



CFA Institute

CFA Institute Research Challenge

Hosted by CFA Society Boston

TEAM G

The CFA Institute Research Challenge is a global competition that tests the equity research and valuation, investment report writing, and presentation skills of university students. The following report was submitted by a team of university students as part of this annual educational initiative and should not be considered a professional report.

Company	Exchange	Ticker	Sector	Industry	Recommendation	Current Price (Nov. 30, 2017)	Target Price
Boston Scientific Corporation	NYSE	BSX	Healthcare	Medical Supplies & Devices	BUY	\$26.28	\$30.79

Recommendation

BUY

HOLD

SELL

We rate BSX a **BUY** based on a stock valuation of \$30.79, a premium of 17% of BSX's current market price of \$26.28.

Our team assigns a BUY rating when we expect a security to deliver returns of 15% or greater in the next 9 to 12 months. A SELL is given when a security is expected to deliver negative returns in the same time period.

Exhibit 1: Derivation of Valuation

	Price	Weight
DCF	\$32.54	60%
Multiple base	\$28.11	40%
Blended Value	\$30.79	-

Exhibit 2: Equity Snapshot

52-Week Range	\$29.93— \$19.67
Avg Monthly Vol	788,228
Share Outstanding	1,373.2 mil
Market Cap	\$39,108.6 mil
EV / EBITDA	24.8x
ROE	12%
Debt to Capital	45%
Price/Book (TTM)	4.38
EPS (TTM)	\$0.87
Forward P/E	23.7
PEG	2.44
2016 Revenue Growth '16	12.2%

Source: Bloomberg & Team Estimates

INVESTMENT SUMMARY

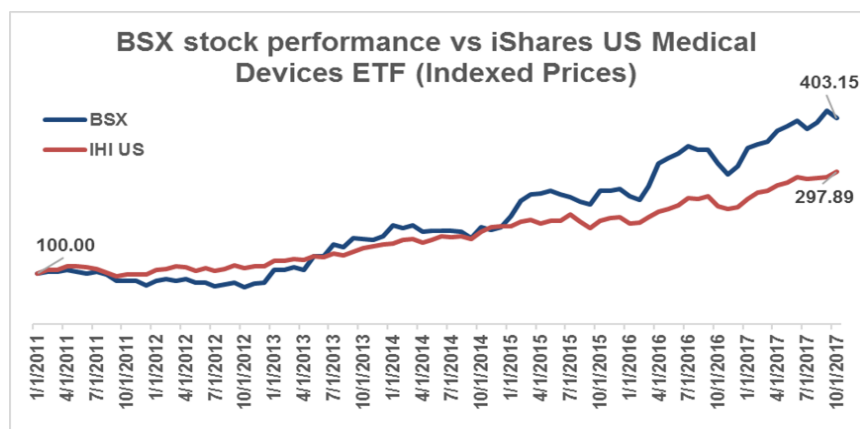
Current stock price undervalues the growth potential and capabilities of the management team: Under new management direction since 2012, Boston Scientific (BSX) has demonstrated a strong capacity to generate revenue growth and market share gains, as well as operating leverage. This strong operational performance, combined with the attractiveness of the medical device industry provides a solid backdrop for further value creation over the next 5 years. We believe that will BSX will generate annualized revenue growth of 6-7% through 2022 with additional operating leverage.

Increasing FCF underpins equity value: We forecast that under a Base Case Scenario, BSX will generate significant Free Cash Flow per year through their improved operations. Over the past five years BSX's management team has led the company through a complete overhaul by effectively navigating the company through litigation hurdles. BSX's favorable revenue growth and the phase-out of litigation and restructuring charges marks a turn in BSX's operations and affords the company the ability to deploy accumulated cash to pursue higher-return investments including strategic acquisitions, product or geographic expansion, and/or share buyback programs.

High-growth potential with focus on profitable products: BSX's market price is driven by expectations of growth, which had been volatile over the last four years, but approached high-single digit organic growth in 2016 and 2017. Going forward, we expect BSX's market leadership positions in Structural Heart and Interventional Cardiology to continue while Urology, Endoscopy, and Neuromodulation drive both top and bottom line growth. These are BSX's fastest growing and highest margin product segments, and have been byproducts of acquisitions previous to 2016.

Strengthening industry with regulatory tailwind: The repeal of the medical device excise tax mandated under the Affordable Care Act and FDA's Expedited Access Pathway Program to provide pre-market approval for high-impact medical devices will also favor BSX's operating margins and facilitate roll-outs of new products.

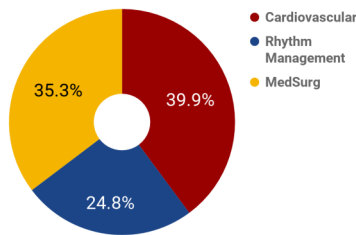
Strong performance since start of year: BSX stock performance in 2017 has been strong and since 2015 continuously outperformed the iShare US Medical Devices ETF. 2017 Q3 results also bested analysts' estimates. We believe that our valuation reflects our confidence in management to deliver continued strong performance. We believe that a late November price decline related the delayed release of BSX's Lotus Edge – a leading source of revenue growth – offers an opportunity to acquire shares with upside potential to \$32 and so reinforces our buy recommendation.



Source: Bloomberg

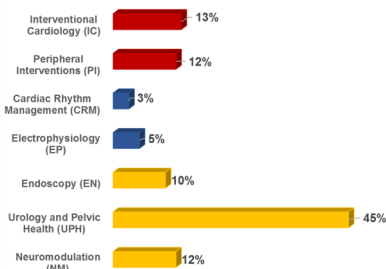


Exhibit 3: 2016 Revenues by segment



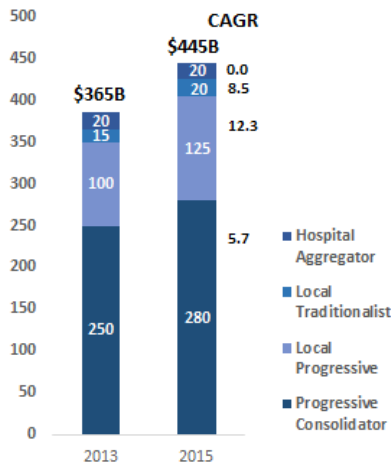
Source: BSX Financials

Exhibit 4: Highest growth rate in UPH product line (2016)



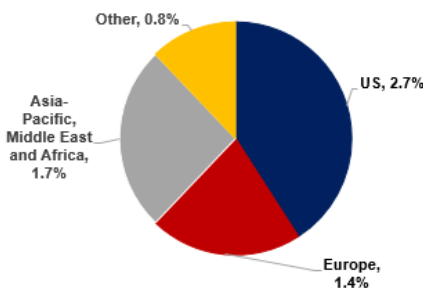
Source: BSX Financials

Exhibit 6: Top 125 System Total Spent by Segment (2013-15) (billions of dollars)



Source: AHA; LEK Research and Analysis

Exhibit 7: Market share for medical devices by region (2016)



Source: Team Estimates

BUSINESS DESCRIPTION

Boston Scientific Corporation develops, manufactures and markets medical devices for a range of interventional medical specialties. The company, founded in 1979 by John Abele and Pete Nicholas, has grown both organically and through acquisitions. A pioneer in developing, manufacturing, and distributing stents, BSX has expanded into minimally invasive technologies in three different business segments: Cardiovascular, Rhythm Management, and Medical Surgical.

Specialized product lines: BSX's largest revenue share is from their Cardiovascular business (40% of total). Their fastest growing segment is MedSurg with 45% growth (inorganic). They also hold a significant position in the US market for rhythm management products. BSX's major product line has expanded from stents (wire meshes used to keep arteries open) to other forms of minimally invasive devices that function as alternative treatments to surgeries. BSX is moving to expand their portfolio across other product categories in structural heart, electrophysiology, and neuromodulation, and their recent acquisitions reflect these trends. Boston Scientific places specific emphasis on the release and performance of their new products. The regulatory approval and market penetration of these products are critical to the firm's growth.

Exhibit 5: Forthcoming product releases & performances to look out for

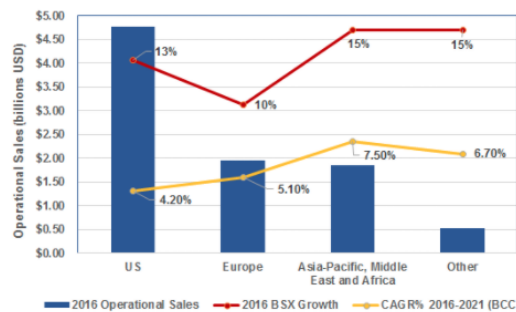
Product Name	Category	Key Information
LOTUS Edge	IC	Aortic valve system. The release in Europe delayed further, impacts forecasted earnings 2018 onward.
WATCHMAN	IC	Left atrial appendage closure device. Received CE Mark in Europe; market penetration to materially impact growth.
Eluvia DES & RANGER DCB	PI	Drug coated balloon catheter. Limited to investigational use only; delay in authorization of commercial sale to impact growth.



Strategy in a changing Industry: BSX markets its products to approximately 35,000 hospital, clinics, outpatient facilities and medical offices in the US. BSX also sells in more than 120 international markets primarily through direct selling channels. Sales in the US rely increasingly on distribution through large group purchasing organizations, hospital networks and other buying groups. BSX's corporate sales force is gaining influence due to the consolidation of health care system and centralization of distribution channels. While corporate sales must focus on bulk buyers, segment-wise marketing must continue to build and develop relationships with physicians. Physician relationships, vital for strengthening BSX's network among cardiologists, are increasingly under pressure as procurement systems in hospitals disintermediate physicians from the process. BSX recognized this early and as a result has focused on developing direct relationships with large system consolidators (e.g. Kaiser), through which the majority of healthcare expenditure flow (Exhibit 6), or with physicians indirectly, through collaborations with the Mayo Clinic.

International presence: Boston Scientific is a global company. It generates significant sales overseas (43% of net sales in 2016) and has research and manufacturing centers throughout the world. At the end of 2016, BSX had six manufacturing facilities outside the US: three in Ireland, two in Costa Rica, one in Puerto Rico, constituting 45% of all manufactured products in 2016. In 2017, the company's first Asia-based manufacturing plant began operations in Penang, Malaysia. BSX also maintains R&D capacity in Ireland, Puerto Rico, Costa Rica, Germany, India and China, along with physician training centers in France, Japan, South Africa, Germany, Italy and India. It employs 27,000 people, 48% in the US.

