

THE SEMICONDUCTOR INDUSTRY: RECENT PRICE TURNAROUND AND PROSPECTS

by Chang-Wook Kim
e-mail: cwkim@hri.co.kr

Prices on Rising Trend

Recently a ray of hope has glimmered in the darkness of the DRAM recession. In early July, the prices of some DRAM products in the spot markets started to turn around and rise, and from early August, the rise in prices spread to almost all DRAM products. In the middle of August, the prices of 16M DRAM has moved up by between fifty cents and one dollar and that of 64M DRAM by more than one dollar. For example, in 4×4 EDO 16M DRAM's case, the price has risen from \$1.40 to \$2, and in the 8×8 synchronous 64M DRAM's case, the price has risen from \$8 to \$9.60 (See Figure 1.). This price rise was much anticipated by and very impressive to the DRAM makers and market observers, since the recent recession in the DRAM industry has been so long and deep.

Two factors appear to be causing the recent price uptick. First is the slowing down of production by the major makers in Korea and Japan. During June, Korean makers stopped their production line for a week or more, and following that, Japanese makers did the same thing in July. Owing to this, the DRAM supply declined. The second factor is irregular demand increase from PC makers caused by their intention to increase their DRAM inventories. PC makers seem to think that the DRAM prices have hit bottom and there will be no more additional large price drop. Furthermore, it is expected that there will be extra demand for PCs during the Christmas season. Until now, PC makers have kept their inventories to a minimum since prices continued to drop, but

now that prices have bottomed out and their inventories are way below the necessary level, they have increased their orders for DRAMs.

Temporary Phenomenon

Even though the recent turnaround in prices is impressive, it seems too early to be fully celebrating, since more time is needed until the situation substantially changes and the cycle enter a recovery phase. It is now estimated that the total production capability still exceeds total demand by 10%. Accordingly, the problem of excess capacity has not yet been solved. Production cutbacks by stopping lines cannot be kept up indefinitely. If the price rising lasts, the cutbacks will be stopped. Also the orders to boost inventories will disappear after the lack of inventory is covered. Then there will be an oversupply again and prices will come down. Thus it is proper to see the present price increase as a temporary phenomenon. It is possibly that there will be another drop in prices before the end of this year.

Prospects Not Too Pessimistic

However, the prospect for the DRAM market is not pessimistic. The structural condition of the DRAM market has improved substantially and it is expected that a recovery phase will come before long.

One of the important improvements is the fact that there have been many exits thus far on the supply side. For example, in July 1997, Motorola

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abandoned DRAM manufacturing, and since then many makers such as Oki, Fujitsu, Mitsubishi, IBM and Acer, has decided to cut back their DRAM businesses. Just two month ago, Texas Instruments, the 7th top maker in the world, decided to quit its DRAM business and sold its three DRAM fabrication plants and facilities. And on August 3, Siemens, the largest maker in Europe, also announced it was closing down a fab plant which was only one year old.

Another improvement is the fact that the target of major demand is moving from 16M to 64M chips. In order for the cyclical phase to transit from recession to recovery, a generation shift of major demand is necessary. While there is still excess capability for 16M, investment for 64M has not yet been implemented sufficiently. Since March, the shipment of 16M chips has turned down and that of 64M has started to surge rapidly. This means that the generation shift has already started. This shift is expected to speed up more from now on with the advent of Windows 98.

Some analysts are pessimistic and say that the recovery will start after 2000 or later because of the overcapacity of DRAM makers and the expected slump of the PC market. But these views overlook the substantial influence

of the generation shift on the market conditions. As the generation shift proceeds, the fab and facilities for 16M chips will be shut down and scrapped, and demand for 64M chips will surge rapidly. Even though the present 64M's balance between supply and demand is estimated to be an oversupply, the potential demand for 64Ms is much larger than the potential supply capability. Therefore, it will not be long before the DRAM market enters into the recovery phase.

According to the historical data, the phase transition has occurred 3~5 quarters after the start of a generation shift. Considering these facts, the turning point is expected to be between the first quarter and third quarter of next year. The simulation of HRI's DRAM price forecasting model shows that the price of 64M chips will start to rise at a moderate pace from the middle of next year and will increase to or stay at \$10 per unit in the first quarter of 2001.

The long-lasting recession has made pessimism pervasive over the DRAM industry. However, the present trouble is not structural but a cyclical phenomenon and the end of the dark day has come near at hand. In recognition of these facts, we can sweep away the pessimistic view lingering over the DRAM industry. **VIP**

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<Figure 1> Prices of Representative DRAM Products

