ANCHOR REPORT

Global memory

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Stick to the technology winners

From product mix to the speed of technology migration

May 25, 2011

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The edge in specialty DRAM is swinging from the broadest offering to the best player. At 30nm, Samsung is about to make the final putt while the likes of Hynix and Elpida are still trying to hit the green.

Finer linewidths are increasingly difficult to hit. At 3xnm in DRAM and 2xnm in NAND, the pace of migration could make the difference between sublime putts and agony in the bunkers.

SEC (BUY) is the tech leader, our top pick and we think most likely to win the trophy. We have Toshiba (BUY) as runner-up. Valuations at Hynix (NEUTRAL) and Elpida (NEUTRAL) are a little rich for our taste.

Key analyses in this Anchor Report include:

- Examination of the diverging cycles in PC DRAM, specialty DRAM, and NAND.
- Leader Board: our assessment of each player's DRAM technology migration. See Figure 8.
- Samsung Electronics versus Global IT peers: valuation gap.

See Appendix A-1 for analyst certification and important disclosures. Analysts employed by non-US affiliates are not registered or qualified as research analysts with FINRA in the US.

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Technology

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From product mix to speed of technology migration

Action: BUY technology leaders — SEC and Toshiba

In the memory sector, the shares of companies that have managed product mix shrewdly have outperformed vs. those focusing only on PC DRAM. From here, we forecast technology migration will come back into play and work as the key differentiator given: (a) gradual "commoditisation" of specialty DRAM; and (b) as we go into a finer linewidth, technology migration will be more challenging and become the critical factor for profitability.

Samsung Elec is our top pick in this regard. We believe Samsung will continue to be the migration leader in DRAM while its portfolio encompassing mobile DRAM, AP, NAND and OLED will allow it to benefit the most from the shift in IT demand — towards smartphone and tablet PC. Compared with major IT peers, Samsung looks significantly undervalued, in our view. We also favour Toshiba; the continued leader in NAND.

We are NEUTRAL on Hynix and Elpida, believing the shares are trading at around fair value. We think the pace of their migration into 3xnm will be the key factors driving their earnings and, hence, our recommendations.

Catalyst: Smartphone and tablet PC can provide further upside

Should demand for smartphones, tablet PCs and servers exceed our baseline assumptions, actual demand for mobile DRAM, server DRAM and NAND might also be exceeded and render our earnings forecasts too conservative for the leading memory producers. We see the pace of technology migration serving as either an upside or downside catalyst for the respective companies.

Goldilocks: PC DRAM, specialty DRAM, NAND cycles

We forecast each memory category — PC DRAM, specialty DRAM, and NAND — will take different cycle trajectories. With the cycles of PC DRAM, specialty DRAM and NAND moving depending on their respective supply/demand balances, we expect gradual expansion of the overall memory market but also a "Goldilocks" effect, as demand remains solid amid no overheating, given the industry's tepid 2011 capex.

Fig. 1: Memory semiconductor: Stocks for action

Company	Ticker	Price (LC)	Rating	PT
Samsung Elec.	005930 KS	880,000	Buy	1,350,000
Toshiba	6502 JP	431	Buy	600
Hynix	000660 KS	31,550	Neutral*	36,000
Elpida	6665 JP	1,134	Neutral	1,300
Nanya	2408 TT	12.7	Reduce	5.3
Inotera	3474 TT	13.4	Reduce	7.8

Note: Prices as of 19th May, 2011. * Rating changed from Buy on 29 Apr, 2011

Source: Bloomberg, Nomura estimates

Rating: *See report end for details of Nomura's rating system.*

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Contents

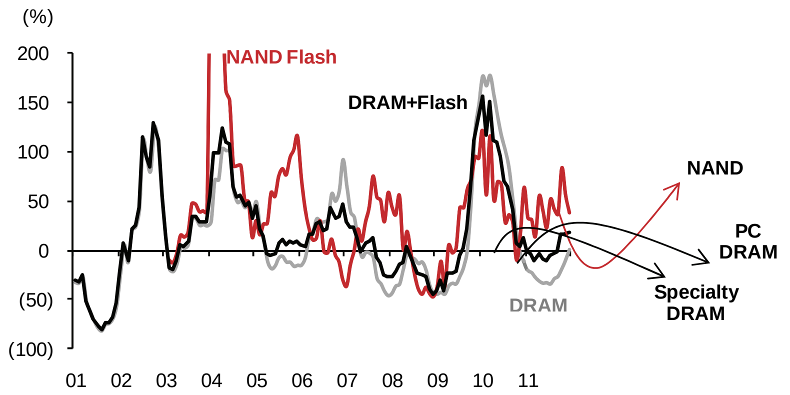
Memory market outlook

We forecast the memory market, in US$ terms, will present 6~8% y-y growth until 2012 and that each memory category — PC DRAM, specialty DRAM, and NAND — will move along a different cycle trajectory. We expect sluggish growth for PC DRAM, strong growth for specialty DRAM, and continued healthy expansion in NAND.

Goldilocks driven by growth of specialty DRAM and NAND. Attention warranted on the migration race

Having bottomed in early 2009, now is the third year of the industry recovery. We forecast continued growth into 2012, bringing us to the fourth consecutive year of industry expansion, longer than the historical average of three years. With the cycles of PC DRAM, specialty DRAM, and NAND moving together on their respective supply/demand balance, we expect the memory market to see gradual expansion, ie, a Goldilocks scenario.

Fig. 2: Memory shipment amount (in US$ terms) growth (y-y)



Source: WSTS, Nomura estimates

Fig. 3: IT Gadget shipment forecast

		2009	2010	2011F	2012F
PC (ex-tablet)	Shipment (mn)	**311**	**353**	**366**	**387**
	y-y	4%	14%	4%	6%
		2009	**2010**	**2011F**	**2012F**
Tablet PC	Shipment (mn)	**0**	**18**	**52**	**103**
	y-y			184%	98%
		2009	**2010**	**2011F**	**2012F**
Total	Shipment (mn)	**311**	**372**	**418**	**491**
	y-y	-26%	19%	12%	17%
		2009	**2010**	**2011F**	**2012F**
Smartphone	Shipment (mn)	**172**	**297**	**452**	**591**
	y-y	24%	72%	52%	31%

Source: Gartner, Nomura estimates

For 2011, we expect NAND shipment value to grow 35% y-y, more than offsetting the 10% y-y decline in the DRAM market, leading to 6% y-y growth for the overall memory market.

Within DRAM, despite weakened demand for PC DRAM (up 29% y-y in 2011F), rapid demand growth for mobile DRAM (up 128% y-y) and server DRAM (up 80% y-y) will likely help DRAM demand grow by 47% y-y in 2011F. NAND, too, will present a healthy demand growth rate of 90% in 2011F, thanks to the smartphone and tablet boom, in our view.

Fig. 4: Memory market forecast

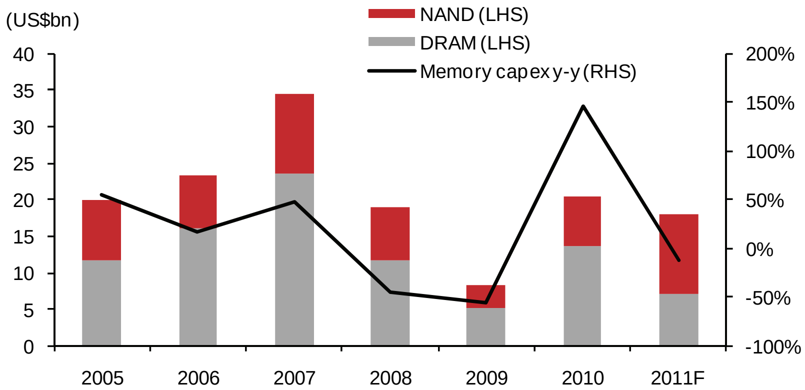
DRAM						
Calendar Year	2007	2008	2009	2010	2011F	2012F
Total Demand (1Gb eq. mn)	**4,951**	**8,240**	**10,513**	**15,446**	**22,633**	**33,138**
Y/Y	94.0%	66.4%	27.6%	46.9%	46.5%	46.4%
Total Supply (1Gb eq. mn)	**5,359**	**8,456**	**10,069**	**14,663**	**22,547**	**32,910**
Y/Y	87.4%	57.8%	19.1%	45.6%	53.8%	46.0%
Demand / Supply	**0.92**	**0.97**	**1.04**	**1.05**	**1.00**	**1.01**
Total shipment value (mn $)	**31,275**	**24,021**	**22,420**	**39,210**	**35,191**	**36,499**
Y/Y	-7.4%	-23.2%	-6.7%	74.9%	-10.3%	3.7%
ASP (1Gb eq.$)	**5.84**	**2.84**	**2.23**	**2.67**	**1.56**	**1.11**
Y/Y	-50.6%	-51.3%	-21.6%	20.1%	-41.6%	-28.9%
NAND						
	2007	2008	2009	2010	2011F	2012F
Total Demand (8Gb eq. mn)	**1,862**	**4,075**	**6,285**	**11,394**	**21,608**	**37,454**
Y/Y	181.4%	118.8%	54.2%	81.3%	89.6%	73.3%
Total Supply (8Gb eq. mn)	**1,880**	**4,286**	**6,554**	**11,403**	**21,585**	**37,640**
Y/Y	177.4%	128.0%	52.9%	74.0%	89.3%	74.4%
Demand / Supply	**0.99**	**0.95**	**0.96**	**1.00**	**1.00**	**1.00**
Total shipment value (mn $)	**14,510**	**12,282**	**14,838**	**21,735**	**29,265**	**33,150**
Y/Y	26.0%	-15.4%	20.8%	46.5%	34.6%	13.3%
ASP (8Gb eq.$)	**7.72**	**2.87**	**2.26**	**1.91**	**1.36**	**0.88**
Y/Y	-54.6%	-62.9%	-21.0%	-15.8%	-28.9%	-35.0%
Total memory shipment amount (mn $)	**45,786**	**36,303**	**37,258**	**60,945**	**64,456**	**69,648**
y-y		**-21%**	**3%**	**64%**	**6%**	**8%**

Source: WSTS, Nomura estimates

In contrast, the industry's overall capital spending has yet to reach a level heralding supply overheating, in our view. This is because only the first-tier players are generating profits, whereas the rest have shallow pockets, due to weakened financial status and relatively mediocre operating cashflow.

Fig. 5: Memory capex trend & forecast

In 2011, the industry's collective spending on NAND will increase y-y vs. that for DRAM will decrease, in our view



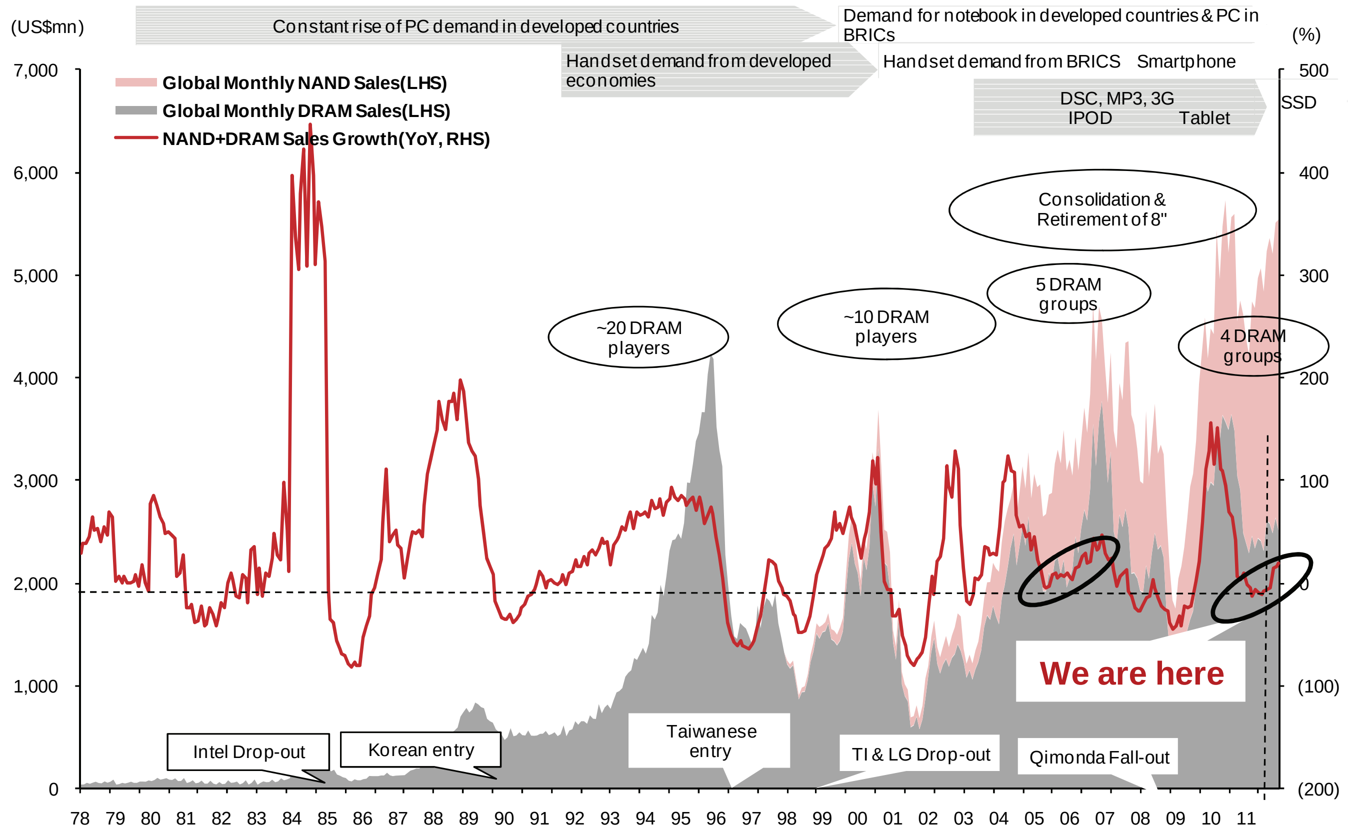
Source: Each company data, Nomura estimates

We believe both product mix and technology migration will be key factors behind differentiation among the memory players. Between the two, we advise paying more attention to technology migration as it may be challenging to move to finer linewidth, and we forecast the commoditisation of specialty DRAM.

For 2012, we forecast the NAND market will continue to expand, by 13% y-y, while DRAM is expected to revert back to growth (up 4% y-y). Overall, the total memory market in 2012F is likely to grow by 8% y-y. We draw parallels with the situation in

2002~2006, when DRAM and NAND had a mixed supply/demand balance while the total industry overall grew consistently over the five years. In this context, the size of the NAND market, in US$ terms, will likely be almost the same size as that of DRAM in 2012. The NAND market was only half the size of the DRAM market in 2007.

Fig. 6: Long-term memory market revenue trend



Source: WSTS, Nomura estimates

DRAM

We foresee a significantly narrower swing in the DRAM price, because of the reduced industry proportion of PC DRAM, which tends to come with a high level of industry fluctuation. Both product mix management (ie, specialty DRAM vs. PC DRAM) and technology migration have been the key factors behind the within-the-pack differentiation since 2010, in our view. From here, we believe specialty DRAM, and mobile DRAM in particular, will be progressively commoditised. Thus, we believe technology migration will be the more important differentiator.

Technology migration

Samsung Elec has been the fastest in commercial production of 3xnm, while Elpida and Hynix are likely to follow suit from 2Q11 onwards. Micron, Nanya, and Inotera are at an early phase of 4xnm migration and they are expected to enter 3xnm in late-2011F. For the memory players, we note Samsung is ahead of Hynix in 3xnm by 6~9 months. Elpida, having jumped from 6xnm directly to 4xnm, is entering 3xnm, fast narrowing the gap vs. Hynix. Nanya and Inotera have been late-movers as they are still trying to shift from 5xnm to 4xnm.

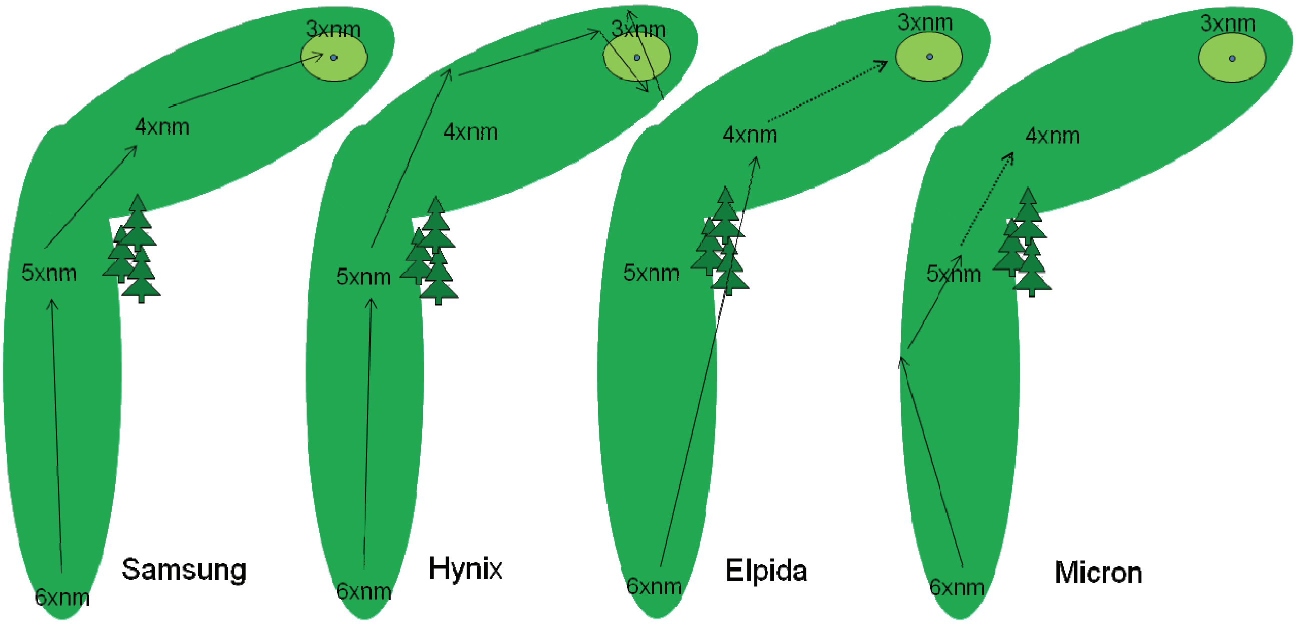
Fig. 7: DRAM Migration roadmap

Samsung — leading status with the gap between Hynix and Elpida narrowing

	2009				2010				2011			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Samsung			46nm				35nm				27nm	
Hynix					44nm					38nm		
Micron	58nm						48nm					
Elpida			65nm S		65nm XS			45nm		38nm		32nm
Nanya				68nm	58nm				48nm			35nm

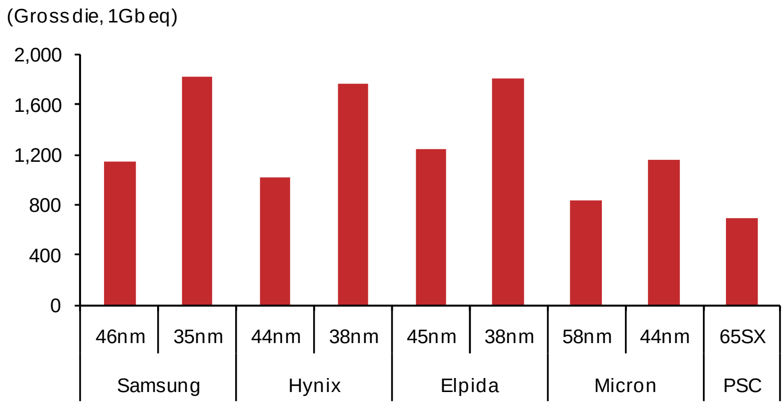
Source: Nomura estimates

Fig. 8: DRAM migration



Source: Nomura estimates

Fig. 9: Number of gross die per wafer by technology



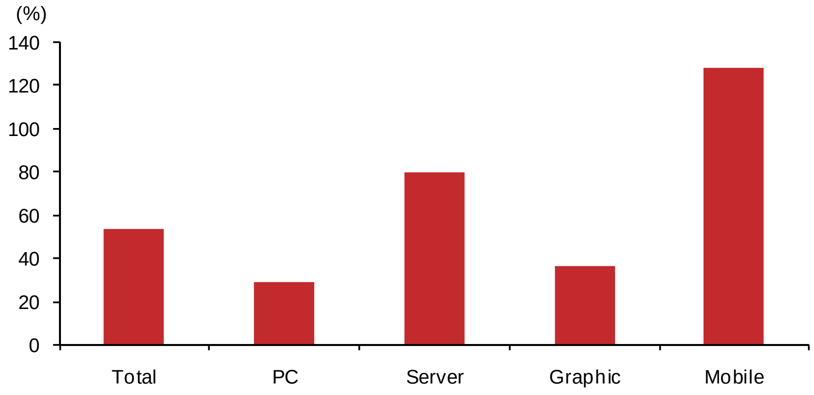
Source: Nomura estimates

Demand by application

By application, we expect demand for mobile DRAM to grow 128% y-y in 2011, backed by the popularity of smartphones and tablet PCs. We believe mobile DRAM will lead overall DRAM demand growth. Thanks to the rise in corporate investments in cloud computing and data transaction system (in order to support the rapid increase in mobile data traffic), we expect strength in server DRAM demand. Demand for graphic DRAM, which we previously thought would weaken on Intel's launch of Sandy Bridge which embeds the graphic processing function, has been stronger than expected. Plus, more personal computers are adopting 3D functionality, which also supports graphic DRAM content growth. Backed by strong demand for specialty DRAMs, we forecast 47% y-y

DRAM demand growth in 2011, in spite of only 29% y-y growth of client PC DRAM growth.

