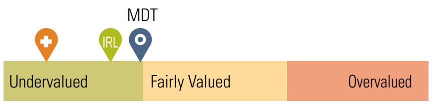
Medtronic PLC MDT (XNYS)

Morningstar Rating	Last Price	Fair Value Estimate	Price/Fair Value	Trailing Dividend Yield %	Forward Dividend Yield %	Market Cap (Bil)	Industry	Stewardship
★★★★ 31 May 2019 22:06, UTC	92.58 USD 31 May 2019	110.00 USD 19 Oct 2018 20:21, UTC	0.84	2.16 31 May 2019	2.16 31 May 2019	124.12 31 May 2019	Medical Devices	Standard

Morningstar Pillars	Analyst	Quantitative
Economic Moat	Wide	Wide
Valuation	★★★★	Undervalued
Uncertainty	Medium	High
Financial Health	—	Strong

Source: Morningstar Equity Research

Quantitative Valuation



	Current	5-Yr Avg	Sector	Country
Price/Quant Fair Value	0.94	0.98	0.82	0.90
Price/Earnings	27.1	31.5	26.5	17.4
Forward P/E	16.9	—	11.3	13.0
Price/Cash Flow	17.9	18.3	18.4	13.1
Price/Free Cash Flow	21.4	22.0	27.3	19.3
Trailing Dividend Yield%	2.16	2.05	1.50	1.92

Source: Morningstar

Bulls Say

- Medtronic has historically held roughly 50% share in its core heart devices. It's also the market leader in spinal products, insulin pumps, and neuromodulators for chronic pain.
- Medtronic's pipeline contains treatments for atrial fibrillation, mitral valve disease, and renal denervation for hypertension. If these new therapies prove effective, Medtronic could dominate three more potentially large markets.
- Medtronic often finds novel ways to apply familiar technologies, like using the implantable electronic stimulation in pacemakers to address fecal incontinence and chronic pain.

Bears Say

- As smaller firms introduce new insulin pump technology, Medtronic may face a stiffer fight to maintain its leadership in this arena.
- Medtronic's devices are indirectly subject to Medicare reimbursement rates; increasing pressure on payments could hurt profitability.
- Over the years, Medtronic has issued a number of voluntary recalls of some of its products. Although the fatalities associated with these problems have remained extremely low, recalls generally require time and effort and can hurt doctors' confidence in the products.

Important Disclosure:

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Investment in Innovation Supports Medtronic's Wide Economic Moat

Business Strategy and Outlook

Debbie S. Wang, Sr. Eq. Analyst, 29 May 2019

Medtronic's standing as the largest pure-play medical device maker remains a force to be reckoned with in the med-tech landscape. Pairing Medtronic's diversified product portfolio aimed at a wide range of chronic diseases with legacy Covidien's breadth of products for acute care in hospitals has bolstered Medtronic's position as a key partner for its hospital customers.

Medtronic has historically focused on innovation, designing and manufacturing devices to address cardiac care, neurological and spinal conditions, and diabetes. All along, the firm has remained focused on its fundamental strategy of innovation. It is often first to market with new products and has invested heavily in internal research and development efforts as well as acquiring emerging technologies. However, in the postreform healthcare world where there are higher hurdles for securing reimbursement for next-generation technology, Medtronic has slightly shifted its strategy to focus on partnering more closely with its hospital clients by offering greater breadth of products and services to help hospitals operate more efficiently. By partnering more closely and integrating itself into more hospital operations, Medtronic is well positioned to take advantage of more business opportunities in the value-based reimbursement environment, in our view. In particular, Medtronic has been pioneering risk-based contracting around some of its cardiac and diabetes products, which we think is attractive to hospital clients and payers alike.

We have always appreciated Medtronic's diverse portfolio, where certain waning product lines would be offset by growth in other categories. The addition of devices and consumables used in the surgical suite should further stabilize potential speed bumps in individual product lines. Medtronic continues to focus on penetrating emerging markets, especially China. We estimate Medtronic generated roughly $1.5 billion in Chinese sales in fiscal 2018. Medtronic's broad portfolio of products fits well with the firm's earlier purchase of Kanghui Holdings, which provides the firm with an established network of native distributors that can reach thousands of hospitals in China.

Analyst Note

Debbie S. Wang, Sr. Eq. Analyst, 23 May 2019

Medtronic posted strong fiscal fourth-quarter results that largely met our full-year top-line expectations and nearly hit our expense projections on the nose. We expect to leave our fair value unchanged once we roll our model and make slight near-term adjustments to our projections. While revenue growth in the cardiovascular group fell slightly short of our expectations, this was offset by stronger-than-expected growth from the minimally invasive and restorative therapies groups. We remain confident in the firm's wide economic moat, which is supported by continued adoption of innovative products, and a steady stream of new products in the pipeline across therapeutic areas.