Exhibit 8: Operational sales, growth, CAGR (2016)



Source: Team Estimates

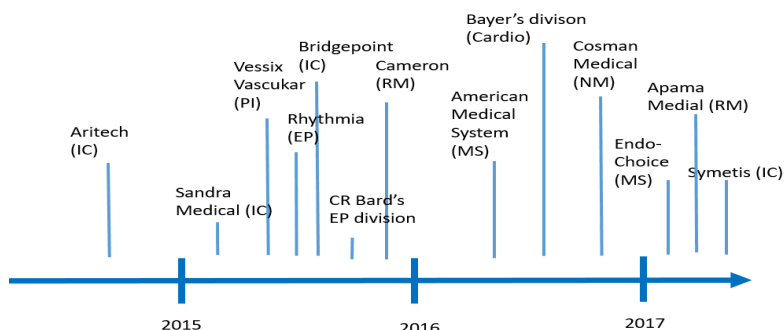


CORPORATE GOVERNANCE

Renewal under new CEO: BSX's acquisition of Guidant in 2014 plagued the company for many years with integration, litigation, and product liability issues. The management transition since 2011 has allowed the company to overcome these challenges, while systematically enhancing operational performance. In addition, management, under Mike Mahoney – appointed in 2012 - has pursued an aggressive, acquisition-led strategy to expand and specialize BSX's product portfolio into new areas like structural heart, neuromodulation, and electrophysiology (Exhibit 9). Furthermore, the new management team has maintained a keen focus on building credibility with shareholders and significantly improving shareholder relations. This has included upgrading corporate communications and a careful approach to providing forward guidance.

Exhibit 9: Product launch timeline

Source: BSX Financials

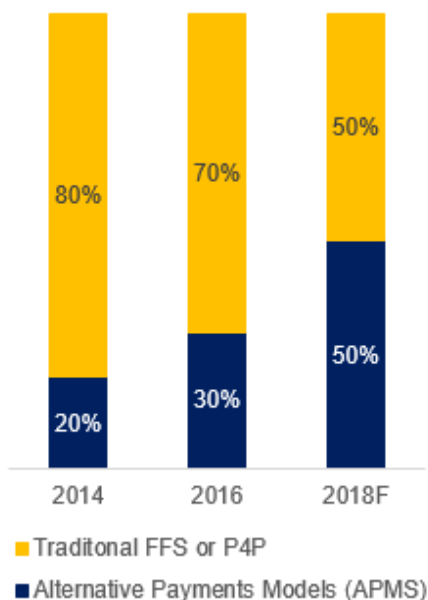


List of Executive Officers		
Executive	Joined BSX in:	Position
Michael F. Mahoney	2011	Chairman and CEO
Kevin Ballinger	2011	VP and President, Interventional Cardiology
Supratim Bose	2012	VP and Pres. Asia-Pac, Middle East and Africa
Daniel J. Brennan	1996	VP and CFO
Art Butcher	1997	Sr. VP and President, Endoscopy
Wendy Carruthers	2004	Sr. VP, Human Resources
Joseph M. Fitzgerald	1990	VP and President, Rhythm Mgmt.
Edward Mackey	2015	VP, Global Operations
Ian Meredith	2017	VP and Global Chief Medical Officer
Jeff Mirviss	1997	Sr. VP and President, Peripheral Interventions
Maulik Navavaty	2005	Sr. VP and President, Neuromodulation
Michael P. Phalen	1988	VP and President, MedSurg
David A. Pierce	1991	Sr. VP and President, Urology and Pelvic Health
Timothy A. Pratt	2008	VP, CAO, General Counsel and Secretary
Brad Sorenson	2005	Sr. VP, Manufacturing and Supply Chain
Eric Thépaut	1996	Sr. VP and President, Europe

Management & Board expertise: BSX's management is supported by a set of board members that can contribute expertise and network with adjacent industries. Yoshiaki Fujimori, former CEO of GE Japan, recently joined the board and could be critical in BSX expansion in Asia-Pacific. This new addition can support the transition of BSX's leadership in Asia-Pacific operation after Supratim Bose's retirement in 2017. Bose, with his prior experience at J&J, had driven BSX's Asia-Pacific expansion. Similarly, Ellen M. Zane, former CEO of Tufts Medical Center, also joined in 2016. Her expertise in governance in the medical device industry is valuable as BSX navigates the tricky regulatory environment and changing industry dynamics. She will also be able to provide guidance to Edward Mackey, who handles BSX's global operation and regulatory affairs. Mackey also recently joined BSX in 2015 after serving as President of DePuy (Johnson & Johnson). The membership of the board saw some changes as Pete M. Nicholas, cofounder and former CEO of BSX, retired in May. Insider trading activities have been fairly stable in the past 3 months, and key management personnel or board members have not made significant trades on BSX positions to indicate any price signals.

INDUSTRY AND COMPETITIVE OVERVIEW

Exhibit 10: Medicare payments is shifting towards Pay for Performance & Bundles



Source: LEK Healthcare Landscape Review (2017)

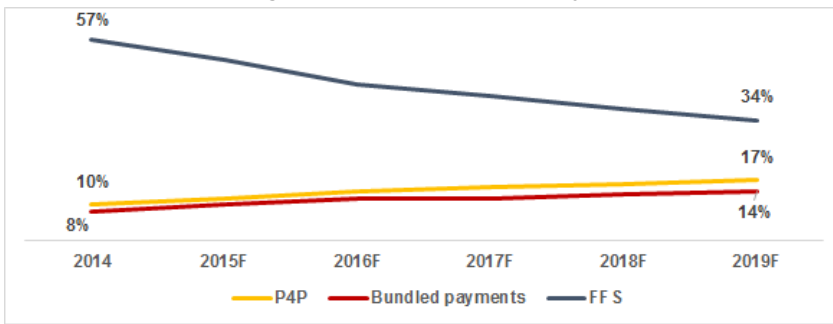
Addressable Market: BSX is operating in a \$600+ billion global medical device market, which is projected to grow at a CAGR of 5.6% through 2021. BSX's current product portfolio addresses approximately \$100 billion of this market, of which they currently capture roughly 9% market share. BSX and the addressable market also benefit from growing health care focus in emerging countries. For instance, Asia is expected to generate annual growth of approximately 7.5% fueled by its growing wealth and aging demographic trends.

Reimbursement rates in markets BSX operates will be critical in creating a robust demand for medical devices. For example, BSX's stock price increased by 5% on news that the Watchman device would be covered under Medicare from February 2016 onward. BSX's size and reputation also improves the chances that products will be covered in Europe's centralized healthcare systems going forward. Attaining product reimbursements in Asia is more challenging because of their distributed healthcare systems; however, we do expect the growing incomes will still contribute to demand for invasive, implantable and therapeutic devices.

Change in healthcare and hospital procurement: A shift toward a value-based healthcare market in which price and purchase decisions are based on outcomes forces BSX to prioritize the patient experience and thus hospital relationships. We observe commercial healthcare payers shifting from Fee-for-Service (FFS) to Pay for Performance (P4P) and Bundled Payment models (Exhibit 10), a shift that will increasingly challenge BSX to demonstrate the total economic impact of their devices on hospital costs. Boston Scientific has proved itself to be one of the more nimble competitors in the medical device industry, particularly with its development of Advantics with Accenture. Advantics Care Pathway is a cloud-based digital health platform for hospitals designed to improve outcomes and reduce costs for treating patients with chronic cardiovascular diseases. Since its launch in 2016, Advantics has helped more than 100 hospital customers globally to define solutions in their environments and transition to value-based healthcare, including strategies to limit patient readmission within 30 days.



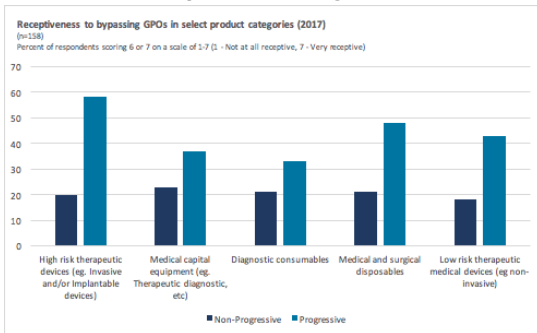
Exhibit 11: FF declining while P4P and Bundle Payments on the rise



Source: LEK Healthcare Landscape Review (2017)

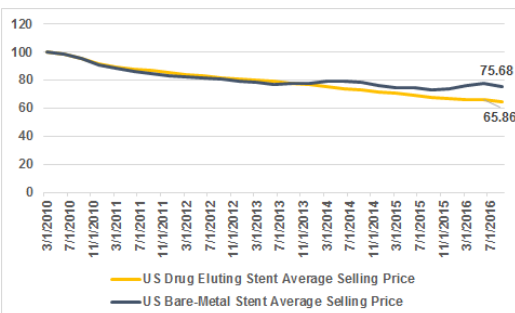
We observe that large hospitals and integrated network players in the US are more willing to work directly with medical device manufacturers, rather than GPOs, particularly for procurement of high-risk devices. BSX already has relationships with these more progressive consolidated systems benefitting the firm, not only in forging better sales relationships, but also in allowing BSX to maintain their margins (see exhibit below on hospitals bypassing GPOs). (Exhibit 12)

Exhibit 12: Receptiveness to bypassing GPOs in select product categories



Price pressures: Medical device manufacturers face a number of pricing pressures that can erode margins, including increased negotiating power of consolidated providers and distributors in the US, and price caps instituted in certain international markets. Metal and drug-eluting stents have both decreased in price worldwide (Exhibit 13). BSX has developed strategies to mitigate these pricing pressures by developing superior relationships in the US and Europe that will allow it to benefit from device distribution partnerships. These partnerships will allow BSX to sell higher value products in adjacent segments while their more popular products face margin compression. In particular, BSX has focused on building market leading products in segments that are adjacent to interventional/peripheral cardiology (structural heart) and rhythm management (electrophysiology, neuromodulation), which will further mitigate these price pressures.

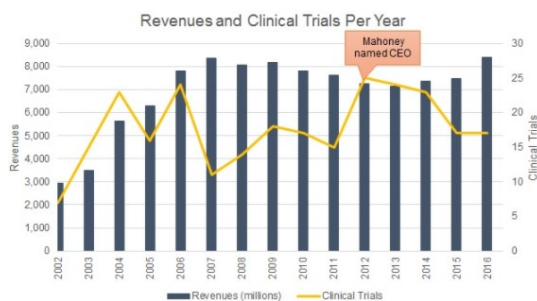
Exhibit 13: Indexed price of stents on a declining trend over the past six years



BSX's Regulatory Outlook: In recent years, BSX and other key medical device players, have lobbied to repeal the Affordable Care Act, which mandated health coverage for all (driving demand for health services but not necessarily for medical devices), placed a heavy 2.3% device excise tax on medical devices (decreasing BSX's net profits), and set limits on Medicare payments (reducing BSX's revenue). Though the excise tax has not been officially repealed, Congress initiated a reprieve in 2016 that halted the 2.3% tax payments for medical device firms. This provides an opportunity for market players to refocus on sourcing new, innovative product opportunities and on building partnerships with hospitals, clinic and healthcare partners.