Fig. 10: Industry bit growth by DRAM application (2011F)



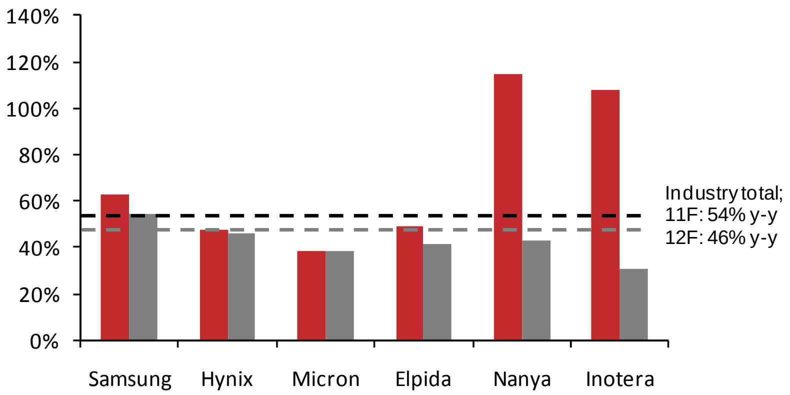
Source: Nomura estimates

Supply

We raise our DRAM bit industry growth forecast for 2011 to 54% y-y, from 51% y-y, which looks somewhat high given the industry's wafer shift towards specialty DRAM (which comes with die penalty); as such, capex in 2011F will likely fall by 47% y-y. We now forecast higher-than-previously-expected supply growth because:

- While Samsung's 2011 spending on DRAM may be significantly less than in 2010 (down 67% y-y), its 2010 spending on DRAM was already large. Thus, we forecast Samsung's DRAM bit growth at more than 60%.
- Having recorded a low base in 2010 due to the low yield, we forecast Nanya's bit growth (including Inotera) at 115% y-y in 2011.
- Having successfully migrated from 65nm to 40nm, Elpida is entering 3xnm at a pace faster than we previously anticipated. We now forecast Elpida's DRAM bit growth at 49% y-y in 2011, higher than our previous forecast of 47% y-y.

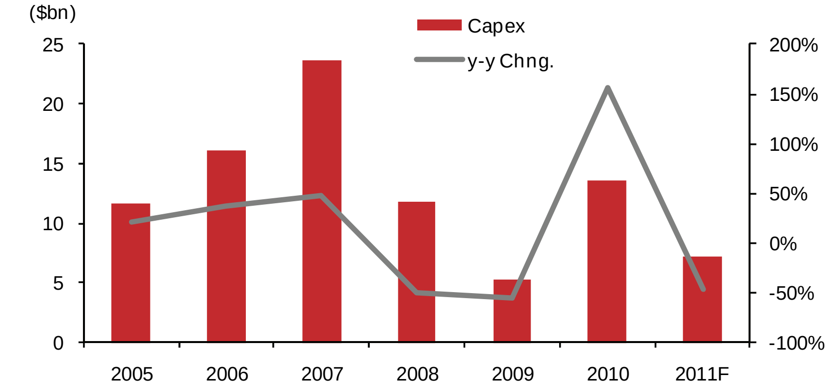
Fig. 11: 2011F DRAM Bit growth by companies



Source: Nomura estimates

Fig. 12: DRAM industry capex trend & forecast

Industry's collective spending on DRAM may fall by c.50% in 2011

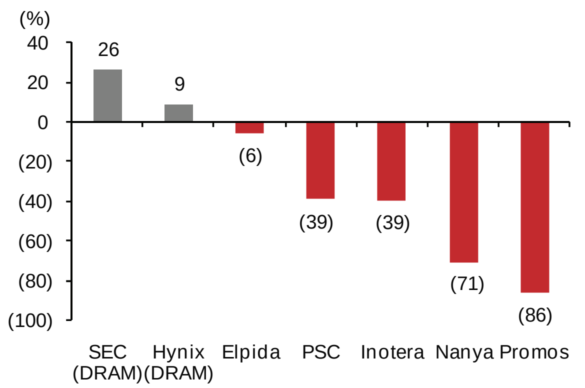


Source: Each company data, Nomura estimates

However, in 2012, we believe the industry's DRAM bit growth will fall to 46% y-y. This is because:

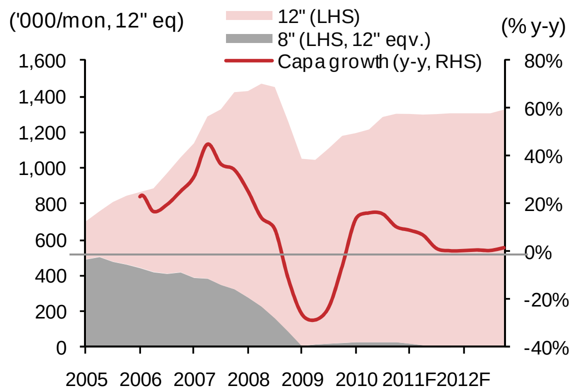
- The industry's collective spending on DRAM may fall by as much as 47% in 2011, bringing little wafer capacity increase.
- The rate of per-wafer bit increase due to technology migration will likely be much more moderate in 2012. We anticipate technology migration will increase per-wafer bit production by only 40~50% in 2012 versus 50~100% of 2010~2011.
- Due to the second-tier companies' relatively weak financial standing and still shallow operating cashflows, we believe they won't have the money to spend.

Fig. 13: DRAM OP margin comparison (1Q11F)



Source: The company data

Fig. 14: DRAM wafer capacity trend & forecast

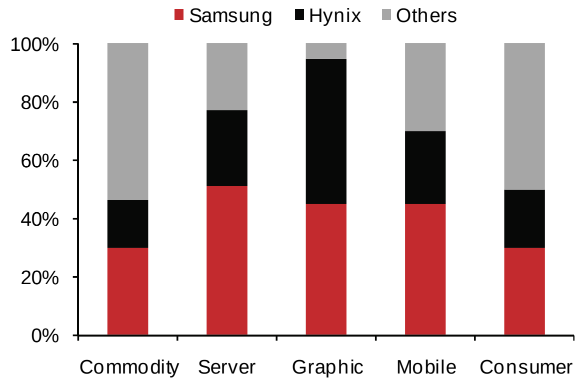


Source: Each company data, Nomura estimates

Product mix by supplier

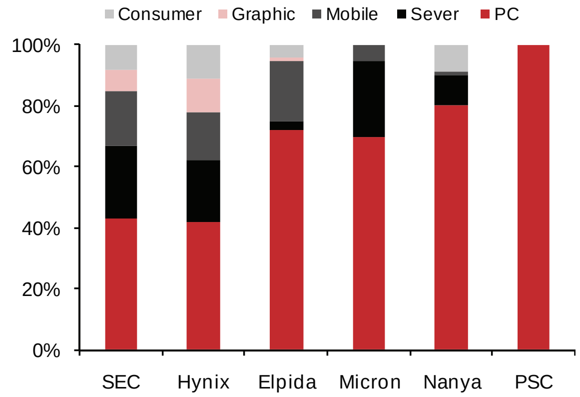
For Samsung and Hynix, PC DRAM contributes only 40% of DRAM shipments, with mobile DRAM and server DRAM each taking up c.20%, and graphic DRAM and consumer DRAM each with c.10% (as of 1Q11).

Fig. 15: Specialty DRAM market share (2011F)



Source: Nomura estimates

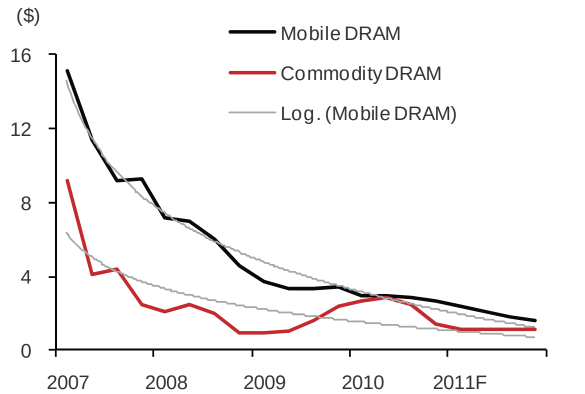
Fig. 16: DRAM product mix composition (1Q11)



Source: Nomura estimates

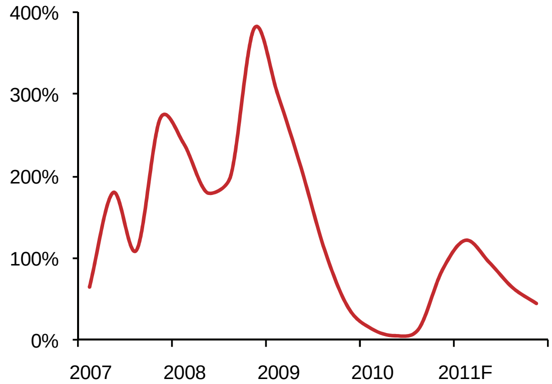
As for mobile DRAM, we note Elpida and Micron are expanding capacity fast, following Samsung and Hynix. Currently, mobile DRAM is selling at above US$2/Gb with its premium over PC DRAM standing at almost 100%. Even considering the higher unit production costs, we figure the OP margin of mobile DRAM should be 20~30%. However, as mobile DRAM supply is likely to rise fast from 2Q11 onwards, in light of the industry's wafer shift towards mobile DRAM, we forecast that mobile DRAM's premium will shrink.

Fig. 17: Mobile DRAM vs. PC DRAM price trend & forecast



Source: Nomura estimates

Fig. 18: Mobile DRAM premium trend & forecast

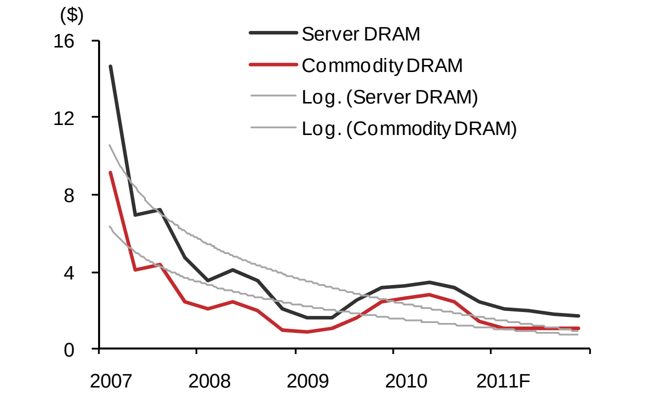


Source: Nomura estimates

As to graphic DRAM, we note Elpida is trying to enter while Samsung and Hynix still largely split the market half-half. In contrast to the street's earlier view that Intel's Sandy Bridge would weaken graphic DRAM demand, we have still seen solid demand for high-end graphic cards, indicating a rise in bit demand for graphic DRAM. In graphic DRAM, we still see a strong duopoly between Samsung and Hynix and, hence, foresee a continued benign situation for both.

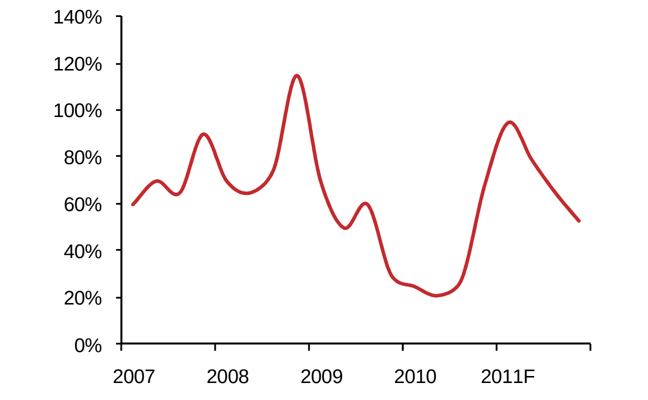
For server DRAM, we see continued healthy demand. On top of an already high entry barrier, corporates' shift to cloud computing should result in more spending on data centres. Also, we think the rapid rise in mobile data traffic necessitates increased spending on data transaction systems. From our channel checks, we note server content-per-box is rising at 50~60% y-y. We think these factors support strong demand growth for server DRAM. In the server DRAM space, Samsung, Hynix and Micron are strong players while Elpida has yet to show any sign of entering. The pricing trend of sever DRAM is similar to that of PC DRAM, yet it enjoys around a 100% price premium over PC DRAM, translating into a 30%p higher OP margin. We forecast the price premium will narrow due to the major DRAM players' wafer shift into more profitable specialty DRAM.

Fig. 19: Server DRAM vs. PC DRAM price trend & forecast



Source: Nomura estimates

Fig. 20: Server DRAM premium trend & forecast

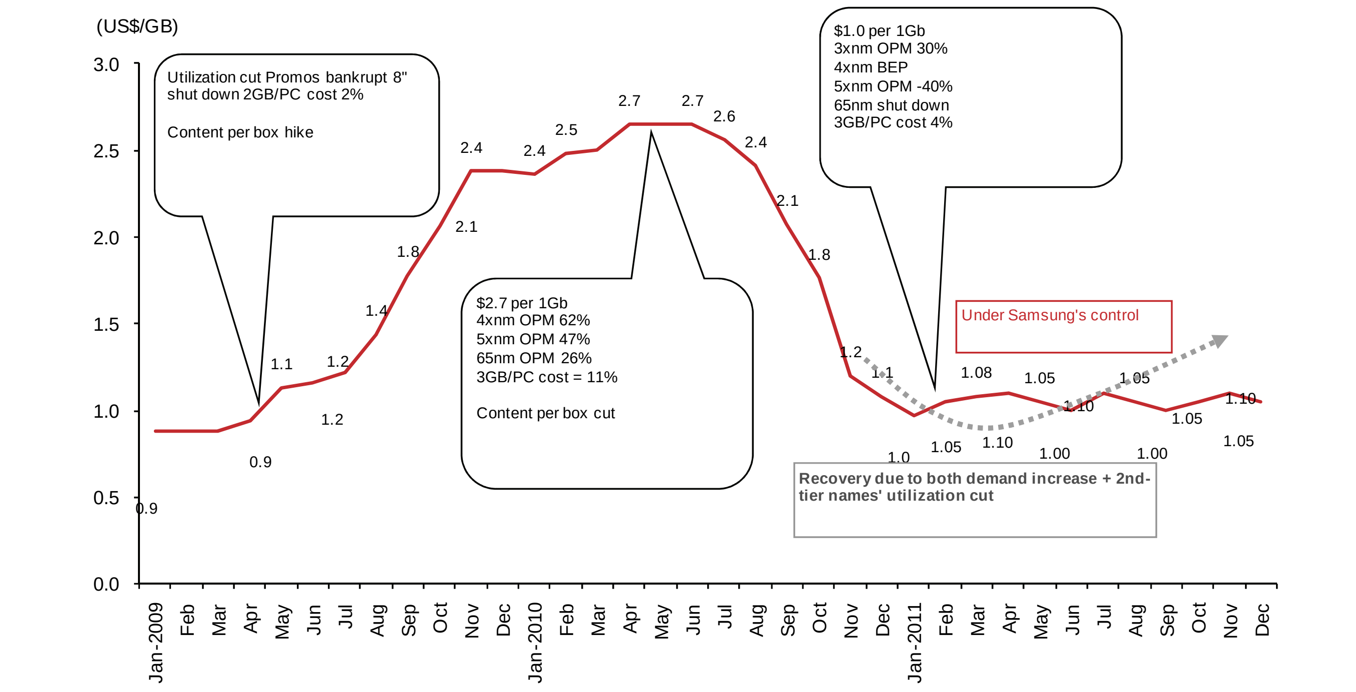


Source: Nomura estimates

The PC DRAM price seems to have bottomed in 1Q11. From here, we forecast the price will hover around US$1/Gb, presenting an L-shaped curve. The current BOM ratio — the ratio of DRAM costs to PC costs — stands at 5%, the historical average. Considering that PC set makers' profitability has recently dropped to only c.2% (Nomura estimates), we do not see much incentive for PC set makers to increase content per box, at the cost of higher expenses on DRAM.

On the flip side, considering that PC DRAM generates 20~30ppt lower margin than specialty DRAM, we do not see much room for PC DRAM prices to fall further. On our baseline scenario (ie, PC DRAM price of US$1.0/Gb to be maintained throughout the year), the production costs of 4xnm technology allows almost nil operating margin while 3xnm technology can only provide around 30% margin, in our view.

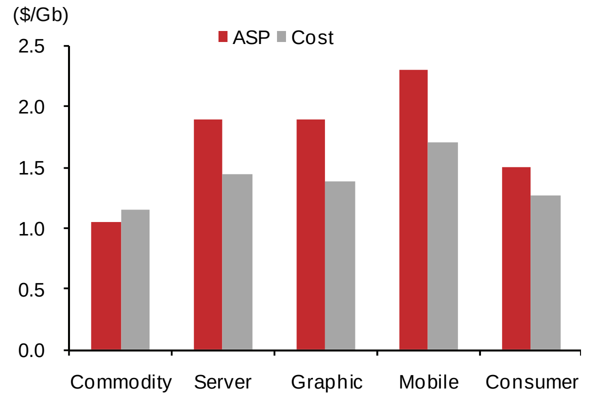
Fig. 21: PC DRAM Contract price forecast



Source: DRAM eXchange, Nomura estimates

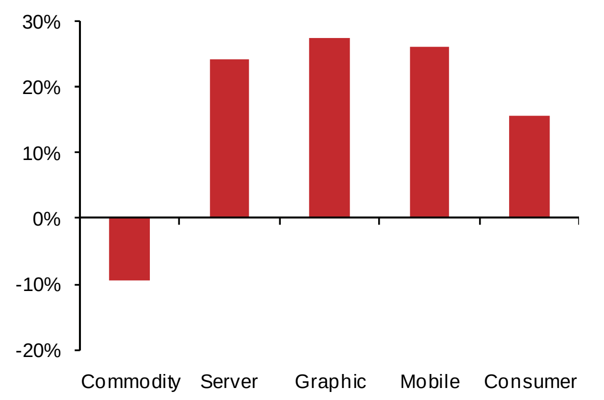
Overall, we expect the DRAM market, in dollar terms, will soft-land in 2011, declining 10% y-y (vs. 75% y-y surge in 2010), with the burst of PC DRAM offset by rapid expansion in specialty DRAM. In 2012, we expect both PC DRAM and specialty DRAM will grow gradually, resulting in 4% y-y industry growth.

