Research Highlights

A weekly summary of our best ideas and developments in the companies we cover.

Morningstar Equity Research
Aug. 27-31, 2018

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Concerns About Intel's Data Center Leadership Are Overdone

Intel has enjoyed an unparalleled run as king of the hill in the data center processor market for over a decade. However, recent product road-map developments for Advanced Micro Devices (7-nanometer server chips in 2019) and Intel's delayed 10-nanometer process (server chips not until 2020) have sent shockwaves through the semiconductor space as investors rethink the current hierarchy of x86 chip suppliers. Despite the secular decline of the PC market, the x86 chip industry still generates a great deal of cash that Intel can use for more-innovative projects, like the data center group's latest offerings.

DCG has been a major growth driver in recent years, particularly with the shift to the cloud. We concede that AMD's near-term prospects are brighter than in years past and that it will likely capture some share in both the PC and server markets. However, we think customers care more about the system-level performance of their workloads that today predominantly run on Intel architecture than process node nomenclature, which will prevent a mass exodus to AMD.

Intel's recent data-centric innovation summit highlighted its focus on custom server chips for major cloud vendors and overall platform approach in lieu of singular components (just the processor) that we think will allow DCG sales to grow at an 11% CAGR over the next five years, with cloud-related DCG sales rising at a 24% CAGR, ahead of market expectations. We believe the market has overreacted to the threat of AMD, and shares of wide-moat Intel look attractive relative to our $65 fair value estimate.

- We foresee healthy DCG growth for Intel (11% CAGR through 2022), led by cloud demand (24% CAGR), which will account for approximately 60% of DCG revenue by 2022.
- Intel customizes about half of the Xeon server CPUs sold to cloud customers (by volume) to meet a diverse set of demand workloads. This is a higher-value and sticky business that will be difficult to displace by the likes of AMD. Most of the performance specifications for these custom chips are kept under wraps; thus, pitting Intel's and AMD's public server road maps head to head doesn't paint the entire picture of competitiveness between the two chip rivals, let alone solely looking at process node.
- Intel's efforts in artificial intelligence have also been promising, as it recorded $1 billion in AI-related Xeon revenue in 2017. Management thinks this could be an $8 billion-$10 billion market by 2022, consistent with our AI estimates and ahead of market expectations.

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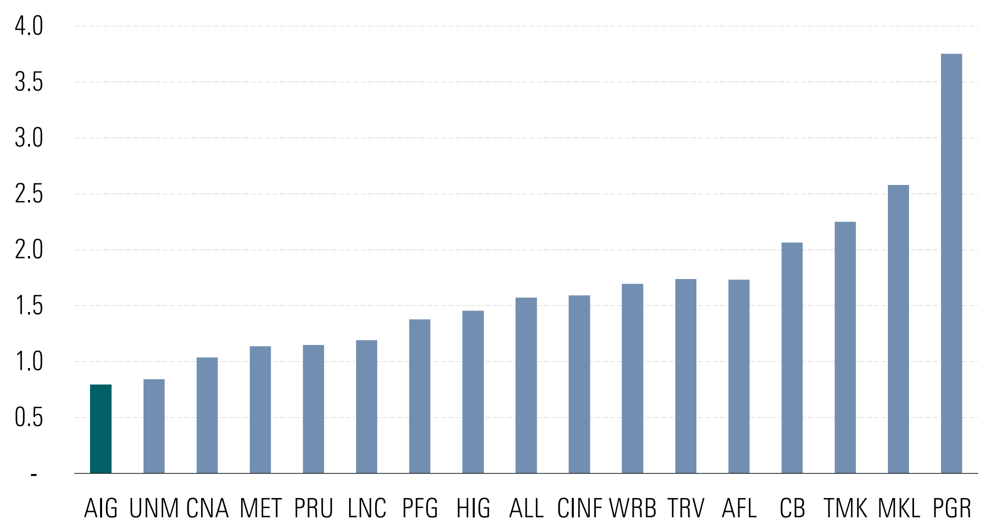
Outlining AIG's Path to Mediocrity

On May 15, 2017, American International Group announced that Brian Duperreault would become CEO. We believe his background is a good fit in terms of solving AIG's main operational issue—improving commercial property-casualty insurance underwriting. In our December 2017 presentation Duperreault Already Built a Better AIG; He Can Do It Again, we laid out the basis of our bullish view on the stock. However, the market remains unimpressed with his tenure, with the company's stock down about 10% since AIG announced his appointment. While the company has not shown a lot of tangible progress in improving underwriting results so far, we appreciate that it will take some time to solve its issues. The company, in our view, does not need to see a dramatic improvement to stop destroying shareholder value; it only needs to move from a negative outlier to merely subpar. We estimate that, all else equal, AIG would only need to improve its commercial P&C combined ratio to 97% (a level that would still be worse than its peer group range) to be able to generate a 10% adjusted ROE. Given that we see no structural issues in its core operations, we believe that the company gradually trending toward peer results is a realistic assumption. Using peer price/book multiples, we estimate that there could be over 50% upside from the current trading level if AIG were to reach this mark.

