

Celia Johnson

Value creation remains a challenge

New research offers insights into what creates value—and what doesn't—in the semiconductor business.

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As an industry, the semiconductor business is known for destroying shareholder value. However, there are a few companies that build both shareholder value and economic profit (exhibit).¹

To better understand what factors affect value creation in semiconductors, we updated and expanded a proprietary database² to include all financial-performance metrics for 182 semiconductor companies between 1996 and 2011.

Our research confirms that size matters in the capital-intensive segments of the market: foundries, microprocessors, and memory. In the latter two segments, our research shows that between 1996 and 2012, the critical threshold to

fund R&D and compete in the marketplace was about \$6 billion in average annual revenue. The point for foundries falls between \$3 billion to \$6 billion in average annual revenue.

When one looks past pure size, companies that have a crisply defined portfolio of product segments are more successful generating economic profit than those with a diffuse array. Within the diversified integrated-device-manufacturer (IDM) category, companies that used the recent downturns to focus their portfolios have been better able to generate economic profits than their competitors have, preliminary research shows; those IDMs that focused their portfolio between 2001

¹Economic profit reflects the total opportunity costs (both explicit and implicit) of a venture to an investor. We focus our analysis there because economic profits act as a good proxy for shareholder value creation.

²Our database of financial metrics for semiconductor companies was constructed in 2011, and its initial findings were discussed in "Creating value in the semiconductor industry," *McKinsey on Semiconductors*, Autumn 2011.

and 2011 were able to improve the economic-profit-to-sales margin by more than 20 percent, while those who diversified their portfolio over the same period only saw a 5 percent improvement in the ratio.

Why is this the case? A focused portfolio correlates more closely with higher market share, and that higher share drives cash flow, thereby financing investment. With a larger R&D budget, these players can be faster to market with new nodes, and that builds additional market

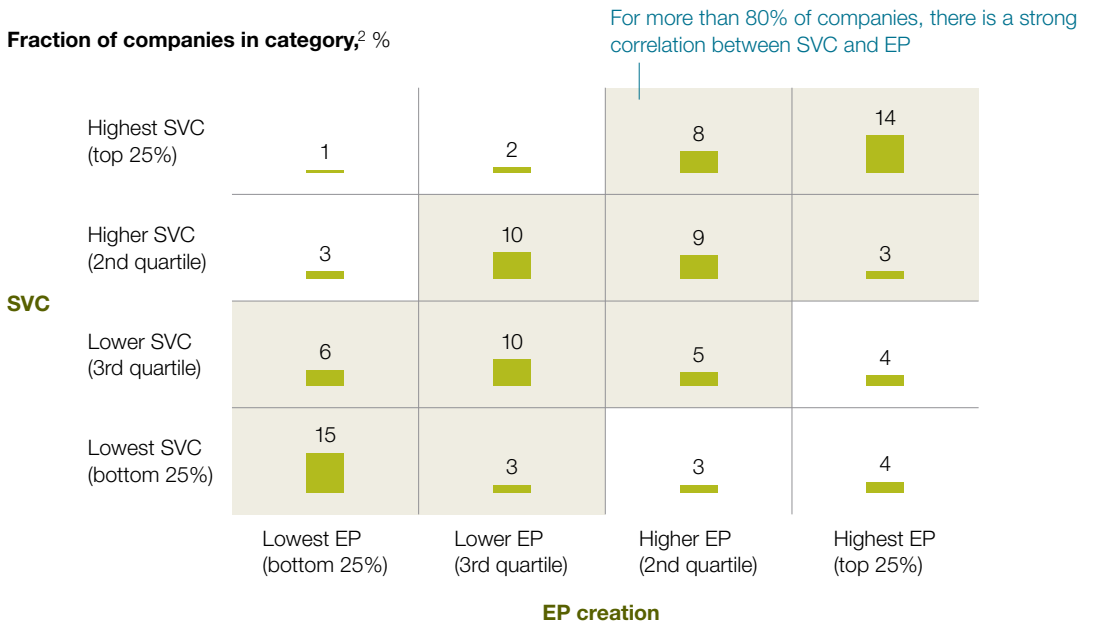
power. And this is not just true for IDMs; earlier time to market with new nodes (meaning the smallest feature size of a chip) and market share both correlate with value creation across all segments of the semiconductor industry.

Given the cost and the presence of established leaders in each segment, it can be difficult for new entrants to elbow their way into the business. Our research shows that semiconductor companies that do not fabricate chips, or fabless companies, are the only segment with new market

Exhibit

Shareholder value creation and economic profit are strongly correlated.

Companies ranked by shareholder value creation (SVC) and economic profit (EP),¹ 1996–2011



¹Economic profit equals net operating profit less adjusted taxes minus capital charge.

²Total companies considered: 182.

Source: Bloomberg; Compustat; McKinsey analysis

entrants that have managed to generate economic profits in the years between 1996 and 2012. New players in all other segments destroyed their economic profits after entering the industry.

In our survey population, 48 of the companies in operation today have destroyed a combined \$500 million in economic profits since 1996. Among diversified IDMs, many of the largest companies in the segment have destroyed value year after year for periods as long as 16 years in a row.

With a focus on the right segments and on significant market share, semiconductor companies can make the types of investments in R&D necessary to power them to market leadership. While competition within the industry is likely to remain fierce, a focus on value creation is an important trait of successful companies. ○



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