Fig. 22: DRAM ASP & Cost by application (1Q11)



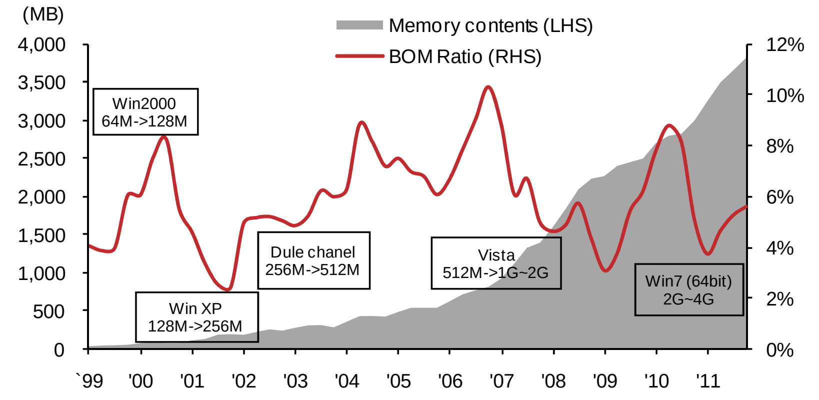
Source: Nomura estimates

Fig. 23: DRAM OP margin by application (1Q11)



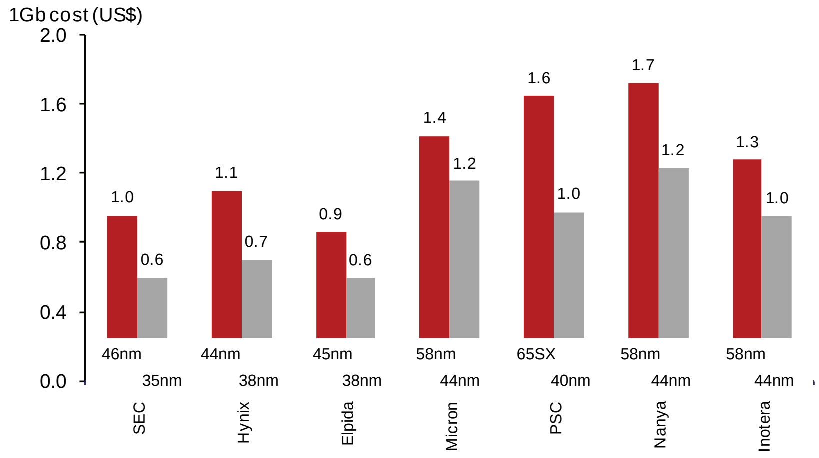
Source: Nomura estimates

Fig. 24: DRAM Bills-on-PC Price ratio



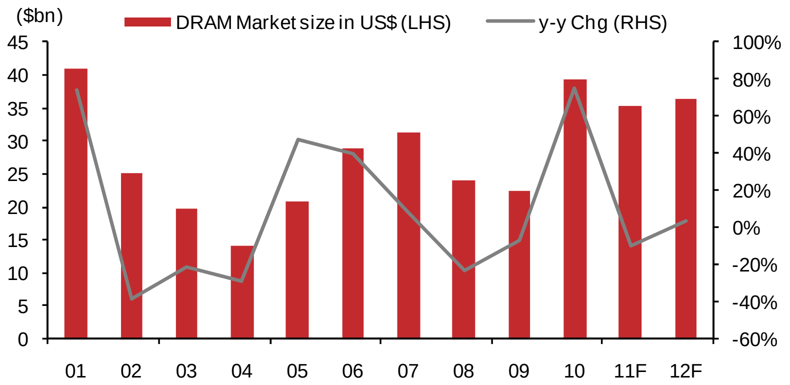
Source: Nomura estimates

Fig. 25: DRAM Production costs by technology



Source: Nomura estimates

Fig. 26: DRAM Market size in US$bn



Source: WSTS, Nomura estimates

Fig. 27: Nomura set shipment forecasts

Calendar year	2009	1Q10	2Q10	3Q10	4Q10	2010	1Q11	2Q11F	3Q11F	4Q11F	2011F	2012F
Personal Computers <units in 000>												
PC Total	**311,243**	**84,985**	**84,136**	**90,552**	**94,845**	**354,518**	**82,346**	**86,300**	**96,180**	**101,200**	**366,026**	**387,250**
Y/Y	3.6%	26.0%	20.5%	9.9%	3.6%	13.9%	-3.1%	2.6%	6.2%	6.7%	3.2%	5.8%
Q/Q		-7.2%	-1.0%	7.6%	4.7%		-13.2%	4.8%	11.4%	5.2%		
Desktops	**136,170**	**35,325**	**35,861**	**36,741**	**37,940**	**145,867**	**34,500**	**36,000**	**39,000**	**40,000**	**149,500**	**153,200**
Y/Y	-9.5%	10.8%	11.5%	4.9%	2.2%	7.1%	-2.3%	0.4%	6.1%	5.4%	2.5%	2.5%
Q/Q		-4.8%	1.5%	2.5%	3.3%		-9.1%	4.3%	8.3%	2.6%		
Notebooks	**168,707**	**47,875**	**46,479**	**51,949**	**54,905**	**201,208**	**46,057**	**48,500**	**55,200**	**59,000**	**208,757**	**225,900**
Y/Y	18.6%	40.2%	28.3%	13.5%	4.4%	19.3%	-3.8%	4.3%	6.3%	7.5%	3.8%	8.2%
Q/Q		-8.9%	-2.9%	11.8%	5.7%		-16.1%	5.3%	13.8%	6.9%		
Netbooks	**34,285**	**8,800**	**8,761**	**10,830**	**9,500**	**37,891**	**7,600**	**6,840**	**6,156**	**4,309**	**24,905**	**15,601**
Y/Y	197.7%	35.4%	16.8%	14.0%	-11.9%	10.5%	-13.6%	-21.9%	-43.2%	-54.6%	-34.3%	-37.4%
Q/Q		-18.4%	-0.4%	23.6%	-12.3%		-20.0%	-10.0%	-10.0%	-30.0%		
Ex. Netbooks	**134,422**	**39,075**	**37,718**	**41,119**	**45,405**	**163,317**	**38,457**	**41,660**	**49,044**	**54,691**	**183,852**	**210,299**
Y/Y	2.8%	41.3%	31.3%	13.4%	8.7%	21.5%	-1.6%	10.5%	19.3%	20.5%	12.6%	14.4%
Q/Q		-6.5%	-3.5%	9.0%	10.4%		-15.3%	8.3%	17.7%	11.5%		
Netbook Ratio	11.0%	10.4%	10.4%	12.0%	10.0%	10.7%	9.2%	7.9%	6.4%	4.3%	6.8%	4.0%
Netbook Ratio by MSFT												
x86 Servers	**6,366**	**1,785**	**1,795**	**1,863**	**2,000**	**7,442**	**1,789**	**1,800**	**1,980**	**2,200**	**7,769**	**8,150**
Y/Y	-17.9%	25.5%	24.8%	13.8%	7.0%	16.9%	0.2%	0.3%	6.3%	10.0%	4.4%	4.9%
Q/Q		-4.5%	0.6%	3.7%	7.4%		-10.5%	0.6%	10.0%	11.1%		
Enterprise Servers	**1,141**	**340**	**350**	**360**	**370**	**1,420**	**390**	**400**	**415**	**430**	**1,635**	**1,870**
Y/Y	0.3%	25.9%	28.7%	24.6%	19.4%	24.5%	14.7%	14.3%	15.3%	16.2%	15.1%	14.4%
Q/Q		9.7%	2.9%	2.9%	2.8%		5.4%	2.6%	3.8%	3.6%		
Workstations	**2,591**	**725**	**750**	**770**	**780**	**3,025**	**810**	**835**	**860**	**890**	**3,395**	**3,750**
Y/Y	-14.8%	25.7%	19.5%	14.9%	8.8%	16.7%	11.7%	11.3%	11.7%	14.1%	12.2%	10.5%
Q/Q		1.1%	3.4%	2.7%	1.3%		3.8%	3.1%	3.0%	3.5%		
Cell Phone <units in 000>												
Cell Phone Total	**1,211,240**	**359,694**	**367,987**	**417,086**	**452,037**	**1,596,802**	**420,394**	**437,210**	**461,256**	**500,463**	**1,819,323**	**2,004,098**
Y/Y	-0.9%	31.0%	28.2%	35.0%	32.7%	31.8%	16.9%	18.8%	10.6%	10.7%	13.9%	10.2%
Q/Q		5.6%	2.3%	13.3%	8.4%		-7.0%	4.0%	5.5%	8.5%		
Smart Phone	172,376	54,306	61,658	80,533	100,150	296,647	95,202	103,856	117,315	135,500	451,873	590,872
Y/Y	23.8%	48.8%	50.5%	96.0%	86.1%	72.1%	75.3%	68.4%	45.7%	35.3%	52.3%	30.8%
Q/Q		0.9%	13.5%	30.6%	24.4%		-4.9%	9.1%	13.0%	15.5%		
Cell Phone ex. Smart Phone	1,038,864	305,388	306,329	336,553	351,886	1,300,156	325,192	333,354	343,941	364,963	1,367,450	1,413,225
Y/Y	-4.1%	28.3%	24.5%	25.7%	22.7%	25.2%	6.5%	8.8%	2.2%	3.7%	5.2%	3.3%
Q/Q		6.4%	0.3%	9.9%	4.6%		-7.6%	2.5%	3.2%	6.1%		
Digital Still Camera <units in 000>												
DSC Total	**105,863**	**24,692**	**30,628**	**31,287**	**34,857**	**121,463**	**27,900**	**30,900**	**34,600**	**40,100**	**133,500**	**134,200**
Y/Y	-11.6%	45.9%	25.0%	3.5%	1.9%	14.7%	13.0%	0.9%	10.6%	15.0%	9.9%	0.5%
Q/Q		-27.8%	24.0%	2.2%	11.4%		-20.0%	10.8%	12.0%	15.9%		
Flat Panel TV <units in 000>												
Flat Panel TV Total	**160,138**	**45,630**	**50,130**	**55,540**	**62,400**	**213,700**	**50,150**	**54,280**	**59,110**	**67,460**	**231,000**	**264,000**
Y/Y	34.2%	42.2%	44.2%	36.4%	18.7%	33.4%	9.9%	8.3%	6.4%	8.1%	8.1%	14.3%
Q/Q		-13.2%	9.9%	10.8%	12.4%		-19.6%	8.2%	8.9%	14.1%		
USB flash memories												
Total	**198,700**	**65,210**	**67,212**	**76,079**	**77,509**	**286,010**	**65,194**	**67,287**	**82,539**	**84,034**	**299,055**	**309,735**
Y/Y	-16.5%	50.6%	50.4%	43.8%	34.1%	43.9%	0.0%	0.1%	8.5%	8.4%	4.6%	3.6%
Q/Q		12.8%	3.1%	13.2%	1.9%		-15.9%	3.2%	22.7%	1.8%		
Flash card memories												
Total	**845,781**	**241,248**	**228,071**	**279,767**	**264,562**	**1,013,649**	**243,678**	**230,368**	**282,584**	**267,227**	**1,023,857**	**1,009,356**
Y/Y	-5.6%	30.8%	19.8%	24.4%	7.5%	19.8%	1.0%	1.0%	1.0%	1.0%	1.0%	-1.4%
Q/Q		-2.0%	-5.5%	22.7%	-5.4%		-7.9%	-5.5%	22.7%	-5.4%		
Game (Console/Handheld)												
Total	**95,914**	**16,700**	**18,000**	**15,500**	**38,000**	**88,200**	**18,300**	**19,300**	**20,500**	**38,600**	**96,700**	**105,000**
Y/Y	-1.0%	-13.6%	-8.6%	-13.9%	-2.3%	-8.0%	9.6%	7.2%	32.3%	1.6%	9.6%	8.6%
Q/Q		-57.1%	7.8%	-13.9%	145.2%		-51.8%	5.5%	6.2%	88.3%		
Solid-State Drive												
Total	**5,800**	**1,274**	**1,666**	**2,744**	**4,116**	**9,801**	**2,891**	**3,854**	**5,781**	**6,745**	**19,271**	**37,288**
Y/Y	15.8%	-2.0%	19.0%	82.9%	157.3%	69.0%	126.9%	131.3%	110.7%	63.9%	96.6%	93.5%
Q/Q		-20.4%	30.8%	64.7%	50.0%		-29.8%	33.3%	50.0%	16.7%		
Portable Navigation System												
Total	**39,000**	**10,191**	**10,048**	**9,908**	**9,769**	**39,916**	**8,918**	**8,530**	**8,159**	**7,804**	**33,412**	**26,958**
Y/Y	7.7%	137.0%	54.6%	10.1%	-49.1%	2.3%	-12.5%	-15.1%	-17.6%	-20.1%	-16.3%	-19.3%
Q/Q		-46.9%	-1.4%	-1.4%	-1.4%		-8.7%	-4.3%	-4.3%	-4.3%		
Memory Type Digital Camcorder												
Total	**15,900**	**4,028**	**4,188**	**4,355**	**4,528**	**17,100**	**4,510**	**4,609**	**4,709**	**4,812**	**18,640**	**19,750**
Y/Y	-0.6%	11.9%	4.7%	6.2%	7.8%	7.5%	12.0%	10.0%	8.1%	6.3%	9.0%	6.0%
Q/Q		-4.1%	4.0%	4.0%	4.0%		-0.4%	2.2%	2.2%	2.2%		
Tablet PC												
Total			**3,870**	**4,800**	**9,731**	**18,401**	**8,748**	**11,758**	**13,838**	**17,963**	**52,307**	**103,484**
Y/Y								203.8%	188.3%	84.6%	184.3%	97.8%
Q/Q				24.0%	102.7%	283.4%	-10.1%	34.4%	17.7%	29.8%		
Graphic Card												
Total	**73,706**	**18,050**	**17,554**	**22,000**	**25,000**	**82,603**	**21,800**	**21,000**	**21,200**	**21,300**	**85,300**	**85,500**
Y/Y	-8.6%	3.2%	3.4%	18.7%	20.7%	12.1%	20.8%	19.6%	-3.6%	-14.8%	3.3%	0.2%
Q/Q		-12.9%	-2.7%	25.3%	13.6%		-12.8%	-3.7%	1.0%	0.5%		

Source: Gartner, Nomura estimates

Fig. 28: Nomura DRAM model - Demand

Calendar Year	2009	1Q10	2Q10	3Q10	4Q10	2010	1Q11	2Q11F	3Q11F	4Q11F	2011F	2012F
Total Demand (1Gb eq. mn)	**10,509**	**3,317**	**3,544**	**3,989**	**4,596**	**15,446**	**4,563**	**5,162**	**5,989**	**6,918**	**22,633**	**33,138**
Y/Y	27.5%	55.4%	49.7%	43.7%	42.3%	47.0%	37.6%	45.7%	50.1%	50.5%	46.5%	46.4%
Q/Q		2.7%	6.9%	12.6%	15.2%		-0.7%	13.1%	16.0%	15.5%		
Computer Total	**8,038**	**2,560**	**2,699**	**2,991**	**3,346**	**11,596**	**3,319**	**3,736**	**4,364**	**4,937**	**16,356**	**23,739**
Y/Y	28.5%	57.0%	51.1%	39.3%	35.3%	44.3%	29.6%	38.4%	45.9%	47.6%	41.1%	45.1%
Q/Q		3.5%	5.4%	10.8%	11.8%		-0.8%	12.6%	16.8%	13.1%		
PC Total	**6,493**	**2,011**	**2,070**	**2,269**	**2,531**	**8,882**	**2,343**	**2,608**	**3,070**	**3,453**	**11,475**	**15,370**
Y/Y	27.8%	52.8%	43.8%	30.2%	26.9%	36.8%	16.5%	26.0%	35.3%	36.4%	29.2%	33.9%
Q/Q		0.9%	2.9%	9.6%	11.5%		-7.4%	11.3%	17.7%	12.5%		
Shipment (units in 000)	311,456	84,985	84,136	90,552	94,845	354,518	82,346	86,300	96,180	101,200	366,026	387,250
Y/Y	3.6%	26.0%	20.5%	9.8%	3.5%	13.8%	-3.1%	2.6%	6.2%	6.7%	3.2%	5.8%
Q/Q		-7.3%	-1.0%	7.6%	4.7%		-13.2%	4.8%	11.4%	5.2%		
Average contents per box (MB)	2,606	2,958	3,075	3,133	3,336	3,132	3,557	3,778	3,990	4,266	3,919	4,961
Y/Y	23.3%	21.3%	19.3%	18.6%	22.6%	20.2%	20.2%	22.9%	27.4%	27.9%	25.1%	26.6%
Q/Q		8.8%	4.0%	1.9%	6.5%		6.6%	6.2%	5.6%	6.9%		
Desktops	**2,764**	**800**	**840**	**890**	**963**	**3,494**	**916**	**1,004**	**1,130**	**1,213**	**4,263**	**5,259**
Y/Y	17.2%	32.8%	28.7%	22.7%	23.1%	26.4%	14.5%	19.5%	27.0%	25.9%	22.0%	23.4%
Q/Q		2.2%	5.0%	5.9%	8.3%		-4.9%	9.6%	12.6%	7.3%		
Notebooks(ex.Netbook)	**2,857**	**916**	**919**	**1,012**	**1,171**	**4,018**	**1,037**	**1,172**	**1,437**	**1,658**	**5,303**	**7,329**
Y/Y	32.3%	66.1%	51.6%	29.1%	27.8%	40.6%	13.2%	27.4%	42.0%	41.6%	32.0%	38.2%
Q/Q		0.0%	0.4%	10.1%	15.7%		-11.5%	13.0%	22.6%	15.4%		
Netbooks	**290**	**86**	**86**	**106**	**93**	**370**	**74**	**67**	**60**	**42**	**243**	**158**
Y/Y	274.4%	78.1%	46.0%	29.5%	-8.2%	27.8%	-13.6%	-21.9%	-43.2%	-54.6%	-34.3%	-34.9%
Q/Q		-15.0%	-0.4%	23.6%	-12.3%		-20.0%	-10.0%	-10.0%	-30.0%		
x86 Servers	**583**	**209**	**224**	**262**	**305**	**1,000**	**316**	**366**	**443**	**541**	**1,666**	**2,623**
Y/Y	19.6%	83.9%	84.6%	70.7%	56.8%	71.6%	51.1%	63.0%	69.0%	77.6%	66.5%	57.5%
Q/Q		7.7%	7.3%	16.7%	16.3%		3.8%	15.7%	21.0%	22.2%		
Enterprise Servers	**1,081**	**390**	**450**	**514**	**583**	**1,938**	**694**	**812**	**951**	**1,104**	**3,561**	**6,252**
Y/Y	39.6%	72.5%	83.0%	82.8%	78.2%	79.3%	77.8%	80.3%	84.9%	89.5%	83.8%	75.6%
Q/Q		19.4%	15.3%	14.3%	13.3%		19.1%	16.9%	17.2%	16.0%		
Workstations	**464**	**159**	**179**	**208**	**232**	**776**	**282**	**316**	**343**	**380**	**1,320**	**2,117**
Y/Y	16.3%	78.2%	78.0%	68.7%	52.5%	67.2%	77.5%	77.0%	65.1%	63.9%	70.0%	60.3%
Q/Q		4.5%	12.7%	16.1%	11.6%		21.6%	12.4%	8.3%	10.8%		
Consumer	**947**	**361**	**438**	**562**	**760**	**2,121**	**743**	**910**	**1,091**	**1,406**	**4,150**	**6,830**
Y/Y	58.1%	120.2%	111.6%	130.6%	128.7%	124.0%	105.8%	107.9%	94.1%	84.9%	95.6%	64.6%
Q/Q		8.6%	21.1%	28.5%	35.3%		-2.2%	22.4%	19.9%	28.9%		
Game Console (Main/CPU)	**71**	**17**	**20**	**18**	**51**	**106**	**29**	**30**	**32**	**59**	**150**	**165**
Y/Y	17.8%	16.7%	6.5%	19.9%	122.2%	49.0%	75.6%	51.8%	75.4%	15.3%	41.8%	10.1%
Q/Q		-28.3%	19.6%	-8.6%	183.1%		-43.3%	3.4%	5.7%	86.0%		
Flat Panel TV (LCD)	**134**	**85**	**101**	**120**	**151**	**457**	**129**	**152**	**170**	**210**	**662**	**930**
Y/Y	288.2%	513.1%	329.0%	230.8%	151.3%	241.6%	51.6%	51.4%	42.5%	38.7%	44.9%	40.4%
Q/Q		41.6%	17.9%	18.8%	26.7%		-14.6%	17.8%	11.8%	23.3%		
Flat Panel TV (PDP)	**13**	**7**	**9**	**11**	**15**	**42**	**12**	**13**	**15**	**16**	**56**	**60**
Y/Y	112.0%	397.1%	284.5%	192.2%	188.0%	231.4%	62.7%	44.3%	32.7%	11.5%	33.0%	6.7%
Q/Q		43.8%	22.5%	21.7%	34.3%		-18.8%	8.7%	11.9%	12.9%		
Cell Phone (ex. Smart Phone)	**270**	**93**	**93**	**105**	**113**	**404**	**104**	**107**	**113**	**120**	**444**	**464**
Y/Y	35.9%	73.0%	54.1%	48.2%	32.3%	49.5%	11.9%	14.4%	7.3%	6.2%	9.7%	4.6%
Q/Q		9.2%	0.3%	12.7%	7.2%		-7.6%	2.5%	5.7%	6.1%		
Smart Phone	**329**	**123**	**164**	**252**	**344**	**884**	**389**	**494**	**614**	**780**	**2,276**	**3,923**
Y/Y	68.0%	106.7%	122.2%	205.2%	204.5%	168.4%	215.1%	200.7%	143.8%	126.5%	157.6%	72.3%
Q/Q		9.2%	33.0%	53.2%	36.8%		13.0%	27.0%	24.3%	27.1%		
Digital Still Camera	**73**	**21**	**28**	**31**	**35**	**115**	**29**	**34**	**39**	**47**	**149**	**189**
Y/Y	38.0%	129.2%	79.8%	43.8%	32.4%	58.1%	38.7%	22.8%	28.3%	32.7%	30.3%	26.2%
Q/Q		-20.6%	29.7%	11.0%	15.9%		-16.9%	14.9%	16.0%	19.9%		
Tablet PC			**8**	**10**	**29**	**46**	**34**	**64**	**92**	**154**	**345**	**1,035**
Y/Y								718.0%	842.5%	434.4%	641.4%	200.3%
Q/Q				24.0%	196.3%		18.3%	88.2%	42.9%	68.0%		

