2011 Orthopedic Outlook

Headwinds Remain but Growth Likely to Accelerate Modestly

2011 Outlook. After interviewing multiple industry contacts, we believe the orthopedic space will remain under pressure during 2011 as a result of accelerating pricing pressure and a more difficult regulatory environment (leading to fewer mix shift benefits as a result of fewer new product introductions). Still, we expect growth in the industry will improve (up 4.4% this year, compared with 3.1% in 2010) as a result of easier volume comparisons and solid growth from several subsectors.

Large Joints. While our channel checks indicate that procedure volumes should reaccelerate modestly in 2011, driven by favorable demographic trends and an easy comparison, a common theme was that pricing in the space would likely deteriorate from 2010 levels. As a result, we are lowering our market growth forecast for the hip and knee markets by 170 and 210 basis points for 2011, to 3%. *We are also modestly lowering our revenue targets for Stryker Corporation and Zimmer Holdings to account for this lower expected market growth.*

Spine and Biologics. We expect the spine market to recover during 2011, following one of the toughest years in recent memory. We expect much of the growth in the sector should come from continued rapid uptake of cervical discs and steady growth in deformity products, but believe the fusion market should remain rather soft as a result of a continued volume slowdown and midsingle-digit pricing pressure. We estimate the overall spine market will grow 4.3% during 2011 (compared with down 2.1% last year), generating revenue of $8.9 billion.

Extremities. The extremities market was a clear bright spot in the orthopedic market during 2010 (up 10%), and we expect continued strong growth from this segment as more surgeons train on performing these procedures to offset volume declines in the large-joint segment of their practices. We estimate that the extremities market will generate revenue of $1.1 billion during 2011, representing growth of 8.6%.

Trauma, Sports Medicine, Dental, and Craniomaxillofacial (CMF). We estimate the trauma and sports medicine markets delivered solid results during 2010 (up 5.4% and 9%, respectively), and we expect both will generate solid performance in 2011 (up 5.2% and 6.5%). The dental market struggled again during 2010 (up 3%, off an easy -3% comparison), while CMF was steady at 6.1% growth last year. We look for a modest reacceleration in the dental implant market during 2011 (up 5.1%), with CMF up a solid 5.3%.

Valuation and Stock Thoughts. Multiples in the orthopedic industry recovered during 2010 but remain near historical lows, as the combination of weak procedure volumes and increased pricing pressures pushed investors to the sidelines. For 2011, we expect multiples will stay near current levels, and we recommend investors opportunistically take positions in more-diversified providers (such as Stryker) or faster-growth areas (including sports medicine).

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Please consult pages 44 and 45 of this report for all disclosures.

Healthcare | Medical Devices

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Industry Report (11-001)

ArthroCare Corporation

Stock Rating:	Market Perform
Company Profile:	Aggressive Growth
Symbol:	ARTC (Nasdaq)
Price:	$31.10 (52-Wk.: $23-$33)

NuVasive, Inc.

Stock Rating:	Market Perform
Company Profile:	Aggressive Growth
Symbol:	NUVA (Nasdaq)
Price:	$25.88 (52-Wk.: $22-$47)

Stryker Corporation

Stock Rating:	Outperform
Company Profile:	Established Growth
Symbol:	SYK (NYSE)
Price:	$54.10 (52-Wk.: $43-$60)

Symmetry Medical Inc.

Stock Rating:	Market Perform
Company Profile:	Core Growth
Symbol:	SMA (NYSE)
Price:	$9.44 (52-Wk.: $8-$12)

Wright Medical Group, Inc.

Stock Rating:	Market Perform
Company Profile:	Aggressive Growth
Symbol:	WMGI (NASDAQ)
Price:	$15.75 (52-Wk.: $13-$20)

Zimmer Holdings, Inc.

Stock Rating:	Market Perform
Company Profile:	Established Growth
Symbol:	ZMH (NYSE)
Price:	$53.97 (52-Wk.: $46-$65)

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Conclusion

We spent the months of October through December in 2010 interviewing most of our orthopedic field resources on the outlook for the industry (defined as hip, knee, spine and biologics, trauma, sports medicine, extremities, and CMF) during 2011. The key points include:

- Pricing in the large-joint market is expected to deteriorate during 2011, and we increased our estimated pricing decline rate from -1% to -2% this year;
- Volumes in the large-joint market are expected to rebound modestly (up about 40 basis points to roughly 4%);
- The increasingly onerous FDA environment will muffle favorable mix shifts in the large-joint market;
- Pricing pressures in the spine market are expected to remain in the midsingle digits;
- Extremities, sports medicine, and trauma should provide good growth during 2011, though pricing pressure in these markets is increasing modestly; and
- Most of the manufacturers are pushing these pricing pressures down to their suppliers, meaning that gross and operating margins should remain firm this year.

For 2011, we estimate that the overall orthopedic industry will grow by 4.4% (up to $33.8 billion), driven by steady trauma performance and strong uptake of cervical discs in the spine market.

The realization that procedure volumes in the large-joint market (hips and knees) are not recession-proof, as well as increased pricing pressures in hips and knees, has pushed many investors to the sidelines last year. Our channel checks with multiple industry contacts indicate that volumes in the large-joint markets will likely rebound modestly this year. We conducted a regression analysis (more details provided in the section on the large-joint market) on the commonly cited macroeconomic factors (unemployment and consumer confidence) to see if they provide specific insights into when volumes in the sector may rebound but found that these variables were not very predictive and the output likely included a heavy amount of statistical error. Consequently, we view our regression analysis as simply directional data rather than fully predictive of when growth in the large-joint market may return to historical levels.

Based on a variety of inputs, we model volume growth in the large-joint market at roughly 4% during 2011, compared with about 3.5% last year. These same sources indicate that pricing pressures in the large-joint market will likely accelerate this year; we therefore model ASPs to decline in the 2% range, roughly 100 basis points higher than our previous target. With the regulatory environment increasingly onerous, we believe that companies will struggle to release enough new products to offset much of this increasing pricing pressure. We lowered our forecast 50 basis points for a positive 1% favorable mix dynamic from the large-joint market during 2011. In total, we now expect that the large-joint market (both hips and knees) will be up 3% during 2011, or about 150 basis points lower than our previous target.

We believe that the extremities and cervical artificial disc markets represent the fastest growth areas for the orthopedic market during 2011. On the extremities side, we model growth at 8.6% during 2011 (up to $1.1 billion), driven by increased shoulder replacement procedures and foot and ankle arthroplasty and fusion cases. There are currently no pure plays in this fast-growth market: Although several of the larger providers (Stryker and Zimmer) have a presence in this space, it is not enough to move their revenue needle, in our view. Wright Medical's market-leading foot-and-ankle franchise offers access to this rapidly growing market, but it represents only 23% of total revenue (compared with about 60% from hip and knee products), which is not large enough to drive outpaced top-line growth at the company and command a premium valuation.

Table 1
2011 Orthopedic Outlook
Worldwide Orthopedic Market
(in thousands)

	2006	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Hips	$4,008,200	$4,407,300	$4,835,758	$4,931,080	$5,125,768	$5,279,342	$5,442,543	$5,611,543	$5,786,579	$5,967,900
Knees	$4,868,471	$5,436,950	$6,023,300	$6,164,400	$6,412,424	$6,606,172	$6,791,705	$6,968,548	$7,163,582	$7,365,107
Spine	$5,343,566	$5,840,317	$6,404,536	$6,898,208	$6,781,965	$7,078,684	$7,492,839	$8,003,601	$8,467,231	$8,931,024
Biologics	$1,280,988	$1,453,109	$1,638,872	$1,775,128	$1,706,195	$1,774,856	$1,883,655	$1,999,959	$2,129,863	$2,269,533
Trauma	$3,157,883	$3,560,432	$3,945,880	$4,136,181	$4,358,284	$4,586,113	$4,836,304	$5,096,298	$5,370,538	$5,659,817
Sports Medicine	$2,049,391	$2,385,608	$2,698,417	$2,906,017	$3,166,345	$3,372,750	$3,586,393	$3,821,598	$4,067,710	$4,331,454
Extremities	$675,228	$760,995	$849,475	$937,063	$1,029,605	$1,118,377	$1,206,543	$1,301,647	$1,395,756	$1,497,288
Dental Implants	$2,550,000	$2,797,900	$2,980,800	$2,882,000	$2,973,680	$3,124,718	$3,346,044	$3,585,517	$3,842,229	$4,117,432
CMF	$572,192	$650,261	$735,733	$798,567	$846,900	$891,869	$939,388	$989,459	$1,042,221	$1,097,818
Total	$24,505,919	$27,292,872	$30,112,771	$31,428,643	$32,401,166	$33,832,880	$35,525,416	$37,378,171	$39,265,709	$41,237,373
Growth										
Hips		*10.0%*	*9.7%*	*2.0%*	*3.9%*	*3.0%*	*3.1%*	*3.1%*	*3.1%*	*3.1%*
Knees		*11.7%*	*10.8%*	*2.3%*	*4.0%*	*3.0%*	*2.8%*	*2.6%*	*2.8%*	*2.8%*
Spine		*9.3%*	*9.7%*	*7.7%*	*-1.7%*	*4.4%*	*5.9%*	*6.8%*	*5.8%*	*5.5%*
Biologics		*13.4%*	*12.8%*	*8.3%*	*-3.9%*	*4.0%*	*6.1%*	*6.2%*	*6.5%*	*6.6%*
Trauma		*12.7%*	*10.8%*	*4.8%*	*5.4%*	*5.2%*	*5.5%*	*5.4%*	*5.4%*	*5.4%*
Sports Medicine		*16.4%*	*13.1%*	*7.7%*	*9.0%*	*6.5%*	*6.3%*	*6.6%*	*6.4%*	*6.5%*
Extremities		*12.7%*	*11.6%*	*10.3%*	*9.9%*	*8.6%*	*7.9%*	*7.9%*	*7.2%*	*7.3%*
Dental Implants		*9.7%*	*6.5%*	*-3.3%*	*3.2%*	*5.1%*	*7.1%*	*7.2%*	*7.2%*	*7.2%*
CMF		*13.6%*	*13.1%*	*8.5%*	*6.1%*	*5.3%*	*5.3%*	*5.3%*	*5.3%*	*5.3%*
Total		*11.4%*	*10.3%*	*4.4%*	*3.1%*	*4.4%*	*5.0%*	*5.2%*	*5.0%*	*5.0%*
% of Market										
Hips	16.4%	16.1%	16.1%	15.7%	15.8%	15.6%	15.3%	15.0%	14.7%	14.5%
Knees	19.9%	19.9%	20.0%	19.6%	19.8%	19.5%	19.1%	18.6%	18.2%	17.9%
Spine	21.8%	21.4%	21.3%	21.9%	20.9%	20.9%	21.1%	21.4%	21.6%	21.7%
Biologics	5.2%	5.3%	5.4%	5.6%	5.3%	5.2%	5.3%	5.4%	5.4%	5.5%
Trauma	12.9%	13.0%	13.1%	13.2%	13.5%	13.6%	13.6%	13.6%	13.7%	13.7%
Sports Medicine	8.4%	8.7%	9.0%	9.2%	9.8%	10.0%	10.1%	10.2%	10.4%	10.5%
Extremities	2.8%	2.8%	2.8%	3.0%	3.2%	3.3%	3.4%	3.5%	3.6%	3.6%
Dental Implants	10.4%	10.3%	9.9%	9.2%	9.2%	9.2%	9.4%	9.6%	9.8%	10.0%
CMF	2.3%	2.4%	2.4%	2.5%	2.6%	2.6%	2.6%	2.6%	2.7%	2.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Sources: Industry sources and William Blair & Company, L.L.C. estimates

We expect the domestic cervical artificial disc market will remain strong this year (up 44%, to revenues of $252 million off a difficult 63% comparison) as new, second-generation products (with improved ease of implantation and reduced risk of migration) are introduced, to go along with mounting clinical data demonstrating the improved outcomes from motion preservation in this region of the spine as compared with fusion. In addition, U.S. deformity growth should remain strong (we model up 10%, to $957 million), as the incidence of adult scoliosis continues to increase; pricing pressures have yet to materially affect implants used in these cases because of the sizable reimbursement rates paid for these procedures. We expect the fusion segment of the spine market will remain soft during 2011 (up less than 1% domestically) as volumes recover slowly (primarily in the lumbar region) and ASP declines remain in the midsingle-digit range.

The vertebral compression fracture (VCF) market continued a recent downward trend during 2010, and we expect this will persist this year, as the American Association of Orthopaedic Surgeons (AAOS) guidelines recommending against vertebroplasty will likely cause some surgeons and more referring physicians to question the utility of these procedures. Further, we expect pricing pressures in this market to accelerate modestly given the appearance of several new kyphoplasty competitors during 2010. Overall, we forecast that the VCF market (including both kyphoplasty and vertebroplasty) will contract by 1% during 2011 (down to $452 million). On the biologics side, we believe this market will grow at 4% (up to $1.8 billion in sales) during 2011. Overall, we model the spine market growing by 4.3% (up to $8.9 billion) during 2011 off an easy -2.1% comparison.

We expect that sports medicine, trauma, and dental implants will deliver upper-single-digit growth during 2011. On the sports medicine side, we model 6.5% growth this year, driven by steady volume increases and favorable mix shifts from the introduction of new products. Within this market, our channel checks indicate that privately held Arthrex continues to capture share (primarily from Smith & Nephew), and we believe this company will grow at almost twice the market rate.

In the trauma market, our channel checks indicate that the market leader, Synthes, continues to introduce innovative new products (primarily lower-profile devices), and will likely remain a share-taker in this segment, which we believe will grow at 5.2% during 2011. Our channel checks indicate that pricing pressure in the trauma industry has accelerated modestly in recent months and should present a headwind for the sector this year. Sales of dental implants rebounded last year (up 3% off an easy comparison), and we project improved performance during 2011 (up 5.1% to $3.125 billion) as a result of stabilization in global consumer confidence. Lastly, in the CMF market, we forecast growth of 5.3% this year (up to $892 million), a modest slowdown in growth compared with recent years, as a result of the expected withdrawal of U.S. military forces from both Afghanistan and Iraq this year.

In summary, as shown in table 2, on the following page, we forecast extremities and sports medicine will deliver the strongest growth rates during 2011 (though modest decelerations from last year's performance) but direct exposure to these markets is relatively limited.

We model another steady growth year from trauma, with spine and biologics delivering solid growth during 2011, off of easy comparisons. On the dental implant side, we model a recovery in this market during 2011, also off of depressed levels, with CMF growth again solid. Lastly, we forecast a continued deceleration in the hip and knee markets, due to accelerating pricing pressure in the market, which should be modestly offset by improved patient volumes.

Based on our expectation for increased pricing pressure in the large-joint market, we are lowering our estimates on Stryker and Zimmer for 2011. For Stryker, we lowered our revenue target by $65 million (now $7.76 billion, up 6.7% constant currency), with EPS $0.02 lower (now $3.70, up 12%). ***Despite this reduction in estimates, Stryker remains our top pick in the sector, as we believe the company's diverse portfolio and operating margin expansion opportunities, along with a steady flow of share-repurchase programs, will***

allow it to deliver solid earnings performance, even with our projected deceleration in the large-joint market. For Zimmer, we lowered our revenue estimate by $41 million (now $4.32 billion, up 3.5%). This reduction in sales results in a $0.02 negative impact to our previous earnings target (we expect that the company will lower its R&D spending to offset any sales deceleration, which added another $0.03 to our revised earnings target), and we now forecast the company generating EPS of $4.63 (up 8.9%). While we believe that value-oriented investors may be interested in Zimmer given its current multiple and sizable cash flow, we remain cautious on the name, based on the weakness we project in the large-joint market, which represents roughly 75% of the company's revenue base.