AIG’s Low Price/Book Multiple Is Unwarranted If It Can Achieve Even Mediocre Underwriting Results



Source: Company filings, Morningstar.

- AIG's other businesses are offsetting commercial P&C weakness. The company's life insurance operations are performing quite well, generating a double-digit adjusted ROE every quarter since the second quarter of 2016. Further, we believe the underlying combined ratio in personal P&C lines is adequate. This leaves commercial P&C as the only material obstacle to generating an overall acceptable return.

- AIG is actively working to improve P&C underwriting results. Duperreault has clearly communicated that fixing commercial P&C underwriting is a key priority. Additionally, management has recently said that it expects AIG to exit 2018 having sustainably reached underwriting profitability.
- After taking a meaningful reserve development charge in the third quarter of 2017, AIG has actually recorded favorable reserve development over the past two quarters. This is a meaningful step in our view, and a sign that Duperreault has effected some positive change.
- AIG's shares remain undervalued. Excluding accumulated other comprehensive income and goodwill, AIG trades at only 0.8 times book value compared with an average multiple of 1.7 times for a peer group of domestic insurers.

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Switching Costs Weak and Strong for ABB and Schneider

Much has been written about the potential of Industry 4.0 and the Industrial Internet of Things, or IIoT, but we don't believe enough attention has been given to the relative supplier competitive advantages and where incumbent suppliers might be less or more able to protect their positions against new-entrant disruptors. In industrial automation, there is a wide variety of suppliers that together create automated processes through multiple software stacks and hundreds of components working together. In a world as fragmented as this, domination by a single player is nearly impossible, but there are pockets where suppliers have stronger barriers to entry and others where the playing field is more level.

We look at both in this report. We see the strongest moats in less flashy control loop functions (the "control freaks") at the field level of industrial automation, and weaker ones in the more exciting software applications. Additionally, suppliers for process industries have a better chance of staving off new entrants than those in discrete. From our research, including conversations with industry players, these are where the highest switching costs lie. We believe ABB and Schneider have wide moats due to high switching costs and intangible assets in their automation divisions, and in some cases in electrical and power products.

From an investment standpoint, we prefer Schneider over ABB. While both have leading positions in the moatier control loop of industrial automation, as well as exposure to process automation, Schneider's share price offers 11% upside versus our fair value estimate, while ABB is fairly valued. Schneider is also taking a more aggressive software approach, which we think is important for taking advantage of the installed controller base on which to build market share in the software stack.

- Industrial controllers offer incumbents the strongest moats against competitors in Industry 4.0. The combination of proprietary software and physical integration into processes creates barriers to entry in industrial controllers that are not prevalent in the consumer PC space. There are thousands of controllers populated through industrial processes globally, and many of them are from the 1970s or 1980s. This is because unlike consumer PCs and electronics, industrial components are built for durability with much longer life cycles.
- The software stack, particularly at the higher levels, is more vulnerable to increased competition from new and existing competitors. Software layers in industrial automation differ from the hardware/physical space of the control loop in two important respects: First, software layers are not physically wired into a plant's operations, which can make migration to new systems easier, and second, software cannot be economically retrofitted.
- For capital goods companies, the most prevalent moat sources are switching costs and intangible assets, which come in many varieties. Capital goods suppliers produce highly engineered products that are often integrated with customer operations but that are not naturally associated with other moat sources, such as efficient scale, which a utility might have, or network effect for a social media website.
- In industrial automation, switching costs are also the strongest moat source but vary widely by product. Due to manufacturing complexity, regulatory requirements, or extreme environments, suppliers often need to work together with customers to tailor their products for sector- or company-specific needs. In software offerings, suppliers with deep field engineer experience are often at an information advantage

in this respect, as they are more apt to provide software that meets the level of detail and specificity requirements of the engineers and operators using it. This includes Industry 4.0 applications, where the difference between mediocre and great software for optimisation, preventative maintenance, and simulation software might be knowing which data to pull and understanding the details behind a particular industrial process.

- While both ABB and Schneider have strongholds in industrial controllers, we prefer Schneider on valuation and its more aggressive software approach. The shares offer 11% upside to our EUR 80 fair value estimate. Schneider is taking a more aggressive software approach, which we think is important for taking advantage of the installed controller base on which to build market share in the software stack.