Additionally, ACA has driven the emphasis in the healthcare system on quality and efficiency, which has resulted in a shift toward a value-based healthcare market in which price and purchase decisions are based on outcomes. Medicare and commercial payers are increasingly focused on payment models that emphasize this new shift. The new consumer base created by the ACA, which now includes payers and consumers in addition to doctors and hospitals, results in a change to how decisions related to high-preference medical devices are selected and procured for diagnosis and care.

Exhibit 14: Continued revenue performance under Mahoney despite high clinical trials



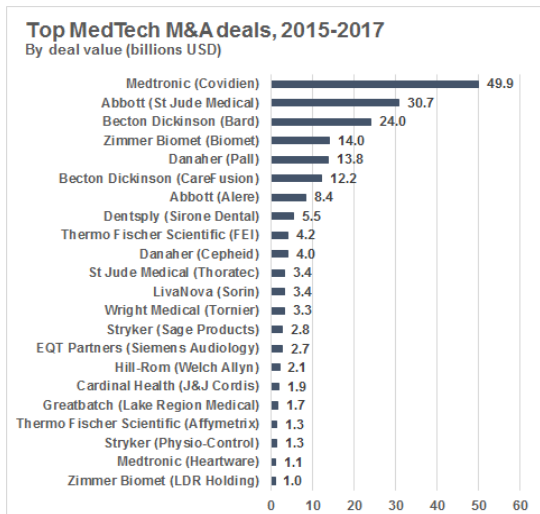
Source: ClinicalTrials.gov

BSX is also subject to provisions of Health Information Technology for Economic and Clinical Health Act (HITECH) because its devices transmit and maintain Protected Health Information (PHI). Exposure to HITECH along with the shifts to value-based healthcare payment models will further shift BSX's sales and marketing focus to hospitals, integrated distributors and direct consumers. It will also create more incentive to use technology and enhanced services throughout the product lifecycle to collect patients-based data on product's efficacy and value-for-money.

Competitive Landscape: Boston Scientific has a very diverse group of competitors, some of whom are "pure play" companies while others focus on health products where medical devices make up only a portion of their overall business. In endoscopy, Boston Scientific's major competition come from Japanese firms such as Hoya, Olympus and Fujifilm where healthcare products make up a smaller percentage of their overall sales.

The larger competitors to BSX include some "pure plays" such as Medtronic, and other organizations, e.g. Abbott, for whom medical devices represent only a portion of their revenues. It also includes larger firms like Johnson and Johnson with significant pharmaceutical components, or technology firms, e.g. Phillips, that have medical device divisions. BSX has competitive product portfolios compared to the "pure plays", but more complementary product portfolios to the larger pharmaceutical and/or technology firms. BSX's size is also such that it could be an acquisition target for a player in the latter group looking to expand its scope.

Exhibit 15: Medtronic leads the M&A deals among top MedTech companies, 2015-2017



Many mid-sized firms do not have as much of an established product portfolio as BSX. BSX has superior cash flows and relationships in the market relative to these competitors (e.g. Zimmer Biomet, Varian Medical). However, some hold a large market share in niche areas such as Edwards Lifescience in Transcatheter Aortic Valve Replacement (TAVR). The Lotus device, whose launch is currently delayed, will disrupt this growing space dominated by Edwards and to a lesser extent, Medtronic. The size of certain firms in this category is such that BSX can consider an acquisition to further strengthen their product offerings and distributorship channels, particularly for their Cardiovascular and MedSurg business segments.

Lastly, there are a pool of smaller firms (<\$10bn in market cap) that serve as competitors, contractors, and potential acquisition targets (e.g. Integra Lifesciences Holdings, Livanova) for BSX. These tend to be clustered around the medical device hotspots in the Northeast and Midwestern regions of the US, and are able to develop new products quickly because of the presence of more progressive hospital systems in these regions.

Driven by the hospital expense constraints, competitive dynamics, consolidation in distributor networks, and prices for medical products, the medical device market is consolidating (Exhibit 15). Because of these pressures and the presence of large firms in the market, BSX's strategy for growth depends as much on competitors' actions as its own strategy. Some of the "pure plays" (e.g. Medtronic), have been faster to develop innovative partnerships with clinics or Physician-Owned Distributors.

Going forward, we expect the secular consolidation trend to favor BSX and their sales and marketing strategy. Hospitals themselves are standardizing their activities, and BSX's increasing focus on being category leaders of high economic value devices, providing solutions to hospitals rather than just products, and developing indirect partnerships with physicians will drive consistent and increasing revenue growth.

VALUATION

Recommendation: Based on our fair value analysis, we find BSX stock undervalued and issue a BUY recommendation. Our valuation indicates that at current levels, BSX trades at a discount to our fair value estimate of \$30.79. We expect the market to make an upward correction on the BSX price over the next 12 months. The equity price is dampened by concerns raised by recent research findings on the efficacy of stents and the delayed release of Lotus Edge. However, business operations have not materially changed in the past month when BSX stock faced downward pressure. The company still has strong forecasted earnings growth, and have other products in the Interventional Cardiology division to support growth.

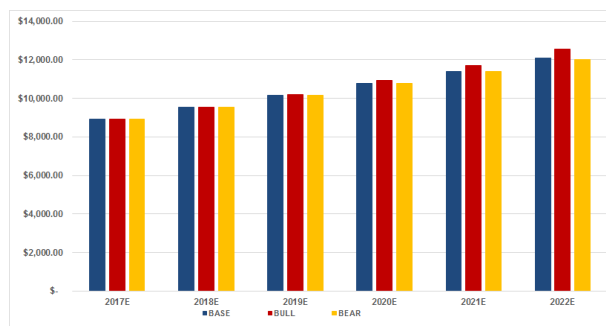
Valuation Methodology: We forecast the firm's financial position through 2022 and built three growth scenarios (Bull, Base, Bear) for the DCF valuation with a blended weighting of 25%, 40%, and 35%. This yielded a DCF intrinsic share price of \$32.54 (Exhibit 21).

Multiples Valuation: Our DCF model yields an implied EV to forward EBITDA multiple of 25.1 under our Base Case scenario. Comparing this to a composite EV to forward EBITDA multiple of a competitive peer group (according to BSX) implies that our intrinsic share price of \$32.54 may contain a slightly upward bias. The implied EV to forward EBITDA multiple is much more in line with mid-sized competitors that have higher growth rates. The forward EV to EBITDA multiples are also consistent with these competitors (Exhibit 16).

This aligns with our belief that while BSX is working towards market leadership like Medtronic and Abbott, the firm possesses growth potential of a mid-sized company. We believe that comparisons to firms such as Edwards Lifesciences and CR Bard are more appropriate because the recent acquisitions for Boston Scientific has positioned the company for growth. In the next five years, we are confident that Boston Scientific's operations will be resemble those of these mid-sized firms in their competitive landscape, rather than larger firms who, we believe, are not as well positioned for organic growth.

Firms	Forward EV/EBITDA
Edwards Lifesciences	22.20
Stryker	18.30
CR Bard	19.15
Weighted average multiple	19.39

Exhibit 17: Projected revenue growth for each case (2017-2022)



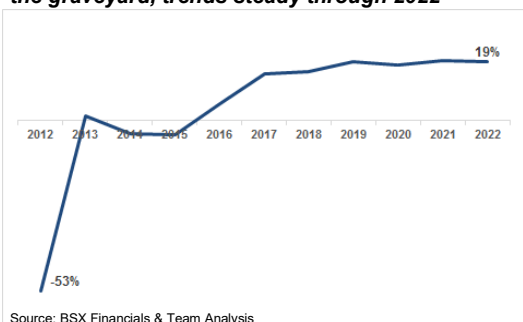
Source: BSX Financials

Revenue: We structure BSX's revenue growth rates according to each of their business segments, and our sales projections rely on a bottom-up approach as follows:

1. Use BSX's historical breakdown of revenue by each of its seven business segments to assess past growth rates
 2. Estimate each segment's growth rate relying on past growth rates, management's guidance, and information from industry professionals on the launch and market penetration of BSX's existing and new products
- Combine estimated segment revenue distribution and growth to define a weighted growth rate per segment and add each segment to derive a final annual growth rate for BSX.

This strategy allows us to accurately reflect changes in business outlook for each of BSX's segments under each of our growth scenarios. BSX's Interventional Cardiology division (which they now break into Cardiology and Structural Heart) is their largest, and changes in growth rates for this division have a significant impact on enterprise value. Our baseline scenario reflects a revenue growth at CAGR 6.15%.

Exhibit 18: BSX operating margins climb out of the graveyard, trends steady through 2022



Capital Structure and Debt Paydown: Using our base model, BSX will begin to accumulate significant levels of cash in the next five years, even with large cash outflows from legal reserves and retirement of debt in 2020. We make an additional assumption that management will first use excess cash to pay down all long term debt. We acknowledge that this is a conservative assumption that will distort projected leverage ratios, while also placing downward bias on the enterprise value.

Restructuring: Based on the 2016 restructuring plan, we assumed the higher end of the guidance for pre-tax expenses of \$210 million. With this initiative scheduled to be almost completed by the end of 2018 and cumulative charges at \$108 million on September 30, 2017, we project \$20 million dollar charges related to restructuring over the next five quarters.

Operational Margins: BSX has current gross margins of 71% and management targets reaching a margin of 72%. We assume they will hit this target incrementally in three years. We also expect management to improve operating margin by lowering SG&A expenditure to 36% by 2019.

Legal Reserves: BSX has accumulated short and long term legal reserves. We assume that cash outflows from these accounts will occur in 2018 (for short term), and in 2017 and 2019 for long term. We also forecast BSX to have legal obligations in future years and expense them for 2021 and 2022 based on average historical legal expenditure.

Capital Expenditure and R&D: Historical capital expenditure for BSX has stayed constant at approximately \$250 million, and we project it to stay constant for projected years. BSX has been reducing their R&D expenditure as a percentage of sales consistently over the last five years. We expect that to continue, assuming R&D expenditure is at 10.5% of sales in 2017 and reduces to 9.5% to 2021.

Working Capital: BSX's working capital has been volatile for the past five years and averaged approximately 11% of revenue. Accounting for short term legal expenses contributed to this. We expect BSX's receivable collection period and payables period to improve. Their cash accumulation will provide them with a very steady supply of working capital over the next five years.