Table 2
2011 Orthopedic Outlook
Summary Subsector Analysis

Sector	Est. 2010 Growth	Est. 2011 Growth	Year-Over-Year Change	Est. 2011 Market Size	Top Three Market Leaders*
Hips	3.9%	3.0%	-1.0%	$5,279,342	Zimmer, JNJ, Stryker
Knees	4.0%	3.0%	-1.0%	$6,606,172	Zimmer, Stryker, JNJ
Spine	-1.7%	4.4%	6.1%	$7,078,684	Medtronic, JNJ, Synthes
Biologics	-3.9%	4.0%	7.9%	$1,774,856	Medtronic, JNJ, Synthes
Trauma	5.4%	5.2%	-0.1%	$4,586,113	Synthes, Stryker, Smith & Nephew
Sports Medicine	9.0%	6.5%	-2.4%	$3,372,750	Arthrex, Smith & Nephew, JNJ
Extremities	9.9%	8.6%	-1.3%	$1,118,377	JNJ, Tornier, Zimmer
Dental Implants	3.2%	5.1%	1.9%	$3,124,718	Nobel Biocare, Straumann, Biomet
Craniomaxillofacial	6.1%	5.3%	-0.7%	$891,869	Synthes, Stryker, JNJ

* In order of 2011 estimated market share

Sources: Industry sources and William Blair & Company, L.L.C. estimates

We are maintaining our estimates on ArthroCare, NuVasive, and Wright Medical. While ArthroCare provides investors exposure to the steady sports medicine industry, at 25 times our 2011 EPS estimate of $1.24, shares trade at more than a 65% premium to the comp group and, in our view, are fully valued at these levels. NuVasive should continue to generate growth above the overall spine market in the coming years due to its leadership position in the faster-growing, less disruptive segment of the spine category, and we have a favorable bias on the name. In addition, the stock is inexpensive compared with a group of similar medical technology names, at only 1.9 times (on an enterprise basis) our 2011 revenue estimate of $528 million (up 12%). However, we believe that the spine market will remain soft this year, which should make it difficult for the company to exceed sales and earnings estimates. With respect to Wright Medical, the company's extremities business has continued to perform well, and we expect a similar trend this year, even as new competition enters the market. However, roughly 60% of revenue comes from the sale of replacement hips and knees, which remain challenging markets and restrain the company's overall growth rate, keeping us neutral on the name, but we believe that value-oriented investors or those with longer time horizons should start positions in the name at these levels.

Lastly, Symmetry Medical represents a complex story, as there are a number of moving pieces that will both hurt and help the company in the coming quarters. On the negative side, our channel checks indicate that instrumentation used during replacement joint and spine procedures is being used longer than normal by the manufacturers to offset the increasing costs of these products that they are forced to bear. This results in a longer replacement cycle for these instruments and consequently hurts the contract manufacturers such as Symmetry. In addition, our field checks indicate that pricing in the industry should come under increased pressure, as manufacturers attempt to offset the ASP declines from hospitals by obtaining pricing concessions from their suppliers. While this activity should help orthopedic companies such as Stryker and Zimmer, it will negatively affect contract manufacturers like Symmetry. We believe that both of these trends are near-term issues that will affect the company during 2011.

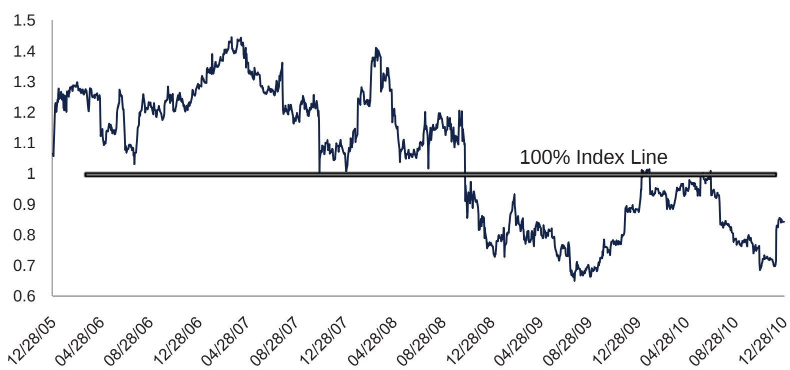
On the positive side (though likely a bit of a longer-term trend) is industry consolidation, which should yield new business for Symmetry. Increased regulatory requirements have prompted orthopedic companies to demand significant improvements in the quality and regulatory functions of its suppliers, which is a significant undertaking and requires large investments in infrastructure and new technology that many of the smaller contract manufacturers simply cannot afford. Consequently, we believe that several smaller players will be forced to sell or simply exit the business, which should open up market share; we expect Symmetry to capture a meaningful portion. While we expect Symmetry will benefit from industry consolidation, we expect this will be a gradual trend rather than an abrupt one, which will not fully offset the elongated replacement cycle in its instrument business and pricing pressures on the implant size and keep us cautious on the name.

Industry Valuations

As shown in table 3, on the following page, share prices for the overall orthopedic industry were down 1% last year.

Not surprisingly, the spine providers, with their rapidly decelerating growth rates, were the hardest hit (down a combined 22%)—especially Alphatec, because of a number of downward estimate revisions and the weak outlook for the sector in the coming year. The large-joint providers delivered modest gains (up 7%), driven primarily by Mako Surgical (up 39%), because of its new indication to perform hip replacement procedures on its Rio robotic system, which adds an important second leg of growth to the story. As shown in figure 1, multiples of some of the more established orthopedic companies recovered toward the end of 2010 after approaching some of the lowest levels in five years.

Figure 1
2011 Orthopedic Outlook
Composite Orthopedic Forward P/E Multiples Index



Composite group includes EXAC, IART, SNN, SMA, SYK, WMGI, and ZMH

Source: Thomson Reuters

While the multiples of this group remain below their historical averages, we do not anticipate that they will recover materially in the coming quarters, because many of the headwinds that negatively affected the industry last year should largely restrain growth rates once again for the sector in 2011.

Table 3
2011 Orthopedic Outlook
Valuation Summary

	Ticker	Price 12/30/10	YTD Change	Mkt. Cap ($ mil.)	EPS 2010E	EPS 2011E	P/E 2010E	P/E 2011E	Mean EPS Growth (%)	Revenues 2010E	Revenues 2011E	EV/Sales 2010E	EV/Sales 2011E	EV/EBITDA 2010E	EV/EBITDA 2011E
Large Joint															
Exactech, Inc.	EXAC	$18.83	9%	242	1.03	1.20	18.2x	15.6x	18	$195	$213	1.3x	1.2x	NA	7.6x
MAKO Surgical Corp.	MAKO	15.44	39%	516	-1.07	-0.65	NM	NM	40	46	75	10.2	6.2	NM	NM
Symmetry Medical Inc.	SMA	9.44	17%	339	0.44	0.76	21.4x	12.5x	11	362	380	1.2	1.1	8.2	6.1
Smith & Nephew plc	SNN	52.52	2%	9,333	3.44	3.79	15.3x	13.9x	13	4,009	4,290	2.5	2.4	7.9	7.3
Stryker Corporation	SYK	54.10	7%	21,478	3.30	3.70	16.4x	14.6x	10	7,292	7,758	2.5	2.4	8.3	7.7
Wright Medical Group, Inc.	WMGI	15.75	-17%	599	0.68	0.85	23.3x	18.6x	17	511	541	1.2	1.1	8.3	6.2
Zimmer Holdings Inc.	ZMH	53.97	-9%	10,659	4.25	4.64	12.7x	11.6x	10	4,171	4,315	NA	2.5	7.0	6.8
Spine															
Alphatec Holdings, Inc.	ATEC	$2.64	-51%	206	0.08	0.27	33.4x	9.8x	67	$207	$268	1.1x	0.9x	8.3x	4.5x
Integra Lifesciences Holdings Corp.	IART	48.48	31%	1,405	2.70	2.95	18.0x	16.4x	12	726	776	2.3	2.2	11.7	10.6
Medtronic, Inc.	MDT	37.26	-15%	40,887	3.37	3.63	11.0x	10.3x	9	15,835	16,513	2.9	2.8	7.9	7.6
NuVasive, Inc.	NUVA	25.88	-19%	1,190	1.21	1.68	21.4x	15.4x	32	473	528	2.1	1.9	10.4	8.0
Orthofix International NV	OFIX	28.77	-7%	505	2.43	2.33	11.8x	12.3x	20	571	612	1.1	1.1	5.7	5.5
TranS1 Inc.	TSON	1.92	-51%	40	-1.06	-0.92	NM	NM	15	26	31	NM	NM	NM	NM
Orthovita, Inc.	VITA	2.05	-42%	157	-0.01	0.11	NM	19.3x	20	105	123	1.6	1.4	NM	17.6
Other															
ArthroCare Corporation	ARTC	$31.10	31%	1,031	0.99	1.24	31.4x	25.0x	15	$356	$371	2.6x	2.5x	11.4	10.6x
BioMimetic Therapeutics, Inc.	BMTI	12.75	7%	282	-1.54	-1.20	NM	NM	35	2	27	NM	8.3	NM	NM
ConMed Corporation	CNMD	26.53	16%	774	1.30	1.45	20.5x	18.3x	8	719	744	1.4	1.3	NA	NA
Kensey Nash Corporation	KNSY	28.35	11%	287	1.86	1.88	15.2x	15.1x	9	79	82	3.1	3.0	NA	NA
Osiris Therapeutics, Inc.	OSIR	7.88	10%	258	-0.07	-0.13	NM	NM	12	43	50	3.9	3.4	NA	NA
Mean			**-1%**				**19.3x**	**15.3x**				**2.6x**	**2.5x**	**8.7x**	**8.2x**
Median			**7%**				**18.1x**	**15.1x**				**2.2x**	**2.3x**	**8.3x**	**7.6x**
Market Indices															
S&P 500	SPX	1,259.78	13%		$79.53	$92.19	15.8x	13.7x							
Russell 2000	RUT	790.26	26%												
Dow Jones Industrial Average	.INDU	11,585.38	11%												
NASDAQ	COMP	2,666.93	18%												

Source: Thomson One Analytics

Industry Overview

2010 Review and the Outlook for 2011

The orthopedic industry in 2010 experienced its slowest year of growth in several years. The primary causes of the slowdown include volume deceleration in large joints and spine, along with increased pricing pressures in these markets. The fastest-growing segment in the orthopedics space is cervical artificial discs; we estimate sales in this segment were up 63% last year. In addition, we believe extremity sales were strong in the weak environment, with growth of 10% year-over-year. We expect these same markets, along with steady performance in sports medicine and trauma, to drive 4.4% growth in the overall orthopedics industry during 2011, which would represent a 130-basis-point improvement compared to last year's depressed performance.

Large Joints

Within the $11.5 billion hip and knee market, both volume and implant pricing were weak during 2010. On the volume side, the loss of COBRA insurance and poor consumer confidence were commonly cited causes of procedure slowdown. As shown in the following table, we estimate that 2010 volume growth of 3.4% in the hip market and 3.6% in the knee market were among the lowest levels in the past five years.

Table 4
2011 Orthopedic Outlook
Hip and Knee Volume Growth

	2006	2007	2008	2009	2010(E)	2011(E)
Hips	5.5%	3.4%	4.5%	3.8%	3.4%	3.9%
Knees	5.0%	4.8%	4.8%	3.7%	3.6%	3.9%

Sources: Industry sources and William Blair & Company, L.L.C. estimates

With historical volume growth in these markets, and essentially no change to the underlying fundamentals—closer to 4%-5%, as shown in the following table—we believe that the roughly 25,000 hip and knee procedures have been deferred over the past two years.

Table 5
2011 Orthopedic Outlook
Lost Hip and Knee Volume Analysis

	2008	2009	2010E
Hips - actual and est.	947,750	983,500	1,016,828
Growth		3.8%	3.4%
Historical Growth Rates (mid-point)		4.5%	4.5%
Pro Forma Procedures		990,399	1,034,967
Delta (pro forma less actual and est.)		6,899	18,139
Total			**25,038**
Knees - actual and est.	928,000	962,000	996,895
Growth		3.7%	3.6%
Historical Growth Rates (mid-point)		4.5%	4.5%
Pro Forma Procedures		969,760	1,013,399
Delta (pro forma less actual and est.)		7,760	16,504
Total			**24,264**

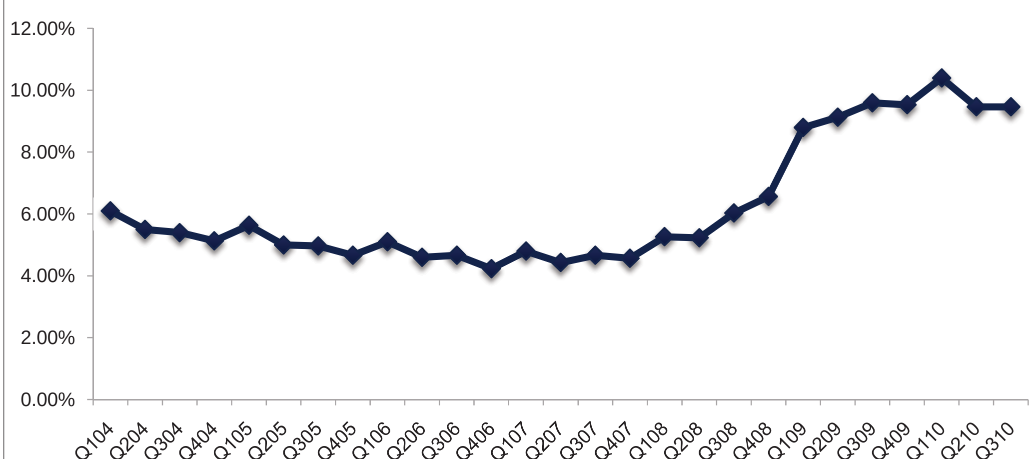
Sources: Industry sources and William Blair & Company, L.L.C. estimates

At about $4,500 per replacement system implanted, we estimate that about $112.5 million in hip revenue was lost or deferred over the past two years, with roughly the same amount for in the knee market. With the hip and knee markets representing roughly $22.6 billion in combined sales during 2009 and 2010, we believe that deferrals have cost the market less than 1% in growth in each of the past two years. With osteoarthritis a progressive disease, a majority of these patients will eventually need surgical intervention to treat their chronic pain. The real question is when these patients will eventually come back for surgery. Obviously, projecting the precise timing of when patients will begin to seek intervention to relieve their mounting pain is difficult. Our channel checks indicate that most patients can defer a replacement procedure for about two years before the pain is so severe that replacement is unavoidable. However, we attempted to take our analysis a step further than these anecdotal comments by performing a regression analysis on a number of metrics to see if any provide some visibility into when volumes may recover.

Regression Analysis on the Macroeconomic Factors Affecting the Orthopedic Market
We compiled data on a number of macroeconomic and industry-specific variables to perform our regression analysis.

Bureau of Labor Statistics (BLS) unemployment rate. Unemployment indices and consumer confidence levels, in our view, may act as leading indicators in modeling some recovery in certain orthopedic markets. The BLS announces monthly changes in the national unemployment rate that suggest the level of insurance coverage across the United States (employed individuals tend to receive healthcare insurance as part of their benefits package). During the early 2000s, national unemployment hovered around 5%-6%. Since the economic recession began (December 2007), unemployment has doubled to more than 10% in the first quarter of 2010, as shown in the following figure.

Figure 2
2011 Orthopedic Outlook
BLS Unemployment Rate

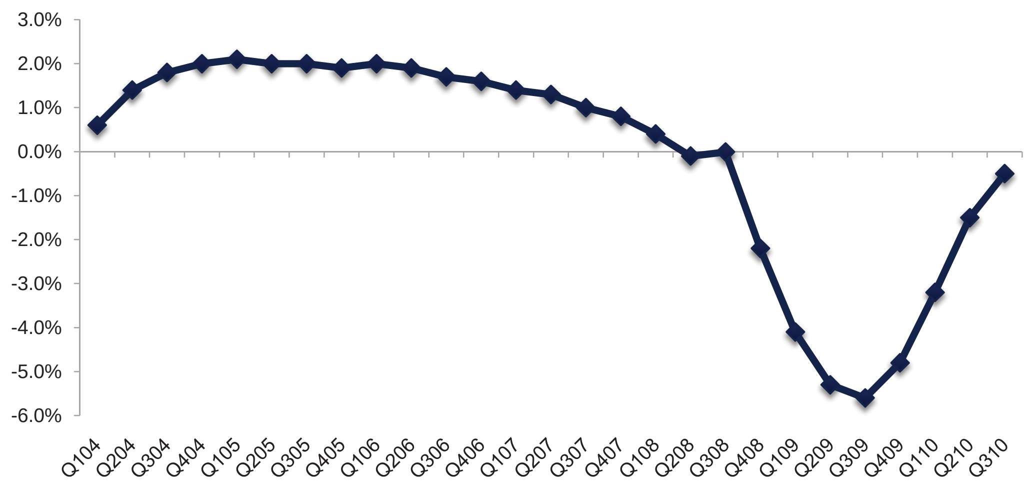


Source: U.S. Bureau of Labor Statistics

Although unemployment has since modestly declined, we expect companies to hire full-time employees relatively slowly, as a result of uncertainty around the pace of economic recovery. While some employees can apply for COBRA insurance coverage after unexpectedly losing employment, we believe most individuals have lost or will soon lose access to COBRA benefits, which last an average of 18 months. As shown in figure 2, there was a 200-basis-point increase in the unemployment rate from third quarter 2008 through fourth quarter 2008. With COBRA benefits expiring after 18 months, we believe that a large number of patients without coverage entered the system in mid-2010, causing the volume weakness experienced in the large-joint market last year. We expect this group of new uninsured individuals will continue to pressure volumes in the large-joint market through the end of 2011 (albeit at a lower level than in 2010), with a recovery back to historical procedural volume growth levels in 2012.

