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Software Moat Overview

Switching costs is a powerful moat source, and R&D and M&As drive innovation and help extend durability of returns.

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Executive Summary

After reviewing the competitive positioning of companies within our software coverage, we recently changed several of our moat ratings, with three upgrades and two downgrades. We believe that software is moaty overall and the main question often becomes the presence and durability of excess returns. Younger firms tend to have lower returns, which in some cases may not yet have surpassed their weighted average cost of capital, while more-mature companies tend to produce stronger returns. We project a median spread of 11% between return on invested capital and the weighted average cost of capital within our group. These spreads vary greatly, so based on a variety of factors such as retention metrics, importance of the software to the end user, investment into product innovation, and breadth of product portfolio, we can assess differences among the individual companies on a more systematic basis.

Key Takeaways

- Switching costs are the primary source of moats within the software industry, as once integrated with other applications and embedded in workflows, it becomes very challenging to replace that solution. We also sometimes see network effects, which vary, and intangible assets, which are mainly associated with firms serving a specific vertical industry, acting as secondary moat sources for software vendors.
- We are upgrading Descartes to a wide moat from a narrow one, and Shopify to wide from a narrow moat, both based on strong performance during covid; Manhattan Associates to wide from narrow based on a smoother-than-expected model transition; while we downgraded Docusign to none from narrow based on slow traction beyond e-signatures; and Twilio to none from narrow, based on a faltering strategy.
- Retention is a key metric that can help quantitatively identify and measure a software company's moat. Within Morningstar's broad software coverage, we observe a median customer retention rate of approximately 93% annually. Mathematically, this alone supports a narrow moat rating assuming the returns are attractive. Retention is also typically higher for enterprise customers compared with small businesses or mid-market clients, as information technology and operational complexities increase with size.
- Beyond retention, we think software vendors must invest appropriately in innovation, engage in smart but limited mergers and acquisitions, have a relatively lower degree of revenue concentration from a single product, offer solutions that are integral to customer operations, enjoy a customer base that skews toward larger enterprise users, and have a relatively better degree of visibility from longer-term subscription agreements. These factors come together differently for software companies, so we think a thoughtful analysis of these factors will shine a light on software moats.

- Our top picks in software include Adobe and Salesforce, as we think negative reactions to recent quarterly results are misguided and do not properly account for the growth outlook for either firm.

Exhibit 1 Companies Mentioned

Company	Ticker	Moat Rating	Stock Price	Fair Value Estimate	Morningstar Star Rating	Uncertainty Rating	Market Cap ($b)
Adobe	ADBE	Wide	$522.25	$635	4	High	$234.3
AspenTech	AZPN	Wide	$193.90	$195	3	High	$12.3
Atlassian	TEAM	Narrow	$153.18	$225	4	Very High	$41.0
Blackbaud	BLKB	Narrow	$76.97	$77	3	High	$3.9
Descartes	DSGX	Wide	$94.73	$81	2	Medium	$8.0
Docusign	DOCU	None	$50.97	$65	4	High	$10.7
Guidewire	GWRE	Wide	$135.51	$102	2	High	$11.2
HubSpot	HUBS	Narrow	$562.00	$610	3	Very High	$28.4
Manhattan Associates	MANH	Wide	$237.37	$225	3	High	$14.3
Microsoft	MSFT	Wide	$446.34	$435	3	Medium	$3,312.6
Pegasystems	PEGA	None	$56.83	$65	3	Very High	$4.9
RingCentral	RNG	None	$27.16	$51	4	Very High	$2.6
Salesforce	CRM	Wide	$231.81	$285	4	High	$234.3
ServiceNow	NOW	Wide	$730.17	$790	4	Medium	$150.8
Shopify	SHOP	Wide	$64.25	$72	3	Very High	$82.3
Twilio	TWLO	None	$53.02	$68	3	Very High	$9.1
Tyler	TYL	Wide	$472.90	$500	3	Medium	$20.3
Zoom	ZM	Narrow	$56.21	$89	4	High	$18.0

Source: Morningstar. Data as of June 21, 2024.

Switching Costs Primarily Drive Software Moats

The primary source of economic moats in the software industry is typically switching costs, as once an application is installed within an organization, it becomes difficult to change it. Switching costs are derived from several factors. From a financial perspective, the customer would have to pay consultants to implement the new package and integrate it across other relevant IT systems, pay for two distinct software instances to run both the old and new solutions in tandem to ensure the new one functions properly, pay to train employees on the new system, and endure a period of lower productivity as employees master the new solution. Further, there are indirect costs involved with changing software vendors, including the time involved, which can take more than a year to implement and test a core system, and lower employee morale, as their jobs could be more challenging in the near term. Lastly, a customer takes on risk in changing software vendors, including the exposure of sensitive data and possible loss of data.

Network effects can be a secondary or supporting moat source within the software industry. The network effect is created and influenced by several factors. At a high level, more popular applications will attract more developers to create extensions or related solutions, which in-turn is likely to help attract more users, creating a flywheel effect. These add-on solutions can often be purchased through the software vendor's marketplace. Similarly, enterprise customers are likely to employ a third-party

system integrator to implement software packages. Consulting firms tend to build practices for software vendors that have an established presence and a large enough user base. The ability to purchase software with a variety of well-established system integrators with a proven track record of implementing a particular software package to perform the integration work is likely to be a factor in the decision-making process. In other words, a larger partner ecosystem will help attract more customers and more customers help attract more system integrators partners, again in a classic flywheel effect.

Intangible assets can be a secondary or supporting moat source within the software industry. We see these intangible assets as overwhelmingly created and supported by branding and proprietary technology. Further, these branding and proprietary technologies tend to be most apparent in vertical software solutions that serve a specific industry with highly specialized needs. In these cases, the software can be highly technical and serve a limited number of customers within a niche market. For example, an insurance company looking to modernize its core software systems is highly likely to at least consider Guidewire, based on the company's reputation for highly specialized solutions, including distinct financial and statutory reporting issues, in a narrow industry that has historically been under-served by software providers. Similarly, selling software to governmental bodies, or any other highly regulated industry, is not the same as selling horizontal-use software to a typical manufacturing company. It takes process knowledge, special certifications, unique customer relationships, and reputational branding.

Below, we show a comparison of key metrics for our software coverage, and then we describe in greater detail how we analyze these key data points as well as key updates for individual companies. We recommend reviewing the economic moat sections of our individual company reports and our Software Industry Landscape from February 2024 for additional information.

Exhibit 2 Software Is Moaty, With Moats Typically Driven by Switching Costs

Company	Ticker	Moat Rating	Moat Sources	ROIC	Ex GW ROIC	WACC	Comments
Adobe	ADBE	Wide	Switching Costs	44.9%	86.8%	8.8%	Limited competition on Creative Cloud
AspenTech	AZPN	Wide	Switching Costs Intangible Assets	10.5%	17.0%	9.0%	Emerson acquired a majority stake of AZPN, which has severely distorted returns
Atlassian	TEAM	Narrow	Switching Costs	38.2%	44.3%	8.9%	Good and expanding portfolio; model transition entering expansion phase
Blackbaud	BLKB	Narrow	Switching Costs Intangible Assets	10.7%	22.0%	7.9%	Model transition and EVERFI acquisitions pressure returns
Descartes	DSGX	Wide	Switching Costs Network Effects	26.3%	103.9%	8.3%	Largest neutral shipping network, supported by a variety of add-on solutions
Docusign	DOCU	None	N/A	28.4%	34.7%	8.8%	Dominates e-signature market
Guidewire	GWRE	Wide	Switching Costs Intangible Assets	17.8%	24.8%	8.5%	Long-running and messy model transition is beyond pain and into expansion phase
HubSpot	HUBS	Narrow	Switching Costs	13.2%	13.4%	8.7%	Mid-market and SMB version of Salesforce
Manhattan Associates	MANH	Wide	Switching Costs Intangible Assets	167.0%	208.0%	9.0%	Strong positioning in warehouse management, with omnichannel retail and transportation management branching out
Microsoft	MSFT	Wide	Switching Costs Network Effects Cost Advantage	45.8%	61.8%	9.0%	Limited competition on Windows, Office; with leadership positions in cloud and AI
Pegasystems	PEGA	None	Switching Costs	9.5%	9.7%	8.8%	Model transition has weighed on returns
RingCentral	RNG	None	Switching Costs	11.7%	12.3%	8.8%	Moaty business should be able to improve returns as the company scales over time.
Salesforce	CRM	Wide	Switching Costs Network Effects	14.5%	26.8%	8.8%	Unrivaled leadership in multiple mission critical applications; ROIC dogged by M&A
ServiceNow	NOW	Wide	Switching Costs	28.0%	29.8%	8.8%	Powerful platform driven by organic innovation with multiple mission critical applications
Shopify	SHOP	Wide	Switching Costs Network Effects	19.7%	20.2%	8.7%	Rapidly expanding portfolio for this ecommerce provider moving from SMB to Enterprise grade solutions
Twilio	TWLO	None	N/A	4.5%	9.4%	8.5%	The post-covid recovery period has been very challenging.
Tyler	TYL	Wide	Switching Costs Intangible Assets	18.6%	65.2%	8.3%	Core software systems for local governments is an under-served niche
Zoom	ZM	Narrow	Switching Costs	23.3%	25.3%	9.0%	Synonomous with video calls and meetings

Source: Morningstar. Data as of June 2024.

Exhibit 3 Summary of Moat Data Points

Ticker	Customer Retention	Current Def. Rev. % of Sales	Total RPO % of Sales	Software Importance	R&D % of Sales	Revenue Concentration	LTV to CAC	Forward M&A Activity
ADBE	85.0%(1)	27.2%	80.1%	Mission Critical	17.0%	Very Low	4.7	Moderate
AZPN	95.0%	13.5%	115.1%	Mission Critical	52.9%	High		Moderate
BLKB	93.0%	33.2%	101.4%	Mission Critical	13.9%	Low		Moderate
CRM	92.0%	49.7%	148.7%	Mission Critical	16.1%	Very Low	3.1	Low
DOCU	98.0%(2)	45.2%	65.0%	Productivity Enhancement	19.1%	Very High	1.1	Low
DSGX	95.0%(1)	13.5%		Mission Critical	14.5%	Low	N/A	High
GWRE	99.0%	21.2%	N/A	Core	27.6%	Moderate	6.9	Moderate
HUBS	88.0%(1)	26.1%	31.4%	Mission Critical	25.5%	High	3.4	Very Low
MANH	95.0%	23.3%	144.5%	Core	14.6%	High	N/A	Low
MSFT	N/A	20.9%	92.0%	Core	12.8%	Very Low	N/A	Moderate
NOW	98.5%	53.2%	165.5%	Mission Critical	24.4%	Low	10.4	Very Low
PEGA	95.0%	25.2%	97.5%	Mission Critical	20.6%	High		Very Low
RNG	90%(1)	9.7%	100.0%	Mission Critical	15.2%	High		Very Low
SHOP	85.0%(1)	3.6%		Core	26.8%	Low	4.9	Low
TEAM	93.0%(1)	32.3%	42.6%	Mission Critical	52.9%	Moderate	7.4	Low
TWLO	103(2)%	3.3%	3.3%	Mission Critical, Productivity Enhancer	22.7%	Very High		Moderate
TYL	98.0%	29.9%	96.0%	Core	5.7%	Very Low	10.4	Moderate
ZM	101%(2)	27.7%	79.0%	Mission Critical	17.6%	Moderate		Low

(1) Morningstar estimate
(2) Dollar retention

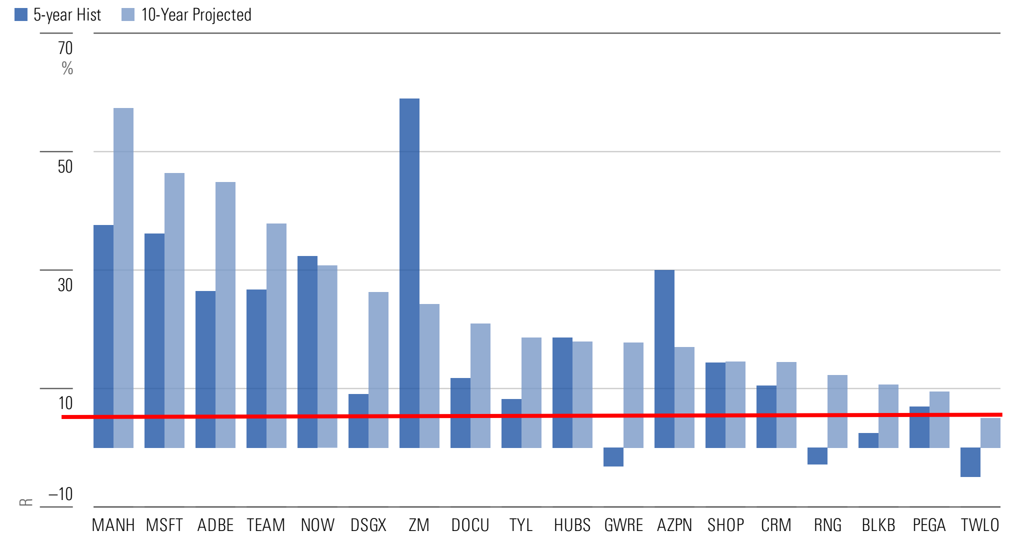
Source: Morningstar. Data as of June 2024.

Key Considerations for Evaluating Software Moats

The ROIC - WACC Spread Is a Great Place to Start

The relationship between returns on invested capital and the weighted average cost of capital, or WACC, is critical. Wider spreads and increased confidence in a company's ability to generate positive economic returns over 10 and even 20 years inform our opinions regarding a company's moat. As long as the software company is growing, operating normally, and not making material acquisitions, we think returns should increase over time as operating leverage is usually apparent in every expense line and the software business model is asset light.

Exhibit 4 Software Companies Typically Generate Excess Returns



Source: Morningstar. Data as of June 2024.

