

Investment Outlook

A Bright Future For the Chip Industry

In July I attended “The CEO Summit” in San Francisco and met with top management teams from the semiconductor equipment industry. Most were riding high off two great years back to back. Most companies had large cash hoards and no debt, and many were dominant in their markets.

Yet the stock prices of these companies were extremely modest relative to earnings. I asked why? The CEO’s said investors feared the growth cycle of the last few years was ending and equipment orders were starting to shrink. The early warning sign was memory prices, which began dropping in January. By August, NAND flash memory prices had dropped 50%, suggesting that supply continues to outpace demand.

I consulted a Semiconductor Industry Association chart entitled “Worldwide Semiconductor Revenues” to see how other boom periods had resolved. The blue line on the chart represents monthly chip sales worldwide. The chart shows semiconductor sales have been on a tear the last two years. Since 1996 the industry has known only two other periods with such strong growth.

The first super cycle was 1998-2000 which ended badly, taking four years for chip sales to recover. The stock prices of many chip companies still have not recovered: Intel is still 36% below its year 2000 stock price, even as Intel’s sales have doubled.

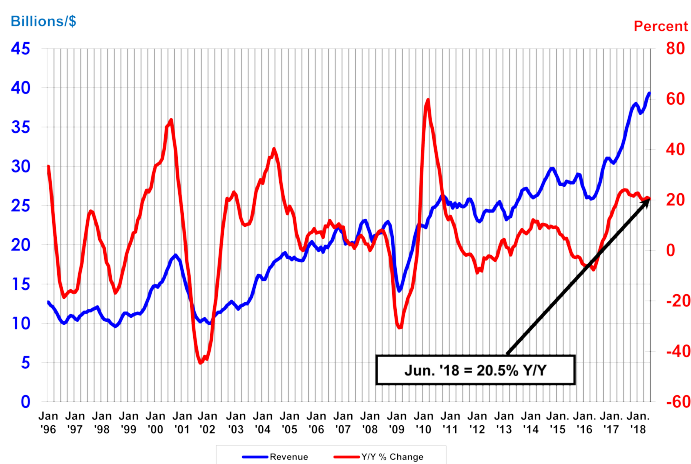
The second super cycle was 2009-2011 and was nothing more than a quick recovery from

the great recession of 2008. This time the increased level of sales was sustained.

Back in 1998-2000, chips were mostly used in computers and telecommunications. When the Internet Bubble burst in year 2000, chip demand plummeted. But today chips are used in almost everything: cars, mobile phones, televisions, even your dog!

Worldwide Semiconductor Revenues

Year-to-Year Percent Change



Source: WSTS

New applications for chips continue to grow: Cloud computing, artificial intelligence, the internet of things, big data, autonomous vehicles, talking computers. These sub-industries are reinforcing each other and making semiconductors ubiquitous.

As the Worldwide Semiconductor Revenues chart makes clear, semiconductor sales are on a long term growth trajectory. Since 2002, monthly sales have increased from \$10 billion to almost \$40 billion. That corresponds to a

9% annual growth rate, which is about three times the growth rate of the global economy.

So semiconductors are clearly a growing industry. Despite the current softness in some areas such as memory, I have no doubt that current revenue levels will be exceeded within the next few years. But growth does not automatically translate to good investment returns. Intensity of competition and reasonableness of stock valuations also must be considered.

Regarding competition, there has been much consolidation in the seventy years since the semiconductor was invented and the industry can now be considered mature. Barriers to entry are high due to patents, large capital investment, and tight long term working relationships with customers. Sales continue to ebb and flow, but major new competition is increasingly rare.

In this issue I profile four companies related to semiconductors. BESI and Fanuc are new recommendations, while Western Digital and Infinera have been discussed previously.

BE Semiconductor, also known as Besi, makes Packaging and Die Attach Equipment, with a 35% market share. Packaging encapsulates the fragile silicon chip in a protective layer; Die Attach connects the chip to the package. As pin count increases, these functions become more demanding. 75% of Besi equipment revenue is from so-called “advanced packaging” which is the most rapidly growing segment of the market.

Besi enjoys healthy gross margins of 57% and healthy operating margins of 27%. Price/Earnings ratio for the last twelve months is a very low 7.9. There is zero net debt, and the net cash is equal to about \$128 million. Its dividend policy is to pay out 40-100% of net income per annum.

Besi is led by Richard Blickman who has led the company since its founding in 1995. Besi is based in the Netherlands, but about 90% of employees are now in Malaysia and China. Besi is projecting a 25-30% drop in revenue from Q2 to Q3. However, BESI should be helped by the rollout of 3D imaging in cellphones and 5G networks, the ongoing push for greater cloud memory and logic capacity and the rise of electronics in autos. The drop in revenues should only last a few quarters and is well accounted for in the low share price, in my opinion.

Besi is well entrenched and has a very defensible market position. What Besi does is highly specialized and it has worked with major customers for decades. While there are competitors, Besi is the dominant supplier with most of its customers.

Fanuc Corp, is the global leader in industrial robots, with about a 60% market share. Fanuc is an acronym for Fuji Automatic NUMerical Control. Robotics have become a very hot field with the advent of AI (artificial intelligence).