Though Medtronic's spine business has been characterized by a slow decline over this decade and we've long been pessimistic about this market, in general, we think the addition of the Mazor robot could change the script and spur sustained growth again for the spine unit. Similar to Stryker's strategy with the Mako robot for hip and knee replacements, Medtronic acquisition of Mazor provides a market-leading footprint in the emerging area of spine robots. We think the robot will contribute to spine product pull-through and afford opportunities to shift practitioners over to higher-margin consumables. As we have discussed in the past with joint replacement robots, it is currently difficult to assess whether the spinal robot leads to better patient outcomes. It will take years to collect clinical data demonstrating the effect, one way or the other. Nonetheless, as with knee replacements, there is a sizable group of patients who are dissatisfied with their outcomes. We think this will contribute to appetite among spine surgeons to try out the technology. Adoption should also be bolstered by the secular shift from open surgeries to minimally invasive spine procedures, which are most likely to benefit from the real-time imaging and precision that robots offer.

Economic Moat

Debbie Wang, Sr. Eq. Analyst, 29 May 2019

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Close Competitors	Currency (Mil)	Market Cap	TTM Sales	Operating Margin	TTM/PE
Johnson & Johnson JNJ	USD	348,211	81,593	22.99	24.27
Boston Scientific Corp BSX	USD	53,415	9,937	16.81	30.03

Medtronic's wide moat is rooted in its dominant presence in highly engineered medical devices to treat chronic diseases, including those beyond its historical stronghold in heart disease. Medtronic's moat comes from several sources.

In the cardiac area, Medtronic competes with roughly three competitors in total across its heart-related portfolio. The markets for pacemakers, ICDs, coronary stents, heart valves, and neuromodulation generally operate as rational oligopolies. There are some switching costs related to cardiac rhythm management devices and transcatheter aortic heart valves.

In the spine area, Medtronic's moat is strengthened by high switching costs for surgeons. Doctors often rely on medical device sales reps for their deep device knowledge as well as their experience with device usage in a wide range of patients. As a result, Medtronic's reps play the role of highly specialized experts who advise practitioners on implantation, programming, and maintenance of Medtronic devices and create sticky relationships with medical practitioners. This dynamic tends to keep spinal surgeons loyal to Medtronic's products, as long as the company does not fall too far behind its competitors when it comes to introducing new technology.

Finally, Medtronic's wide moat is bolstered by several intangibles, including intellectual property and carefully nurtured relationships with physicians. Thanks to its persistent ability to innovate, Medtronic is often first to market with new products in various therapeutic areas. We expect Medtronic to continue its record of innovation, based on its extensive patent portfolio. According to independent intellectual property evaluation publications Device Link and The Patent Board, Medtronic holds the strongest intellectual property position based on number and technological strength of its patents.

We think Medtronic's diversified medical technology portfolio allows it to better weather occasional glitches in the development or approval process for any particular new device. Investments in neuromodulation, diabetes, and spinal products from the middle to late 1990s paid off in spades through 2010. Although the spine and ICD businesses have been hit with slower market growth since then, the firm has seen double-digit growth in its diabetes, surgical technologies, drug-coated balloons, neurovascular, and atrial fibrillation segments. While some of Medtronic's product lines have waned as new clinical data has altered treatment guidelines, the firm continues to invest in emerging technologies, including renal denervation and transcatheter mitral valves, that should drive future growth.

The addition of Covidien deepens Medtronic's competitive advantages, as Covidien's medical device segment enjoys brand recognition, technological innovation, and substantial scale. Covidien's innovation record, enhanced by incremental research investment during the past few years, has resulted in a steady stream of product upgrades and new technologies. Most of Covidien's device subsegments operate in an oligopolistic fashion; the absence of irrational price competition and the evolutionary (rather than revolutionary) nature of innovation tend to lead to only marginal share shifts in the industry and strong excess returns. Covidien currently ranks at or near the top in all product categories where it competes in devices and vies mainly with Johnson & Johnson; the rest of the field is typically highly fragmented, with most companies occupying product niches rather than competing broadly against the big two.

We have seen no new entrants making significant inroads. New competitors sometimes pop up on the margins, ranging from less sophisticated (discounted prices) to high-end (technological advancements), but they rarely result in monumental market shifts. The existing players' positioning is very defensible, with most practitioners rarely switching to competitors' products because of inertia as well as up-front training costs. While surgeons' influence over procurement decisions is arguably waning, the established players also have administrators' ears. Covidien and J&J dominate a number of surgical specialties with the breadth of their portfolios, rendering competitors' efforts to displace them on cost on an individual product basis less meaningful.

Fair Value & Profit Drivers

Debbie Wang, Sr. Eq. Analyst, 29 May 2019

We're holding steady on our $110 fair value estimate. We continue to incorporate fairly optimistic expectations for

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innovation in the structural heart, diabetes, and neurovascular units, as well as incremental margin expansion following the sale of legacy Covidien's medical supplies business to Cardinal Health.

With the shedding of that business, we project 4.2% average annual top-line growth for Medtronic's remaining product lines. However, we expect Medtronic's new neuromodulation indications, drug-eluting balloons and insulin pumps, ongoing development of the atrial fibrillation market, and transcatheter valve sales to defend against pricing erosion in the near term. We estimate slightly faster 5.4% average annual revenue growth from the restorative therapies group through fiscal 2024, driven by adoption of new technologies in neuromodulation and neurovascular and a return to growth of the spine business thanks to the addition of the Mazor robot.

