#), cloud accounting platform [BlackLine](#)'s \$240.0 million acquisition of multinational billing provider [FourQ](#), and India-based payments company [Razorpay](#)'s \$200.0 million acquisition of payment POS provider [Ezetap](#).

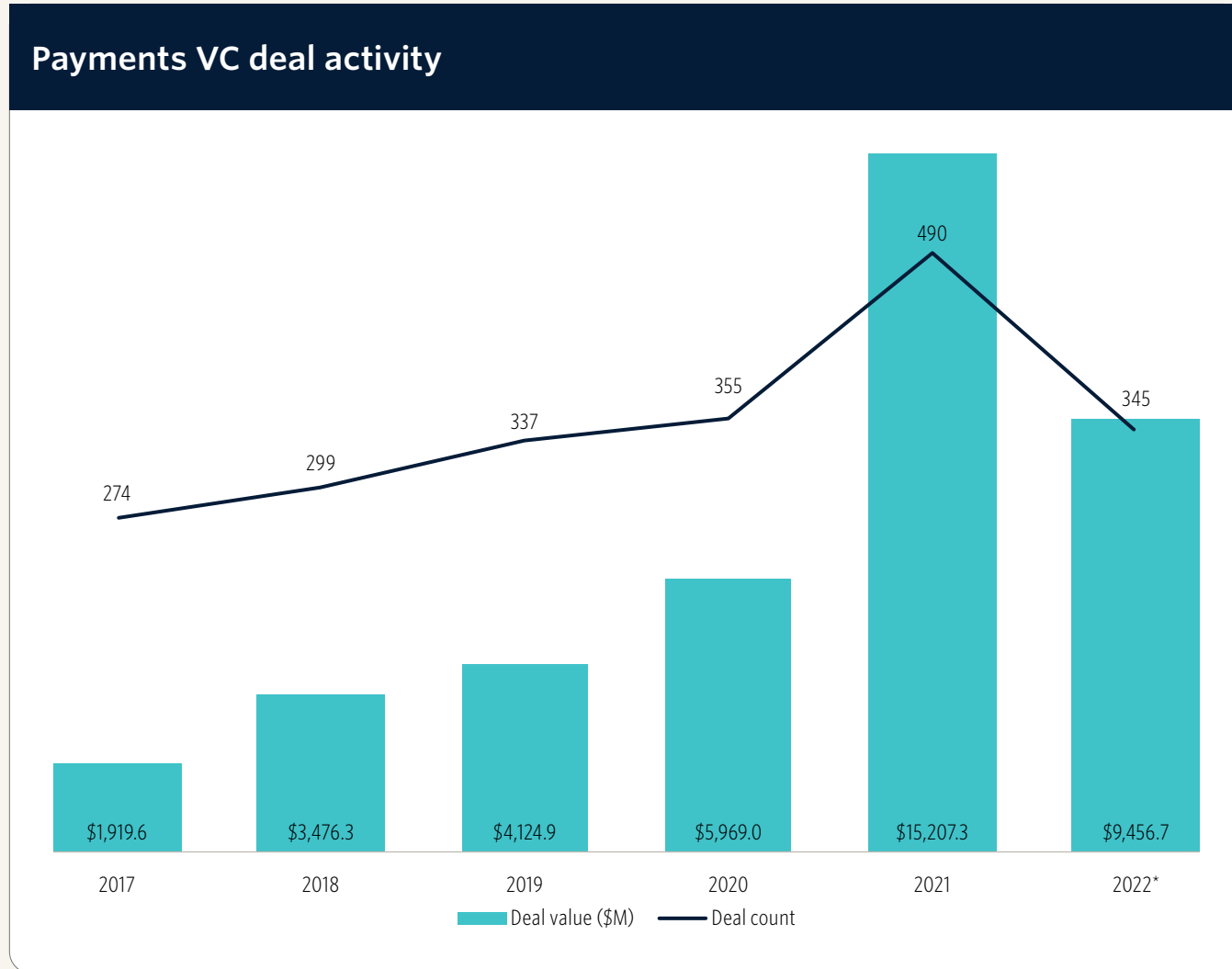
Payments market size estimate (\$B)*



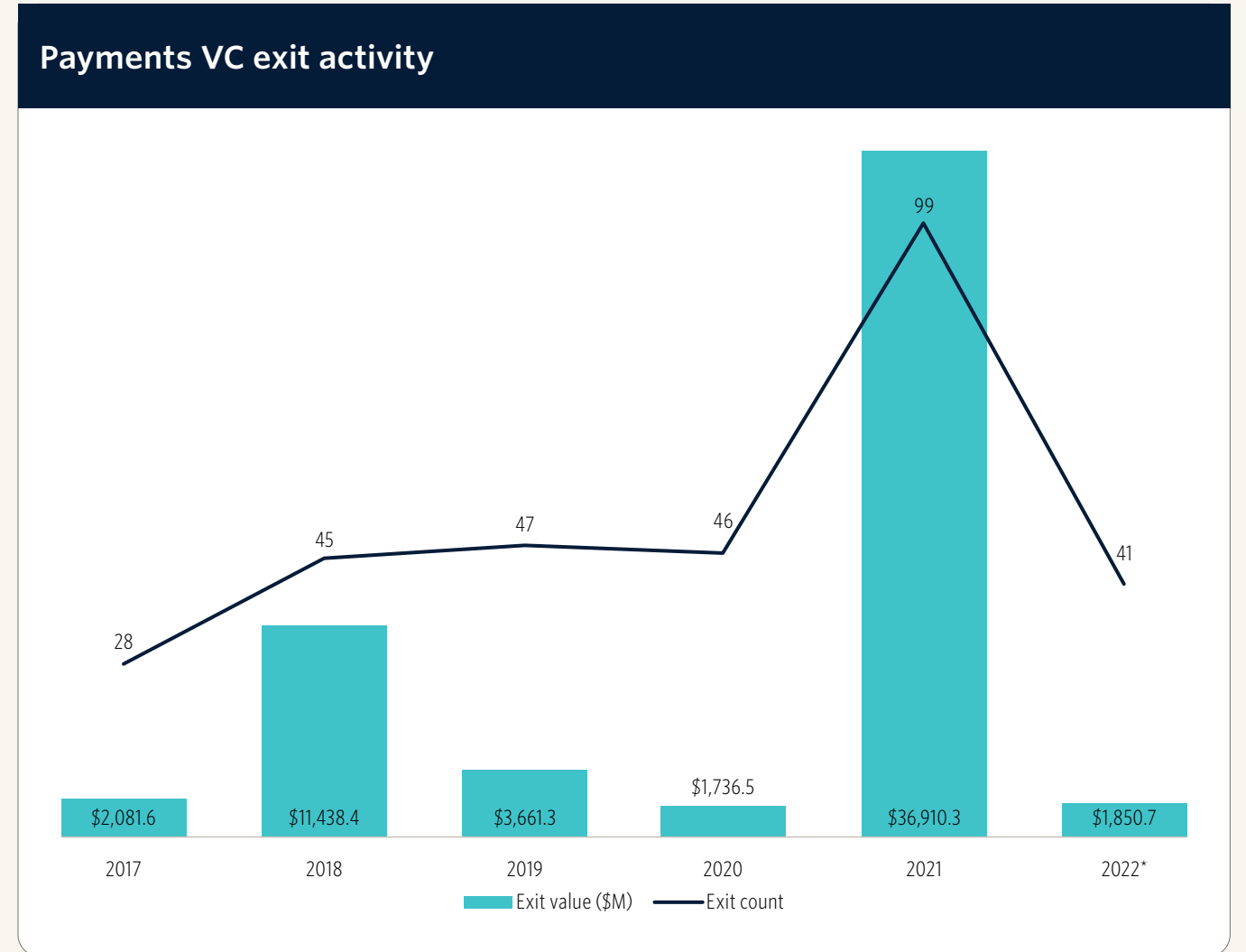
Sources: Visa, Mastercard, Credit Suisse, PitchBook Estimates
Geography: Global | *As of December 31, 2022



PAYMENTS



Source: PitchBook | Geography: Global | *As of December 31, 2022



Source: PitchBook | Geography: Global | *As of December 31, 2022



PAYMENTS

Key payments VC deals over the past year*

Company	Close date (2022)	Subsegment	Stage	Deal value (\$M)	Lead investor(s)	Valuation step-up
Checkout.com	January 12	Payment platforms & POS	Series D	\$1,000.0	N/A	2.6x
SumUp	July 28	Payment platforms & POS	N/A	\$602.9	Bain Capital Tech Opportunities	N/A
SaltPay	January 1	Payment platforms & POS	Series C	\$500.0	N/A	N/A
ServiceTitan	November 22	Payment platforms & POS	Series H	\$365.0	N/A	0.7x
Bolt Financial	February 9	Payment platforms & POS	Series E	\$355.0	BlackRock	1.8x
GoCardless	May 9	Payment platforms & POS	Series G	\$312.0	Permira	N/A
Xendit	September 22	Payment platforms & POS	Series D	\$300.0	Coatue Management, Insight Partners	N/A
SpotOn	May 18	Payment platforms & POS	Series F	\$300.0	Dragoneer Investment Group	1.0x
Flutterwave	January 31	Payment platforms & POS	Series D	\$250.0	B Capital Group	2.6x
Paddle	April 28	Payment platforms & POS	Series D	\$209.0	Kohlberg Kravis Roberts	N/A

Source: PitchBook | Geography: Global | *As of December 31, 2022



PAYMENTS

Key payments VC exits over the past year*

Company	Close date (2022)	Subsegment	Exit value (\$M)	Exit type	Acquirers/index	Valuation step-up
Finaro	March 1	Payment platforms & POS	\$575.0	M&A	Shift4 Payments	N/A
SafetyPay	January 31	B2B payments	\$441.0	M&A	Paysafe Group	4.3x
FourQ	January 26	B2B payments	\$240.0	M&A	BlackLine	N/A
Ezetap	August 16	Payment platforms & POS	\$200.0	M&A	N/A	N/A
Azimo	April 4	B2B payments	\$175.0	M&A	Papaya Global	N/A
The Giving Block	February 28	Payment platforms & POS	\$106.9	M&A	Shift4 Payments	N/A
Payswiff	February 18	Payment platforms & POS	\$60.1	M&A	Cholamandalam Investment and Finance Company	1.9x
Involtum	January 19	Payment platforms & POS	\$31.2	M&A	Ease2pay	N/A
UPoS	January 31	Payment platforms & POS	\$10.1	M&A	Infibeam Avenues	3.0x
SenangPay	July 14	Payment platforms & POS	\$7.5	Buyout/LBO	Apis Partners, Doku	0.6x

Source: PitchBook | Geography: Global | *As of December 31, 2022



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Opportunities

Aggregated and omni-commerce payment systems: Consumers have benefited from new payment methods that have arisen with the ongoing shift toward digital payments and the emergence of new money transfer methods. At the same time, however, this has resulted in merchants and businesses requiring more advanced payment platforms that can accept transactions across a multitude of payment methods, rails, and currencies at any given POS. Fintechs are helping merchants navigate these issues in various ways, with companies such as [SpotOn](#), [Flutterwave](#), [SaltPay](#), and [Till Payments](#) providing platforms that can accept a range of payment forms—including debit and credit cards, digital wallets, cryptocurrencies, BNPL, and payment links sent to emails and SMS—in multiple currencies, both in-person and online. Other startups are concentrating on providing these aggregated payment services for niche industries. [Squire](#) provides a range of payment services and automated management solutions for barbershops, and [Dutchie](#) provides multi-channel POS payment processing capabilities for cannabis dispensaries.

Streamlined B2B checkout and invoicing: The complex processes associated with B2B payments—including the negotiation of net terms, customization of contract provisions, and manual billing and invoicing procedures—can result in inefficiencies and cash flow constraints for businesses. In addition, these daunting purchasing and checkout experiences can result in low customer retention, as enterprise buyers are increasingly seeking out simplified purchasing experiences similar to those in B2C. Fintechs such as [Balance](#) and [TreviPay](#) are solving these

constraints by developing API integrations that streamline the online checkout and invoicing process for commercial customers, in addition to allowing their users to accept various payment forms, offer trade credit, receive payment instantly, and track receivables. Similarly, startups such as [GoCardless](#) automate the collection and reconciliation of invoices, helping businesses reduce operational costs, improve cashflow, and reduce payment failures.