With AI it becomes much easier to program a robot to complete the task at hand; the robot can teach itself to some extent.

Fanuc should benefit from government policies to spur manufacturing in the U.S. including repatriation of foreign earnings, accelerated tax deductions for equipment purchases, and tariffs on foreign goods. Fanuc earns about one third of its revenues in the U.S. and has been dominant in the U.S. auto industry for decades.

Fanuc launched the FIELD platform in 2017 in collaboration with Cisco, Rockwell Automation and other partners. The FIELD platform enables machines in a plant to intelligently coordinate and collaborate in a flexible manner in real time to improve machine reliability, product quality, process

flexibility and assembly speed. It will work with any machine, not just Fanuc's, and is an open platform, so anyone can develop or buy apps, much like one downloads apps on a smartphone. Fanuc expects this will take factory automation to a whole new level.

Fanuc has a fanatical dedication to reliability. The last thing Fanuc wants is for an assembly line to be shut down because of machine failure. Fanuc has 24/7 global product support and they guarantee parts availability for the life of any machine it sells going back to 1956. Fanuc's reputation is a major competitive advantage.

Fanuc trades at a PE ratio of about 29, based on projected earnings FYE 3/2019. However, Fanuc has no debt and holds a cash hoard equal to 43% of the stock price. If we subtract the cash from the stock price, the PE ratio is 16.5, which seems quite reasonable for the leading company in a growing and profitable industry. Fanuc also has a reputation for being conservative in its projections.

Western Digital (WDC) makes hard disk drives (HDD's) as well as flash memory and solid state drives (SSD's). After decades of consolidation, there are only two major HDD makers, Western Digital and Seagate. Western Digital's sales are about double Seagate's. WD leapfrogged Seagate with a technology called MAMR which is strongly outselling Seagate. Seagate's Debt to Equity ratio is about triple WD's which weakens Seagate's ability to compete.

WD's stock has been trading in the \$80 to \$90 range for the last year, but recently fell to \$60, a low not seen since 2016. The price fell in spite of stable adjusted earnings in Q2, and the adjusted PE ratio is now below 5. The reason for the stock decline is falling prices for flash memory. As noted above, NAND flash memory prices have fallen by 50% since January.

While WD is currently earning very healthy profits, some investors fear hard disk drives are a dying technology, to be replaced by flash memory. Solid state drives (SSD's) currently cost about 10 times as much as HDD's. Some analysts have extrapolated the falling flash memory prices of the last six months to claim that hard drives will lose the price advantage in the next couple of years.

This gloomy projection is deeply flawed. Flash memory by itself is not a substitute for a hard disk drive. The flash memory has to be packaged into a solid state drive. Enterprise SSD's did not achieve significant sales until 2013. In the five years since, cost per megabyte has declined at a 24% average annual rate. Over the same time period, HDD prices have fallen 15% per annum. Starting from a tenfold price advantage and applying the rates of decline of the last five years, it will take SSD's twenty years to become cheaper than HDD's. At the current rate of earnings, Western Digital will have earned \$288 per share over the next twenty years; not bad for a \$60 stock.

The critics also ignore the fact that Western Digital is a major player in SSD's, having acquired Sandisk in 2016, and having extended Sandisk's joint venture with Toshiba Memory Corp. to 2029. WD's CEO claims that SSD costs are falling along with SSD prices and that profit margins remain intact. Flash memory is a five way race but WD has the relationships with the data centers and has the cash flow from the HDD business and has the technical prowess from the Sandisk-Toshiba tie in. WD should survive.

We first bought WD in the beginning of January at around \$81. The stock immediately moved up and we sold for around \$95 in our customer's tax deferred accounts in early March. We continued to hold WD in most taxable accounts so as to not trigger a short term capital gain. WD

stock began to drop and in late April we reinvested our tax deferred accounts at around \$80. With the stock now at \$60 and paying a 3.33% dividend, WD is a strong buy.

Infinera makes gear for optical telecommunications networks. We have followed Infinera since 2008 and profits have been elusive. Seems as though management constantly sacrifices profits to grow market share. Infinera is now the #1 or #2 supplier in most of its markets, so that goal has been achieved.

What I find most exciting about Infinera is its new business model called "Instant Bandwidth". When Infinera sells network gear, it typically installs excess capacity, which the customer does not pay for unless and until they use it. When the customer licenses the extra capacity, Infinera merely notes the change on its software and collects an additional license fee for the extra bandwidth.

This model means Infinera will earn huge margins as bandwidth needs increase. Infinera has no additional cost because the equipment is already installed. Infinera is running about breakeven now, so any new license fees will drop straight to the bottom line.

Data transmission is exploding and optical networks are crucial enablers. But competition is fierce. It has been a long haul for Infinera but with "Instant Bandwidth" it seems to finally be in a position to generate sustained profits.

In the short term, investors have a lot to be nervous about. The upcoming midterm elections may shake investor confidence. But taking a longer view, there are many areas of the stock market which are priced attractively. In this issue we profiled four stocks which are leaders in growing industries, have financial strength, competent consistent management, yet modest valuations. We continue to focus long term and not be distracted by the daily noise.

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