Beta: We constructed a beta value using a bottom-up approach. We used the weighted average of an adjusted leveraged beta value using data from industry peers to derive an industry average beta value. We then used the industry average debt to equity ratio and industry average tax rate to estimate an industry unlevered beta of 0.83 (Exhibit 19).

Tax Rate: We have relied on management's guidance for tax rates; we use a tax rate of 14% for 2017, increasing by 1 percentage point each year until 2022 to 19%.

WACC: In order to calculate an accurate present value for each year's cash flow, we calculated each year's WACC respectively (Appendix X). In doing so, we considered the firm's changing capital structure, change in the risk-free rate, and change in cost of debt using the firm's marginal cost of issuing new debt. BSX's debt is BBB rated, hence we added a credit risk spread corresponding to 10 year corporate debt (130bps) to the 10 year Treasury rate. With the outlook of a contractionary monetary policy in the US, we assumed the 10 year treasury rate to increase by 25bps every two years. To calculate the cost of equity we used the CAPM model. We assumed the 10 year Treasury rate as our risk free rate, which also increased by 25 bps every two years.

We used a market premium of 5.69% in accordance with A. Damadoran's research. A yearly value combined with our assumptions on paydown of debt has resulted in

Exhibit 19: Beta Construction	
Company	Adjusted Beta
Boston Scientific	0.79
Stryker	0.74
Abbott	1.10
Edward Life	0.86
CR Bard	0.75
Becton	0.77
Metronic	0.72
Zimmer	0.90
Industry Unlevered Beta	
Industry Average Beta	0.83
Industry Average Debt-to-Equity	79%

Source: LEK Healthcare Landscape Review (2017)

Exhibit 20: Growth Story	
Scenario	Avg. Forecasted Growth Rate
Base	6.2%
Bull	7.1%
Bear	5.8%

Exhibit 21: Scenario Analysis		
Scenario	Price	Weight
Base	\$32.66	40%
Bull	\$35.98	25%
Bear	\$29.94	35%
DCF Intrinsic Value	\$32.54	

our WACC is increasing over time. We believe this is a reasonable assumption as it leads to a higher cost of capital and adds to a more conservative estimate for enterprise value.

Scenario Analysis: We modelled three growth scenarios in order to create a more robust view of future cash flow to the firm and determine BSX's fair value (Appendix X). We assumed that BSX does improve its operational efficiency, particularly by lowering its operating costs and R&D expenditure. We modified the pace of growth and litigation related charges for our scenarios. In all of our scenarios, we find that the firm's stock is trading at a significant discount to our calculated intrinsic value.

FINANCIAL ANALYSIS

BSX has among the highest gross margins relative to its peers and slowly improved over the last few years to 71.09% in 2016. However, it lags significantly in operating margin where the most efficient of their competitors occupy percentages in the low thirties.

BSX's operating margin improved from negative in 2014-2015 to 5.3% in 2016 and 14.5% through Q3 in 2017. A major portion of operating expenses in past years is attributable to large litigation fees, acquisition and restructuring costs, and other non-recurring charges. Setting these aside and looking primarily at SG&A and R&D expenses, BSX has an adjusted operating margin of 25.0% for the nine months in 2017, up from 20.2% in FY 2014. These improved adjusted numbers reflect much improved SG&A spending below 35% for the year, down from 37% in 2016.

The Johnson and Johnson settlement over the Guidant acquisition cost \$600 million or 8% of sales in 2015 from payments alone. We expect that BSX will wind down current litigation issues within the next twelve months as reflected in projected spending. In 2017, Q1 and Q3 had operating margins of 16.8% and 17.1% respectively. In Q2 bringing higher non-recurring costs in the same quarter as the Symetis acquisition, depressed operating margin to XX%. As operational improvements are converge with the end of high litigation costs, we expect operating margins to improve to 19% by the end of the forecast period.

Cash Flow: BSX's cash flows have been volatile in the past, but are set to grow significantly from 2019 onward. Free Cash Flow to revenue, a negligible number until 2018, will stabilize to approximately 10% of revenue. Operating cash flow as a percentage of revenue also improves to reach 22% in 2022; which is close to the 24% target that BSX has been providing in their guidance.

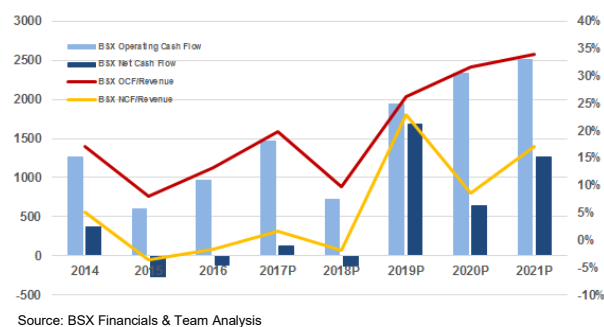
Liquidity

BSX has a current ratio of 0.7 and a quick ratio of 0.3, both having fallen steadily over the last three years. Accruals and payables contributed to this decline, but more recently it is attributable to a spike in short term debt to over \$1.26B at the end of Q3 from just \$5M at the end of Q1.

Capital Structure

There is some variability in debt structure among peers and the closest competitors. BSX equity multiplier is higher than Abbott and Medtronic, however, it is still within normal range for the industry. Earlier this year, BSX retired a \$250 million note and paid off all term loans amounting to \$750M set to mature between 2018 and 2020. The overall impact was a decrease of long term debt by \$1B and an increase in short term debt to \$1.26B through a new commercial paper program. The net impact of adding over \$200M keeps interest payments flat as the cost of short-term debt is at approximately 1.65% as of September 30, compared to variable term loan rates just below 3%. BSX EBIT is 6.6 times their total interest expense, above the industry average of 5.9, and should increase as EBIT is projected to grow while interest payments remain the same in the short term and decrease long term. Increased flows combined with recent action to retire long term debt early points to BSX continuing this reduction of debt to move closer to the leverage ratio of Medtronic and Abbott between 1.8 and 2.2.

Exhibit 22: BSX poised for significant positive cash flow



Source: BSX Financials & Team Analysis

Exhibit 23: BSX lags in performance indicators among competitors, but slowly improving

	Operating Margin	Equity Multiplier	3-Yr Avg Growth
BSX	12.5%	2.46x	5.6%
MDT	20.5%	1.83x	21.5%
SYK	18.5%	2.06x	8.0%
BCR	25.9%	2.76x	6.8%
ABT	7.9%	2.24x	2.0%
BDX	12.2%	2.91x	13.3%
EW	27.9%	1.74x	13.3%
ZBH	13.3%	2.53x	19.2%
AVERAGE	17.3%	2.32x	11.2%
Median	15.9%	2.35x	10.6%

Source: Bloomberg & Team Analysis



DuPont Analysis: After multiple years of negative returns, dramatically increased net profit in recent years is driving a growth in BSX's ROA and subsequently ROE, despite a slight decrease in financial leverage in 2017. In the last 12 months, BSX has generated an ROE just below 12% but which is above the industry average of 11%. With BSX improving operational leverage going forward, we expect ROE to increase, but eventually decrease along with paydown in debt.

Exhibit 24: Dupont Analysis						
	2012	2013	2014	2015	2016	2017
Profit Margin on Sales	-56%	-2%	-2%	-3%	4%	11%
Total Asset Turnover	0.42	0.43	0.43	0.41	0.46	0.50
ROA	-0.24	-0.01	-0.01	-0.01	0.02	0.05
Equity Multiplier	2.50	2.53	2.64	2.87	2.69	2.29
ROE	-0.59	-0.02	-0.02	-0.04	0.05	0.13

Source: Team Analysis

INVESTMENT RISK

Our outlook on BSX's performance is informed – and has been tempered by – a number of key investment risks.

Litigation and Product Delays: While litigation expenses related to prior cases are expected to decline significantly, costs related to future litigation will be damaging if protracted. We have made a provision for future litigation related expenses in our model, representing in each year approximately one-third of BSX's average litigation expense over the last five years.

Product Delays and Competition: BSX faces significant execution risk in bringing new products to market. Their acquisition led strategy over the past several years has allowed the firm to grow rapidly. However, we have concerns about their ability relative to competitors to maintain quality and standards in their supply chain. This risk includes a non-trivial probability of BSX having delays when bringing new products to market, but also product recalls. The latter in particular will materially impact BSX's value as these can involve revenue and inventory write downs along with litigation.

Exhibit 25: Transcatheter Aortic Valve Replacement (TAVR) Product Approval Timeline

Boston Scientific	2018
Edwards Lifesciences	Q4 2017
Medtronic	Q1 2017
Abbott (St. Jude)	2018-2019

Exhibit 26: Competitive Landscape for the Watchman

Players	Notes
Boston Scientific	Product: Watchman -- only product in the US market
AtriCure	Product: AtriClip LAA Exclusion System
Abbott (via St Jude Medical)	Product: Amplatzer cardiac plug (ACP) 1 and 2nd generation Amulet device for LAA occlusion -- widely used outside US; Projected to have US release in 2020
Medtronic (via investment in Lifetech Scientific)	Product: LAmbré LAA closure system -- 1st CE Marked LAA closure system from China
J&J (via Coherex Medical)	Strategic acquisition by J&J to enter LAA market
Sentreheart	Product: ECLIPSE 2015, FDA warned on potential adverse effect for product



Lotus: The Lotus Edge was planned to be reintroduced to the market in Q1 of 2018. However, on November 28 BSX a product release delay. This delay has been modeled into our revenue forecasts for 2018 and 2019.



Watchman: BSX's Watchman is a unique medical device in the US market that is enjoying strong single market presence. BSX is relying on penetration of the Watchman and its ability to maintain market share going forward. However, St. Jude, now acquired by Abbott, and other competitors are conducting clinical trials for Watchman-like products. The nature of the product itself implies

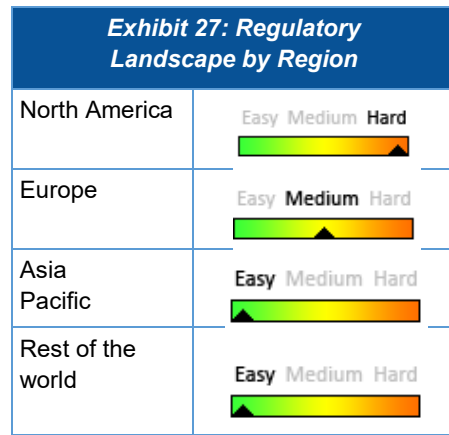
volatility in future demand, as surgeons question how pervasive the technology can be. These potential competitive threats have likewise informed our revenue growth estimates.