Source: Nomura estimates

Fig. 29: Nomura DRAM model – Supply & Total market value

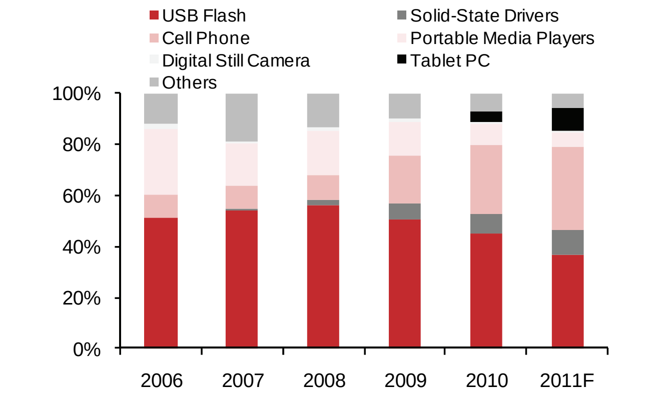
Calander year	2009	1Q10	2Q10	3Q10	4Q10	2010	1Q11	2Q11F	3Q11F	4Q11F	2011F	2012F
Total Supply (1Gb eq. mn)	**10,242**	**3,186**	**3,435**	**3,830**	**4,213**	**14,663**	**4,748**	**5,354**	**5,913**	**6,532**	**22,547**	**32,910**
Y/Y	21.1%	57.0%	41.0%	43.3%	35.7%	43.2%	49.0%	55.9%	54.4%	55.1%	53.8%	46.0%
Q/Q		2.6%	7.8%	11.5%	10.0%		12.7%	12.8%	10.4%	10.5%		
Samsung	**3,220**	**1,076**	**1,252**	**1,550**	**1,627**	**5,505**	**1,843**	**2,102**	**2,369**	**2,637**	**8,951**	**13,796**
Y/Y	43.8%	70.7%	60.6%	80.2%	71.3%	71.0%	71.3%	67.8%	52.8%	62.0%	62.6%	54.1%
Q/Q		13.2%	16.4%	23.8%	5.0%		13.2%	14.1%	12.7%	11.3%		
Hynix	**2,328**	**723**	**764**	**816**	**961**	**3,264**	**1,100**	**1,120**	**1,219**	**1,368**	**4,807**	**7,023**
Y/Y	27.7%	46.6%	41.3%	34.1%	40.1%	40.2%	52.2%	46.6%	49.4%	42.4%	47.3%	46.1%
Q/Q		5.4%	5.7%	6.8%	17.7%		14.5%	1.8%	8.8%	12.2%		
Elpida	**2,035**	**635**	**675**	**709**	**787**	**2,806**	**836**	**1,050**	**1,100**	**1,190**	**4,176**	**5,911**
Y/Y	50.3%	56.1%	48.4%	38.5%	19.2%	37.9%	31.6%	55.6%	55.1%	51.2%	48.8%	41.5%
Q/Q		-3.8%	6.2%	5.0%	11.0%		6.3%	25.5%	4.8%	8.2%		
Total Micron (Inc.Inotera)	**1,040**	**400**	**409**	**360**	**380**	**1,549**	**465**	**485**	**555**	**635**	**2,140**	**2,970**
Y/Y	48.8%	105.1%	77.8%	31.0%	11.8%	49.0%	16.3%	18.6%	54.1%	67.1%	38.1%	38.8%
Q/Q		17.6%	2.3%	-11.9%	5.5%		22.4%	4.3%	14.4%	14.4%		
Total Nanya (Inc.Inotera)	**670**	**160**	**164**	**190**	**257**	**772**	**309**	**396**	**462**	**494**	**1,660**	**2,378**
Y/Y	49.2%	5.6%	0.3%	5.8%	47.7%	15.3%	92.6%	140.6%	142.5%	92.1%	115.0%	43.2%
Q/Q		-7.8%	2.5%	15.8%	35.0%		20.2%	28.0%	16.7%	7.0%		
Nanya own	**260**	**57**	**76**	**101**	**109**	**344**	**109**	**170**	**235**	**256**	**769**	**1,213**
Y/Y	55.2%	2.9%	44.9%	20.2%	61.7%	32.3%	88.9%	122.5%	132.3%	134.6%	123.6%	57.6%
Q/Q		-14.9%	32.6%	32.9%	7.8%		-0.6%	56.2%	38.7%	8.9%		
Total Inotera	**659**	**206**	**176**	**178**	**296**	**857**	**401**	**452**	**453**	**476**	**1,782**	**2,330**
Y/Y	40.9%	94.4%	18.5%	-6.9%	38.9%	29.9%	94.7%	156.2%	154.0%	60.8%	108.0%	30.8%
Q/Q		-3.3%	-14.3%	1.1%	65.9%		35.6%	12.7%	0.2%	5.0%		
Powerchip	**438**	**184**	**117**	**149**	**156**	**606**	**158**	**184**	**192**	**200**	**734**	**800**
Y/Y	-41.3%	236.2%	28.7%	29.8%	-12.2%	38.4%	-14.4%	56.6%	29.3%	28.3%	21.0%	9.0%
Q/Q		3.9%	-36.3%	26.4%	5.0%		1.3%	16.5%	4.3%	4.2%		
Winbond	**177**	**41**	**40**	**39**	**29**	**150**	**25**	**20**	**19**	**19**	**83**	**72**
Y/Y	25.0%	125.2%	-17.2%	-31.2%	-45.3%	-15.4%	-39.3%	-50.6%	-51.9%	-35.1%	-44.8%	-13.0%
Q/Q		-23.0%	-2.7%	-3.9%	-24.0%		-14.5%	-20.9%	-6.3%	2.4%		
ProMOS	**264**	**55**	**72**	**87**	**85**	**300**	**86**	**87**	**88**	**90**	**351**	**360**
Y/Y	-51.1%	-12.2%	20.0%	29.8%	15.3%	13.5%	55.3%	20.3%	2.0%	4.8%	17.1%	2.5%
Q/Q		-25.3%	30.8%	19.5%	-1.3%		0.7%	1.3%	1.3%	1.4%		
Demand/Supply	**1.03**	**1.04**	**1.03**	**1.04**	**1.09**	**1.05**	**0.96**	**0.96**	**1.01**	**1.06**	**1.00**	**1.01**
ASP (1Gb eq. $)	2.19	2.92	3.08	2.78	2.06	2.67	1.73	1.68	1.53	1.37	1.56	1.11
Y/Y	-22.9%	74.5%	66.7%	23.2%	-24.8%	22.2%	-40.9%	-45.5%	-44.9%	-33.4%	-41.6%	-28.9%
Q/Q		6.9%	5.5%	-10.0%	-25.9%		-16.1%	-2.7%	-8.9%	-10.5%		
Total shipment value (mn$)	**22,420**	**9,315**	**10,593**	**10,632**	**8,670**	**39,210**	**8,199**	**8,995**	**9,048**	**8,949**	**35,191**	**36,499**
Y/Y	-6.7%	173.9%	134.9%	76.6%	2.1%	74.9%	-12.0%	-15.1%	-14.9%	3.2%	-10.3%	3.7%
Q/Q		9.7%	13.7%	0.4%	-18.5%		-5.4%	9.7%	0.6%	-1.1%		

Source: Nomura estimates

NAND

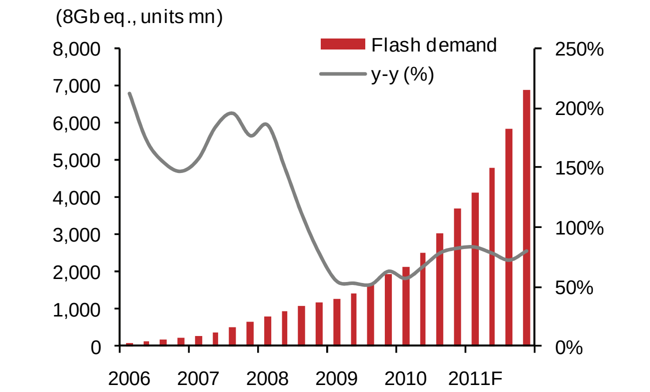
Thanks to the popularity of smartphone and tablet PC, we forecast NAND demand will grow by 90% y-y and 73% y-y in 2011 and 2012, respectively. For 2012 in particular, we are likely to see the NAND market supported by the growth of SSD (Solid-State Drive). With per-Byte costs of 20nm-based 64Gb NAND forecast at US$0.6/GB (leading to the selling price of 128GB SSD below US$100 for the first time), we foresee rapid growth for SSD demand from 2H12 onwards.

Fig. 30: NAND demand by application



Source: Nomura estimates

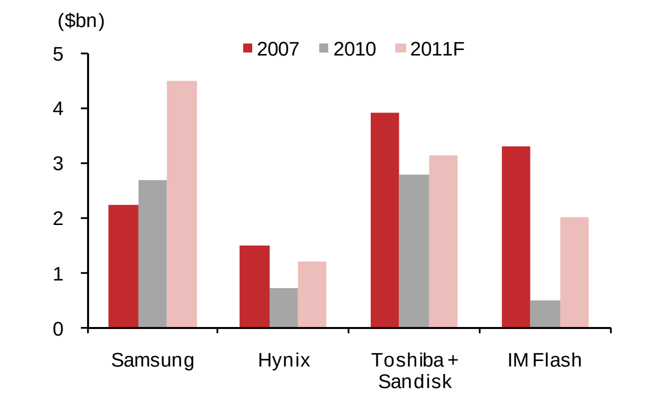
Fig. 31: NAND Demand growth (Quarterly)



Source: Nomura estimates

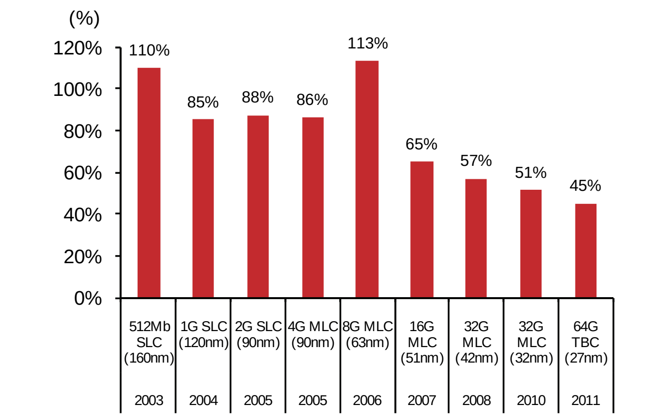
On the back of strong demand growth, we expect the industry's spending on NAND will increase by 61% y-y and wafer capacity to grow by 16% y-y in 2011. Samsung's Fab. 16 looks set to begin production in 3Q11 while Micron's Singapore fab and Toshiba's Fab 5 also look set to begin operation in 3Q11. However, as technology migration contributes progressively less to per-wafer bit growth, we forecast the industry's NAND bit growth at only 74% in 2012.

Fig. 32: NAND Capex trend and forecast



Source: Each company data, Nomura estimates

Fig. 33: Per-wafer die growth by NAND technology



Source: Nomura estimates

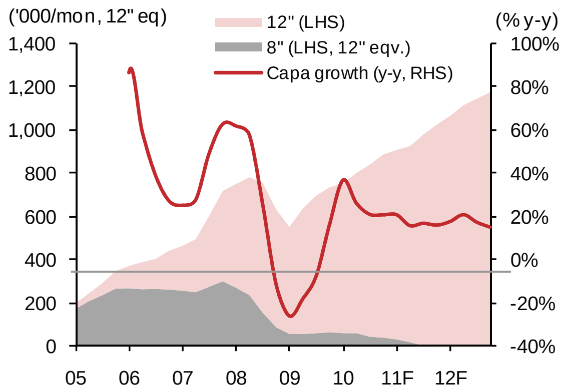
In contrast to DRAM, we see a substantially narrower technology gap between the players. However, based on 1Q11 NAND OP margin, Samsung is generating the highest profitability, largely attributable in our view to scale effect and a higher proportion of MCP (Multi-Chip Package).

Fig. 34: NAND Technology migration roadmap

		2009				2010				2011F			
		1Q09	2Q09	3Q09	4Q09	1Q10	2Q10	3Q10	4Q10	1Q11	2Q11F	3Q11F	4Q11F
Samsung	63nm	20%	20%	10%	10%	5%	3%	2%	2%	1%			
	51nm	70%	62%	50%	40%	25%	21%	10%	5%	3%			
	42nm	10%	15%	35%	35%	30%	23%	15%	10%	5%			
	35nm		3%	5%	13%	30%	38%	40%	20%	20%	15%	7%	5%
	32nm (3X)				2%	10%	15%	30%	50%	55%	50%	40%	40%
	27nm							3%	13%	16%	35%	50%	40%
	21nm											3%	15%
Toshiba		2009				2010				2011F			
		1Q09	2Q09	3Q09	4Q09	1Q10	2Q10	3Q10	4Q10	1Q11	2Q11F	3Q11F	4Q11F
	56nm	40%	30%	10%	10%	10%							
	43nm	60%	70%	80%	70%	60%	50%	30%	10%	10%	5%		
	32nm			10%	20%	30%	50%	70%	85%	80%	55%	40%	20%
	24nm								5%	10%	40%	57%	70%
	19nm											3%	10%
Hynix		2009				2010				2011F			
		1Q09	2Q09	3Q09	4Q09	1Q10	2Q10	3Q10	4Q10	1Q11	2Q11F	3Q11F	4Q11F
	57nm	35%	35%	30%	10%	5%	5%						
	48nm	65%	65%	65%	50%	50%	35%	3%					
	41nm			5%	40%	40%	40%	35%	30%	25%	20%	15%	10%
	32nm					5%	20%	60%	60%	50%	40%	30%	20%
	26nm							2%	10%	25%	40%	50%	60%
	20nm											5%	10%
IMFT		2009				2010				2011F			
		1Q09	2Q09	3Q09	4Q09	1Q10	2Q10	3Q10	4Q10	1Q11	2Q11F	3Q11F	4Q11F
	55nm	64%	45%	28%	17%	10%	5%						
	34nm	36%	55%	72%	80%	75%	60%	55%	40%	30%	20%	10%	5%
	28nm				3%	15%	35%	45%	60%	55%	45%	40%	35%
	22nm								3%	15%	35%	50%	60%

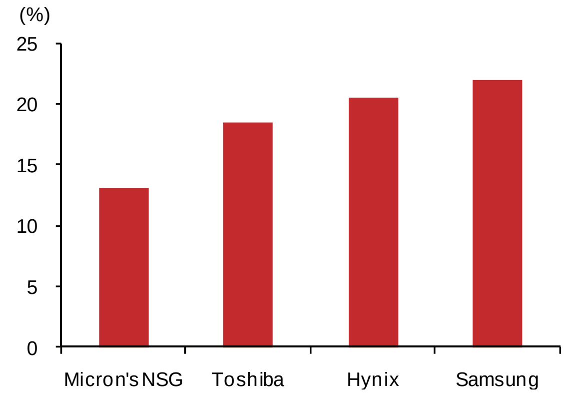
Source: Nomura estimates

Fig. 35: NAND Wafer capacity trend & forecast



Source: Nomura estimates

Fig. 36: NAND OP Margin comparison (1Q11)



Source: Company data

Market differentiators

We expect multi-bit-per-cell technology and read-write speed will be the key differentiators, along with technology migration.

Multi-Chip per cell technology

MLC (Multi-Level Chip) allows the storage of two bits in a cell and this has substantially reduced NAND unit production costs, in our view. Following MLC, TLC (Triple-Level Chip), which stores three bits per cell, began commercial adoption in 2010. However, we think the technology progress from SLC (Single-Level Chip) to MLC, TLC, and QLC (Quad-Level Chip) comes with one critical downside – lower data reliability and speed.

While Samsung and Toshiba are applying TLC to NAND, the technology barrier to enhance data reliability is too high for TLC to be used for high-end embedded NAND, in our view. As the controller technology is pivotal to improve the performance of TLC-based NAND, we believe Samsung and Toshiba need to further develop good controller technology for TLC NAND. In our view, Sandisk has the most cutting-edge TLC NAND controller technology.

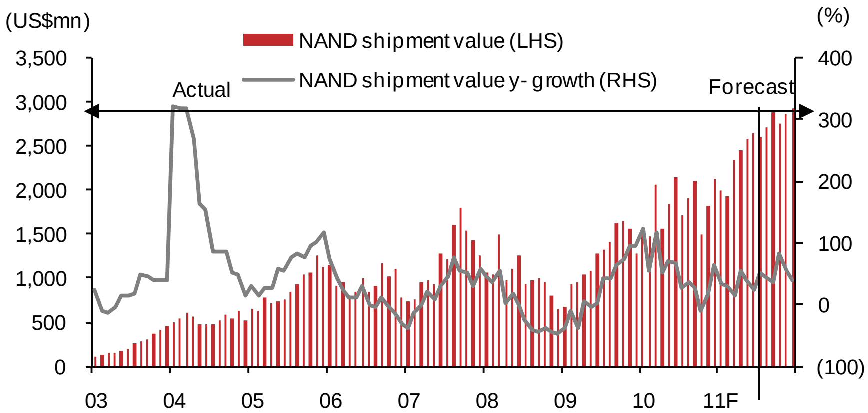
Read-write speed

Besides the multi-level storage technology, we believe read-write speed will be another key differentiator. Similar to HDD being the bottleneck for PC run speed, we find the speed of NAND memory and network I/O have been the two most critical bottlenecks for mobile gadgets. Now that we have seen a substantial enhancement in network speed thanks to the improvement in mobile clouding technology, we believe the speed of NAND will remain the key factor to be improved. Recently, Samsung began volume production of toggle DDR 2.0 NAND, which boasts 10x faster speed than SDR NAND (400Mbps for toggle DDR 2 vs. 40Mbps for SDR) and 3x faster than the latest peer (DDR 1.0). Once the toggle DDR 2.0 NAND is applied to USB 3.0, we foresee another race over speed within the NAND players, as we have already witnessed the same race in DRAM (ie, DDR1 to DDR2 and DDR3).

NAND market to see CAGR of 23% until 2012

We forecast the NAND market in dollar terms will grow 35% y-y in 2011 to stand at US$29bn. In 2012, it will grow 13% y-y to stand at US$33bn, on our forecast. Of note, we forecast a temporary price correction in 4Q11~1Q12, as we expect both rapid bit growth due to the new NAND fabs' commencing operation and set makers' inventory adjustments. NAND ASP is likely to decline by 29% in 2011 and 35% in 2012.

Fig. 37: NAND monthly shipment value (past & forecast)