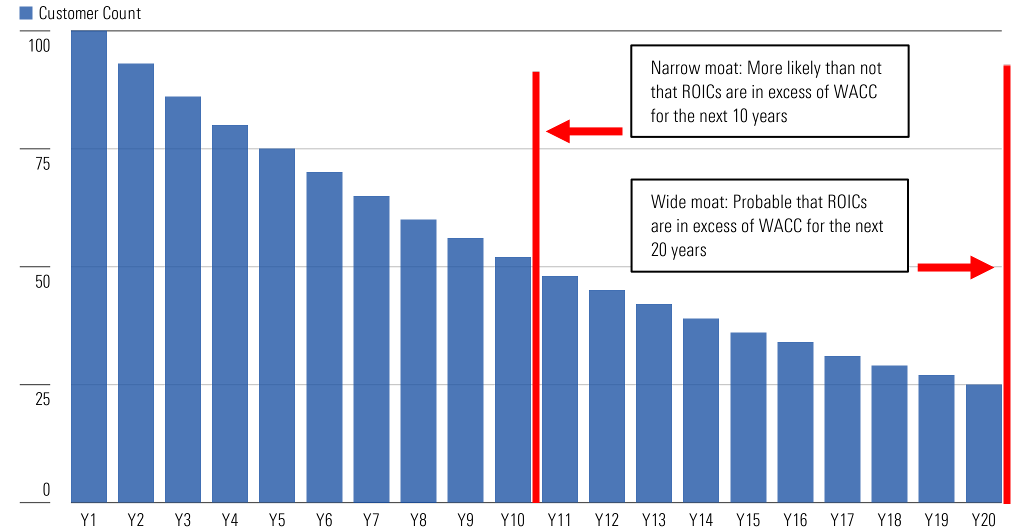
Retention Metrics Provide Key Insight Into Health of Any Software Company

One of the most important data points that software companies provide is retention rates. These come in a variety of flavors, but the two varieties most often seen are "gross retention"—which measures what percentage of customers from one year ago are still customers today)—and "net retention," sometimes called "net dollar retention," which measures how much the customer cohort from one year ago is spending today relative to what they were spending one year ago. Given the annuity-like nature of software subscriptions, customer retention is critical. Excellent retention metrics support good growth and are indicative of a strong, moaty solution.

For software, we also look at other visibility indicators such as deferred revenue (payments have been received but periodic service has not been fully delivered), remaining performance obligations, or RPO, (total contracted revenue for services not yet delivered, regardless of whether invoices have been sent). These metrics can give an indication of pending revenue generation and often "derisk" the growth story. We can also look at the mix of recurring revenue for a software company—which is typically around 93% of total revenue—or contract duration, which ranges from monthly for SMB to four years for core systems for enterprise customers. Some software companies may also have transactional revenue, which we consider recurring in nature. In general, enterprise users require a more intricate sales process, with multiple layers of demonstrations, proof points, technical assessments, and approvals, which are led by a sales team. Conversely, software companies experience higher retention from enterprise users, generally 92% or better, while small businesses might generate retention of 80% -0%, as installations at large customers are far more complex and, therefore, more costly and challenging to change.

Exhibit 5 Higher Customer Retention Mathematically Underpins Economic Moats

% of Customers Retained on Y-Axis versus Years on X-Axis



Source: Morningstar

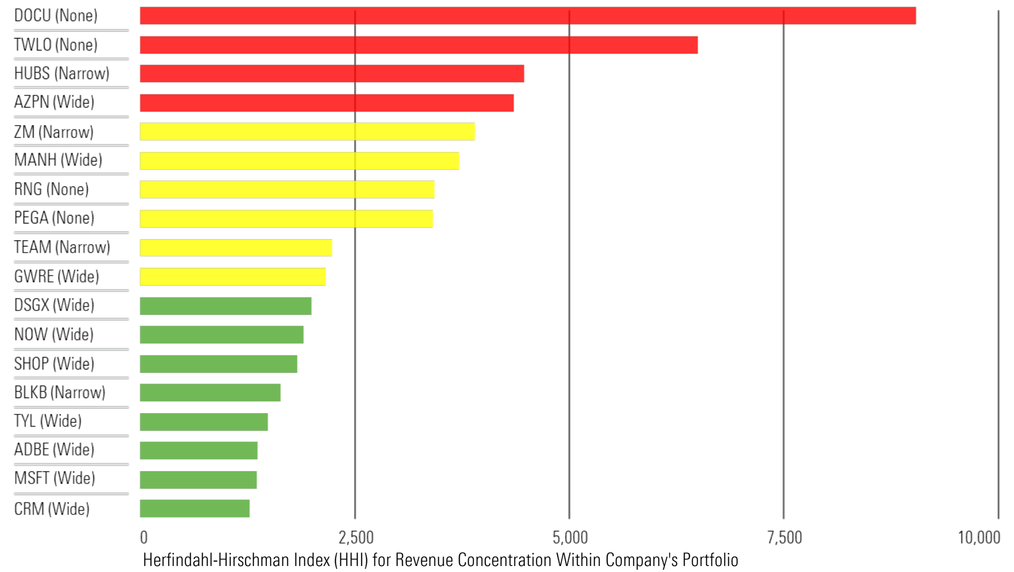
How Important Is the Software Application to the Customer?

The more important the solution is to the customer, the less likely they are to switch to another product. We have developed a simple framework to assess this importance, categorizing software offerings as mission-critical (most important), money-saving or productivity-enhancing (moderate importance), or nice to have (low importance). An enterprise resource planning, or ERP, system is core to operations. Similarly, parts of ERP systems such as the customer relationship management, or CRM, have been carved out into standalone markets but remain mission-critical for the user, meaning the user could not operate without the solution. Money-saving or productivity-enhancing applications can still be important, but they are less important than core systems. These solutions may apply to smaller areas of operations or a small percentage of the workforce. Lastly, we see a third category of solutions, which we consider "nice to have" but clearly less important than either of the two other categories. We believe most enterprise software is in the two more important categories.

How Concentrated Is the Company's Revenue?

A company with greater revenue diversification tends to increase our confidence in its ability to generate higher returns over an extended period of time. Diversification helps mitigate risk from a single solution facing increasing competition, while providing multiple potential growth vectors.

Exhibit 6 Revenue Diversification Tends to Help Strengthen and Even Widen Economic Moats

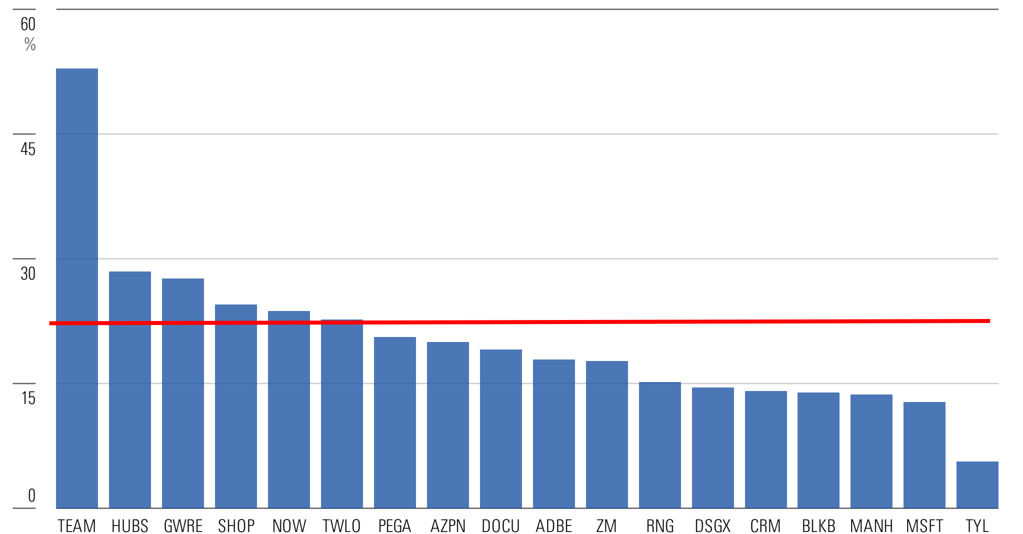


Source: Morningstar. Data as of June 2024.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

Software companies must innovate in order to maintain their competitive positioning. As a percentage of revenue, research and development, or R&D, expense for our software companies averaged 20%, which is typically the second-largest expense after sales and marketing. There is no "ideal" level of R&D investment, but we observe that, as a percentage of revenue, this line item tends to decrease over time, so there is leverage present even for innovation.

Exhibit 7 Software Companies Invest Heavily in R&D (% of Revenue) to Innovate



Source: Morningstar. Data as of June 2024.

Has the Company Made Recent Acquisitions That Could Distort the Financial Statements?
Software companies make acquisitions to bolster their R&D efforts, add top engineering talent, and speed time to market for certain features. Deal sizes typically are small. M&A activity is common within the industry and we do not expect this practice to change going forward. However, acquisitions can materially increase goodwill, thus expanding the invested capital base and lowering ROICs, and increasing intangible assets, whose amortization can lower returns further. Understanding any effects on the financial statements from acquisitions, along with a robust strategic analysis of the role that acquisitions are playing in each company's competitive positioning is another tool for analyzing moats in the industry.

Adobe: Maintaining Wide Moat Based on Creative Dominance and Expanding Portfolio

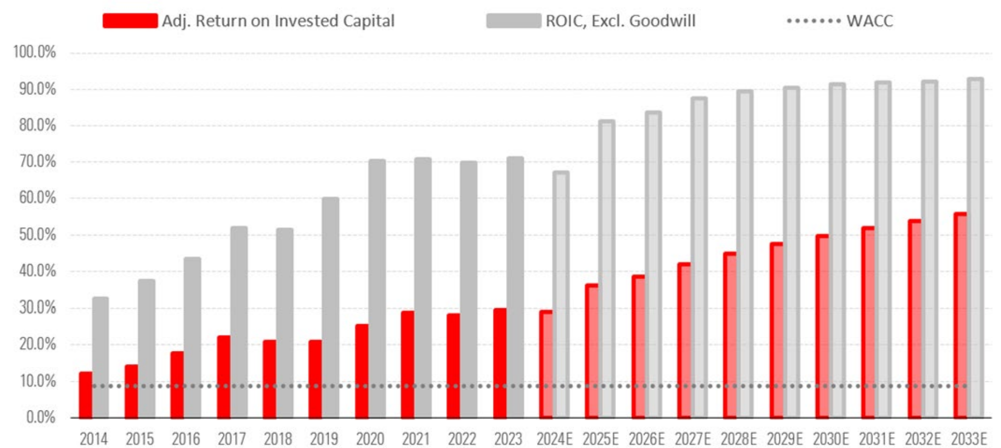
Company Description

Adobe provides the most comprehensive suite of solutions, the Creative Cloud, to creative professionals to assist in making content for online, offline, and video media; Acrobat for streamlining digital workflows; and Digital Experience for planning and managing all phases of a customer's journey.

Moat Summary

We believe Adobe has earned a wide moat based on switching costs and network effects and that ROICs will more likely than not exceed the company's WACC over the next 20 years. The company dominates the creative space, created a worldwide standard in the PDF format, and offers a leading marketing platform as well Adobe's ROICs were meaningfully pressured in the 2012-15 time frame due to the company's transition from a perpetual license model to a subscription model. We think returns over the last several years are more indicative of the company's performance and expect continued improvements going forward based on margin expansion, the rolling off of amortization expenses, and operational improvements.

Exhibit 8 We Expect Adobe to Continue to Generate Attractive ROICs



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

Adobe does not disclose retention statistics, but we estimate the overall retention is approximately 85%-90%, with enterprise customers being well in excess of 90% and self-serve, or SMB, customers being 75%-85%. We think the ability for a project photographer to subscribe for a month, unsubscribe for another month, and then resubscribe for a month makes the calculation difficult and the resulting data less meaningful. So while retention is probably lower than other elite software companies (92% is good, 95% great, and 99% elite), we do not view this as problematic. Approximately 81% of revenue is recurring through subscription agreements, while still more of the mix is recurring in nature. Deferred

revenue is about 27% of revenue, while RPO is about 80% of revenue. Contract duration tends to be a year for enterprise customers, while self service is typically a year but can be month to month.

How Important Is the Software to the Customer?

Adobe's Creative Cloud dominates the industry to the extent that Photoshop has become the de facto industry standard for image editing. Advertising agencies, corporate marketing departments, and independent creative professionals have adopted Adobe solutions en masse, and they are sharing files back and forth as part of every day workflow. While there may be point solutions that compete with one of the apps within Creative Cloud, there are extremely limited options for a single suite of integrated apps. Acrobat also created the now-ubiquitous PDF standard, for which there is no viable alternative. Suffice it to say that creative professionals would not be able to function without Adobe solutions and that much of the world relies on Acrobat PDFs for streamlining business processes. On the Digital Experience side, which is predominantly an enterprise grade solution, we think much of this opportunity is greenfield, and the competition is limited to just a handful of firms, with only two other sizable firms.

How Concentrated Is the Company's Revenue?

While the bulk of revenue is derived from Creative Cloud, there are north of 25 individually packaged solutions contained therein as well. Then there are various pricing tiers and access levels for both Creative Cloud as well as Document Cloud. Lastly, Adobe also offers another 20 applications within its Experience Manager solution. Overall, we think revenue is very well diversified and the portfolio spans the needs of the entire creative and marketing process, and then some.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

We think Adobe invests appropriately to develop new solutions and maintain its competitive position. The company is relatively mature, so its R&D expense is fairly stable. It invests right at the median of our coverage at 18% of revenue into R&D expense.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, Adobe has been acquisitive and uses M&A as a means to extend its R&D efforts. By virtue of its age, the company has made many acquisitions, some of which have been substantial, resulting in a material difference between adjusted and unadjusted ROICs. We expect the company to continue to make smaller bolt-on deals in the coming years mainly as a means to more rapidly add features to key solutions. Adobe has also made more substantial acquisitions over the years, including Macromedia, Omniture, and Marketo, all of which were publicly traded. The company's balance sheet includes $1.1 billion of intangible assets and $12.8 billion of goodwill, so the capital base is at somewhat inflated and amortization of intangibles, which further depresses returns.

AspenTech: Maintaining Wide-Moat Rating Based on a Robust Portfolio Serving Capital Intensive Industries

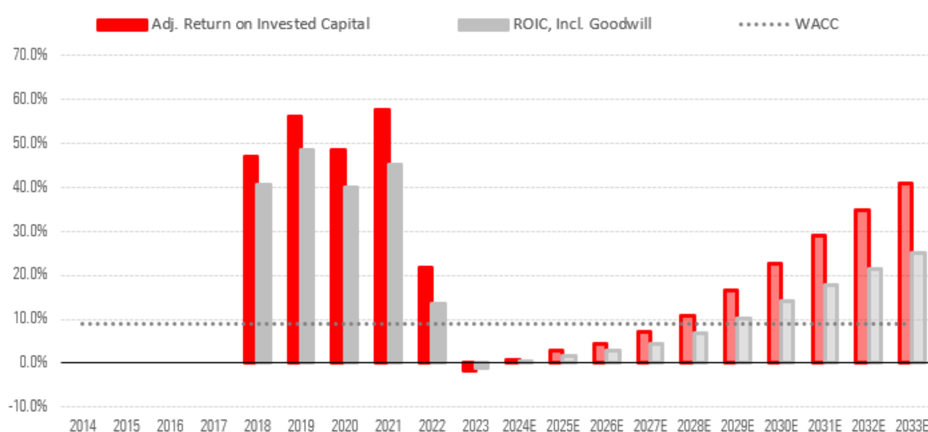
Company Description

Aspen Technology is a global leader in asset optimization software, enabling customers within capital-intensive industries to design, operate and maintain their operations to meet their profitability, safety, and sustainability goals. In May 2022, Emerson Electric traded over $6 billion in cash and its Open Systems International (digital grid management) and subsurface science and engineering businesses for 55% of AspenTech's shares. The new AspenTech is the combination of heritage Aspen, OSI, and SSE and offers more than 60 software modules.

