

Perspective

Manufacturer of Semiconductor Chips: Global Scenario with Asian Predominance

Semiconductor: Five chip-manufacturers hold 53% of global with Asian Predominance wafer capacity. That protects the trend for pure production against order. At the first sight the announcement of the renowned chip analyst Bill McClean of USA market research house IC made in the beginning of February 2020. Insights does not contain anything unusual or alarming. Five leading semiconductor manufacturers hold at present 53% of worldwide installed wafer capacity consequently the production volume of chips.

Long standing observers of semiconductor industry would comment on the facts and their historical developments in 50 years of their existence. That is even the natural macroeconomic rational consolidation of the high-tech branch in view of rising capital requirement as a token of technological progress. That shirks the duty in the production with always smaller and nanometer dimensions and with dump (pile/stack) (3-D stacking) of ICs. To that come to the remarkable innovations in the part of users like artificial intelligence hyper scalable cloud server and 5G communication.

In 2009 the then world market leaders held certainly only 30% of production capacity. But today fall from statistically considered on every five manufacturers each about 10% of market share. That is no monopoly no market dominance but in all cases technological competency. That is valid also when one discloses the real rank series of these five offerers. Samsung holds the top position with 15% TSMC follows with 12%, Micron has 9.4% and SK Hynix 8.9% Kioxia/WD (previously Toshiba Memory) comes as tail /amp at 7.2%.

It is interesting the fact is that the already mentioned manufacturer wholly or partially acts as foundries: as manufacturer for chip design houses without the luxury of one's own production basis. That is naturally a specific art of often as competition dragging surged market consolidation of industries on vestment of specialization. All the mentioned firms are with the exception of US firm Micron registered in Asia. Also that is an art of geographical consolidation.

In total lie the biggest "Pure-play Foundries" consequently thus producer on pure wage basis of skilled persons without own marks and products in the area of top twelve of chip offerers: TSMC, Global Foundries, UMC, SMIC and Power chip. In total, the firms place at the disposal of their customer a production capacity of 4.8 million wafers per month. That is approximately 24% of entire production basis of world market. Also here no outstanding (remarkable) concentration, earlier a work distribution. As comparison: The chip pioneer and longstanding world market leader Intel provides according to IC Insights at present more than a capacity of 817000 wafers per month.

Against that Samsung can raise a production of 2.9 million wafers per month. Most of that goes into bricks like dram and flash Samsung develop strongly further with two new works in S. Korea and in far China. Also TSMC as biggest pure-play foundry increases with 2.5 million wafer starts per month. With its expanded 15 and new factory 18 both strategically placed in Taiwan. Similarly it is valid for US manufacturer Micron Technology. It has its monthly production capacity in the past year on 1.8 million stopped with a new 300 mm wafer factory in Singapore

and through the complete takeover of in 2005 jointly with Intel established flash technology LLC on Lehi, Utah.

Also the Korean S K Hynix as the fifth biggest wafer factory manager is involved with the present 74 million wafers starts per month most of which for Dram and Nand Flash storage is involved in race for the expansion of capacity. Two new factories were straight commissioned in Korea and in China and a further project are in planning in Korea.

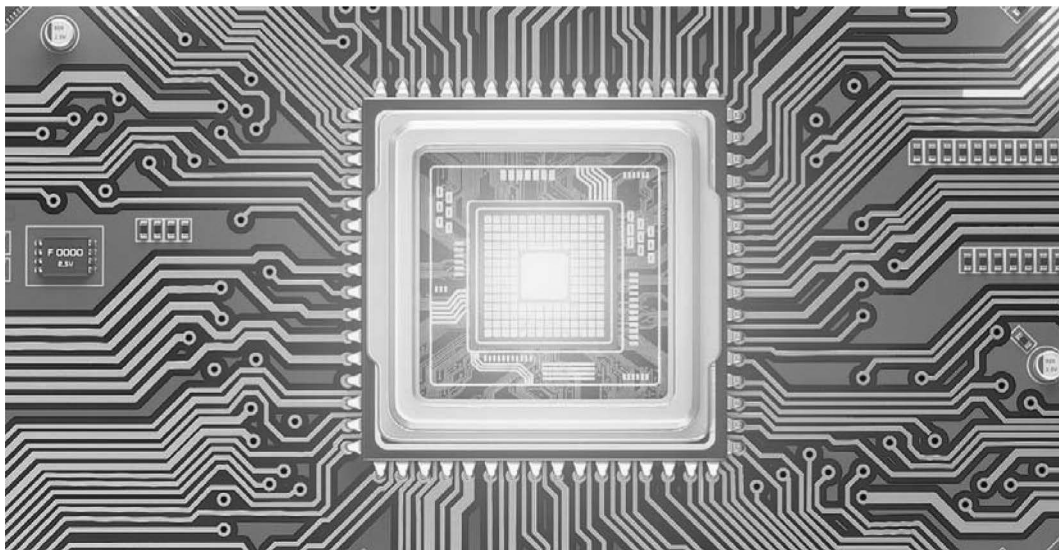
The decision for or against one inhouse production is a specific challenge of semiconductor industry. Between 1974 and 2019 there was supply of which FQE expenditure in the measure approximately 15% of the turnover. In the last three years this order size due to irregular market and price trend at the warehouses has shifted downwards, 2018 it dropped down to

13%. First in 2019 it rose again in followers' global turnover loss to 12% on its longstanding historical market.

According to one up-to-date analysis of IC Insights for the top rich TSMC it shines that the foundries with transition to future chip structures smaller than 7nm could realize an advantage with the manufacturing cost against the inhouse production. With that these rollback the long ranging trend of smaller produce storage proceeds covering profits on chips per wafer. Possible with that opens the way to favourable future of further growing market share of foundries.

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Shining View

With Future Chip Structures below 7 μm , pure production workshops could turn back to sinking net returns per chip.