Source: WSTS, Nomura estimates

Fig. 38: Nomura NAND model

Calendar Year	2009	1Q10	2Q10	3Q10	4Q10	2010	1Q11	2Q11F	3Q11F	4Q11F	2011F	2012F
Total Demand (8Gb eq. mn)	**6,285**	**2,121**	**2,515**	**3,050**	**3,707**	**11,394**	**4,112**	**4,795**	**5,817**	**6,883**	**21,608**	**37,454**
Y/Y	54.2%	68.5%	78.0%	84.1%	89.5%	81.3%	93.9%	90.6%	90.7%	85.7%	89.6%	73.3%
Q/Q		8.4%	18.6%	21.3%	21.5%		10.9%	16.6%	21.3%	18.3%		
USB Flash Drives	**987**	**335**	**368**	**413**	**423**	**1,539**	**537**	**540**	**673**	**707**	**2,456**	**3,711**
Y/Y	28.8%	72.5%	63.1%	53.9%	41.4%	55.9%	60.3%	46.9%	62.8%	67.1%	59.7%	51.1%
Q/Q		11.9%	9.8%	12.4%	2.3%		26.9%	0.6%	24.6%	5.1%		
Flash Cards	**2,188**	**831**	**901**	**930**	**929**	**3,592**	**1,284**	**1,286**	**1,469**	**1,468**	**5,507**	**8,973**
Y/Y	46.1%	61.9%	76.4%	58.6%	61.1%	64.2%	54.6%	42.6%	57.9%	58.1%	53.3%	62.9%
Q/Q		44.1%	8.5%	3.2%	-0.2%		38.3%	0.1%	14.3%	0.0%		
Solid-State Drivers	**399**	**82**	**140**	**264**	**379**	**865**	**253**	**347**	**591**	**842**	**2,033**	**5,024**
Y/Y	335.5%	24.1%	48.0%	150.8%	185.6%	117.1%	209.3%	148.8%	123.3%	121.9%	135.0%	147.1%
Q/Q		-38.3%	70.4%	89.4%	43.4%		-33.2%	37.0%	70.0%	42.6%		
Cell Phone (ex.Smartphone)	**245**	**86**	**96**	**112**	**124**	**418**	**108**	**107**	**107**	**110**	**433**	**472**
Y/Y	54.6%	80.5%	80.2%	69.9%	59.4%	70.9%	24.8%	12.2%	-4.4%	-10.7%	3.6%	8.9%
Q/Q		11.4%	10.7%	17.4%	10.1%		-12.7%	-0.5%	0.0%	2.8%		
Smart Phone	**933**	**398**	**512**	**747**	**1,027**	**2,684**	**1,069**	**1,471**	**1,776**	**2,250**	**6,565**	**10,745**
Y/Y	298.2%	202.4%	166.5%	215.8%	175.3%	187.6%	168.8%	187.3%	137.7%	119.1%	144.6%	63.7%
Q/Q		6.6%	28.7%	46.0%	37.5%		4.1%	37.5%	20.7%	26.7%		
Portable Media Players	**811**	**172**	**192**	**216**	**301**	**880**	**252**	**270**	**292**	**362**	**1,176**	**1,570**
Y/Y	17.4%	5.3%	8.5%	4.3%	14.2%	8.6%	46.5%	40.9%	35.1%	20.4%	33.6%	33.5%
Q/Q		-34.7%	11.5%	12.6%	39.2%		-16.2%	7.3%	8.0%	24.1%		
Digital Still Camera	**54**	**17**	**22**	**24**	**27**	**89**	**25**	**29**	**34**	**41**	**129**	**158**
Y/Y	24.7%	137.0%	93.6%	56.0%	34.1%	66.5%	45.3%	32.7%	45.1%	52.9%	44.4%	22.8%
Q/Q		-15.8%	29.4%	7.7%	14.3%		-8.8%	18.1%	17.8%	20.5%		
Digital Camcorder	**23**	**9**	**13**	**16**	**21**	**59**	**27**	**32**	**38**	**45**	**141**	**253**
Y/Y	130.1%	167.2%	166.0%	139.1%	147.6%	151.9%	203.3%	137.8%	141.5%	114.7%	140.5%	78.7%
Q/Q		5.8%	50.6%	18.3%	31.4%		29.6%	18.1%	20.1%	16.9%		
Portable Navigation System	**121**	**42**	**42**	**46**	**46**	**175**	**46**	**49**	**56**	**61**	**211**	**263**
Y/Y	64.7%	232.2%	117.6%	55.9%	-24.0%	44.4%	9.0%	16.3%	23.4%	33.6%	20.9%	24.5%
Q/Q		-30.3%	0.0%	9.0%	-0.1%		0.1%	6.6%	15.7%	8.2%		
Tablet PC	**0**	**0**	**76**	**127**	**271**	**473**	**282**	**425**	**531**	**737**	**1,975**	**4,986**
Y/Y								462.1%	319.6%	172.0%	317.5%	152.5%
Q/Q				67.4%	114.0%		4.1%	50.7%	25.0%	38.7%		
Others	**525**	**150**	**155**	**155**	**160**	**620**	**230**	**240**	**250**	**260**	**980**	**1,300**
Y/Y	2.9%	25.0%	24.0%	14.8%	10.3%	18.1%	53.3%	54.8%	61.3%	62.5%	58.1%	32.7%
Q/Q		3.4%	3.3%	0.0%	3.2%		43.8%	4.3%	4.2%	4.0%		
	2009	**1Q10**	**2Q10**	**3Q10**	**4Q10**	**2010**	**1Q11**	**2Q11F**	**3Q11F**	**4Q11F**	**2011F**	**2012F**
Total Supply (8Gb eq. mn)	**6,554**	**2,197**	**2,650**	**3,038**	**3,519**	**11,403**	**4,053**	**4,782**	**5,834**	**6,917**	**21,585**	**37,640**
Y/Y	52.9%	66.5%	80.6%	75.7%	72.6%	74.0%	84.5%	80.4%	92.0%	96.6%	89.3%	74.4%
Q/Q		7.7%	20.7%	14.6%	15.8%		15.2%	18.0%	22.0%	18.6%		
Samsung	**2,030**	**679**	**857**	**952**	**1,063**	**3,551**	**1,373**	**1,789**	**2,092**	**2,385**	**7,639**	**13,269**
Y/Y	26.9%	54.2%	78.5%	76.3%	86.6%	74.9%	102.4%	108.7%	119.8%	124.3%	115.2%	73.7%
Q/Q		19.0%	26.3%	11.1%	11.7%		29.1%	30.3%	17.0%	14.0%		
Toshiba	**1,766**	**556**	**640**	**780**	**850**	**2,827**	**960**	**1,036**	**1,284**	**1,476**	**4,756**	**7,706**
Y/Y	87.8%	58.1%	55.4%	66.6%	59.3%	60.1%	72.5%	62.0%	64.5%	73.6%	68.2%	62.0%
Q/Q		4.2%	15.0%	21.9%	9.0%		12.8%	8.0%	23.9%	15.0%		
Sandisk	**1,195**	**405**	**485**	**520**	**650**	**2,060**	**695**	**765**	**970**	**1,150**	**3,580**	**6,255**
Y/Y	111.5%	72.3%	120.5%	70.5%	49.4%	72.4%	71.6%	57.7%	86.5%	76.9%	73.8%	74.7%
Q/Q		-6.9%	19.8%	7.2%	25.0%		6.9%	10.1%	26.8%	18.6%		
Hynix	**428**	**147**	**179**	**281**	**370**	**976**	**425**	**547**	**648**	**785**	**2,405**	**4,635**
Y/Y	-13.1%	101.0%	75.9%	162.5%	151.6%	127.8%	189.9%	206.1%	130.6%	112.4%	146.4%	92.7%
Q/Q		-0.2%	21.8%	57.3%	31.6%		15.0%	28.6%	18.5%	21.2%		
IM Flash (MU/INTC)	**1,135**	**380**	**460**	**425**	**515**	**1,780**	**580**	**625**	**820**	**1,100**	**3,125**	**5,695**
Y/Y	65.0%	73.5%	81.1%	37.5%	45.9%	56.8%	52.6%	35.9%	92.9%	113.6%	75.6%	82.2%
Q/Q		7.6%	21.1%	-7.6%	21.2%		12.6%	7.8%	31.2%	34.1%		
Demand/Supply	**0.96**	**0.97**	**0.95**	**1.00**	**1.05**	**1.00**	**1.01**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**
ASP	**2.26**	**2.28**	**2.10**	**1.88**	**1.55**	**1.91**	**1.58**	**1.51**	**1.33**	**1.14**	**1.36**	**0.88**
Y/Y	-21%	18%	-10%	-25%	-30%	-16%	-31%	-28%	-29%	-26%	-29%	-35%
Q/Q		3%	-8%	-10%	-18%		2%	-4%	-12%	-14%		
Total shipment value ($mn)	**14,838**	**5,013**	**5,554**	**5,725**	**5,443**	**21,735**	**6,401**	**7,221**	**7,759**	**7,885**	**29,265**	**33,150**
Y/Y	21%	96%	63%	31%	20%	46%	28%	30%	36%	45%	35%	13%
Q/Q		11%	11%	3%	-5%		18%	13%	7%	2%		

Source: WSTS, Nomura estimates

Investment opinion

Since July 2010, in the memory sector, we have seen the shares of companies with shrewd product mix management outperform those with PC DRAM only. From here, we forecast technology migration will come back and work as the key differentiator. Our top pick is Samsung considering the strong cost competitiveness and the positive effect from the smartphone boom. Also, Samsung is substantially undervalued compared with its IT peers, in our view.

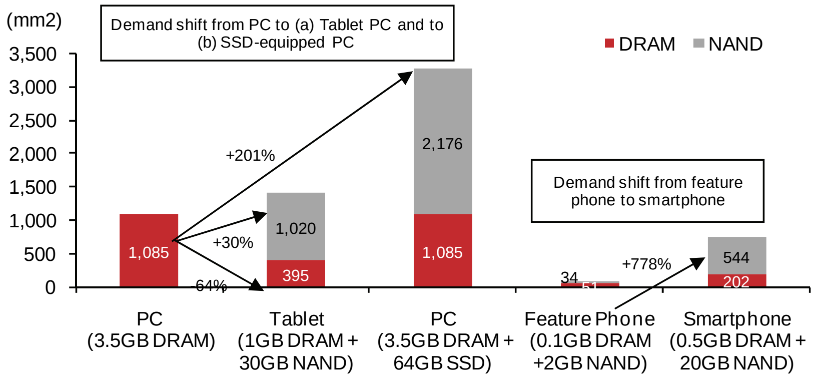
Our view on the industry

Previously, post the bursting of the PC DRAM price bubble in 2H10, we made our call as below:

- the memory market would soft-land and recover on the shift in demand sources (from feature phone to smartphone and tablet; from PC to servers); and
- We advised shifting focus (a) from DRAM to NAND and (b) from PC DRAM to specialty DRAM, and (c) from second tiers to first tiers.

While it takes time for the shift in industry dynamics to be fully reflected in the share price of each company, the share prices have shown differing trends so far.

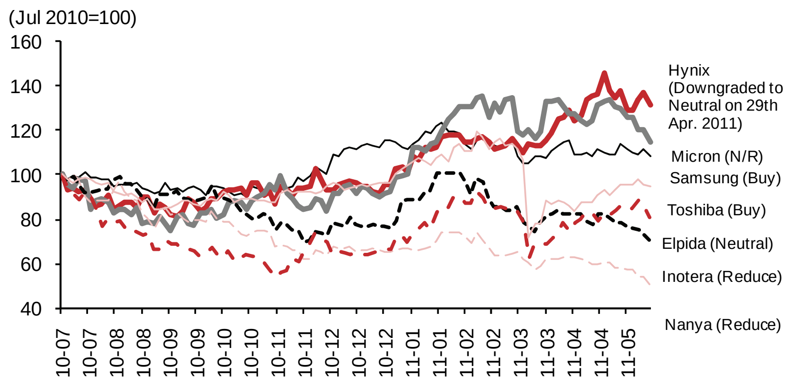
Fig. 39: Silicon area consumption; Traditional IT gadgets vs. Smartphone & Tablet



Source: Nomura estimates

Fig. 40: Memory makers share price performance

Hynix, Micron and Samsung outperformed vs. Elpida, Inotera, and Nanya



Source: Bloomberg, Nomura

From here, we see technology migration as the key differentiator for memory players. This is because:

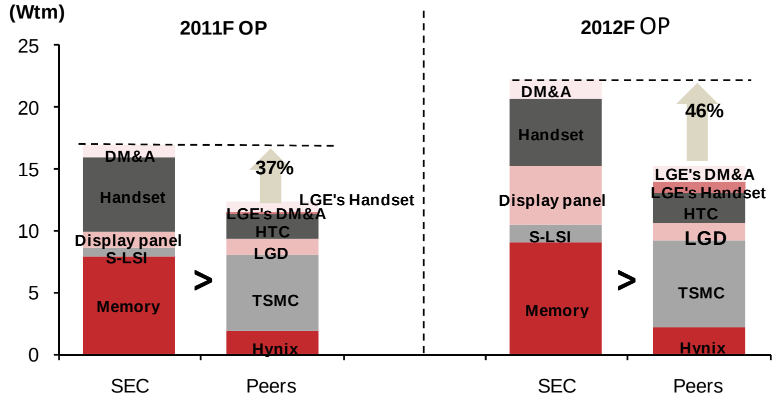
- We foresee a "commoditisation" of specialty DRAM. Also, even within specialty DRAM, each application should move in accordance with its own supply/demand cycle, which is typically much shorter than the overall DRAM cycle. Thus, it is challenging for investors to make investment decisions based on each application cycle. In a nutshell, we believe product mix management will be less of a differentiating factor.

- Technology migration typically determines profitability with the margin gap spanning from 0% to 30%. From here onwards, we believe migration will be the most important factor for memory shares' performance over the next one-two years.

Samsung Elec is our top pick

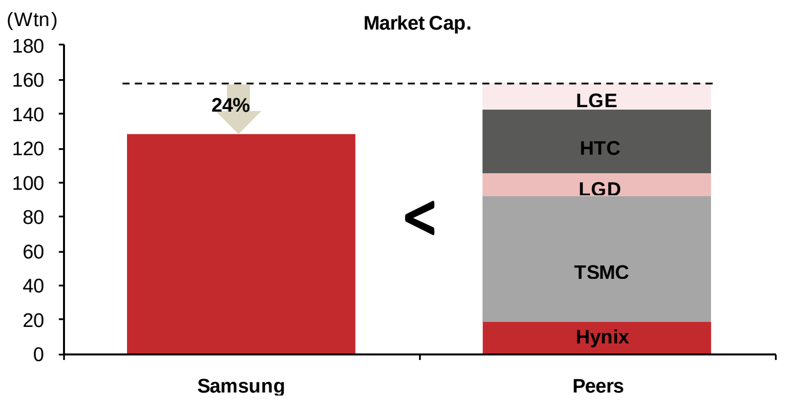
Based on the above criteria, Samsung Elec is our top pick. We maintain a BUY with a PT of W1,350,000. Samsung will continue to be the migration leader in DRAM with a wide gap vs. its followers, in our view. Also, we see revived earnings momentum ahead for Samsung, backed by new growth engines: NAND, OLED, smartphones and System-LSI. Compared with its major IT peers, Samsung looks far undervalued (refer to our report published on 2 May).

Fig. 41: Operating profit comparison: Samsung vs. sum of competitors



Source: Bloomberg, Nomura estimates

Fig. 42: Market cap comparison: Samsung vs. sum of competitors



Source: Bloomberg, Nomura estimates; As of 19th May

We also favour Toshiba (PT of Y600). For Toshiba, we forecast NAND flash bit growth of nearly 70% and a 30% decline in average bit prices over FY12/3, but think the company can secure a margin of 20% in NAND as it increases the weighting of products at the 24nm node and beyond to 60% by end-September 2011 and reduces costs. We forecast growth for embedded products, the company's key market, and project sales growth of 17% at the NAND flash memory business for full-year FY12/3.

For Hynix, though it has performed well in NAND, its DRAM operation has still far to go to be satisfactory, in our view. We downgraded Hynix to NEUTRAL (PT of W36,000) on 29 Apr 2011, as the valuation was at a historical high. Should Hynix migrate to 30nm faster than its competitors, we would take it as a positive sign of stronger competitiveness and would re-evaluate our rating.

For Elpida (NEUTRAL, PT of Y1,300), we think it can move back into operating profits in FY12/3 Q1 on full contributions from production at the 40nm node. Moreover, early adoption of mass production at 30nm and the start of small-lot production at 25nm will likely result in bit growth of at least 50% over FY12/3. Yet, we think the current valuation appropriately reflects the company's fair value. The pace of technology migration is the key factor affecting our investment rating.

For Nanya and Inotera, we maintain our REDUCE call, with PTs of NT$5.3 and NT$7.8, respectively. Their shares have so far underperformed vs. other memory names yet we believe they are still substantially over-valued. A successful migration into 4xnm and, further, 3xnm may allow them to turn to the black, yet whether this happens is questionable.

Fig. 43: Memory peer group valuation

Company	Code	Rating	Price	Price	Upside (%)	P/B (x)			P/E (x)		ROE (%)	
			19-May	target		FY10	FY11F	FY12F	FY11F	FY12F	FY11F	FY12F
SEC	005930 KS	BUY	880,000	1,350,000	53%	1.5	1.3	1.2	8.4	6.6	16.6	18.4
Toshiba	6502 JP	BUY	431	600	39%	2.1	1.8	1.6	12.6	9.6	14.9	17.8
Hynix	000660 KS	NEUTRAL	31,550	36,000	14%	2.3	1.9	1.6	10.5	9.1	20.2	19.0
Elpida	6665 JP	NEUTRAL	1,134	1,300	15%	1.0	0.9	0.8	12.1	9.7	8.6	9.4
NTC	2408 TT	REDUCE	12.7	5.3	-58%	1.6	3.2	2.9	N/A	35.1	-67.2	8.6
Inotera	3474 TT	REDUCE	13.4	7.8	-42%	1.1	1.5	1.8	N/A	N/A	-23.8	-19.4
Micron	MU US	N/R	10.1	N/R	N/R	1.2	1.2	1.0	17.6	8.7	6.9	11.2
PSC	5346 TT	N/R	5.2	N/R	N/R	0.9	0.9	0.8	N/A	6.3	-6.9	10.4

Source: Bloomberg, Nomura estimates (SEC, Hynix, NTC, and Inotera – CW Chung; Toshiba – Masaya Yamasaki; Micron and PSC – Bloomberg consensus)

Samsung Electronics 005930.KS 005930 KS

MEMORY

NOMURA
EQUITY RESEARCH

Far undervalued relative to peers

CONVICTION CALL: New sequential growth cycle ahead

May 25, 2011

Rating Remains	**Buy**
Target price Remains	KRW 1,350,000
Closing price May 19, 2011	KRW 880,000
Potential upside	+53.4%

Action: Passed inflection point + attractive valuation = BUY

Samsung is our top pick in the memory space for three reasons. First, as the leader in the technology migration, we believe Samsung will continue to generate the highest OP margin in the DRAM space. Second, with the portfolio encompassing specialty DRAM, NAND, Application Processors, and OLED, Samsung is likely to benefit the most from the shift in IT demand towards smartphones and tablet PCs. Finally, we reckon Samsung is substantially undervalued compared to its major IT peers. We rate the shares BUY with target price of KRW1,350,000.

Catalyst: Sequential OP growth should lead share momentum

After bottoming in 1Q11, we believe quarterly operating profit is likely to show sequential growth throughout the year. The earnings momentum, in our view, will be the strongest catalyst for the share price.

Valuation: Based on 2.0x 12-month forward BVPS of KRW693,400

Our target price is based on 2.0x 12-month forward BVPS of KRW693,400. We believe our target P/BV multiple of 2.0x is justified considering we expect a high-teens ROE over the next two years, and this looks sustainable even beyond the next two years.

31 Dec	FY10		FY11F		FY12F	
Currency (KRW)	Actual	Old	New	Old	New	
Revenue (bn)	154,630	166,909	166,910	183,313	183,313	
Reported net profit (bn)	15,799	15,902	15,902	20,194	20,194	
Normalised net profit (bn)	15,799	15,902	15,902	20,194	20,194	
Normalised EPS	105,540.2	105,772.0	105,772.1	133,736.3	133,736.2	
Norm. EPS growth (%)	61.9	0.2	0.2	26.4	26.4	
Norm. P/E (x)	9.5	N/A	9.4	N/A	7.4	N/A
EV/EBITDA	4.2	N/A	3.9	N/A	3.0	N/A
Price/book (x)	1.5	N/A	1.3	N/A	1.2	N/A
Dividend yield (%)	1.1	N/A	1.1	N/A	1.5	N/A
ROE (%)	20.4	17.2	17.2	19.0	19.0	
Net debt/equity (%)	1.2	0.3	0.3	net cash	net cash	

Source: Nomura estimates

Key company data: *See page 2 for company data, and detailed price/index chart.*
Rating: *See report end for details of Nomura's rating system.*

Anchor themes

We are seeing a long-lasting shift in IT demand towards smartphones and tablet PCs. We believe Samsung is best positioned to benefit.

Nomura vs consensus

We are more positive than the Street on Samsung's ability to differentiate itself in terms of cost competitiveness and market share. Our TP is 11% higher than consensus.

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Key data on Samsung Electronics

Income statement (KRWbn)

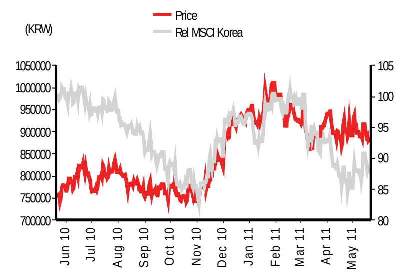
Year-end 31 Dec	FY09	FY10	FY11F	FY12F
Revenue	**136,323**	**154,630**	**166,910**	**183,313**
Cost of goods sold	-94,593	-102,667	-111,782	-118,172
Gross profit	**41,730**	**51,964**	**55,128**	**65,142**
SG&A	-30,747	-35,342	-38,377	-42,965
Employee share expense	-80	676	310	400
Operating profit	**10,903**	**17,297**	**17,061**	**22,576**
EBITDA	**22,063**	**28,690**	**31,103**	**39,161**
Depreciation	-10,911	-10,847	-13,482	-16,010
Amortisation	-248	-547	-560	-574
EBIT	10,903	17,297	17,061	22,576
Net interest expense	-203	-23	189	333
Associates & JCEs	1,713	2,267	2,085	2,311
Other income	-222	-212	-8	-98
Earnings before tax	**12,191**	**19,329**	**19,327**	**25,122**
Income tax	-2,431	-3,182	-3,173	-4,522
Net profit after tax	**9,760**	**16,147**	**16,155**	**20,600**
Minority interests	-188	-347	-253	-406
Other items				
Preferred dividends				
Normalised NPAT	**9,572**	**15,799**	**15,902**	**20,194**
Extraordinary items				
Reported NPAT	**9,572**	**15,799**	**15,902**	**20,194**
Dividends	-1,176	-1,490	-1,503	-1,962
Transfer to reserves	**8,396**	**14,309**	**14,399**	**18,232**
Valuation and ratio analysis				
FD normalised P/E (x)	15.6	9.5	9.4	7.4
FD normalised P/E at price target (x)	24.0	14.5	14.4	11.4
Reported P/E (x)	13.5	8.3	8.3	6.6
Dividend yield (%)	0.9	1.1	1.1	1.5
Price/cashflow (x)	7.8	6.3	5.8	4.7
Price/book (x)	1.9	1.5	1.3	1.2
EV/EBITDA (x)	5.4	4.2	3.9	3.0
EV/EBIT (x)	10.2	6.7	6.8	5.1
Gross margin (%)	30.6	33.6	33.0	35.5
EBITDA margin (%)	16.2	18.6	18.6	21.4
EBIT margin (%)	8.0	11.2	10.2	12.3
Net margin (%)	7.0	10.2	9.5	11.0
Effective tax rate (%)	19.9	16.5	16.4	18.0
Dividend payout (%)	12.3	9.4	9.4	9.7
Capex to sales (%)	6.3	14.0	13.8	13.9
Capex to depreciation (x)	0.8	2.0	1.7	1.6
ROE (%)	15.0	20.4	17.2	19.0
ROA (pretax %)	12.7	17.3	14.3	16.6
Growth (%)				
Revenue	12.4	13.4	7.9	9.8
EBITDA	36.8	30.0	8.4	25.9
EBIT	80.8	58.6	-1.4	32.3
Normalised EPS	73.3	61.9	0.2	26.4
Normalised FDEPS	73.2	65.1	0.6	27.0
Per share				
Reported EPS (KRW)	65,182.50	105,540.22	105,772.12	133,736.20
Norm EPS (KRW)	65,182.50	105,540.22	105,772.12	133,736.20
Fully diluted norm EPS (KRW)	56,259.58	92,862.98	93,466.39	118,697.88
Book value per share (KRW)	475,568.92	571,752.72	661,947.94	752,216.99
DPS (KRW)	8,000.00	10,000.00	10,000.00	13,000.00

Source: Nomura estimates

Notes

For the base of EPS and BVPS, we used the total number of common and preferred shares, with the number of treasury shares substracted. Also, we treated preferred dividend as common dividend due to their similar nature

Price and price relative chart (one year)