ADP private employment data. Whereas the BLS estimates unemployment by only including those holding or seeking jobs, Automated Data Processing employment data, also available monthly, reflects only private-sector, non-farm employment, as estimated by ADP, a large payroll company. While both unemployment data points are helpful, we believe ADP may be modestly more useful in determining a turning point in the economy, as its data does not reflect growth from temporary and government workers, who may not receive full health insurance benefits. Similar to the BLS data, ADP private employment data shows negative growth year-over-year since mid-2008, despite easy comparisons from 2009.

Figure 3
2011 Orthopedic Outlook
ADP Employment (Year-Over-Year Change)



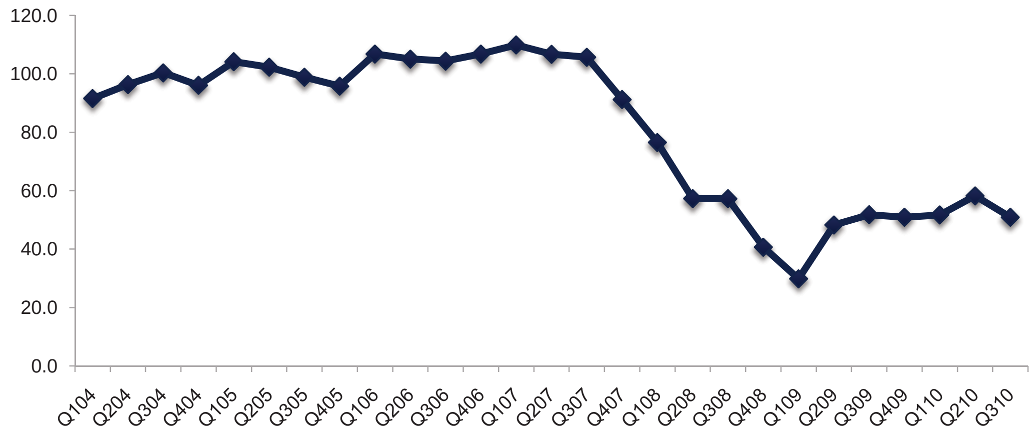
Sources: Automatic Data Processing, Inc. and William Blair & Company, L.L.C. estimates

The change in trajectory since third quarter 2009 is encouraging, but growth remains negative on a year-over-year basis, which means that the number of people without insurance continues to increase and, in our view, will likely restrain procedure volumes.

Consumer confidence index. Lastly, we believe the consumer confidence index (CCI) may also affect the orthopedic market, as consumers typically spend more when opinions about the current or future state of the economy are positive. The CCI has fallen significantly over the past several years, to below 50 for several quarters (on average 50.9 during third quarter 2010), much lower than the benchmark of 100, indicating most consumers remain skeptical of improvements in economic growth, as shown in the figure 4, on the following page.

We expect most orthopedic firms are affected by low consumer confidence, now more than before, as patients typically pay more out-of-pocket for surgeries and treatment than in the past. This, in our opinion, along with fears of taking time off work, translates into lower patient volumes and induces hospitals to seek pricing concessions from their vendors to make up for lost profitability caused by fewer procedures.

Figure 4
2011 Orthopedic Outlook
Consumer Confidence



Sources: The Conference Board and William Blair & Company, L.L.C. estimates

Regression Results: Interesting but Not Predictive

We conducted a series of two-variable regression analyses over various time frames and against the previously discussed macroeconomic factors and industry-specific data (a list of assessed variables is included in table 6) to see if they may predict a recovery in the large-joint market.

Table 6
2011 Orthopedic Outlook
Data Used in Regression Analysis

Macroeconomic Factors
- U.S. Bureau of Labor Statistics Unemployment Rate*
- ADP Employment (yoy change)*
- Consumer Confidence*

Industry Growth Rates
- Knee Procedure Growth*
- Knee Market Growth*
- Hip Procedure Growth
- Hip Market Growth*

Company Growth Rates
- Stryker Hip Growth
- Stryker Knee Growth
- Zimmer Hip Growth
- Zimmer Knee Growth

*Various combinations of these metrics yielded positive correlations

Sources: Industry sources and William Blair & Company, L.L.C. estimates

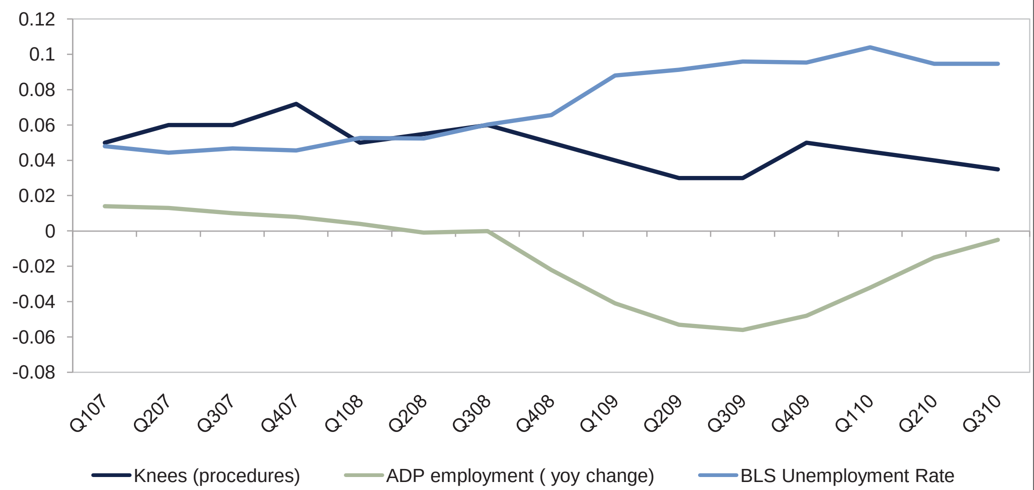
Interestingly, the shorter time frame analysis (around the beginning of the recent recession) yielded higher predictive values than longer-term analyses, and we have included only these results in this report. However, by using this data and its shorter time frames, it introduces error into the analyses since the number of observations (around 14) is quite low. This issue highlights another problem with our two-variable regression, which is the likelihood of meaningful error in our analysis, as it does not account for a number of additional factors that are likely affecting the large-joint market. Consequently, we believe that our regression analysis of the large-joint market should simply be viewed as directional data rather than a definitive tool in assessing movement in this large market.

A quick primer on regression analysis: Correlation measures whether two events move together through time. As the correlation coefficient (or R) of the events moves closer to negative or positive 1, the events are more likely to move in the same or opposite directions. While correlation does not suggest causation, we believe signals of an improvement in unemployment and consumer confidence during a quarter may imply a recovery in the large-joint market. R^2 (or R^2) is the coefficient of determination and a proxy for the predictive value of a regression equation. We refer to both of these metrics in the following discussion on the results of our regression analysis of various portions of the large-joint market.

Replacement Knee Procedures

Knee replacement procedures have historically grown around 4%-5% each year as underlying demographics have supported increased surgical interventions. Growth levels have declined recently from these past averages, to 3%-4%, as unemployment increased. Our analysis has found that knee replacement procedures have a correlation coefficient of 0.71 with ADP data and -0.79 with BLS unemployment rates. While not perfectly correlated, and with a predictive R^2 value of 0.51, our analysis suggests that even in a bear-case scenario where ADP employment reverses its current trend and declines 3% on an easy comparison, knee-procedure growth would come in at the low end of the historical average (4.3%). Assuming the current trend continues and ADP remains unchanged from the previous year, knee procedures would grow at 5.3%. If employment trends accelerate materially, knee procedures may grow at an above-average rate of 6.3%.

Figure 5
2011 Orthopedic Outlook
Knee Procedure Growth vs. ADP Employment and BLS Unemployment Rate



Sources: ADP, BLS, and William Blair & Company, L.L.C. estimates

As mentioned previously, we believe that the regression output (in this case on knee volumes) may be a bit too optimistic, but we believe that monitoring the BLS unemployment data will provide investors with a general sense of the direction of replacement knee procedures given the high correlation seen between these two variables.

Table 7
2011 Orthopedic Outlook
Regression Output: Knee Procedure Growth

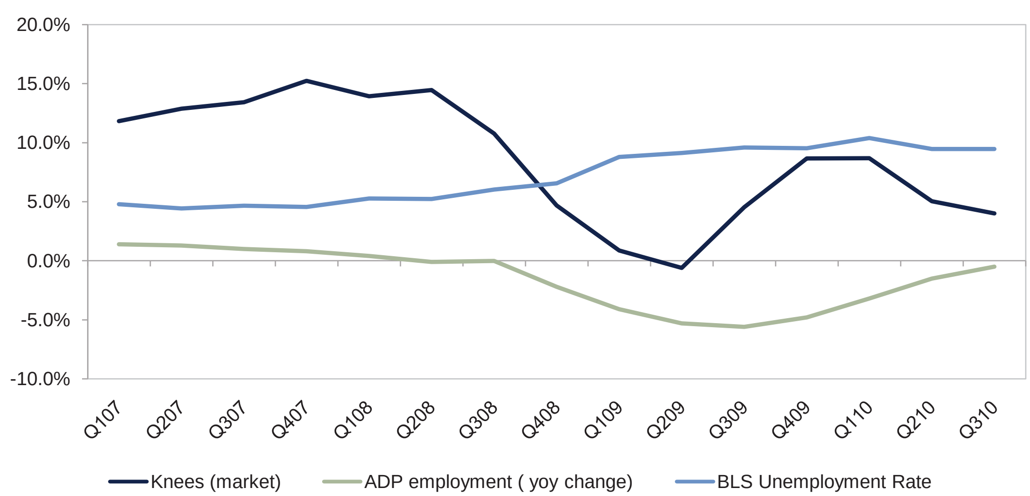
	BLS	Knee Procedures
Bear Scenario	-3%	4.3%
Base Case	0%	5.3%
Bull Scenario	3%	6.3%

Source: William Blair & Company, L.L.C. estimates

Replacement Knee Market

Looking into the broader market, the replacement knee market (total revenues) grew between 10% and 15% during 2007 and throughout most of 2008, as favorable mix, positive pricing, and volume increases drove strong growth. Since late 2008, growth in the knee market has slowed to 4.6% on average. The correlation coefficient for the replacement knee market growth to ADP and unemployment since 2007 has been 0.77 and -0.78 (with an R^2 of 0.69), respectively. Looking at the data with a one-quarter lag, consumer confidence has a strong correlation coefficient of 0.86 to market growth. Assuming consumer confidence does not change materially from the third-quarter average of 50.9, the regression formula delivers an expected market growth rate of 5.4%. That estimate, in our view, does not incorporate the deteriorating pricing environment or the more-challenging regulatory environment, which are both weighing on growth in the knee market but again represents another metric (consumer confidence) for investors to monitor when analyzing the replacement knee market.

Figure 6
2011 Orthopedic Outlook
Knee Market Growth vs. ADP Employment and BLS Unemployment Rate



Sources: ADP, BLS, and William Blair & Company, L.L.C. estimates

Table 8
2011 Orthopedic Outlook
Regression Output: Knee Market Growth

	CCI	Knee Market
Bear Scenario	40.0	3.7%
Base Case	50.0	5.4%
Bull Scenario	60.0	7.1%

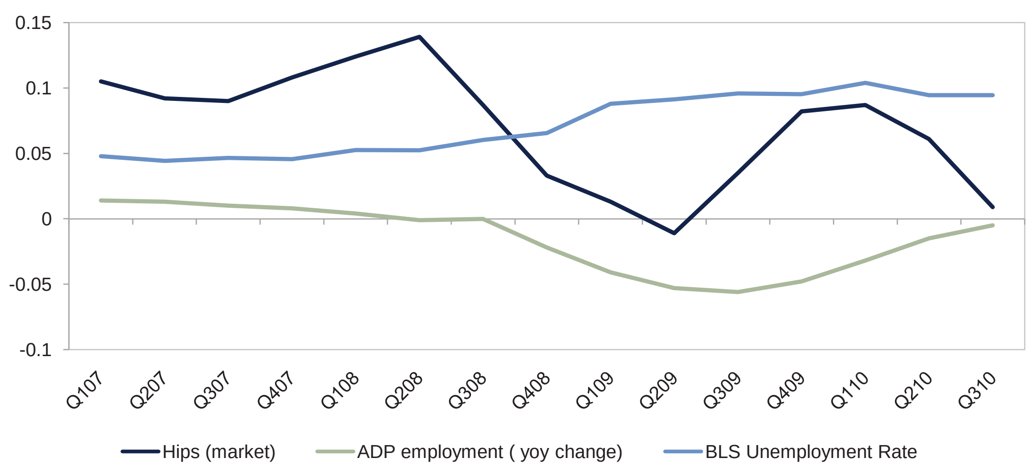
Source: William Blair & Company, L.L.C. estimates

Once again, we believe that these growth estimates are a bit too rosy, but sustained increases in this metric may signal an improvement in the knee market.

Hip Market

Moving into the hip market, which several years ago grew in the high-single to low-double digits but has decelerated to 4.5% growth since 2009. The correlation coefficient for market growth to ADP and unemployment since 2007 has been 0.64 and -0.65, respectively (we also regressed hip volumes on these variables but observed very low correlation among all of the metrics and have excluded them from our analysis). Further regression on ADP employment data estimates market growth at 5.3% during the year, given an employment slowdown of 3%. The regression formula yields that hip market growth may begin to approach historical levels above 8.7% simply from a stabilization of this metric.

Figure 7
2011 Orthopedic Outlook
Hip Market Growth vs. ADP Employment and BLS Unemployment Rate



Sources: ADP, BLS, and William Blair & Company, L.L.C. estimates

We believe that the output of this regression again highlights the relatively low predictive value of regression analysis on projecting changes in the large-joint growth, as it is likely much too optimistic on the impact of changes in ADP on growth in the hip market.

Table 9
2011 Orthopedic Outlook
Hip Market Growth

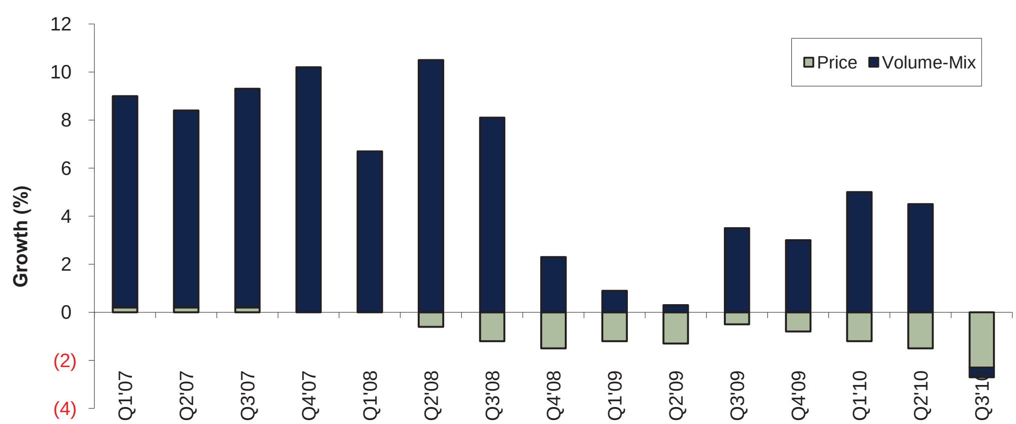
	ADP	Hip Market
Bear Scenario	-3%	5.3%
Base Case	0%	8.7%
Bull Scenario	3%	12.2%

Source: William Blair & Company, L.L.C. estimates

In summary, the economic regression analysis likely does not provide good visibility into the specific timing or magnitude of a recovery in the large-joint market, though ADP and unemployment may be helpful for assessing general movements in the space. We believe that the exercise was worthwhile because it demonstrates that projecting a recovery in these markets from quantitative analysis likely is directionally helpful, but is only one data point in the mosaic process to assess when the market will fully turn. Consequently, we will rely more heavily on our channel checks to forecast expected trends in the large joint market during 2011. On the volume side, our field sources indicated that they expect the number of procedures (primarily domestically) to tick higher this year, due to slight improvements in the unemployment rate, improved consumer confidence, and easy comparisons. In aggregate, we model worldwide hip and knee volume growth of 3.9% apiece during 2011.

