

TAIWAN SEMICONDUCTOR

We often find it difficult to invest in technology companies, because we prefer to direct our attention to more predictable, less volatile businesses where industry fundamentals aren't likely to change quickly. In addition, investors are frequently enamored with the promise of technology and lose sight of the underlying business itself, often resulting in high prices for shares of many technology companies—even when they lack a viable business model. However, Taiwan Semiconductor (TSM), with its tremendous market share in an industry with incredibly high barriers to entry, is a technology company we can get excited about.

Originally formed by a joint agreement between Phillips Electronics and the Taiwanese government in 1987, the idea was to create a standalone “foundry” to produce microchips. Historically, only large integrated companies had enough capital to actually build the very expensive and ultra-clean facilities required to produce semiconductors. Smaller, less wealthy firms were capable of design innovation, but large scale production remained an issue. Sensing an opportunity, TSM was created. The company is now the world's largest producer of semiconductors, controlling a dominant 44% of the foundry market.

Microchips are everywhere today: in our cars, cell phones, cameras, televisions and PC's. And given the inexorable pace of technology innovation, there is no end in sight. New applications will emerge—home appliances will get “energy smart,” for example. And for the chips already in our favorite gadgets, the trend remains: faster, smarter and smaller. While all this may be obvious to end users, what's actually going on in the semiconductor industry probably isn't. Producing microchips requires a climate-controlled facility almost totally free of dust and vibration. As we described earlier, only the largest companies can afford to build such facilities, and due to increased complexity, costs keep increasing. For example, it is estimated that building a new state-of-the-art semiconductor manufacturing facility today would cost at least several *billion* dollars. So while innovations in chip design can come from anywhere, only a few companies have the ability to actually fabricate them. In short, the economics of the semiconductor business favor a continued move toward a bifurcated industry: a mix of “fabless” design companies partnering with large-scale chip manufacturers. Intel is the largest semiconductor company in the world, and its recent decision to outsource some of its new Atom processor production to TSM seems to validate our outlook.

In addition to operating in a fast-growing market with high barriers to entry, TSM also enjoys a tremendous scale advantage, which is always a key in manufacturing businesses. Its history of operational growth clearly reflects both competitive advantages and growth in the industry itself. In 2008, TSM posted over \$11 billion in revenue—representing an average annual growth rate of 20+% over the last 10

years. As revenues have grown, scale advantages have helped increase net margins from 14% to just short of 20% over the same period. Going forward, we expect that revenue growth will taper off some, yet remain attractive, and high-teens net margins should persist. Because TSM's operations generate good cash flows, the company carries very little debt, despite the costs of maintaining world class manufacturing facilities. Recently, TSM announced it spent more than \$300 million in the second quarter of 2009 alone to acquire manufacturing equipment. Few other foundries could spend so much in a depressed economy.

TSM's leadership team is highly experienced. Founder Morris Chang recently returned to the CEO role. Chang, is a true visionary leader with more than 50 years experience in the business. Given the highly profitable nature of the business, competition is intense and TSM's managers have faced difficult decisions. Overall, they've proven to be long-term oriented as well as flexible. A consistent history of timely acquisitions, key investments and a consistent vision of the company's future give us confidence in their leadership. We applaud their focus on the more complex, cutting edge area of the business. This translates into greater research and development costs, but it also creates a reputation for unique abilities and know-how that most competitors cannot match. This often involves charging customers higher prices for the latest builds, and it helps make TSM less reliant on older, soon-to-be-low-margin commodity chips. Compensation is one area where TSM is, unfortunately, more like the average technology firm. While we appreciate that maintaining a team of talented engineers is costly, we'd prefer a less rich compensation structure. That said, we are pleased to see that employees and directors own some 7% of the company.

While technological advancement has been and remains a powerful force, the process is rarely a straight line. New innovations can spur demand, but the state of the overall economy affects demand as well. In fact, we perceive TSM to be highly cyclical, given its exposure to end-consumer demand, macroeconomic cycles and the cycles associated with the microchip business itself. As a result, a major risk for investors is the volatility of the chip business. It's tempting to invest when production is humming near capacity and everyone is buzzing about the latest must-have gadgets. While it takes a bit of courage to buy during the dark days of slack demand, excess capacity and slumping profits, this will often lead to better investment returns once things turn around.

Another key risk to TSM is that because it is a Taiwan-based firm, the company is subject to somewhat different rules and regulations in reporting (and shareholder rights) than American companies. Also, Taiwan's relationship with China is sometimes an uneasy one, so there is an element of political risk.

Admittedly, we don't know what the next innovation in semiconductors will be, nor do we know what tomorrow's amazing new electronic gadgets will look like. Nevertheless, we do know that TSM retains an economically enviable position in a fast-growing industry and is captained by a good management team. This gives us confidence that the company will remain a leader in making those innovations available to the world.

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We have provided abbreviated descriptions of certain companies in order to help readers better understand the basic operations and investment considerations of these companies. Readers should note that these descriptions are not intended to be complete analyses or to be investment recommendations. Company situations are always subject to change. There are risks associated with all forms of investment, including the stocks of the companies we describe. Further, at sufficiently high prices, the stocks of even the best companies may become overpriced, and at sufficiently low prices, the stocks of even struggling companies may be underpriced.

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