ROBOGLOBAL®

3Q17: ROBO EARNINGS REPORT

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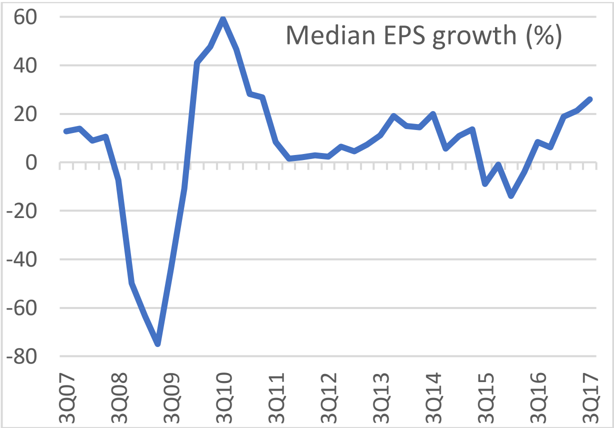
SUMMARY

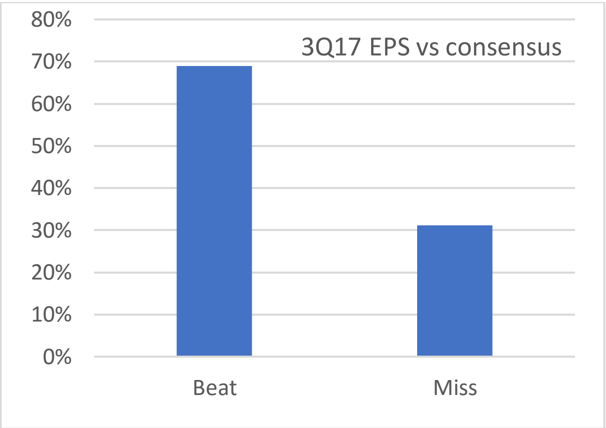
The ROBO Global Robotics & Automation Index continued to build momentum in 3Q17. The median EPS growth accelerated to 26% YoY. This growth is significantly better than anticipated and the strongest since 2011. 69% of index members beat consensus estimates. Revenue growth across the Index accelerated to nearly 12%, led by particularly industrial-flavored sectors such as Manufacturing and Actuation, Sensing, and Food & Agriculture.

Inside, we discuss some of the more interesting trends that emerged from the results of the 84 members of the index, including stunning results from Japanese automation companies, continued strong demand for industrial robotics, momentum in healthcare robotics and the increasing prevalence of artificial intelligence.

The Index is poised to post its strongest EPS growth since 2011.

With 88% of its members reporting 3Q17 results, the median EPS growth[1] for 3Q17 stood at 26% YoY, up from 21% in the prior quarter and significantly better than the mid-to-high teens we had anticipated. This is more than double Factset's estimate of 10% YoY earnings growth for the S&P 500, and well above expectations for 6% growth at the end of the quarter. The 3Q comp (+8%) was significantly higher than the 2Q comp (-4%). 69% of companies beat consensus EPS estimates and 62% beat revenue estimates, somewhat less than the records hit in 2Q.





[1] This report discusses median sales and EPS for the 84 index members as of November 24, 2017. The ROBO Global Robotics & Automation Index is a two-tiered equal-weight index.

Earnings growth for the Index was led by the top line.

The median sales growth accelerated to 11.6%, from 8.3% in the prior quarter—the fastest sales growth since 2013 and a return to double-digit growth after nearly three years of single-digit revenue growth at the median. This expansion was driven by the more industrial-flavored sectors within the Index, such as Manufacturing (+14%) and Actuation (+17%), as well as Sensing (+22%) and Food & Agriculture (+18%). The largest sub-sector in the Index, Computing, Processing and AI, continued to accelerate at +9%. 3D Printing was up +11%, driven largely by metal printing. Healthcare and Integration, which include the large, diversified automation powerhouses, remained on strong footing, were up 8% and 5% respectively. In contrast, the Energy subsector disappointed, dipping back into negative territory to -1%.

Better than expected results have led to upward revisions to consensus estimates, with the median 2017 sales growth now standing at 9.1%, up 40bps from two months ago and up 150bps from mid-year levels. However, the median EPS growth for the current year increased only marginally, climbing +70bps to 14%—though still 3ppt higher than at mid-year and nearly double the 7.1% achieved in 2016. Over three years, median EPS growth stands at 41% based on Factset consensus estimates.