(%)	1M	3M	12M
Absolute (KRW)	0.6	-8.3	13.8
Absolute (USD)	0.8	-6.0	23.4
Relative to index	1.9	-12.1	-15.6
Market cap (USDmn)	119,352.8		
Estimated free float (%)	82.0		
52-week range (KRW)	1014000/ 735000		
3-mth avg daily turnover (USDmn)	356.25		
Major shareholders (%)			
Samsung Life Insurance	7.5		
Samsung Corp.	5.6		

Cashflow (KRWbn)

Year-end 31 Dec	FY09	FY10	FY11F	FY12F
EBITDA	22,063	28,690	31,103	39,161
Change in working capital	7,265	-1,134	-3,490	1,802
Other operating cashflow	-10,142	-3,730	-1,702	-9,354
Cashflow from operations	**19,186**	**23,827**	**25,911**	**31,608**
Capital expenditure	-8,525	-21,635	-23,071	-25,472
Free cashflow	**10,660**	**2,192**	**2,840**	**6,136**
Reduction in investments	-3,768	-4,770	-2,353	-2,600
Net acquisitions				
Reduction in other LT assets	-6,283	-948	-268	-289
Addition in other LT liabilities	-3,078	1,971	-3,528	-2,347
Adjustments	7,230	1,397	5,440	4,471
Cashflow after investing acts	**4,762**	**-158**	**2,132**	**5,371**
Cash dividends	-871	-1,918	-1,499	-1,506
Equity issue	331	184	0	0
Debt issue	-3,078	1,971	-3,528	-2,347
Convertible debt issue				
Others	192	-438	60	60
Cashflow from financial acts	**-3,427**	**-200**	**-4,967**	**-3,794**
Net cashflow	**1,335**	**-359**	**-2,835**	**1,577**
Beginning cash	8,815	10,149	9,791	6,956
Ending cash	10,149	9,791	6,956	8,533
Ending net debt	-530	985	292	-3,633

Source: Nomura estimates

Notes

We forecast 2011F capex of KRW23tn

Balance sheet (KRWbn)

As at 31 Dec	FY09	FY10	FY11F	FY12F
Cash & equivalents	10,149	9,791	6,956	8,533
Marketable securities	10,734	12,689	12,689	12,689
Accounts receivable	17,818	19,153	18,829	20,381
Inventories	9,839	13,365	15,490	18,122
Other current assets	5,671	6,406	10,371	7,213
Total current assets	**54,211**	**61,403**	**64,335**	**66,937**
LT investments	8,985	11,801	14,153	16,754
Fixed assets	43,560	52,965	62,554	72,016
Goodwill				
Other intangible assets	1,256	2,779	2,892	3,010
Other LT assets	4,168	5,341	5,782	6,258
Total assets	**112,180**	**134,289**	**149,716**	**164,974**
Short-term debt	5,946	9,554	6,446	4,374
Accounts payable	8,235	9,149	9,903	10,719
Other current liabilities	17,694	21,242	22,765	24,775
Total current liabilities	**31,876**	**39,945**	**39,114**	**39,869**
Long-term debt	3,673	1,222	802	526
Convertible debt				
Other LT liabilities	3,587	3,773	6,052	6,231
Total liabilities	**39,135**	**44,940**	**45,968**	**46,626**
Minority interest	3,211	3,760	4,231	4,762
Preferred stock	119	119	119	119
Common stock	778	778	778	778
Retained earnings	65,181	85,015	99,414	117,646
Proposed dividends				
Other equity and reserves	3,756	-323	-794	-4,957
Total shareholders' equity	**69,834**	**85,590**	**99,517**	**113,586**
Total equity & liabilities	**112,180**	**134,289**	**149,716**	**164,974**
Liquidity (x)				
Current ratio	1.70	1.54	1.64	1.68
Interest cover	53.7	752.7	na	na
Leverage				
Net debt/EBITDA (x)	net cash	0.03	0.01	net cash
Net debt/equity (%)	net cash	1.2	0.3	net cash
Activity (days)				
Days receivable	40.0	43.6	41.5	39.1
Days inventory	37.3	41.2	47.1	52.1
Days payable	26.7	30.9	31.1	31.9
Cash cycle	50.6	54.0	57.5	59.3

Source: Nomura estimates

Notes

Net debt to turn net cash in 2012F

Far undervalued vs. global IT peers

Backed by the PC DRAM recovery, SEC's strong leadership in memory technology migration, and the earnings contribution from the new growth engines – specialty DRAM, NAND, S-LSI and OLED – we foresee a continued earnings uptrend for Samsung. More importantly, we see Samsung as highly undervalued compared to its global IT peers. Samsung is our top pick in the memory sector.

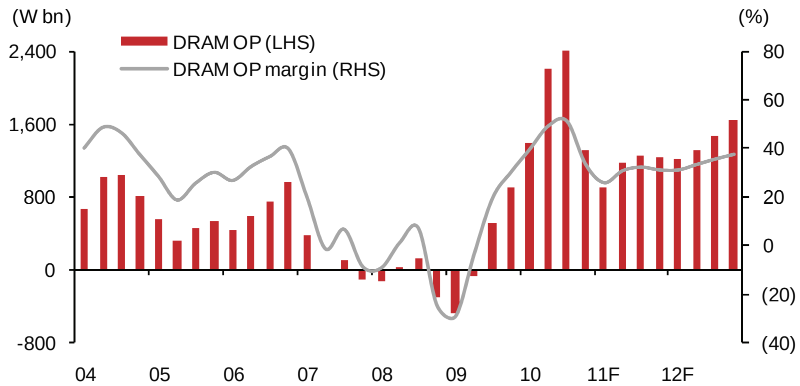
We expect sequential quarterly earnings growth in 2011

We believe 1Q11 was the bottom for SEC's operating income and forecast OP will increase to KRW4.0tn in 2Q11F, KRW4.9tn in 3Q11F and KRW5.2tn in 4Q11F. Beyond 2011, we foresee revived earnings momentum ahead for Samsung, backed by new growth engines: NAND, OLED, smartphones and System-LSI.

For DRAM, we believe the rules of the game are shifting back to cost competitiveness from product mix management. As Samsung has further widened its cost gap versus followers it will be able to generate 30% of OP margin in DRAM, on our view.

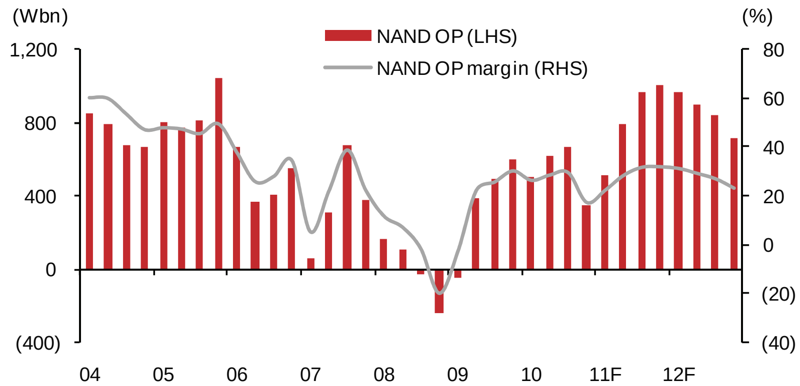
For NAND, while we are likely to see a short supply, the progressively higher shipment proportion of larger-density products, which command lower unit costs, makes moderately lower selling prices rather natural. Meantime, given that production costs are likely to be down by 10-15% every quarter, segment profitability should continue to improve in spite of the selling price decline.

Fig. 44: Samsung Electronics: DRAM OP and OP margin trend & forecasts



Source: Company data, Nomura estimates

Fig. 45: Samsung Electronics: NAND OP and OP margin trend & forecasts



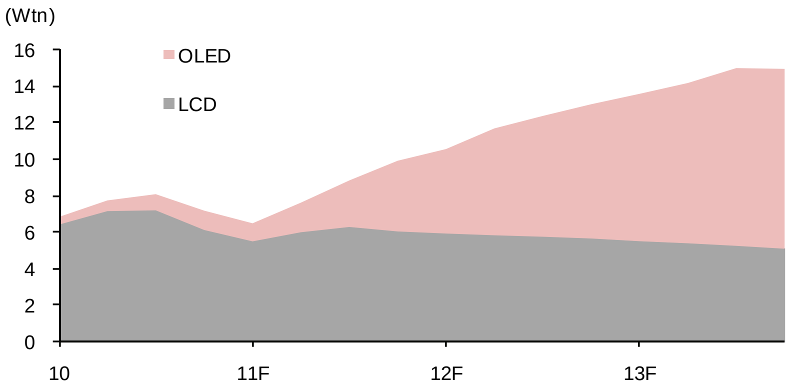
Source: Company data, Nomura estimates

For the display panel segment, the demand for high-end small-size panels remains strong, we think directly benefiting Samsung's AMOLED operation. With 5.5G technology in hand, Samsung will invest in an 8G OLED line with total capex of KRW20-30tn over the next three to four years. We understand Samsung is ahead of its closest competitors on OLED technology by 1-2 years, and we expect this segment to become the company's core growth engine in the mid-term.

Although OLED comes with higher unit costs than LCD, we expect OLED will become the mainstream technology in 2-3 years' time, with its costs eventually falling below that of conventional LCD panels.

With 2011F likely be the bottom for the segment OP (W1.3tn in 2011F), thanks to the progressively higher earnings contribution from OLED, we believe the display panel operation will be able to generate W4.7tn of OP in 2012F (up 260% y-y).

Fig. 46: Samsung Electronics: revenue -- OLED vs. LCD

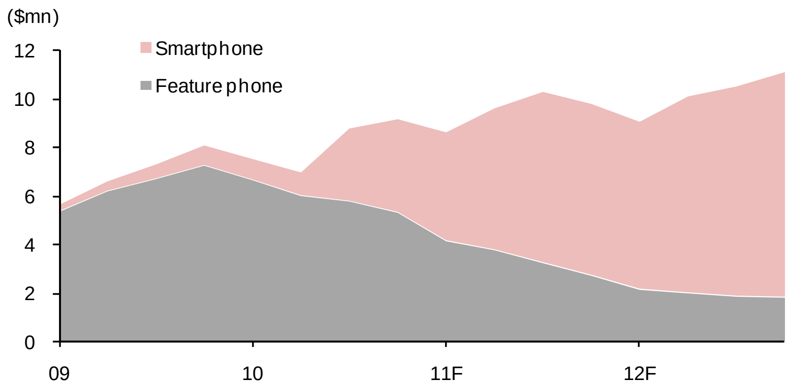


Source: Company data, Nomura estimates

As to the handset segment, although Samsung was late in entering the smartphone space compared to Apple and HTC, its strong execution capability has proven itself by the company overtaking HTC in terms of smartphone shipments. We now expect Samsung to ship 86mn smartphones in 2011F.

Smartphone shipments of 86mn units will take Samsung's 2011 whole-year market share to 17%. Although this is still lower than its market share in the whole handset industry, Samsung's smartphone market share is likely to catch up to the segment's historical norm of a high-teens market share as we near 4Q11.

Fig. 47: Samsung Electronics: revenue -- feature phones vs. smartphones



Source: Company data, Nomura estimates

Fig. 48: Samsung Electronics: earnings forecasts

Revenue

(W tn)	2009	1Q10	2Q10	3Q10	4Q10	2010	1Q11	2Q11F	3Q11F	4Q11F	2011F	2012F
Semi	**26.8**	**8.1**	**9.6**	**10.7**	**9.3**	**37.7**	**9.2**	**9.9**	**10.4**	**10.8**	**40.3**	**43.7**
Memory	16.8	5.5	6.8	7.6	6.1	25.9	5.9	6.7	7.0	7.2	26.8	29.1
DRAM	9.3	3.5	4.5	5.2	3.9	17.1	3.5	3.8	3.9	4.0	15.2	16.4
Flash	7.2	1.9	2.2	2.3	2.1	8.5	2.3	2.8	3.1	3.2	11.5	12.5
SRAM	0.4	0.1	0.1	0.1	0.1	0.4	0.0	0.1	0.0	0.1	0.2	0.2
Sys-LSI	4.6	1.1	1.6	2.1	2.3	7.1	2.3	2.3	2.5	2.7	9.7	12.4
Others	5.1	1.5	1.2	1.1	1.0	4.8	1.0	0.9	0.9	0.9	3.7	2.2
Display	**25.8**	**6.9**	**7.8**	**8.1**	**7.2**	**29.9**	**6.5**	**7.6**	**8.9**	**9.9**	**32.9**	**47.7**
LCD	0.0	6.0	6.8	6.8	5.8	25.5	5.2	5.7	6.0	5.8	22.8	22.2
OLED & small LCD	0.0	0.9	0.9	1.3	1.4	4.4	1.2	1.9	2.8	4.1	10.1	25.5
Telecom	**37.6**	**9.2**	**8.8**	**11.1**	**11.7**	**40.8**	**10.6**	**11.9**	**12.9**	**12.6**	**48.0**	**51.6**
DM & HA	**51.2**	**12.6**	**14.5**	**14.1**	**16.3**	**57.6**	**13.5**	**15.0**	**15.7**	**17.4**	**61.7**	**65.6**
Others	**-5.2**	**-2.1**	**-2.7**	**-3.9**	**-2.7**	**-11.5**	**-2.9**	**-3.5**	**-4.4**	**-5.2**	**-15.9**	**-25.3**
Total	**136.3**	**34.6**	**37.9**	**40.2**	**41.9**	**154.6**	**37.0**	**40.9**	**43.4**	**45.6**	**166.9**	**183.3**
KRW/US$	**1,275**	**1,145**	**1,160**	**1,186**	**1,120**	**1,153**	**1,115**	**1,100**	**1,070**	**1,050**	**1,084**	**1,010**
Sales (US$, bn)	**106.9**	**30.3**	**32.7**	**33.9**	**37.4**	**134.1**	**33.2**	**37.2**	**40.6**	**43.4**	**154.0**	**181.5**

OP Margin(consolidated)

(W tn)	2009	1Q10	2Q10	3Q10	4Q10	2010	1Q11	2Q11F	3Q11F	4Q11F	2011F	2012F
Semi	**8%**	**24%**	**31%**	**32%**	**19%**	**27%**	**18%**	**21%**	**23%**	**23%**	**21%**	**24%**
Memory	14%	35%	42%	44%	28%	38%	24%	30%	32%	31%	29%	31%
DRAM	9%	39%	49%	51%	33%	44%	26%	31%	32%	31%	30%	34%
Flash	20%	26%	28%	29%	17%	25%	22%	28%	31%	32%	29%	27%
SRAM	18%	34%	35%	34%	34%	34%	30%	32%	30%	28%	30%	31%
System-LSI	-1%	0%	5%	6%	8%	5%	10%	5%	7%	9%	8%	11%
LCD & OLED	**7%**	**7%**	**11%**	**6%**	**2%**	**7%**	**-4%**	**1%**	**6%**	**9%**	**4%**	**10%**
Telecom	**11%**	**12%**	**7%**	**10%**	**13%**	**11%**	**13%**	**13%**	**12%**	**11%**	**13%**	**11%**
Digital Media	**6%**	**4%**	**2%**	**-2%**	**-1%**	**1%**	**1%**	**2%**	**2%**	**2%**	**2%**	**2%**
Total	**8%**	**13%**	**13%**	**12%**	**7%**	**11%**	**8%**	**10%**	**11%**	**11%**	**10%**	**12%**

Operating profit(consolidated)

(W tn)	2009	1Q10	2Q10	3Q10	4Q10	2010	1Q11	2Q11F	3Q11F	4Q11F	2011F	2012F
Semi	**2.06**	**1.96**	**2.94**	**3.42**	**1.80**	**10.12**	**1.64**	**2.07**	**2.39**	**2.47**	**8.57**	**10.47**
Memory	2.39	1.92	2.85	3.33	1.68	9.78	1.42	1.98	2.24	2.25	7.89	9.10
DRAM	0.88	1.39	2.20	2.63	1.31	7.53	0.90	1.17	1.26	1.23	4.55	5.63
Flash	1.44	0.50	0.62	0.67	0.35	2.13	0.52	0.79	0.97	1.01	3.28	3.42
SRAM	0.07	0.03	0.04	0.03	0.02	0.12	0.01	0.02	0.01	0.01	0.05	0.06
System-LSI	-0.02	0.00	0.07	0.13	0.18	0.38	0.23	0.11	0.17	0.24	0.76	1.36
LCD & OLED	**1.74**	**0.49**	**0.88**	**0.52**	**0.11**	**2.00**	**-0.23**	**0.11**	**0.55**	**0.87**	**1.29**	**4.73**
Telecom	**4.10**	**1.10**	**0.63**	**1.13**	**1.48**	**4.33**	**1.43**	**1.57**	**1.61**	**1.41**	**6.01**	**5.48**
Digital Media	**3.07**	**0.52**	**0.36**	**-0.23**	**-0.20**	**0.45**	**0.10**	**0.23**	**0.28**	**0.33**	**0.95**	**1.57**
Total	**10.90**	**4.41**	**5.01**	**4.86**	**3.01**	**17.30**	**2.95**	**4.04**	**4.91**	**5.17**	**17.06**	**22.58**
YoY	**N/A**	**642%**	**88%**	**16%**	**-12%**	**59%**	**-33%**	**-19%**	**1%**	**71%**	**-1%**	**32%**

Note: 'Others' includes inter-divisional sales

Source: Company data, Nomura estimates

Substantially undervalued vs. global IT peers

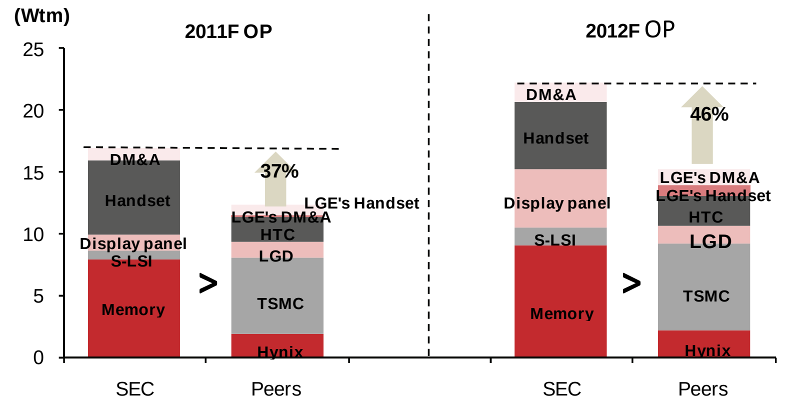
On top of sequential earnings momentum, we believe Samsung remains undervaluated vs its peers, another reason why we favour Samsung.

We reckon the aggregate market cap of Samsung's IT peers (HTC, LGE, LGD, TSMC, and Hynix) stands at KRW160tn, which is higher than Samsung's market cap of KRW130tn. We believe Samsung's equity is still substantially undervalued, given that: 1) the growth outlook and scale of each of the company's operations is at least on par with or even above that of global peers; and 2) our analysis does not account for the value of Samsung's non-core investment assets (eg, its stake in Samsung Corning Precision and Samsung Card),

We estimate an appropriate fair value of KRW200tn for Samsung's equity. This equals to KRW1,350,000 for each common share, which is equivalent to our target price. Our target price is based on 2.0x 12-month forward BVPS of KRW693,400. We believe our target P/BV multiple of 2.0x is justified considering we expect a high-teens ROE over the next two years and this looks sustainable even beyond the next two years.

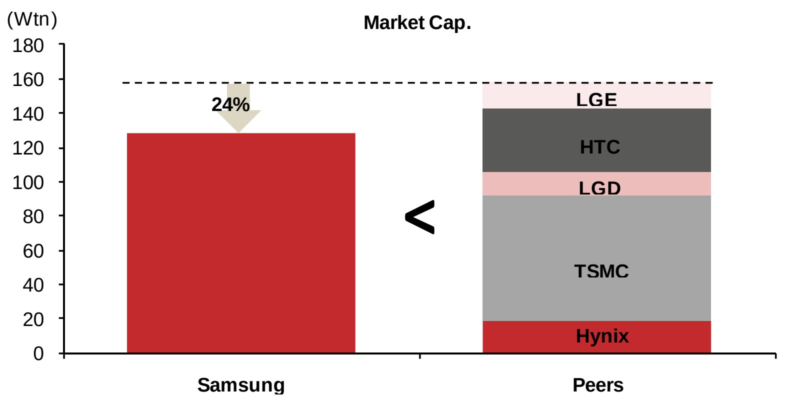
Risks to our view include: 1) faster-than-expected KRW appreciation; 2) increased competition in the smartphone space; and 3) excessive industrywide capex in NAND.