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Best Ideas

Company and Industry	Morningstar Rating	Fair Value Estimate	Current Price	Uncertainty Rating	Moat Rating	Price / Fair Value	Market Cap (B)	Analyst
Basic Materials								
Cameco (CCJ)	★★★★	$17	$10.38	High	Narrow	0.61	4.14	Inton
Compass Minerals International (CMP)	★★★★	$83	$63.25	High	Wide	0.76	2.14	Goldstein
Martin Marietta Materials (MLM)	★★★★	$265	$203.87	High	Narrow	0.77	12.85	Inton
Communication Services								
BT Group (BT.A)	★★★★	GBX 360	GBX 218.1	High	Narrow	0.61	21.64	C. Nichols
China Mobile (941)	★★★★	HKD 100	HKD 73.8	Medium	Narrow	0.74	1511.09	Baker
Comcast (CMCSA)	★★★★	$42	$36.68	Medium	Wide	0.87	168.07	Macker
Telefonica (TEF)	★★★★★	$13	$6.98	High	Narrow	0.54	36.28	C. Nichols
Telstra (TLS)	★★★★	AUD 4.4	AUD 3.1	Medium	Narrow	0.70	36.87	Han
Consumer Cyclical								
Advance Auto Parts (AAP)	★★★	$165	$161.8	Medium	Narrow	0.98	11.99	Akbari
Bayerische Motoren Werke (BMW)	★★★★	EUR 117	EUR 84.6	High	Narrow	0.72	54.99	Hilgert
Expedia Group (EXPE)	★★★★	$185	$131.45	High	Narrow	0.71	19.65	Wasiolek
General Motors (GM)	★★★★	$45	$36.36	High	None	0.81	51.30	Whiston
Great Wall Motor (2333)	★★★★	HKD 6.6	HKD 4.83	High	None	0.73	64.02	Su
Hanesbrands (HBI)	★★★★★	$27	$17.51	Medium	Narrow	0.65	6.31	Hottovy
InvoCare (IVC)	★★★★	AUD 17	AUD 12.88	Medium	Wide	0.76	1.42	Ragonese
Mattel (MAT)	★★★★	$21.5	$15.4	High	Narrow	0.72	5.30	Katz
Norwegian Cruise Line Holdings (NCLH)	★★★★	$69	$53.32	High	Narrow	0.77	11.81	Katz
Walt Disney (DIS)	★★★★	$130	$111.92	Medium	Wide	0.86	166.45	Macker
WPP (WPP)	★★★★	GBX 1500	GBX 1278	Medium	Narrow	0.85	16.13	Mogharabi
Consumer Defensive								
G8 Education (GEM)	★★★★★	AUD 3.5	AUD 2.06	High	None	0.59	0.93	James
General Mills (GIS)	★★★★★	$59	$45.64	Low	Wide	0.77	27.20	Vora
Imperial Brands (IMB)	★★★★★	GBX 3700	GBX 2751.5	Low	Wide	0.74	26.24	Gorham
Kao (4452)	★★★	JPY 8800	JPY 8625	Low	Wide	0.98	4204.00	Wei
Mondelez International (MDLZ)	★★★★	$52	$42.44	Medium	Wide	0.82	62.24	Lash
PepsiCo (PEP)	★★★★	$123	$111.96	Low	Wide	0.91	158.35	Vora
Procter & Gamble (PG)	★★★★	$97	$83.41	Low	Wide	0.86	207.62	Lash
Reckitt Benckiser Group (RB.)	★★★★	GBX 7300	GBX 6625	Low	Wide	0.91	46.81	Gorham
Energy								
Cenovus Energy (CVE)	★★★★	$21	$12.35	Very High	None	0.59	15.18	Gemino
Enbridge (ENB)	★★★★	$64	$45.11	Medium	Wide	0.70	77.39	Gemino
Enterprise Products Partners (EPD)	★★★★	$35.5	$28.68	Low	Wide	0.81	62.41	Ellis
Royal Dutch Shell (RDS.B)	★★★★	$78	$68.6	Low	None	0.88	278.80	Good
Total (TOT)	★★★★	$74	$63.62	Medium	None	0.86	167.73	Good
Financial Services								
Agricultural Bank of China (601288)	★★★★	CNY 4.2	CNY 3.63	High	Narrow	0.86	1260.35	Tan
American International Group (AIG)	★★★★	$76	$53.64	Medium	None	0.71	47.66	Horn
Capital One Financial (COF)	★★★★	$127	$99.25	Medium	Narrow	0.78	47.48	Plunkett
Credit Suisse Group (CSGN)	★★★★	CHF 22	CHF 14.51	High	Narrow	0.66	37.01	Scholtz
Invesco (IVZ)	★★★★★	$38	$24.26	Medium	Narrow	0.64	9.97	Warren