Moat Summary

Through its leading competitive position in the highly specialized petroleum and chemical refining industries, we believe AspenTech has established a wide moat based on high customer switching costs and intangible assets. Returns historically were among the best within our software coverage, and despite unusual accounting treatment whereby the goodwill and intangible assets arising from Emerson's acquisition of AspenTech's were put on Aspentech's balance sheet, we think it is more likely than not that AspenTech will continue to generate returns well in excess of its cost of capital for the next 20 years. At a high level, the accounting treatment is such that AspenTech acquired itself and created goodwill in the process, which obviously does not reflect economic reality.

Exhibit 9 Underlying Returns, Excluding the Distortion From the Emerson Acquisition, Remain Attractive



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

AspenTech does not provide retention metrics on a consistent basis. However, over the years management has occasionally maintained that the company enjoys high customer retention rates in excess of 95%. As recent macro pressure has resulted in elongated sales cycles, renewals have scaled back slightly in terms of dollar retention but the customers remain. We view this as a temporary

headwind and expect AspenTech to improve as the environment normalizes. Approximately 94% of revenue stems from license agreements and maintenance, which is appropriate given the nature of the firm's solutions. The average contract duration for legacy Aspen was five years, whereas the newer solutions from OSI and others are typically one-year deals. Deferred revenue is approximately 13% of revenue, while RPO is approximately 115% of revenue.

How Important Is the Software to the Customer?

AspenTech serves virtually all the largest refineries, chemical processors, and engineering and construction companies, all of which face increasing pressure to deliver resources for a growing population while also reducing waste, emissions, and energy consumption. These facilities operate under continuous processing 24 hours per day, 365 days per year in industries that are generally narrow-margin. Given that the cost of failure is very high, ensuring that operations run efficiently is imperative.

How Concentrated Is the Company's Revenue?

We view AspenTech's revenue as highly concentrated. As expected, the majority of sales stem from Heritage Aspen solutions into the petroleum and chemical processing arenas, with the flagship AspenOne platform being integrated across customers' workflows. We expect it will take some time for subsurface engineering and digital grid management businesses to fully ramp up, however we are encouraged by the segments' early contributions to annual contract value growth.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

AspenTech's decades of know-how combined with its continued R&D focus enable the firm to stay competitive. The firm's R&D spend in recent years has ranged between 15%-20% or revenue, which is higher than its competitors but in line with our software group median of 18%. Given the company's focused portfolio, we believe these innovation efforts are appropriate.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Emerson pushed all of the goodwill and intangible assets arising from its acquisition of AspenTech onto AspenTech's balance sheet. From an ROIC standpoint, we think this approach is inconsistent with the economic reality, as AspenTech clearly did not acquire itself and therefore should not be saddled with the goodwill, intangible assets, and amortization of purchased intangibles that combine to lower returns. Therefore, we have attempted to adjust for this throughout our explicit forecast. Aside from this, AspenTech has historically completed tuck-in acquisitions that complement its existing suite, with minor impact on its income statement. Now that it has been consolidated into Emerson, the company has a stated strategic initiative to execute more deals, which we expect will remain of the bolt-on variety.

Atlassian: Maintaining Narrow Moat, Which Should Strengthen as the Company Exits Its Model Transition

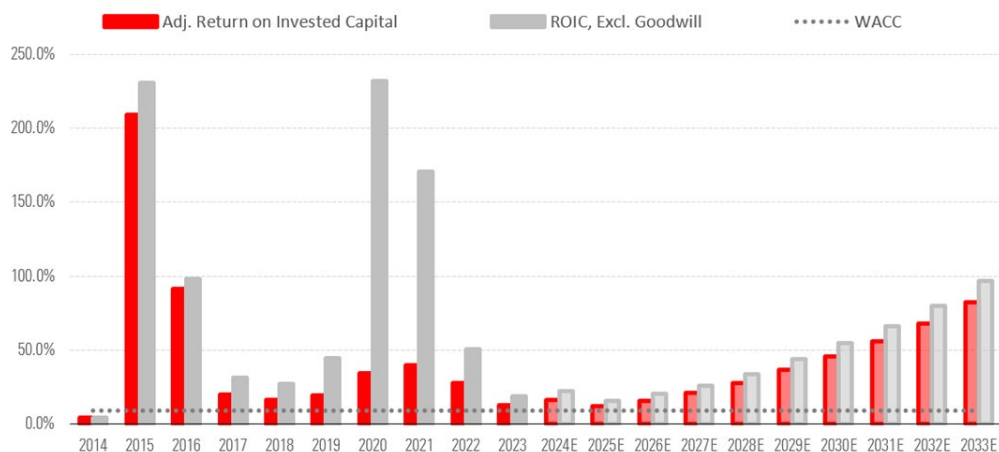
Company Description

Atlassian creates software that helps teams work together more efficiently and more effectively. The company provides project planning and management software, collaboration tools, coding software, Jira service desk solutions, and also has an emerging set of security applications.

Moat Summary

We believe Atlassian has earned a narrow moat based on switching costs and that ROICs will more likely than not exceed the company's WACC over the next 10 years. The company has been acquisitive, with deals overwhelmingly being of the small bolt-on variety. Atlassian has also been undergoing a model transition where it has been moving perpetual license sales to SaaS and subscription arrangements, which has negatively pressured ROIC. Given that perpetual license sales ended in February 2024, we expect both margins and returns to be at or near a bottom and should improve steadily in the coming years.

Exhibit 10 We Expect Atlassian to Generate Attractive ROICs Exiting Its Model Transition



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

Atlassian does not provide retention metrics on a regular basis. However, in the past it has occasionally provided data on both gross and net retention. Customer, or gross retention, for customers spending $50,000 or more annually with Atlassian was 98% five years ago, which would be in the elite category. We assume, given macro pressures and the expanding portfolio, that this has decreased slightly but would still be in the mid-90% area. The company has also referenced net retention in the 130%-140% range in late 2022, which would also be excellent, especially under the macro circumstances at that time. Approximately 94% of revenue is recurring through subscription and maintenance agreements,

which is not surprising given the transition to subscriptions and cloud delivery. Deferred revenue is 32% of revenue, while RPO is 43% of revenue.

How Important Is the Software to the Customer?

Given Atlassian's wide-ranging and expanding portfolio we think the solutions skew toward mission critical, particularly on the service desk and code creation side, with the collaboration elements more related to productivity enhancing. The company's Jira service desk solution follows a similar story arc to ServiceNow. Initially used for IT help desks, Jira has branched out to other use cases, including customer service and human resources. However, whereas ServiceNow has always nearly exclusively targeted the largest enterprises, Atlassian's software initially targeted SMB and mid-market users. The company employs a freemium model whereby it allows small groups to use stripped -down versions for free. It then hopes to convert these users to paid subscribers and upsell more seats and solutions as the customer grows. Given the company's typically-high net revenue retention, Atlassian has clearly been successful at entrenching itself in a given customer, upselling that customer to a paid version, and then expanding aggressively from there.

How Concentrated Is the Company's Revenue?

Atlassian's revenue concentration is moderate, based on our analysis. The company built out from its initial Jira issue resolution application for use in the software development process to include a variety of important products, including Jira, Jira Service Management, Confluence, Trello, Bitbucket, Work Management, Project Discovery, Align, Opsgenie, Crucible, Access, and Crowd. We expect that recently released applications and unspecified future products will continue to foster a broad revenue base without heavy concentration on just a couple of solutions.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

Atlassian is very well positioned across the SMB and mid-market customer groups given its breadth of products, robust features, and freemium model. Atlassian dedicates the most resources to R&D among our coverage and has not invested less than 45% of annual revenue in this area since its IPO in December 2015. In fiscal 2023, the company spent 53% of revenue on R&D efforts, against the 18% median of our coverage group. Atlassian's investment is modestly inflated given the model transition, which has a depressing effect on revenue and generally requires higher spending. Management sees significant opportunities and has invested accordingly. Given the company's revenue level, we could argue the Atlassian has over-invested here, but considering the resulting revenue growth, we have no quarrel with this strategy historically. However, given the relative level of spending on product innovation, we believe this will have to decline meaningfully as a percentage of revenue over time in order to allow the company's margins to improve.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, Atlassian has been acquisitive and uses M&A as a means to extend its R&D efforts. While the firm has completed a variety of deals, it has clearly eschewed transformative M&A and focused on small feature-driven acquisitions. The firm's largest deal by a wide margin was for

Loom in November 2023 for $975 million. We expect the firm to continue to make small bolt-on deals in the coming years in support of its R&D efforts. The company's balance sheet includes $330 million of intangible assets and $1.3 billion of goodwill, so the capital base is modestly inflated and, while amortization of intangibles has historically been small, it will be larger over the next several years to account for the Loom acquisition, which should weigh on returns.

Blackbaud: Maintaining Narrow Moat Supported by Switching Costs in Insulated Niche

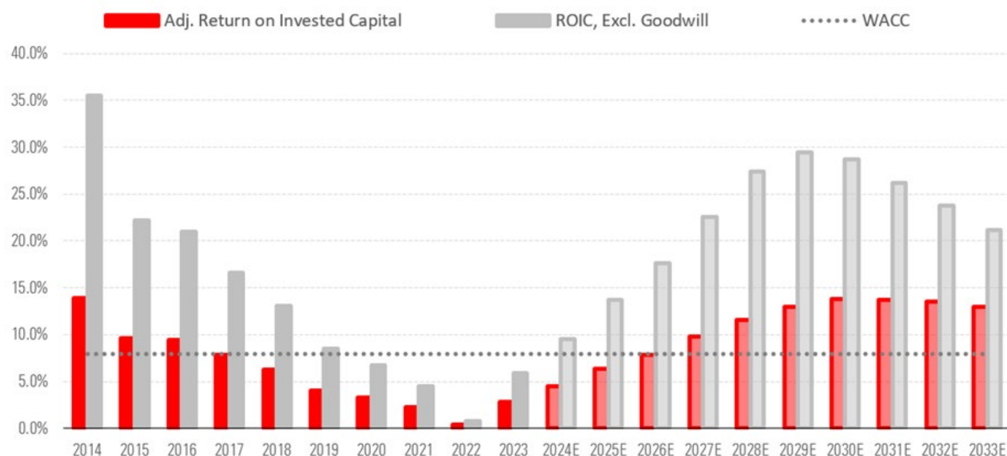
Company Description

Blackbaud provides software solutions designed to serve the "social good" community, including nonprofits, foundations, corporations, educational institutions, healthcare institutions, and individual change agents. The company has also moved into related areas outside core fundraising, notably into K-12 schools. The firm enables more than $100 billion in donations annually across a customer base in excess of 40,000 customers in over 100 countries.

Moat Summary

We assign a narrow moat rating to Blackbaud, driven by high switching costs and to a lesser extent, intangible assets based on its deep domain expertise in the nonprofit vertical. The company has historically produced attractive returns but a model transition has weighed on returns over the last several years, with the pressure on returns exacerbated by the 2022 acquisition of EVERFI. We think the negative impacts from these factors have troughed, as evidenced by the bounce in returns in 2023. We expect the model transition headwinds have now become tailwinds, which should drive returns beyond cost of capital within a few years. We also think it is more likely than not that excess returns continue throughout the next decade. We also note the nonprofit vertical is characterized by low budgets and higher than average macro sensitivity.

Exhibit 11 Blackbaud's Improving Profitability and Investments Will Support Increasing ROICs



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

Blackbaud does not provide retention metrics on a regular basis. However, in the past management has indicated the firm enjoys customer retention in the 91%-93% range, which we view as solid overall and impressive given the firm's nonprofit customer base. The company has also been moving customers to longer duration contracts, which underscores the longer-term commitment customers are willing to make and should support even higher retention over time. Approximately 97% of revenue was recurring

in nature due to the cloud transition. Deferred revenue represents approximately 33% of revenue, while RPO represents about 101% of revenue.

How Important Is the Software to the Customer?

Nonprofits rely on Blackbaud's Raiser's Edge NXT CRM, which we believe is the best-in-class solution, to maintain relationships with donors. The firm also provides an extensive suite of customizable solutions including financial management, marketing, events, payment processing, corporate donations, corporate education, and analytics, all purpose-built for the social good industry. Given its breadth and integration across workflows, the software is critical to customers' operations.

How Concentrated Is the Company's Revenue?

We believe the firm's revenue concentration is low, based on a variety of disparate solutions that are tied together mainly by the specialized needs of its nonprofit customer base. The portfolio has grown over time mainly via acquisitions. Historically the bulk of revenues was derived from the combination of Raiser's Edge NXT and Financial Edge NXT. Traction in a variety of other solutions has led to improved revenue diversification.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

Over the last several years the firm's R&D investment has spanned between 11% and 15% of revenue, which is under the 18% median of our software group. Given the company's relative maturity and the slow-moving nature of the underlying nonprofit customer base, we view this investment in innovation as appropriate. Competitors certainly exist, with Salesforce being the most notable, but we think the relatively insulated market offers fewer opportunities for widespread competition. Further, Raiser's Edge has long been viewed as the premiums solution within the industry.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, Blackbaud uses M&A to supplement its R&D program and enter new markets. In Blackbaud's case, acquisitions have led to new discrete solutions within the company's portfolio more so than for most of the software firms within our coverage. Over the years, Blackbaud has acquired its way to offering the most extensive software portfolio specifically targeting the nonprofit niche. Some acquisitions come with a steep price tag or require a little more management attention and time for integration effort to pay dividends. As a result, the company's balance sheet holds $1.05 billion in goodwill and $581 million in intangible assets. Together with the related amortization expenses, these items pressure returns.