While legacy Medtronic's gross margins have historically held firm at about 75%, the addition of Covidien has lowered this by roughly 600 basis points, and the firm has made gradual and steady progress in raising gross margin more than 100 basis points over the last four years. We think the company can eke out incremental improvement over the next few years as it further rationalizes its manufacturing assets. We project normalized gross margin just over 70% over the longer term. We expect further cost synergies to emerge from sales and administration, thanks to more cross-selling and bundling of products and services.

Risk & Uncertainty

Debbie Wang, Sr. Eq. Analyst, 29 May 2019

Based on the average volatility of cash flows from a diverse product portfolio in relatively less discretionary therapeutic markets, we rate Medtronic's uncertainty as medium.

With baby boomers hitting Medicare age, there could be future cuts to Medicare reimbursement for device-related procedures, which would translate into financial pressure for its hospital customers. Innovation is the name of the game in medical devices, but the bar has been raised in the wake of healthcare reform. Successfully securing price premiums for new technology is no longer a given and now depends on favorable clinical data. Increasing regulatory attention and interest in conducting more extensive clinical trials and aftermarket studies could increase development costs for Medtronic. Product recall and liability and inventory write-downs are occasional sore spots for the industry. Although the U.S. Department of Justice wrapped up its investigation into off-label use of the Infuse product without issuing any charges, the controversy around the investigation added uncertainty and contributed to a decline in Infuse sales. Potential investigations into other products and their marketing remain a risk in the medical device business.

Stewardship

Debbie Wang, Sr. Eq. Analyst, 29 May 2019

In 2011, Omar Ishrak left GE Healthcare to lead Medtronic as CEO and chairman. While he had little direct experience with the cardiac market or the device industry, he was considered a rising star at GE. Ishrak was the pioneer behind GE Healthcare's successful entrance into the China market--he led efforts to expand the product portfolio in order to compete head to head with local Chinese imaging companies such as Mindray, which gave GE a substantial leg up in the midmarkets in China. Considering that Medtronic has been making a number of investments in China and India and has identified emerging markets as a strategic source of growth, we think Ishrak brings valuable perspective to the party. We think he has successfully pushed Medtronic away from its U.S.-centric past and focused the organization more closely on the potential in emerging markets. He has led the firm to invest in new areas of innovation, including transcatheter mitral valve technologies, renal denervation, and spine robotics. Importantly, he's been the driving force behind Medtronic's efforts to position new products and services to help hospital customers improve outcomes and lower costs--key priorities that have shifted hospital purchasing behavior in the wake of the Affordable Care Act.

We think the addition of former sell-side analyst Mike Weinstein to lead corporate strategy is a very intriguing move by Medtronic. We believe Weinstein will bring a deep well of med-tech expertise and connections in the industry, which CFO Karen Parkhill lacks as she came from a banking background. We expect that Weinstein will sharpen Medtronic’s focus on M&A activities, help streamline the portfolio (including the potential sale of some products or businesses), and influence and clarify the firm’s approach to capital allocation.

Under Ishrak's leadership, management's capital-allocation decisions have been primarily solid, with an occasional

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misstep when it comes to acquisitions. Like the other major medical device companies, Medtronic makes regular acquisitions of smaller (often privately held) firms that offer emerging technology. These purchases are typically dilutive in the short term because the technology still requires much development to reach commercialization. Though it is difficult to assess the value of what was purchased, we tend to view these investments akin to the internal investments that Medtronic must make in R&D. Our main concern is that, even though Medtronic has not seen a pattern of goodwill impairment, in the past it has not hesitated to pony up generous offers for certain acquisition targets that did not seem to add value over the longer term. For example, Medtronic spent $4.2 billion to purchase Kyphon in 2008--an acquisition that turned out to be a disappointment as there were fewer-than-expected synergies in terms of sales, marketing, and physician relationships. Medtronic has not been able to goose Kyphon's products back into robust growth. However, we think many of Medtronic's other acquisitions should add value over time, including Mazor, Covidien, and Ardian.

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Analyst Notes Archive

ACA Ruled Unconstitutional by District Court, but We See No Near-Term Impact to Fundamentals

Jake Strole, Eq. Analyst, 17 December 2018

On Dec. 14, Judge Reed O'Connor of the Northern District of Texas issued a ruling effectively declaring the Patient Protection and Affordable Care Act, or ACA, unconstitutional. For now, we're assuming little will change for the companies we cover in the healthcare sector over the near term as the ruling will likely make its way through the appeals process. We wouldn't be surprised to see this case as the third appearance the ACA will make in front of the U.S. Supreme Court, but the potential timeline for a final decision remains unclear.

The basis for the decision finds its roots in Congress' elimination of the shared-responsibility financial penalty that accompanied the passage of the Tax Cuts and Jobs Act late last year. In short, Judge O'Connor found the individual mandate to be an essential and inseverable provision of the ACA, and Congress' decision to eliminate the enforcement of tax penalties under the law rendered the entirety of the legislation unconstitutional. This logic follows from the 2012 U.S. Supreme Court decision that upheld the ACA as constitutional under Congress' powers of taxation.

In our view, the healthcare provider sector is most at-risk stemming from any changes to prevailing healthcare legislation. Whether it be changes to individual coverage or a roll-back of Medicaid expansion, a higher uninsured rate unequivocally equates to pressure on hospital margins. From a payer perspective the trade-off is a little less clear, although Medicaid-focused insurers are likely to feel the bulk of any enrollment losses.