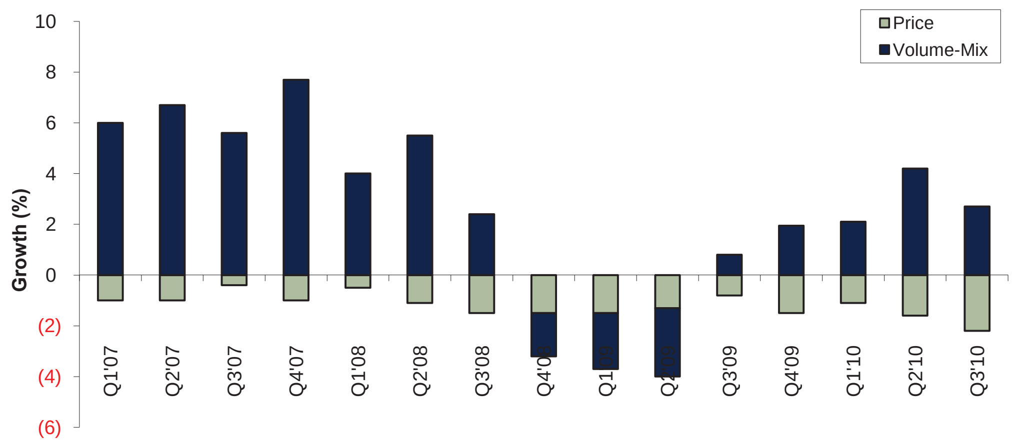
Many of the large-joint providers have stated that they expect pricing pressures to remain in the 1%-2% range on older-generation products during 2011. However, our channel checks indicate that pricing pressures will likely be more severe than that expected by the suppliers. We believe that Zimmer's third quarter 2010 results provide a bit of validation to our thesis, as pricing for the company was down 2.3% and 2.2% in knees and hips, respectively, as shown in figures 8 and 9,.

Figure 8
2011 Orthopedic Outlook
Zimmer Holdings: Historical Knee Price/Volume and Mix Trend



Source: Zimmer Holdings, Inc.

Figure 9
2011 Orthopedic Outlook
Zimmer Holdings: Historical Hip Price/Volume and Mix Trend



Source: Zimmer Holdings, Inc.

Consequently, we are increasing our expectation for pricing declines in both markets during 2011 by 100 basis points (now -2%) for the large-joint providers (both hips and knees).

Another issue affecting the overall large-joint market during 2010 was the negative mix shift experienced in the hip industry, associated with the migration away from metal-on-metal (MoM) systems due to the increased risk of metal ions associated with these products. While there has been no data demonstrating adverse clinical results associated with metal ions, many clinicians have decided to avoid the possibility of longer-term complications presenting by moving to other material types (namely metal-on-polyethylene [MoP]) in the hip systems they implant. MoP products are a lower ASP system than MoM (roughly $1,000 per implant), which we believe modestly affected mix during 2010. We believe this dynamic has largely played out at this point and that the opportunities exist to introduce new products (with improved wear features) that will continue to drive favorable mix in the coming years. For 2011, we model mix contributing 1% to growth, but believe the increasingly difficult regulatory environment may restrain the pace of new product introductions, which could pressure our estimates. Based on our analysis of the various components of the LJM (volume, price, and mix), we project the hip and knee markets growing by 3% each during 2011.

Within the large-joint market, we continue to favor Stryker, based on our channel checks, which indicate that the company will likely take some share in the hip market on the strength of two newer systems (Rejuvenate and Restoration) that it introduced last year. Furthermore, Stryker's diversified platform mitigates its exposure to the headwinds facing these markets. Zimmer, with roughly 75% of revenues from the sale of hip and knee products, is fully exposed to these deteriorating fundamentals, and we remain cautious on the name. Smith & Nephew continues to take share by our estimate, albeit modest, in the large-joint market, while we estimate Wright Medical will simply hold share in the coming years rather than capturing new accounts. Privately held Biomet continues to take some share, and we anticipate the company will remain a net gainer going forward.

Table 10
2011 Orthopedic Outlook
Worldwide Replacement Hip Revenue and Market Share Estimates
(in thousands)

	2005	2006	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Worldwide Hip Market Revenue	**$3,718,250**	**$4,008,200**	**$4,407,300**	**$4,835,758**	**$4,931,080**	**$5,125,768**	**$5,279,342**	**$5,442,543**	**$5,611,543**	**$5,786,579**	**$5,967,900**
		7.8%	*10.0%*	*9.7%*	*2.0%*	*3.9%*	*3.0%*	*3.1%*	*3.1%*	*3.1%*	*3.1%*
Market Participants - ($s)											
Zimmer	$1,140,200	$1,189,000	$1,220,820	$1,279,500	$1,228,300	$1,246,340	$1,282,104	$1,311,653	$1,346,770	$1,382,992	$1,420,360
Stryker	921,219	941,586	1,028,944	1,055,597	1,081,129	1,125,000	1,171,125	1,219,130	1,268,209	1,307,767	1,348,745
JNJ DePuy	807,910	897,621	1,019,607	1,111,979	1,160,692	1,218,761	1,241,924	1,268,113	1,313,101	1,359,846	1,402,456
Biomet	403,565	433,429	482,530	547,511	571,410	597,082	617,453	642,220	662,162	682,816	704,212
Smith & Nephew	295,706	378,000	469,000	648,000	665,000	686,167	699,982	712,973	740,724	763,828	787,763
Wright Medical	109,200	121,973	134,251	160,788	167,868	173,384	178,753	185,046	190,792	196,744	202,909
Other	40,450	46,592	52,148	32,382	56,681	79,034	88,001	103,408	89,785	92,585	101,454
Total	$3,718,250	$4,008,200	$4,407,300	$4,835,758	$4,931,080	$5,125,768	$5,279,342	$5,442,543	$5,611,543	$5,786,579	$5,967,900
Market Participants - (Market Share)											
Zimmer	30.7%	29.7%	27.7%	26.5%	24.9%	24.3%	24.3%	24.1%	24.0%	23.9%	23.8%
Stryker	24.8%	23.5%	23.3%	21.8%	21.9%	21.9%	22.2%	22.4%	22.6%	22.6%	22.6%
JNJ DePuy	21.7%	22.4%	23.1%	23.0%	23.5%	23.8%	23.5%	23.3%	23.4%	23.5%	23.5%
Biomet	10.9%	10.8%	10.9%	11.3%	11.6%	11.6%	11.7%	11.8%	11.8%	11.8%	11.8%
Smith & Nephew	8.0%	9.4%	10.6%	13.4%	13.5%	13.4%	13.3%	13.1%	13.2%	13.2%	13.2%
Wright Medical	2.9%	3.0%	3.0%	3.3%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%
Other	1.1%	1.2%	1.2%	0.7%	1.1%	1.5%	1.7%	1.9%	1.6%	1.6%	1.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

We expect Stryker will take share in the hip market in 2011 with two new systems reaching full commercial availability.

Sources: Industry sources and William Blair & Company, L.L.C. estimates

Table 11
2011 Orthopedic Outlook
Worldwide Replacement Knee Revenue and Market Share Estimates
(in thousands)

	2005	2006	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Worldwide Knee Market Revenue	**$4,421,810**	**$4,868,471**	**$5,436,950**	**$6,023,300**	**$6,164,400**	**$6,412,424**	**$6,606,172**	**$6,791,705**	**$6,968,548**	**$7,163,582**	**$7,365,107**
Growth		*10.1%*	*11.7%*	*10.8%*	*2.3%*	*4.0%*	*3.0%*	*2.8%*	*2.6%*	*2.8%*	*2.8%*
Market Participants - ($s)											
Zimmer	$1,366,700	$1,461,400	$1,635,880	$1,763,500	$1,760,200	$1,778,720	$1,828,591	$1,874,511	$1,916,351	$1,962,821	$2,010,674
Stryker	868,160	974,065	1,124,914	1,284,603	1,336,920	1,381,000	1,423,500	1,460,217	1,498,238	1,540,170	1,583,498
JNJ DePuy	1,067,760	1,151,284	1,237,309	1,279,821	1,292,321	1,353,784	1,404,544	1,426,258	1,477,332	1,525,843	1,576,133
Biomet	535,867	590,021	674,129	774,019	836,927	910,366	948,656	978,006	1,010,439	1,045,883	1,082,671
Smith & Nephew	402,422	506,000	568,000	718,000	729,000	776,765	808,422	821,796	836,226	859,630	883,813
Wright Medical	92,471	94,458	102,334	119,895	122,178	124,051	129,082	135,834	139,371	143,272	147,302
Other	88,430	91,243	94,383	83,462	86,854	87,737	63,377	95,084	90,591	85,963	81,016
Total	$4,421,810	$4,868,471	$5,436,950	$6,023,300	$6,164,400	$6,412,424	$6,606,172	$6,791,705	$6,968,548	$7,163,582	$7,365,107
Market Participants - (Market Share)											
Zimmer	30.9%	30.0%	30.1%	29.3%	28.6%	27.7%	27.7%	27.6%	27.5%	27.4%	27.3%
Stryker	19.6%	20.0%	20.7%	21.3%	21.7%	21.5%	21.5%	21.5%	21.5%	21.5%	21.5%
JNJ DePuy	24.1%	23.6%	22.8%	21.2%	21.0%	21.1%	21.3%	21.0%	21.2%	21.3%	21.4%
Biomet	12.1%	12.1%	12.4%	12.9%	13.6%	14.2%	14.4%	14.4%	14.5%	14.6%	14.7%
Smith & Nephew	9.1%	10.4%	10.4%	11.9%	11.8%	12.1%	12.2%	12.1%	12.0%	12.0%	12.0%
Wright Medical	2.1%	1.9%	1.9%	2.0%	2.0%	1.9%	2.0%	2.0%	2.0%	2.0%	2.0%
Other	2.0%	1.9%	1.7%	1.4%	1.4%	1.4%	1.0%	1.4%	1.3%	1.2%	1.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

We expect Biomet will continue its recent trend of capturing share in the knee market during 2011 on the strength of its Oxford partial and Vanguard knee systems.

Sources: Industry sources and William Blair & Company, L.L.C. estimates

Spine and Biologics

The combination of volume slowdowns and increased pricing pressure in 2010 resulted in relatively flat performance compared with 2009, making 2010 the toughest year in the spine and biologics market in recent history.

The fusion market (roughly 66% of the overall domestic spine implant industry) was particularly weak (we estimate down 7%), driven by a material reduction in the number of lumbar procedures performed, as well as increased pricing pressure. On the volume side, increased insurance scrutiny over which patients receive lumbar spinal fusion (those with nonspecific discogenic pain are now routinely denied payment for their procedures) has resulted in an estimated 10%-20% reduction in case volumes within this category. While some of these patients will eventually receive a fusion to relieve their chronic pain, we believe that a majority of these cases are permanently gone. As a result of this issue, along with the loss of COBRA insurance and the reluctance of patients to miss extended periods of work during this economic downturn, as shown in table 13, on page 22, we estimate a 10% reduction in the number of domestic lumbar procedures performed year-over-year (down to about 267,000).

Had volumes in the lumbar fusion market grown near historical rates (about 5%), roughly 44,000 additional procedures would have been performed, which we estimate would have added about $390 million in revenue to the overall spine market last year (about 460 additional basis points of growth to the worldwide spine and biologics market).

In addition, we believe the deteriorating pricing environment has driven lumbar implant ASPs down by an estimated 4.5% last year. We believe that mix offset the ASP declines by about 200 basis points during 2010 (for a net ASP reduction per case of 2.5%). For 2011, our channel checks indicated that they expect lumbar fusion volumes to recover slightly his year, and we model modest growth of 1.9% off an easy -10% comparison (with the market lapping the procedural downturn associated with insurance denials of patients with nonspecific discogenic back pain during the second half of 2011). Our channel checks expect pricing to remain depressed (we model it down 2.2% with some mix benefit). In total, we believe the lumbar fusion market will decline by 0.5% next year, to $2.3 billion.

Within the domestic lumbar fusion market, we anticipate that less disruptive techniques (including lateral fusion and TLIF) will be used more frequently during 2011. While we believe that NuVasive will remain the technology leader in this market in the coming years, our channel checks indicate that competitive trials of similar products from a number of newer competitors (Medtronic, DePuy, Globus Medical, and K2M) are ongoing and will likely affect the company's ability to capture meaningful share this year. Furthermore, a couple of our contacts have indicated that the pricing environment in the less disruptive lumbar segment is getting more competitive, which could drive ASPs lower. However, we believe that the rapid pace of innovation in this area will allow the providers to more than offset any pricing pressure on older-generation products. Longer term, we anticipate that as surgeons get used to performing less disruptive spinal surgery, they will seek out NuVasive and its full product portfolio to facilitate these procedures. For 2011, we forecast the less disruptive lumbar fusion products market at roughly $400 million, with NuVasive the market leader with about 75% share.

Volume growth on the cervical side of the fusion market remains healthy, in our opinion, and was up 5.7% during 2010 (roughly 260,000 cases performed). We believe that the spate of new cervical products released last year helped to mostly offset pricing pressures in the domestic cervical fusion market, but we believe that in total, price/mix was down 0.6%. For 2011, we believe that volumes in the cervical segment of the domestic fusion market will increase by 4.8% (up to $1.1 billion), with price/mix a 0.6% headwind.

Table 12
2011 Orthopedic Outlook
Worldwide Spine Market
(in thousands)

	2006	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Biologic Revenue	$1,280,988	$1,453,109	$1,638,872	$1,775,128	$1,706,195	$1,774,856	$1,883,655	$1,999,959	$2,129,863	$2,269,533
Growth		*13.4%*	*12.8%*	*8.3%*	*-3.9%*	*4.0%*	*6.1%*	*6.2%*	*6.5%*	*6.6%*
Total U.S. Spine Market Revenue	$4,017,719	$4,391,216	$4,815,441	$5,225,915	$5,137,852	$5,362,639	$5,676,393	$6,063,334	$6,414,569	$6,765,927
Growth		*9.3%*	*9.7%*	*8.5%*	*-1.7%*	*4.4%*	*5.9%*	*6.8%*	*5.8%*	*5.5%*
International Spine Market Revenue	$1,325,847	$1,449,101	$1,589,095	$1,672,293	$1,644,113	$1,716,045	$1,816,446	$1,940,267	$2,052,662	$2,165,097
Growth		*9.3%*	*9.7%*	*5.2%*	*-1.7%*	*4.4%*	*5.9%*	*6.8%*	*5.8%*	*5.5%*
Worldwide Spine and Biologics Market	**$6,624,555**	**$7,293,426**	**$8,043,409**	**$8,673,336**	**$8,488,160**	**$8,853,540**	**$9,376,495**	**$10,003,561**	**$10,597,094**	**$11,200,557**
Growth		*10.1%*	*10.3%*	*7.8%*	*-2.1%*	*4.3%*	*5.9%*	*6.7%*	*5.9%*	*5.7%*

Sources: Industry sources and William Blair & Company, L.L.C. estimates

Table 13
2011 Orthopedic Outlook
Domestic Thoracolumbar Spinal Fusion Market
(in thousands)

	2006	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Total thoracolumbar	223,575	246,813	272,388	297,000	267,444	272,501	281,997	293,578	305,636	318,193
Growth		*10.4%*	*10.4%*	*9.0%*	*-10.0%*	*1.9%*	*3.5%*	*4.1%*	*4.1%*	*4.1%*
Revenue per case (in 000s)	9.000	9.000	9.000	8.925	8.700	8.500	8.400	8.300	8.200	8.100
Total revenue (in 000s)	**$2,012,175**	**$2,221,313**	**$2,451,488**	**$2,650,725**	**$2,326,763**	**$2,316,261**	**$2,368,777**	**$2,436,694**	**$2,506,218**	**$2,577,364**
Growth		*10.4%*	*10.4%*	*8.1%*	*-12.2%*	*-0.5%*	*2.3%*	*2.9%*	*2.9%*	*2.8%*

Sources: Industry sources and William Blair & Company, L.L.C. estimates

Table 14
2011 Orthopedic Outlook
Domestic Cervical Spinal Fusion Market
(in thousands)

	2006	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Total Cervical Fusion Cases	182,925	201,938	222,863	243,000	256,956	269,251	281,997	293,578	305,636	318,193
Growth		*10.4%*	*10.4%*	*9.0%*	*5.7%*	*4.8%*	*4.7%*	*4.1%*	*4.1%*	*4.1%*
Revenue per case (in 000s)	4.200	4.200	4.200	4.200	4.175	4.150	4.125	4.100	4.075	4.050
Total revenue (in 000s)	**$768,285**	**$848,138**	**$936,023**	**$1,020,600**	**$1,072,791**	**$1,117,391**	**$1,163,239**	**$1,203,668**	**$1,245,468**	**$1,288,682**
Growth		*10.4%*	*10.4%*	*9.0%*	*5.1%*	*4.2%*	*4.1%*	*3.5%*	*3.5%*	*3.5%*

Sources: Industry sources and William Blair & Company, L.L.C. estimates

While reimbursement is challenging to obtain and physician payments for the procedures remain inadequate in the opinions of surgeons, we believe uptake of artificial discs accelerated during 2010. The main driver of this acceleration, according to our channel checks, is increased use of cervical discs. Longer-term data on these products have shown equivalent to superior results compared to fusion in certain patients, which is compelling more surgeons to use these devices. Furthermore, younger, more-active patients are demanding these cervical discs to preserve the motion in their upper spine. With a number of next-generation cervical products that incorporate surgeon-requested features (such as improved fixation to reduce the risk of device migration) expected in 2011, we believe that procedure growth in this category will remain strong (we model volume growth of 46% to more than 26,000). While we expect favorable mix shifts to offset pricing pressures in the space, we model the combination of these factors creating a negative 1% headwind for the space in the coming years. Despite this modest pressure, we model robust growth in the domestic cervical disc market during 2011 (up 44%, to $253 million) and in the coming years.

