



SK Hynix (000660 KS)

ACCUMMULATE RECOMMENDATION / COMPANY UPDATE

Rating:	OVERWEIGHT
Target Price (KRW):	44,300
Price (8 Oct 2015, KRW):	37,550
52-Week Price Range (KRW)	30,300-51,700
Market Cap. (KRW B)	25.380
Enterprise Value (KRW B)	49.253

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Historical Price (3-Year)



Industry Finally Showing Signs of Rationality

Investors hopeful about SK Hynix's upcoming 3Q15 earnings announcement

- 3Q15 Earnings Forecast Solid:** We forecast SK Hynix to post sales of KRW5.00T (+9%,QoQ), operating profit of KRW1.4T (-3%,QoQ) and net profit of KRW1.07T (-3%,QoQ) for its upcoming 3Q15 earnings announcement on Oct. 22. Despite recent downtrend in PC DRAM ASP, SK Hynix's decision to increase Mobile DRAM production portion has been the main catalyst. Moreover, NAND production and shipment is expected to increase with larger demand coming from across the globe.
- 2016 Industry Fundamentals Likely to Improve:** 3Q has always been a harsh quarter for SK Hynix in the past. However, this is less likely for the upcoming quarter as its peers are seeing improved performance, most notably with Micron (a close competitor of SK Hynix) which is expected to outperform analysts' expectations.
- Upcoming Catalysts:** 1) On Aug 25, SK Hynix announced a construction of two semiconductor factories along with the newly built semiconductor factory M14, totalling up to KRW46T, to boost production of Mobile DRAM. 2) Proportion of Mobile DRAM is expected to increase up to 40% of total DRAM revenue. 3) As 90% of SK Hynix's revenue comes from overseas sales, favorable projection of KRW/USD exchange rate has a positive influence on our Q3 estimates.
- Valuation:** Our 12-month target price of **KRW44,300** was derived from 12-month forward industry P/B multiple analysis. We currently believe that the stock is undervalued by 20%, however we urge investors to be weary of the cyclical nature of the industry as well as to the forecasts for a YoY drop in full-year earnings for 2016.

Financial and Valuation Metrics

Year	12/13A	12/14A	12/15E	12/16E	12/17E
BPS (KRW)	16,836	22,939	28,349	33,375	38,509
EPS (KRW)	4,099	5,842	6,375	6,098	6,666
P/E (x)	9.0 x	8.2 x	5.4 x	5.7 x	5.2 x
ROE (%)	25.2	27.2	23.2	18.6	17.7
EV / EBITDA (x)	4.3 x	4.1 x	3.4 x	3.2 x	2.8 x

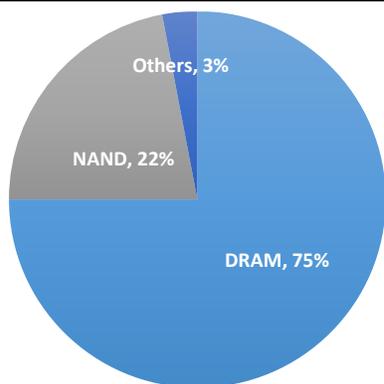
Company Background

Overview

- Headquartered in Icheon, South Korea, SK Hynix (000660.KS) is listed on Korea Exchange and develops and produces memory and non-memory semiconductors. It distributes its products to both domestic and overseas market to renowned companies like Samsung Electronics, Apple Inc., Asus and Dell.
- SK Hynix is the world's second-largest memory chip maker and the world's fifth-largest semiconductor company.
- Its product lines include DRAM (77%), NAND (19%) and other non-memory semiconductors such as, image sensors which are mainly used in digital imaging products.