We don't intend to make any changes to moat ratings or fair value estimates as a result of this decision. We'll continue to monitor the case as it makes its way through appellate court in the coming months, but the outcome and timeline is too uncertain to make any meaningful changes to our assumptions in these early days. Additionally, wildcards such as potential legislative action further muddies our analysis.

Medtronic Posts Solid Third Fiscal Quarter; No Change to Our Fair Value Estimate

Debbie Wang, Sr. Eq. Analyst, 19 February 2019

Medtronic posted solid fiscal third-quarter performance that largely spanned the product portfolio; we haven't made any changes to our assumptions and are holding steady on our fair value estimate. With organic quarterly top-line growth up 4.4%, third-quarter sales grew slightly slower than in the previous four quarters, though the firm faced an unusually robust comparable in the prior-year period. As is typical for Medtronic, adoption of novel products more than offset declines in older products. The firm's steady release of new products and ongoing investment in its pipeline underscore our confidence in Medtronic's wide economic moat.

We view Medtronic's Heartware left ventricular assist device as the softest spot in the quarter--down in the mid-teens--as rival Abbott recently received the destination therapy indication on its competitive product. The improvements to and data published on Abbott's HeartMate 3 have helped attract practitioner attention. Additionally, new heart transplant guidelines may be leading more patients to choose extracorporeal membrane oxygenation over LVADs, in order to gain priority for transplantation. We suspect the guideline changes could be a significant factor in reordering practitioner and patient behavior because even Abbott's heart failure business in the U.S. fell 3% in the fourth quarter. It's not yet clear how long this new usage pattern will last, but we think it could take at least a few years to gather data on outcomes.

We're eager to see large-scale clinical results on Medtronic's TYRX antibacterial envelope for cardiac rhythm management devices, expected in mid-March. While smaller-scale studies have hinted at impressive reductions in infection, if results from the WRAP-IT trial are favorable and can demonstrate cost savings by avoiding complications, we anticipate wider adoption of the TYRX product, and associated product pull-through on traditional CRM devices.

Medtronic Wraps Up Fiscal Year With Solid Results; No Change to Our FVE

Debbie Wang, Sr. Eq. Analyst, 23 May 2019

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Quantitative Equity Report | Release: 01 Jun 2019, 00:45 UTC | Reporting Currency: USD | Trading Currency: USD | Exchange:XNYS

Medtronic PLC MDT ★★★Q

01 Jun 2019 02:00 UTC

Last Close	Fair Value Q	Market Cap	Sector	Industry	Country of Domicile
31 May 2019	01 Jun 2019 02:00 UTC	31 May 2019			
92.58	98.11	124.1 Bil	Healthcare	Medical Devices	IRL Ireland

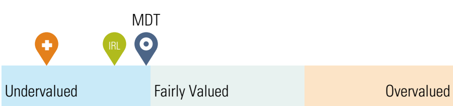
There is no one analyst in which a Quantitative Fair Value Estimate and Quantitative Star Rating are attributed to; however, Mr. Lee Davidson, Head of Quantitative Research for Morningstar, Inc., is responsible for overseeing the methodology that supports the quantitative fair value. As an employee of Morningstar, Inc., Mr. Davidson is guided by Morningstar, Inc.'s Code of Ethics and Personal Securities Trading Policy in carrying out his responsibilities. For information regarding Conflicts of Interests, visit http://global.morningstar.com/equitydisclosures

Company Profile

One of the largest medical device companies, Medtronic develops and manufactures therapeutic medical devices for chronic diseases. Its portfolio includes pacemakers, defibrillators, heart valves, stents, insulin pumps, spinal fixation devices, neurovascular products, and surgical tools. The company markets its products to healthcare institutions and physicians in the United States and overseas. Foreign sales account for about 45% of the company's total sales.

Quantitative Scores

		Scores All	Rel Sector	Rel Country
Quantitative Moat	Wide	100	100	98
Valuation	Undervalued	24	23	28
Quantitative Uncertainty	High	97	97	79
Financial Health	Strong	89	85	75



Source: Morningstar Equity Research

Valuation

	Current	5-Yr Avg	Sector Median	Country Median
Price/Quant Fair Value	0.94	0.98	0.82	0.90
Price/Earnings	27.1	31.5	26.5	17.4
Forward P/E	16.9	—	11.3	13.0
Price/Cash Flow	17.9	18.3	18.4	13.1
Price/Free Cash Flow	21.4	22.0	27.3	19.3
Trailing Dividend Yield %	2.16	2.05	1.50	1.92
Price/Book	2.5	2.7	3.4	1.7
Price/Sales	4.1	3.9	4.2	1.9

Profitability

	Current	5-Yr Avg	Sector Median	Country Median
Return on Equity %	9.8	8.8	12.4	13.5
Return on Assets %	5.3	4.6	6.2	6.1
Revenue/Employee (K)	355.3	313.9	309.2	296.5