Fig. 49: Operating profit comparison: Samsung vs. sum of competitors



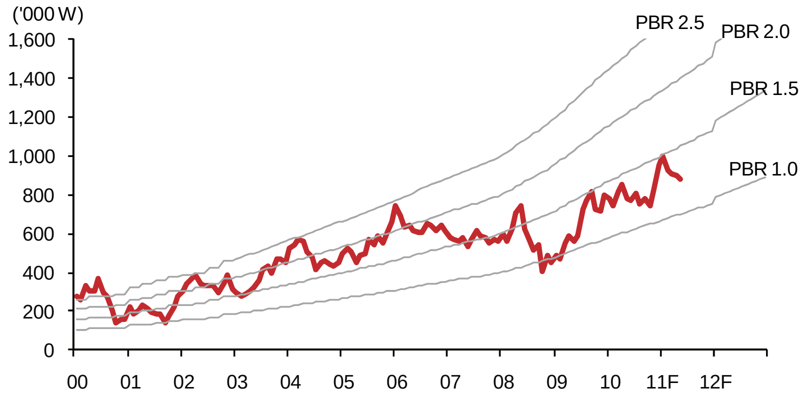
Source: Bloomberg consensus, Nomura estimates

Fig. 50: Market cap comparison: Samsung vs. sum of competitors



Source: Bloomberg consensus, Nomura estimates

Fig. 51: Samsung Electronics: P/BV band



Source: Bloomberg, Nomura estimates

Leadership in NAND intact

Expecting increased sales and profits in 12/3 too as strong demand for NAND flash outweighs impact of earthquake

May 25, 2011

Relative rating Remains	**Buy**
Target price Remains	JPY 600
Closing Price May 19, 2011	JPY 431
Potential upside	+39.2%

Investment stance — positive on prospects for further sales and profit growth

We maintain our BUY rating. Despite the negative impact of the nuclear plant incident, we continue to expect profit growth at the two core businesses of NAND flash memory and social infrastructure. We continue to calculate our TP of ¥600 by multiplying our 13/3 EPS forecast of ¥44.9 by a P/E of 13.4x, a slight premium to the average of the 12–14x range we consider appropriate for the industrial electronics sector.

11/3 results would have exceeded company's estimates were it not for the earthquake

Toshiba had already revised its earnings estimates for 11/3 on 19 April. It estimates the earthquake dented sales and operating profits by ¥70bn and ¥20bn, respectively, and excluding this factor, operating profits would have come in at ¥260.3bn, beating the company's estimate of ¥250bn and in line with the ¥260bn we projected prior to the earthquake. We estimate operating profits for the NAND flash memory business came to around ¥30bn in Q4, with a margin of 18.4%, up 2.4ppt q-q. The company posted impairment losses of ¥15.9bn at the SoC business.

We expect profits to remain on an upward trend in 12/3 and beyond

While many companies have not issued guidance, Toshiba expects increased sales and profits in 12/3, guiding for operating profits of ¥300bn. As well as substantially narrower losses at the HDD and SoC businesses, we forecast ongoing profit growth at the NAND flash memory business. We retain our operating profit forecast of ¥310bn. We forecast NAND flash bit growth of nearly 70% and a 30% decline in average bit prices, but think the company can secure a margin of 20% in this business as it increases the weighting of products at the 24nm node and beyond to 60% by end-September 2011 and reduce costs. The order backlog at the social infrastructure segment was up 10% on end-10/3 owing to increased demand in the thermal power and transmission and distribution fields.

Cons	11/3			12/3E		13/3E		14/3E
Currency: JPY	Actual	Old	New	Co's	Old	New	Old	New
Sales (bn)	6,399	6,700	6,800	7,000	7,200	7,300	N/A	7,800
Ope profits (bn)	240	310	310	300	380	380	N/A	430
EPS	32.6	33.1	34.2	33.1	44.9	44.9	N/A	49.6
P/E (x)	13.4	13.2	12.7	N/A	9.7	9.7	N/A	8.8
EV/EBITDA (x)	6.4	5.0	5.3	N/A	4.4	4.5	N/A	3.8
P/B (x)	2.1	1.8	1.9	N/A	1.6	1.6	N/A	1.4
Dividend yield (%)	1.1	1.4	1.4	N/A	2.3	2.3	N/A	2.5

Source: Company data, Nomura estimates except where noted.

Key company data: *See page 2 for company data, and detailed price/index chart.*
Rating: *See report end for details of Nomura's rating system.*

Anchor themes

We see prospects for growth in a wide range of areas that relate to environmental and energy themes, in cloud computing, smart grids, power generation, railways, and electric vehicles. Moreover, smartphones and tablet devices have become a new category and are likely to drive growth in demand for key components.

Catalyst

Toshiba is due to hold a business strategy briefing by the end of May. We expect it to give details of its strategy to strengthen its two key areas of NAND flash memory and social infrastructure.

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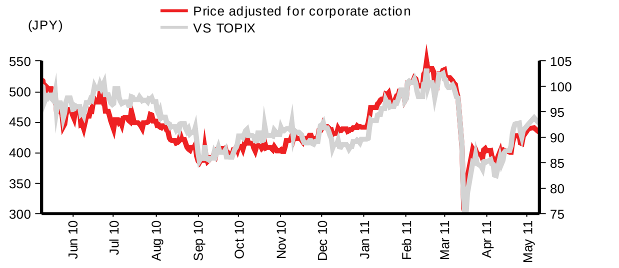
Key data on Toshiba

Rating

Stock	Buy
Sector	Bullish

Price and price relative chart



Source: Thomson Reuters Datastream

Performance

(%)	1M	3M	12M
Absolute	12.7	-15.2	-16.5
Relative to TOPIX	12.7	-5.6	-8.1

Stock price data

Current stock price (JPY)	435
Market capitalization (JPY bn)	1,843.4
52-week low stock price (JPY)	309
52-week high stock price (JPY)	553
Shares out (mn)	4,237.6

Source: Thomson Reuters Datastream, Nomura estimates

Valuation and ratio analysis

(JPY)	11/3	12/3E	13/3E	14/3E
EPS	32.6	34.2	44.9	49.6
BPS or NAV per share	205.0	233.2	268.1	306.7
DPS	5.0	6.0	10.0	11.0

Income statement

(JPY bn)	11/3	12/3E	13/3E	14/3E
Sales	6,399	6,800	7,300	7,800
Depreciation	259	265	280	300
Operating profits	240	310	380	430
EBITDA	499	575	660	730
Pretax profits	196	250	350	400
Minority interests	9	20	25	30
Net profits	138	145	190	210

Balance sheet

(JPY bn)	11/3	12/3E	13/3E	14/3E
Current assets	2,800	2,886	3,010	3,170
Long-term assets	2,580	2,622	2,674	2,707
Total assets	5,379	5,508	5,685	5,877
Interest-bearing debt	1,279	1,179	1,079	979
Other liabilities	1,727	1,761	1,796	1,832
Total liabilities	4,200	4,209	4,238	4,267
Net assets	1,180	1,299	1,447	1,610

Cash flow statement

(JPY bn)	11/3	12/3E	13/3E	14/3E
Operating cash flow	374	425	476	520
Net profits	138	145	190	210
Depreciation	259	265	280	300
Change in working capital	-6	-8	-14	-9
Other	-16	22	21	19
Investment cash flow	-215	-295	-319	-318
Capex	-229	-295	-320	-320
Other	15	0	1	2
Free cash flow	159	130	157	202
Financial cash flow	-155	-125	-141	-145
Change in interest-bearing debt	-88	-100	-100	-100
Dividend payments	-18	-25	-42	-47
Other	-49	0	1	2
Change in cash & equivalents	-9	4	16	57

Comparatively good performance in 11/3 excluding impact of earthquake

Sales rose 1.7% y-y to ¥6,398.5bn and operating profits 91.8% to ¥240.3bn in 11/3, in line with preliminary figures. The company estimates that the earthquake dented sales by ¥70bn and operating profits by ¥20bn, and profits would have exceeded its estimate of ¥250bn excluding this factor. Year-on-year yen appreciation lowered sales by ¥290bn and operating profits by ¥56bn, but profits grew sharply as a result of restructuring effects and increased volumes. Despite a decline of ¥8.1bn at the digital products segment (from ¥21.3bn in 10/3 to ¥13.2bn in 11/3), overall operating profits increased by ¥115.1bn y-y owing to an improvement of ¥107.2bn at the electronic devices segment (from losses of ¥20.4bn to profits of ¥86.8bn) and ¥14.2bn the home appliances segment (from losses of ¥5.4bn to profits of ¥8.8bn).

We think the company's 12/3 projections are achievable as they factor in various risks

Despite uncertainties such as the impact from the earthquake, Toshiba has issued guidance for 12/3 and forecasts operating profits of ¥300bn. It factors in dents of ¥300bn to sales and ¥70bn to operating profits from the earthquake, concentrated in H1. We retain our operating profit forecast of ¥310bn, and see the main profit drivers as narrower losses at the SoC business and higher sales and profits at the NAND flash memory business. The end-11/3 order backlog at the social infrastructure segment was also up 10% on end-10/3, and we look for sales growth in excess of 10% at the medical systems, power systems and industrial systems businesses, with sales growth also at the elevator and solutions businesses. We look for profit growth at the digital products segment on improved HDD earnings, despite concerns about a fall in profits from PCs and TVs.

Semiconductor business — we forecast ongoing losses at SoC business, but growth for NAND flash memory

Operating losses of ¥2.4bn in 11/3 Q4 at the semiconductor business were heavier than the company projected. However, the figure for the SoC business included impairment losses of ¥15.9bn and losses at the Iwate plant associated with the earthquake, and we think the discrete semiconductor and NAND flash memory businesses performed well. We estimate operating profits at the NAND flash memory business at around ¥30bn, with an operating margin of 8.4%, an improvement on Q3. Full-year operating profits at the NAND flash memory business appear to have come to just under ¥110bn, broadly in line with the company's projection despite the impact of rolling blackouts. Toshiba's NAND flash supply-demand ratio was 95–100% in Q4, and we expect it to remain healthy in 12/3 Q1 at 100%. We think NAND flash sales will fall slightly q-q in Q1 owing to problems that arose in March just before the earthquake occurred and seasonal factors. Nevertheless, we forecast growth for embedded products, the company's key market, and project sales growth of 17% to ¥710bn and 29% growth in operating profits to ¥140bn at the NAND flash memory business for full-year 12/3.

Valuation methodology

We calculate our target price of ¥600 by multiplying our 13/3 EPS forecast of ¥44.9 by a P/E of 13.4x, a slight premium to the sector average.

Risks that may impede the achievement of the target price

We identify more intense price competition for NAND flash memory as a major downside risk to our target price. Prices for NAND flash memory and other types of memory are susceptible to supply-demand conditions, and excessive capex at suppliers can easily result in oversupply. The company's digital products segment is also susceptible to price competition. We also note project execution risks for nuclear power plants until such time as plants are completed.

Fig. 52: Toshiba [6502]: consolidated financial data

(¥bn, except where noted)

	10/3	11/3	12/3E	13/3E	14/3E
Sales by segment					
Digital products	2,263.2	2,328.6	2,450.0	2,620.0	2,800.0
% y-y	-2.1	2.9	5.2	6.9	6.9
Electronic devices	1,270.0	1,347.7	1,450.0	1,600.0	1,760.0
% y-y	-0.5	6.1	7.6	10.3	10.0
Social infrastructure	2,319.0	2,267.6	2,450.0	2,620.0	2,800.0
% y-y	-3.6	-2.2	8.0	6.9	6.9
Consumer electronics	579.8	599.8	600.0	630.0	640.0
% y-y	-14.0	3.4	0.0	5.0	1.6
Other	345.6	352.9	360.0	370.0	380.0
% y-y	-10.1	2.1	2.0	2.8	2.7
Eliminations	-486.4	-498.2	-510.0	-540.0	-580.0
Total	6,291.2	6,398.5	6,800.0	7,300.0	7,800.0
% y-y	-3.4	1.7	6.3	7.4	6.8

Source: Company data, Nomura estimates

Fig. 53: Toshiba [6502]: consolidated financial data

(¥bn, except where noted)

	10/3	11/3	12/3E	13/3E	14/3E
Operating profits by segment					
Digital products	21 3	13.2	20.0	30.0	0.0
Margin (%)	0.9	0.6	0.8	1.1	1.4
Electronic devices	-20.4	86.8	145.0	180.0	210.0
Margin (%)	-1.6	6.4	10.0	11.3	11.9
Social infrastructure	137.2	137.1	150.0	160.0	170.0
Margin (%)	5.9	6.0	6.1	6.1	6.1
Consumer electronics	-5.4	8.8	10.0	10.0	10.0
Margin (%)	-0.9	1.5	1.7	1.6	1.6
Other	-7.7	-7.6	-5.0	0.0	0.0
Margin (%)	-2.2	-2.2	-1.4	0.0	0.0
Eliminations	0.2	2.0	-10.0	0.0	0.0
Total	125.2	240.3	310.0	380.0	430.0
Margin (%)	2.0	3.8	4.6	5.2	5.5

Source: Company data, Nomura estimates

Fig. 54: Toshiba [6502]: consolidated financial data

(¥bn, except where noted)

	10/3	11/3	12/3E	13/3E	14/3E
Income statement					
Sales	**6,29 .2**	**6,398.5**	**6,800.**	**7,300.0**	**7,800.0**
% y-y	-3.4	1.7	6.3	7.4	6.8
COGS	4,922.2	4,897.5	5,191.5	5,582.5	5,992.4
Gross profits	1,459.4	1,501.0	1,608.5	1,717.5	1,807.6
As % of sales	23.2	23.5	23.7	23.5	23.2
SG&A expenses	1,342.2	1,260.7	1,298.5	1,337.5	1,377.6
As % of sales	21.3	19.7	19.1	18.3	17.7
Operating profits	**125.2**	**240.3**	**310.0**	**380.0**	**430.0**
% y-y	-	91.9	29.0	22.6	13.2
Margin (%)	2.0	3.8	4.6	5.2	5.5
Nonoperating income	93.5	95.0	70.0	70.0	70.0
Interest & dividends received	8.0	8.7	10.0	10.0	10.0
Other	85.5	86.3	60.0	60.0	60.0
Nonoperating expenses	185.7	139.7	130.0	100.0	100.0
Interest paid	35.7	32.3	32.0	32.0	32.0
Other	150.0	107.4	98.0	68.0	68.0
Pretax profits	**34.4**	**195.5**	**250.0**	**350.0**	**400.0**
% y-y	-	5.7x	27.8	40.0	14.3
Margin (%)	0.5	3.1	3.7	4.8	5.1
Corporation tax	29.7	40.7	85.0	135.0	160.0
Effective tax rate (%)	-	20.8	34.0	38.6	40.0
Minority interests	14.5	8.8	20.0	25.0	30.0
Equity in net income of affiliates	0.0	0.0	0.0	0.0	0.0
Net profits	**-19.7**	**137.8**	**145.0**	**190.0**	**210.0**
% y-y	-	-	5.2	31.0	10.5
Margin (%)	-0.3	2.2	2.1	2.6	2.7
Depreciation	297.0	258.8	265.0	280.0	300.0
As % of sales	4.7	4.0	3.9	3.8	3.8
Capex (order basis)	209.9	320.0	375.0	400.0	400.0
As % of sales	3.3	5.0	5.5	5.5	5.1
R&D expenses	311.8	319.7	350.0	360.0	370.0
As % of sales	5.0	5.0	5.1	4.9	4.7

Source: Company data, Nomura estimates

Hynix Semiconductor 000660.KS 000660 KS

MEMORY

NOMURA EQUITY RESEARCH

Migration to 3xnm will be the key to winning

Rich valuation yet successful migration into 3xnm may allow upside

May 25, 2011

Rating Remains	**Neutral**
Target price Remains	KRW 36,000
Closing price May 19, 2011	KRW 31,550
Potential upside	+14.1%

Action: The recovery is already priced in

Though the memory market, in our view, has just passed the tipping point, we believe Hynix's valuation multiple has risen above the historical peak. Given our ROE forecast for 2011 and 2012 of c.20%, the current 12-month-forward valuation of 1.8x P/B seems to be already pricing in the industry's recovery scenario. Going forward, a successful migration into 3xnm could cause us to reassess our estimates.

Catalyst: Successful migration is the key to further upside

We are concerned on whether Hynix can successfully migrate into 3xnm for DRAM and 20nm for NAND. If they achieve the target, actual operating results may come in above our baseline forecast. Should this be the case, we could reconsider our view on the stock.

Valuation: 2.0x at 12M Forward BVPS of W18,000

Our target price of W36,000 is based on 2.0x our target P/B multiple and 12-month forward BVPS of W18,000. Given our expectation of c.20% of ROE over the next two years, we believe a 2.0x target multiple is appropriate.

31 Dec	FY10	FY11F		FY12F		
Currency (KRW)	Actual	Old	New	Old	New	
Revenue (bn)	12,107	11,632	11,632	12,176	12,176	
Reported net profit (bn)	2,598	1,792	1,792	2,049	2,049	
Normalised net profit (bn)	2,598	1,792	1,792	2,049	2,049	
Normalised EPS	4,379.4	3,035.1	3,020.5	3,471.0	3,454.3	
Norm. EPS growth (%)	na	-31.0	-31.0	14.4	14.4	
Norm. P/E (x)	7.2	N/A	10.4	N/A	9.1	N/A
EV/EBITDA	3.7	N/A	4.0	N/A	3.5	N/A
Price/book (x)	2.3	N/A	1.9	N/A	1.6	N/A
Dividend yield (%)	0.5	N/A	0.5	N/A	0.5	N/A
ROE (%)	37.4	20.2	20.2	19.0	19.0	
Net debt/equity (%)	49.0	22.7	22.7	6.7	6.7	

Source: Nomura estimates

Key company data: *See page 2 for company data, and detailed price/index chart.*
Rating: *See report end for details of Nomura's rating system.*

Anchor themes

We expect the specialty DRAM space will be crowded with the entrance of the late-comers. The rule of the game will be back to the speedy technology migration.

Nomura vs consensus

We are conservative as to whether Hynix can successfully migrate further into 3xnm in DRAM. Our PT is lower than consensus by 16%, reflecting our conservative stance.

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Key data on Hynix Semiconductor

Income statement (KRWbn)

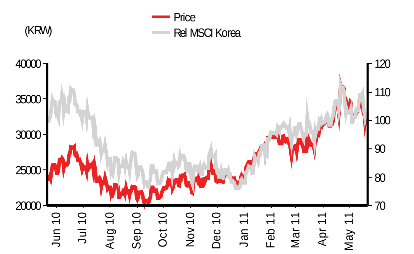
Year-end 31 Dec	FY09	FY10	FY11F	FY12F
Revenue	**7,909**	**12,107**	**11,632**	**12,176**
Cost of goods sold	-6,283	-7,670	-8,151	-8,339
Gross profit	**1,626**	**4,437**	**3,481**	**3,837**
SG&A	-1,434	-1,461	-1,600	-1,680
Employee share expense	0	0	0	0
Operating profit	**192**	**2,976**	**1,882**	**2,157**
EBITDA	**2,898**	**6,069**	**5,255**	**5,551**
Depreciation	-2,707	-3,093	-3,373	-3,394
Amortisation				
EBIT	192	2,976	1,882	2,157
Net interest expense	-403	-283	-199	-60
Associates & JCEs	2	4	4	4
Other income	-160	-30	163	14
Earnings before tax	**-369**	**2,667**	**1,850**	**2,115**
Income tax	-53	-69	-58	-66
Net profit after tax	**-422**	**2,598**	**1,792**	**2,049**
Minority interests	0	0	0	0
Other items	0	0	0	0
Preferred dividends	0	0	0	0
Normalised NPAT	**-422**	**2,598**	**1,792**	**2,049**
Extraordinary items	0	0	0	0
Reported NPAT	**-422**	**2,598**	**1,792**	**2,049**
Dividends	0	-89	-89	-89
Transfer to reserves	**-422**	**2,509**	**1,703**	**1,960**
Valuation and ratio analysis				
FD normalised P/E (x)	na	7.2	10.4	9.1
FD normalised P/E at price target (x)	na	8.2	11.9	10.4
Reported P/E (x)	na	7.2	10.4	9.1
Dividend yield (%)	na	0.5	0.5	0.5
Price/cashflow (x)	16.4	3.2	4.1	3.7
Price/book (x)	3.1	2.3	1.9	1.6
EV/EBITDA (x)	8.1	3.7	4.0	3.5
EV/EBIT (x)	121.3	7.6	11.1	9.0
Gross margin (%)	20.6	36.6	29.9	31.5
EBITDA margin (%)	36.6	50.1	45.2	45.6
EBIT margin (%)	2.4	24.6	16.2	17.7
Net margin (%)	-5.3	21.5	15.4	16.8
Effective tax rate (%)	na	2.6	3.1	3.1
Dividend payout (%)	na	3.4	4.9	4.3
Capex to sales (%)	15.7	28.2	30.1	29.6
Capex to depreciation (x)	0.5	1.1	1.0	1.1
ROE (%)	-7.4	37.4	20.2	19.0
ROA (pretax %)	4.7	20.2	12.2	13.6
Growth (%)				
Revenue	15.8	53.1	-3.9	4.7
EBITDA	217.0	109.4	-13.4	5.6
EBIT	na	1,453.4	-36.8	14.7
Normalised EPS	na	na	-31.0	14.4
Normalised FDEPS	na	na	-31.0	14.4
Per share				
Reported EPS (KRW)	-716.44	4,379.41	3,020.54	3,454.33
Norm EPS (KRW)	-716.44	4,379.41	3,020.54	3,454.33
Fully diluted norm EPS (KRW)	-712.18	4,379.41	3,020.54	3,454.33
Book value per share (KRW)	10,040.04	13,447.57	16,468.10	19,922.43
DPS (KRW)	0.00	149.28	149.28	149.28

Source: Nomura estimates

Notes

Given c.20% ROE over the next two years, we believe current valuation of 2.0x P/B is rich enough

Price and price relative chart (one year)



(%)	1M	3M	12M
Absolute (KRW)	-3.8	7.3	28.8
Absolute (USD)	-3.6	10.0	39.6
Relative to index	-2.4	3.6	-0.6
Market cap (USDmn)	17,147.7		
Estimated free float (%)	64.0		
52-week range (KRW)	37400/20100		
3-mth avg daily turnover (USDmn)	264.72		
Major shareholders (%)			
NPS	9.1		
KOFC	5.5		