Source: Morningstar. As of Aug. 31, 2018

Best Ideas

Company and Industry	Morningstar Rating	Fair Value Estimate	Current Price	Uncertainty Rating	Moat Rating	Price / Fair Value	Market Cap (B)	Analyst
Financial Services (cont.)								
Mitsubishi UFJ Financial Group (8306)	★★★★	JPY 880	JPY 670.8	Medium	None	0.76	8773.18	Wu
Pendal Group (PDL)	★★★★	AUD 11	AUD 9.37	Medium	Narrow	0.85	2.63	Likos
QBE Insurance Group (QBE)	★★★	AUD 12.5	AUD 11.01	High	None	0.88	14.86	Ellis
Westpac Banking (WBC)	★★★★	AUD 35	AUD 28.54	Medium	Wide	0.82	96.64	Ellis
Healthcare								
Allergan (AGN)	★★★★★	$263	$190.89	Medium	Wide	0.73	64.80	Waterhouse
McKesson (MCK)	★★★★★	$210	$129.98	Medium	Wide	0.62	25.97	Lekraj
Medtronic (MDT)	★★★★	$105	$96.81	Medium	Wide	0.92	130.86	Wang
Ramsay Health Care (RHC)	★★★★	AUD 76	AUD 55.7	Medium	Narrow	0.73	11.26	Kallos
Roche Holding (ROG)	★★★★★	CHF 337	CHF 240.8	Low	Wide	0.71	206.07	Andersen
Shire (SHP)	★★★★	GBX 4990	GBX 4513	Medium	Narrow	0.90	41.27	Andersen
Industrials								
Allegion (ALLE)	★★★	$91	$87.29	Medium	Wide	0.96	8.29	Bernard
Anixter International (AXE)	★★★★★	$107	$70.95	Medium	Narrow	0.66	2.37	Bernard
Beijing Enterprises Holdings (392)	★★★★★	HKD 58	HKD 37.65	Medium	Narrow	0.65	47.52	Song
Brambles (BXB)	★★★	AUD 11.2	AUD 10.97	Medium	Wide	0.98	17.46	Fleck
CK Hutchison Holdings (1)	★★★★	HKD 118	HKD 90.45	Medium	None	0.77	348.93	Tan
G4S (GFS)	★★★★	GBX 337	GBX 250.9	Medium	None	0.74	3.89	Field
GEA Group (G1A)	★★★★★	EUR 47	EUR 33.05	Medium	Wide	0.70	5.97	Molina
General Dynamics (GD)	★★★	$220	$192.51	Medium	Wide	0.88	57.04	Higgins
Grupo Aeroportuario del Pacifico (GAP B)	★★★	MXN 217	MXN 198.23	High	Wide	0.91	111.21	Higgins
Guangshen Railway (525)	★★★★★	HKD 6.5	HKD 3.43	High	None	0.53	29.63	Song
Johnson Controls International (JCI)	★★★★	$53	$37.65	High	Narrow	0.71	34.82	Bernard
Kion Group (KGX)	★★★★★	EUR 90	EUR 60.5	Medium	Narrow	0.67	7.12	Molina
Royal Philips (PHIA)	★★★★	EUR 42	EUR 38.99	Medium	Narrow	0.93	36.32	Vonk
Sodexo (SW)	★★★★	EUR 110	EUR 91.5	Medium	Narrow	NA	13.57	Field
Stericycle (SRCL)	★★★★	$86	$61.71	High	Narrow	0.72	5.30	Young
Real Estate								
Aveo (AOG)	★★★★	UNKNOWN. AI	UNKNOWN. AI	Medium	None	0.84	1.36	Sherlock
Sun Hung Kai Properties (16)	★★★★	HKD 153	HKD 116.5	Medium	Narrow	0.76	337.50	Zhong
Welltower (WELL)	★★★	$74	$66.58	High	None	0.90	24.77	Brown
Technology								
Intel (INTC)	★★★★	$65	$48.24	Medium	Wide	0.74	222.43	Davuluri
Microchip Technology (MCHP)	★★★★	$112	$85.55	Medium	Wide	0.76	20.15	Colello
MYOB Group (MYO)	★★★★	AUD 3.82	AUD 2.96	Medium	Narrow	0.77	1.75	James
ServiceNow (NOW)	★★★★	$221	$198.45	Medium	Wide	0.90	35.30	Fitzsimmons
Synaptics (SYNA)	★★★★	$64	$47.71	Very High	None	0.75	1.69	Davuluri
TDK (6762)	★★★	JPY 12500	JPY 12490	High	None	1.00	1576.80	Ito
Tencent Holdings (700)	★★★★★	HKD 590	HKD 340	High	Wide	0.58	3237.56	Tam
Utilities								
Dominion Energy (D)	★★★★	$84	$70.98	Low	Wide	0.85	46.40	Fishman
Enel (ENEL)	★★★★	EUR 5.7	EUR 4.3	Medium	None	0.75	43.81	Fulop
FirstEnergy (FE)	★★★★	$41	$37.38	Low	Narrow	0.91	18.17	Fishman
Scana (SCG)	★★★★★	$56	$38.64	Medium	Narrow	0.69	5.51	Miller