NOTABLE TRENDS

Japan delivers stunning results.

Japanese companies currently account for nearly 30% of the ROBO Global Robotics & Automation Index. As a group, these companies were shining stars in 3Q, with revenue and orders growth accelerating once again to demonstrate continued strength across the board. More than half of the Japan-based index members raised full-year profit guidance, and despite a weaker Yen that provided a nice tailwind (we estimate the Japanese currency was ~8% cheaper than a year ago against the US Dollar and the Chinese Renminbi), organic sales growth was simply stunning.

FANUC, the world's leading provider of industrial robotics and computerized numerical controllers, topped the rankings with revenue growth of 39%, followed closely by DAIFUKU, the top supplier of logistics automation solutions, which was up 35%. SMC, the global leader in pneumatic actuators, was not far behind at +29%, along with KEYENCE at +28%, and YASKAWA at +25%, while OMRON grew its Industrial Automation sales by 23%, It is notable that several companies pointed to difficulty in hiring and retaining workers in Japan and China.

The electronics industry remains a key driver.

While demand for factory automation grew in virtually all major end-markets, the technology sector was a key driver of growth. Major contributors included manufacturers of smartphones, semiconductor production equipment, flat panel display and lithium batteries. A major investment cycle in OLED technology and connected devices is driving demand for sensing. This was reflected in astounding 3Q sales growth of 75% at COGNEX which was boosted by massive orders from Apple and its iPhone supply chain, as well as significant upticks at KEYENCE and new index member KOH YOUNG. Laser companies were also major beneficiaries of this growing demand, including IPG PHOTONICS, which increased revenue by 48%, and JENOPTIK, which saw a 29% increase in Optics & LifeSciences

Virtually all index members with material exposure to the semiconductor industry beat expectations, from BROOKS AUTOMATION to YUSHIN, MICROCHIP and QUALCOMM.

China stands out—and not only in electronics.

Sales to China delivered surprising upside growth for nearly every index member with sizeable exposure to the country. IPG PHOTONICS' China sales grew more than 70% YoY to reach 45% of group revenue. This spectacular growth was rooted primarily in the adoption of high power laser for use in cutting, welding, and engraving applications. Other Chinese companies that contributed to the quarter's major upswing include OMRON, COGNEX, FANUC, YASKAWA, NABTESCO, KEYENCE, and RENISHAW.

Demand is very strong for industrial robotics.

Sales at the world's top-three suppliers of industrial robots continued to trend skyward. Sales rose +20% at FANUC, +24% at YASKAWA, and +10% at ABB Robotics & Motion. Meanwhile, TERADYNE's Universal Robotics sales accelerated to +70% YoY—and an impressive +77% in the first nine months of 2017. These numbers reflect the continued adoption of collaborative robots across a growing range of applications.

Capacity constraints are emerging.

Capacity constraints began to emerge in various areas of the supply chain earlier this year for the first time since 2007. Despite aggressive expansion plans, it looks like FANUC will be unable to meet higher-than-anticipated demand for its robots and computerized numerical control systems. While demand is typically slower in the second half of the year, several component suppliers are running at maximum capacity and extending lead times. HARMONIC DRIVE, the world's number-two supplier of precision speed reducers for industrial robots and a leader in cobots, saw its sales of speed reducers rise by 54%, and orders jump 161% in Q3, creating significant capacity constraints. Major constraints were also evident in the delivery of servo-motors, linear motion guides, and ball-screws from THK and HIWIN. Hiwin raised prices for the fourth time this year.

Global manufacturing is driving broad-based growth in factory automation spending.

It is important to note that this growth is fueled by much more than just robotics. As manufacturing activity remains on an upward trajectory in the world's major manufacturing hubs, demand for factory automation equipment in general continues to accelerate. This is perhaps best reflected in the continued acceleration in revenue growth at the global factory automation "do-it-all" companies such as SIEMENS, which grew digital factory sales by 9%, and ROCKWELL AUTOMATION (+8%, the fastest pace since 2011).

Artificial intelligence is hot.

Artificial Intelligence—or AI—is now a key buzzword on earnings calls. Many of the ROBO Global Robotics & Automation Index members are direct beneficiaries of the growing focus on artificial intelligence—from the companies that provide AI technologies to companies who are using AI to gain a competitive advantage.