Cross-border payment solutions: Cross-border transactions remain complex and opaque. With e-commerce continuing to expand and a growing number of businesses increasing operations across borders, opportunities to overhaul cross-border payments have deepened. Currently, many of these transactions are completed with the help of multiple banks, making international transfers slow and non-transparent. Further, the processing of these transfers is often still manual and must consider the regulatory landscape surrounding multiple geographies.

Startups such as [Thunes](#) and [Veem](#) are solving these issues. [Thunes](#) acts as a single transfer hub and allows its users to integrate via API into a global payment network comprised of over 130 countries. This enables global money transfers between various bank accounts and digital wallets, quick or instant cross-border payout options, real-time tracking, and high visibility over FX rates and fees. [Thunes](#) is currently utilized by leading payment players and fintechs, such as [PayPal](#), [Western Union](#), [MoneyGram](#), [Grab](#), [M-PESA](#), and [Revolut](#). Likewise, [Veem](#) offers a money transfer platform that integrates directly into a business' accounting systems, allowing users to transfer payments in real time in over 100 countries, create multi-currency invoices, automate payment reconciliation, lock exchange rates for up to 92 days, and adhere to compliance regulations.



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Embedded payments infrastructure: Growing consumer demand for integrated experiences and increasing needs of businesses for flexible omnichannel payments have created significant opportunities for fintechs that can quickly enable embedded payments. However, developing an integrated plug-and-play approach for embedding payment services requires a strong infrastructure that can support a variety of payment options, card issuing, KYC and compliance processes, and currency conversions.

Fintechs such as [Rapyd](#) are providing the necessary infrastructure and APIs to empower businesses to swiftly integrate payment services, money transfers, and card issuing into their own platforms. By further layering on services such as identity verification, fraud monitoring, global licensing, and compliance management, [Rapyd](#)'s platform allows third parties looking to embed payment services to focus on core business tasks and achieve quicker time to market. Similarly, [Qolo](#) offers a single API platform that businesses can use to build out an omnichannel payments platform, accept multiple payment options, and issue physical and virtual cards. Startups such as [Paddle](#) are providing embedded payments infrastructure for SaaS companies, allowing subscription-based businesses to build out seamless checkout experiences, implement flexible billing options, process various payments, and develop reporting insights, all while remaining compliant with payment-related regulations.

Real-time payments: New RTP rails are coming online, and demand for instant transfers continues to rise; adoption has been slow, however, leaving much to be explored. For example, while [The Clearing House](#)'s RTP network has increased its volume of transactions by 42% YoY in 2022,

total transactions for the year only stood at 60.4 million,³⁷ or 0.8% of the ACH's 2022 transaction volume.³⁸ Still, the upcoming launch of the Fed's 24/7 RTP network FedNow in 2023, and the growing usage of EU instant payment networks such as Target Instant Payments Settlement, reinforces opportunities in real-time payments. In our view, there is a clear use case for utilizing RTP options, as businesses can benefit from greater cash flow, reduced risk of payment failure, and simpler invoicing processes. We expect that more fintechs will partner with banks and offer RTP options to enhance their suite of offerings to both businesses and consumers. A notable example includes enterprise neobank [NorthOne](#), which recently announced a partnership with [The Bancorp](#) in January 2023 to offer RTP services via [The Clearing House](#)'s RTP service.

Risks and considerations

Complex value chain: While the complexity of B2B payments creates opportunities for startups to address, challenges remain in finding a single end-to-end solution that can address and scale with the ever-changing needs of a business. For instance, large organizations that transact in many industries and geographies may need to integrate multiple solutions that can enable omnichannel payments, various currency transactions, cross-border transfers, and invoice automation, while streamlining payments across various methods such as wire transfers, ACH, RTP, and issued cards.

Highly concentrated industry: The payments industry has existed for centuries and includes dominant players such as [Visa](#), [Mastercard](#), and [PayPal](#). These leaders have established global networks that new players will have a difficult time replicating in terms of reliability and scale.

³⁷: "RTP," [The Clearing House](#), n.d., accessed February 15, 2023.

³⁸: "ACH Network Volume and Value Statistics," [Nacha](#), 2022.



PAYMENTS

Furthermore, a multitude of prominent fintechs such as [Adyen](#), [Stripe](#), [Block](#), and [Toast](#) have been addressing gaps in the payments space for over a decade. Many of these fintechs have partnerships with well-known brands, such as [Stripe's](#) growing partnership with Amazon. As a result, new entrants into the space could encounter high barriers to success.

New payment rail nuances: The emergence of new and faster payment rails brings two major nuances for consideration. First, while RTP networks can provide greater convenience and eliminate cash flow hiccups, they have not found a suitable way to address fraud. RTP payments are irreversible and currently have little protections in place for disputing transactions once they are sent, making it an alluring avenue for fraud. This can be evidenced by the near 300% increase in fraud losses when the UK first launched its Faster Payments Service in 2008.³⁹ As most existing payment rails have provisions in place to protect consumers against fraud, this could slow the rate of adoption of RTP. For example, consumers that facilitate payments using credit and debit cards are limited to a \$50 liability from fraudulent charges due to the Fair Credit Billing Act, while most card networks implement a zero-liability policy for unauthorized charges. Further, transfers sent via ACH are revocable and have limited maximum liabilities under Regulation E.⁴⁰

Secondly, the adoption of faster payment rails could challenge the business models of legacy providers, which rely heavily on transaction-based fees. For example, banks and card networks benefit significantly from card issuing, as it generates substantial revenues in the form of interchange. Faster payment methods could lead to wider adoption of models such as account-to-account (A2A) payments, or direct transfers between bank accounts. This has notably been viewed as a threat to market leaders such as [Visa](#), who previously threatened [PayPal](#) with ramped-up competition in response to [PayPal's](#) strategy to promote bank account payments over card payments. Additionally, globally emerging models that utilize QR codes for payments are piling on further pressure, as these models typically charge little-to-no fees to merchants.

Scale required due to thin margins: The majority of payment processing fees, which can range from 75% to 95% of interchange, are typically allocated to issuing banks and card networks. As total interchange fees range between roughly 2% to 3% per transaction, this leaves only a small share of processing fees for merchant acquirers and other service providers. As a result, companies that derive revenues from processing fees will likely need to achieve significant scale and/or expand into ancillary revenue streams to expand margins and grow profitability.

³⁹: "Payments Modernization: Balancing the Risks and Rewards," Deloitte, n.d., accessed February 15, 2023.

⁴⁰: "Using Credit Cards and Disputing Charges," Federal Trade Commission, May 2022.



Regtech

Overview

Regtech seeks to improve how businesses handle compliance. Companies offering regtech products often focus on automating regulatory processes such as onboarding and reporting, monitoring fraud, managing enterprise risk, and implementing identity controls. Often, regtech companies incorporate technologies such as cloud architecture, AI & ML, and APIs to streamline approaches to navigating the exceptionally dynamic regulatory landscape. As the financial industry is one of the most regulated industries in the world, banks and FIs allocate a material number of resources to personnel, legal expenses, consulting, accounting and auditing, and data processing to remain compliant. As a result, regtech products can quickly add value to FIs, which currently spend a combined \$274 billion on compliance costs annually.⁴¹

The utility of regtech products can be largely attributed to the deluge in regulatory policies that went into effect following the GFC. Most banks addressed these demanding policies with manual processes that have either remained in place or seldomly improved over the last decade. Outdated legacy systems that many FIs operate on have made it difficult for banks to upgrade to new technologies that help automate compliance procedures. Furthermore, the number of bad actors appears to have risen recently in correlation with slowing economic growth and the rise of digital banking. Regtech has evolved from a product that solely automates compliance tasks to one that also helps to create insight out of data and inform decisions surrounding risk. Currently, 50% of firms have either implemented a regtech solution fully or partially, representing a 38% increase from 2021.⁴² We expect this number will continue to grow, given the escalating regulatory scrutiny within the fintech sector and the increasing focus on data security.

⁴¹: "Explore the True Cost of Financial Crime Compliance Worldwide," LexisNexis, n.d., accessed February 15, 2022.

⁴²: "Fintech, RegTech, and the Role of Compliance in 2023," Thomson Reuters, Mike Cowan, Susannah Hammond and Helen Camfield, 2022.

We break out the regtech segment into three categories:

Crime surveillance & fraud detection: These companies provide software applications and services that help prevent firms' loss of capital due to theft, scams, and fraud.

Regulatory affairs and compliance: These companies utilize automation to assist FIs in matters regarding local, state, and federal regulators and other regulatory bodies. This includes KYC, AML, and/or compliance reporting.

Risk management: These companies identify, evaluate, and prioritize financial risks such as market, credit, volatility, liquidity, or legal risks.

Industry drivers

Increasing fraud: Online crime and losses from fraud have been closely correlated to periods of economic hardship.⁴³ Much of this fraudulent activity can be attributed to first-party fraud, which occurs when a party deliberately misrepresents their identity or presents false information. As difficult macroeconomic conditions continue to impact consumer wealth and discretionary income, a higher number of consumers could intentionally engage in fraudulent schemes for the purpose of financial gain.

⁴³: "Global Recession Fraud 2022: How Economic Downturns Impact Crime & What to Do About It," Seon, Gergo Varga, August 31, 2022.



REGTECH

Demanding sanctions amid heightened geopolitical risk: The onset of Russia's invasion of Ukraine brought forth a myriad of sanctions, requiring organizations across the globe to ensure their KYC, AML, and risk management processes were tightly knit. Many of these sanctions were issued overnight, requiring organizations to comply in real time and closely monitor any future developments. However, this has been a challenging development for banks as their processes for complying with sanctions are often manual and paper-based. FIs are likely to seek out solutions that can improve both the speed and accuracy of their KYC and AML abilities—especially with further geopolitical risk ahead—as over \$403 billion in penalties have racked up for KYC and AML violations since 2008.⁴⁴ Additionally, 48% of companies are now increasing investments in cybersecurity or data privacy in response to geopolitical conflict.⁴⁵

Evolving fraud and cybercrime: Though technologies have gotten better at preventing fraudulent activity, fraud has also become more sophisticated over time and harder to mitigate; phishing scams have increased in scale and approach, advanced hacking methods have led to higher account takeovers and data leaks, and new technologies such as generative AI and ChatGPT have blurred the lines between deception and reality. As a result, 91% of FIs have currently reported a YoY increase in fraud, and 71% of institutions have increased spending to prevent fraud.⁴⁶

Dynamic and complex regulatory environment: A slew of regulatory standards have been developed for FIs, including the Sarbanes-Oxley Act (SOX), Gramm-Leach-Bliley Act, GDPR, PSD2, Markets in Financial Instruments Directive II (MiFID II), Systems and Organization Controls 2 (SOC 2), New York State Department of Financial Services Cyber Security Regulation (23 NYCRR 500),

Payment Card Industry Data Security Standard (PCI DSS), California Consumer Privacy Act (CCPA), and more. This abundance of compliance standards coupled with the ever-changing regulatory landscape has created demand for solutions that can support various compliance frameworks and keep up with regulators.

High-consequence policies: Policymakers are reacting to increasing fraud by issuing stricter laws surrounding KYC and AML. For example, the Anti Money Laundering Act created several consequential provisions for AML compliance within the US. The legislation, which became law in 2021, contains fifty-six sections and expands on the Bank Secrecy Act, increases penalties for repeat violators, creates better protections for whistleblowers, and requires the identity of businesses' beneficial owners to be submitted to a database overseen by the Financial Crimes Enforcement Network (FinCEN). Notably, this law also aims to encourage technological innovation, and requires FinCEN to appoint innovation officers.⁴⁷

Market size

We estimate global spend from FIs on regulatory compliance—including expenditures relating to data protection and security, compliance, and identity and access management—reached \$55.0 billion in 2022. We expect these expenditures will rise as new regulations are imposed and further avenues for fraudulent activity develop. We forecast the regtech market to grow at a 31.6% CAGR, reaching \$161.6 billion by 2027.