Source: Morningstar. As of Aug. 31, 2018

Highlighted Stocks

Fortune Brands Home & Security FBHS

Morningstar Rating	Industry	Moat Trend	Currency	Fair Value Estimate	Current Price	Uncertainty Rating	Moat Rating	Price/Fair Value	Market Cap (Bil)
★★★★	Consumer	Stable	USD	67	53.04	High	Narrow	0.79	7.59

Source: Morningstar. As of Aug. 31, 2018

We think Fortune Brands paid a fair price for a business with high growth potential and attractive margins.

Analyst Note, Aug. 27, 2018
Fortune Brands has announced that it has agreed to acquire Fiberon, a $200 million manufacturer of outdoor decking, railing, and fencing products, for $470 million. Management expects the deal to close within 30 days, at which point Fiberon will be included in Fortune Brands' newly formed doors and security segment (these two segments had previously operated autonomously). We've raised our fair value estimate to $67 per share from $66; we think Fortune Brands paid a fair price for a business with high growth potential and attractive margins.

According to Fortune Brands, Fiberon operates in a $2.5 billion decking market, and the capped composite nonwood market subsegment, where Fiberon is focused, represents about a quarter of the decking market and has been growing about 10% annually. In late July, Fortune Brands announced the combination of its doors and security segments to accelerate growth and realize better economies of scale. This acquisition should certainly help the doors and security business achieve its top-line growth targets.

Fortune Brands expects the acquisition to add $0.05 to $0.06 to EPS in 2019 and $0.09 to $0.10 in 2020. We think the EPS delta between 2019 and 2020 will be the result of Fortune Brands' ability to improve Fiberon's penetration across builder, wholesale, and home center channels. Indeed, the company noted to us that the Fiberon acquisition is mostly a revenue synergy story rather than a cost take-out story.

Based on our follow-up conversation with the company, review of publicly traded peer Trex, and our modeling work, we estimate that Fortune Brands' $470 million purchase price equates to about 11 to 13 times Fiberon's trailing 12-month EBITDA and about 9.5 to 10.5 times Fortune Brands' expectations for Fiberon's 2019 EBITDA. For the sake of comparison, Trex currently trades at approximately 26 times and 21 times the firm's trailing 12-month and 2019 consensus EBITDA, respectively.

Fortune Brands had $345.5 million of cash on hand at the end of June, but approximately 80% of this cash is held at foreign subsidiaries. As such, we expect Fortune Brands will fund this acquisition with debt.

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Integra Lifesciences Holdings IART

Morningstar Rating	Industry	Moat Trend	Currency	Fair Value Estimate	Current Price	Uncertainty Rating	Moat Rating	Price/Fair Value	Market Cap (Bil)
★★★	Healthcare	Stable	USD	58	59.50	High	Narrow	1.03	5.04

Source: Morningstar. As of Aug. 31, 2018

Integra has completed only a handful of sizable studies, but we think continued investment in this area could ultimately form the basis for a moat supported by intangibles.

Analyst Note, Aug. 31, 2018
We're initiating coverage of Integra Lifesciences with narrow moat and stable trend ratings. Our fair value estimate of $58 per share pegs valuation near 21 times and 16 times our estimates of 2019 adjusted earnings and EBITDA, respectively. This places shares in 3-star territory for now, but we'd highlight the wide distribution implied by our high uncertainty rating.

The firm operates in three distinct areas; neurosurgery, wound care, and extremity orthopedics. We think the firm's neurosurgical and orthopedic segments support a firmwide narrow moat rating, given the high switching costs in these end markets and their estimated outsize contribution to total profits. After the $1 billion acquisition of Codman Neurosurgery from Johnson & Johnson at the end of 2017, Integra become a more formidable neurosurgical company, expanding its business by nearly 50%. We think the combination will help Integra remain a relevant vendor as healthcare providers continue to cull their list of preferred suppliers.