NVIDIA, whose results and guidance once again blew past consensus estimates, remains front and center in the AI race with its chips taking leadership in deep learning and autonomous vehicle applications. Nvidia's momentum of adoption by hyperscale cloud providers and server suppliers is unprecedented in the history of computing. Its new line of Volta accelerators for datacenters provides 10 times the deep learning power of its predecessor, which was already the preferred choice of virtually every major cloud player around the world. Nvidia's DrivePX platform is showing impressive growth in engagement and adoption by more than 200 companies, including high quality OEMs such as Tesla, Mercedes, Audi, and Volvo, and Toyota was recently added to the mix. The company announced the launch of DrivePX Pegasus to power level-5 autonomous vehicles, which are due to ship in 2H18.

The push for AI is continuing to gain momentum. Amazon, Baidu, Microsoft and other leading cloud vendors announced strategies that include the use of field-programmable gate array products (FPGAs) for machine learning (deep learning and inference), which would greatly benefit XILINX. COGNEX acquired Vidi, a leader in deep learning-based machine vision, which can solve some of the most difficult quality inspection problems in manufacturing. Korean 3D inspection specialist KOH YOUNG announced the release of a new AI-powered software for its automated optical inspection equipment. Industrial robot powerhouses FANUC and ABB have announced the deployment of AI-based solutions to facilitate programming. In healthcare, AI is making headway from surgical robotics (INTUITIVE SURGICAL and MAZOR ROBOTICS) to radiology and radiation treatment (VARIAN). To accelerate the adoption of AI in medical imaging, NUANCE COMMUNICATIONS unveiled its Open AI Marketplace for diagnostic imaging for developers, data scientists, and radiologists. More than 20,000 radiologists already use its PowerScribe cloud-based reporting platform.

Healthcare's use of robotics is rising.

The healthcare sector continues to deliver positive surprises. INTUITIVE SURGICAL delivered another large beat and raise with robotics surgery procedures up 15% YoY and better margins. The company is on the cusp of launching key new products, including flexible robotics and catheters, and its Da Vinci Sp which is now moving into clinical trials. Meanwhile, MAZOR ROBOTICS presented the results of a three-year comparable clinical study covering more than 400 patients and 10 surgeons at the National Association of Spine Surgeons (NASS), which demonstrated a 5x reduction in surgical complications and 7x reduction in revision surgeries with the use of its robotics spine surgery solutions, compared with freehand techniques. Mazor's results also confirmed that spine surgery is rapidly moving towards robotics adoption, with sales up 126% YoY on the back of a record 19 system shipments in the quarter, up from just 10 a year ago. With Medtronics taking over sales and marketing on a global basis, Mazor is set to turn profitable.

Logistics and warehouse automation is surging.

DAIFUKU, the global leader in logistics automation, raised its full-year profit outlook again after a 35% surge in FQ2 revenue and 85% in H1 orders. ZEBRA TECHNOLOGIES, the world's leading automatic ID and data capture company, delivered another beat and raise with strength across all regions and business lines. CARGOTEC was the exception, with weaker orders for port automation equipment.

3D printing is lagging in plastics but rising in metals.

3D Printing disappointed on the plastics side, with STRATASYS and 3D SYSTEMS reporting marginal sales declines. However, the metal printing side delivered better than expected results and strong revenue growth at both SLM SOLUTIONS (+42%) and EXONE (+22%).

3Q17: THE BEST AND THE WORST OF THE EARNINGS SEASON

Positive Surprises

IMMERSION
RAVEN
RENISHAW
NVIDIA
TOPCON
IPG PHOTONICS
COGNEX

Negative Surprises

MAXAR
CARGOTEC
AIDA
KRONES
OCEANEERING

Year-to-date performance

The ROBO Global Robotics & Automation Index rose 49% year-to-date through November 28, 2017, largely outpacing the MSCI All-Country World Index (+20%), the S&P500 (+17%) and the Nasdaq (+28%)[2]. The top and bottom performers and returns of each of the 12 ROBO subsectors are shown in the figures below.

Total return by subsector, year to date (%)

Actuation	+ 90%
Industrial Manufacturing	+ 60%
Sensing	+ 57%
Logistics Automation	+ 56%
Security & Surveillance	+ 54%
ROBO Global R&A Index	+ 49%
Healthcare	+ 47%
Food & Agriculture	+ 47%
Computing, Processing & AI	+ 45%
Integration	+ 33%
3D Printing	+ 19%
Consumer Products	+ 9%
Energy	- 26%

Disclaimer

[2] Year-to-date Data Sourced from Bloomberg

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