⁴⁴: ["All Bark and No Bite: The Political Economy of Bank Fines in Anglo-America," University of Birmingham, Huw Macartney and Paola Calcagno, June 27, 2019.](#)

⁴⁵: ["PwC's 26th Annual Global CEO Survey," PWC, January 16, 2023.](#)

⁴⁶: ["Alloy's Annual State of Fraud Benchmark Report," Alloy, 2022.](#)

⁴⁷: ["The Anti-Money Laundering Act of 2020: Congress Enacts the Most Sweeping AML Legislation Since Passage of the USA PATRIOT Act," GreenburgTraurig, January 19, 2021.](#)



REGTECH

Business model

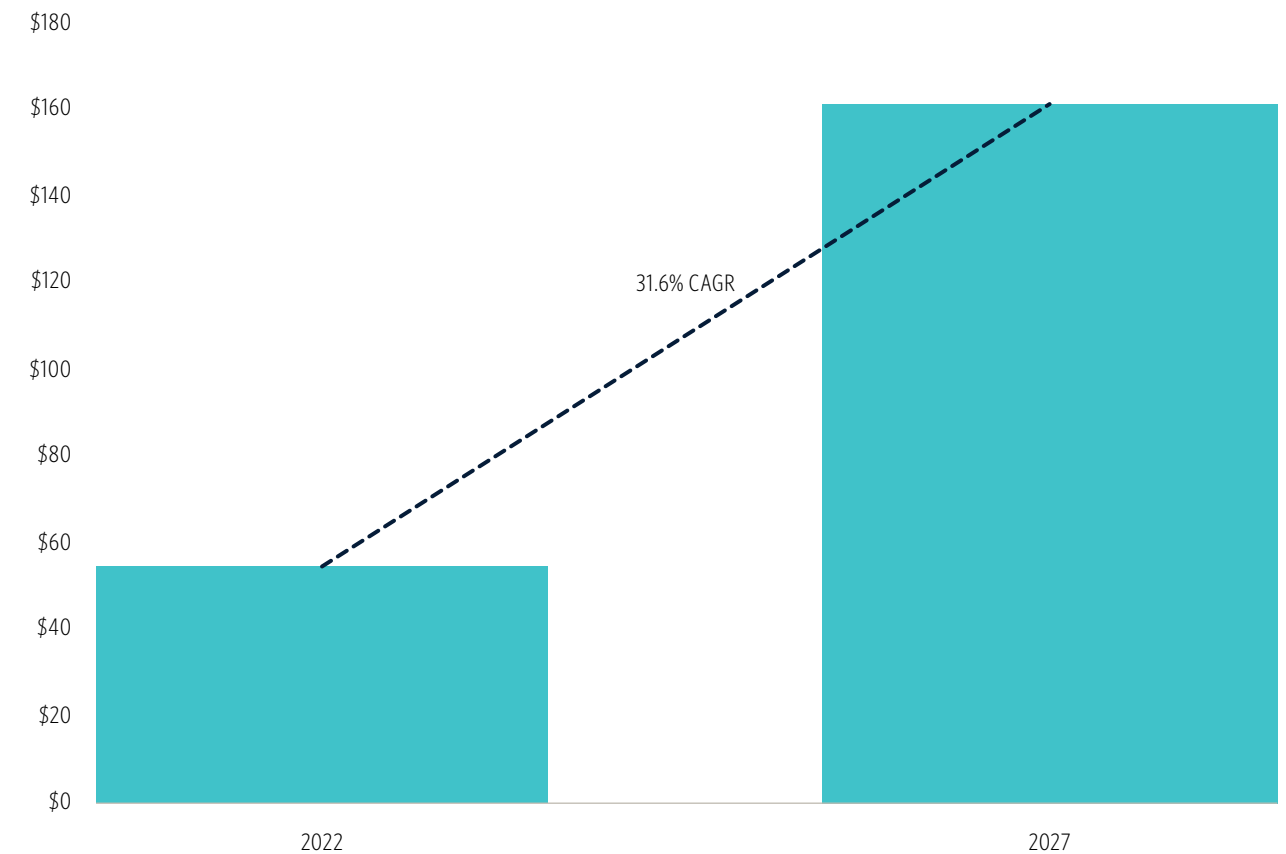
Regtech companies primarily offer their solutions via a usage-based SaaS model and collect revenues through monthly or annual subscription fees, as well as on-premise offerings.

VC activity

Regtech companies raised \$1.6 billion across 114 deals in 2022, representing 57.6% and 20.3% YoY declines from \$3.7 billion and 143 deals in 2021, respectively. These declines were driven by the regulatory affairs & compliance and crime surveillance & fraud detection subsegments, which saw deal value drop by 64.2% and 62.6% YoY, respectively. The risk management subsegment only saw deal value decline by 2.0% YoY, though this category continues to make up the smallest percentage of total regtech VC funding. The largest deals for the year include blockchain compliance firm [Chainalysis](#)' \$170.0 million Series F, AML & KYC software provider [Alloy](#)'s \$152.0 million Series C, fraud detection company [TRM Labs](#)' \$130.0 million Series B2, and risk management and research provider [Tegus](#)' \$110.6 million Series B1.

Exit activity has been sparse in this segment and declined 85.7% YoY to \$253.6 million in 2022. Notable exits in 2022 include security operations provider [ReliaQuest](#)'s \$160.0 million LBO of cybersecurity startup [Digital Shadows](#), data analysis platform [Perfios](#)' \$78.9 million acquisition of identity verification platform [Karza Technologies](#), and cross-border payments hub [Thunes](#)' \$14.7 million acquisition of crime prevention startup [Tookitaki](#).

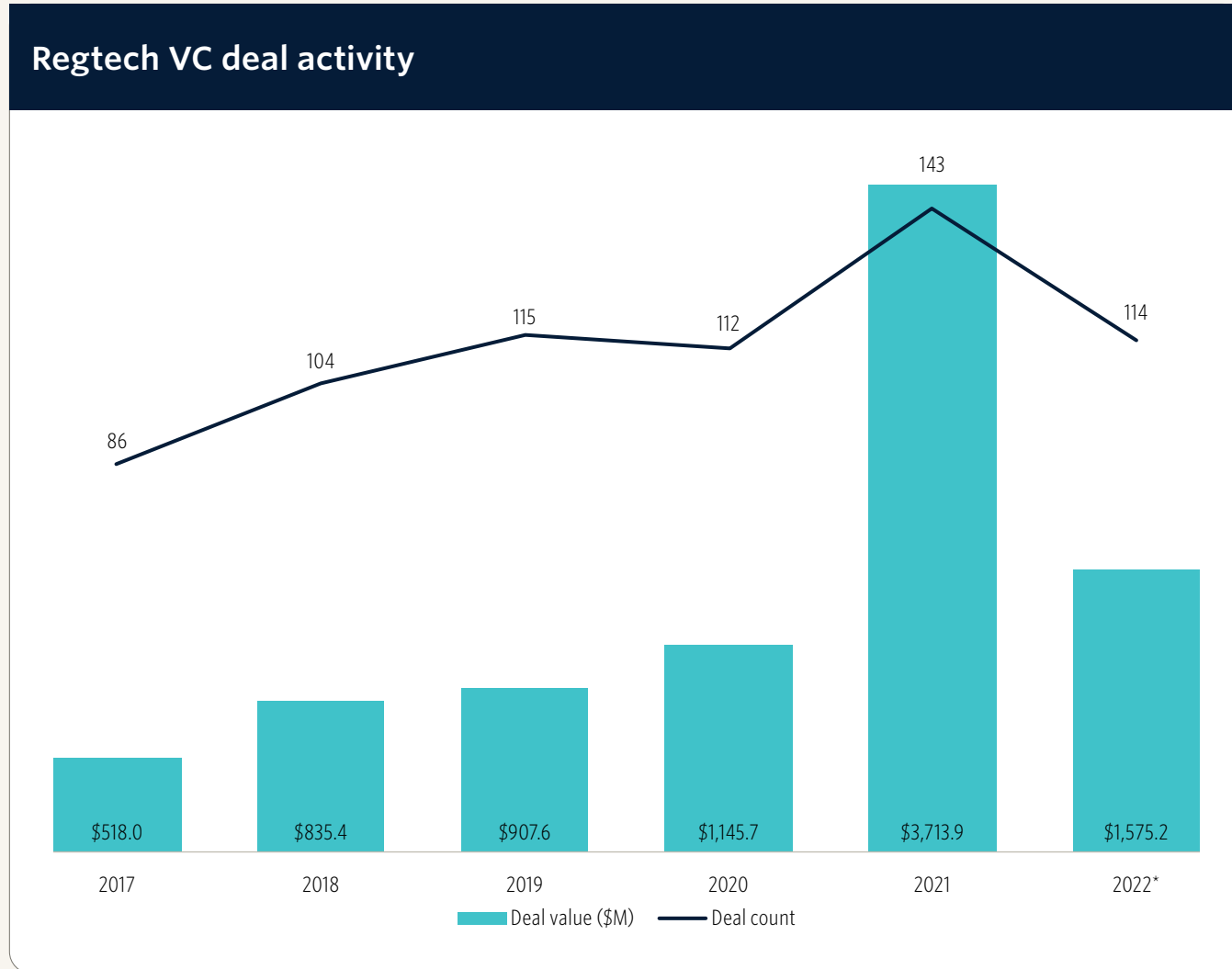
Regtech market size estimate (\$B)*



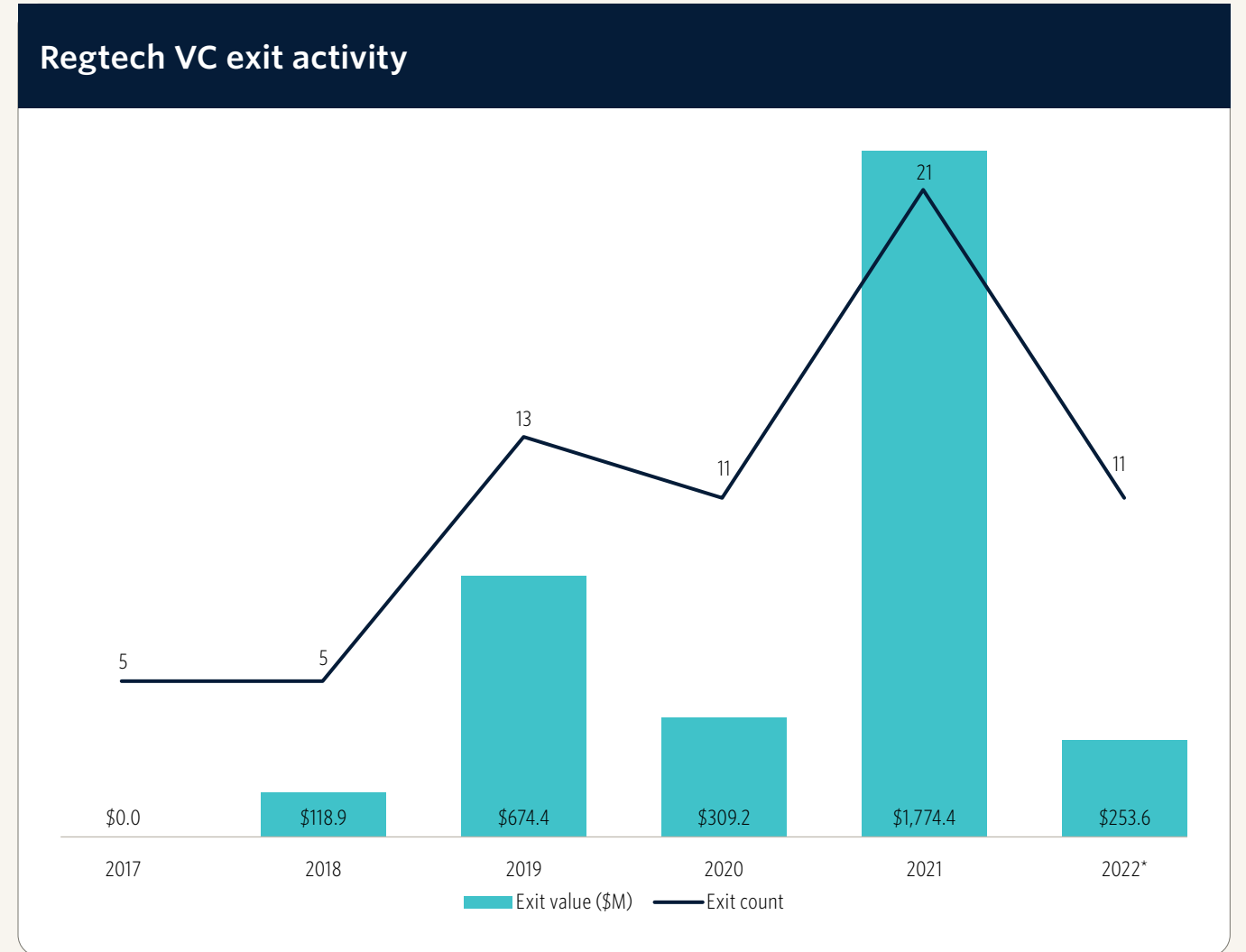
Sources: McKinsey, PitchBook Estimates | Geography: Global | *As of December 31, 2022