Descartes: Upgrading to Wide Moat Based on Proven Ability to Support the Supply Chain During Covid Pressures

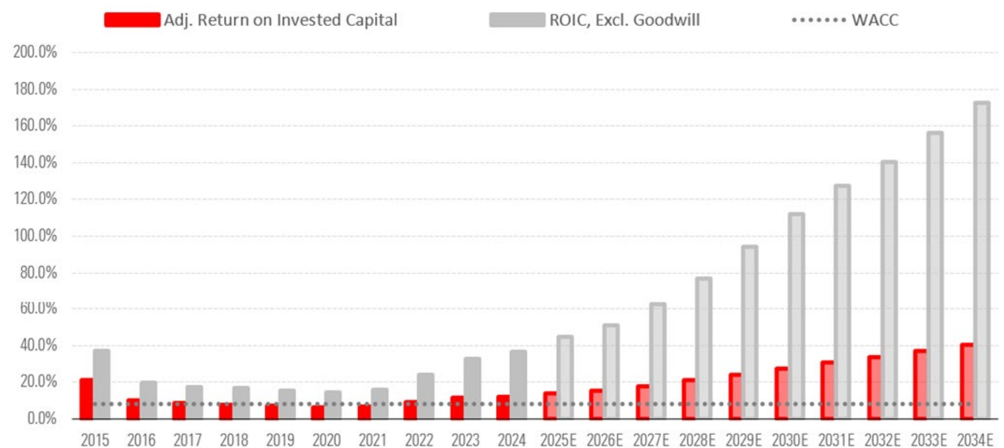
Company Description

Descartes operates the largest neutral shipping network in the world, connecting 200,000 shippers, manufacturers, suppliers, retailers, and government agencies and enabling the sharing of tens of billions of shipping-related transactions each year. The firm also offers a broad portfolio of solutions that solve a variety of challenges within the shipping industry, including customs and compliance; transportation management; and routing, mobile and telematics.

Moat Summary

We believe Descartes has earned a wide moat based on switching costs and network effects that have historically enabled the company to generate returns on invested capital in excess of its cost of capital. Our upgrade is supported by the company's excellent performance during the supply chain crisis associated with the covid lockdown period. We believe it is more likely than not that excess returns will continue for the next 20 years given the firms methodical nature. We note the company is acquisitive and therefore has a sizable goodwill balance that depresses ROICs.

Exhibit 12 Descartes' Acquisition Model Creates Goodwill, Which Weighs on ROICs



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

Descartes does not regularly provide retention metrics, although we believe the company's gross, or customer retention, is consistently around 95%, which we view as excellent and quantitatively supports a wide moat. Approximately 90% of revenue is recurring through subscription agreements, with about 40% of total revenue being transactional in nature. Even within the transactional portion of revenue, customers typically sign on for minimum commitments on an annual basis. Deferred revenue is about 15% of revenue, while RPO is about 65% of revenue.

How Important Is the Software to the Customer?

We view Descartes' solutions as mission-critical, as they help inputs arrive promptly for just-in-time manufacturing, shepherd goods make their way through Customs and compliance in more than 160 countries, schedule deliveries, change shipments on the fly, and provide real-time intelligence on where specific items are within the supply chain. It seems unlikely that Descartes' customers—entities directly involved in moving goods—will be inclined to switch software platforms that help them move goods more efficiently. Further, we think the large network, combined with the various related software modules, represents a compelling logistics solution for users, making the integrated platform that much stickier. Lastly, Descartes demonstrated its importance to users during the supply chain contortions that arose during the covid lockdowns, as it helped shippers navigate significant issues and delays.

How Concentrated Is the Company's Revenue?

Descartes has moderate revenue concentration, which is not problematic in our view. The reason for this is obvious, as the firm is acquisitive and has added a variety of discrete products to its portfolio over the years. We do not expect revenue concentration to change much over the next five years.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

While other providers, such as SAP, may operate larger networks, Descartes operates the largest neutral shipping network, which provides users with confidence that larger shippers are not favored over smaller shippers and that no party is forced to use a competitor's software system. The company consistently invests about 15% of annual revenue into its R&D program, which is below the 18% median for software but not unusual for specialized vertical software providers with more focused end-markets. Additionally, Descartes' explicit strategy is to acquire companies with established solutions in order to supplement its R&D efforts and accelerate time to market with existing solutions that can be more easily distributed to the company's existing clients.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, Descartes has made acquisitions. In fact, Descartes' stated strategy is to lean into M&A to bring more products under its umbrella. In executing its strategy, the company intends to make several acquisitions per year, but does so in a disciplined manner regarding attractive valuation, complementary technology, industry consolidation, and clear adjacency to core logistics needs. Since 2015, Descartes has completed 29 acquisitions for a total consideration of $1.1 billion. The company's balance sheet includes approximately $250 million in intangible assets and $760 million of goodwill, so the capital base is definitely inflated and amortization pressure on returns is meaningful. Even so, shares are up approximately 600% over the last ten years so investors clearly have rewarded the company's acquisition-led strategy.

Docusign: Downgrading to No-Moat Rating Based on Increasing Competition and Slow Uptake for Solutions Beyond E-Signatures

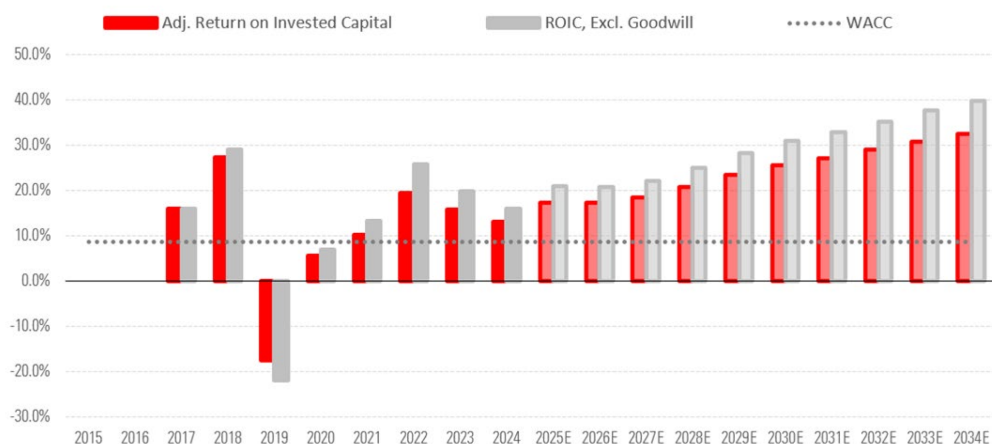
Company Description

Docusign offers the Intelligent Agreement Management, a broad cloud-based software suite that enables users to automate the agreement process and provide legally binding e-signatures from nearly any device, along with several related solutions, notably contract lifecycle management. E-signatures dominate the company's revenue stream.

Moat Summary

We believe Docusign is moaty and had previously rated the company as having a narrow moat. However, we are concerned by the slower-than-expected uptake of the company's solutions beyond e-signatures, such as contract lifecycle management. We also see a new commitment from Adobe in the e-signature market that we think could govern Docusign's advancement going forward. Finally, we view e-signatures more as a feature on a larger platform, and note that e-signatures themselves are an efficiency enhancement tool rather than a mission-critical solution. So, while we see positive economic returns in the near term, our confidence beyond the mid term for such returns has waned. The company completed its IPO in fiscal 2019, hence the distorted ROICs. Docusign benefited from a surge in e-signature demand related to covid-driven lockdowns and then a related stagnation as the pandemic waned, such that recent net dollar retention has dipped below 100%, which is highly unusual for software companies.

Exhibit 13 While We Expect Docusign's Returns to Improve Post-Covid, We Question the Durability of Returns



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

Docusign provides net dollar retention data, which has been trending down sequentially for at least eight quarters to the most recent level of 98%. NDR basically measures how much revenue associated with a given client (or the entire book of business) is retained on a periodic basis. This is almost always

in excess of 100% for software companies. Management has long maintained that its normal NDR was in the 112%-119% range, even during the height of the covid-lockdowns when it peaked at 125%. Further, given the relative importance of the real estate industry, where transaction volumes are down with higher interest rates, Docusign's revenue's have seen incremental pressure due to high interest rates and a housing shortage. We think the contraction among clients is beginning to ease and should reverse by next year. Approximately 97% of revenue is recurring through subscription agreements, with the average contract duration being 18 months, which is consistent with its 17-month-19-month range since the company's initial public offering in 2018. Deferred revenue is about 45% of revenue, while RPO is about 65% of revenue.

How Important Is the Software to the Customer?

E-signature was a nascent market before covid hit. The lockdowns forced a surge of investment to help companies attempt to conduct basic business operations, such as executing contracts. Docusign rather uniquely benefited during this time frame, and while the hangover period has been felt more at covid beneficiary firms, this period of unprecedented disruption served as a proving ground for the technology. Because just a few years ago the world overwhelmingly utilized analog signatures on paper documents, we think e-signatures fall more into the productivity enhancement category within our framework. Further, the company notes that an e-signature saves the average user $36 per instance and that the turnaround time improves from nine days to same day. We therefore think the value proposition is compelling for users.

How Concentrated Is the Company's Revenue?

Docusign has the highest revenue concentration within our software coverage. While the company has worked diligently to add solutions to the portfolio and now boasts in excess of 15 products,, with most being add-ons to e-signatures, revenue is still overwhelmingly derived from its flagship e-signature offering. We expect revenue diversification to unfold over a period of years, rather than quarters.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

Docusign's e-signature solution dominates the market for such products. While there are a wide variety of competitors, the main notable competitor is Adobe in our view. Docusign has invested about 19%-20% of revenue into its R&D efforts in each of the last three years. We think this is appropriate against the 18% median for our coverage to help expand a limited product suite.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, Docusign has made acquisitions. However, it has utilized M&A to a considerably smaller degree than most of our coverage, completing just four deals since its 2018 IPO. The difference between adjusted and unadjusted ROICs is only a few hundred basis points. We expect Docusign will continue to occasionally make small acquisitions in the coming years but will remain more conservative than most peers. The company's balance sheet includes approximately $50 million of intangible assets and $350 million of goodwill, so the capital base is only modestly inflated and amortization pressure on returns is similarly small.

Guidewire: Maintaining Wide Moat Rating Based on Strengthening P&C Vertical Leadership

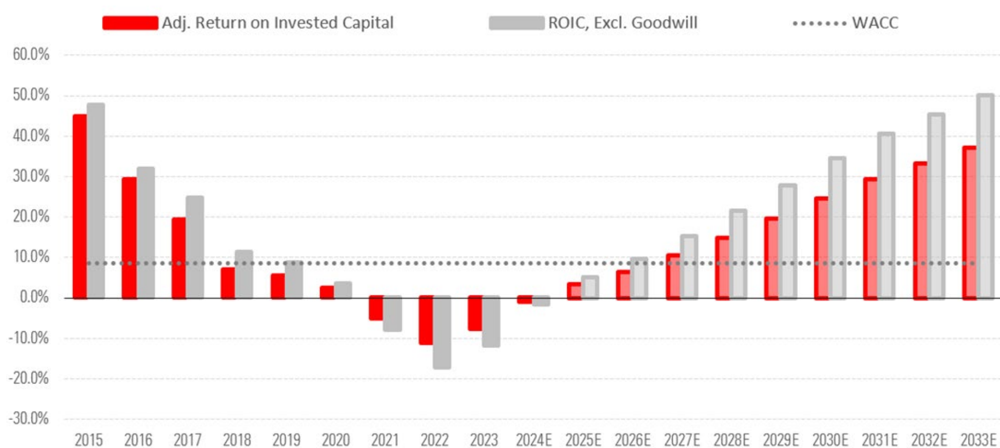
Company Description

Guidewire provides various software solutions to enable property and casualty (P&C) insurers to underwrite risk, issue policies, and administer claims. Key products include PolicyCenter, BillingCenter, and ClaimCenter, along with InsuranceNow. The company also offers a variety of add-on solutions, such as HazardHub, Cyence, and the data platform.

Moat Summary

We believe Guidewire has earned a wide moat based on switching costs and intangible assets and that ROICs will more likely than not exceed the company's WACC over the next 20 years. The software side of the business creates the moat, while the services business is not moaty in our view. While the last several years may have been messy because of the company's model transition to the cloud, Guidewire is gaining momentum and financial and operating metrics are clearly improving. The firm has moved beyond the depths of the transition and we think returns will bounce back over the next several years. Further we think the company's competitive lead has widened, as Guidewire first helped modernize the P&C insurance industry with modern software, and is now helping steer it to the cloud, which punctuates a remarkable journey since the company's 2012 IPO.

Exhibit 14 We Expect Returns to Improve, as the Model Transition Is Now Past the Trough



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

As the portfolio has grown and become more complex, Guidewire no longer provides retention statistics. However, Guidewire for years had never lost a client. While we think that is no longer possible given the breadth of the portfolio, we continue to believe retention is best-in-class, and is likely in the 99% area. More than 80% of revenue is recurring under subscription or term-license contracts, which typically span multiple years. Deferred revenue is approximately 21% of total revenue.

How Important Is the Software to the Customer?

Guidewire's solutions are required by a P&C insurance carrier in order to carry out its core operations. If there is a priority level more important than mission critical, these solutions would represent it. Guidewire was first to market with cloud-based solutions for the P&C industry and has led the charge in modernizing the industry that has long been based on COBOL or FORTRAN. While Majesco and Duck Creek are focused competitors, Oracle and SAP both have industry specific solutions for insurance carriers. However, Guidewire is widely viewed the industry leader.

How Concentrated Is the Company's Revenue?

Revenue concentration has diversified meaningfully since Guidewire's 2012 initial public offering when the company effectively had just one product, ClaimCenter. This was accomplished through organic product development and acquisitions. However, given its focus on serving the P&C industry we think some moderate level of revenue concentration is likely to persist. Overall, we do not believe revenue concentration is problematic and believe it can continue to decline as Guidewire matures.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

Guidewire has been at the forefront of innovation as it helps modernize the P&C insurance industry. We think the company is investing aggressively to introduce new solutions, integrate acquired technology, and to realize all of these solutions in the Guidewire Cloud. As the company has transitioned to a subscription model, it had to first port solutions to the cloud. This resulted in elevated R&D expenditures on top of a depressed revenue base, which has led to an artificially high level of investment that is substantially above the software median of approximately 18%. As a percent of revenue, R&D has already began to decline, which we expect to continue over time.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, Guidewire has been acquisitive and uses M&A to extend its R&D efforts. Given the company is relatively young still, M&A activity has skewed smaller, toward feature addition and product expansion into directly relevant areas, and we expect deal-making to continue in this regard in the coming years. Acquisitions have not been transformative, in our opinion. The company's balance sheet includes $372 million of intangible assets and $14 million of goodwill, but given an asset base of just over $2 billion, the capital base is at somewhat inflated and amortization of intangibles modestly depresses returns.