Liquidity Risk: BSX's low current and quick ratio expose them to potentially higher financing cost in the next two years as short term interest rates increase and before they begin to accumulate cash. This low liquidity ratio, at least within our investment horizon, could result in an increase in the firm's short-term cost of debt if a revenue or operational shock challenges BSX's ability to service short-term obligations. Lower cost capacity under the new commercial paper line initiated in 2017 can help to mitigate modest liquidity effects.

Entrenched relationships and competitive threats: As direct engagement between medical service providers and medical device manufacturers expands, there is a potential for a winner-take-all market dynamic to evolve among firms, especially those with overlapping products in their portfolio. Entrenched relationships of bigger medical device firms with service providers can prevent newer firms from accessing hospital distribution networks. We observe some of BSX's competitors already engaged, starting relationships with clinics and physician-owned distributors. BSX is also progressive on this front and has also begun to build direct relationships with medical service providers. Nonetheless, it is at a disadvantage to some larger medical device manufacturers who have seized a lead in critical product segments, such as structural heart, in which BSX seeks to expand.

Failure to improve margins: We expect BSX to streamline operations and improve operational performance significantly in the next 3 years. They are globalizing distribution and customer service, streamlining business processes, and incorporating automation and other optimization into their supply chain. At a strategic level, creating synergies through acquisition and ensuring a strong and consistent culture of excellent operating performance across acquired companies is also difficult to achieve and perpetuate. Both will place considerable pressure on management with the risk that BSX will fail to achieve operating and margin goals. Our models have been constructed to reflect the probability of such margin risk.

Regulatory Risk: If the ACA is not repealed, BSX, and the industry, will continue to incur the 2.3% excise tax. In addition, as BSX expands more into products that collect and share patient-level data, its exposure to regulations from the HITECH Act also increases. Both may result in higher operating costs to BSX and the industry, including costs related to lobbying, cyber-security software and related infrastructure. We expect such risks to impact all competitors and so not represent a distinct competitive threat to BSX.



Source: Team Research

Appendix 1: Market Size

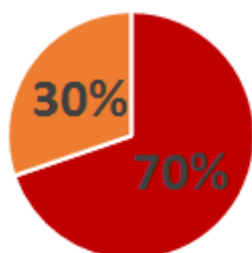


Cardiovascular

Market Size (2016): \$27.3B

Market CAGR (2016 - 2021): 8.2%

BSX Market Share: 13.2%



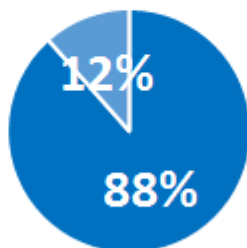
■ Intervention Cardiology ■ Peripheral Interventions

Rhythm Management

Market Size (2016): \$26.2B

Market CAGR (2016-2021): 10%

BSX Market Share: 8.6%



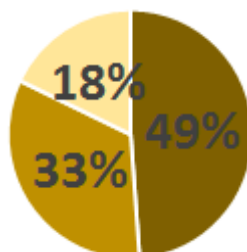
■ Cardiac Rhythm Management ■ Electrophysiology

MedSurg

Market Size (2016): \$71.1B

Market CAGR (2016-2021): 6.5%

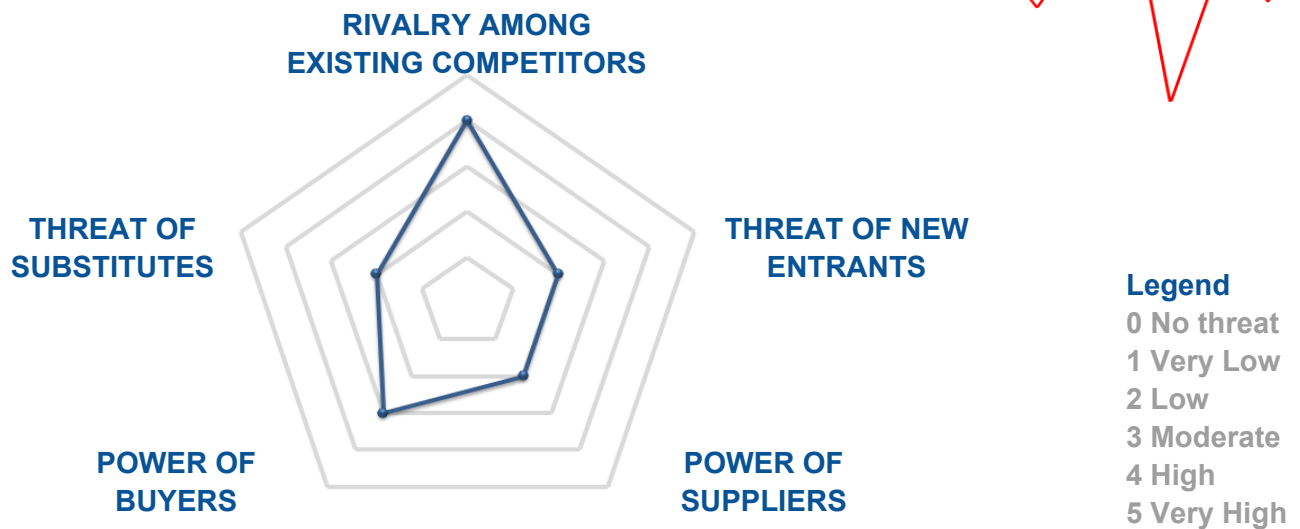
BSX Market Share: 4.5%



■ Endoscopy ■ Urology and Pelvic Health ■ Neuromodulation



Appendix 2: Porter's Five Forces



Rivalry among existing competitors (High)

Rivalry is high among existing competitors, especially with growing pressures on price points and with the crowding out of suppliers as the healthcare industry consolidates. Hospitals are shifting from many suppliers to only a small handful of suppliers. There are roughly 5,000 hospitals in the United States. Between 1998 and 2012, there were 1,113 mergers and acquisitions involving a total of 2,277 hospitals. Thus, hospitals have been aggregating into fewer and larger economic units, inflating their purchasing power. There are a number of strong, large-sized competitors—such as Abbott and Medtronic—that have locked-in customers for commoditized products. Compared to the world's largest markets for medical devices, the United States remains the largest with a size of more than \$140 billion USD, representing about 40% of the global medical device market in 2015. Similarly, the top 10 medical device companies in the U.S. capture 35% of the global medical device market. Based on this understanding, the most stiff competition is among American medical device companies.

Threat of substitutes (Low)

Healthcare products companies have low threat of substitute products. Substitutes to certain medical devices includes medication and invasive surgical devices. Innovative medical devices reduce costs, recovery time, and pain, making these products more appealing than their substitutes. Unless there is a breakthrough in the use of medical devices in the healthcare industry, there will be no significant substitute threats to these instruments.

Threat of new entrants (low)

The threat of new entrants in the medical device industry is low due to significantly high R&D expenditures required to enter the market. A firm has to survive costly clinical trials and receive FDA approval, which takes time. The threat of potential litigation (such as recalls) can be very costly and serve as high barriers of entry for new players in the industry. In addition, new entrants face difficulties competing with existing products that are already accepted as safe and effective, unless the new device manufactured by the new entrant proves to be significantly better or more affordable to consumers. The credibility and relationships of existing medical device firms is another barrier for entrants. Competitors of strong reputation in the industry will have longstanding relationships with clients. Procurement of supplies for medical device companies can also present barriers for new entrants. Supply chain risks primarily include uncontrolled material or process changes, particularly when suppliers have an imperfect understanding of how their components affect end-product quality. Supplier management is a challenge particularly when dealing with a large, globalized supply base.

Power of suppliers (Low)











Power of suppliers, which are located worldwide, pose low threat to medical device companies. Many components used in the manufacturing of medical device products are easily fabricated from commonly available raw materials or mass produced items available from multiple supply sources. There is some risk (low) in the case of a manufacturer needing to change suppliers. To mitigate this risk, medical device manufacturers have well-developed networks of supplier relationships so that such shifts can be done smoothly without high transaction costs for manufacturers. If need be, companies could also find alternative sources of supply, or could develop these within a reasonable period of time.

Bargaining power of customers (Moderate):

As hospitals have been consolidating into fewer and larger economic units, they have simultaneously inflated their market power as customers and their ability to negotiate lower prices. While hospitals (customers) have more bargaining power for items that have become commoditized, such as towels and stents for products with one or two suppliers (such as Boston Scientific's US market domination over the Watchman LAAC), bargaining power of customers is very low.

Appendix 3: Regulatory Impact



Item	Impact on BSX
 Patient Protection and Affordable Care Act (ACA)	The ACA's 2.3% excise tax directly impacts BSX's bottom line and future ability to spend these funds in R&D and innovation.
 Health Information Technology for Economic and Clinical Health Act (HITECH)	Instituted in 2009, HITECH is an incentive program created by the Center for Medicare and Medicaid Services (CMS) aimed to encourage "Meaningful Use" of Electronic Medical Records (EMR). BSX is subject to HITECH because its devices transmit and maintain Protected Health Information (PHI). Despite monetary incentives for HITECH compliance, some physicians believe that EMRs do not reduce their administrative workload and instead distract from caregiving. Other physicians accept the coming penalty for non-compliance rather than the disruption and financial investment of a new system. Moreover, polls indicate that the majority of physicians do not trust or understand this regulatory requirements. HITECH impacts BSX in two ways: (i) it will have continue to develop medical devices that gather patient data (PHI) and (ii) stay up to date with cyber security threats posed to PIH collection.
 American Health Care Act (AHCA)	It is possible that the American Health Care Act of 2017, currently being developed by Republicans, will effectively repeal the ACA. If the current legislature passes the AHCA, it may change the dynamics for parts of the 2.3% device tax and oversight to which BSX is subject.
 21st Century Cures Act	Enacted in 2016, the 21st Century Cures Act is aimed to accelerate the discovery, development, and delivery of 21st century cures, and for other purposes. BSX will benefit through its speed to market. On average, it takes about 18 months for a device to survive through the regulatory process. BSX actively lobbied in favor of this legislation in 2015 and 2016 because the law directly impacts the top line.
 Medical Device Access and Innovation Protection Act	Medical Device Access and Innovation Protection Act was introduced in the Senate on January 12, 2017. If passed, the bill would amend the Internal Revenue Code to repeal the excise tax on the sale of a medical device by the manufacturer, producer, or importer.
 Hospital Readmissions Reduction Program (HRRP)	Added in 2012 to the ACA, HRRP penalizes hospitals by -3% if they have higher than expected risk-standardized 30-day readmission rates for acute myocardial infarction, heart failure, pneumonia, chronic obstructive pulmonary disease, total hip arthroplasty/total knee arthroplasty, and coronary artery bypass graft. For the FY2018 IPPS/LTCH PPS proposed rule, CMS proposed changes to the payment adjustment factor in accordance with the 21st Century Cures Act. CMS is proposing to assess penalties based on a hospital's performance relative to other hospitals with a similar proportion of patients who are dually eligible for Medicare and full benefit Medicaid.
 Hospital Value-Based Purchasing Program	Established by the ACA, the Hospital VBP Program adjusts payments to hospitals for inpatient services based on their performance on an announced set of measures. CMS estimates there will be a \$1.9 billion pool that hospitals can win back with good measure scores.
 Hospital Acquired Conditions (HAC) Program	For FY2018, CMS is not making any changes to the measure set used to calculate the lowest performing hospitals; 25% of hospitals are proposed to receive a 1% penalty for higher HAC rates.
 Investigational Device Exemption (IDE)	Section 520(g) of the Federal Food, Drug, and Cosmetic Act establishes a framework for FDA to grant devices for investigational use an exemption from certain requirements so that experts qualified by scientific training and experience can investigate their safety and effectiveness. For significant risk devices, the sponsor must first submit an IDE application and obtain FDA approval
 Early Feasibility Studies (EFS) Program	EFS Program, administered under FDA's Center for Devices and Radiological Health (CDRH), facilitates the conduct of early feasibility studies in the United States to increase access for patients to potentially beneficial technologies and to support device innovation. The EFS Program provides a mechanism for innovators to work directly with, sponsors, FDA review teams, and clinicians to work together early so they can increase the efficiency of their device development. BSX takes advantage of this program by being a part of the Medical Device Innovation Consortium.