In wound care, we think Integra's offering remains a no-moat operation, since the industry consists of relatively fragmented competitors, difficult-to-identify product differentiation, and a lack of strong intellectual property protection. That said, management's growing investment in clinical studies may produce data that puts Integra a step a head of the competition. In an industry that hasn't been held to the same standards as pharmaceutical or traditional device development, outcomes data could support competitive differentiation in a world guided by value-based care. Integra has completed only a handful of sizable studies, but we think continued investment in this area could ultimately form the basis for a moat supported by intangibles. That said, we'd like to see additional data and evidence that these investments are yielding superior returns over the long run, and not just a new cost of doing business.

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Salesforce.com CRM

Morningstar Rating	Industry	Moat Trend	Currency	Fair Value Estimate	Current Price	Uncertainty Rating	Moat Rating	Price/Fair Value	Market Cap (Bil)
★★★★	Technology	Positive	USD	175	152.87	Medium	Wide	0.87	113.03

Source: Morningstar. As of Aug. 31, 2018

Even after an impressive year-to-date run, we still anticipate additional upside for Salesforce and still see this as an attractive point of entry.

Analyst Note, Aug. 29, 2018

After transferring coverage of Salesforce.com to a new analyst, we are raising our fair value estimate to $175 per share from $158 and maintaining our wide moat rating, positive trend, and medium uncertainty ratings. We continue to believe Salesforce benefits from strong switching costs and a network effect in terms of its platform offerings. The firm's acquisition of MuleSoft (acquired at an expensive multiple of 22 times revenue) and incremental investments in its AI tools (Einstein) embolden our confidence in Salesforce's increasing switching costs. With shares trading at a discount to our fair value estimate, even after an impressive year-to-date run, we still anticipate additional upside for Salesforce and still see this as an attractive point of entry. The firm's prospects are buoyed by salient trends, such as a shift to cloud applications and enterprises undergoing a digital transformation. These trends, coupled with robust aggregate CRM spending growth, will propel Salesforce's top line, in our opinion.

The firm reported second-quarter 2019 earnings on Aug. 29. Salesforce's second-quarter revenue of $3.3 billion and diluted GAAP EPS of $0.39 per share sat at the upper end of our expectations. Our estimates for fiscal 2019 revenue are now $13.2 billion, targeting the high end of management's guidance. We attribute shares selling off to muted third-quarter EPS guidance, but we were impressed with full-year targets. MuleSoft and verticalization remained the story during the quarter. MuleSoft's Anypoint Integration Platform allows Salesforce to essentially become the glue behind the entire IT systems of major enterprises, while concurrently strengthening the interconnection between Salesforce's various clouds. Our fair value increase is largely based on greater expectations for MuleSoft's growth, which we model on a standalone basis. Second, we see vertical products, like Health Cloud, as crucial to the firm's long-term growth story.

In terms of our long-term thesis, we believe that after starting as a trailblazer at the genesis of the software-as-a-service, or SaaS, movement, Salesforce.com has expeditiously transformed into a modern software heavyweight. We think Salesforce benefits from secular tailwinds, as enterprises use cloud applications for rapid deployments, instant updates, and to lower the total cost of ownership for their software applications.

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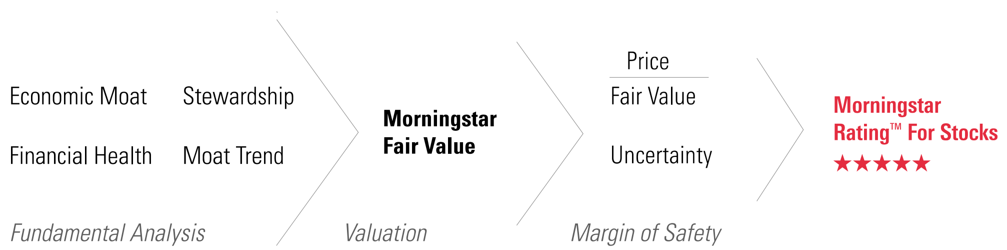
Research Methodology for Valuing Companies

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. Moreover, we think analyzing valuation through discounted cash flows presents a better lens for viewing cyclical companies, high-growth firms, businesses with finite lives (e.g., mines), 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.

Morningstar Research Methodology



Source: Morningstar.

Four key components drive the Morningstar rating: (1) our assessment of the firm's economic moat, (2) our estimate of the stock's fair value, (3) our uncertainty around that fair value estimate, and (4) the current market price. This process ultimately culminates in our single-point star rating.