HubSpot: Maintaining Narrow Moat Based on Robust Portfolio and MidmMarket Strength

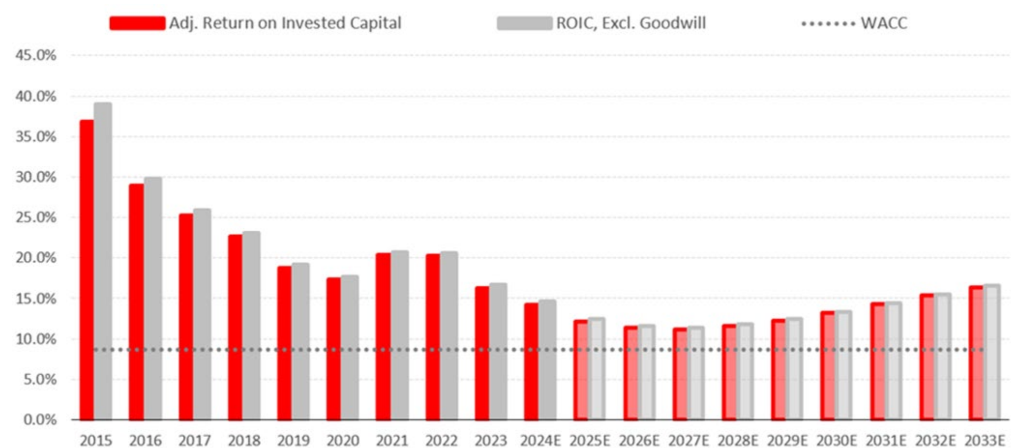
Company Description

We believe HubSpot is a leader in marketing, sales, service, and operations automation software, along with content management and commerce solutions for the under-served small and medium size businesses, orSMB, and midmarket companies. We see a long runway for growth as it gathers new customers and continues to move its existing clients up a tiered pricing structure and sell multiple hubs to larger clients.

Moat Summary

We believe HubSpot has earned a narrow moat based on switching costs and that ROICs will more likely than not exceed the company's WACC over the next 10 years. The company completed its IPO in fiscal 2014, hence the declining ROICs through 2020. While covid was an immediate boon for some software firms, it was challenging for HubSpot as SMB customers suffered. ROICs rebounded in 2021 and 2022 as the world began to normalize. Around the same time, HubSpot was spending feverishly on product development and introduced key new solutions like CMS Hub, Operations Hub, and Commerce Hub; relaunched Service Hub; transitioned to a platform approach rather than a point solution approach; and began offering more solutions in the free tier, which help create a large funnel for demand but also delay monetization. Our model assumes no economic recovery, which has remained an issue for software companies service SMB customers, and therefore results in a slower recovery in returns.

Exhibit 15 We Expect HubSpot To Generate Durable, Attractive Returns Over Time



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

HubSpot provides both net dollar retention and customer retention data. Customer retention has been stable in the high 80% area for the last couple of years, which we see as very good for SMB-focused software vendors. HubSpot experiences customer retention of 90% for clients that sign larger deals involving multiple solutions. Like for much of our SMB-centric software companies, net dollar retention

has been trending down over the last couple years but has stabilized in excess of 103%. During the covid recovery in 2021, NDR peaked nicely above 110%. Net retention is almost always greater than 100% for software companies. Approximately 98% of revenue recurring under annual subscription agreements—although the company occasionally signs multi-year deals with larger customers. Deferred revenue is about 31% of revenue. HubSpot also provides some other information that points to strong underlying business trends that we think will ultimately manifest in improving returns. These include the fact that 45% of annual recurring revenue, or ARR, is represented by customers with three or more products; and average revenue per subscriber has continued to expand even in a muted environment and with the inclusion of additional products available in a free pricing tier.

How Important Is the Software to the Customer?

HubSpot's solutions are mainly mission critical and perhaps even core to normal operations for customers. We think this fact is lost on investors because the target audience is SMB and mid-market companies, which often have a host of challenges that are not present at larger customers. The fact that a user may be at a small company does not mean they do not need robust applications to run their businesses. The underlying solutions are generally comparable to software sold by Salesforce in particular. However, rather than selling deals that could be worth more than $100 million like Salesforce, HubSpot's average annual deal has increased from approximately $9,700 in 2020 to approximately $11,400 in 2023.

How Concentrated Is the Company's Revenue?

HubSpot has relatively high revenue concentration, but given a rapidly expanding portfolio, including significant new product introductions since 2020, we believe concentration will ease in the coming years.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

HubSpot is clearly one of the leading software providers for SMB and mid-market companies in general. As we increase the aperture to focus on the company's main hubs, we see a similar leadership position for each solution. Competition varies greatly on the low end, and becomes Salesforce, Adobe, and traditional enterprise vendors on the high end. We see a soft spot in the middle, where HubSpot primarily focuses. HubSpot has meaningfully expanded its R&D program as it has launched a variety of new solutions and transitioned the company's solutions to a platform approach. In 2023, the company invested 28% of revenue back into R&D compared with the 18% median for our coverage. From a growth perspective, the results have been obviously excellent for the company so the investment was clearly worth it. That said, we expect R&D to decline as a percentage of revenue in the coming years.

Has the Company Made Acquisitions Over the Last Several Years that Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, HubSpot has made acquisitions. However, it has utilized M&A to a lesser degree than most of our coverage, completing just three acquisitions in the last five years for a total of approximately $180 million. Most of the company's product development has been organic, which we view favorably. The difference between adjusted and unadjusted ROICs is not material in our view. We

expect HubSpot will continue to occasionally make small acquisitions in the coming years but will also continue to use M&A more sparingly than peers. The firm's balance sheet includes approximately $40 million of intangible assets and $170 million of goodwill, so the capital base is only modestly inflated and amortization on returns is similarly small.

Manhattan Associates: Upgrading Moat Rating to Wide Based on Stellar Returns and a Strengthening Competitive Position as the Company Moves to the Cloud

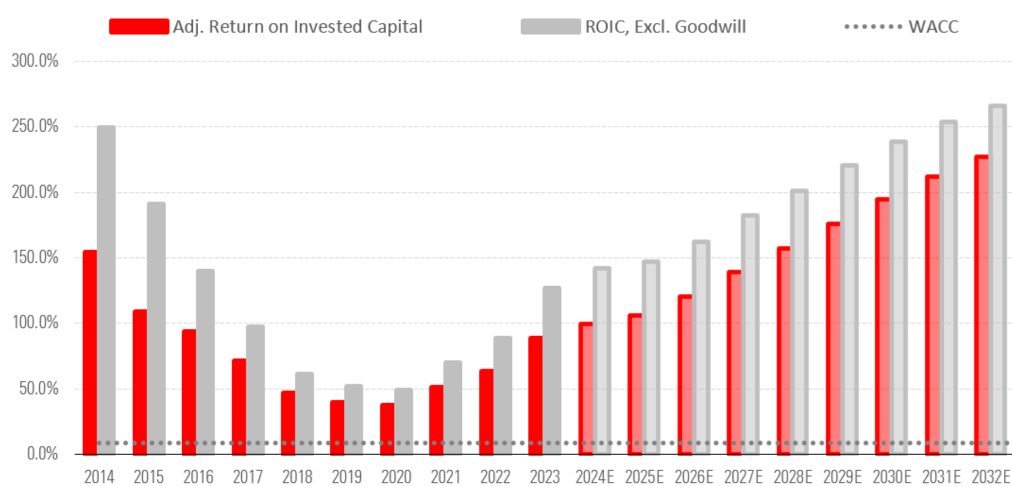
Company Description

Manhattan Associates provides logistics software, primarily serving the needs of larger customers with more complex needs. The company's primary solution is warehouse management,or WMS, followed by transportation management, orTMS, and omnichannel retail. Consistent with other software providers, Manhattan also provides implementation services to customers, although the services mix for Manhattan is considerably higher than it is for peers.

Moat Summary

We believe Manhattan has earned a wide moat based on switching costs and intangible assets and that ROICs will more likely than not exceed the company's WACC over the next 20 years. We previously rated the company's moat as narrow with some concern around the fact that Manhattan was in the early stages of a model transition and we were concerned about the financial impact from moving to a subscription model. We also have had reservations about the company's services business, which is approximately half of revenue and well-above peers. Active WMS launched in 2020, so we think we have now observed enough of the transition to feel comfortable that Manhattan's returns should remain very attractive. We think the services business is narrow-moat at best, a view we have not changed. We feel the overall level and consistency of returns has solidified our upgrade to wide.

Exhibit 16 Manhattan's Model Transition Has Been Smooth and Its Returns Have Remained Strong



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

Manhattan enjoys excellent customer retention of 95%-plus, which has not changed much over the last 20 years and remains consistent even as the company has moved to subscriptions and is certainly supportive of a wide moat rating. Approximately 45% of revenue is and should be recurring over the next

few years in the form of subscription and maintenance agreements. Contract duration is typically around five years on average. Deferred revenue is about 23% of revenue, while RPO is about 144% of revenue.

How Important Is the Software to the Customer?

We consider WMS as a core solution, while TMS and omnichannel are both mission critical. Very high retention and longer than average contract durations support this belief. Consider that some customers have dozens of distribution centers around the world delivering products to their clients in more than hundred countries and the strategic nature of operating assets at that scale becomes an imperative.

How Concentrated Is the Company's Revenue?

We categorize Manhattan's revenue concentration as high. WMS accounts for about 50% of revenue, omnichannel 30%, and TMS and inventory 20%. Within each major solution, there are a variety of other attachment opportunities. Revenue concentration has slowly come down over time, and we expect this trend to continue in the coming years as the portfolio continues to grow. That said, we don't expect the main category mix to change meaningfully in the next five years.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

There are several main competitors within WMS, including SAP, Oracle, and Blue Yonder. The landscape has not changed much in the last 20 years. Win rates in competitive situations have remained near 70% over the last 20 years, so we think the firm's bona fides are firmly established. Manhattan has invested 14%15% of revenue into R&D efforts in each of the last five years. We think this could have been slightly inflated by the transition to the cloud. Overall, we see innovation as consistent and appropriate for the company to maintain its leadership position. Further, given the company's reputation and full suite of cloud enabled applications, we think Manhattan should make the final set competitors when potential clients are looking to invest in a WMS system.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, Manhattan has made acquisitions. However, it has utilized M&A only minimally in our judgement. We expect the company will continue to occasionally execute small bolt-on deals in the coming years but will remain more conservative than most peers. The company's balance sheet includes approximately $60 million of goodwill, with purchased intangibles completely amortized, representing no carrying value. The capital base, then, is only modestly inflated, while amortization no longer is a drag on returns.

Microsoft: Maintaining Wide Moat Based on Public Cloud Positioning and Emerging AI Leadership

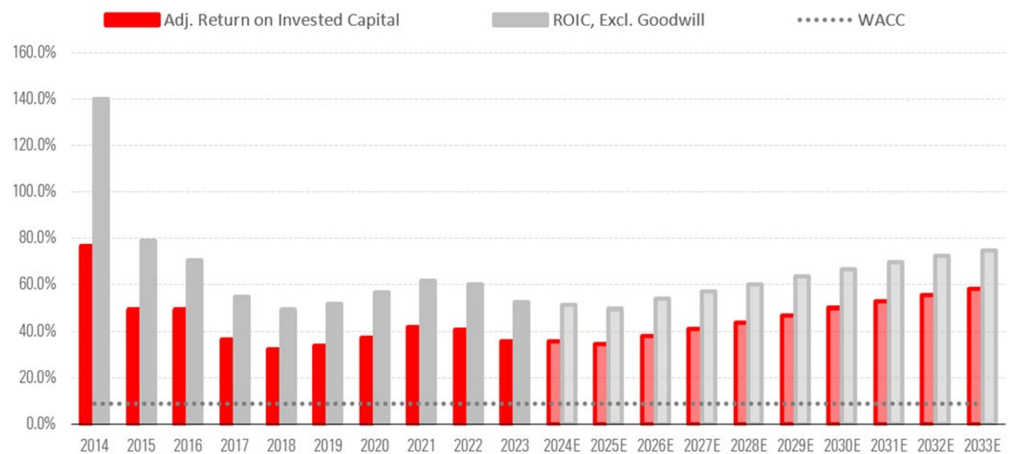
Company Description

Microsoft provides a wide variety of software solutions, from its iconic Windows and Office products, to its Azure public cloud suite of services, to LinkedIn for professional networking, to Xbox gaming. Microsoft is the largest software company in the world.

Moat Summary

We believe Microsoft has earned a wide moat based on switching costs, network effects, and cost advantages, and that ROICs will more likely than not exceed the company's WACC over the next 20 years. Microsoft has been able to maintain high returns even in the face of a model conversion to subscriptions and substantial investment in Azure infrastructure. We think strong leadership positions in secular trends toward AI and public cloud offerings support our wide moat rating.

Exhibit 17 We Do Not Expect Microsoft's Elite Returns to Wane



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

Microsoft does not disclose retention statistics, nor do we think it would be meaningful to have an overall retention measure given the different types of solutions the company offers. On subscription agreements for more traditional software applications, we believe overall retention is above 90%, with enterprise retention being notably higher and retention of SMB customers could be more in the low 80% area. Some solutions are more elastic in nature, such as Azure. While some Azure customers may sign significant multi-year commitments, others may use Azure infrastructure for projects, coming on and churning off, several times per year. A Game Pass user may not renew their subscription, but they will still be Xbox users, or a Windows user can buy a copy of Windows or license it. Further, Microsoft purposefully provides generous licensing terms and conditions to customers to entice them to move workloads from Microsoft on-premise instances to Azure, which would confound the retention calculations. So overall we think given Microsoft's monopoly-like solutions, customer retention has been

and should remain healthy. We estimate approximately 80% of revenue is recurring through subscription or consumption commitment agreements, while services, gaming, and Windows typically are discrete purchases. Even this doesn't tell the story though, as an Xbox customer will buy the console one time every five years but buy many games during that period, making those revenues sticky. Deferred revenue is about 21% of revenue, while RPO is about 92% of revenue. Contract duration tends to be one to three years for enterprise customers, while self service is typically a year but can be month to month. Generally larger deals tend to extend for more years.

How Important Is the Software to the Customer?

Microsoft provides indispensable solutions, such as Windows, Office, Server, Dynamics, Dev Ops, and Azure, among others. Without these, a business would not be able to operate in a modern way. While the applications obviously become embedded in the users' workflows, many of Microsoft's solutions are core to the workflows and operations, or mission-critical applications. Dynamics represents core ERP functionality, LinkedIn provides mission critical human capital management functionality and is the largest (and most impactful) professional network. Further, there may not even be much in the way of true competition for many of these solutions, such as Windows and Office. Lastly, together Azure and AWS completely dominate the public cloud market, where Microsoft continues to gain market share.

How Concentrated Is the Company's Revenue?