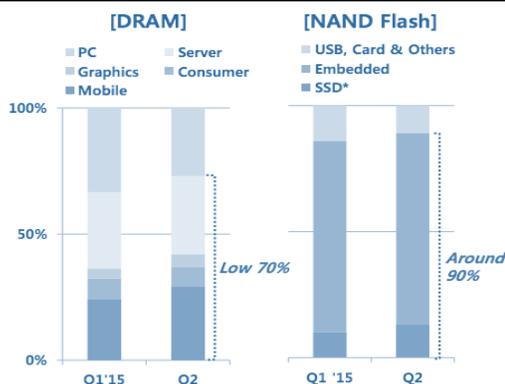
Revenue Composition

Figure 1 – SK Hynix FY15 Revenue Mix by Product



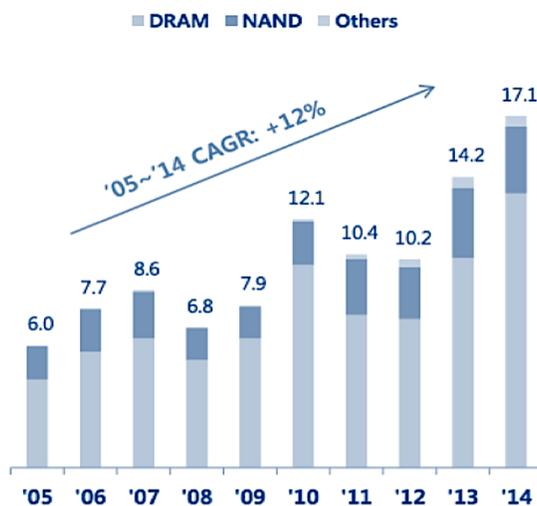
Source: Company data

Figure 2 – SK Hynix FY15 Revenue Mix by Application



Source: Company data

Figure 3 – SK Hynix Historical Revenue Mix

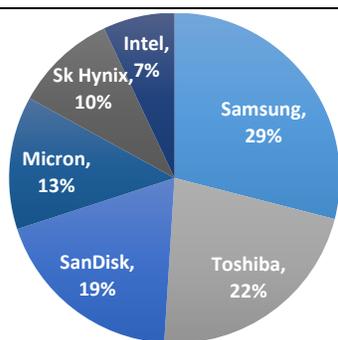


Source: Company data

Make Them Smaller, Faster and Cheaper

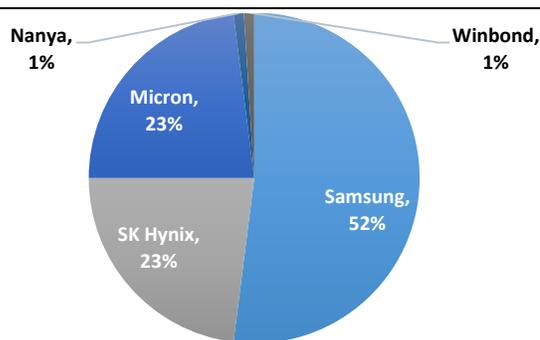
- Semiconductor industry encounters fierce competition across the globe where prices of new chips can halve within a few months. Therefore, the industry’s focus was on lean product development
- Highly cyclic nature of semiconductor industry can pose both advantages and threats to the companies as regularity entails both good predictability and repeated risks. Severe price competition, highly accelerated technology cost, and slowdown in customers’ replacement of electronic devices.
- The industry suffers little from the threat of new entrants due to high technological barriers, but competitive rivalry, as mentioned above, can be a significant threat. In particular, exceptional cases of government-supported Chinese companies must be considered.