Table 15
2011 Orthopedic Outlook
Domestic Cervical Artifical Disc Market
(in thousands)

	2006	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
# of Cervical Cases	4,200	5,580	7,800	11,040	18,000	26,208	36,288	45,287	54,345	62,497
Growth		*32.9%*	*39.8%*	*41.5%*	*63.0%*	*45.6%*	*38.5%*	*24.8%*	*20.0%*	*15.0%*
Disc implanted per case	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1
Total implants	4,200	5,580	7,800	11,040	18,000	26,208	36,288	49,816	59,779	68,746
ASP per Disc	10.000	10.000	10.000	9.750	9.750	9.650	9.550	9.450	9.350	9.250
Total revenue (in 000s)	**$42,000**	**$55,800**	**$78,000**	**$107,640**	**$175,500**	**$252,907**	**$346,550**	**$470,763**	**$558,937**	**$635,903**
Growth			*39.8%*	*38.0%*	*63.0%*	*44.1%*	*37.0%*	*35.8%*	*18.7%*	*13.8%*

Sources: Industry sources and William Blair & Company, L.L.C. estimates

On the lumbar disc side, we believe growth in this segment of the domestic spine market was strong during 2010 (up 18.2%, to $64.5 million) but off a relatively small base. While the lumbar opportunity is significantly larger than cervical on a volume basis, we believe that utilization of discs in the lower region of the spine will be materially lower than in the upper region given the weight-bearing responsibilities in this segment of the spine. Consequently, we forecast lumbar artificial disc revenue of $169 million at the end of our projection period (2015), which is only about a quarter of the size of our cervical estimate ($636 million).

Table 16
2011 Orthopedic Outlook
Domestic Lumbar Artifical Disc Market
(in thousands)

	2006	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
# of Lumbar Cases	2,800	3,420	4,200	4,960	6,000	7,392	9,072	12,773	15,328	17,627
Growth		*22.1%*	*22.8%*	*18.1%*	*21.0%*	*23.2%*	*22.7%*	*40.8%*	*20.0%*	*15.0%*
Avg. Discs implanted per case	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total implants	2,800	3,420	4,200	4,960	6,000	7,392	9,072	12,773	15,328	17,627
ASP per Disc	11.500	11.250	11.000	11.000	10.750	10.500	10.250	10.000	9.800	9.600
Total revenue (in 000s)	**$32,200**	**$38,475**	**$46,200**	**$54,560**	**$64,500**	**$77,616**	**$92,988**	**$127,734**	**$150,215**	**$169,222**
Growth		*19.5%*	*20.1%*	*18.1%*	*18.2%*	*20.3%*	*19.8%*	*37.4%*	*17.6%*	*12.7%*

Sources: Industry sources and William Blair & Company, L.L.C. estimates

The treatment of spinal deformities is the second-largest segment of this market and represented, by our estimate, an $870 million domestic opportunity last year. With the incidence of adult scoliosis growing significantly recently, we believe that deformity volumes grew by 10.5% last year (up to almost 39,000 domestically). For 2011, we expect volumes in the deformity segment of the spine market to grow by 10%, with implant revenues per case steady at $22,500 for a total market opportunity of about $957 million. Given this sizable opportunity and profitability profile per case, many new competitors have entered this space recently (NuVasive and OrthoFix) to challenge the industry leader Medtronic. Consequently, we believe share in this segment will move around a bit in the coming quarters and that pricing in the market may weaken beginning in 2012.

Table 17
2011 Orthopedic Outlook
Domestic Spinal Deformity Market
(in thousands)

	2006	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Case volume	24,750	28,000	31,500	35,000	38,675	42,543	46,797	51,476	56,624	62,286
Revenue per case (in 000s)	22.500	22.500	22.500	22.500	22.500	22.500	22.250	22.000	21.750	21.500
Total revenue (in 000s)	**556,875**	**630,000**	**708,750**	**787,500**	**870,188**	**957,206**	**1,041,228**	**1,132,481**	**1,231,573**	**1,339,159**
Growth		*13.1%*	*12.5%*	*11.1%*	*10.5%*	*10.0%*	*8.8%*	*8.8%*	*8.7%*	*8.7%*

Sources: Industry sources and William Blair & Company, L.L.C. estimates

The treatment of vertebral compression fractures decelerated during 2010, as clinicians continued to question the utility of vertebroplasty, based on a negative article that appeared in the *New England Journal of Medicine* in mid-2009. Utilization of kyphoplasty also waned in response to this article, as referrals were affected by the article. With the American Association of Orthopedic Surgeons (AAOS) issuing guidelines recommending against the use of vertebroplasty and modestly recommending kyphoplasty in treating patients with vertebral compression fractures, we believe the market will likely continue to recede next year, though kyphoplasty will likely gain additional market share beyond the estimated 66% rate this year. Overall we anticipate this market will decline domestically by 1% during 2011 (to $452 million).

Table 18
2011 Orthopedic Outlook
Domestic Vertebral Compression Fracture Market
(in thousands)

	2006	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
# Vertebroplasty Cases	46,800	43,700	40,700	36,750	36,057	35,696	35,307	35,230	35,116	36,170
# Fractures per Case	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Total fractures treated	65,520	61,180	56,980	51,450	50,480	49,975	49,430	49,322	49,163	50,637
Revenue per Fracture	1.000	0.980	0.960	0.950	0.940	0.930	0.920	0.910	0.900	0.890
Total revenue (in 000s)	**$65,520**	**$59,956**	**$54,701**	**$48,878**	**$47,451**	**$46,477**	**$45,475**	**$44,883**	**$44,246**	**$45,067**
Growth		*-8.5%*	*-8.8%*	*-10.6%*	*-2.9%*	*-2.1%*	*-2.2%*	*-1.3%*	*-1.4%*	*1.9%*
# Kyphoplasty Cases	73,200	71,300	69,300	68,250	69,993	72,475	75,027	78,415	81,938	84,396
# Fractures per Case	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Total fractures treated	102,480	99,820	97,020	95,550	98,690	101,464	105,038	109,781	114,713	118,154
Revenue per Fracture	4.300	4.250	4.200	4.200	4.150	4.000	3.900	3.800	3.700	3.650
Total revenue (in 000s)	**$440,664**	**$424,235**	**$407,484**	**$401,310**	**$409,564**	**$405,858**	**$409,650**	**$417,166**	**$424,437**	**$431,262**
Growth		*-3.7%*	*-3.9%*	*-1.5%*	*2.1%*	*-0.9%*	*0.9%*	*1.8%*	*1.7%*	*1.6%*

Sources: Industry sources and William Blair & Company, L.L.C. estimates

We believe the worldwide market for biologics (with most sales in this category coming from utilization during spinal fusion procedures) was down 4% during 2010, due to the previously discussed volume weakness and a negative mix shift toward lower-priced stem-cell-based products. We believe that both NuVasive and Orthofix captured significant share in this category during 2010, due to increased clinical and regulatory scrutiny over the off-label usage of Medtronic's highly successful INFUSE. For 2011, as shown in the following table, we believe that the market for biologics will rebound and post 4% growth off an easy comparison (-4%).

While we forecast a rebound in biologic sales this year, it is actually lower than the recovery we project in the spine implant market (up 4.4% off a tougher comparison of -1.7%), as we anticipate that the shift toward lower-priced products such as NuVasive's Osteocel and Orthofix's Trinity Evolution will continue. Longer term, there are new biologic products in development that may have commercial appeal, but we do not anticipate that they will enter the domestic market for several years.

We expect Medtronic to maintain its leadership position in the global spine market but that the smaller providers such as NuVasive and Orthofix, along with a number of private companies (Globus, K2M, Lanx, LDR Spine, and Pioneer Surgical), will continue taking share through rapid new product introductions. While this may represent a compelling entry point for longer-term investors, we expect 2011 will represent another challenging year for spine names because the issues that adversely affected the space last year (insurance denials and pricing pressures) remain, and we recommend only opportunistic investment in the highly differentiated providers.

Table 19
2011 Orthopedic Outlook
Worldwide Biologics Market
(in millions)

	2005	2006	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Revenue											
Medtronic	$514	$666	$769	$845	$864	$854	$874	909	946	993	1,043
J&J DePuy	175	199	205	218	224	196	202	214	227	240	255
Synthes	115	133	153	188	210	178	185	196	208	221	234
Stryker	63	74	87	109	130	115	118	125	133	141	149
Biomet	48	55	53	52	53	47	48	51	54	58	61
Zimmer	34	40	44	49	58	51	52	55	59	62	66
Smith & Nephew	8	13	15	17	19	17	17	18	20	22	23
NuVasive	0	0	6	21	50	70	85	100	118	136	156
Globus	3	9	16	25	40	45	56	66	76	86	97
Orthofix	14	14	15	16	20	24	30	35	42	48	56
Other	70	80	90	100	108	110	107	112	118	124	130
Total Market	**$1,043**	**$1,281**	**$1,453**	**$1,639**	**$1,775**	**$1,706**	**$1,775**	**$1,884**	**$2,000**	**$2,130**	**$2,270**
Market Share											
Medtronic Sofamor Danek	49.2%	52.0%	52.9%	51.6%	48.7%	50.1%	49.3%	48.3%	47.3%	46.6%	45.9%
J&J DePuy	16.8%	15.5%	14.1%	13.3%	12.6%	11.5%	11.4%	11.4%	11.3%	11.3%	11.2%
Synthes	11.0%	10.3%	10.5%	11.4%	11.8%	10.4%	10.4%	10.4%	10.4%	10.4%	10.3%
Stryker	6.0%	5.8%	6.0%	6.7%	7.3%	6.7%	6.7%	6.6%	6.6%	6.6%	6.6%
Biomet	4.6%	4.3%	3.7%	3.1%	3.0%	2.8%	2.7%	2.7%	2.7%	2.7%	2.7%
Zimmer	3.2%	3.1%	3.0%	3.0%	3.2%	3.0%	2.9%	2.9%	2.9%	2.9%	2.9%
Smith & Nephew	0.7%	1.0%	1.0%	1.0%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
NuVasive	0.0%	0.0%	0.4%	1.3%	2.8%	4.1%	4.8%	5.3%	5.9%	6.4%	6.9%
Globus	0.3%	0.7%	1.1%	1.5%	2.3%	2.6%	3.2%	3.5%	3.8%	4.0%	4.3%
Orthofix	1.3%	1.1%	1.0%	1.0%	1.1%	1.4%	1.7%	1.9%	2.1%	2.3%	2.5%
Other	6.7%	6.2%	6.2%	6.1%	6.1%	6.4%	6.0%	5.9%	5.9%	5.8%	5.7%
Total Market	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Growth Rate											
Medtronic Sofamor Danek		29.6%	15.5%	10.0%	2.2%	-1.1%	2.3%	4.0%	4.0%	5.0%	5.0%
J&J DePuy		13.6%	3.2%	6.0%	3.0%	-12.5%	3.0%	6.0%	6.0%	6.0%	6.0%
Synthes		15.2%	15.1%	23.0%	12.0%	-15.2%	4.0%	6.0%	6.0%	6.0%	6.0%
Stryker		17.2%	18.5%	25.0%	19.2%	-12.0%	3.0%	6.0%	6.0%	6.0%	6.0%
Biomet		13.0%	-2.4%	-3.4%	2.3%	-11.0%	3.0%	6.0%	6.0%	6.0%	6.0%
Zimmer		19.7%	9.7%	11.4%	17.1%	-12.1%	3.0%	6.0%	6.0%	6.0%	6.0%
Smith & Nephew		66.7%	18.0%	15.3%	10.3%	-11.5%	3.0%	8.0%	8.0%	8.0%	8.0%
NuVasive		NA	NA	272.7%	139.3%	39.8%	21.2%	18.0%	18.0%	15.0%	15.0%
Globus		182.1%	86.4%	50.0%	62.6%	12.5%	25.0%	18.0%	15.0%	13.0%	13.0%
Orthofix		0.0%	7.1%	6.7%	25.0%	20.0%	25.0%	18.0%	18.0%	16.0%	15.0%
Other		14.3%	12.5%	11.1%	8.0%	1.9%	-3.0%	5.0%	5.0%	5.0%	5.0%
Total Market		**22.8%**	**13.4%**	**12.8%**	**8.3%**	**-3.9%**	**4.0%**	**6.1%**	**6.2%**	**6.5%**	**6.6%**

Sources: Industry sources and William Blair & Company, L.L.C. estimates

Trauma

We believe 2010 represented another solid year for the trauma market, with estimated growth at 5.4% (worldwide sales of $4.358 billion). While many of the traditional products in the market continue to sell well, the market has seen a subtle shift toward lower-profile devices and smaller-joint products. Our channel checks indicate this is because new auto safety standards, which include the use of more frontal and side air bags, have reduced the number of large injuries but led to more small-joint fractures. These injuries require a different type of product to treat; consequently, many of the market participants have been introducing these devices in recent years.

Our field checks indicate that Synthes continues to lead the way with these products, with some of the smallest and lowest-profile devices available. Given this steady new product flow, the company has been able to continue taking share in recent quarters (up to an estimated 47.6% in 2010), and we expect a similar trend next year (we model Synthes capturing another 40 basis points of share). While volumes in the trauma market are not overly economically sensitive, we believe there has been a deceleration over the past two years, as less people travel during economic downturns. We anticipate that volumes will accelerate modestly next year, though our channel checks indicate that pricing pressures are expected to increase modestly (though largely offset by favorable mix shifts). In total, as shown in table 20, we anticipate the worldwide trauma market will grow by 5.2% during 2011 (up to sales of $4.586 billion).

Table 20
2011 Orthopedic Outlook
Worldwide Trauma Market
(in millions)

	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Revenues									
Synthes	$1,650	$1,835	$1,950	$2,075	$2,200	$2,331	$2,471	$2,620	$2,777
Stryker	566	670	702	744	779	826	871	919	970
Smith & Nephew	376	421	425	442	460	478	497	517	538
Biomet	223	233	232	239	251	261	271	282	293
Zimmer	206	221	235	238	250	263	276	290	304
J&J DePuy	240	250	263	276	288	302	318	333	350
Other	300	315	330	345	359	375	392	409	428
Total Market	**$3,560**	**$3,946**	**$4,136**	**$4,358**	**$4,586**	**$4,836**	**$5,096**	**$5,371**	**$5,660**
Market Share									
Synthes	46.3%	46.5%	47.1%	47.6%	48.0%	48.2%	48.5%	48.8%	49.1%
Stryker	15.9%	17.0%	17.0%	17.1%	17.0%	17.1%	17.1%	17.1%	17.1%
Smith & Nephew	10.6%	10.7%	10.3%	10.1%	10.0%	9.9%	9.8%	9.6%	9.5%
Biomet	6.3%	5.9%	5.6%	5.5%	5.5%	5.4%	5.3%	5.2%	5.2%
Zimmer	5.8%	5.6%	5.7%	5.5%	5.5%	5.4%	5.4%	5.4%	5.4%
J&J DePuy	6.7%	6.3%	6.3%	6.3%	6.3%	6.3%	6.2%	6.2%	6.2%
Other	8.4%	8.0%	8.0%	7.9%	7.8%	7.8%	7.7%	7.6%	7.6%
Total Market	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Growth Rate									
Synthes	17.9%	11.2%	6.3%	6.4%	6.0%	6.0%	6.0%	6.0%	6.0%
Stryker	18.5%	18.4%	4.8%	6.0%	4.7%	6.0%	5.5%	5.5%	5.5%
Smith & Nephew	11.9%	12.0%	1.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Biomet	-8.6%	4.8%	-0.6%	2.9%	5.0%	4.0%	4.0%	4.0%	4.0%
Zimmer	5.1%	7.6%	5.9%	1.4%	5.3%	5.0%	5.0%	5.0%	5.0%
J&J DePuy	6.7%	4.2%	5.0%	5.0%	4.5%	5.0%	5.0%	5.0%	5.0%
Other	7.1%	5.0%	4.8%	4.5%	4.0%	4.5%	4.5%	4.5%	4.5%
Total Market	**12.7%**	**10.8%**	**4.8%**	**5.4%**	**5.2%**	**5.5%**	**5.4%**	**5.4%**	**5.4%**

Sources: Company filings, industry sources, and William Blair & Company, L.L.C. estimates

While we continue to like this market, it does not offer domestic equity investors much of an opportunity to invest in the sector; we believe Stryker represents the best option for investors, with its estimated 17.1% share of this market, but this represents only about 10% of its current sales. With roughly 48% market share, Synthes offers investors the best access to the worldwide trauma market, though the stock only trades on the Swiss Exchange. We are unaware of any potential public offerings of pure plays on this industry.

