

# Perspective

## R&D Shifting Overseas – Is “Big Ortho” Following?

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*Big Ortho will continue to leverage its emerging market R&D centers in an attempt to "localize product" — versus relying on those centers as a source of R&D for products globally.*

The U.S. is steadily losing high technology jobs as American companies expand their research and development (R&D) labs primarily in China, India, Brazil and Eastern Europe. A study conducted by Ernst & Young of 1,000+ companies in late 2010 found that about 11% of North American-based companies (of all types) spent more than 25% of their R&D budget in emerging markets. However, by the end of 2015, greater than 23% of those companies expect to have exceeded that figure. Of companies based in Western Europe, only 7% confirmed that they invest more than a quarter of their R&D monies in emerging markets, but approximately 19% plan to over the next 3-4 years.

### **The Rationale**

In the past decade, American companies have turned from using overseas R&D centers to simply localize products, to relying on them as a source of R&D for products globally.

In the six years through 2009, about 85% of the growth in R&D workers employed by U.S.-based multinational companies has been abroad, according to the National Science Board (NSB). U.S. companies are generally NOT closing labs at home but instead focusing expansion abroad.

To a large degree, companies are building labs where engineering and scientific talent is becoming concentrated. About 56% of the world's engineering degrees awarded in 2008 were in Asia – and only 4% in the U.S., as per the NSB report. In addition, a large portion of engineering students in the U.S. are foreigners – 57% of U.S. doctoral degrees went to foreigners, mostly from East Asia or India.

Further, large, global companies are still able to hire researchers for about 50-75% less salary than in the U.S. Emerging market countries have established comprehensive training programs that educate thousands of workers. Once trained, these workers are hired by U.S. companies for their own R&D facilities.

Finally, innovative products made in the U.S. are sometimes manufactured in emerging markets. More R&D is flowing to these markets as researchers look to work near factories where ideas can be quickly tested. And R&D centers in emerging markets are less expensive to build than in the U.S.

China, India, Brazil and Eastern Europe have been the biggest beneficiaries of the R&D investment shift.

### **Is It Just R&D – Or Does This Shift Have Across-The-Board Implications?**

The Commerce Department reported that U.S.-based multinational companies added 1.5 million total workers to their payrolls in Asia and the Pacific region from 1999 thru 2009, and almost 500,000 workers in Latin America – while cutting payrolls at home by more than 850,000. Again, the fastest growth was in China, India, Brazil and Eastern Europe. Although U.S.-based companies still employ more workers in Europe than in any other part of the world, most of the hiring during the 2000's took place in lower-wage countries in Eastern Europe – primarily Poland and Hungary.

Multinational companies also reduced capital-investment spending in the U.S. at an annual rate of 0.2% between 1999 and 2009, and increased it at an annual rate of 4.0% overseas. However, \$2.40 was allocated in capital spending in the U.S. for every \$1 spent abroad.

### **What Are The R&D Trends For Global, U.S.-Based Companies?\***

**3M** and General Electric (GE) have spent billions of dollars in recent years to expand their overseas research labs. Both companies are seeking to secure a broader pool of scientific talent, adapt products to overseas markets and garner favor with foreign governments by doing more research abroad.

3M's CEO stated that the Company is expanding labs overseas "in preparation for a world where the West is no longer the dominant manufacturing power.....given the moribund interest in science in the U.S., this is strategically very important".

GE announced plans in late 2010 to spend \$500 million to set up 6 product development centers in China. In early 2011, GE added a global research center in Brazil – its fifth such center in the world.

### **What Are The Big U.S.-Based Orthopedic Companies Doing?**

"Big Ortho" continues to invest in emerging markets because, as McKinsey reports, "it's important to be a local player – whether it's R&D or manufacturing. The critical point is understanding how to compete like a local player". However, it seems "Big Ortho" will continue to leverage its emerging market R&D centers to localize product — a "work-in-progress" since most of these companies still perceive the need to maintain control of key activities out of their U.S. headquarters -- versus relying on those centers as a source of R&D for products globally.

Based on an underpenetrated market opportunity, sheer population size and anticipated 10-15% per annum growth (likely conservative), all BRIC (Brazil, Russia, India and China) countries are attractive to “Big Ortho”. However, the Chinese government's announcement in late 2010 that it plans to spend ~ \$125 million by the end of 2013 on infrastructure development and training, including rural medical training and the construction of an additional 2,400 hospitals, has clearly made China a front-runner.

