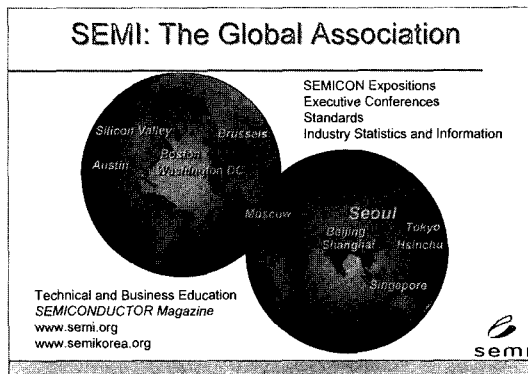
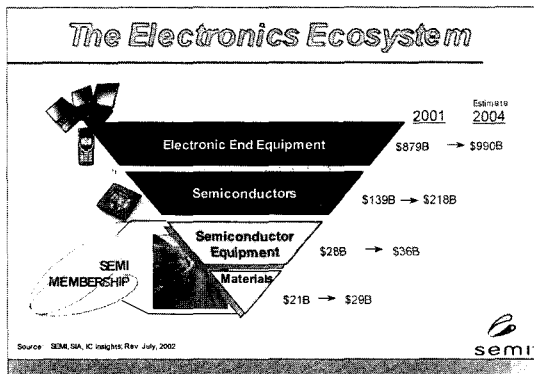


반도체장비 산업현황(上)

이 주 훈*



1. About SEMI

For those of you that have followed SEMI for awhile, this figure may be familiar. It represents an interdependent group of industries that together, enable the modern world as we know it. From PCs to phones to automobiles and satellites.

The electronic end equipment market is expected to grow at about a 4% rate over the next 3 years as it approaches a Trillion dollar market size.

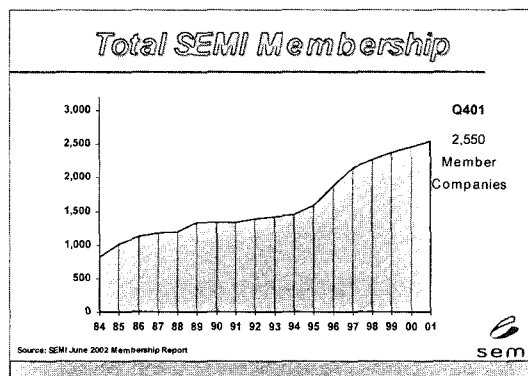
This market is made possible by the semiconductor manufacturers whose market is expected to grow at a compounded rate of 16% over the next 3 years.

The entire semiconductor market is enabled by the purveyors of equipment technology and materials who are projected to grow at compounded rates of 18% and 10% respectively. SEMI's members comprise the bottom 2 segments of this inverted pyramid.

SEMI's greatest strength lies in its global reach. SEMI Korea serves the interests and needs of Korean industry and brings the voices and concerns of the region into the larger global forums that SEMI facili-

tates. SEMICON Korea may be the most visible part of what SEMI does, however our presence here does far more to serve the interests of the Korean semiconductor industries than just SEMICON.

Listed here are just some of the many products and services that SEMI provides to its members and to the entire semiconductor industry worldwide. SEMI's reach enables our regional members to connect with the entire global industry, expanding business opportunities and advancing semiconductor manufacturing.



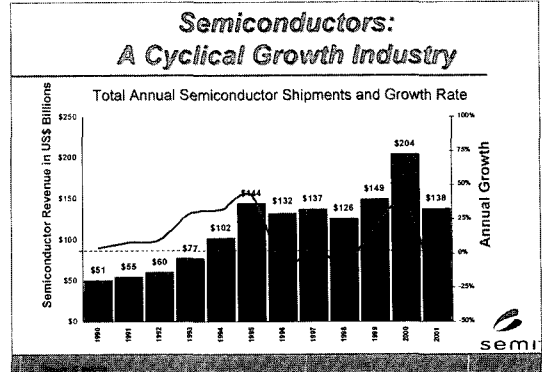
The companies that make up SEMI's membership provide technology, products and services to the world's chipmakers, such as Samsung, Hymix, TSMC

*SEMI Korea 사장

Who Are SEMI's Members?

Companies throughout the world providing goods and services to the semiconductor and flat panel display industries.

- Production Equipment
- Facility Equipment
- Process Materials
- Packaging Materials
- Consumables and Components
- Software and Factory Automation
- Fab Design and Construction
- Consulting



and Intel, enabling those companies to make the leading-edge chips that power virtually every electronic device made today.

SEMI members, however, are more than just suppliers of manufacturing technology. They also play a critical role in the research and development of new processes and new materials that enable new generations of semiconductors that advance the development of new electronics.