Legend

 Direct Impact  Indirect Impact

Appendix 4: DCF & Cash Flows

Fiscal year ends in December. USD in millions except per share data

Calculation of Free Cash Flows	2017E	2018E	2019E	2020E	2021E	2022E
Net Sales	8939.8	9504.7	10089.0	10671.0	11319.6	12048.8
Direct Expense	2583.6	2781.2	2909.3	3022.6	3206.1	3412.5
Operating Expense	5035.1	5277.3	5325.3	5799.2	6012.7	6415.7
Operating Income	1321.1	1446.2	1854.4	1849.2	2100.8	2220.7
Tax	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%
NOPAT	1136.1	1229.3	1557.7	1534.8	1722.7	1798.7
Depreciation & Amortization	805.0	795.0	793.0	789.0	751.0	751.0
Δ in Net Operating Working Capital	(328.7)	(1169.7)	(247.8)	100.9	72.9	88.1
Capital expenditures	(250.0)	(250.0)	(250.0)	(250.0)	(250.0)	(250.0)
Free Cash Flow to Firm	1362.4	604.6	1852.9	2174.7	2296.5	2387.8
PV of Calculation of FCFE	2017E	2018E	2019E	2020E	2021E	2022E
PV of Terminal Value						42677.6
PV of Cash Flows	1362.4	633.8	1881.5	2203.5	2326.6	2419.3
Total Value	1362.4	633.8	1881.5	2203.5	2326.6	45096.9
Terminal Growth Rate	2.00%					
Terminal WACC	6.46%					
Total PV of FCFE	50,394					
Debt	(5,224)					
Total PV of FCFE	45,170					
Net Diluted Shares Outstanding	1382.91					
Value of Equity per Share	32.66					

In our DCF valuation, we created three scenarios: Base, Bull and Bear. Each scenario is used to create a more robust view on the fluctuations of future cash flows. The results are blended at the rates of 40%, 25%, and 35%, respectively. In order to give us a more stable estimate in line with the growth perspective that drives BSX's price, we focused on changing the nature and level of growth rate and potential Litigation related charges. Operating costs, capital structure, and CAPEX and acquisition of intangible assets have been kept constant.

Base Case: Our assumptions for growth rates for the Base case reflect performance reflected in Q3 reporting. We also assumed that revenues under each segment converge to the market growth rate (BSX estimates) for each segment by 2021. However, we downgraded our growth in IC, reflecting the recent news about the release of the LOTUS EDGE in the US market being further delayed. PI division still enjoys robust growth following from 2016. CRM growth remains flat. NM is a growing industry which we believe BSX is a front runner in. BSX's recent acquisitions in Endoscopy and Urology will allow for above market revenue growth in the near term, but we expect growth rates to converge to market growth rates. We expect BSX to grow revenues in NM in line with market growth rate. In addition we expect BSX to continue to have litigation related charges of 30% of 5 year historical average, which they will begin expensing starting from 2020, after having drawn down from their legal reserves.

Bull Case: In our Bull Case, we assume that the Watchman device will gain substantial market penetration starting from 2018, while assuming that the delay in releasing the Lotus, is only 6 months, rather than 1 year assumed in the Base case. We expect the the drug-coated balloon systems (under PI) to do well in the Asia-Pacific market, without cannibalizing cardiology sales. We also expect BSX to gain significant market share in Urology and Endoscopy, particularly in European and East Asian markets and realize growth rates in excess of 2% over the market growth rate. We also assume that BSX will be able to grow faster than market growth rate for NM after establish product category leadership in the segment. Lastly, we also assume that Litigation related charges of only 10% of 5 year historical average.

Bear Case: In our Bear Case, we assume that the release of the Lotus will be delayed by an extra quarter, and that market penetration of the Watchman will not be as significant enough to cover for the division sales growth. We also assume balloon catheter systems to cannibalize sales of other stent systems particularly in emerging markets in Pacific Asia and Latin America. We assume that Litigation related charges to be 60% of the 5 year historical average.

Appendix 5: WAAC Calculations



WACC Calculations	2017E	2018E	2019E	2020E	2021E	2022E
D+E	12255.4	12881.5	14410.7	14548.7	15383.9	16007.5
Debt	4416.0	3816.0	3816.0	2366.0	1366.0	0.0
D/(D+E)	36.0%	29.6%	26.5%	16.3%	8.9%	0.0%
Equity	7839.4	9065.5	10594.7	12182.7	14017.9	16007.5
E/(D+E)	64.0%	70.4%	73.5%	83.7%	91.1%	100.0%
D/E	56.3%	42.1%	36.0%	19.4%	9.7%	0.0%
Tax Rate	14.0%	15.0%	16.0%	17.0%	18.0%	19.0%
R[f]	2.4%	2.6%	2.9%	3.1%	3.4%	3.6%
R[prem]	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%
Unlevered BETA	0.50	0.50	0.50	0.50	0.50	0.50
Levered BETA	0.74	0.67	0.65	0.58	0.54	0.50
K[d]	4.5%	4.7%	5.0%	5.2%	5.5%	5.7%
K[e]	6.6%	6.5%	6.6%	6.4%	6.4%	6.5%
WACC	5.6%	5.7%	5.9%	6.1%	6.3%	6.5%

Appendix 6: Pro Forma Income Statement and Balance Sheet

Income Statement									
<i>Fiscal year ends in December. USD in millions except per share data</i>									
	Historical			Base Scenario					
Income Statement	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total Revenue	7380	7477	8386	8940	9505	10089	10671	11320	12049
Direct Expenses	2210	2173	2424	2584	2747	2875	2988	3169	3374
Gross Profit	5170	5304	5962	6356	6758	7214	7683	8150	8675
SG&A	2902	2873	3099	3263	3469	3632	3842	4075	4338
R&D	817	876	920	939	998	1009	1067	1075	1145
Amortization	438	495	545	535	525	523	519	481	481
Other	1314	1387	951	298	285	161	372	381	452
Operating Income	-301	-327	447	1321	1481	1888	1884	2137	2259
Other Income	-208	-323	-270	-177	-191	-229	-142	-82	0
Pre-Tax Income	-509	-650	177	1144	1290	1659	1742	2055	2259
Tax Expense	-390	-411	-170	160	193	266	296	370	429
Net Income	\$ (119)	\$ (239)	\$ 347	\$ 984	\$ 1,096	\$ 1,394	\$ 1,446	\$ 1,685	\$ 1,830
Weighted Average Basic Shares Outstanding	1,406.7	1,341.2	1,324.3	1,341.2	1,363.5	1,373.2	1,373.2	1,373.2	1,373.2
EPS	\$ (0.08)	\$ (0.18)	\$ 0.26	\$ 0.73	\$ 0.80	\$ 1.02	\$ 1.05	\$ 1.23	\$ 1.33

Balance Sheet									
<i>Fiscal year ends in December. USD in millions except per share data</i>									
	Historical			Base Scenario					
Balance Sheet	2014	2015	2016	2017	2018	2019	2020	2021	2022
Assets									
Cash and Marketable Securities	587	319	196	386	258	1947	2582	3842	4895
Accounts Receivable	1183	1275	1472	1564	1663	1766	1867	1981	2109
Other Current Assets	1836	1877	1571	1691	1756	1809	1841	1915	1982
Total Current Assets	3606	3471	3239	3641	3677	5522	6291	7738	8986
Property and Equipment, net	1507	1490	1630	1610	1590	1570	1550	1530	1510
Intangible Assets + Goodwill, net	11504	12667	12561	12026	11501	10978	10459	9978	9497
Other Long Term Assets, net	425	505	666	666	666	666	666	666	666
Total Assets	17042	18133	18096	17943	17434	18736	18966	19912	20659
Liabilities									
Accounts Payable	262	209	447	465	494	518	538	571	607
Short Term Debt	403	3	64	114	188	160	132	100	62
Other Current Liabilities	2181	2218	3076	3366	2139	2270	2401	2547	2711
Total Current Liabilities	2846	2430	3587	3946	2821	2947	3071	3217	3381
Long-Term Debt	3859	5674	5420	4416	3816	3816	2366	1366	0
Other Long Term Liabilities	3880	3709	2356	1742	1732	1378	1347	1311	1271
Total Non-Current Liabilities	7739	9383	7776	6158	5548	5194	3713	2677	1271
Total Liabilities	10585	11813	11363	10104	8368	8141	6783	5894	4651
Shareholder Equity									
Common Shareholder's Equity	16	16	16	16	16	16	16	16	16
Additional Paid-in Capital	16703	16860	17014	17136	17266	17401	17543	17693	17853
Retained Earnings (accumulated deficit)	-8689	-8927	-8581	-7597	-6500	-5107	-3661	-1975	-145
Treasury Stock	-1717	-1717	-1717	-1717	-1717	-1717	-1717	-1717	-1717
Accumulated Other Comprehensive loss	144	88	1	1	1	1	1	1	1
Total Shareholder Equity	6457	6320	6733	7839	9066	10595	12183	14018	16007
Total Liabilities and Shareholder E	17042	18133	18096	17943	17434	18736	18966	19912	20659

