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The medtech opportunity for Japanese companies

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A large-scale commitment to growth in healthcare technologies could be a key contributor to the Japanese economy.

In Japan, moving the economy back to growth after two decades of stagnation has been a headache for policy makers and the private sector alike. In addition to reigniting growth, Japan has to prepare for a future shaped by shifting demographic headwinds, rapid technological change, and amplified global competition. Improving productivity is fundamental to addressing these challenges.

Abenomics¹ has focused on “three arrows” of monetary easing, fiscal stimulus, and structural reforms. For the “fourth arrow” of private-sector initiatives, in our research, *The future of Japan: Reigniting productivity and growth*,² we identified several sectors that are particularly well suited to helping Japanese companies build new globally competitive positions. One that could be critical to Japan’s future is advanced life sciences and, in particular, medical technology, or medtech.

Medtech could help the Japanese economy grow, regain an innovative and competitive edge, and drive productivity. Over the years, several Japanese healthcare companies have dropped out of the global top rankings with a lower number of truly innovative new products launched. At the same time, some healthcare reforms have been slower compared with those in Europe and the United States, presenting a still fragmented care-delivery model. Medtech, including medical devices and equipment for diagnostics and care, could be one of the sectors to help lead Japan back to competitiveness for a number of significant reasons:

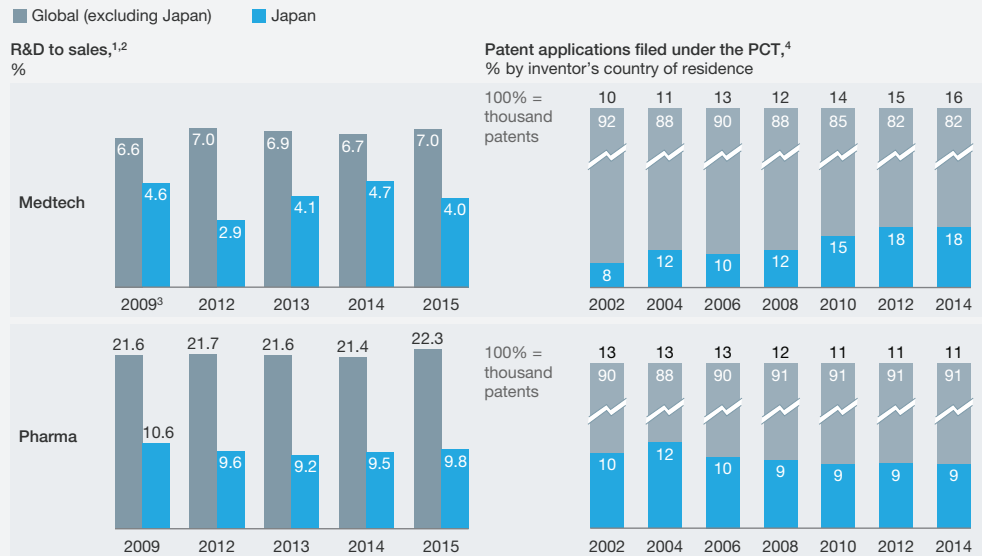
- Medtech remains an attractive industry sector to participate in globally, having outperformed the S&P 500 over the past ten and five years. While pricing pressures, cost reduction, and scale are important themes, innovation and growth remain primary drivers of success. As described later, there may be around \$140 billion of global top-line growth in medtech between 2015 and 2020.
- The innovation gap between Japanese and global medtech players is smaller than in pharmaceuticals. Japanese medtech companies spend approximately 4 to 5 percent of sales on R&D, lagging just slightly behind their overseas peers, at 6 to 7 percent. In comparison, Japanese pharmaceutical companies spend less than 10 percent on R&D, far

¹ Abenomics (アベノミクス) refers to the collection of economic policies advocated by the prime minister of Japan, Shinzō Abe, following his election to a second term of office in December 2012. The policy is based on the “three arrows” of monetary easing, fiscal stimulus, and structural reforms.

² To download the full report, see “How a private-sector transformation could revive Japan,” McKinsey Global Institute, March 2015, on McKinsey.com.

Exhibit 1

Japanese medtech has innovated effectively in a global context.



¹For Japan (both medical devices and pharma), used Japan Ministry of Internal Affairs and Communications' "Research for science and technology," where only a single industry is assigned to a company by its major business. For medical devices, the category used here is "medical equipment manufacturers," a subcategory of "institutional use machine manufacturers"; this does not include medical-device companies under other categories, such as "electronic components manufacturing." Thus, coverage of the Japanese medical-device industry would be narrower than pharma, whose business is more focused.

²\$/Y is average for each year.

³Data for medical devices is not available for 2010-11.