Given Microsoft's product breadth, we view revenue concentration as among the lowest within our coverage. The company offers hundreds of solutions, many of which have add-on features. Office, for example comes in many different flavors, so while it accounts for about 23% of revenue, there are many solutions that roll up into that figure. Azure similarly has more than 200 services on the menu. Overall, we think revenue is very well diversified and the portfolio serves many core needs of business users.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

We think Microsoft invests appropriately to develop new solutions and maintain its competitive position. The company is relatively mature so its expense at 12% to 13% of revenue is fairly stable and consistently below the 18% median for our coverage. We think that R&D has some scale and note that from a dollar basis, Microsoft easily invests the most into R&D efforts amongst companies we cover.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, Microsoft has been acquisitive and uses M&A as a means to extend its R&D efforts. By virtue of its age, the company has made many acquisitions, some of which have been substantial, resulting in a material difference between adjusted and unadjusted ROICs. Even large acquisitions are typically immaterial given the company's $3 trillion market capitalization. We expect the company to continue to make smaller bolt-on deals in the coming years mainly as a means to more rapidly add features to key solutions. Microsoft has also made more substantial acquisitions over the years, including Activision for $69 billion in 2023. The company's balance sheet includes $119 billion of goodwill and $30 billion of intangible assets, so the capital base is at least somewhat inflated and amortization of intangibles further depresses returns.

Pegasystems: Maintaining No-Moat Rating Based on Legal Matters and Uneven Model Transition

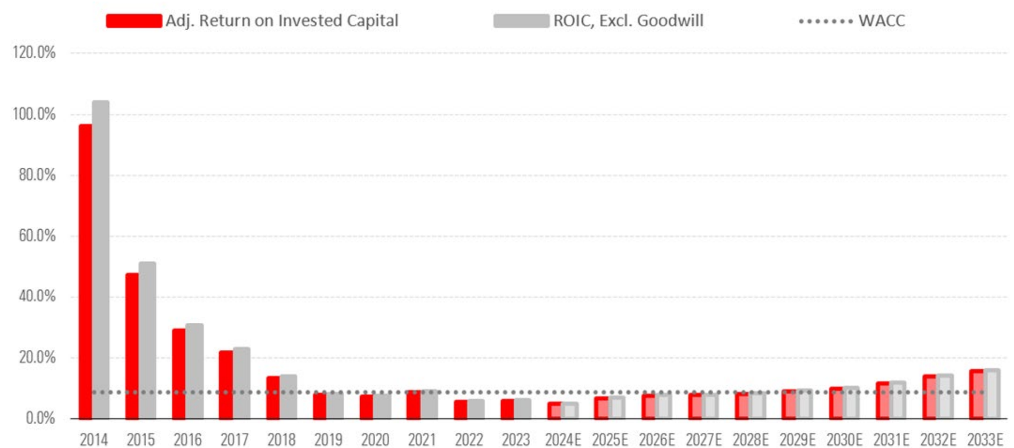
Company Description

Pegasystems provides a suite of solutions for customer engagement and business process management, or BPM that help users automate workflows. The company's key offering is the Pega Infinity platform, which combines BPM with CRM applications. Pegasystems focuses on enterprise-size customers, specifically within the financial, insurance, and healthcare verticals.

Moat Summary

While we believe Pegasystems has developed moaty solutions, we rate the company as having no economic moat. This stems from both the firm's elongated model transition to a cloud-based subscription model, and the company's ongoing litigation with Appian. The underlying software solutions are moatworthy in our view and we have previously rated PEGA as having a narrow moat. Additionally, Appian was awarded a $2 billion judgement against the company, which has a market cap of approximately $5 billion as of this writing. Pegasystems has appealed the ruling, but we see potential value destruction based on this ongoing legal issue. Once the company demonstrates it can consistently deliver excess economic returns and the litigation with Appian is complete, we think it could be appropriate to reconsider our rating.

Exhibit 18 While the Model Transition Has Been Messy, Returns Can Improve Over Time



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

Pegasystems historically experienced customer retention of approximately 99% under its legacy on-premises model. Management believes it will see customer retention of approximately 95% going forward under the new subscription model. Given that the company focuses on larger enterprise customers, which are usually stickier revenue sources for software vendors, we think this is reasonable. Approximately 84% of revenue is recurring through subscription, term license, and maintenance agreements, with the remainder being perpetual licenses, and are being phased out, and professional

services. Deferred revenue is about 26% of revenue, while RPO, is about 102% of revenue. Contract duration tends to three to five years for enterprise customers.

How Important Is the Software to the Customer?

Pegasystems provides mission critical CRM, customer engagement, and general workflow automation solutions. Historically high retention levels support this notion. The company's software helps users engage with customers, which helps retain and upsell those customers, and lower costs by streamlining business processes. We therefore think the company's base of enterprise customers has embedded the software throughout their operations and relies on it for normal operations.

How Concentrated Is the Company's Revenue?

Revenues have historically been driven by the core business process management suite, which we think are moving to the Pega Cloud solution. Customer engagement related software has provided some degree of diversification, but we still view revenue concentration as high.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

We think Pegasystems invests appropriately to develop new solutions and maintain its competitive position. The company is relatively mature so its R&D expense at 20% to 23% of revenue annually since 2018 is fairly stable and consistently above the 18% median for our coverage. We think is somewhat elevated due to pressured revenues as well as additional cloud-related spending during the model transition and believe that R&D as a percentage of revenue will trend down modestly over time.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, Pegasystems has made acquisitions to extend its R&D efforts. However, it has utilized M&A only minimally in our judgement. We expect the company will continue to occasionally execute small bolt-on deals in the coming years but will remain more conservative than most peers. The company's balance sheet includes approximately $80 million of goodwill, with purchased intangibles completely amortized, representing no carrying value. The capital base, then, is only modestly inflated, while amortization no longer is a drag on returns.

RingCentral: Maintaining No Moat Rating as This Moaty Business Just Needs to Turn the Corner on Delivering Excess Returns

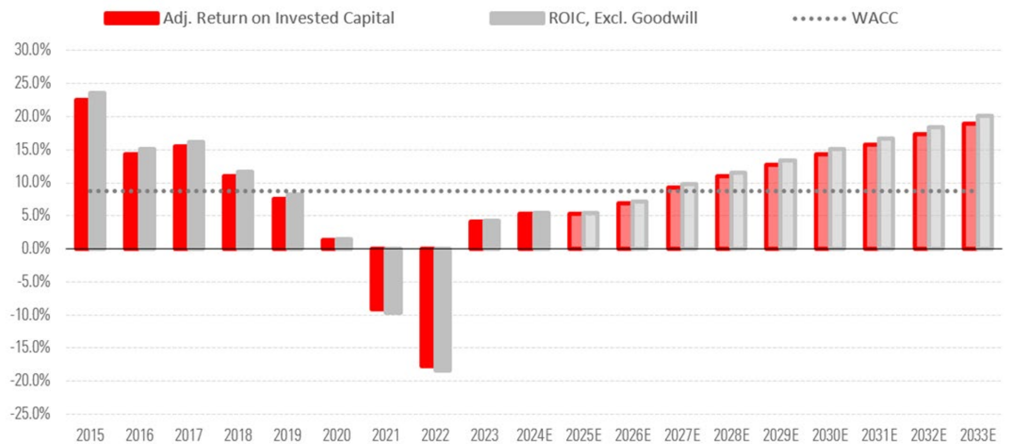
Company Description

RingCentral is a unified communications as a service, or UCaaS, provider. The company's unified communications platform foremost replaces on-premises private branch exchange (PBX) phone systems, which support voice-only desktop phones, with its cloud-based phone system. Beyond its flagship voice product, the company's platform enables integrated omnichannel communications, including voice, messaging, SMS, video meetings, conferencing, and contact center software solutions. The software allows businesses to communicate and collaborate all on one platform across various device-types.

Moat Summary

We believe RingCentral has not earned an economic moat. While believe the company's software solutions possess the hallmarks of a switching cost derived moat, we are not satisfied that the company can consistently generate economic returns that exceed its cost of capital. We acknowledge that the company's ROICs have improved over the last several years, but other factors leave us cautious over the next several years. These include the rapid CEO changes in 2023, the corporate rebranding in early 2024, and concern that Microsoft Teams and Zoom represent top-tier competition that did not exist in the same way prior to covid.

Exhibit 19 RingCentral's Solutions Are Moaty but Returns Must Improve to Earn Moat



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

RingCentral has generally experienced customer retention around 90%, with net retention spiking to in excess of 150% during covid and deflating to simply "greater than 100%" throughout 2023. The company serves a variety of customer sizes ranging from SMB to large multi-national enterprises, with the latter comprising 40% to 45% of annual contract value. Within software more broadly, SMB users tend to experience higher churn, whereas enterprise users show lower churn. We therefore conclude that 90%

is solid overall for RingCentral. While upwards of 90% of the company's revenue is recurring via subscriptions, customers at the small end of the spectrum can be month to month, while larger customers likely have multi-year agreements. Deferred revenue is about 10% of revenue, while RPO is about 100% of revenue. Contract duration tends to be at least three years for enterprise customers, while self-service is typically month to month or for annual subscriptions.

How Important Is the Software to the Customer?

Core communication systems are mission critical in our view, as they allow for contact between the company and its customers.

How Concentrated Is the Company's Revenue?

Given RingCentral's focused portfolio, revenues are highly concentrated. With a limited portfolio, switching costs are likely not as strong as they otherwise could be with a wide variety of solutions connecting RingCentral to its customers.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

We think RingCentral invests appropriately to develop new solutions and maintain its competitive position. Given the company's focused portfolio, R&D is efficient in our view, at 15% of revenue, compared with the median of our coverage at 18%.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, RingCentral has made acquisitions to extend its R&D efforts. However, it has utilized M&A only minimally in our judgement. We expect the company will continue to occasionally execute small bolt-on deals in the coming years but will remain more conservative than most peers. The company's balance sheet includes approximately $70 million of goodwill, with $390 million in intangible assets, which are mostly associated with the Avaya partnership rather than actual acquisitions. The capital base, then, is only modestly inflated, while amortization from purchased intangibles is only slight drag on returns.

Salesforce: Maintaining Wide Most Based on Customer 360 Dominance

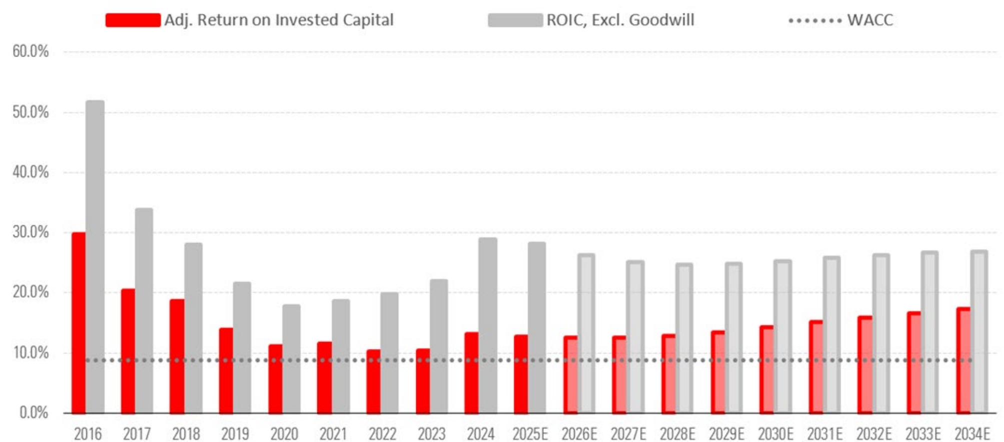
Company Description

Salesforce provides a complete set of solutions for everything to do with customers, including Sales Cloud for customer relationship management, Service Cloud for customer service, Marketing Cloud for planning and managing the entire customer journey, and then other solutions such as Slack for Collaboration, Tableau for data visualization, and MuleSoft for data integration.

Moat Summary

We believe Salesforce has earned a wide moat based on switching costs and network effects and that ROICs will more likely than not exceed the company's WACC over the next 20 years. Salesforce's historically active M&A activity negatively impacted returns. We expect large deals are off the table going forward, although small bolt-on deals are likely to continue. In our view, Salesforce is the clear leader in customer 360 software and should come out stronger as AI winners and losers are determined.

Exhibit 20 We Believe Large Scale M&A Is Over and Salesforce's ROICs Should Trend Upward



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

Salesforce enjoys gross retention in the 92%-92.5% range and has slowly been pushing this upward over the last several years. We believe retention of enterprise customers is higher than the corporate average and that the bulk of revenues is derived from larger organizations whereas Salesforce has many SMB customers. So while retention is probably lower than other elite software companies (92% is good, 95% great, and 99% elite), we do not view this as problematic. Approximately 93% of revenue is recurring overwhelmingly through subscription agreements with a smaller portion related to transactional or consumption pricing. Deferred revenue is about 50% of revenue, while RPO is about 149% of revenue. Contract duration tends to be one to three years for enterprise customers, while self-service is typically a year but can be month to month.

How Important Is the Software to the Customer?

Salesforce created the SaaS model and eventually came to be the clear leader in multiple software categories, including CRM, customer service, and marketing solutions. Companies have come to realize that data is a critical asset, and being able to piece together all known elements about their customers or prospects will help market to them, sell to them, and serve them. No firm as a more robust portfolio around these concepts than Salesforce. We view Salesforce's clouds, as being mission critical and believe that they make conducting business in a modern fashion a reality.

How Concentrated Is the Company's Revenue?

Salesforce has among the lowest amount of revenue concentration within our coverage. The company offers five segments, which range from 15% of revenue to 25% of revenue. Even within those segments there are a wide variety of solutions, such that concentration among any single SKU is fairly low. Overall we the portfolio as being capable of surrounding users' customers with data and being able to service the entire customer journey from prospecting, to marketing, selling, and servicing. Salesforce also offers a variety of other solutions such as data integration through MuleSoft, data visualization through Tableau, and collaboration through Slack.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

We think Salesforce invests appropriately to develop new solutions and maintain its competitive position. The company is relatively mature so its R&D expense is fairly stable. It invests just below the median of our coverage at 18% of revenue into R&D expense, which is logical given that Salesforce's revenue base is the second largest in our coverage, so some leverage should be apparent.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, Salesforce has been acquisitive and uses M&A as a means to extend its R&D efforts. By virtue of its age, the company has made many acquisitions, some of which have been substantial, resulting in a material difference between adjusted and unadjusted ROICs. We expect the company to continue to make smaller bolt-on deals in the coming years mainly as a means to more rapidly add features to key solutions. We think the Slack acquisition in 2021 combined with the post-covid hangover finally pushed shareholders over the precipice and exhausted their patience with sub-scale margins and large-scale acquisition. In response, Salesforce management changed its strategy to avoid large acquisitions, disbanded its M&A committee, and altered its capital allocation strategy to do buybacks and pay a dividend. The company's balance sheet includes $5.3 billion of intangible assets and $48.6 billion of goodwill, so the capital base is definitely inflated and amortization further depresses returns.