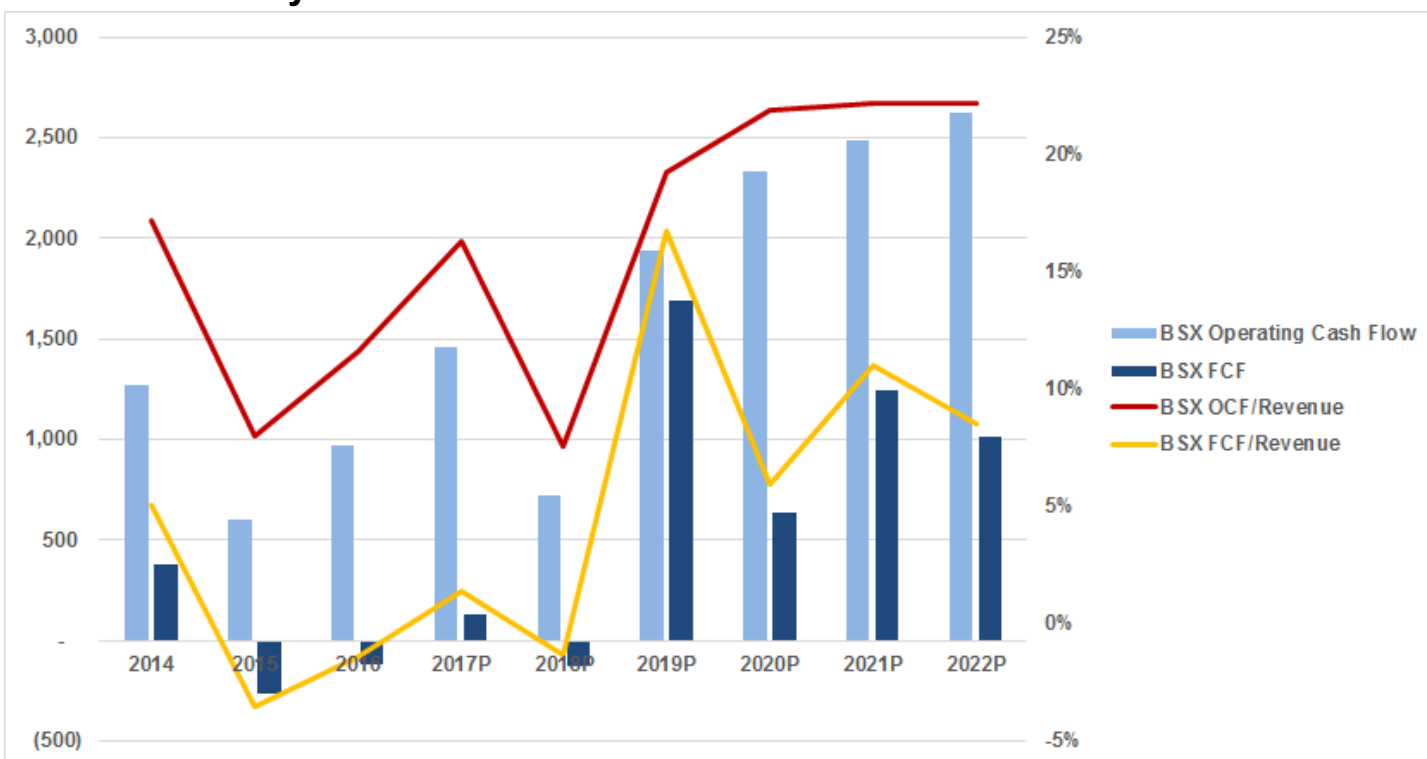
Appendix 7: Pro Forma Cash Flow Statement

Cash Flow Statement

Fiscal year ends in December. USD in millions except per share data

Income Statement	Historical			Base Scenario					
	2014	2015	2016	2017	2018	2019	2020	2021	2022
Cash Flow from Operating Activities:									
Net Income	-119	-239	347	984	1096	1394	1446	1685	1830
Depreciation and Amortization	725	769	815	805	795	793	789	751	751
Short and Long term Legal Reserves	0	0	0	-333	-1355	-335	0	0	0
Other	663	70	-190	4	185	87	101	73	88
Cash Flow from Operations	1269	600	972	1460	722	1939	2336	2509	2669
Cash Flow from Investing Activities:									
Capital Expenditure	-259	-247	-376	-250	-250	-250	-250	-250	-250
Purchase of Intangible Assets	-512	-2000	-540	0	0	0	0	0	0
Other Investments	26	61	29	0	0	0	0	0	0
Cash Flow from Investing	-745	-2186	-887	-250	-250	-250	-250	-250	-250
Cash Flow from Financing Activities:									
Short-Term Debt	0	0	0	-64	0	0	0	0	0
Long-Term Debt	0	1430	-190	-1000	-600	0	-1450	-1000	-1366
Other Financing	-150	-108	-16	-21	0	0	0	0	0
Cash Flow from Financing	-150	1322	-206	-1085	-600	0	-1450	-1000	-1366
Change in Net Cash	\$ 374	\$ (264)	\$ (121)	\$ 126	\$ (128)	\$ 1,689	\$ 636	\$ 1,259	\$ 1,053

Cash Flow Analysis



Appendix 8: Peer Group Analysis

As of Most Recent Quarterly Filing (9/30 for all except MDT - 10/27)

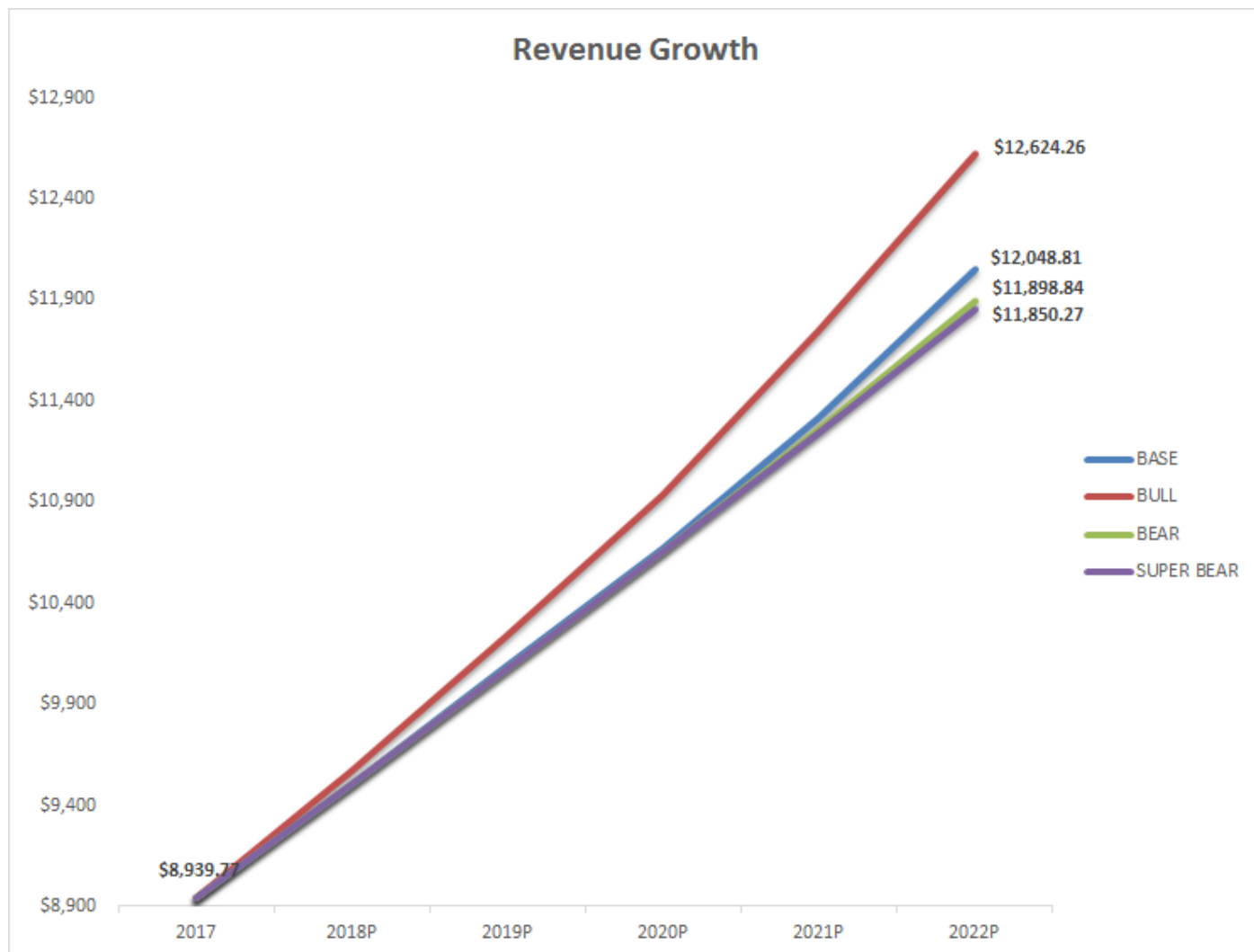
Ratio Analysis	BSX	MDT	SYK	BCR	ABT	BDX	EW	ZBH	AVERAGE	Median
Profitability Ratios										
Revenue	8,830	29,639	12,130	3,875	25,134	12,093	3,315	7,763	12,847	10,462
Gross Margin	0.71	0.69	0.66	0.63	0.55	0.49	0.74	72.2%	0.65	0.68
Operating Margin	0.13	0.20	0.18	0.26	0.08	0.12	0.28	13.3%	0.17	0.16
Net Profit Margin	9.55%	16.93%	14.67%	14.67%	8.37%	9.10%	22.47%	8.36%	13.01%	12.11%
Liquidity Ratios										
Current Ratio	0.72	2.40	2.37	1.72	2.69	5.58	3.49	1.47	2.56	2.38
Quick Ratio	0.50	2.05	1.61	1.37	2.26	5.03	2.76	0.78	2.04	1.83
Cash Ratio	0.04	1.29	0.83	0.77	1.41	4.25	1.91	0.16	1.33	1.06
Activity Ratios										
Total Asset Turnover	0.47	0.31	0.56	0.70	0.35	0.32	0.60	0.29	0.45	0.41
Fixed Asset Turnover	5.26	6.67	6.55	7.66	3.48	2.61	5.10	3.79	5.14	5.18
Days Receivable	60.76	70.84	59.13	47.37	69.71	52.64	52.31	61.99	59.34	59.95
Days Inventory	154.89	144.76	217.93	133.90	111.65	107.88	230.33	352.78	181.77	149.82
Days Payable	53.36	68.36	40.67	20.49	59.56	47.29	48.51	55.37	49.20	50.93
Cash Conversion Cycle	162.30	147.23	236.39	160.79	121.80	113.22	234.12	359.41	191.91	161.54
Debt/Leverage Ratios										
Debt/Equity	0.75	0.56	0.69	0.81	0.75	1.46	0.33	1.00	0.79	0.75
Debt/Assets	0.30	0.31	0.34	0.29	0.33	0.50	0.19	0.39	0.33	0.32
Assets/Equity (Equity Multiplier)	2.46	1.83	2.06	2.76	2.24	2.91	1.74	2.53	2.32	2.35
Interest Coverage Ratio (EBIT/Int. Exp.)	4.92	8.17	N/A*	18.04	2.94	3.32	171.02	3.07	30.21	4.92
DUPONT ANALYSIS										
Net Profit Margin	0.10	0.17	0.15	0.15	0.08	0.09	0.22	8.4%	0.13	0.12
Asset Turnover	0.47	0.31	0.56	0.70	0.35	0.32	0.60	0.29	0.45	0.41
ROA	0.05	0.05	0.08	0.10	0.03	0.03	0.14	0.02	0.06	0.05
Equity Multiplier	2.46	1.83	2.06	2.76	2.24	2.91	1.74	2.53	2.32	2.35
ROE	0.11	0.10	0.17	0.28	0.07	0.08	0.24	0.06	0.14	0.10
* No Interest payment information given										