Sports Medicine

The sports medicine market (we define this as the surgical treatment of injuries caused by repetitive motion that wears down joint tendons or ligaments or caused by acute trauma to these tissues) maintained its reputation as a strong grower even during the global economic weakness experienced last year, with estimated growth of 9% in 2010 (up to $3.166 billion). A majority of the growth in this segment came from international markets, as domestic volumes were below historical levels (midsingle digits), likely because of a rise in unemployment. Looking into 2011, we anticipate that growth in the sports medicine market will remain in the upper-single digits, as we lap easy domestic comparisons and as international growth from Asia-Pacific bolsters the overall market. Still, our channel checks indicate that pricing pressures should remain in the low single digits and once again present a headwind for the sector this year.

We believe that the sports medicine market is an attractive area of the orthopedic market because the growth rate remains solid (high-single digits) and the potential for new innovation is material (as seen from ArthroCare and Arthrex). Our channel checks indicate that Arthrex remains the belle of the ball in the sports medicine industry and generated growth (we estimate 14%) well in excess of the overall market during 2010. New product introductions were the driver of the growth at Arthrex, according to our field checks, and we believe the company will remain a technology leader and share-taker. While we estimate that it has been a share donor in recent years (as shown in table 21), we believe that Smith & Nephew recaptured some share last year on the back of a strong flow of new products, although we believe this will be relatively short-lived; we forecast Arthrex will remain the dominant share gainer in the coming years because of its singular focus on this industry and steady flow of innovative new products.

For institutional investors, ArthroCare is a pure play on the sports medicine industry, although we believe that the stock is fully valued at current levels. In addition, ConMed generates roughly 38% of its revenue from this market. But the company has been a net share donor in recent years, and we do not believe that it will be able to recapture meaningful share.

Table 21
2011 Orthopedic Outlook
Worldwide Sports Medicine Market
(in millions)

	2004	2005	2006	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Revenues												
Smith & Nephew	$290	$417	$486	$592	$643	$647	$719	$755	$792	$832	$874	$917
J&J Mitek	282	323	340	405	454	508	538	572	601	631	662	695
Stryker	154	192	227	275	300	293	320	336	351	372	394	418
Arthrex	232	289	380	427	505	606	691	774	859	953	1,049	1,154
ConMed	207	210	226	264	282	271	282	293	305	317	330	343
ArthroCare	125	140	160	176	200	210	230	239	254	269	288	308
Biomet	98	101	105	102	115	122	124	128	136	144	153	162
Other	75	80	125	145	200	250	263	276	289	304	319	335
Total Market	**$1,463**	**$1,752**	**$2,049**	**$2,386**	**$2,698**	**$2,906**	**$3,166**	**$3,373**	**$3,586**	**$3,822**	**$4,068**	**$4,331**
Market Share												
Smith & Nephew	19.8%	23.8%	23.7%	24.8%	23.8%	22.3%	22.7%	22.4%	22.1%	21.8%	21.5%	21.2%
J&J Mitek	19.3%	18.4%	16.6%	17.0%	16.8%	17.5%	17.0%	17.0%	16.8%	16.5%	16.3%	16.1%
Stryker	10.5%	11.0%	11.1%	11.5%	11.1%	10.1%	10.1%	10.0%	9.8%	9.7%	9.7%	9.6%
Arthrex	15.9%	16.5%	18.5%	17.9%	18.7%	20.9%	21.8%	22.9%	23.9%	24.9%	25.8%	26.6%
ConMed	14.1%	12.0%	11.0%	11.1%	10.5%	9.3%	8.9%	8.7%	8.5%	8.3%	8.1%	7.9%
ArthroCare	8.5%	8.0%	7.8%	7.4%	7.4%	7.2%	7.3%	7.1%	7.1%	7.0%	7.1%	7.1%
Biomet	6.7%	5.8%	5.1%	4.3%	4.3%	4.2%	3.9%	3.8%	3.8%	3.8%	3.8%	3.7%
Other	5.1%	4.6%	6.1%	6.1%	7.4%	8.6%	8.3%	8.2%	8.1%	8.0%	7.8%	7.7%
Total Market	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Growth Rate												
Smith & Nephew		43.8%	16.5%	21.8%	8.6%	0.6%	11.1%	5.0%	5.0%	5.0%	5.0%	5.0%
J&J Mitek		14.5%	5.3%	19.1%	12.0%	8.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Stryker		24.7%	18.2%	21.2%	9.2%	-2.5%	9.3%	5.0%	5.0%	5.0%	5.0%	5.0%
Arthrex		24.4%	31.5%	12.4%	18.0%	20.0%	14.0%	12.0%	11.0%	11.0%	10.0%	10.0%
ConMed		1.6%	7.9%	16.5%	6.9%	-3.9%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
ArthroCare		12.0%	14.3%	9.8%	13.6%	5.1%	9.5%	4.2%	7.0%	7.0%	7.0%	7.0%
Biomet		2.9%	4.1%	-2.8%	12.6%	5.9%	2.2%	3.0%	6.0%	6.0%	6.0%	6.0%
Other		6.7%	56.3%	16.0%	37.9%	25.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Total Market		**19.7%**	**17.0%**	**16.4%**	**13.1%**	**7.7%**	**9.0%**	**6.5%**	**6.3%**	**6.6%**	**6.4%**	**6.5%**

Sources: Industry sources and William Blair & Company, L.L.C. estimates

Dental Implants

The dental implant market remained rather soft in 2010 despite easy comparisons, as an international lack of consumer confidence led to a slowdown in the number of procedures performed. In aggregate, as shown in table 22, on the following page, we believe that the dental implant market was up 3% last year (worldwide sales of $2.974 billion).

Looking into 2011, we believe that the sector is set up for a modest recovery, as comparisons appear manageable. Further, one of the industry leaders, Nobel Biocare, mentioned on its last conference call that it expected improvements in patient volumes during 2011, driven by stabilization in consumer confidence. In total, we forecast 5.1% growth (revenues of $3.125 billion) in the dental implant market during 2011. Over the longer term, we believe the dental implant market is an attractive area that should deliver high-single-digit growth, based on favorable patient demographics, limited pricing pressure (because of the cash pay model in the United States, although reimbursement is in place in international markets), and a favorable mix environment.

Both Straumann and Nobel Biocare offer excellent exposure within the dental implant market and are publicly traded, but not on U.S.-based exchanges. For investors looking for domestic exposure to this market, there is currently no pure play on the space. However, privately held BioHorizons has filed to go public. The timing of when the company reaches the public markets is uncertain at this point, but based on a number of SEC filings made in recent weeks, we believe BioHorizons is fairly close to starting the formal pricing process.

Through the first nine months of 2010, BioHorizons generated sales of $58.7 million, up 19%, compared with our overall market growth estimate of 3%; this implies that the company is taking share (primarily from the smaller providers, in our opinion). We believe that the company's unique Laser-Lok technology, which mitigates the loss of bone and tissue around the implant, is the main driver of BioHorizons' recent success. While we expect the company to capture only 10 to 20 basis points of share annually, given the size of the dental implant market, this should allow BioHorizons to generate double-digit top-line growth for several years.

Table 22
2011 Orthopedic Outlook
Worldwide Dental Implant Market
(in millions)

	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Revenues									
Nobel Biocare	$672	$641	$588	$594	$618	$661	$707	$757	$810
Straumann	504	549	532	543	570	610	652	698	747
DENTSPLY	237	259	258	272	288	308	330	353	378
Biomet	308	336	280	294	312	333	357	382	408
Zimmer	221	228	205	214	224	239	259	279	302
BioHorizons	56	69	69	79	87	95	105	115	127
Other	800	900	950	979	1,027	1,099	1,176	1,259	1,347
Total Market	**$2,798**	**$2,981**	**$2,882**	**$2,974**	**$3,125**	**$3,346**	**$3,586**	**$3,842**	**$4,117**
Market Share									
Nobel Biocare	24.0%	21.5%	20.4%	20.0%	19.8%	19.8%	19.7%	19.7%	19.7%
Straumann	18.0%	18.4%	18.5%	18.2%	18.2%	18.2%	18.2%	18.2%	18.1%
DENTSPLY	8.5%	8.7%	9.0%	9.1%	9.2%	9.2%	9.2%	9.2%	9.2%
Biomet	11.0%	11.3%	9.7%	9.9%	10.0%	10.0%	10.0%	9.9%	9.9%
Zimmer	7.9%	7.6%	7.1%	7.2%	7.2%	7.2%	7.2%	7.3%	7.3%
BioHorizons	2.0%	2.3%	2.4%	2.6%	2.8%	2.8%	2.9%	3.0%	3.1%
Other	28.6%	30.2%	33.0%	32.9%	32.9%	32.9%	32.8%	32.8%	32.7%
Total Market	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Growth Rate									
Nobel Biocare		-4.7%	-8.2%	1.0%	4.0%	7.0%	7.0%	7.0%	7.0%
Straumann		8.9%	-3.1%	2.0%	5.0%	7.0%	7.0%	7.0%	7.0%
DENTSPLY		9.3%	-0.4%	5.4%	5.9%	7.0%	7.0%	7.0%	7.0%
Biomet		8.9%	-16.5%	5.0%	6.0%	7.0%	7.0%	7.0%	7.0%
Zimmer		3.1%	-10.0%	4.4%	4.5%	7.0%	8.0%	8.0%	8.0%
BioHorizons		23.2%	0.0%	14.0%	10.0%	10.0%	10.0%	10.0%	10.0%
Other		12.5%	5.6%	3.0%	5.0%	7.0%	7.0%	7.0%	7.0%
Total Market		**6.5%**	**-3.3%**	**3.2%**	**5.1%**	**7.1%**	**7.2%**	**7.2%**	**7.2%**

[1] Data before 2007 uncomparable to future years.

Sources: Industry sources and William Blair & Company, L.L.C. estimates

Extremities

In addition to sports medicine and cervical artificial discs, another bright spot in the orthopedic industry during 2010 was extremity products (replacement shoulders, ankles, and elbows, to go along with fusion products). We estimate that this market will grow 10% once all of the numbers for 2010 are out in a few weeks, driven by robust uptake of replacement shoulder systems (both traditional and reverse) and ankle products.

Table 23
2011 Orthopedic Outlook
Worldwide Extremities Market
(in thousands)

	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Total Extremities Market	$760,995	$849,475	$937,063	$1,029,605	$1,118,377	$1,206,543	$1,301,647	$1,395,756	$1,497,288
Growth	*12.7%*	*11.6%*	*10.3%*	*9.9%*	*8.6%*	*7.9%*	*7.9%*	*7.2%*	*7.3%*

Sources: Industry sources and William Blair & Company, L.L.C. estimates

With a modest slowdown in the number of replacement hip and knee cases, orthopedic surgeons are increasingly turning their attention to performing shoulder and ankle procedures to augment their income. While these extremities procedures have been around for some time, the instrumentation and implants needed to perform these cases has gotten much better in recent years, which makes the procedures easier for the surgeon to perform and more repeatable (leading to improved outcomes for patients). As shown in table 24, we estimate that volumes in the shoulder replacement market grew 7.6% during 2010, and we model an increase of 7.2% this year.

Table 24
2011 Orthopedic Outlook
Worldwide Shoulder Volumes
(in thousands)

	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Partial	21,000	22,000	22,500	22,950	23,409	23,877	24,355	24,842	25,339
Total Standard Replacement	56,000	60,500	65,000	69,550	74,419	79,628	85,202	91,166	97,547
Total Reverse Replacement	18,000	21,500	25,000	28,500	31,920	35,112	38,623	42,486	46,734
Total Shoulder Volumes	95,000	104,000	112,500	121,000	129,748	138,617	148,180	158,493	169,620
Growth									
Partial	5.0%	4.8%	2.3%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Standard	8.7%	8.0%	7.4%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Reverse	24.1%	19.4%	16.3%	14.0%	12.0%	10.0%	10.0%	10.0%	10.0%
Total Shoulder Volume Growth	10.5%	9.5%	8.2%	7.6%	7.2%	6.8%	6.9%	7.0%	7.0%

Sources: Industry sources and William Blair & Company, L.L.C. estimates

It is important to note that within the shoulder replacement industry, our channel checks indicate that the number of reverse procedures (for patients with a corresponding rotator cuff tear) performed has increased at a faster rate than other cases, which results in a favorable mix shift for the overall market, as these products are priced much higher than traditional or hemi systems. Consequently, as shown in table 25, on the following page, we estimate implant pricing for the shoulder market was up 2% last year (there is pricing pressure in this sector like virtually all other segments of the orthopedic industry). We expect ASPs will increase slightly during 2011 as the favorable mix shift toward higher-priced reverse shoulder systems continues. In aggregate, we believe that this market will continue to deliver among the best growth rates in all of orthopedics and model it to increase by 8% this year.

Table 25
2011 Orthopedic Outlook
Worldwide Replacement Shoulder Market
(in thousands, except ASPs)

	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Partial	21,000	22,000	22,500	22,950	23,409	23,877	24,355	24,842	25,339
Total Standard Replacement	56,000	60,500	65,000	69,550	74,419	79,628	85,202	91,166	97,547
Total Reverse Replacement	18,000	21,500	25,000	28,500	31,920	35,112	38,623	42,486	46,734
Total Shoulder Volumes	95,000	104,000	112,500	121,000	129,748	138,617	148,180	158,493	169,620
Shoulders Market Share									
Johnson & Johnson	34.0%	33.5%	32.0%	31.0%	30.0%	29.5%	29.0%	28.5%	28.0%
Tornier	19.0%	20.0%	21.0%	22.0%	23.0%	24.0%	25.0%	26.0%	27.0%
Zimmer	19.5%	20.0%	20.5%	21.0%	21.0%	21.0%	21.0%	21.0%	21.0%
Biomet	18.0%	17.5%	17.0%	16.5%	16.0%	15.5%	15.0%	15.0%	14.5%
DJO Incorporated	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Exactech	3.5%	4.0%	4.5%	4.5%	5.0%	5.0%	5.5%	5.5%	5.5%
Other	3.0%	2.0%	2.0%	2.0%	2.0%	2.0%	1.5%	1.0%	1.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Shoulders Market Share - Procedures									
Johnson & Johnson	32,300	34,840	36,000	37,510	38,924	40,892	42,972	45,171	47,494
Tornier	18,050	20,800	23,625	26,620	29,842	33,268	37,045	41,208	45,797
Zimmer	18,525	20,800	23,063	25,410	27,247	29,110	31,118	33,284	35,620
Biomet	17,100	18,200	19,125	19,965	20,760	21,486	22,227	23,774	24,595
Encore Medical	2,850	3,120	3,375	3,630	3,892	4,159	4,445	4,755	5,089
Exactech	3,325	4,160	5,063	5,445	6,487	6,931	8,150	8,717	9,329
Other	2,850	2,080	2,250	2,420	2,595	2,772	2,223	1,585	1,696
Total	95,000	104,000	112,500	121,000	129,748	138,617	148,180	158,493	169,620
Average selling price (ASP)	$4,800	$4,900	$5,000	$5,100	$5,150	$5,200	$5,250	$5,250	$5,250
Total Shoulder Revenue	**$456,000**	**$509,600**	**$562,500**	**$617,100**	**$668,200**	**$720,808**	**$777,943**	**$832,089**	**$890,506**
Growth	*12.8%*	*11.8%*	*10.4%*	*9.7%*	*8.3%*	*7.9%*	*7.9%*	*7.0%*	*7.0%*

Sources: Industry sources and William Blair & Company, L.L.C. estimates

The second sizable component of the extremities market is in the sale of ankle replacement and fusion products, which we estimate grew quickly on a volume basis (up 8.5%) during 2010. Within this segment of the extremities market, we believe that sales of total replacement systems grew the quickest (up 18%) last year, though off of a relatively small base (3,800 procedures in 2009). While total ankle replacement procedures have historically been reserved for patients with low activity levels, our channel checks indicate that younger individuals looking to retain more motion in this joint are increasingly demanding these products. Furthermore, with the recent improvements in the implant technology and insertion tools, surgeons are increasingly comfortable performing these cases and confident in the outcomes for their patients. We believe that volume growth in these systems will remain in the high teens for several years.