Economic Moat

The concept of an economic moat plays a vital role not only in our qualitative assessment of a firm's long-term investment potential, but also in the actual calculation of our fair value estimates. An economic moat is a structural feature that allows a firm to sustain excess profits over a long period of time. We define economic profits as returns on invested capital (ROIC) over and above our estimate of a firm's cost of capital, or weighted average cost of capital (WACC). Without a moat, profits are more susceptible to competition. We have identified five sources of economic moats: intangible assets, switching costs, network effect, cost advantage, and efficient scale.

Companies with a narrow moat are those we believe are more likely than not to achieve normalized excess returns for at least the next 10 years. Wide-moat companies are those in which we have very high confidence that excess returns will remain for 10 years, with excess returns more likely than not to remain for at least 20 years. The longer a firm generates economic profits, the higher its intrinsic value. We believe low-quality, no-moat companies will see their normalized returns gravitate toward their cost of capital more quickly than companies with moats.

To assess the sustainability of excess profits, analysts perform ongoing assessments of the moat trend. A firm's moat trend is positive in cases where we think its sources of competitive advantage are growing stronger, stable where we don't anticipate changes to competitive advantages over the next several years, or negative where we see signs of deterioration.

Estimated Fair Value

Combining our analysts' financial forecasts with the firm's economic moat helps us assess how long returns on invested capital are likely to exceed the firm's cost of capital. Returns of firms with a wide economic moat rating are assumed to fade to the perpetuity period over a longer period of time than the returns of narrow-moat firms, and both will fade slower than no-moat firms, increasing our estimate of their intrinsic value.

Our model is divided into three distinct stages:

Stage I: Explicit Forecast

In this stage, which can last 5 to 10 years, analysts make full financial statement forecasts, including items such as revenue, profit margins, tax rates, changes in working capital accounts, and capital spending. Based on these projections, we calculate earnings before interest, after taxes (EBI) and net new investment (NNI) to derive our annual free cash flow forecast.

Stage II: Fade

The second stage of our model is the period it will take the company's return on new invested capital—the return on capital of the next dollar invested (RONIC)—to decline (or rise) to its cost of capital. During the Stage II period, we use a formula to approximate cash flows in lieu of explicitly modeling the income statement, balance sheet, and cash flow statement as we do in Stage I. The length of the second stage depends on the strength of the company's economic moat. We forecast this period to last anywhere from one year (for companies with no economic moat) to 10–15 years or more (for wide-moat companies). During this period, cash flows are forecast using four assumptions: an average growth rate for EBI over the period, a normalized investment rate, average return on new invested capital (RONIC), and the number of years until perpetuity, when excess returns cease. The investment rate and return on new invested capital decline until a perpetuity value is calculated. In the case of firms that do not earn their cost of capital, we assume marginal ROICs rise to the firm's cost of capital (usually attributable to less reinvestment), and we may truncate the second stage.

Stage III: Perpetuity

Once a company's marginal ROIC hits its cost of capital, we calculate a continuing value, using a standard perpetuity formula. At perpetuity, we assume that any growth or decline or investment in the business neither creates nor destroys value and that any new investment provides a return in line with estimated WACC.

Because a dollar earned today is worth more than a dollar earned tomorrow, we discount our projections of cash flows in stages I, II, and III to arrive at a total present value of expected future cash flows. Because we are modeling free cash flow to the firm—representing cash available to provide a return to all capital providers—we discount future cash flows using the WACC, which is a weighted average of the costs of equity, debt, and preferred stock (and any other funding sources), using expected future proportionate long-term, market value weights.

Uncertainty Around That Fair Value Estimate

Morningstar's uncertainty rating captures a range of likely potential intrinsic values for a company and uses it to assign the margin of safety required before investing, which in turn explicitly drives our stock star rating system. The 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, and other company-specific factors.