ServiceNow: Maintaining Wide Moat Rating Based on Market Leadership and Still-Growing Portfolio

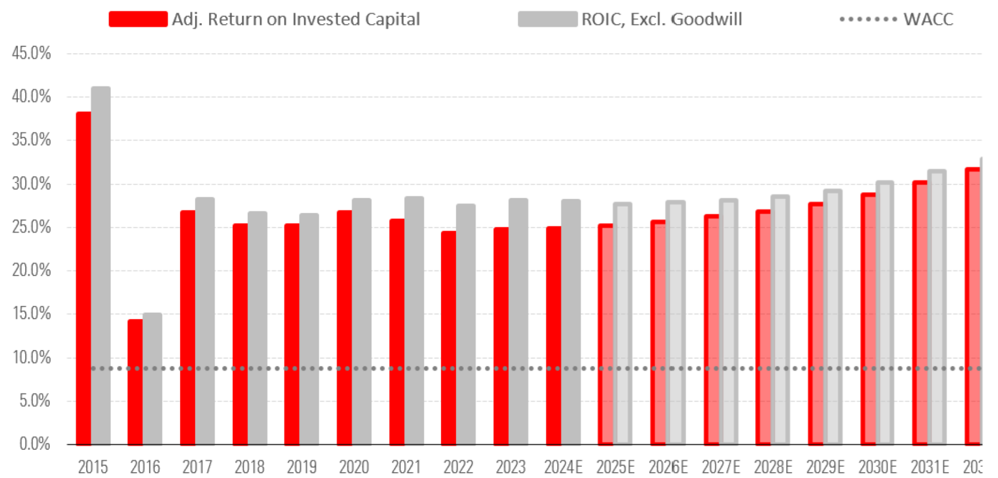
Company Description

ServiceNow provides service desk and related add-on solutions for a wide variety of use cases, notably IT help desk, customer service, human resources, and compliance.

Moat Summary

We believe ServiceNow has earned a wide moat based on switching costs and that ROICs will more likely than not exceed the company's WACC over the next 20 years. We see ServiceNow's organic growth and product innovation as core to our investment thesis and think that AI should serve to extend the company's strong competitive positioning over the next several years.

Exhibit 21 We Expect ServiceNow's Returns to Remain Among the Best in Software



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

ServiceNow's customer retention has been in 98% to 99% range for years, leaving the company in elite territory. Even the net retention number, which is occasionally disclosed north of 125% is excellent for as large as the company has already become. Approximately 97% of revenue is recurring through subscription agreements, making ServiceNow best in class. Deferred revenue is about 53% of revenue, while RPO is about 165% of revenue. Contract duration tends to be approximately three years.

How Important Is the Software to the Customer?

From IT service, to customer service and human resources, ServiceNow's applications are mission critical to enterprise users because of the importance of the enterprise department and the functionality of the solutions. The platform is powerful in its simplicity and flexibility in that it allows customers to streamline and automate processes across the entire organization with a few mouse clicks, resulting in productivity improvements and cost reductions. The applications themselves are not just incorporated into

workflows, they define and enable the workflows. While there are point solution alternatives for various use cases, there are few alternatives for platforms that are capable of streamlining operations across functions or departments.

How Concentrated Is the Company's Revenue?

ServiceNow's revenue concentration is low in our opinion. While the original IT service desk drives the largest piece of revenue, ServiceNow boasts three solution lines that each generate $1 billion or more of annual contract value. As the company has grown, its portfolio has expanded to cover IT service, customer service, HR service, compliance, operations, financial management, and other areas, it has also added good-better-best pricing tiers and released vertical specific versions. This has lead to a substantial rise in new solutions and has helped diversify revenues. We expect that IT workflows will decline over time as a percent of revenue and therefore revenue concentration should continue to decrease from already low levels.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

We think ServiceNow invests aggressively to develop new solutions and maintain its competitive position. Given its size we would conclude that ServiceNow is approaching maturity, however, given its revenue growth, we surmise it is relatively young. The opportunities across multiple use cases is what drives continued relatively high investment in new product development. Considering the resulting revenue growth, we agree with this strategy. At 24% of revenue, ServiceNow invests above the 18% R&D median within our coverage.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, ServiceNow has been acquisitive and uses M&A as a means to extend its R&D efforts. While the firm has completed a variety of deals, it has clearly eschewed large-scale M&A. We expect ServiceNow to continue to make smaller bolt-on deals in the coming years mainly as a means to more rapidly add features to key solutions. The company's balance sheet includes $220 million of intangible assets and $1.2 billion of goodwill, so the capital base is only modestly inflated, while amortization of intangibles has only a nominal impact on returns.

Shopify: Upgrading to Wide Moat Based on Growing E-Commerce Leadership

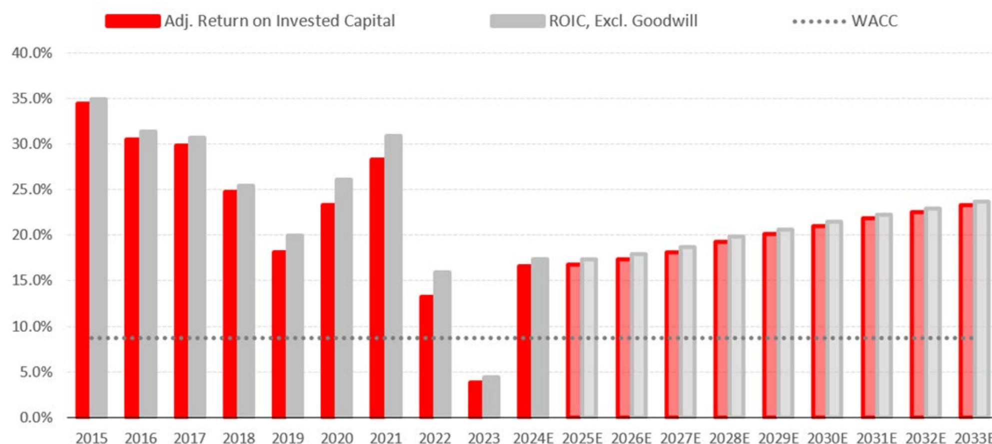
Company Description

Shopify offers an e-commerce platform primarily to small and medium-sized businesses. The firm has two segments: subscription solutions and merchant solutions. The Subscription solutions segment allows Shopify merchants to conduct e-commerce on a variety of platforms, including the company's website, physical stores, pop up stores, kiosks, social networks (Facebook), and Amazon. Merchant solutions are add-on products for the platform that facilitate e-commerce and include Shopify Pay, Shopify Shipping, and Shopify Capital.

Moat Summary

We believe Shopify has earned a wide moat based on switching costs and network effects and that ROICs will more likely than not exceed the company's WACC over the next 20 years. We do not view retention as problematic given the high concentration of SMB users and see the market moving from acceptance of Shopify Plus to the enterprise solution being a true enterprise solution. We view the covid lockdown period as being instrumental in serving as a proving ground for enterprise users, and we see the company's product innovation as further solidifying the solution among large customers. Shopify's ROICs were pressured in 2022 and 2023 due to the acquisition of Deliverr and the subsequent investment in building out a logistics and fulfilment network, which the company abruptly sold in 2023.

Exhibit 22 After Disposing of Deliverr and Exiting Logistics Business, We Expect Continued Attractive Returns



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

Shopify does not disclose retention statistics. However, retention on monthly recurring revenue used to be disclosed annually at "in excess of 100%," which is not surprising given that monthly recurring plans tend to be for larger customers on Shopify Plus. We believe customer retention for Shopify Plus users is in the 90% to 95% range, while overall retention is likely in the area of 80% given the SMB user base that churns much faster than enterprise clients. This is consistent with many software companies that

serve both enterprise and SMB users and provide some level data on each group. Approximately 26% of revenue is recurring from software subscriptions, while the remaining 74% is derived from the merchant solutions segment and is mostly recurring in nature in form of payments and shipping, along with other services, attached to the software subscriptions. While these metrics are important indicators for software companies generally, they are not as relevant for Shopify given the substantial mix of software-attached revenue.

How Important Is the Software to the Customer?

In order to sell products over the internet, a digital commerce platform is required. While adoption took off during the covid lockdown, it was rapidly gaining popularity prior to that. Customers tend to be SMB users who flocked to the combination of simplicity, robust features, affordability, and available merchant solutions. The merchant solutions, like shipping and payments, are critical functions in their own right that users rely on. We think the value proposition is high for smaller users. While at the higher end, enterprise users that never had a direct relationship with consumers found they could get a site up and running within a matter of days, while still enjoying a competitive product. There is no shortage of competitors in either the SMB or enterprise categories, but Shopify really cemented its position among the leaders during the covid lockdowns.

How Concentrated Is the Company's Revenue?

Shopify’s revenue concentration is low in our view. As the company has grown it has added a variety of software applications to complement the e-commerce platform. Further, the company takes a success fee on Shopify Plus users in the form a percentage of gross merchandise value, which helps provide a great deal of revenue diversity. While the bulk of revenue is derived from Merchant Solutions, there are a wide variety of services therein, including payments, shipping, and capital.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

Shopify has invested heavily in R&D over the years as it added extensive capabilities to the platform. These investments ramped up as the company was building out its fulfilment network and related features. However, Shopify reversed course and abruptly sold its logistics business to Flexport in 2023 and undertook a materially corporate restructuring, which included substantial headcount reductions. While R&D expense may have been well into the 20% range in Shopify’s early years, we expect a more normalized level in the mid-to-high-teens going forward, compared with the median of our coverage at 18%. Therefore, we think the company is investing in innovation at appropriate levels.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, Shopify has made some acquisitions as a means to extend its R&D efforts. However, the company uses M&A less frequently than much of our coverage. While Shopify made a substantial $2.1 billion acquisition in 2022 for Deliverr, it turned around and disposed of it the next year in the logistics sale to Flexport. Goodwill and intangibles both spiked in 2022 but have returned to relatively small amounts. The company’s balance sheet includes $30 million of intangible assets and

$430 million of goodwill, so the capital base is now just modestly inflated and amortization has only a small negative impact on returns.

Twilio: Downgrading to No Moat Based on Evolving Strategy and Poor Returns

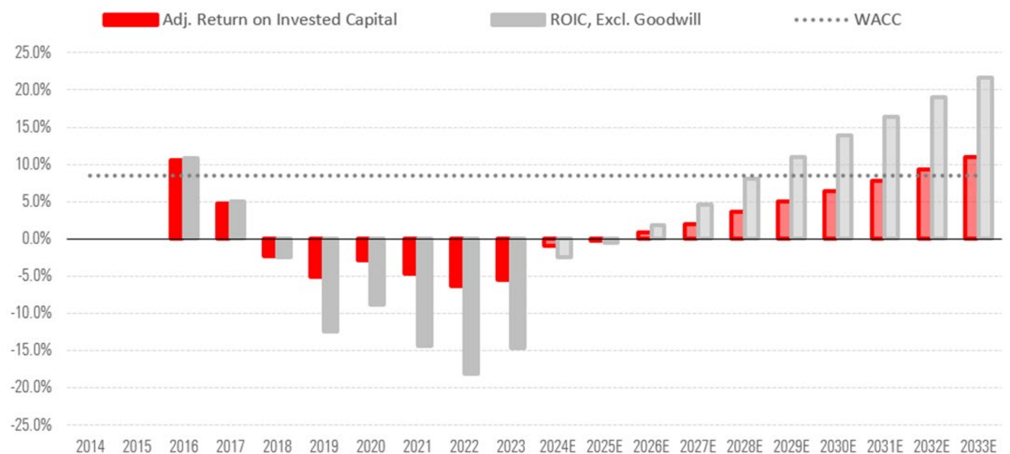
Company Description

Twilio is a cloud-based communication platform-as-a-service company offering communication building blocks that allow for a fully customized customer engagement experience spanning voice, video, chat, and SMS messaging. It does this through various application programming interfaces, or APIs, and prebuilt solution applications aimed at improving customer engagement. The company leverages its Super Network, a global network of carrier relationships, to facilitate high-speed, cost-effective communication.

Moat Summary

We believe Twilio has not earned an economic moat. We previously rated the company's moat as narrow based on switching costs and network effects, but the post-covid environment has been extremely challenging and the improving returns we modeled have evaporated as the company's Data and Applications segment, which was assembled via acquisitions, has struggled. With core messaging driving more than half of revenues and having structurally lower margins, we think the company the company can eventually drive ROICs above its cost of capital, but we are concerned with the trajectory even through the next five years.

Exhibit 23 We Have Low Confidence That Twilio Can Generate Attractive Returns in the Medium Term



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

Twilio provides net dollar retention, or NDR data, which has been trending down over the last several years to the most recent level of 103%. NDR basically measures how much revenue associated with a given client (or the entire book of business) is retained on a periodic basis. This is almost always in excess of 100% for software companies. Twilio's business surged during the covid lockdowns, but growth has slowed dramatically as the immediacy of business continuity has receded, and NDR therefore has been squeezed. We think the contraction among clients is beginning to ease but the

trajectory remains opaque. Nearly all of revenue is recurring either contractually through subscription agreements, or transactionally based on message volumes. Both deferred revenue and RPO are about 3% of revenue.

How Important Is the Software to the Customer?

Twilio's software APIs and applications are mission critical in our view, as they make various communication modalities work. We have little doubt that the software is moaty given the importance of communications over all of its various modes. We view the messaging portion of the business as sometimes mission critical and sometimes more of a productivity enhancement, with an underlying service that can be thought of as commodity in nature.

How Concentrated Is the Company's Revenue?

We estimate that between 50% and 60% of revenue is driven by messaging, with 30-35% from CPaaS and related software, and approximately 15% from application software. Core messaging is the lowest margin offering and is out-growing application software, which is problematic in our view. We conclude that revenues are highly concentrated.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

We think Twilio invests appropriately to develop new solutions and maintain its competitive position. The company has been investing aggressively in R&D to the tune of near 30% from 2020 through 2022, with it dipping to 23% in 2023. Considering the need to expand the functionality of Data and Applications solutions, we believe the company must continue to invest heavily over the next several years, which we think will govern improvements to ROIC. Further, we think the underlying messaging service is commodity-like, even if the API's provide differentiation. Normally companies use its primary business as a cash cow to fund emerging products. However, Twilio has generated meaningfully positive free cash flow margins in only one of the last five years, which we think is evidence of the difficulties in front of the company.