Figure 4 – 2014 NAND Market Share



Source: DRAM Exchange

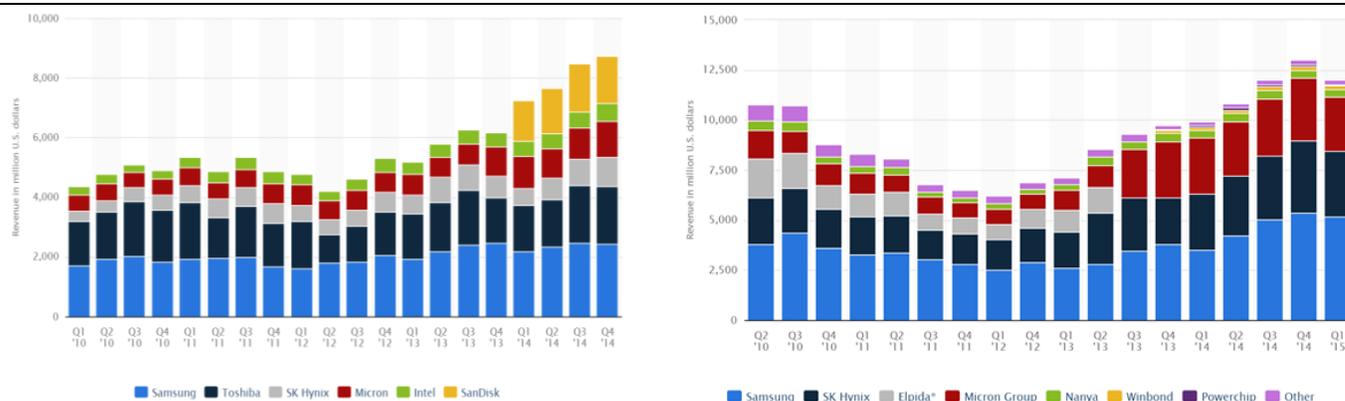
Figure 5 – 1Q15 DRAM Market Share



Source: DRAM Exchange

- The figure shows the market shares of major competitors in DRAM and NAND market. Although competition in the DRAM market is relatively stabilized, Sandisk entered the NAND market in 2014 and is now taking a position ahead of Sk Hynix.

Figure 6 – Global Revenue Breakdown by Manufacturers (DRAM and NAND)



Source: DRAM Exchange

- **DRAM:** DRAM Market share of SK Hynix recently surpassed that of Micron, and additional construction of factories will likely increase the gap. SK Hynix also benefitted from the industry cycle, and prospect is positive.
- **NAND:** NAND market is not as positive for SK Hynix, since SanDisk entered the competition in 2014, absorbing most of the momentum from the positive industry cycle. Furthermore, SK Hynix is a little behind in 3D NAND R&D phase compared to the other market leaders. One alleviating fact is that the next technology transition (3D NAND) is a difficult one that requires one or two years. Therefore, shortage will extend up to 2016, or even 2017.

Valuation

Multiple Analysis

We have used Price-to-Book multiple to estimate the fair value of SK Hynix. We have also selected a benchmark P/B to be Micron's 12-month forward P/B of 1.25. We will consider 12m forward P/B of SK Hynix's direct competitors in memory-semiconductor segment such as, Samsung Electronics, Sandisk, Toshiba and Intel. This multiple approach suggests a fair value of **44,300 KRW** within the next one-year horizon.

- **Current Share Price:** Currently trading at P/B of 1.0 and P/E of 5.3 which are all well below the industry average suggests that SK Hynix is undoubtedly undervalued further considering its market capitalization (8th in KOSPI).

Figure 7 – Metric Comparison with Micron Technology

Developments and Technical Facts

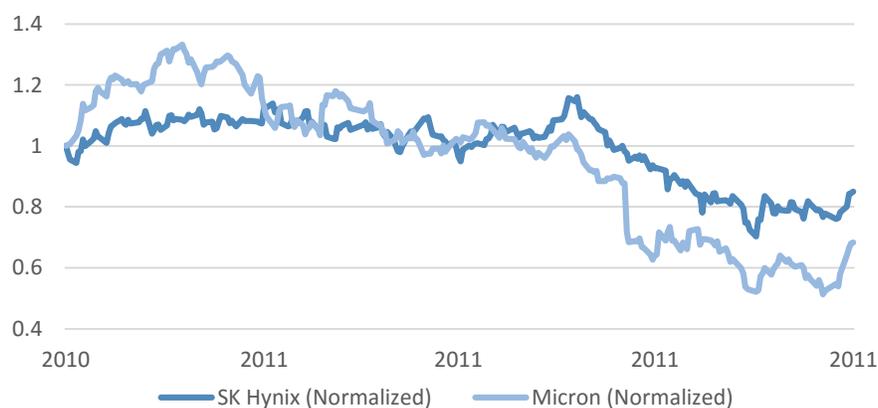
	SK Hynix	Micron Technology
DRAM Market Share (1Q15)	23%	23%
NAND Market Share (1Q15)	12%	13%
DRAM Fine-Process Rate	25nm (60% of DRAM production)	25nm (62% of DRAM production)
Recent NAND Developments	3D-NAND (est. 4Q15)	3D XPoint (est. 1H16)