With the forces and load placed on the ankle joint, along with the favorable demographic movements in the older population, we believe growth in the ankle and hindfoot fusion markets will remain strong in the coming years (upper-single digits).

Table 26
2011 Orthopedic Outlook
Worldwide Ankle and Hindfoot Volumes
(in thousands)

	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Hindfoot fusion	58,000	63,000	68,000	73,440	78,581	84,081	89,967	96,265	103,003
Ankle fusion	12,000	13,500	14,750	16,004	17,284	18,667	20,067	21,471	22,974
Ankle replacement	2,650	3,200	3,800	4,484	5,246	6,086	6,999	7,908	8,936
Foot and Ankle	72,650	79,700	86,550	93,928	101,111	108,834	117,032	125,645	134,914
Growth									
Hindfoot	9.4%	8.6%	7.9%	8.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Ankle fusion	14.3%	12.5%	9.3%	8.5%	8.0%	8.0%	7.5%	7.0%	7.0%
Ankle replacement	23.3%	20.8%	18.8%	18.0%	17.0%	16.0%	15.0%	13.0%	13.0%
Total Growth	*10.7%*	*9.7%*	*8.6%*	*8.5%*	*7.6%*	*7.6%*	*7.5%*	*7.4%*	*7.4%*

Sources: Industry sources and William Blair & Company, L.L.C. estimates

Growth in elbow replacements has also been strong in recent years (up double digits in each of the past three years) but off a relatively low base. We do not anticipate elbow replacement will be a meaningful contributor to growth in the extremities markets in the coming years but do believe that shoulder and ankle/hindfoot are large enough to drive considerable growth in this category.

Data on market shares in the extremities market is difficult to obtain as the largest competitors (J&J DePuy, Tornier, Wright Medical, and Zimmer) often group their trauma and extremities results into a single category. However, as shown in table 27, on the following page, we believe that Johnson & Johnson's DePuy business is the market leader in this industry with roughly 27.5% share.

While we estimate DePuy is the leader in this fast-growing market, we believe that privately held Tornier has been quickly gaining share in recent years, due to its singular focus on this area and its consistent stream of new products. Tornier has filed to go public, but the timing of when it will be public is uncertain. In addition to Tornier, we believe that both Wright Medical and Zimmer have been capturing share in the extremities market. In terms of Wright Medical, the company does not offer a shoulder replacement system but has, in our view, the broadest ankle and hindfoot offering available. The company has introduced a number of innovative new products in recent years and, importantly, made inserting these devices considerably easier than older-generation products. We believe these new features have allowed Wright to capture significant share in the ankle and hindfoot market, which boosts its presence in the overall extremities industry.

Table 27
2011 Orthopedic Outlook
Worldwide Extremities Market Share
(in thousands)

	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
J&J DePuy	$229,143,000	$250,455,850	$264,819,000	$282,997,966	$298,739,906	$316,465,994	$335,145,938	$354,748,856	$375,621,469
Tornier	140,027,800	164,276,550	190,089,750	218,583,142	246,122,194	274,778,319	306,157,951	338,687,137	374,292,770
Wright Medical	63,603,050	72,343,475	79,906,500	89,858,737	98,303,658	108,055,827	116,513,845	127,380,663	136,811,065
Zimmer	96,322,200	110,034,100	124,181,250	139,278,986	150,666,318	162,410,225	175,146,167	187,182,558	200,445,579
Other	231,898,950	252,365,025	278,066,000	298,886,081	324,544,543	344,832,847	368,683,061	387,756,449	410,116,754
	$760,995,000	$849,475,000	$937,062,500	$1,029,604,913	$1,118,376,619	$1,206,543,213	$1,301,646,962	$1,395,755,663	$1,497,287,637
Market Share									
J&J DePuy	30.1%	29.5%	28.3%	27.5%	26.7%	26.2%	25.7%	25.4%	25.1%
Tornier	18.4%	19.3%	20.3%	21.2%	22.0%	22.8%	23.5%	24.3%	25.0%
Wright Medical	8.4%	8.5%	8.5%	8.7%	8.8%	9.0%	9.0%	9.1%	9.1%
Zimmer	12.7%	13.0%	13.3%	13.5%	13.5%	13.5%	13.5%	13.4%	13.4%
Other	30.5%	29.7%	29.7%	29.0%	29.0%	28.6%	28.3%	27.8%	27.4%

Sources: Industry sources and William Blair & Company, L.L.C. estimates

Zimmer does not have a foot and ankle offering, but it sells both traditional and reverse shoulder systems. As shown in table 27, we believe that Zimmer has been taking a modest amount of share in the overall extremities market through strong growth in the sale of its shoulder systems to its existing surgeon base, which is one of the largest in all of orthopedics. While Zimmer has said that it is pursuing the foot and ankle market through internal development efforts, we do not expect that these products will be commercialized for a couple of years. However, we believe Zimmer will continue to take modest amounts of share in the extremities markets in the coming quarters by selling to its existing surgeon base.

Craniomaxillofacial (CMF)

With the United States announcing its intent to withdraw all of its troops in Iraq by the end of 2011 and a large portion from Afghanistan over the same time frame, we believe the market for CMF products (which can be tied to the number of global conflicts) will decline modestly during 2011, following several strong years of growth. We forecast worldwide sales in this category at $892 million (up 5.3%) during 2011.

Within this industry, we expect Synthes to remain the market leader and for it to even capture a modest amount of share this year (up to 38.5%). Synthes continues to introduce innovative new products that carry a smaller profile and provide good outcomes for patients. With its late 2010 acquisition of privately held Porex, Stryker signaled that it would like to increase its presence in the CMF market, and we anticipate a modest improvement in the company's estimated 27% share position at the end of last year. However, we believe that capturing organic share from Synthes and the other competitors in the category will remain challenging for Stryker and, as shown in table 28, we believe that market share will be sticky in the CMF industry in the coming years.

Table 28
2011 Orthopedic Outlook
Worldwide CMF Market Share
(in thousands)

	2004	2005	2006	2007	2008	2009	2010E	2011E	2012E	2013E	2014E	2015E
Revenues												
Stryker	$115	$129	$150	$175	$203	$219	$226	$239	$252	$266	$281	$296
Synthes	145	165	195	230	270	300	324	343	362	382	403	425
DePuy	66	74	82	90	98	105	112	119	125	132	139	147
Biomet	55	60	65	70	75	80	85	89	93	99	104	110
Other	70	75	80	85	90	95	100	102	106	111	115	120
Total Market	**$451**	**$503**	**$572**	**$650**	**$736**	**$799**	**$847**	**$892**	**$939**	**$989**	**$1,042**	**$1,098**
Market Share												
Stryker	25.5%	25.7%	26.2%	27.0%	27.6%	27.4%	26.7%	26.8%	26.8%	26.9%	26.9%	27.0%
Synthes	32.2%	32.8%	34.1%	35.4%	36.7%	37.6%	38.3%	38.5%	38.6%	38.6%	38.7%	38.8%
DePuy	14.6%	14.7%	14.3%	13.8%	13.3%	13.1%	13.3%	13.3%	13.3%	13.3%	13.4%	13.4%
Biomet	12.2%	11.9%	11.4%	10.8%	10.2%	10.0%	10.0%	9.9%	10.0%	10.0%	10.0%	10.0%
Other	15.5%	14.9%	14.0%	13.1%	12.2%	11.9%	11.8%	11.5%	11.3%	11.2%	11.0%	10.9%
Total Market	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Growth Rate												
Stryker		12.4%	16.2%	16.7%	15.7%	7.8%	3.4%	5.8%	5.5%	5.5%	5.5%	5.5%
Synthes		13.8%	18.2%	17.9%	17.4%	11.1%	8.0%	6.0%	5.5%	5.5%	5.5%	5.5%
DePuy		12.1%	10.8%	9.8%	8.9%	7.1%	7.0%	5.5%	5.5%	5.5%	5.5%	5.5%
Biomet		9.1%	8.3%	7.7%	7.1%	6.7%	6.0%	4.5%	5.5%	5.5%	5.5%	5.5%
Other		7.1%	6.7%	6.3%	5.9%	5.6%	5.0%	2.5%	4.0%	4.0%	4.0%	4.0%
Total Market		**11.6%**	**13.7%**	**13.6%**	**13.1%**	**8.5%**	**6.1%**	**5.3%**	**5.3%**	**5.3%**	**5.3%**	**5.3%**

Sources: Industry sources and William Blair & Company, L.L.C. estimates

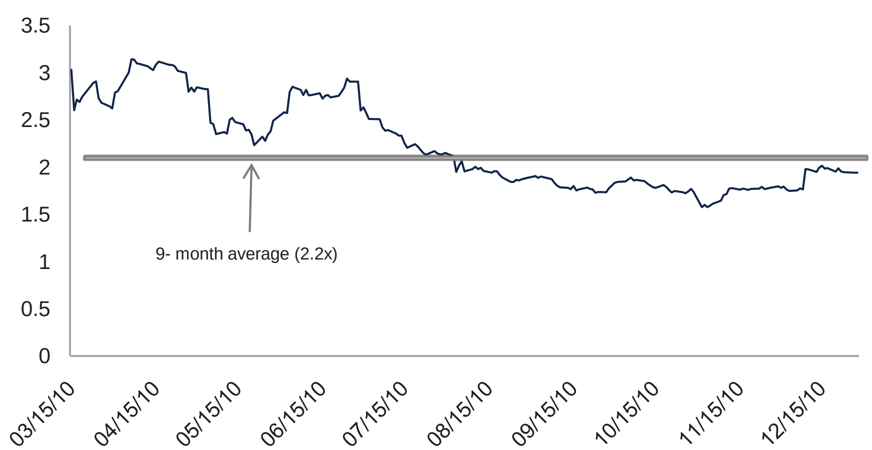
Companies Under Coverage — 2011 Outlook and Valuation

Among the six orthopedic names that we currently cover (ArthroCare, Stryker, Symmetry, NuVasive, Wright Medical, and Zimmer), our top pick for 2011 is Stryker, based on the company's diversified platform, operating margin expansion opportunity, and sizable cash position (even after its recent string of acquisitions and new share-repurchase program). We believe the company will be able to generate double-digit EPS growth, even with our projected slowdown in the large-joint market. We maintain favorable biases on ArthroCare, NuVasive, and Wright Medical but will wait for stabilization in some of their end-markets or better entry points before becoming more constructive.

ArthroCare Corporation

ArthroCare represents the best pure play on the large and rapidly growing sports medicine industry (we estimate it at $3.166 billion, up 9% last year), in our view. However, even though the company is introducing a number of new products, we believe that upside to our revenue estimates (specifically sports medicine, which is about 65% of sales) is limited as it would require ArthroCare to take more share in the market than it has in recent years. We are not changing our estimates at this time, but believe that with the stock up 31% last year and at 25 times our 2011 EPS target of $1.24, shares of ArthroCare trade at more than a 65% premium to a group of similar growth medical technology companies. Further, as shown in figure 10, while the stock is trading below its nine-month-forward relative P/E multiple (data before this time frame is unavailable as shares of ArthroCare were relisted at the beginning of 2010), it still receives a healthy premium to the overall market, which we believe fully values the company.

Figure 10
2011 Orthopedic Outlook
ArthroCare Corporation Forward Price-to-Earnings Multiple Relative to the S&P



Historical P/E data on ArthroCare is fairly limited given minimal research coverage
Source: Thomson Reuters

We believe that the stock is also already pricing in the resolution of its outstanding litigation and investigations, which our analysis of similar situations indicates may be finished by the end of this year. We believe a common thesis among investors is that once the litigation and investigations are complete, the company will put itself up for sale—ArthroCare had previously explored strategic options in March 2008 during its internal accounting review—driving the stock price much higher. However, the stock has lifted almost 20% since a modest amount of progress on the litigation was reported during the company's third-quarter conference call and insiders purchased shares on the open market. We believe that investors interpreted these events as movement on the resolution of the litigation and the stock now reflects this to some extent.

With respect to the takeout speculation following resolution of the litigation and investigations, we agree that ArthroCare is a unique asset, based on its sizable positions within sports medicine and ear, nose, and throat markets. Johnson & Johnson, in our view, might be the most likely acquirer, as ArthroCare would bolster its position in the sports medicine industry and add a new line of products in ENT, where it recently purchased chronic sinusitis manufacturer Acclarent. Furthermore, Smith & Nephew may want to defensively protect its access to its key radiofrequency ablation product supplier, or privately held Arthrex or Medtronic may lob in bids. However, with our analysis indicating that the litigation and investigations will likely last until the end of 2011, we believe that a buyer will likely wait until these liabilities are lifted before starting a formal acquisition process. In addition, with several key coblation patents expiring at the end of 2014 and a number of relatively commoditized anchor and suture products in the portfolio, we believe buyers may be frightened away by the prospect of meaningful share loss and pricing pressure in the industry, following the expiration of this intellectual property in only a few years. Consequently, we have a difficult time recommending this premium valuation name simply on the basis of an expected takeout and rate the stock Market Perform.

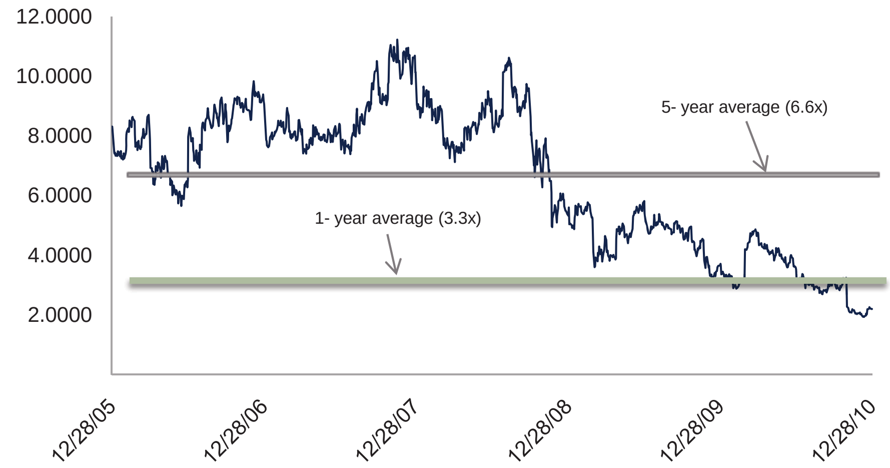
NuVasive, Inc.

While we acknowledge the inexpensive valuation compared with its historical sales multiple and believe risk-tolerant investors should start positions in NuVasive at these levels, we remain cautious on the name for two reasons. First, with the pressures on the lumbar fusion market (insurance denials lowering procedure volumes and pricing pressures) likely to persist during 2011 and NuVasive generating roughly 60% of its expected revenue from products sold into this area, we believe that the expectation of relatively flat performance in this segment of the business may be modestly at risk. In addition, with the 10%-20% revenue growth guidance that management has provided for 2011 dependent upon strong performance in areas where NuVasive has not been historically strong (cervical, biologics, and international), we believe that reaching the high end of the range will be difficult.

The second reason for our caution on the name is concern over the impact of the recent slowdown in the spine market on the company's aggressive salesforce. With the number of procedures available falling due to the increased rate of insurance denials, meeting quarterly quotas may become increasingly difficult for this group and result in turnover in the sales organization. With what view as one of the best management teams in medical technology, we believe NuVasive will attempt to keep this unit cohesive through various incentives; however, we have witnessed a pattern of defections within the device space historically when growth decelerates, and we would not be surprised if this occurs in the coming months. We believe that for a majority of the salesforce moving to another organization for the same level of compensation will be difficult, but we anticipate that some of the best performers will get offers to lead the same function at other fast-growing companies (including spine providers, as well as other medical technology companies). We believe investors should closely monitor NuVasive's salesforce turnover rates in the coming quarter for signs of dislocation in this key group. If turnover in the salesforce does not occur, we believe it may signal a stabilization of the lumbar spine market and solid progress in several of NuVasive's new growth areas (cervical and biologics), which would be a favorable sign for the story.

From a valuation perspective, as shown in figure 11, on the following page, NuVasive is trading well below its historical one- and five-year enterprise value-to-sales multiples, which may be a compelling entry point if the spine market were to reaccelerate sooner than expected.