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Source: PitchBook | Geography: Global | *As of December 31, 2022



Source: PitchBook | Geography: Global | *As of December 31, 2022



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Key regtech VC deals over the past year*

Company	Close date (2022)	Subsegment	Stage	Deal value (\$M)	Lead investor(s)	Valuation step-up
Chainalysis	April 28	Crime surveillance & fraud detection	Series F	\$170.0	GIC (Singapore), Viserion Investment	2.0x
Alloy	September 1	Regulatory affairs and compliance	Series C	\$152.0	Avenir Growth Capital, Lightspeed Venture Partners	6.4x
TRM Labs	November 11	Crime surveillance & fraud detection	Series B2	\$130.0	The Goldman Sachs Group, Thoma Bravo, Tiger Global Management	9.8x
Tegus	September 27	Risk management	Series B1	\$110.6	N/A	1.0x
Veriff	January 24	Regulatory affairs and compliance	Series C	\$100.0	Alkeon Capital Management, Tiger Global Management	N/A
Access Fintech	September 22	Risk management	Series C	\$75.3	Dawn Capital, WestCap	2.7x
Stable	May 25	Risk management	Series B	\$60.0	Acrew Capital, Greycroft	N/A
Truework	May 1	Regulatory affairs and compliance	Series C	\$60.0	G Squared	2.5x
Middesk	April 13	Regulatory affairs and compliance	Series B	\$57.0	Canapi Ventures, Insight Partners	12.9x
Sardine	September 20	Crime surveillance & fraud detection	Series B	\$51.5	Andreessen Horowitz	5.6x

Source: PitchBook | Geography: Global | *As of December 31, 2022



REGTECH

Key regtech VC exits over the past year*

Company	Close date (2022)	Subsegment	Exit value (\$M)	Exit type	Acquirers/index	Valuation step-up
Digital Shadows	July 23	Risk management	\$160.0	Buyout/LBO	FTV Capital, Kohlberg Kravis Roberts, ReliaQuest, Ten Eleven Ventures	N/A
Karza Technologies	March 16	Crime surveillance & fraud detection	\$78.9	M&A	Perfios	14.2x
Tookitaki	April 19	Regulatory affairs and compliance	\$14.7	M&A	Thunes	N/A
Syntizen	July 19	Regulatory affairs and compliance	N/A	M&A	M2P Fintech	N/A
Jewel Paymentech	July 18	Risk management	N/A	M&A	ADVANCE.AI	N/A
Qentnis	May 31	Risk management	N/A	M&A	Consumer Edge	N/A
Sentinels AI	April 25	Regulatory affairs and compliance	N/A	Buyout/LBO	ACE & Company, Astorg (Paris), Bridgepoint Advisers, Fenargo, SilverTree Equity	N/A
Invoid	January 19	Regulatory affairs and compliance	N/A	M&A	Credenc	N/A
kompany	March 1	Regulatory affairs and compliance	N/A	M&A	Moody's Analytics	N/A
b.fine	November 16	Regulatory affairs and compliance	N/A	Buyout/LBO	Nordic Capital, Regnology	N/A

Source: PitchBook | Geography: Global | *As of December 31, 2022



REGTECH

Opportunities

Fraud prevention and greater AML solutions: Banks spend billions a year for less than a 1% success rate in AML. Specifically, money laundered globally can reach amounts up to \$3 trillion,⁴⁸ yet criminal enterprises are still able to retain 99.95% of the proceeds pertaining to their crimes.⁴⁹ With severe regulatory fines creating additional costs for banks, it remains clear that current AML processes are not effective enough. Furthermore, the emergence of new payment rails and methods has created new avenues for fraud. Multiple types of fraud—including first-party, third-party, and synthetic fraud—are taking place across various money transfer methods including the ACH, credit and debit cards, real-time payments, wire transfers, BNPL, and blockchains. Losses from fraud have continued to accelerate, with 70% of FIs losing over \$500 thousand to fraud in the past 12 months and 27% of institutions losing over \$1 million.⁵⁰ The high-priority initiatives of fintechs such as neobanks to ensure low-friction onboarding and user experiences have enabled bad actors to undertake in fraudulent endeavors more easily. Fintechs currently witness an average fraud rate of 0.30%, which is double the amount for credit card fraud and triple the amount of debit card fraud.⁵¹

Resultingly, numerous opportunities exist for players in the regtech space, as both legacy FIs and fintechs are in dire need of solutions that can optimize their processes for fraud prevention and reduce losses to bad actors. Some fintechs such as [Chainalysis](#), [Featurespace](#), and [ThetaRay](#) are addressing these issues by monitoring transactions and customer accounts in real time, enabling institutions to identify anomalies through gaining a better understanding of normal customer behavior. Other startups such as [Hummingbird](#) and [Ripjar](#) employ data intelligence platforms that analyze thousands of data sources including locations, phone numbers, news links, and beneficial ownership structures to assist with investigations and case management. Providers such as [Unit21](#) and [Alloy](#) group many of these services into a broad suite of solutions. Additionally, some regtech providers are also concentrating on specific pain points. [Inscribe](#) helps institutions detect fraud in digital and paper documents, and [Forter](#) assists merchants with reducing chargebacks and false transaction declines.

⁴⁸: "UNODC Brings Expertise on Anti-Money Laundering to Uzbekistan," UNODC, n.d., accessed February 15, 2023.

⁴⁹: "Anti-Money Laundering: The World's Least Effective Policy Experiment? Together, We Can Fix It," Taylor & Francis Online, Ronald F. Pol, February 25, 2020.

⁵⁰: "State of Fraud Benchmark Report," Alloy, 2022.

⁵¹: "Neobanks: The Bumpy Road to Profitability," Aite Novarica, David Albertazzi and Ron van Wezel, December 10, 2020.



REGTECH

Enhanced identity verification: As the financial industry continues to migrate toward a digital world, a large gap remains to be filled for addressing identity fraud. Greater data sharing, increasingly sophisticated scams, and lack of proper controls within institutions have led to a growing number of personal data leaks. As a result, account takeovers and other forms of monetary theft are continuing to affect consumers, which can lead to acute losses for FIs. Within the US alone, identity fraud has resulted in \$52 billion in losses across 42 million consumers.⁵² Startups such as [Socure](#) and [Trulioo](#), which raised post-money valuations of \$4.5 billion and \$1.8 billion, respectively, have witnessed robust growth by developing identity verification solutions for financial organizations. Both startups offer a single API that enables organizations to access hundreds of data points and verify identities through AI & ML techniques.

Biometric identity verification technologies—which can identify users based on their face, fingerprint, iris, or voice—have also emerged as a solution that has helped banks and fintechs reduce identity theft and conduct KYC requirements. These solutions have become increasingly ideal for banks and fintechs, as they enhance KYC and AML procedures while minimizing onboarding friction and improving customer experience and security by removing passwords.

Startups such as [Veriff](#), [Onfido](#), and [IDnow](#) allow financial organizations to verify identities from photos and videos in real time through AI-powered technologies. We highlight additional opportunities for identity and access management in our [2021 Annual Information Security Report](#).

Streamlined compliance tools: Platforms that help track new regulations and monitor compliance across employees and operations can add significant value to FIs. This is due to the complex and dynamic regulatory environment, as well as the significant fines that can be imposed by regulators if organizations are not compliant. Fintechs streamlining compliance processes for FIs are doing so in a multitude of ways. Companies such as [ComplySci](#) provide platforms that monitor employee actions against rules and regulations, such as personal trading activities or failed renewals of certifications and attestations. Within capital markets, startups like [SteelEye](#) automate record keeping and compliance monitoring for trades, orders, emails, and messages, while fintechs such as [Finalis](#) have developed platforms for private market dealmakers to execute capital raises, M&A, and private placements quickly and compliantly. Other fintechs such as [Ascent](#), [RegAsk](#), and [FiscalNote](#) help centralize compliance procedures and notify organizations of potential impacts from new regulatory changes.

⁵²: ["2022 Identity Fraud Study: The Virtual Battleground," Javelin, John Buzzard, March 29, 2022.](#)



REGTECH

Risks and considerations

Complexity driving skepticism: Challenges in remaining compliant across a multitude of regulatory standards and the growing sophistication of fraudulent schemes have created hesitancy in adopting modern regtech solutions. 66% of executives believe that regulatory standards are too complex for a single solution, while 58% of executives find modern fraud schemes too sophisticated to be combatted by regtech.⁵³ This can lead to longer sales cycles for regtech providers, as many FIs are keen to seek out the best solution addressing their compliance needs.

Solutions can be piecemeal: Large banks and FIs often have dense networks and operate across numerous geographies. Accordingly, these organizations will need to navigate varying policies and regulatory standards while managing both internal and external risk. Many of these protocols fall under their own segment within a broader value chain and can require specific solutions. For example, suspicious activity monitoring and fraud prevention will require products that can

improve how organizations examine transactions—such as those provided by [Signifyd](#); while KYC procedures require identity verification services—such as those provided by [Onfido](#). This can pose a challenge to many institutions, as they must find scalable solutions for specific functions while simultaneously integrating new technologies into their systems. As regulations are constantly evolving, additional challenges may arise if chosen products and services are not adaptable or scalable, leaving organizations to continually search for new solutions.

Data privacy concerns: Institutions will need to ensure they can maintain the confidentiality of their customer information upon integrating third-party platforms, as many regtech solutions work with transaction and personal consumer data sets. While more secured data sharing can lead to better KYC and AML outcomes for all financial industry participants, many institutions have remained skeptical of trusting outside providers with significant access to their data sets. In addition, regulations that prioritize data privacy, such as the GDPR, have made it complicated for organizations to easily share data.

⁵³: [“The State of Fraud and Financial Crime in the U.S.,” PYMNTS, September 2022.](#)



Wealthtech

Overview

Companies in the enterprise wealthtech segment provide solutions catered toward wealth managers, registered investment advisors (RIAs), broker-dealers, retirement consultants, family offices, and certified financial planners. Products and services offered in this category include investment tools and platforms that streamline back-office operations and enhance how advisors accommodate their clients. Specifically, new innovations in this space augment key areas of the wealth management value chain, including customer relationship management (CRM), financial planning, trading portfolio management, advisory billing, marketing and lead generation, and compliance management.

Shifts in the wealth management landscape have opened the door for fintechs to address new gaps experienced by advisors. In addition to the industry's pandemic-induced migration to a more dominant environment, the move from a product commission business model to a recurring revenue model based on AUM fees has generated significant opportunities for online platforms that can assist with client communication, lead generation, and business intelligence. As advisors are hence focusing on differentiating themselves based on the advisory services they can provide—rather than the investment products they can sell—platforms that generate advanced analytics and continuously track performance are quickly improving financial monitoring.

Further, client investment preferences are changing, risk management strategies are growing due to volatile markets, there is greater demand for alternative assets, and sustainable investments are sometimes changing from preferences to requirements. These factors are collectively giving rise to direct indexing offerings, which address the growing need for customized solutions. As such, we believe a significant number of long-term drivers exist in this segment.

Our enterprise wealthtech segment is comprised of the following categories:

Advisor tech: Technologies that help RIAs, financial planners, wealth managers, and independent broker-dealers enhance service to clients, including personal advice, faster response times, easier client onboarding, and access to new asset classes.

Investment tools & platforms: Services that allow businesses to better manage their savings and assets, which include access to financial data and information, research, educational resources, and other investment tools.

Retirement planning: Companies that provide retirement plans offered by businesses and organizations.

Industry drivers

Industry digitization: The shift caused by COVID-19 to more digital financial services has impacted how wealth managers serve clients. Digital access has become a larger priority to 40% of investors, while 75% of wealth managers believe digital interaction will become the norm.⁵⁴ Thus, advisors are turning their attention toward platforms that enable them to frequently and easily communicate with clients, as well as tools that streamline digital onboarding, portfolio management capabilities, and billing processes. Notably, the growing number of digital products delivering these capabilities has generated the need for platforms that can serve as a single source of data and integrate with all other solutions.