⁴Patent Cooperation Treaty. While the Organisation for Economic Co-operation and Development (OECD) patent database also has subset of data for patent applications to the European Patent Office (EPO), triadic patent families, and patent applications to the US Patent and Trademark Office (USPTO), updates for these are later than PCT, so used only PCT for this analysis.

Source: Evaluate; Japan Ministry of Internal Affairs and Communications, "Research for science and technology"; OECD patent database

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behind the global average of 20 percent. Measured in number of patents, the productivity of Japanese medtech R&D beats the pharmaceutical industry, with the number of Japanese patents in medtech as a percentage of the total number of patents across the global industry double that of pharma—18 percent versus 9 percent—and growing, in contrast to pharma, where productivity has been flat or shrinking (Exhibit 1).

- The global medtech market is still more fragmented than the biopharma market, although consolidation continues. This offers opportunities for Japanese or other companies currently outside the medtech space looking to enter inorganically.
- Innovation in medtech relies on a system of cross-functional capabilities, continuous improvement, and engineering prowess, whereas the biopharma model relies more on fewer products with higher sales (with some simplification). Japan has not produced much disruptive innovation in recent years but has maintained a capable industrial ecosystem, with leading electronics, material-science, and advanced-technology companies with highly relevant capabilities and technologies. For example, Hamamatsu Photonics is a global leader in optical semiconductors and cutting-edge photomultiplier technology, which has helped researchers win multiple Nobel prizes and is used in medical-imaging devices. Murata is a global leader in ceramic capacitors, with new applications in implantable devices. These companies may not be well known globally, but each is an industry leader in its own subsectors, with state-of-the-art technology that is already being or could be further redeployed. New innovation in medtech may very well result from the transfer of such capabilities into new healthcare products.

- The Japanese domestic context could be an incubator for medical technologies that address issues of national importance: for example, those related to an aging population and productivity improvements. Due to government incentives, medical technologies that can allow for better and more convenient home care—for instance, such as decentralized healthcare delivery or supportive medical robotics—could quickly scale up domestically. Various initiatives have been launched, such as the public–private partnership “Realizing the Robot Revolution,” which intends to broaden insurance coverage for robotics in nursing care as well as expedite the review process for medical robots.
- Japan is one of the largest healthcare markets in the world (next to the United States and China). Moreover, while Japan used to be a difficult market in which to launch new products, due to the fragmentation of care providers and distribution, combined with slower regulatory approvals, this is now changing. In 2014, the government launched new regulatory procedures at a national level aimed at innovative medical devices. Approval times have shortened overall, and some premiums for innovative products are now available. In parallel, as cost pressures mount and prefectures take more control at the local level, there is the potential for greater consolidation of facilities over time. In combination with Japan’s demographic insularity, which could support accumulation of standardized data, Japan could be an attractive launchpad for any new medical device.

To lead Japan back to competitiveness in medtech, more success cases will be needed that build on the preceding factors. Take, for example, regenerative medicine, where Japan is pulling ahead in a still-fragmented but promising new sector thanks to a combination of advanced academic research (including a Nobel Prize winner), a supportive regulatory environment, and investments and acquisitions abroad. There are now several Japanese companies leading in regenerative medicine globally. Over the past three years alone, at least 15 of the largest pharmaceutical and medtech companies have started to invest in this field, with nontraditional players also entering (see sidebar, “Japan’s advanced industries are broadening their exposure to medtech”).

[Japanese companies have the capabilities, strategic need, and cash to lead a renaissance in medical technologies.](#) Several players in Japan, such as Olympus, Hitachi, and Terumo are already globally competitive and, in some cases, true leaders in their field. Other companies lead in the domestic market but do not yet have a significant overseas presence—for example, Arkray in diabetes diagnostics and Fukuda Denshi in patient monitoring and diagnostics.

Further potential lies in two other segments of the industry. First, a large number of companies have smaller medtech businesses, of varying types and maturity, within their broader conglomerates. Asahi Kasei and Mitsubishi Chemical are examples. Second, several innovative companies exist with relevant technologies and a stated commitment to grow their medical-technologies platform—for instance, Nikon and JSR. Both types of companies could take advantage of a positive convergence and commit to grow in this field.

The traditional “core” business of these companies (such as advanced electronics, optics, precision instruments, chemicals, and imaging) is often under competitive or disruptive threat, due in part to a tendency toward an inward-looking focus that has led some Japanese companies to refine and enhance existing technology yet overlook some emerging trends. This gap with respect to innovation and globalization has in turn led to a technology gap (for instance, in digital and software) and also limited commercial capabilities, including access to global markets—hence the need to reinvest in fields with more attractive profitability profiles where Japan can find and sustain an edge.