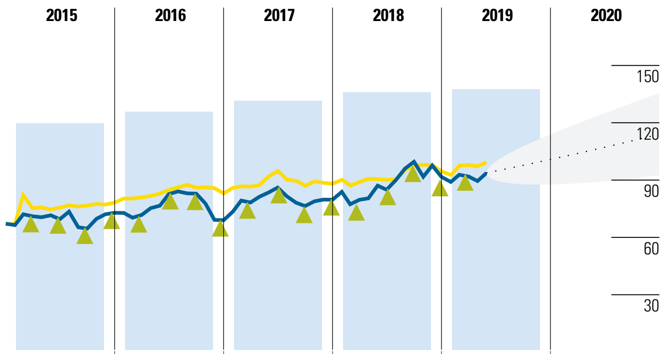
Financial Health

	Current	5-Yr Avg	Sector Median	Country Median
Distance to Default	0.7	0.7	0.6	0.7
Solvency Score	401.4	—	494.6	451.9
Assets/Equity	1.8	1.9	1.4	1.8
Long-Term Debt/Equity	0.5	0.5	0.1	0.4

Growth Per Share

	1-Year	3-Year	5-Year	10-Year
Revenue %	0.8	13.9	12.5	8.3
Operating Income %	0.5	11.7	5.9	5.7
Earnings %	-21.5	-2.0	-7.6	1.5
Dividends %	7.0	14.7	12.1	13.9
Book Value %	2.2	0.0	15.3	13.8
Stock Total Return %	9.6	6.8	10.6	11.9

Price vs. Quantitative Fair Value



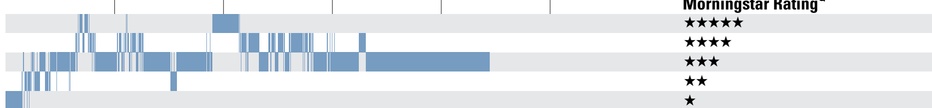
- Quantitative Fair Value Estimate
- Total Return
- Sales/Share
- Forecast Range
- Forecasted Price
- Dividend
- Split

Momentum:	Neutral
Standard Deviation:	17.13
Liquidity:	High

81.66	52-Wk	100.15
55.54	5-Yr	100.15

2015	2016	2017	2018	2019	2020	
8.5	-5.2	15.9	15.1	2.3		Total Return %
7.8	-17.7	-5.6	20.1	-8.8		+/– Market (Morningstar US Index)
1.88	2.34	2.24	2.15	2.16		Trailing Dividend Yield %
1.98	2.41	2.28	2.20	2.16		Forward Dividend Yield %
46.5	23.8	22.2	54.3	27.2		Price/Earnings
3.9	3.5	3.8	4.1	4.1		Price/Revenue

Morningstar Rating Q

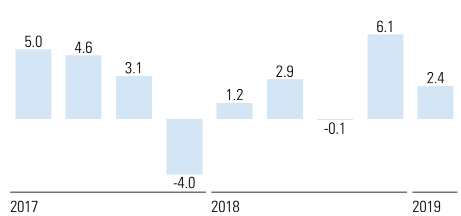


2014	2015	2016	2017	2018	TTM	Financials (Fiscal Year in Mil)
17,005	20,261	28,833	29,710	29,953	30,555	Revenue
2.5	19.1	42.3	3.0	0.8	2.0	% Change
4,818	4,557	5,960	6,313	6,343	6,844	Operating Income
1.0	-5.4	30.8	5.9	0.5	7.9	% Change
3,065	2,675	3,538	4,028	3,104	4,919	Net Income
4,959	4,902	5,218	6,880	4,684	5,958	Operating Cash Flow
-396	-571	-1,046	-1,254	-1,068	-1,091	Capital Spending
4,563	4,331	4,172	5,626	3,616	4,867	Free Cash Flow
26.8	21.4	14.5	18.9	12.1	15.9	% Sales
3.02	2.41	2.48	2.89	2.27	3.61	EPS
-10.4	-20.2	2.9	16.5	-21.5	59.0	% Change
4.36	3.89	3.39	3.68	3.14	4.33	Free Cash Flow/Share
1.12	1.22	1.52	1.72	1.84	1.96	Dividends/Share
19.37	14.19	36.32	36.06	37.09	37.36	Book Value/Share
984	1,406	1,373	1,353	1,343	1,341	Shares Outstanding (Mil)
						Profitability
16.1	7.4	6.7	7.9	6.2	9.8	Return on Equity %
8.4	3.7	3.4	4.0	3.3	5.3	Return on Assets %
18.0	13.2	12.3	13.6	10.4	16.1	Net Margin %
0.47	0.28	0.28	0.30	0.31	0.33	Asset Turnover
2.0	2.0	1.9	2.0	1.8	1.8	Financial Leverage
74.5	68.9	68.3	68.7	69.8	70.4	Gross Margin %
28.3	22.5	20.7	21.3	21.2	22.4	Operating Margin %
10,176	33,623	30,221	25,898	23,678	23,653	Long-Term Debt
19,443	53,230	52,063	50,294	50,720	49,829	Total Equity
7.0	5.7	6.0	6.5	6.7	6.7	Fixed Asset Turns

Quarterly Revenue & EPS

Revenue (Mil)	Jul	Oct	Jan	Apr	Total
2019	7,384.0	7,481.0	7,546.0	—	—
2018	7,390.0	7,050.0	7,369.0	8,144.0	29,953.0
2017	7,166.0	7,345.0	7,283.0	7,916.0	29,710.0
2016	7,274.0	7,058.0	6,934.0	7,567.0	28,833.0
Earnings Per Share ()					
2019	0.79	0.82	0.94	—	—
2018	0.74	1.48	-1.03	1.07	2.27
2017	0.66	0.80	0.59	0.84	2.89
2016	0.57	0.36	0.77	0.78	2.48

Revenue Growth Year On Year %



Research Methodology for Valuing Companies

Qualitative Equity Research 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 believe this bottom-up, long-term, fundamentally based approach allows our analysts to focus on long-term business drivers, which have the greatest valuation impact, rather than short-term market noise.