⁵⁴: ["Wealth and Asset Management 4.0," ThoughtLab, n.d. accessed February 15, 2023.](#)



WEALTHTECH

Unprecedented transfer of wealth: The US is set to undergo the largest intergenerational wealth transfer in its history, with an estimated \$84 trillion in assets to be transferred to heirs over the next two decades.⁵⁵ The new generation of inheritors is expected to manage money differently than its preceding generation by placing additional importance on investing rather than on budgeting and savings. Additionally, 70% of heirs are expected to fire their parents' investment advisors after receiving their inheritance.⁵⁶

Business model shift: The industry continues to move from a commission-based business model to an AUM and advisory fee model. For instance, financial planning has evolved into a continuous service rather than a single upfront event, as advisors are less focused on identifying financial products they can sell. The quality and constancy of a manager's advice is instead being monetized, giving way to tools that enable plan monitoring, real-time performance tracking, and enhanced data analytics. Scaling a recurring revenue business additionally requires advisory firms to retain their clientele. This has prompted the need for solutions that enable greater CRM and back-office automation.

Demand for alternative assets: Investors are asking for more access to alternative assets. This has generated demand from advisors for platforms that can enable them to access and offer nontraditional asset investments to their clients. Furthermore, we believe there is a significant runway for growth in this segment, as global alternative AUM is expected to reach over \$21 trillion by 2025.⁵⁷

⁵⁵: "Cerulli Anticipates \$84 Trillion in Wealth Transfers Through 2045," Cerulli Associates, January 20, 2022.

⁵⁶: "Millions of Clients and Billions of Dollars Are Falling Through a Wealth Transfer Crack," RIAIntel, Michael Thrasher, August 10, 2021.

⁵⁷: "What are Alternative Investments?" PIMCO, n.d., accessed February 15, 2023.

Sustainable investment preferences: Search volume for "sustainable finance" has increased 232% over the past five years,⁵⁸ while 26% of investors chose not to invest with a manager in 2022 because of inadequate ESG policies,⁵⁹ thus highlighting the growing desire for clients to allocate toward investments with a sustainability factor. Advisors are therefore employing a greater number of tools that can help them identify sustainable investments and customize appropriate plans for their clients.

Market size

We estimate that the North America wealth management platform TAM reached \$168.2 billion in 2022. Our TAM estimates are revenue-based and determined by total AUM in North America, including alternative assets. We forecast the market will grow at an 8.9% CAGR to \$257.2 billion in 2027 as new digital technologies emerge and demand for both sustainable investing and alternative assets continues to rise.

Business model

Enterprise wealthtech companies primarily monetize by charging a percentage fee on assets that are run on their platforms, in addition to subscription fees and charges for API calls.

⁵⁸: "Sustainable Finance," Exploding Topics, n.d., accessed February, 2023.

⁵⁹: "Can Resilience Shape a Shifting Landscape?" EY, Natalie Deak Jaros, et al., November 15, 2022.



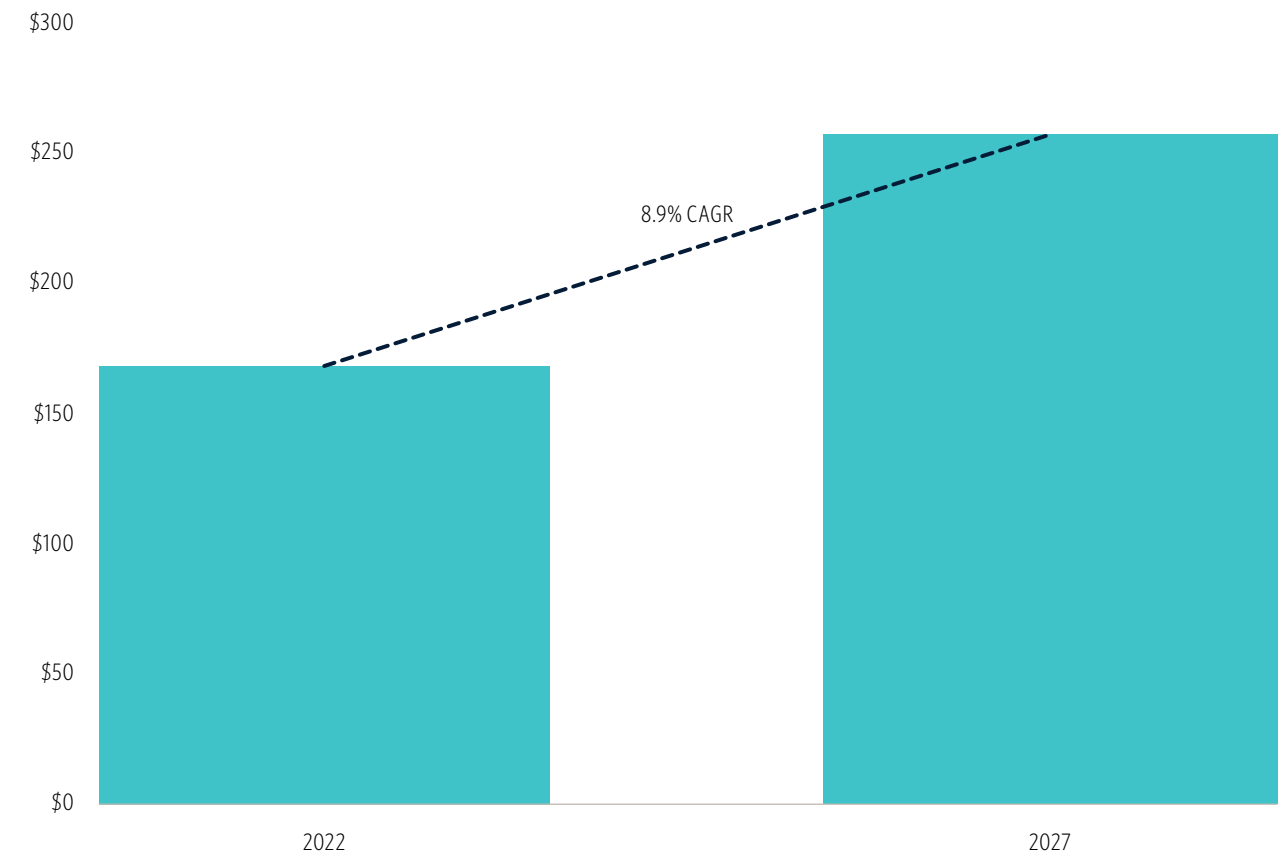
WEALTHTECH

VC activity

Enterprise wealthtech companies raised \$1.3 billion across 114 deals in 2022, representing a 29.9% YoY decline and a 0.0% YoY change from the \$1.9 billion and 114 deals in 2021, respectively. The decrease in deal value was primarily driven by a 58.4% YoY decline in the retirement planning category; the advisortech and investment tools & platforms subsegments saw deal values decline less drastically by 2.2% and 19.2% YoY, respectively. Overall, deal value in this segment sits at considerably higher levels compared to that of pre-2021 years, largely due to significant levels of capital flowing into advisortech. Notable deals in 2022 belonged to AI investments platform [Qraft](#)'s \$146.0 million Series C, private markets access platform [Opto Investments](#)' \$145.0 million Series A, and AI-powered advisortech [Tifin](#)'s \$109.0 million Series D.

Exit activity in this segment was subdued in 2022, with exit value declining 95.8% YoY to \$35.2 million. Key exits consist of public wealthtech firm Envestnet's \$20.7 million acquisition of advisor transition management platform [Truelytics](#) and \$14.5 million acquisition of digital 401k marketplace [401kplans.com](#). Notably, digital retirement platform [NextCapital](#)—last valued at \$135.0 million—was acquired by [Goldman Sachs](#) in August for an undisclosed amount.

