Chip sales on track for rapid growth

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Something very different happened in the semiconductor industry this past year. The sales downturn, although severe, was completely unlike any previous semiconductor industry downturn. Seeing the difference and understanding semiconductor industry dynamics leads to only one conclusion; Semico Research Corporation's forecast: double digit increases in semiconductor sales, peaking in 2011, followed by a downturn starting in 2012.

The 2008/2009 downturn in total worldwide semiconductor sales was the first downturn in semiconductor industry history that was not driven by huge excess inventories leading to falling ASPs. It was also the first downturn that was not preceded by a year with an increase in annual sales of more 30 percent.

Those facts have important implications. The semiconductor sales cycle is very familiar. When sales are up, fab owners invest heavily in manufacturing equipment. When that equipment comes on line, there is excess capacity. OEM inventories build, and then ASPs plummet. The fab owners stop investing in equipment. When demand returns, there is too little capacity; and ASPs shoot up. Fab owners begin investing in equipment again. When the new capacity comes on line, the cycle repeats. OEM inventories increase again, and ASPs drop.

That is not what happened in 2008, outside the memory market. Quarterly semiconductor shipments dropped 36.6 percent from the third quarter of 2008 to the first quarter of 2009, but ASPs did not decrease. Instead, average ASPs actually increased by a tenth of a cent. Over the same time period, quarterly semiconductor sales declined 35.7 percent, almost matching the decrease in shipments. Why did this happen?

Simply stated, OEMs ate up their inventories. In late 2008, fearing a recession or, worse, a depression, OEMs stopped buying semiconductors and began depleting their inventories. Then, in the second quarter of 2009, two things changed.

First, a bit of cautious optimism began to appear. Unemployment was still high, and there were other troublesome signs. But, the banking crisis was subsiding, and the economy was beginning to show signs of a recovery. Second, OEM semiconductor inventories were at a dangerously low level. The OEMs began buying semiconductors again to restock the supply chain and meet fundamental demand.

Quarterly semiconductor shipments increased 16.9 percent in the second quarter of 2009 and 19.7 percent in the third quarter. Third quarter shipments were 54.5 percent above first quarter shipments, and third quarter semiconductor sales were 40.0 percent above first quarter sales. After a one year 'V' shaped decline and recovery, from the third quarter of 2008 through the third quarter of 2009, shipments and sales had very nearly recovered to an extension of the long term trend line. What happens now?

Although the semiconductor revenue decrease in 2008/2009 was due to declining shipments rather than declining ASPs, fab owners followed the usual rule. They stopped investing. Now, as demand picks up, there is going to be too little capacity, and ASPs will increase. Already, there is anecdotal evidence of tight foundry capacity at some technology nodes and of increases in ASPs, especially DRAM and NAND ASPs.

Now the industry is back on its old familiar cycle. 2010 semiconductor sales will be substantially greater than 2009 sales, in part because the first half of 2009 was so bad. Shipments will increase from 2010 through 2012, following the long-term trend line. Sales will increase sharply, driven by increasing ASPs. New capacity will start ramping in 2011 and reach its full production capability in 2012. Supply will catch up with and exceed demand. OEM inventories will increase, ASPs will drop; and there will be another downturn. The shipments driven downturn of 2008/2009 will be forgotten.