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 an uncertainty-adjusted 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: (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.

1. 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 excess economic profits as returns on invested capital (or ROIC) over and above our estimate of a firm's cost of capital, or weighted average cost of capital (or 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.

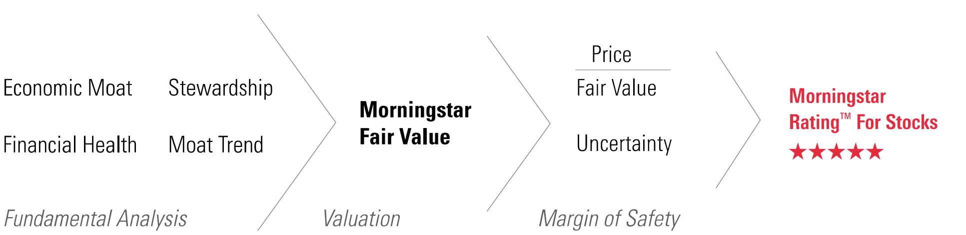
Companies with a narrow moat are those we believe are more likely than not to achieve normalized excess returns for at least the next 10 years. Wide-moat companies are those in which we have very high confidence that excess returns will remain for 10 years, with excess returns more likely than not to 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 the firm's cost of capital more quickly than companies with moats.

To assess the direction of the underlying competitive advantages, 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 when we see signs of deterioration.

All the moat and moat trend ratings undergo periodic review and any changes must be approved by the Morningstar Economic Moat Committee, comprised of senior members of Morningstar's equity research department.

2. 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.

Morningstar Research Methodology for Valuing Companies



Our model is divided into three distinct stages:

Stage I: Explicit Forecast
In this stage, which can last five 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, or EBI, and the net new investment, or 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, or RONIC, and the number of years until perpetuity, when excess returns cease. The investment rate and return on new invested capital decline until the perpetuity stage is reached. 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.

Research Methodology for Valuing Companies

3. 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 of 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.

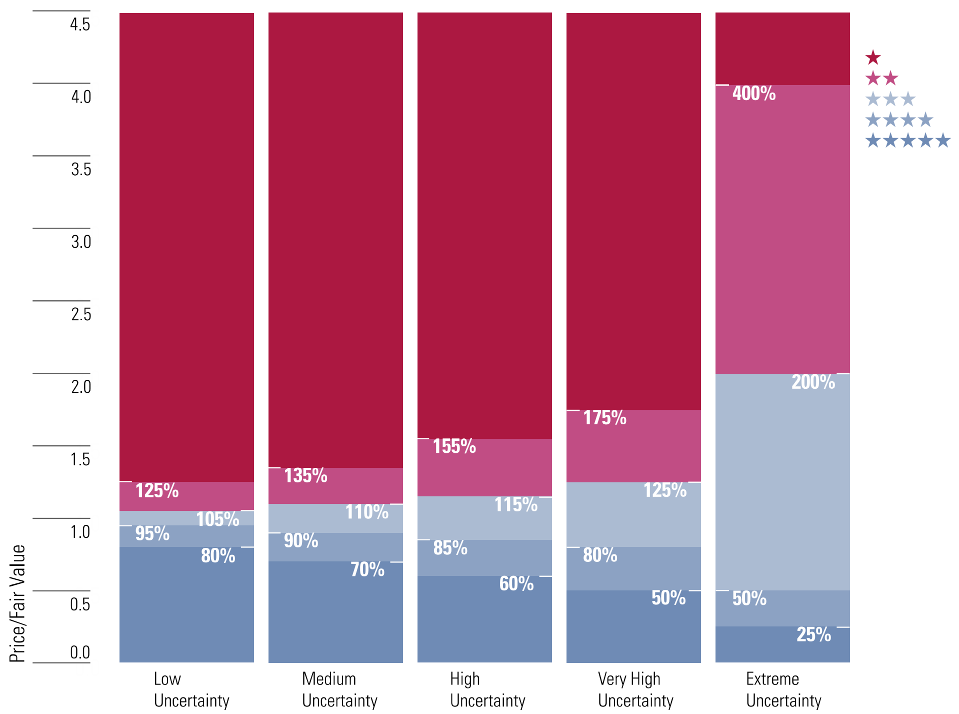
- ► Low–margin of safety for 5-star rating is a 20% discount and for 1-star rating is 25% premium.
- ► Medium–margin of safety for 5-star rating is a 30% discount and for 1-star rating is 35% premium.
- ► High–margin of safety for 5-star rating is a 40% discount and for 1-star rating is 55% premium.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

4. Market Price

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

For more details about our methodology, please go to https://shareholders.morningstar.com.