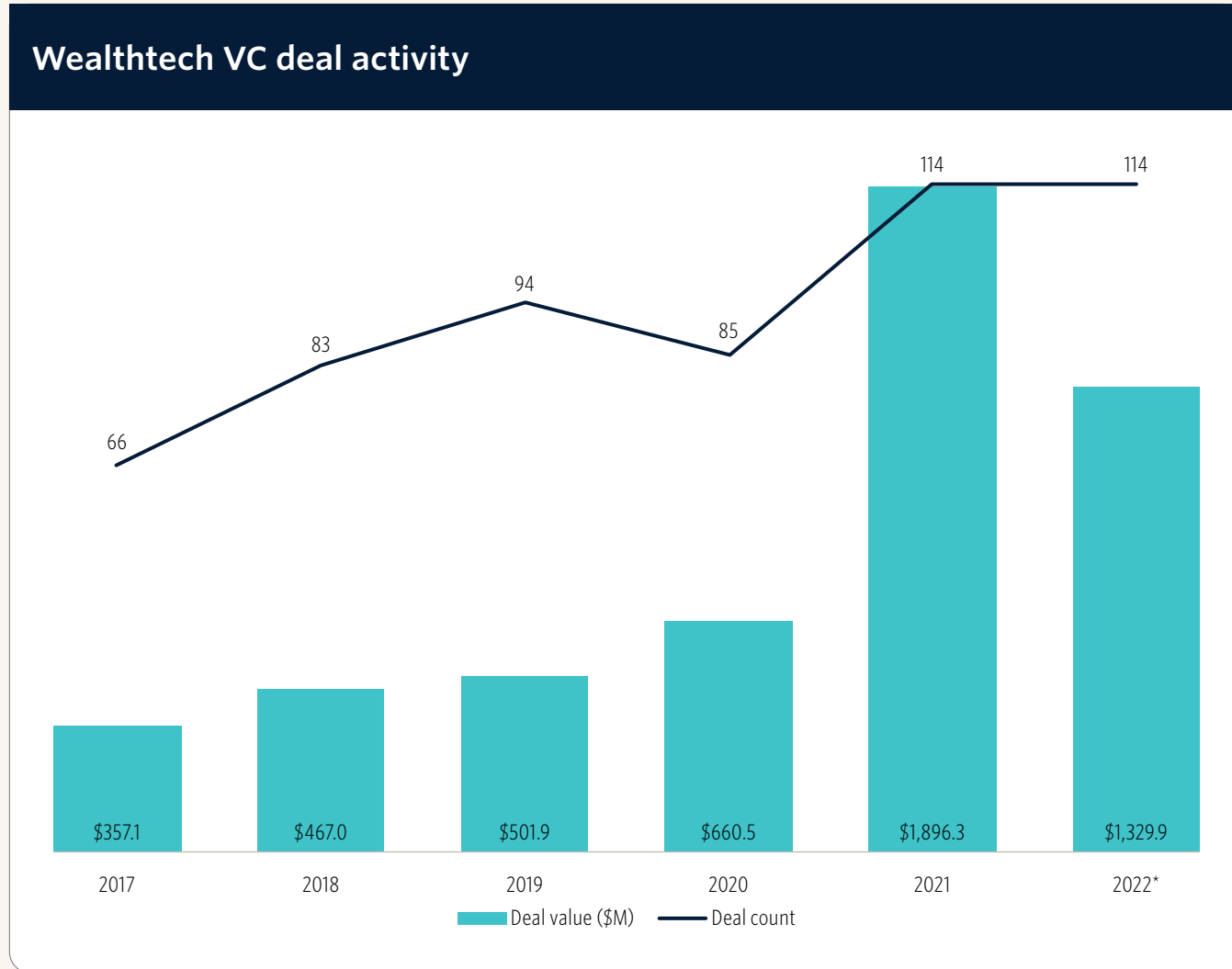
Wealthtech market size estimate (\$B)*



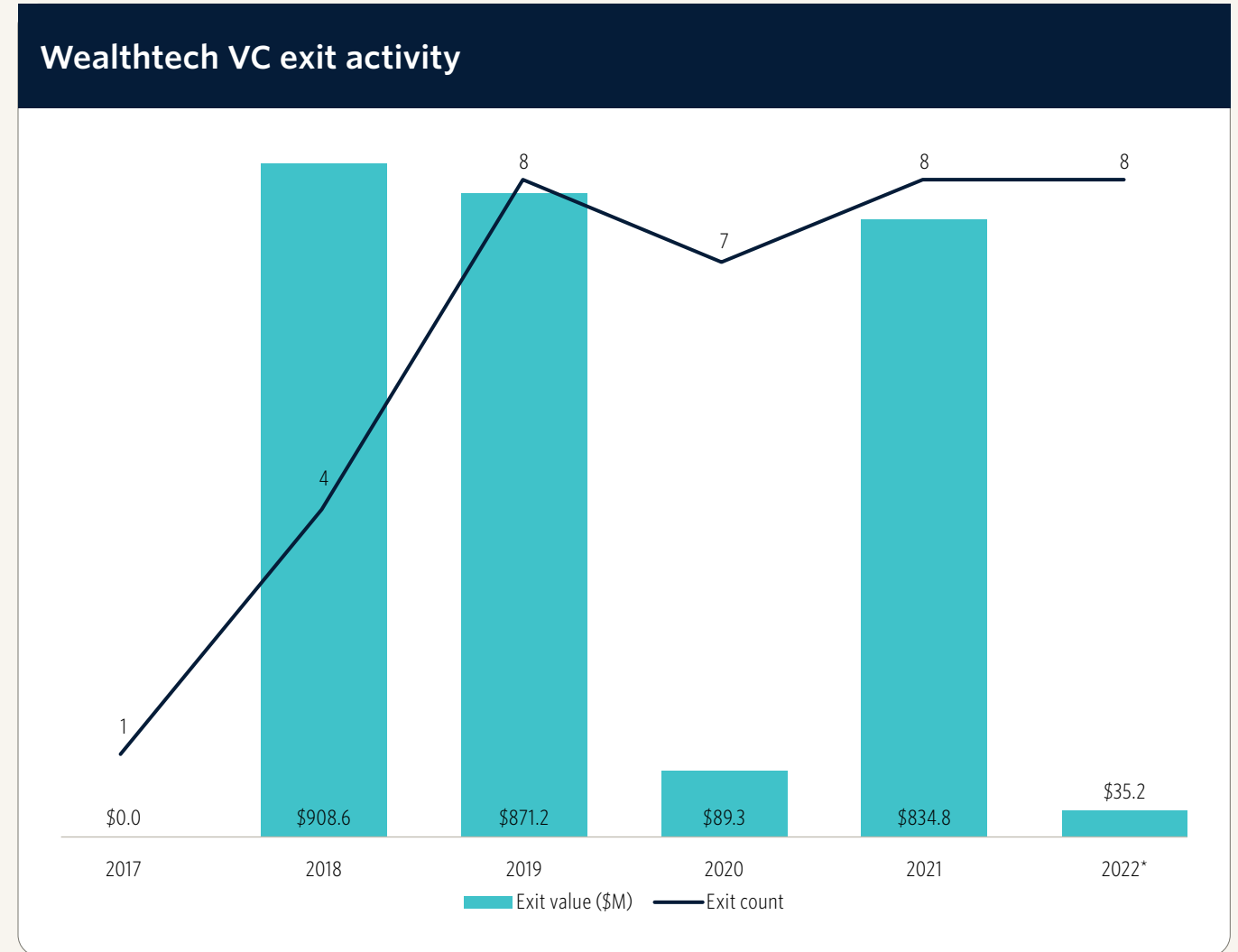
Sources: McKinsey, PitchBook Estimates | Geography: Global | *As of December 31, 2022



WEALTHTECH



Source: PitchBook | Geography: Global | *As of December 31, 2022



Source: PitchBook | Geography: Global | *As of December 31, 2022



WEALTHTECH

Key wealthtech markets VC deals over the past year*

Company	Close date (2022)	Subsegment	Stage	Deal value (\$M)	Lead investor(s)	Valuation step-up
Qraft	January 10	Advisortech	Series C	\$146.0	N/A	N/A
Opto Investments	September 19	Advisortech	Series A	\$145.0	Tiger Global Management	5.0x
Tifin	May 12	Advisortech	Series D	\$109.0	N/A	1.6x
XEMPUS	September 29	Retirement planning	Series D	\$70.0	Goldman Sachs Asset Management, InfraVia Growth	N/A
Signal Advisors	January 1	Advisortech	N/A	\$61.0	N/A	N/A
Ethic	September 14	Advisortech	Series C	\$50.0	Jordan Park	3.2x
Smart	July 14	Retirement planning	N/A	\$48.5	N/A	N/A
Pontera	February 23	Retirement planning	N/A	\$45.0	Lightspeed Venture Partners	N/A
Alasco	January 11	Investment tools & platforms	Series B	\$40.0	Insight Partners	N/A
FundGuard	April 13	Advisortech	Series B	\$40.0	Citigroup, State Street	N/A

Source: PitchBook | Geography: Global | *As of December 31, 2022



WEALTHTECH

Key wealthtech markets VC exits over the past year*

Company	Close date (2022)	Subsegment	Exit value (\$M)	Exit type	Acquirers/index	Valuation step-up
Truelytics	July 1	Advisortech	\$20.7	M&A	Investnet	N/A
401kplans.com	May 31	Retirement planning	\$14.5	M&A	Investnet	N/A
Active.Ai	June 17	Advisortech	N/A	M&A	GupShup	N/A
Alpima	November 22	Advisortech	N/A	M&A	Quantifeed	N/A
Finn AI	June 23	Advisortech	N/A	M&A	Glia	N/A
PlanFees	October 1	Retirement planning	N/A	M&A	N/A	N/A
NextCapital	August 26	Retirement planning	N/A	M&A	The Goldman Sachs Group	N/A
Nirvana Solutions	July 15	Advisortech	N/A	Buyout/LBO	Blue Horizon Software, Concentric Equity Partners	N/A

Source: PitchBook | Geography: Global | *As of December 31, 2022



WEALTHTECH

Opportunities

Superior financial planning and client engagement tools: Numerous solutions have emerged to help wealth managers drive significant value in their advice offerings and service experiences. Managers are justifying their fees by placing stronger emphases on the value of their ongoing advisory service and their customer engagement experiences, especially as the industry becomes digitally native. These priorities are being enhanced by the emergence of numerous advanced planning and client servicing tools.

For example, [Addepar](#) provides a platform that aggregates all financial accounts and generates a consolidated view of client portfolios. This allows advisors to easily monitor performance and model scenarios, ultimately enabling them to deliver advanced and customized plans. [Elements](#) similarly offers wealth managers a platform that assesses the overall health of a client's portfolio on a recurring basis, along with recommendations for improving each plan. A mobile-centric client portal that gives clients visibility into how their plans are performing is also included in [Elements'](#) platform, driving further value in customer engagement. Startups are also employing AI & ML technologies, such as [Conquest Planning](#), which leverages AI to streamline client onboarding and assist human advisors in customizing plans for their clients. Other developers, such as [SigFig](#), are enhancing service offerings with live interactive tools like video calls and screen share, enabling a hybrid approach between digital and physical advisory. [SigFig's](#) suite additionally includes a centralized platform to review customer plans, a self-serve client portal, automated reviews, and integrations with existing CRM systems.

Custom solutions and direct indexing: Historically, direct indexing—purchasing the underlying shares of an index rather than an exchange-traded fund or an index mutual fund—was a tactic employed for wealthy individuals. However, with the onset of zero-commission trades, growing demand for more personalized financial plans, and new technologies enabling automated portfolio customization, the concept of direct indexing has become more widely available to all investors. Advisors seeking a competitive advantage are utilizing new platforms that enable direct indexing and tailored client plans. Importantly, the growing preference for sustainable investments is also driving demand for these solutions. We expect there will be continued interest from advisors for portfolio customization abilities, as direct indexing is estimated to provide an approximate \$1.5 trillion AUM opportunity.⁶⁰

Late-stage startup [Vise](#) provides an AI-powered platform that utilizes a multitude of market inputs and data points to automatically customize portfolios that are in-line with client inputs. [Vise's](#) platform also continuously monitors portfolios, enabling dynamically rebalanced allocations and automated tax-loss harvesting. In a similar sense, [Ethic](#) offers a platform that helps wealth advisors create and manage portfolios that align with client financial goals, ESG values, and tax preferences. Other solutions include those developed by [Atomic](#), which powers institutions with the abilities for white-label direct indexing, ESG investing, and tax-loss harvesting investment products via its APIs.

⁶⁰: ["Competing for Growth," Morgan Stanley, Betsy L. Graseck, et al., 2021.](#)



WEALTHTECH

Alternative asset solutions: As highlighted in our [Q3 2022 Retail Fintech Report](#), consumer demand for alternative investments has increasingly risen, with institutions such as [Blackstone](#), [KKR](#), [Apollo Global Management](#), [The Carlyle Group](#), and [TD Asset Management](#) launching alternative asset funds for high-net-worth retail investors. Correspondingly, alternative investment platforms have surfaced to equip advisors with the capacity to allocate to alternative assets. [CAIS](#), a late-stage unicorn valued at \$1.0 billion, allows advisors to allocate toward hedge funds, private equity funds, real estate, and private credit on its platform. [CAIS](#) also empowers advisors with streamlined tools such as automated transactions and position reporting, AML and KYC monitoring, and data integrations with third-party systems. [CAIS](#) has also built customized platforms for various RIAs and wealth managers such as [William Blair](#), [Northwestern Mutual](#), [Truist](#), and [RW Baird](#).

Risks and considerations

Legacy players staying competitive: Large incumbents are launching similar products to defend against the threat of new entrants. For example, [Morningstar](#) and [Charles Schwab](#) both introduced their own direct-indexing solutions in 2022. Acquisitions by legacy players have been frequent in the wealthtech space, as highlighted by BlackRock's acquisition of B2B robo-advisor [FutureAdvisor](#), [J.P. Morgan](#)'s acquisition of custom indexing provider [OpenInvest](#), [Vanguard](#)'s acquisition of direct-indexing platform [Just Invest](#), and [Empower](#)'s acquisition of digital wealth management platform [Personal Capital](#). As a result, customer acquisition costs could become fundamentally higher.

Skepticism of automated processes: Technologies such as AI & ML utilized for investment decisions and/or market data analysis are difficult to understand and may not provide full explanations of the underlying algorithms driving decisions. Furthermore, many platforms implementing these technologies have not been battle-tested through economic downturns. Still, if these technologies can deliver solid performance during volatile market cycles and demonstrate their abilities to successfully reduce operating costs, confidence in these solutions could increase and further accelerate adoption.

Cybersecurity compliance: Phishing attacks, malware, and other cybersecurity threats have become increasingly risky for wealth managers employing multiple third-party platforms. While APIs have made it easier for various systems to communicate with each other, lack of proper controls and ambiguity surrounding which provider is responsible for cybersecurity and compliance protocols have put client data at risk. Correspondingly, the SEC is expected to finalize its proposed Cybersecurity Rule 206(4)-9 in April 2023, which will introduce a series of requirements for RIAs to address cybersecurity risks, including risk assessments, incident reporting, recordkeeping, and disclosures. These guidelines could likely increase operating costs for advisors and cause them to seek out providers that also have proper cybersecurity protocols.



Appendix

Top VC-backed enterprise fintech companies by total VC (\$M) raised to date*

Company	VC (\$M) raised to date	Industry sector	Industry group	Verticals	Segment	HQ
Generate	\$3,252.1	Financial services	Capital markets/institutions	Cleantech, fintech	Capital markets	San Francisco, US
JD Digits	\$3,141.3	Information technology	Software	AI & ML, big data, cloudtech & DevOps, fintech, SaaS, TMT	Financial services infrastructure	Beijing, China
Stripe	\$2,235.0	Information technology	Software	B2B payments, fintech, mobile, SaaS	Payments	South San Francisco, US
Checkout.com	\$1,830.0	Information technology	Software	Fintech, mobile commerce, SaaS	Payments	London, UK
ServiceTitan	\$1,464.8	Information technology	Software	Fintech, marketing tech, SaaS	Payments	Glendale, US
Ramp	\$1,268.4	Information technology	Software	Fintech, SaaS, TMT	CFO stack	New York, US
Market Financial Solutions	\$1,261.9	Financial services	Other financial services	Fintech, mortgage tech	Alternative lending	London, UK
Brex	\$1,211.5	Financial services	Other financial services	B2B payments, fintech	CFO stack	Draper, US
Carta	\$1,192.0	Information technology	Software	Fintech, SaaS	Capital markets	San Francisco, US
SaltPay	\$994.6	Information technology	Software	Fintech, SaaS	Payments	London, UK