Figure 11
2011 Orthopedic Outlook
NuVasive Trailing-12-Months' Price-to-Sales Multiple



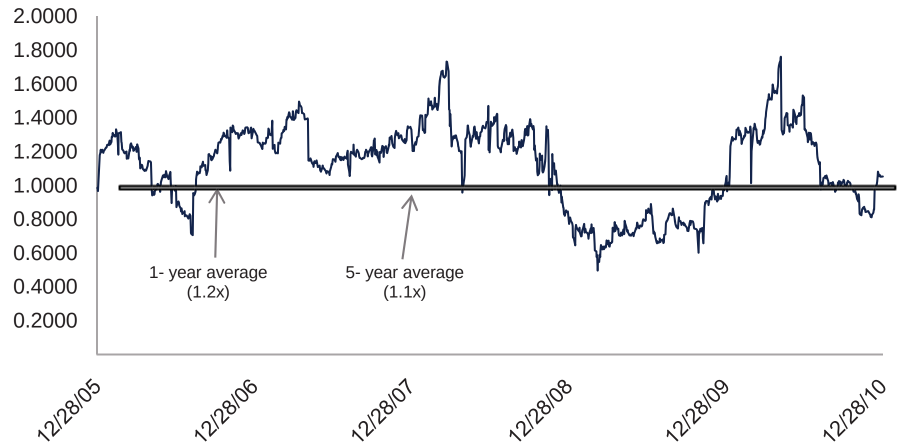
Source: Thomson Reuters

We believe that risk-tolerant investors should start positions at these depressed levels, but we will wait for increased visibility into stabilization in the spine market and steadiness in the salesforce before becoming more constructive on the name. We rate the stock Market Perform.

Symmetry Medical Inc.
Symmetry Medical represents a complex story, as there are a number of moving pieces that should both hurt and help the company in the coming months. On the negative side, our channel checks indicate that instrumentation used during replacement joint and spine procedures is being used longer than normal by the manufacturers to offset the increasing costs of these products that they are forced to bear. This results in a longer replacement cycle for these instruments and consequently hurts the contract manufacturers such as Symmetry. Furthermore, our field checks indicate that pricing in the industry is under increased pressure because the large orthopedic companies are attempting to offset the ASP declines they are seeing from hospitals by obtaining pricing concessions from their suppliers. This activity should help the orthopedic companies (Stryker and Zimmer) maintain their margins but hurt the contract manufacturers, including Symmetry. We believe that both of these trends are near-term issues that will negatively affect the company during 2011.

On the positive side (though likely a bit of a longer-term trend) is industry consolidation, which should yield new business for Symmetry. Increased regulatory requirements have prompted orthopedic companies to demand significant improvements in the quality and regulatory functions of its suppliers, which is a significant undertaking that requires large investments in infrastructure and new technology that many of the smaller contract manufacturers simply cannot afford. Consequently, we believe that several smaller players will be absorbed by the larger providers or simply exit the business, which should open up market share; we expect Symmetry to capture a meaningful portion. As shown in figure 12, shares of Symmetry trade in line with its one- and five-year relative average (compared to the S&P 500), which we view as fully valued and leads us to maintain our Market Perform rating.

Figure 12
2011 Orthopedic Outlook
Symmetry Medical Forward Price-to-Earnings Multiple Relative to the S&P



Source: Thomson Reuters

Stryker Corporation

While we expect Stryker will continue to take share in hip market during 2011, based on the strength of its two new systems, as well as maintain its position in the knee market, our expectations for a slowdown in both categories force us to lower our estimates on the company this year. We are lowering our revenue target for Stryker by $65 million (now $7.758 billion, up 6.7% constant currency). We note that our current revenue target does not include any sales from the pending neurovascular acquisition (currently a unit of Boston Scientific) that the company announced in late October 2010. We are maintaining our gross and operating margin estimate for Stryker, as our channel checks indicate that the company is successfully working its suppliers for cost concessions, which should offset the pricing pressures that the company is facing in the large-joint market. We are lowering our 2011 EPS target by $0.02 (now $3.70, up 12%) to account for the expected revenue base, but note that upside to this estimate may exist through the $840 million worth of share repurchases still authorized under two different programs.

Despite reducing our estimates on the company, Stryker remains our favorite pick in the orthopedic industry, given its diversified platform, operating margin expansion opportunities, and strong balance sheet (roughly $4.5 billion in cash before the neurovascular acquisition, $1 billion in debt, and annual free cash flow of about $1.2 billion). While certainly exposed to the issues facing the large-joint and spine markets, only about 40% of revenues are generated from the sale of these implants. We expect the company's diversified portfolio, with sizable trauma, extremities, and med-surg businesses, will allow Stryker to better weather economic downturns and deliver steadier midsingle-digit top-line growth than companies that are singularly focused on specific segments of the orthopedic industry.

As shown in table 29, on the following page, Stryker maintains a much lower operating margin than its closest competitor, Zimmer.

Table 29
2011 Orthopedic Outlook
Comparison: Profitability of Stryker and Zimmer

	Stryker	**Zimmer**
Sales (in millions)	$1,768	$965
Gross Margin	69.4%	77.3%
SG&A (% of revenue)	37.8%	43.2%
R&D (% of revenue)	5.6%	6.0%
Operating Margin	25.3%	28.1%
Tax Rate	27.6%	25.8%
Net Margin	17.9%	19.8%

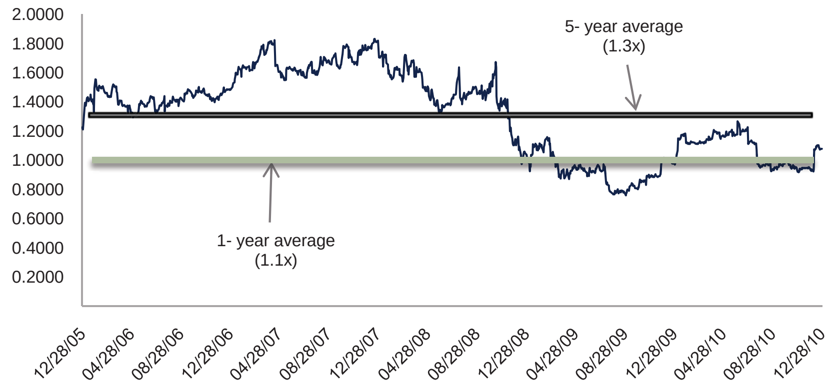
September quarter-end results, except Biomet, which has an August quarter-end
Source: SEC filings

While a component of this lower operating margin is related to the lower-profit medical-surgical business that makes up about 43% of sales, we believe the opportunity exists to drive this key metric higher in the coming quarters. We expect that a majority of operating margin improvement will come from driving its SG&A as a percentage of revenue lower as the company tightly controls costs. In addition, while not critical to the operating margin improvement story, our channel checks indicate that the neurovascular business the company is in the process of acquiring carries gross margins in the mid-80s percent range and operating margins in the mid-30s percent range. This should also help Stryker's profitability profile, even if additional investment is needed in R&D in this potentially new business. We model Stryker delivering 60 basis points of operating margin improvement during 2011 (up to 25.7%) and believe that the company will continue to leverage this key metric by about the same amount in the coming years. Stryker also pays a higher tax rate than its smaller competitor (27.6% in the third quarter compared to 25.3%), which may provide another mechanism to drive earnings growth in the coming years.

Lastly, on the cash side, even if Stryker completes the neurovascular acquisition for a purchase price of $1.5 billion, that would still leave the company with about $3 billion in cash and $1 billion in debt. We anticipate that the company will remain acquisitive in the coming quarters but would not be surprised if it pauses to fully integrate its recent spate of acquisitions. With roughly $840 million in share repurchases authorized, we expect Stryker will use its cash flows over the next three quarters (fourth quarter 2010 through second quarter 2011) to buy back its stock (though our model does not currently incorporate a lower share count). While the shares of Stryker do trade at a premium valuation (compared to other large cap orthopedic names) of 14.6 times our revised 2011 EPS target of $3.70 (up 12%), as shown in figure 13, they trade in line relative to the S&P 500 and below its five-year historical average, which represent a compelling entry point, in our view.

With a number of levers to pull to deliver steady, double-digit earnings growth, we encourage investors to start or build positions in this name and rate the stock Outperform.

Figure 13
2011 Orthopedic Outlook
Stryker Forward Price-to-Earnings Multiple Relative to the S&P



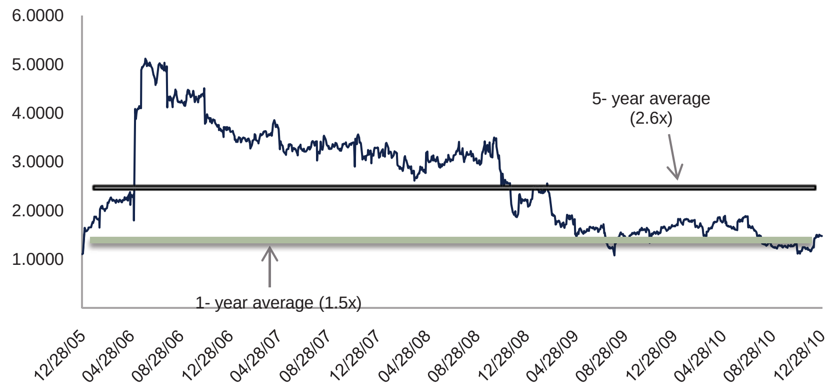
Source: Thomson Reuters

Wright Medical Group, Inc.
We maintain a favorable bias on Wright Medical based on its market-leading foot-and-ankle franchise and modest valuation (6.2 times our 2011 EBITDA target, which is below comparable fast growers with similar profitability profiles). Within the foot-and-ankle franchise, several companies (Integra Lifesciences, and privately held Small Bone Innovations and Tornier) have launched competitive products aimed at taking share from Wright in the coming quarters. Furthermore, some of the larger orthopedic companies, including Stryker and Zimmer, have signaled that they may be interested in entering this segment of the extremities market. While we anticipate that these new players will have some impact on Wright during 2011, we anticipate that the company will continue to lead the category and deliver double-digit growth this year (buoyed slightly by the end-of-2010 acquisition of certain assets from EZ Concept Surgical Device Corporation: financials were not disclosed), based on its robust product portfolio and large, direct salesforce that is solely focused on selling these devices.

However, with roughly 60% of revenues derived from the sale of replacement hip and knee products and these markets struggling to grow in the current environment, we believe that overall corporate growth will remain modest (we are maintaining our targets of 3% hip and 4% knee growth for Wright during 2011). In addition, most of the surgeons that we have spoken to are aware of issues (dislocation, infection, and cup loosening) related to the company's PROFEMUR hip stems and are cautious about using Wright's products. While we believe that problems associated with this stem are within the realm of normalcy for these types of products, we believe this makes it more challenging for the company to capture share in the market, and as a result we believe that upside to our hip estimates is limited. With our model already including a 340-basis-point improvement in operating margins year-over-year (up to 10.6%), we believe that delivering upside to this metric will also be difficult because it is largely tied to the performance of the hip and knee business.

As shown in figure 14, on the following page, Wright trades well below its one-year and five-year relative historical averages (though in line with the S&P 500 currently).

Figure 14
2011 Orthopedic Outlook
Wright Medical Forward Price-to-Earnings Multiple Relative to the S&P



Source: Thomson Reuters

In addition, when we perform a sum-of-the-parts analysis on Wright, it appears that after applying a modest multiple of three times revenue (a multiple that is in line with to below other similar quickly growing medical technology providers) to the fast-growing extremities business, the remainder of the company is only receiving multiples of 0.5 times.

Table 30
2011 Orthopedic Outlook
Sum-of-the-Parts Valuation - Wright Medical

	Hips	Knees	Extremities	Biologics	Other
2011 Revenue	$129,082	$178,753	$138,926	$83,519	$10,290
Multiple	0.5	0.5	3.0	0.5	0.5
Value	$64,541	$89,377	$416,777	$41,760	$5,145
Total Enterprise Value	$617,600				
Less: Debt	$200,606				
Plus: Cash	$190,806				
Total Equity Value	$607,799				
Shares Outstanding	38,011				
Implied Share Price	$15.99				
Current Price	$15.75				
Potential Upside	1.5%				

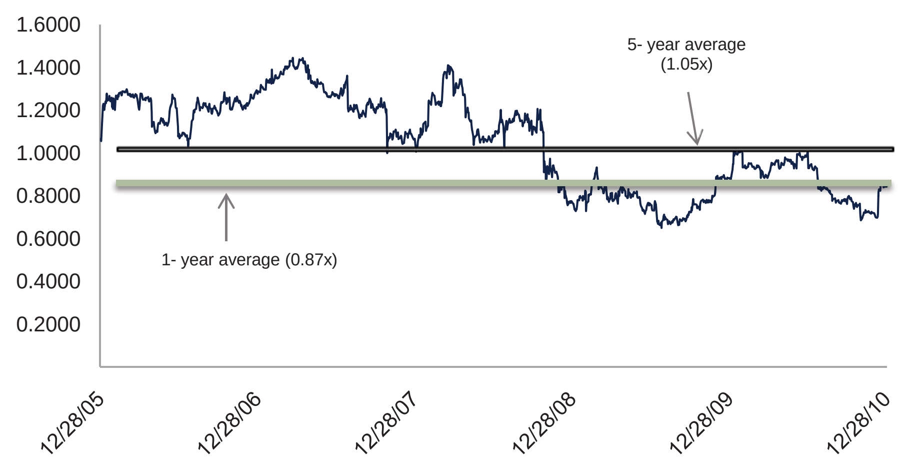
Sources: SEC filings and William Blair & Company, L.L.C. estimates

Consequently, we believe that value-oriented investors or those with a longer time horizon, should start positions in Wright at current levels, but we will stick with our Market Perform rating for the time being until gaining increased visibility into the impact of the weakening large-joint market on the company's performance in the coming quarters.

Zimmer Holdings, Inc.
With roughly 75% of revenues derived from the sale of replacement hip and knee systems, Zimmer is the most exposed to the recent softening and our projected weakness in the large-joint market (driven primarily by increased pricing pressure in the industry). Furthermore, we believe the combination of competitive launches and internal product issues has cost the company market share in recent years, and we anticipate this trend will persist during 2011, as our channel checks indicate that surgeons are increasingly using Stryker's new hip systems. Based on these factors, we are lowering our 2011 revenue target for Zimmer by $41 million (now $4.14 billion, up 3.5%). With our channel checks indicating that the orthopedic manufacturers are aggressively working their suppliers for pricing concessions and tight inventory management, we believe that Zimmer will be able to maintain solid gross and operating margins and are not adjusting our targets on these two metric. On the bottom line, we are lowering our target by $0.02, to $4.63 (up 9%), to account for lower expected sales this year. We note that our revised estimates do not account for the recently completed Beijing Montagne acquisition or the just-announced Sodem Diffusion S.A. deal, as the company has not disclosed any information on the transactions. We anticipate these deals likely will boost the top line modestly and may be neutral to earnings this year. However, we will wait for additional details from the company before adjusting our model.

Zimmer's balance sheet remains solid with about $1 billion in cash and $1.1 billion in debt, with solid annual free cash flows of roughly $1 billion. We anticipate that Zimmer will continue to use its cash to repurchase its stock and complete tuck-in acquisitions. We would not be surprised to if the company moves to diversify the portfolio outside of the traditional orthopedic space, given the challenges in the industry, but absent this event, we believe that Zimmer will struggle to reaccelerate top-line growth and deliver consistent, double-digit earnings growth. While the company does trade well below its historical relative P/E multiple, as shown in figure 15, at 11.8 times our revised 2011 EPS target of $4.63, the stock trades above its projected normal growth rate of around 10% and we remain cautious on the name. We rate the stock Market Perform.

Figure 15
2011 Orthopedic Outlook
Zimmer Holdings Forward Price-to-Earnings Multiple Relative to the S&P



Source: Thomson Reuters

Additional information is available upon request.

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DJIA:	11585.38
S&P 500:	1259.82
NASDAQ:	2669.63

The prices of the common stock of other public companies mentioned in this report follow:

Boston Scientific Corporation	$7.76
Johnson & Johnson	$62.13
Smith & Nephew	$52.52

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Coverage Universe	Percent	Inv. Banking Relationships*	Percent
Outperform (Buy)	64%	Outperform (Buy)	8%
Market Perform (Hold)	35%	Market Perform (Hold)	2%
Underperform (Sell)	1%	Underperform (Sell)	0%

* Percentage of companies in each rating category that are investment banking clients, defined as companies for which William Blair has received compensation for investment banking services within the past 12 months.

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