Many SEMI members also provide critical services and marketing expertise that contribute to technology innovation as well as to the opening and expansion of new markets.

Through our presence in every major semiconductor manufacturing region, SEMI works to engage the industry and facilitate interaction among members, with their customers, with local government and with other associations.

By having a local presence and a global reach, SEMI serves the interests and needs of local industry

and brings the voices and concerns of the region into the larger global forums that SEMI facilitates.

In areas such as industry research and statistics, international standards, environment, health and safety, investor relations, public policy and other industry advocacy activities, SEMI works worldwide to advance the business and technology interests of our members no matter what their country of origin may be.

2. Semiconductor Industry Trends

The chip industry is historically a cyclical industry, but a growth wise industry.

COMPLEX interaction of capacity, inventory, ASP.

Revenues surged above \$200M for the first time ever in 2000, though shrunk by over 30% in 2001.

Global semiconductor sales were US\$138 billion last year, down 32% from the previous year.

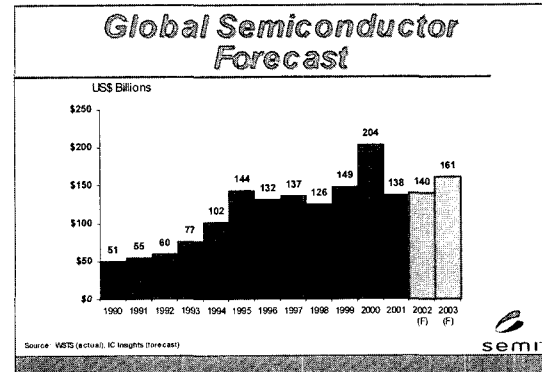
With the exception of 2000, global semiconductor revenues have been flat since 1995.

Estimates for 2002 are that semiconductor revenues

What SEMI Does

Focus on Business Issues

- Industry Statistics and Information
- International Standards
- Industry Advocacy & Communications
- & Industry Benefits
- Expositions
- Executive Conferences
- Technical and Business Education
- Industry Publications
- ✓ Semiconductor Magazine
- ✓ SEMI Newsletter Service
- Website: www.semi.org



will grow in the 0-5% range.

Obviously, it is very challenging to forecast the semiconductor industry, though 2003 forecast range from 15-30% growth depending the analysis source.

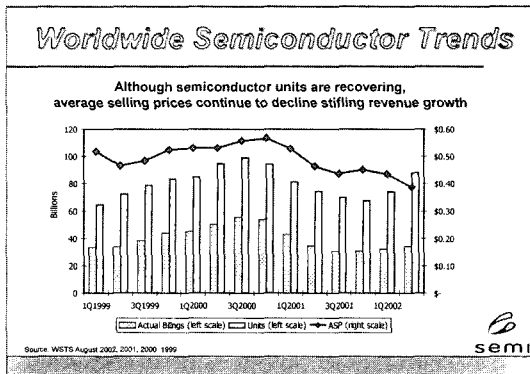
IC Insights is forecasting 15% growth reaching \$161 billion.

There is still a lot of uncertainty regarding the timing of the semiconductor industry recovery.

Shown here are semiconductor unit, average selling prices, and revenues on a quarterly basis.

There has been steady recovery as far as semiconductor unit volumes for several quarters.

This is a signal that demand for semiconductors is recovering.



The expectation the semiconductor unit growth will be at least 10%, perhaps up to 15% for 2002.

Average selling prices are still trending downward on a quarterly basis.

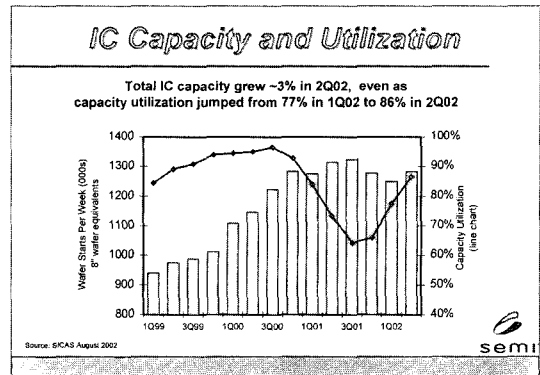
This is problematic for the semiconductor manufacturers as manufacturing technologies require great levels of investment, but a reward for that investment looks to be distant.

This charts shows capacity and capacity utilization trends for IC manufacturers collected and reported by SICAS (Semiconductor International Capacity Statistics).

The semiconductor industry increased capacity by 27% in 2000.

When end market demand collapsed in 2001, fab capacity utilization dropped to 64%. At its peak in the boom cycle, utilization had reached 96%.