Source: PitchBook | Geography: Global | *As of December 31, 2022



APPENDIX

Top VC investors in enterprise fintech companies since 2017*

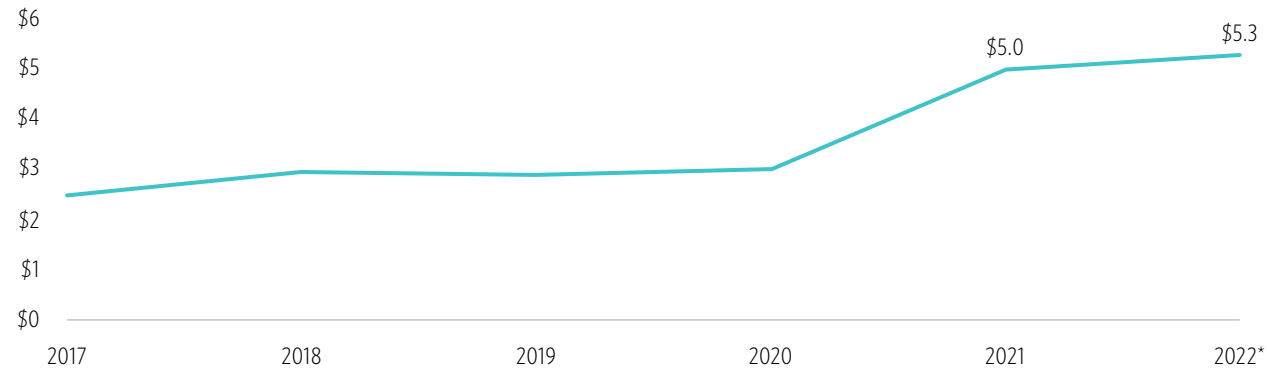
Investor	Deal count	Angel and seed	Early-stage VC	Late-stage VC	Venture growth
500 Global	141	70	48	22	1
Tiger Global Management	122	6	39	47	30
Global Founders Capital	117	52	54	8	3
Accel	109	14	41	42	12
FJ Labs	106	38	47	17	4
QED Investors	102	26	46	25	5
Index Ventures	97	17	36	35	9
Enterprise Ireland	88	26	45	15	2
Alumni Ventures	79	29	26	19	5
Soma Capital	77	30	40	4	3

Source: PitchBook | Geography: Global | *As of December 31, 2022



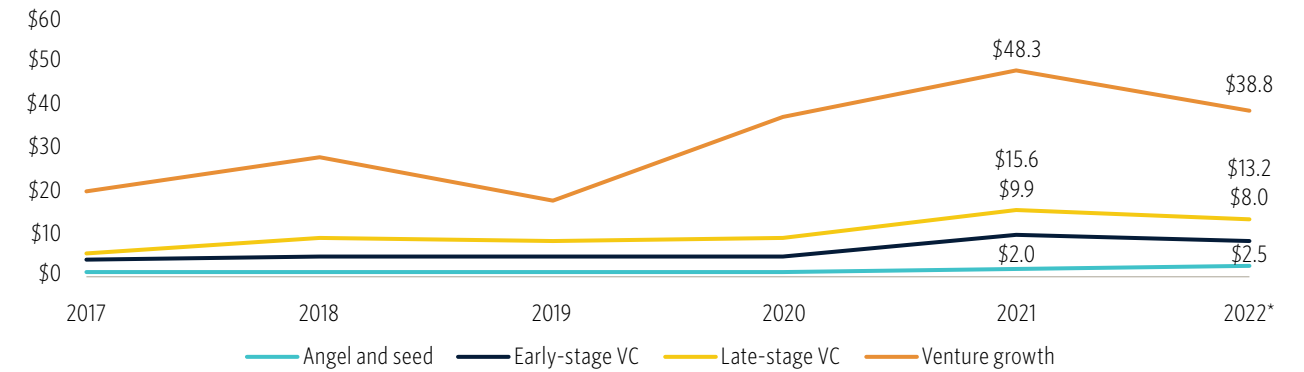
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Median enterprise fintech VC deal value (\$M)



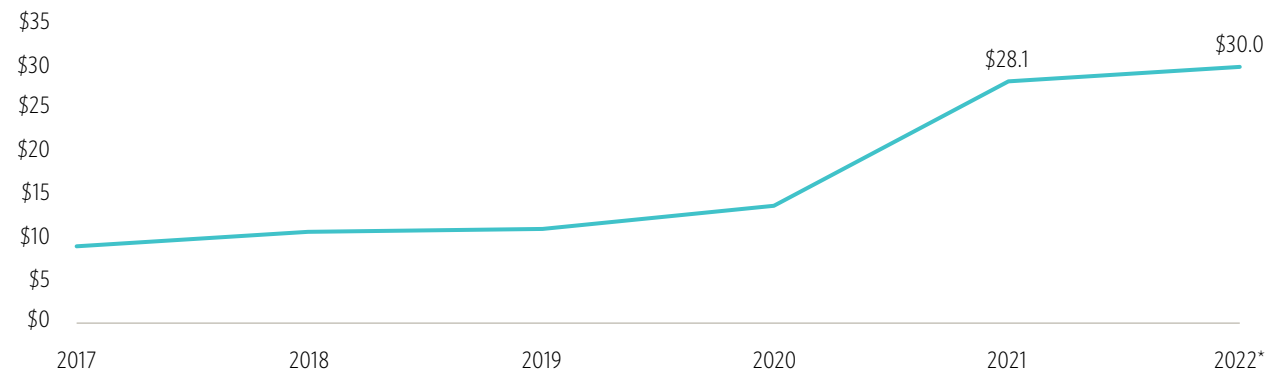
Source: PitchBook | Geography: Global | *As of December 31, 2022

Median enterprise fintech VC deal value (\$M) by stage



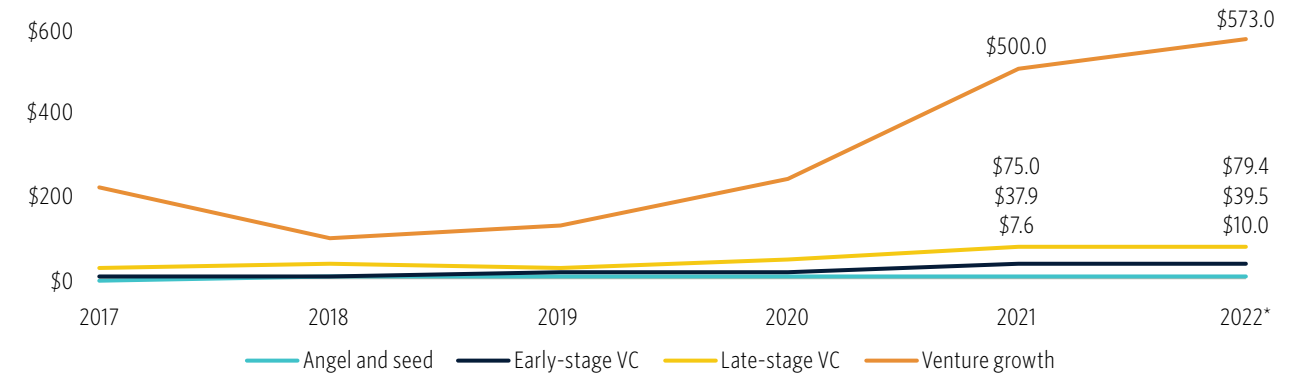
Source: PitchBook | Geography: Global | *As of December 31, 2022

Median enterprise fintech VC pre-money valuations (\$M)



Source: PitchBook | Geography: Global | *As of December 31, 2022

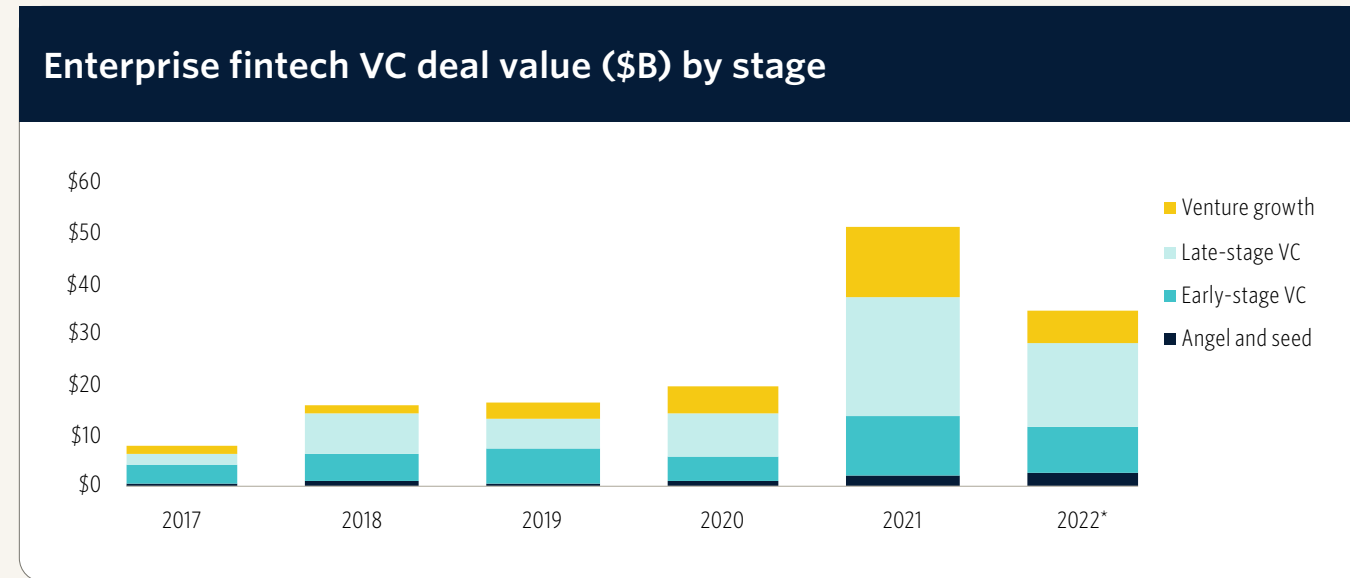
Median enterprise fintech pre-money valuation (\$M) by stage



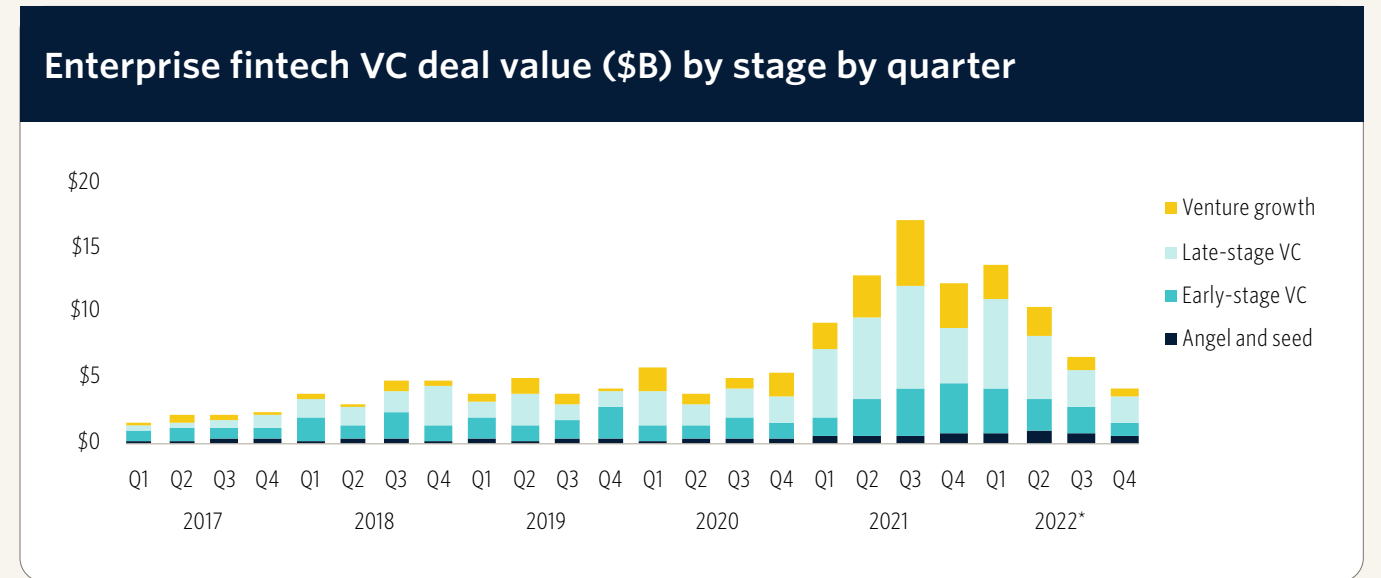
Source: PitchBook | Geography: Global | *As of December 31, 2022