Multiples

	SK Hynix	Micron Technology
P/E	4.86 x	4.97 x
P/B	1.21 x	1.29 x
P/B (12m Forward)	1.00 x	1.25 x
EV/EBITDA	2.59 x	3.09 x

Source: Bloomberg, Company Data, KEIC estimates

Figure 8 – Micron Technology and SK Hynix Stock Price Movement (Normalized Trend Analysis)



Source: Bloomberg, KEIC estimates

Calculation of Share Price Based on P/B:

- **Assumption:** We applied 50% weight for Micron's 12-month forward P/B and 50% weight for 12-month industry P/B since Micron and SK Hynix have similar share price movements and similar current equity multiples.
- Under these assumptions, **Figure 9** illustrates our calculation for the final target price.

Figure 9 – P/B Analysis Results**Multiples Analysis:**

12m Forward Micron P/B	1.25 x
12m Forward Industry P/B	1.17 x

SK Hynix BPS(Book per Share) **36,600**

Target P/B 1.21x

Target Price 44,300

*50% weight for 2016 Micron's 12m forward P/B
50% weight for 2016 Industry Average P/B*

Current Price:	37,000
Premium-to-Current:	20%

Source: KEIC estimates

Investment Thesis, Catalysts and Risks

We believe that SK Hynix is currently slightly undervalued and foresee a volatile yet steady increase of its stock price in the next 12 months for the following reasons:

- **1) Construction plan with total investment of 46 trillion won** – On Aug 25, SK Hynix announced its plans to construct semiconductor factory in augment to another recently built semiconductor factory “M14”, with total investment of 46 trillion won. 15 trillion won will be invested in constructing M14 and 31 trillion won in constructing two other factories. However, the announcement has not disclosed specific date and content of the investment, which means DRAM Capex will not increase immediately. Since 46 trillion won of CAPEX will be used over 10 years, this year’s DRAM Capex will not be affected greatly.
- **2) Projected Q3 earnings** – Samsung Electronics’ earnings surprise was mainly boosted by profits from lowered unit costs and exchange rate benefits. Similarly, SK Hynix’s Q3 earnings is expected to be higher than the projected earnings reported previously, mainly due to favourable KRW/USD exchange rate and stable mobile DRAM price. It is projected that Q3 revenue and operating income will be 5 trillion and 1.4 trillion won, respectively.
- **3) Introduction of 3D NAND** – Introduction of 3D-NAND will start to stabilize revenues from 2H16. On the long run, NAND’s prices will be near its cash costs, hence manufacturers will control its production rate in order to maintain average selling price.

Investment Risks

The followings represent the greatest risks to our investment thesis:

- **1) Industry Risk: Cyclical Industry** – Highly interconnected and supply & demand driven, SK Hynix is exposed to high level of risk from industry. Production (and hence) is heavily dependent on production facilities and how ‘cheaper’ and ‘smaller’ semiconductors the company can make. We do expect some more production facilities other than the three newly built factories to be made in the future
- **2) Emerging China Semiconductor Market** – New competitor from China has emerged with full backing from the Chinese government (SOE). Although the impact is minimal on the short run, this may force game plan change for many other companies in the industry including SK Hynix on the long run. However we believe that this factor will eventually reflected into the current stock price and will continue to do so. However, we do not expect any surprise elements in this aspect.