Whereas operating profit margins for major Japanese industrial companies outside of medtech have typically been measured in single digits, operating profit margins in large global medtech players range from 10 to 25 percent.

At the same time, these companies have capabilities and intellectual property that are highly relevant in the medical-technologies field—from material sciences to electronics, precision engineering to microfluidics, and process integration to miniaturization. However, these capabilities are not sufficient on their own to lead in medical devices—companies need to build understanding and expertise within the healthcare landscape and market environment—but they represent a sound platform from which to pursue organic and inorganic growth.

Finally, Japanese companies hold an estimated \$2.4 trillion in cash on their balance sheets. Furthermore, current monetary policy makes additional borrowing cheap, and the current yen exchange rate, as compared to five years ago, makes exports competitive.

[Recent moves by Japanese players to move into or focus further on medtech are promising.](#) The drive toward medtech by well-known Japanese companies continues; in fact, out of the 20 largest Japanese companies today, over three-quarters of them are already involved in this business segment. Canon’s takeover of Toshiba Medical Systems, the fourth-largest diagnostic-imaging player worldwide, is a prime example of a company expanding in this space in a big way.

Additionally, there are players moving organically into this field, leveraging their own distinctive capabilities in other sectors to transform healthcare. What all these activities have in common are a long-term, bullish view on the medtech sector as well as a strong belief that manufacturing, innovation, and product-design capabilities in other sectors—such as advanced industries, electronics, and even gaming—can be used to win in new markets.

[Japanese companies could pursue different strategies to grow a sustainable market position depending on their starting point.](#) A variety of archetypal business models exist in this industry, allowing for different companies and capabilities to create value for patients, physicians, and shareholders.

Japan's advanced industries are broadening their exposure to medtech

- Canon's takeover of Toshiba Medical Systems moved the largest maker of cameras into the top 30 medical-device players globally and to number one in medical imaging in Japan.
- Nikon's acquisition of retinal-imaging leader Optos for \$400 million and the partnership with Lonza in 2015 have firmly moved Nikon into the medtech sector. Together with Lonza, the world's largest manufacturer of cells for regenerative-medicine therapeutics, Nikon is planning to establish a new company dedicated to regenerative-medicine contract manufacturing. Building on the Optos acquisition, Nikon more recently established a strategic alliance with Verily to develop machine learning-enabled solutions for diabetes-related eye disease.
- Both Toyota and Honda have entered the medtech space by developing walking-assistance robots for medical and recovery use. Toyota is going even further with its transfer-assist robot, which supports patients (and caregivers) in moving them in and out of bed. Their best-in-class manufacturing capabilities give them a sizeable head start over new entrants. Yamaha also recently announced the establishment of a new medical-device business.
- JSR, one of Japan's leading chemical companies, has acquired several medtech companies in recent years and established a dedicated business unit (JSR Life Sciences) in April 2016 to spearhead growth in this sector. JSR is using a combination of medtech acquisitions and in-house capabilities to build new product ranges that are potentially game changing.
- Ricoh entered the medtech space with the acquisition of Yokogawa Electric's magnetoencephalography (MEG) business in March 2016. MEG systems measure brain functionality and map brain activity by detecting the faint magnetic fields generated in the brain.

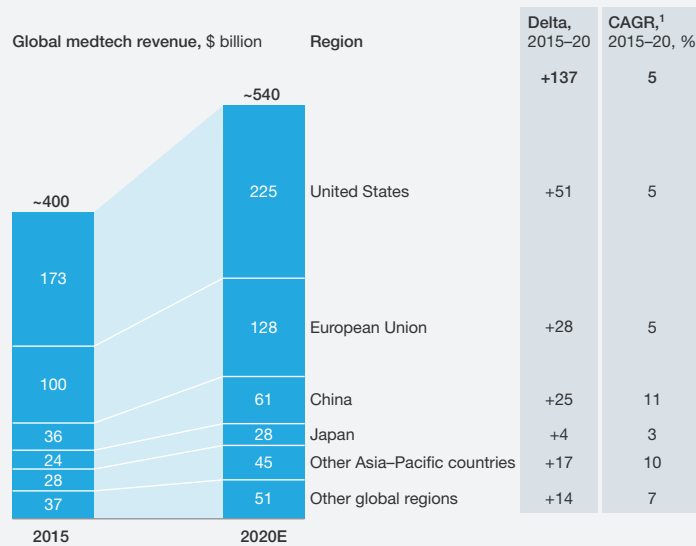
In light of this, and based on various starting positions of different companies, we envision several strategic options for Japanese companies to grow a sustainable platform in medical technologies:

- **Repurpose engineering capabilities and supplement biological technologies.** Many of the “hot” fields in medtech today require engineering and product-development capabilities, which Japanese companies have but often struggle to repurpose. As an example, point-of-care diagnostics is an approximately \$23.5 billion global industry, with further robust growth. Success in this market requires, apart from capabilities to understand local customer needs and regulatory requirements, the integration of precision engineering, microfluidics, optics, electronics, and high-quality controlled manufacturing—all capabilities that many Japanese companies have today. By acquiring biological technologies, which are available but may be still scarce, the Japanese innovation ecosystem has all the ingredients to succeed in this category.
- **Expand in adjacent or complementary areas.** Japanese medtech leaders have historically focused on incremental innovation of their core capabilities and have sometimes neglected to expand along the value chain. Laparoscopy and endoscopy players may already lead in scope design and manufacturing but could further expand their portfolio of add-on tools for tissue manipulation, resection, cauterization, and suture into robotic endoscopy or surgery. Leaders in diagnostic microscopy could add to their offerings of biologic reagents, software, and biomedical capabilities and integrate their products into a service to hospitals or care centers.
- **Partner and innovate with public stakeholders.** This option does not refer to government subsidies or national championship, which may well also play a part, but rather to “systems innovation,” where private players take a role to help reduce the high and growing healthcare costs in Japan. Japanese companies have ample opportunity to develop (or borrow) and test new delivery models of integrated and managed care supported by technology. Some of the large conglomerates with an interest in this field have the scale, brand, and capabilities to help take innovative specific elements of the care-delivery system and potentially export them to other countries that are still transitioning to a more modern healthcare system, especially in the area of care for the elderly.
- **Leapfrog and disrupt specific technology segments.** Admittedly, Japan has seen slow innovation in the biomedical field, but in areas such as regenerative medicine, induced-pluripotent-stem-cell (iPSC) engineering, and robotics, it has a technological advantage and political commitment to innovate and shape the future of the industry. Growth will, however, require further visionary leadership, rapid innovation rates, and entrepreneurship.

Companies with an interest in growing a medtech business need to commit to innovate not only their products but also their operating model. In light of the observations expressed in this paper, as we think about what it takes to succeed, we have identified five key success factors for companies with an interest to grow in medtech. These apply to both organic and inorganic growth strategies:

Exhibit 2

Medtech is a global growth opportunity.



¹Compound annual growth rate.

Source: Business Monitor International; GlobalData Medical eTrack, as of Oct 2015; Health Research International 2015; *MedTech in Asia: Committing at scale to raise standards of care for patients*, Dec 2015, McKinsey.com

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1. **Drive a targeted and resilient investment strategy.** The risk-return profile, investment cycles, and overall success factors of medical technologies and companies are different from those in advanced electronics, pure tech, or heavy industries. Companies with limited recent history of successful acquisitions need to develop the capabilities to scout, identify, secure, and integrate the right technologies, including patent-strength assessment.
2. **Open up to new innovation models and collaboration opportunities.** The traditional engineering model where conception, design, development, manufacturing, and commercialization happen under the same roof is hard to sustain in medical technologies. Companies need to open up to external innovation, be ready to collaborate with commercial partners across the industry, and attract global talent from diverse backgrounds. Internally, this requires a more entrepreneurial approach to decision making, accountability, and execution than most Japanese companies are currently used to.
3. **Build critical regulatory and medical capabilities.** Companies currently not operating at the core of the medical industry need to build critical capabilities required to understand the highly regulated medical industry, such as regulatory affairs, medical affairs, market access, and pricing. Talent in this area is scarce, so companies will have to build appealing value propositions to attract and retain the best.
4. **Keep a global perspective from day one.** Due to different local regulatory procedures and a highly diverse healthcare system and varied end users, entering different markets can seem daunting. However, improving human health is a global endeavor (Exhibit 2), where product-development trajectories are increasingly expensive and will be applicable across the globe. Long-term success will require a global presence or a very solidly defended local position.

5. **Bring existing manufacturing expertise but build competitive muscle.** New entrants have to decide how to position themselves versus incumbents. Japanese players have the technological prowess and manufacturing expertise to target high-value niches within innovative big-box and therapeutic devices. This may be more attractive than competing on cost or following an acquisition-driven play. Even with an innovative leapfrog strategy, incumbent competition should be anticipated and will require competitive muscle to win.

There is a need for Japanese companies to move rapidly. As the global medical-device market has tripled in size over the past 20 years, many new innovative players have entered and business models have changed and evolved. However, over that same period, the top global players have also consolidated and now generate over half of the worldwide medtech revenue. Growth remains the central value-creation lever in medtech, with a great deal of white space available, but the window of opportunity to grow the Japanese economy may close soon. **□**

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