Morningstar Equity Research Star Rating Methodology



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 re-calculated at the market close on every day the market on which the stock is listed is open.

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. 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. The market is pricing in an excessively optimistic outlook, limiting upside potential and leaving the investor exposed to Capital loss.

Research Methodology for Valuing Companies

Other Definitions

Last Price: Price of the stock as of the close of the market of the last trading day before date of the report.

Stewardship Rating: Represents our assessment of management's stewardship of shareholder capital, with particular emphasis on capital allocation decisions. Analysts consider companies' investment strategy and valuation, financial leverage, dividend and share buyback policies, execution, compensation, related party transactions, and accounting practices. Corporate governance practices are only considered if they've had a demonstrated impact on shareholder value. Analysts assign one of three ratings: "Exemplary," "Standard," and "Poor." Analysts judge stewardship from an equity holder's perspective. Ratings are determined on an absolute basis. Most companies will receive a Standard rating, and this is the default rating in the absence of evidence that managers have made exceptionally strong or poor capital allocation decisions.

Quantitative Valuation: Using the below terms, intended to denote the relationship between the security's Last Price and Morningstar's quantitative fair value estimate for that security.

- ► Undervalued: Last Price is below Morningstar's quantitative fair value estimate.
- ► Fairly Valued: Last Price is in line with Morningstar's quantitative fair value estimate.
- ► Overvalued: Last Price is above Morningstar's quantitative fair value estimate.

Risk Warning

Please note that investments in securities are subject to market and other risks and there is no assurance or guarantee that the intended investment objectives will be achieved. Past performance of a security may or may not be sustained in future and is no indication of future performance. A security investment return and an investor's principal value will fluctuate so that, when redeemed, an investor's shares may be worth more or less than their original cost. A security's current investment performance may be lower or higher than the investment performance noted within the report. Morningstar's Uncertainty Rating serves as a useful data point with respect to sensitivity analysis of the assumptions used in our determining a fair value price.

Quantitative Equity Reports Overview

The quantitative report on equities consists of data, statistics and quantitative equity ratings on equity securities. Morningstar, Inc.'s quantitative equity ratings are forward looking and are generated by a statistical model that is based on Morningstar Inc.'s analyst-driven equity ratings and quantitative statistics. Given the nature of the quantitative report and the quantitative ratings, there is no one analyst in which a given report is attributed to; however, Mr. Lee Davidson, Head of Quantitative Research for Morningstar, Inc., is responsible for overseeing the methodology that supports the quantitative equity ratings used in this report. As an employee of Morningstar, Inc., Mr. Davidson is guided by Morningstar, Inc.'s Code of Ethics and Personal Securities Trading Policy in carrying out his responsibilities.

Quantitative Equity Ratings

Morningstar's quantitative equity ratings consist of:
(i) Quantitative Fair Value Estimate
(ii) Quantitative Star Rating
(iii) Quantitative Uncertainty
(iv) Quantitative Economic Moat
(v) Quantitative Financial Health
(collectively the "Quantitative Ratings").

The Quantitative Ratings are calculated daily and derived from the analyst-driven ratings of a company's peers as determined by statistical algorithms. Morningstar, Inc. (""Morningstar," "we," "our") calculates Quantitative Ratings for companies whether it already provides analyst ratings and qualitative coverage. In some cases, the Quantitative Ratings may differ from the analyst ratings because a company's analyst-driven ratings can significantly differ from other companies in its peer group.

Quantitative Fair Value Estimate: Intended to represent Morningstar's estimate of the per share dollar amount that a company's equity is worth today. Morningstar calculates the quantitative fair value estimate using a statistical model derived from the fair value estimate Morningstar's equity analysts assign to companies. Please go to https://shareholders.morningstar.com for information about fair value estimates Morningstar's equity analysts assign to companies.

Quantitative Economic Moat: Intended to describe the strength of a firm's competitive position. It is calculated using an algorithm designed to predict the Economic Moat rating a Morningstar analyst would assign to the stock. The rating is expressed as Narrow, Wide, or None.

- ► Narrow: assigned when the probability of a stock receiving a "Wide Moat" rating by an analyst is greater than 70% but less than 99%.
- ► Wide: assigned when the probability of a stock receiving a "Wide Moat" rating by an analyst is greater than 99%.
- ► None: assigned when the probability of an analyst receiving a "Wide Moat" rating by an analyst is less than 70%.

Quantitative Star Rating: Intended to be the summary rating based on the combination of our Quantitative Fair Value Estimate, current market price, and the Quantitative Uncertainty Rating. The rating is expressed as 1-Star, 2-Star, 3-Star, 4-Star, and 5-Star.