**Medtronic** has had a significant head start in China with a 20-year presence in the country. In late 2007, the Company purchased shares (15% equity interest) in Shandong Weigo Group and created a joint venture to market spine and orthopedic products. The agreement, which expires in 2013, was a big success since it allowed Medtronic to access value segments in China while transitioning its own brand to sell to the premium segment. In mid-2010, Medtronic opened a patient care center in Beijing and in 2011, the Company opened a Chinese headquarters in Shanghai.

This has helped Medtronic's emerging markets spine sales have grown at a CAGR of 25% (ex-Fx) over the past four years. The foundation of the Company's international spine strategy is simple -- use localized R&D and manufacturing. Medtronic is placing a significant emphasis on emerging markets with the goal of increasing total company sales from emerging markets to 20% in 2015-2016 from 10% in 2011.

**Zimmer** has acknowledged that “emerging markets -- including China, Brazil and Russia, among others -- continued to generate strong growth in 2011, reinforcing their long term potential”. In late 2011, Zimmer announced the building of a new R&D facility in China that “will focus on innovation to meet the unique needs of Asian patients and clinicians”.

Zimmer's proposed R&D facility will complement its acquisition in late 2010 of Beijing Montagne Medical (BMM), a maker of hips, knees and power tools tailored to the Chinese market. The BMM acquisition included product development and R&D expertise.

**Smith & Nephew** (S&N) has confirmed that “China remains the focus. However, we support our newly created Emerging Markets, which also includes India, Brazil and Russia”. In 2007, S&N acquired a European-based company -- PLUS Orthopedics -- that had a reasonably established presence in China. S&N opened its first facility for advanced wound management in Suzhou, China in mid-2009. A second facility for orthopedics was opened in Beijing in mid-2010. At the end of 2011, S&N had almost 700 employees in China.

Smith & Nephew's CEO has stated that “we will build upon our initial success in China and expand to create sustainable businesses in India, Brazil and Russia. We will innovate for value ... and our future success will depend upon offering new technologies designed for each market where we operate”.

**Biomet** is progressing with its “planned expansion in China”. The Company opened manufacturing operations in Jinhua and Changzhou “that are growing and currently include ~ 850 persons”. Biomet supposedly invested over \$15 million in the Changzhou facility.

**Stryker** has recently articulated that “most of the product’s and product improvements – with the exception of neurotechnology products – have been developed internally at research facilities located in manufacturing locations in the U.S., Ireland, Switzerland, Puerto Rico, France and Germany”.

However, Stryker may have as many as 200 R&D personnel in India. In addition, the Company has built a facility in Suzhou, China for the manufacture of reconstructive, spinal and neurotechnology products. The Company also has a supply agreement for orthopedic instrumentation with a Chinese manufacturer.

**Johnson & Johnson** already has major research facilities in Brazil, China and India – and its Medical Group has been active in China since 1994. **Synthes**, recently acquired by J&J, has established a strong presence in emerging markets over the past decade, culminating with building its own manufacturing facility in China in 2010. The Company has also initiated three clinical trials in China “that will enable Synthes to sell devices manufactured in China specifically to address the needs of Chinese patients”. The first commercial launch of these products in China is planned for 2013. In addition, Synthes continues to educate and train surgeons in emerging markets, most notably in China and India.

## Looking Ahead

At between 4.0% and 5.5% of sales, R&D remains one of the smallest expenses for the seven identified orthopedic companies – and arguably an area of underinvestment over the past several years, especially in light of the incremental costs associated with a) instituting more robust quality systems/processes, b) extended product commercialization timelines resulting from a more deliberate FDA 510K regulatory process, and c) greater demand for clinical evidence by agencies such as CMS.

Several “Big Ortho” companies have expressed a desire to at least slightly increase R&D spending as a percentage of sales in 2013. A repeal of the medical device tax could encourage even greater reinvestment in R&D. If the orthopedic companies follow the lead of 3M, GE and others, they’re likely to retain their R&D infrastructure in the U.S. but expand it abroad – with a focus on emerging markets, especially China and India. However, more significant R&D shifts out of the U.S. to emerging markets are unlikely in the short term.

“Big Ortho” will continue using its emerging market R&D centers in an attempt to localize product. The companies who most effectively transition control of key activities from their U.S.-based headquarters to their emerging market R&D centers will likely achieve the greatest success. And relying on emerging market centers as a source of R&D for products globally is still many years away for “Big Ortho”.

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