Has the Company Made Acquisitions Over the Last Several Years That Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

As with most software companies, Twilio has been acquisitive and uses M&A to extend its R&D efforts and to enter completely new markets. Over the last couple years the pace of M&A has slowed from what we would have previously characterized as aggressive, including frequent and larger deals. As a result there is a material difference between adjusted and unadjusted returns. Lastly, the company acquired Zipwhip in 2021 for $840 million and then shut it down in 2023, so the M&A program as a whole has not been as successful as we see in many of our other software companies. The company's balance sheet includes $5.2 billion of goodwill and $590 million of intangible assets, so the capital base is clearly inflated (considering the market cap of approximately $11 billion as of May 14, 2024), and amortization of intangibles further depresses returns.

Tyler Technologies: Maintaining Wide Moat Based on Expanded Portfolio and Dissipating Headwinds from Model Conversion

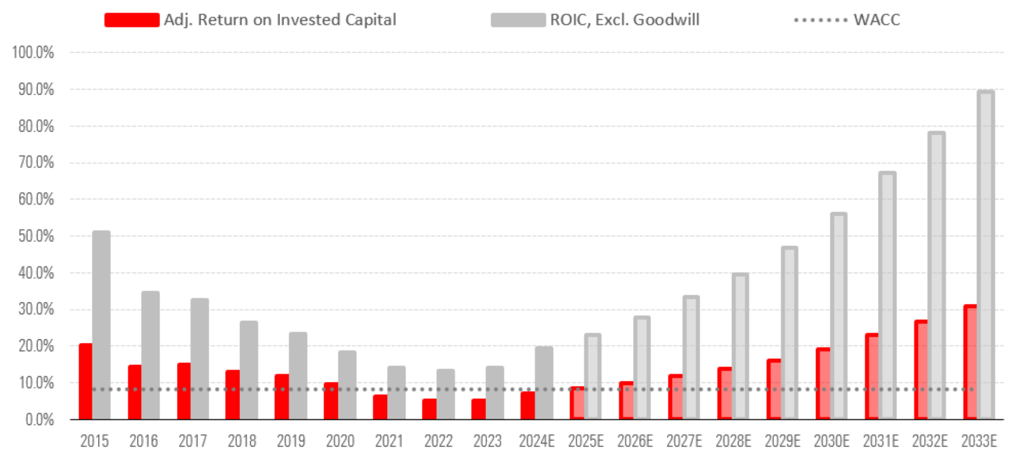
Company Description

Tyler provides software and service solutions to the specific niche market it serves, which is state and municipal government bodies. Its biggest standalone solutions are the Odyssey court management system (CMS), the Munis ERP system, and the NIC platform.

Moat Summary

We believe Tyler Technologies has earned a wide moat based on switching costs and intangible assets and that ROICs will more likely than not exceed the company's WACC over the next 20 years. Tyler's ROICs have been pressured by a long-running organic model transition. For more than a decade the company has been giving customers a choice on purchasing either on premise or SaaS versions of its solutions without ever forcing users to migrate to the cloud version. In the last several years clients have been overwhelmingly choosing the subscription versions. For example, in 2023 83% of new contracts were SaaS-based, while 85% of new contract value was SaaS. Beginning in 2024 we expect pressure on both revenue growth and operating margins to ease, as the bulk of the transition will finally be behind Tyler. Additionally, in 2021 Tyler closed on the acquisition of NIC, which materially increased goodwill and amortization expenses, which we expect to roll off over the next several years, further easing pressure on ROICs.

Exhibit 24 We Expect Model Transition Pressures on Returns to Begin Easing in 2024



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

Tyler enjoys excellent customer retention of 98%, which puts the company among the elite software vendors. 85% of revenue is recurring through subscriptions (63% of revenue) and maintenance agreements (12% of revenue). Further, approximately 40% of subscription revenue is transactional in

nature, mostly from the NIC business, acquired in 2021. Deferred revenue is about 30% of revenue, while RPO is approximately 96% of revenue. Contract duration is typically four years.

How Important Is the Software to the Customer?

Tyler's software systems are core to the operations of the constituencies they serve, and without them, the courts and governments could not function. Cook County (Chicago), for example, uses Tyler's CMS to run its court system, which is a specific vertical ERP solution. While there are competitive solutions, the municipal government market has long been underserved. We believe no competitor overseas a similarly comprehensive portfolio serving this market. Further, when Tyler's portfolio consisted mainly of Munis and Odyssey, with fewer add on modules, we believe customer retention was even higher.

How Concentrated Is the Company's Revenue?

While the bulk of revenue is derived from Odyssey, Munis, and Payments, Tyler has endeavored to expand its portfolio over the years. In doing so, it has also diversified its revenues such that revenue concentration is very low. The company lists 13 other product areas, like the three main solutions, each of these have a wide variety of add-on products. Overall, we think revenue is very well diversified and the portfolio spans the needs of its local and state government clients.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

We think Tyler invests appropriately to develop new solutions and maintain its competitive position. The company is mature and its served market is niche in nature, so its R&D expense is both fairly stable and relatively low. At 6% of revenue, the company invests below the median of our coverage at 18% of revenue. That said, it has considerably more financial and engineering resources at its disposal than any of its peers that focus on governmental software. Additionally, Tyler has long used M&A to supplement its R&D programs. Overall, we think the company invests appropriately in product innovation.

Has the Company Made Acquisitions Over the Last Several Years that Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, Tyler has been acquisitive and uses M&A as a means to extend its R&D efforts. By virtue of its age, the company has made many acquisitions, some of which have been substantial, resulting in a material difference between adjusted and unadjusted ROICs. We expect the company to continue to make smaller bolt-on deals in the coming years mainly as a means to more rapidly add features to key solutions. Tyler's larger acquisitions include New World Systems and NIC, which was publicly traded. The company's balance sheet contains $930 million of intangible assets and $2.5 billion of goodwill, so the capital base is inflated and amortization of intangibles further depresses returns.

Zoom: Maintaining Narrow Moat Based on Switching Costs and Aided by an Expanding Portfolio

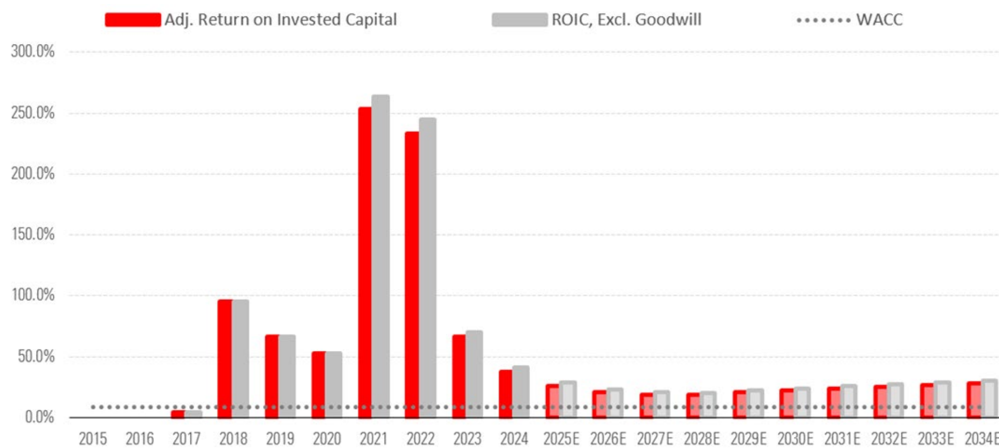
Company Description

Zoom Video Communications, Inc. provides a video-first communications platform that connects people through frictionless video, voice, chat, and content sharing across various device types.

Moat Summary

Based on our analysis, Zoom has developed a narrow moat based primarily on switching costs with an emerging moat source arising from network effects. We believe the company will more likely than generate excess economic returns beyond its cost of capital over the next decade. Zoom benefited uniquely during the covid-lockdowns as the company's solution became the unofficial way to conduct meetings and conduct business in something approaching a normal manner. The company's July 2020 quarterly results stand out as one of the three best quarters we can recall in all of technology in the last 25 years. Returns have been stellar and we expect them to remain well-above the firm's cost of capital in the coming years.

Exhibit 25 Zoom Was Already Producing Strong Returns Even Before It Uniquely Benefited From Covid



Source: Morningstar. Data as of June 2024.

Retention and Other Visibility Indicators

Zoom provides net retention data, which has been trending down as the world has returned to work. In the most recent quarter this was 101%, which is down from in excess of 130% during the lockdown. The company also provides an online average monthly churn rate, which has been stable at pre-covid levels at around 3% over the last four quarters. This represents the smallest customers and suggests gross retention for these users of around 64% annually. We think customer retention is closer to 95% for enterprise customers. Given the massive user base of individual license customers, we are unconcerned with retention levels or the underlying trends, which themselves are consistent with SMB software in general over the last couple years. The company's revenue base is subscription based, with most revenue generated from annual subscriptions, with individual users sometimes going monthly and large

enterprises opting for multi-year deals. Deferred revenue is approximately 28% of revenue, while RPO is 79% of revenue.

How Important Is the Software to the Customer?

The use case for Zoom’s main video calling and meeting solution was proven out during the covid lockdown, where it enabled the world to function in a reasonably normal manner. Zoom Phone provides core communication services, including voice, video, and text. Zoom Video Engagement Center is the firm’s call center solution. These products fulfil core needs and are therefore mission critical to users. We see a variety of notable competitors in each solution area, but tend to view Zoom as the disruptor based on the success the company had with Zoom meetings during the pandemic.

How Concentrated Is the Company's Revenue?

Zoom has worked to introduce new solutions over the years. Several of these solutions, including Zoom Phone, have gained meaningful traction and have helped diversify revenues. We therefore view revenue concentration as moderate and not problematic.

Is the Company Investing Enough to Maintain Its Competitive Positioning?

Based on our analysis, we think Zoom invests appropriately to develop new solutions and maintain its competitive position. During covid the firm’s revenues ramped significantly faster than engineering headcount, so R&D appeared light relative to the company’s size for a couple years. Since then however, management has invested more to improve upon its platform, develop new solutions, and introduce new features. The firm’s R&D expense represents approximately 18% of revenue, which is inline with the median of our coverage, which we think is fitting.

Has the Company Made Acquisitions Over the Last Several Years that Could Add Material Goodwill to the Balance Sheet or Meaningful Amortization Expenses to the Income Statement?

Like most software companies, Zoom has made acquisitions to extend its R&D efforts. That said, in our view the company utilizes M&A toward the lower end of the spectrum within our coverage, completing about one deal per year over the last five years. We expect the company will continue to occasionally execute small bolt-on deals and feature additions in the coming years. Zoom’s balance sheet includes approximately $310 million in goodwill, with $50 million in intangible assets. The impact of acquisition related amounts are relatively minor within the ROIC calculation in terms of both the invested capital base as well as amortization within the income statement. M

Research Methodology for Valuing Companies

Overview

At the heart of our valuation system is a detailed projection of a company's future cash flows, resulting from our analysts' research. Analysts create custom industry and company assumptions to feed income statement, balance sheet, and capital investment assumptions into our globally standardized, proprietary discounted cash flow, or DCF, modeling templates. We use scenario analysis, in-depth competitive advantage analysis, and a variety of other analytical tools to augment this process. We think analyzing valuation through discounted cash flows presents a better lens for viewing cyclical companies, high-growth firms, businesses with finite lives (mines, for example), or companies expected to generate negative earnings over the next few years. That said, we don't dismiss multiples altogether but rather use them as supporting cross-checks for our DCF-based fair value estimates. We also acknowledge that DCF models offer their own challenges (including a potential proliferation of estimated inputs and the possibility that the method may miss short-term market-price movements), but we believe these negatives are mitigated by deep analysis and our long-term approach.

Morningstar's Equity Research Group ("we," "our") believes that a company's intrinsic worth results from the future cash flows it can generate. The Morningstar Rating for stocks identifies stocks trading at a discount or premium to their intrinsic worth—or fair value estimate in Morningstar terminology. Five-star stocks sell for the biggest risk-adjusted discount to their fair values, whereas 1-star stocks trade at premiums to their intrinsic worth.

Four key components drive the Morningstar rating:

- our assessment of the firm's economic moat.
- our estimate of the stock's fair value.
- our uncertainty around that fair value estimate.
- the current market price.

This process ultimately culminates in our single-point star rating.

Economic Moat

The Morningstar Economic Moat Rating is a structural feature that Morningstar believes positions a firm to earn durable excess profits over a long period of time, with excess profits defined as returns on invested capital above our estimate of a firm’s cost of capital. The economic moat rating is not an indicator of the investment performance of the investment highlighted in this report. Narrow-moat companies are those that Morningstar believes are more likely than not to achieve normalized excess returns for at least the next 10 years. Wide-moat companies are those that Morningstar believes will earn excess returns for 10 years, with excess returns more likely than not to remain for at least 20 years. Firms without a moat, including those that have a substantial threat of value destruction-related risks related to environmental, social, and governance; industry disruption; financial health; or other idiosyncratic issues, are more susceptible to competition. Morningstar has identified five sources of economic moats: intangible assets, switching costs, network effect, cost advantage, and efficient scale.

Fair Value Estimate

Each stock's fair value is estimated by using a proprietary discounted cash flow model, which assumes that the stock's value is equal to the total of the free cash flows of the company is expected to generate in the future, discounted back to the present at the rate commensurate with the riskiness of the cash flows. As with any DCF model, the ending value is highly sensitive to Morningstar's projections of future growth.

Fair Value Uncertainty

The Morningstar Uncertainty Rating represents the analysts’ ability to bound the estimated value of the shares in a company around the fair value estimate, based on the characteristics of the business underlying the stock, including operating and financial leverage, sales sensitivity to the overall economy, product concentration, pricing power, exposure to material ESG risks, and other company-specific factors. Based on these factors, analysts classify the stock into one of several uncertainty levels: Low, Medium, High, Very High, or Extreme. Our recommended margin of safety—the discount to fair value demanded before we’d recommend buying or selling the stock—widens as our uncertainty of the estimated value of the equity increases.

Market Price

The market prices used in this analysis and noted in the report come from exchanges on which the stock is listed, which we believe is a reliable source.

Morningstar Rating for Stocks
The Morningstar Rating for Stocks is a forward-looking, analyst-driven measure of a stock's current price relative to the analyst's estimate of what the shares are worth. Stock star ratings indicate whether a stock, in the equity analyst's educated opinion, is cheap, expensive, or fairly priced. To rate a stock, analysts estimate what they think it is worth (its "fair value"), using a detailed, long-term cash flow forecast for the company. A stock's star rating depends on whether its current market price is above or below the fair value estimate. Those stocks trading at large discounts to their fair values receive the highest ratings (4 or 5 stars). Stocks trading at large premiums to their fair values receive lower ratings (1 or 2 stars). A 3-star rating means the current stock price is close to the analyst's fair value estimate.

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