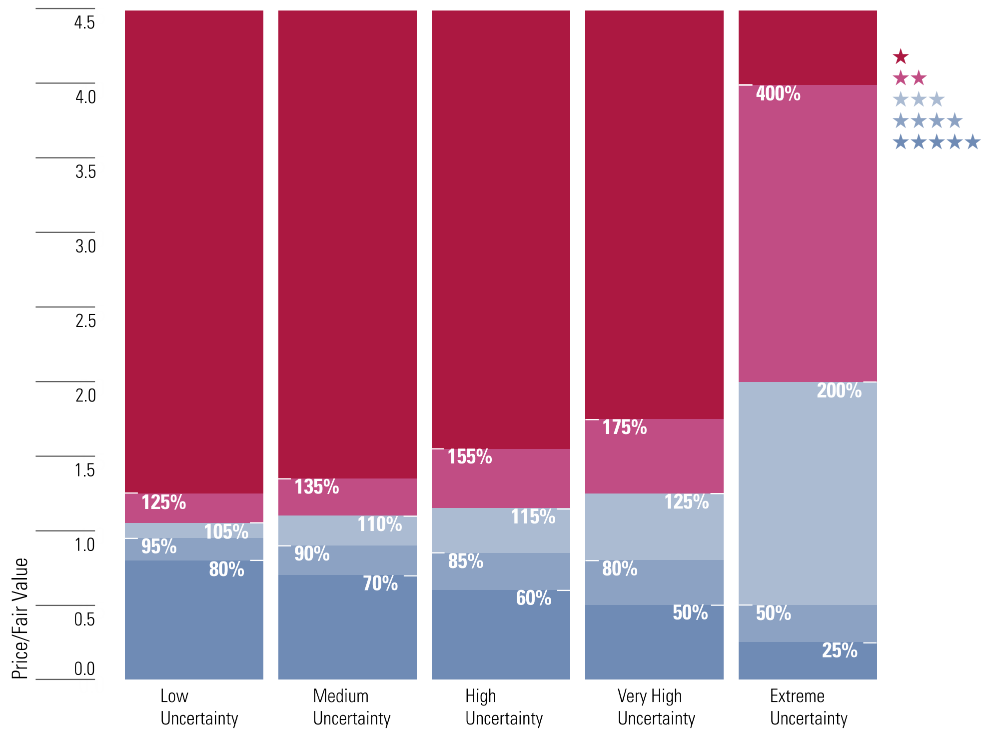
Analysts consider at least two scenarios in addition to their base case: a bull case and a bear case. Assumptions are chosen such that the analyst believes there is a 25% probability that the company will perform better than the bull case and a 25% probability that the company will perform worse than the bear case. The distance between the bull and bear cases is an important indicator of the uncertainty underlying the fair value estimate.

Our recommended margin of safety widens as our uncertainty regarding the estimated value of the equity increases. The more uncertain we are about the estimated value of the equity, the greater the discount we require relative to our estimate of the value of the firm before we would recommend the purchase of the shares. In addition, the uncertainty rating provides guidance in portfolio construction based on risk tolerance.

Our uncertainty ratings for our qualitative analysis are low, medium, high, very high, and extreme.

- Low: Margin of safety for 5-star rating is a 20% discount and for 1-star rating is a 25% premium.
- Medium: Margin of safety for 5-star rating is a 30% discount and for 1-star rating is a 35% premium.
- High: Margin of safety for 5-star rating is a 40% discount and for 1-star rating is a 55% premium.
- Very high: Margin of safety for 5-star rating is a 50% discount and for 1-star rating is a 75% premium.
- Extreme: Margin of safety for 5-star rating is a 75% discount and for 1-star rating is a 300% premium.

Morningstar Equity Research Star Rating Methodology



Market Price

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

For more details about our methodology, please go to http://global.morningstar.com/equitydisclosures.

Morningstar Star Rating for Stocks

Once we determine the fair value estimate of a stock, we compare it with the stock's current market price on a daily basis, and the star rating is automatically recalculated at the market close on every day the market on which the stock is listed is open. Our analysts keep close tabs on the companies they follow and, based on thorough and ongoing analysis, raise or lower their fair value estimates as warranted.

Please note, there is no predefined distribution of stars. That is, the percentage of stocks that earn 5 stars can fluctuate daily, so the star ratings, in the aggregate, can serve as a gauge of the broader market's valuation. When there are many 5-star stocks, the stock market as a whole is more undervalued, in our opinion, than when very few companies garner our highest rating.

We expect that if our base-case assumptions are true, the market price will converge on our fair value estimate over time, generally within three years (although it is impossible to predict the exact time frame in which market prices may adjust).

Our star ratings are guideposts to a broad audience, and individuals must consider their own specific investment goals, risk tolerance, tax situation, time horizon, income needs, and complete investment portfolio, among other factors.

The Morningstar Star Ratings for stocks are defined below:

★★★★★ We believe appreciation beyond a fair risk-adjusted return is highly likely over a multiyear time frame. Scenario analysis developed by our analysts indicates that the current market price represents an excessively pessimistic outlook, limiting downside risk and maximizing upside potential.

★★★★ We believe appreciation beyond a fair risk-adjusted return is likely.

★★★ Indicates our belief that investors are likely to receive a fair risk-adjusted return (approximately cost of equity).

★★ We believe investors are likely to receive a less than fair risk-adjusted return.

★ Indicates a high probability of undesirable risk-adjusted returns from the current market price over a multiyear time frame, based on our analysis. Scenario analysis by our analysts indicates that the market is pricing in an excessively optimistic outlook, limiting upside potential and leaving the investor exposed to capital loss.

Risk Warning

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