★: the stock is overvalued with a reasonable margin of safety.
Log (Quant FVE/Price)<–1*Quantitative Uncertainty

★★: the stock is somewhat overvalued.
Log (Quant FVE/Price) between (–1*Quantitative Uncertainty, –0.5*Quantitative Uncertainty)

★★★: the stock is approximately fairly valued.
Log (Quant FVE/Price) between (–0.5*Quantitative Uncertainty, 0.5*Quantitative Uncertainty)

★★★★: the stock is somewhat undervalued.
Log (Quant FVE/Price) between (0.5*Quantitative Uncertainty, 1*Quantitative Uncertainty)

★★★★★: the stock is undervalued with a reasonable margin of safety. Log (Quant FVE/Price) >1*Quantitative Uncertainty

Quantitative Uncertainty: Intended to represent Morningstar's level of uncertainty about the accuracy of the quantitative fair value estimate. Generally, the lower the quantitative Uncertainty, the narrower the potential range of outcomes for that particular company. The rating is expressed as Low, Medium, High, Very High, and Extreme.

- ► Low: the interquartile range for possible fair values is less than 10%.
- ► Medium: the interquartile range for possible fair values is less than 15% but greater than 10%.
- ► High: the interquartile range for possible fair values is less than 35% but greater than 15%.
- ► Very High: the interquartile range for possible fair values is less than 80% but greater than 35%.
- ► Extreme: the interquartile range for possible fair values is greater than 80%.

Quantitative Financial Health: Intended to reflect the probability that a firm will face financial distress in the near future. The calculation uses a predictive model designed to anticipate when a company may default on its financial obligations. The rating is expressed as Weak, Moderate, and Strong.

- ► Weak: assigned when Quantitative Financial Health <0.2
- ► Moderate: assigned when Quantitative Financial Health is between 0.2 and 0.7
- ► Strong: assigned when Quantitative Financial Health >0.7

Research Methodology for Valuing Companies

Other Definitions

Last Close: Price of the stock as of the close of the market of the last trading day before date of the report.

Quantitative Valuation: Using the below terms, intended to denote the relationship between the security's Last Price and Morningstar's quantitative fair value estimate for that security.

- Undervalued: Last Price is below Morningstar's quantitative fair value estimate.
- Fairly Valued: Last Price is in line with Morningstar's quantitative fair value estimate.
- Overvalued: Last Price is above Morningstar's quantitative fair value estimate.

This Report has not been made available to the issuer of the security prior to publication.

Risk Warning

Please note that investments in securities are subject to market and other risks and there is no assurance or guarantee that the intended investment objectives will be achieved. Past performance of a security may or may not be sustained in future and is no indication of future performance. A security investment return and an investor's principal value will fluctuate so that, when redeemed, an investor's shares may be worth more or less than their original cost. A security's current investment performance may be lower or higher than the investment performance noted within the report.

The quantitative equity ratings are not statements of fact. Morningstar does not guarantee the completeness or accuracy of the assumptions or models used in determining the quantitative equity ratings. In addition, there is the risk that the price target will not be met due to such things as unforeseen changes in demand for the company's products, changes in management, technology, economic development, interest rate development, operating and/or material costs, competitive pressure, supervisory law, exchange rate, and tax rate. For investments in foreign markets there are further risks, generally based on exchange rate changes or changes in political and social conditions.

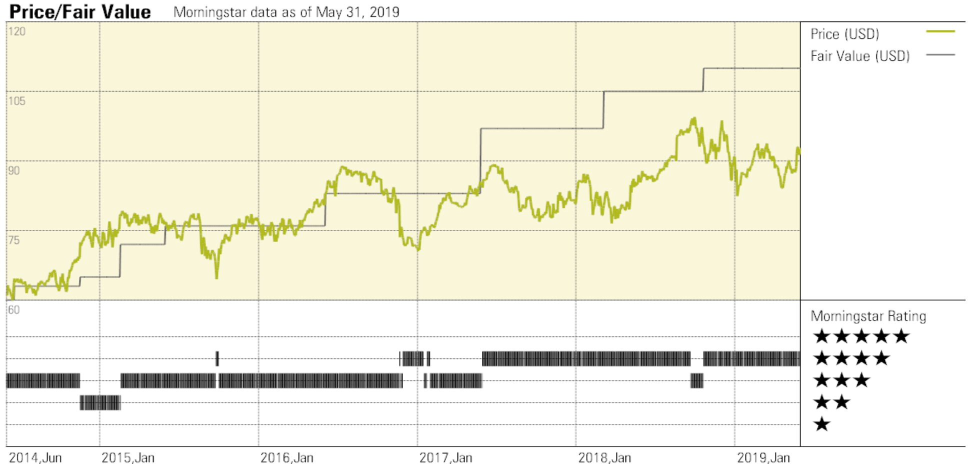
A change in the fundamental factors underlying the quantitative equity ratings can mean that the valuation is subsequently no longer accurate.

For more information about Morningstar's quantitative methodology, please visit http://global.morningstar.com/equitydisclosures.

Medtronic PLC MDT (XNYS)

Morningstar Rating	Last Price	Fair Value Estimate	Price/Fair Value	Trailing Dividend Yield %	Forward Dividend Yield %	Market Cap (Bil)	Industry	Stewardship
★★★★ 31 May 2019 22:06, UTC	92.58 USD 31 May 2019	110.00 USD 19 Oct 2018 20:21, UTC	0.84	2.16 31 May 2019	2.16 31 May 2019	124.12 31 May 2019	Medical Devices	Standard

Price/Fair Value Morningstar data as of May 31, 2019



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Medtronic PLC MDT (XNYS)

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