Older fabs have been decommissioned during this downturn, though a number of leading semiconductor

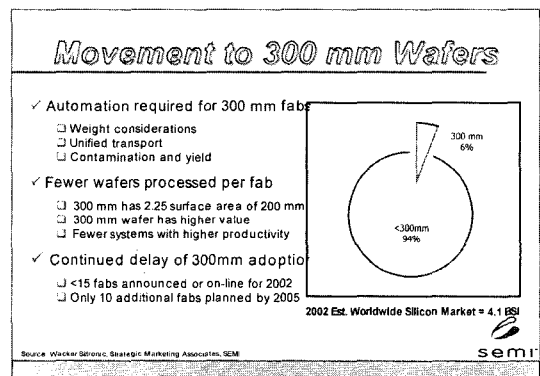


manufacturers have added new fabs for advanced processes including 300mm fabs.

Capacity utilization has improved at least through the first half of 2002.

There will be at least 10 300mm fabs in production by the end of this year. Another 20 or more could be constructed by 2005.

Currently SEMI estimates that 300mm wafer production will account for about 6 percent of the wafer area consumption in 2002 as this advanced manufac-

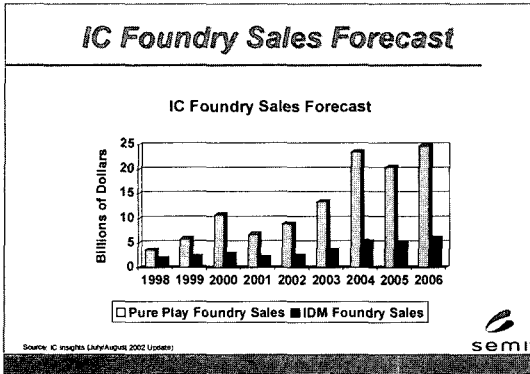


turing technology is only now beginning to ramp up in production.

IC Insights defines a pure-play foundry as a company that does not offer standard products and relies on producing ICs for other companies (e.g., TSMC, UMC, Chartered, etc.).

IDM foundry are companies that provide foundry services in addition to standard products (e.g., IBM, Samsung, Hynix)

Pure play foundries are expected to grow a 30



CAGR from 2001-2006.

Total foundry revenues will grow from 7.5% of semiconductor sales in 2001, to over 16 % by 2006.

Foundries will grow as more and more chip companies begin to outsource their production. This is expected to grow as Integrated Device Manufacturers (IDMs) such as AMD, Texas Instruments, Infineon, etc. outsource some production.

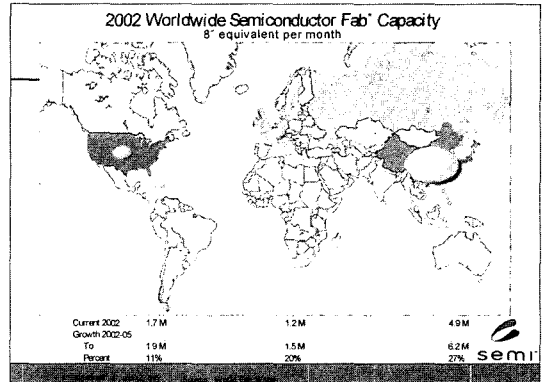
For many chip companies, the \$1.5 billion to \$2.0 billion price tag for 300mm fabs is too expensive. These companies will partner with a foundry supplier.

The foundry market also relies on the fabless semiconductor market.

Fabless revenues represent 66% of foundry sales.

As a percentage of overall semiconductor revenues, fabless semiconductor revenues represent about 10% of the semiconductor market.

A key driver in this outsourcing trend is the huge investment needed in constructing and equipping leading edge fabs. A 300mm fab comes with a \$1.5 billion to \$2.0billion price tag.



The bubble size on the next 4 charts demonstrates the relative sizes (within in each chart not between charts).

Note the difference in growth between these major regions.

North America 11% 200K 8" equivalents/month

Europe 20% ant 300K 8" equivalents/month

Asia 27% and 1.3M 8" equivalents/month

Top Ten Fabless Companies

2001 Rank	Company	Country	2001 Revenues (\$M)
1	Qualcomm	U.S.	1,235
2	Nvidia	U.S.	1,206
3	Xilinx	U.S.	1,149
4	VIA Technologies	Taiwan	1,009
5	Broadcom	U.S.	962
6	Altera	U.S.	839
7	Cirrus Logic	U.S.	534
8	ATI Technologies	Canada	480
9	MediaTek	Taiwan	447
10	QLLogic	U.S.	357
	Others		4,674
	TOTAL		12,892

Source: IC Insights

*편집자주 : 지면 관계상 다음 항목은 한국반도체 장비학회지 제3호에 게재될 예정입니다.

3. Capital Equipment Trends
4. FPD Trends and Outlook
5. Summary and Conclusions