Appendix 9: BSX Private Equity and Venture Portfolio (2012-onwards)



Name	Funding Type	Money Raised (USD Millions)	Announced Date	Brief Description	Founded	Notable Other investors
SetPoint Medical	Series D	30	8/28/2017	Implantable Neuro-modulation devices	2006	Medtronic, Topspin Partners
Channel Medsystems	Series C	14.1	8/23/2017	Proprietary Cryo-ablation delivery tech	2009	Scientific Health Development Partners, Incube Ventures
Neuros Medical	Series A	20	8/7/2017	Neurostimulation therapies	2008	BlueTree Allied Angles, Ohio TechAngels
Amphora Medical	Series B	35.5	7/20/2017	Medical device manufacturer	2011	Baird Capital, Longitude Capital
Cameron Health	Series D	31	7/3/2017	Implantable Defibrillators	2001	Delphi Ventures, Greenspring Associates, Alloy Ventures
Neuro Tronik	Series B	23.1	4/18/2017	Structural heart medical devices	2012	Synergy, Mountain Group
Neovasc	Post-IPO equity	75	12/13/2016	Cardiovascular (transcatheter devices)	2008	75m post-IPO equity
Securus Medical Group	Series C	10	9/15/2016	Monitor core body temperature	2011	Global Cardiovascular Innovation Centre
NxThera	Series D	40	12/3/2015	Men's Urology	2008	American Medical System, Mitsui Global Investments
TVA Medical	Series C	15	10/6/2015	Innovative, minimally invasive therapies for end-stage renal disease	2008	Square 1 Bank, Sante Ventures, TriStar Health Partners
Channel Medsystems	Series C	22	8/31/2015	Proprietary Cryo-ablation delivery tech	2009	Aperture ventures Partners, Scientific health Development
Preventice Solutions	Venture		8/4/2015	Cloud Health Monitoring	2004	BSX
InterVene	Series A	5.9	3/23/2015	Medical device manufacturer	2011	LaunchCapital, Green Park and Golf Ventures
Sensible medical Innovations	Venture	20	11/11/2013	Sensing and Monitoring of several chronic medical conditions	2007	Genesis Partners, SCP Vitalife Partners
SetPoint Medical	Series A	30.607	8/8/2013	Proprietary implantable neuromodulation devices	2006	GlaxoSmithKline
Channel Medsystems	Series B	9.787	5/2/2013	Proprietary Cryo-ablation delivery tech	2009	Aperture Venture Partners, InCube Ventures, Venture-health
BAROnova	Series C	27.3	2/15/2013	Non-pharmacologic devices to induce weight loss	2006	Lumira Capital, Longitude Capital, Sante
Neuros Medical	Series A	3.5	7/18/2012	Neurostimulation therapies	2008	Aperture Venture Partners, Jumpstart, US Venture Partners

Appendix 10: Scenario Analysis

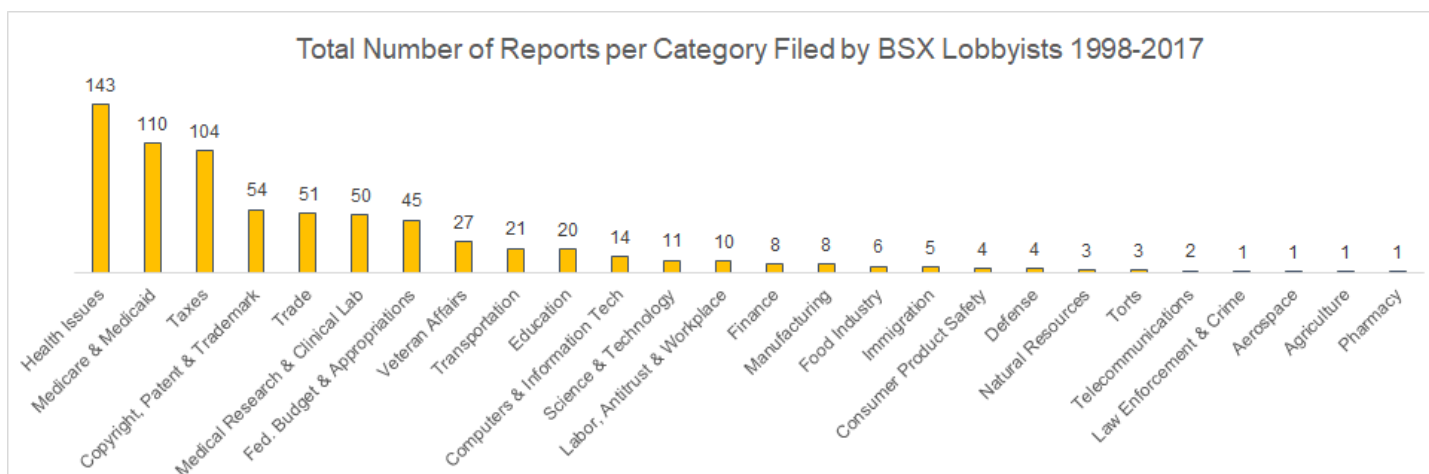
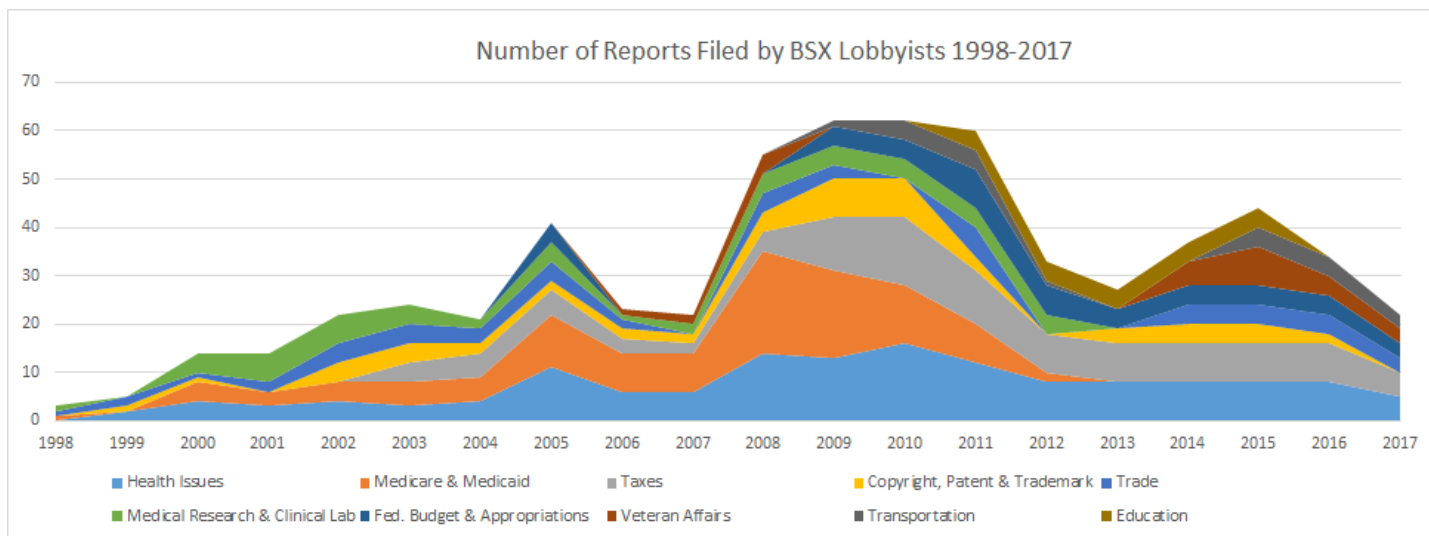


	2017	2018P	2019P	2020P	2021P	2022P
Base	\$ 8,939.77	\$ 9,504.72	\$ 10,088.97	\$ 10,671.01	\$ 11,319.58	\$ 12,048.81
Bull	\$ 8,939.77	\$ 9,567.40	\$ 10,238.19	\$ 10,935.21	\$ 11,744.17	\$ 12,624.26
Bear	\$ 8,939.77	\$ 9,504.72	\$ 10,077.08	\$ 10,651.18	\$ 11,254.33	\$ 11,898.84

Appendix 11: Lobbying Data



Protecting interests through US lobbying: BSX spent as much as \$1.7 million in lobbying efforts in 2016. Our research demonstrates lobbying efforts are consistent with party-based politics: under Republican President George W. Bush (2000-2008), BSX filed less reports compared to the eight years under Democratic President Barack Obama (2008-2016) who was pro-healthcare regulation.



Appendix 12: Original Research

Qualitative Data Collection: In addition to financial analysis, our team interviewed 20 experts and professionals in the healthcare industry to inform our understanding of the industry from diverse perspectives.

Title at Company	Company/Organization
Founder	S2N Health
Analyst	Abundant Venture Partners, Chicago
Managing Editor	Health News Review, Maine
Lean Specialist, Paralegal	Insurance Solutions Org
Residency Student	Residency Student, CA
Med Student	Mt. Sinai Medical School, NYC
Project Leader II	Baxter International
Office Research Business Development Industry Translation	Tufts Medical Center
Strategy Consultant	Clarion Healthcare
Director of Finance	NXStage Medical
Former BSX Intern	Boston Scientific
Cardiac Catheterization Laboratory and Interventional Cardiology Staff	Tufts Medical Center
Cardiologist	Tufts Medical Center
Staff	Mass Medical Device Council
Program Manager	CISDI
Executive	Boston Medical Center
Doctor	Boston Medical Center
Cardiology Fellow	New Orleans Hospital
Product Innovation Leader	Phillips, Digital Health
Design Assurance Engineer	Integer Holdings Corp.

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