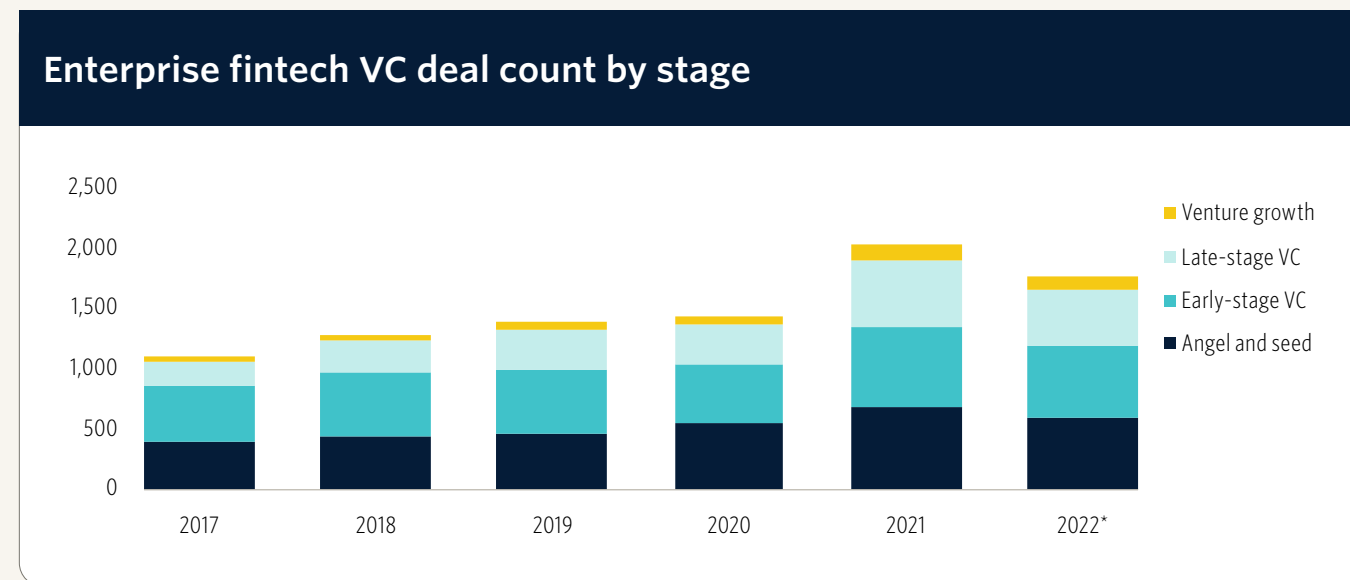
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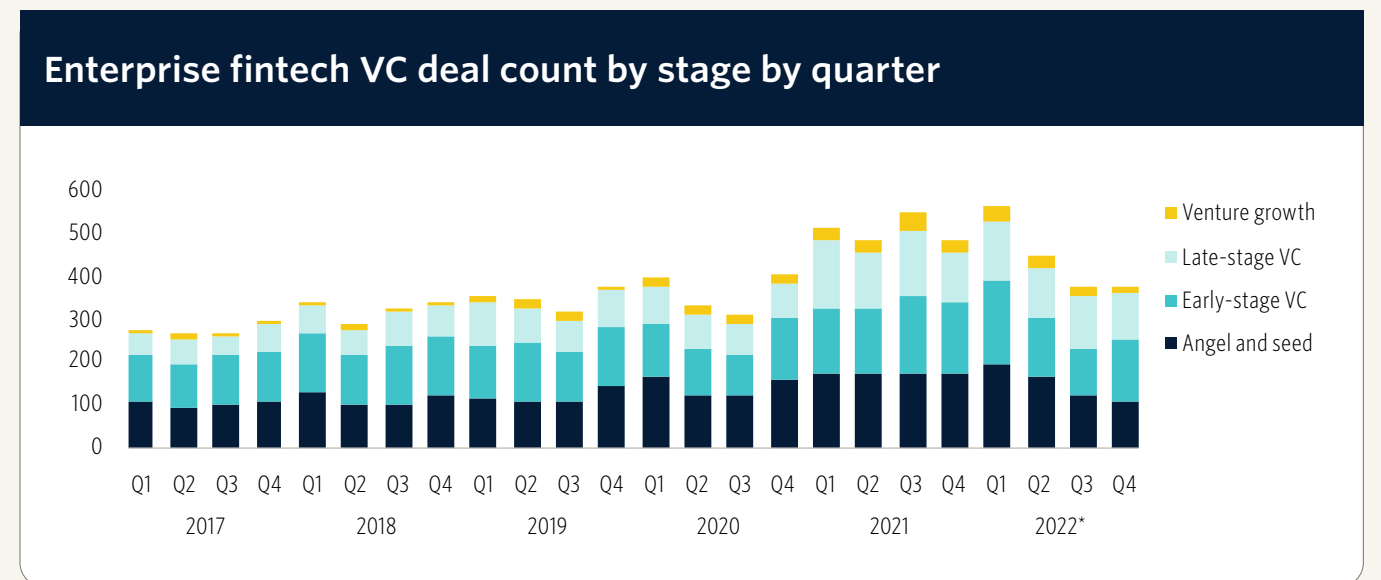
Source: PitchBook | Geography: Global | *As of December 31, 2022



Source: PitchBook | Geography: Global | *As of December 31, 2022



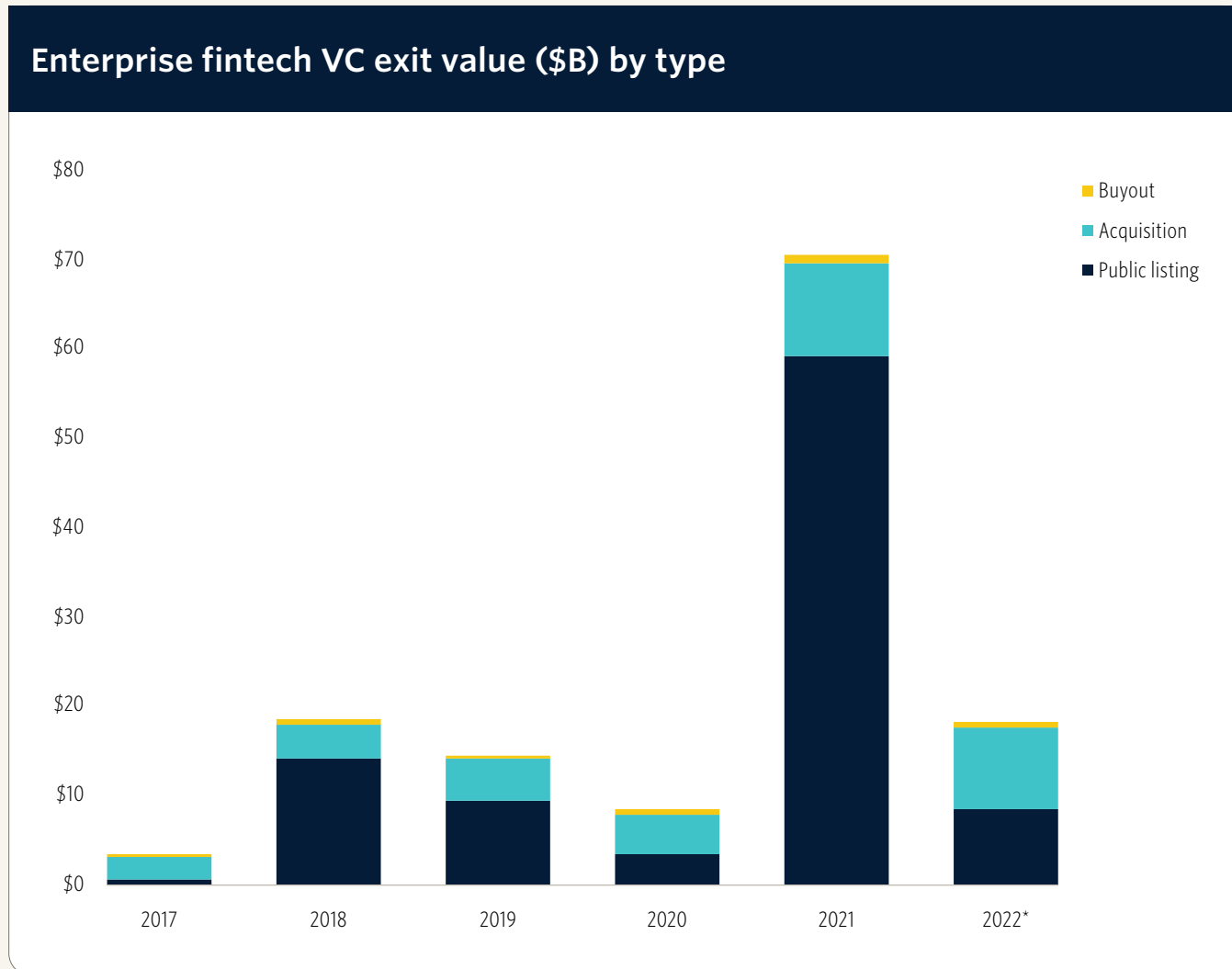
Source: PitchBook | Geography: Global | *As of December 31, 2022



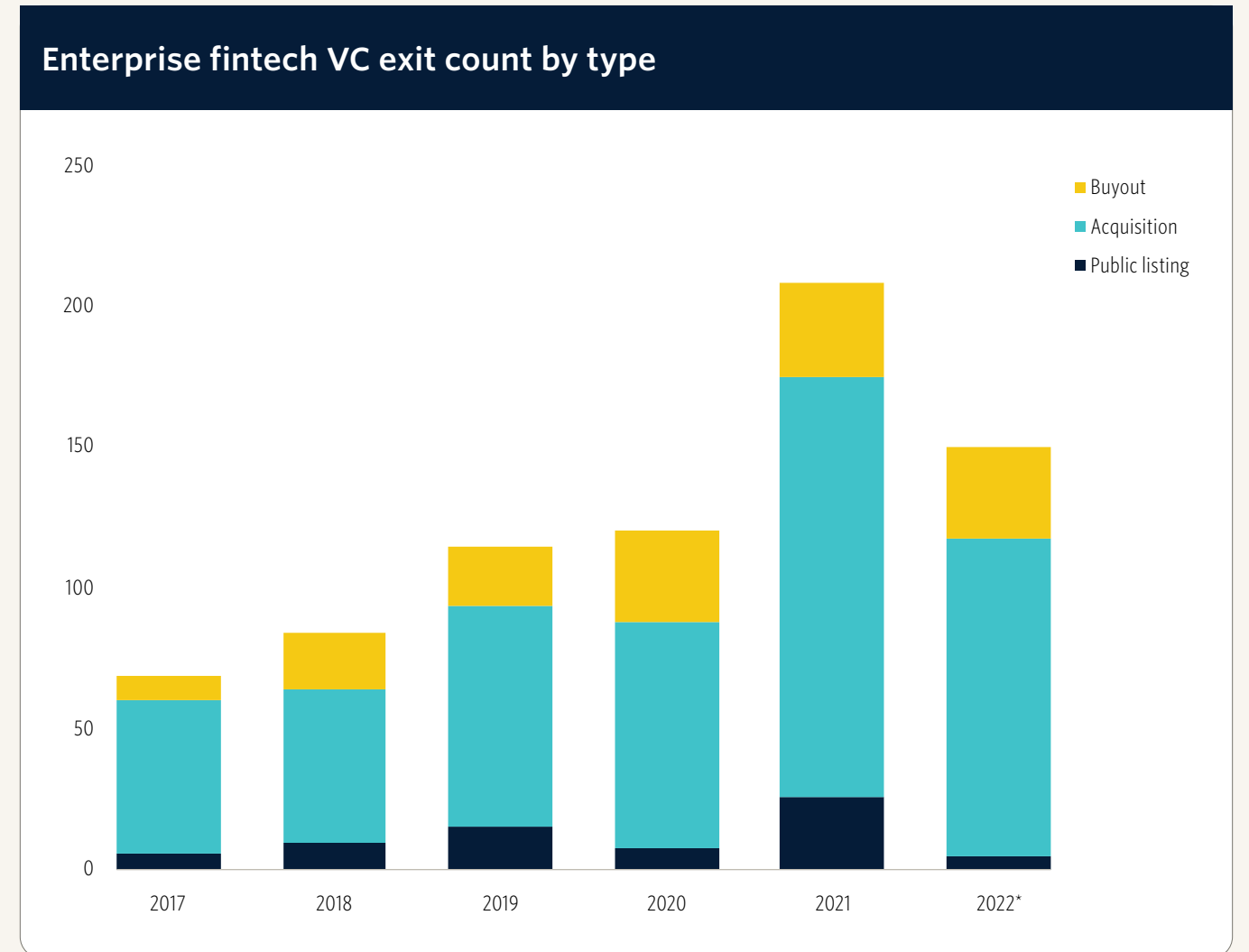
Source: PitchBook | Geography: Global | *As of December 31, 2022



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Our Emerging Tech Research provides detailed analysis of nascent tech sectors so you can better navigate the changing markets you operate in—and pursue new opportunities with confidence.

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