Cashflow (KRWbn)

Year-end 31 Dec	FY09	FY10	FY11F	FY12F
EBITDA	2,898	6,069	5,255	5,551
Change in working capital	-922	92	668	-419
Other operating cashflow	-836	-257	-1,367	-56
Cashflow from operations	**1,140**	**5,904**	**4,555**	**5,076**
Capital expenditure	-1,240	-3,412	-3,500	-3,600
Free cashflow	**-100**	**2,492**	**1,055**	**1,476**
Reduction in investments	-26	112	-18	-19
Net acquisitions	0	0	0	0
Reduction in other LT assets	373	-245	183	0
Addition in other LT liabilities	318	-103	208	19
Adjustments	-68	-1,179	-279	-11
Cashflow after investing acts	**497**	**1,076**	**1,149**	**1,465**
Cash dividends	0	0	-89	-89
Equity issue	1,036	3	0	0
Debt issue	-456	-914	-950	-700
Convertible debt issue	0	-220	-49	-3
Others	-293	156	-62	-48
Cashflow from financial acts	**287**	**-975**	**-1,150**	**-840**
Net cashflow	**784**	**101**	**-1**	**625**
Beginning cash	1,319	2,103	2,204	2,203
Ending cash	2,103	2,204	2,203	2,828
Ending net debt	4,852	3,909	2,214	790

Source: Nomura estimates

Notes

We forecast almost flat y-y change in capex

Balance sheet (KRWbn)

As at 31 Dec	FY09	FY10	FY11F	FY12F
Cash & equivalents	2,103	2,204	2,203	2,828
Marketable securities	0	0	0	0
Accounts receivable	1,730	1,604	1,749	1,876
Inventories	1,057	1,265	1,517	1,628
Other current assets	291	607	638	957
Total current assets	**5,180**	**5,680**	**6,107**	**7,289**
LT investments	328	216	234	253
Fixed assets	10,139	10,591	10,638	10,864
Goodwill	469	464	444	424
Other intangible assets				
Other LT assets	271	516	333	333
Total assets	**16,387**	**17,467**	**17,756**	**19,164**
Short-term debt	2,971	2,719	2,417	2,618
Accounts payable	740	914	996	1,102
Other current liabilities	1,922	1,717	1,620	1,652
Total current liabilities	**5,633**	**5,350**	**5,033**	**5,373**
Long-term debt	3,066	2,696	1,352	355
Convertible debt	918	698	648	645
Other LT liabilities	850	747	955	974
Total liabilities	**10,467**	**9,491**	**7,988**	**7,347**
Minority interest	0	0	0	0
Preferred stock	0	0	0	0
Common stock	2,966	2,969	2,969	2,969
Retained earnings	934	3,387	5,090	7,051
Proposed dividends	0	0	0	0
Other equity and reserves	2,020	1,620	1,709	1,797
Total shareholders' equity	**5,920**	**7,976**	**9,768**	**11,817**
Total equity & liabilities	**16,387**	**17,467**	**17,756**	**19,164**
Liquidity (x)				
Current ratio	0.92	1.06	1.21	1.36
Interest cover	0.5	10.5	9.5	36.0
Leverage				
Net debt/EBITDA (x)	1.67	0.64	0.42	0.14
Net debt/equity (%)	82.0	49.0	22.7	6.7
Activity (days)				
Days receivable	57.3	50.3	52.6	54.5
Days inventory	62.4	55.2	62.3	69.0
Days payable	42.3	39.4	42.8	46.1
Cash cycle	77.3	66.2	72.1	77.4

Source: Nomura estimates

Notes

Net debt/equity will continue to shrink, we believe

The industry has bottomed out; NAND to lead the growth in 2011

Having bottomed out, in our view, in 1Q11, we anticipate a moderate (not a 'V-shaped' though) recovery of the DRAM industry. As to NAND, we forecast continued market expansion. Overall, we expect the memory market to leave the soft-landing behind and then to recover.

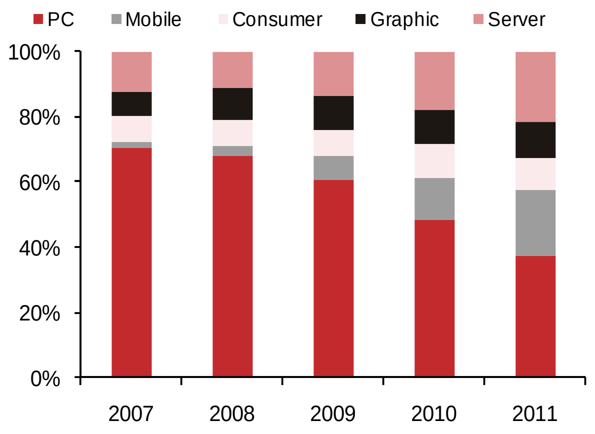
Throughout the year, we believe Hynix's earnings will keep improving until mid-4Q11, following the better-than-consensus results of 1Q11. Going forward, we see following two factors as the key determinants for the continued earnings improvement:

1) The pace of shipment expansion of non-PC DRAM (for server and mobile) and their price trend, and

2) Bit shipment growth and the speed of cost reduction (of both DRAM and NAND), driven by the technology migration.

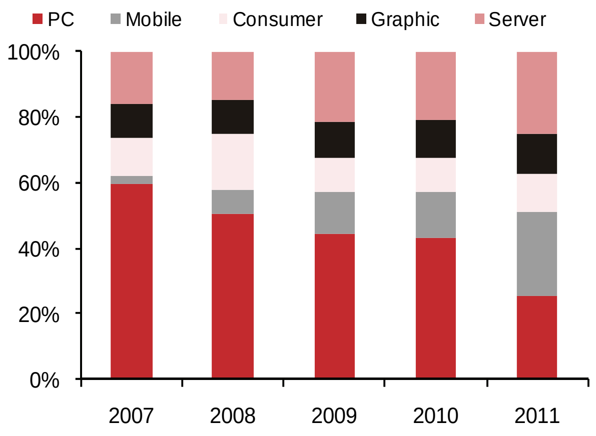
We forecast 2011 revenue and operating profit at W11.6tn (down 4% y-y) and W1.9bn (down 37% y-y), respectively. We forecast EBITDA at W5.3bn (down 13% y-y).

Fig. 55: Hynix bit shipment split



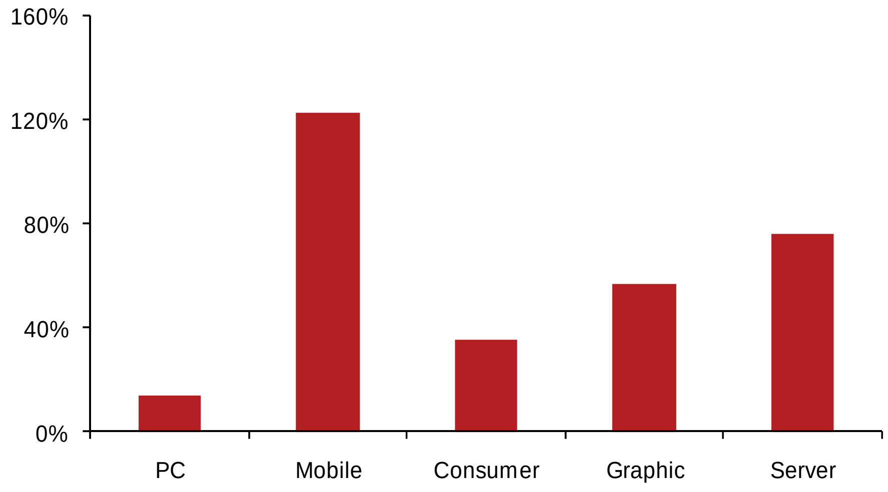
Source: Nomura estimates

Fig. 56: Hynix DRAM revenue split



Source: Nomura estimates

Fig. 57: Hynix DRAM Bit growth by application (2011F)



Source: Nomura estimates

Yet the share is fairly valued now; maintain NEUTRAL

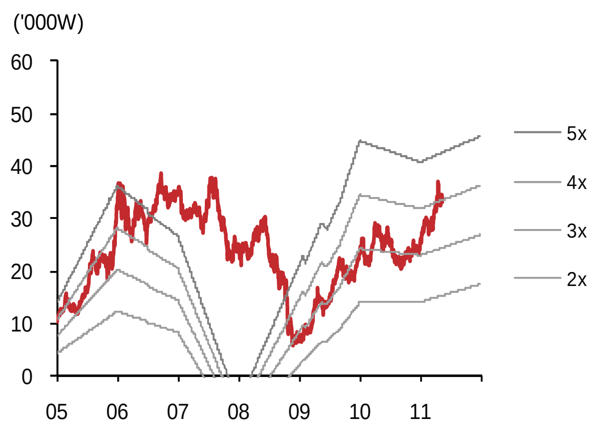
In spite of the rapid fall in PC DRAM price, which in previous cycles led to a hard-landing in Hynix's earnings, we had expected the company's earnings to land softly on the back of its expanded shipment proportion of specialty DRAM and NAND.

With the change in structure of the memory industry – i.e., the rise of specialty DRAM and NAND – the impact from the PC DRAM downturn on industry earnings has waned compared to past cycles. On the flip side, however, the impact from the industry's upturn has also been reduced not only versus the past cycles but also versus the market's expectation.

Given the fact that shrewd product mixture and cost competitiveness determine the winner of the memory industry, we believe Hynix has already achieved one goal – a successful product portfolio. The only remaining work to be done by Hynix is smooth technology migration, on which we now put more weight compared to product mix management.

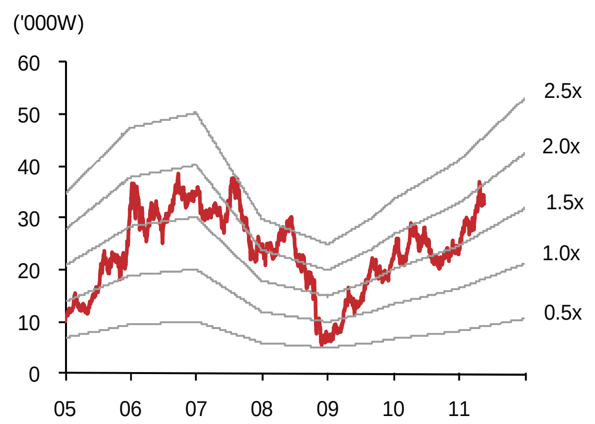
Post the peak in PC DRAM prices of April-May 2010, Hynix's share price went through a severe correction of as much as 30% until September 2010, yet now it is still above its bottom by as much as 60%. We believe the market's expectation on the industry's bottoming out (post the soft landing) has been almost baked in, leaving us limited upside from here.

Fig. 58: Hynix – EV/EBITDA Bandchart



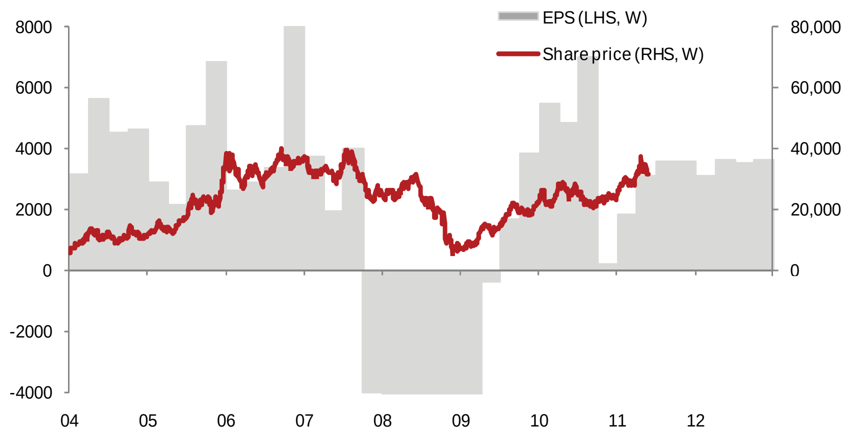
Source: Bloomberg, Nomura estimates

Fig. 59: Hynix – P/B Bandchart (12M Forward)



Source: Bloomberg, Nomura estimates

Fig. 60: Quarterly EPS vs. Share price (2004 ~ 2012F)



Source: Bloomberg, Nomura estimates

Elpida Memory 6665.T 6665 JP

INDUSTRIAL ELECTRONICS

NOMURA
EQUITY RESEARCH

Currently fairly valued

Aiming to regain market share by moving to 30nm node, where ROI is high

May 25, 2011

Relative rating Remains	**Neutral**
Target price From JPY 1,250	JPY 1,300
Closing Price May 19, 2011	JPY 1,134
Potential upside	+14.6%

This is a repriced version of a note first published on 12 May, 2011.

Investment stance — aiming to regain ground via shift to smaller process size for mobile DRAM

We raise our earnings forecasts slightly and hike our target price from ¥1,250 to ¥1,300 as we think the early shift to the 30nm node will result in bit growth of over 50% y-y in 12/3. The company now looks likely to move into profit in 12/3 Q1 thanks to full contributions from 40nm processes. Wafer procurement risks have eased, and we like the way the company has gained ground in mobile DRAM versus peers.

Narrower operating losses in 11/3 Q4 thanks to shift to smaller node despite weak product prices

Elpida Memory saw volatile earnings in 11/3, booking operating profits of ¥67.9bn in H1 but losses of ¥32.1bn in H2. On a q-q basis, Q4 sales fell 5% to ¥92.1bn, but operating losses narrowed by ¥21.7bn to ¥5.2bn and the negative operating margin of 5.7% was an improvement of 22.0ppt. Bit shipments grew 6%, within the range of guidance, and we estimate that per bit prices fell 10%. We also estimate that premium DRAM accounted for 48% of sales, although the company has stopped disclosing this data. In our view, the biggest factor behind the earnings improvement was the start of full-fledged contributions from production at the 40nm node.

We expect full 40nm contributions in 12/3 Q1 despite uncertainty over prices

The PC, smartphone, and tablet markets have started to look a little weak of late, dashing initial bullish expectations. Contract prices appear to have risen around 3% in the first half of May, but spot prices are on a downtrend. Even under these circumstances, we think Elpida Memory can move back into operating profits in 12/3 Q1 on full contributions from production at the 40nm node. Moreover, the early adoption of mass production at 30nm and the start of small-lot production at 25nm will likely result in bit growth of at least 50% over 12/3. Having raised our bit growth assumption, we have raised our full-year 12/3 operating profit forecast from ¥35.0bn to ¥40.0bn.

Cons	11/3			12/3E		13/3E		14/3E
Currency: JPY	Actual	Old	New	Co's	Old	New	Old	New
Sales (bn)	514	500	520	N/A	540	560	N/A	600
Ope profits (bn)	36	35	40	N/A	50	50	N/A	60
EPS	5.4	73.9	93.9	N/A	123.1	117.3	N/A	140.8
P/E (x)	234.3	17.1	13.5	N/A	10.3	10.8	N/A	9.0
EV/EBITDA (x)	4.1	4.0	3.4	N/A	3.6	3.0	N/A	2.6
P/B (x)	1.1	1.0	1.0	N/A	0.9	0.9	N/A	0.8
Dividend yield (%)	0.0	0.0	0.0	N/A	0.0	0.0	N/A	0.0

Source: Company data, Nomura estimates except where noted.

Note: Earnings revisions shown in above table were first published on 12 May, 2011.

Key company data: *See page 2 for company data, and detailed price/index chart.*
Rating: *See report end for details of Nomura's rating system.*

Anchor themes

A maturing market for PC DRAM means that DRAM producers have been focusing on low power consumption mobile DRAM, which holds strong growth potential. With competition for mobile DRAM intensifying, staying at the forefront of technology will likely prove key.

Catalyst

In the short term, it looks as though smartphone and tablet shipments have been weaker than initially expected. We think the key will be having a competitive edge in mass production of 4Gb DRAM modules at 3xnm process sizes.

Research analysts

Industrial electronics

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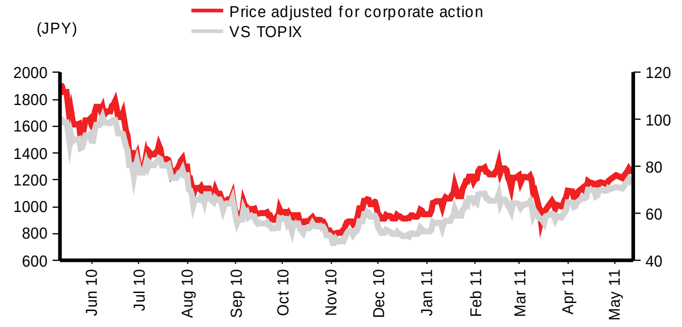
Key data on Elpida Memory

Rating

Stock	Neutral
Sector	Bullish

Price and price relative chart



Source: Datastream

Performance

(%)	1M	3M	12M
Absolute	13.0	1.9	-31.7
Relative to TOPIX	11.7	12.2	-22.8

Stock price data

Current stock price (JPY)	1,266
Market capitalization (JPY bn)	271.6
52-week low stock price (JPY)	716
52-week high stock price (JPY)	1,949
Shares out (mn)	214.5

Source: Datastream, Nomura estimates

Valuation and ratio analysis

(JPY)	11/3	12/3E	13/3E	14/3E
EPS	5.4	93.9	117.3	140.8
BPS or NAV per share	1,192.5	1,295.8	1,413.2	1,558.7
DPS	0.0	0.0	0.0	0.0

Income statement

(JPY bn)	11/3	12/3E	13/3E	14/3E
Sales	514	520	560	600
Depreciation	126	135	130	130
Operating profits	36	40	50	60
EBITDA	162	175	180	190
Pretax profits	17	30	40	50
Minority interests	13	6	10	15
Net profits	2	20	25	30

Balance sheet

(JPY bn)	11/3	12/3E	13/3E	14/3E
Current assets	278	313	322	366
Long-term assets	601	547	517	488
Total assets	879	860	839	855
Interest-bearing debt	405	365	315	295
Other liabilities	64	64	64	64
Total liabilities	523	484	438	423
Net assets	356	376	401	432

Cash flow statement

(JPY bn)	11/3	12/3E	13/3E	14/3E
Operating cash flow	173	173	177	153
Net profits	2	20	25	30
Depreciation	126	135	130	130
Change in working capital	48	-1	-7	-7
Other	-3	19	29	0
Investment cash flow	-111	-80	-100	-100
Capex	-118	-80	-100	-100
Other	7	0	0	0
Free cash flow	62	93	77	53
Financial cash flow	-60	-60	-80	-20
Change in interest-bearing debt	-100	-40	-50	-20
Dividend payments	0	0	0	0
Other	39	-20	-30	0
Change in cash & equivalents	1	33	-3	33

Source: Company data, Nomura estimates

Operating losses narrow in 11/3 Q4 on shift to 40nm despite lower prices

Elpida Memory booked 11/3 Q4 sales of ¥92.1bn (down 5% q-q) and operating losses of ¥5.2bn, a q-q improvement of ¥21.7bn. Factoring out 11/3 Q3 inventory valuation losses of ¥11.0bn and provisions for doubtful accounts of ¥2.0bn and the ¥2.0bn reversal of the doubtful account reserve in Q4, operating losses came to ¥13.9bn in Q3 for a negative margin of 14.3%, and ¥18.2bn in Q4 for a negative margin of 19.8%. In Q4, the per bit price fell 10% q-q on a dollar basis, primarily because of lower prices for general purpose DRAM, but we think an estimated 20% rise in sales of premium DRAM and full-fledged contributions from 40nm mass production from February meant that earnings did not deteriorate by as much as the fall in DRAM prices.

Contract DRAM prices up through mid-May, but rise lacks sustainability

Contract DRAM prices have been rising gradually since mid-March, and in mid-May the 2Gb module price appeared to be around US$2.10, up nearly 3% on the late-April level. We attribute this to OEM suppliers stockpiling DRAM on concerns that the earthquake in Japan would disrupt silicon wafer supply. That said, final demand for PCs has remained weak, and spot prices have continued to fall, with 2Gb DRAM modules at the $1.80–1.90 level. As such, we expect the uptrend in contract prices to collapse. While market prices could turn upward from 12/3 Q2 on seasonal growth in demand and concerns over yields at the 40nm node, we cannot rule out the possibility that plentiful wafer supplies and progress to smaller nodes will weaken prices. We assume a modest decline in prices with supply and demand broadly in balance.

Elpida Memory working once again to be at the vanguard of smaller process sizes

Elpida Memory was at the vanguard of the shift to the 70nm node, having successfully skipped a generation. That said, excessive investment based on overly high expectations for Windows Vista resulted in falling prices and earnings deterioration, forcing the company into only a minor upgrade at the 65nm node. Although the company has managed to hold onto a certain share of the PC DRAM market, it has lost substantial share of the mobile DRAM market owing to poor cost competitiveness. Elpida Memory then skipped mass production at 50nm and focused instead on 40nm, which offers better investment efficiency, and we like the way this started to feed through to earnings in Q4. With the 30nm node offering even greater investment efficiencies, Elpida Memory is moving to full-fledged mass production at its Hiroshima plant in May 2011 to mass produce 4Gb mobile DRAM modules as well as 2Gb PC DRAM modules. We expect 30nm to account for 20% of production capacity at the Hiroshima plant at end-June and 30% at end-September. Rexchip Electronics plans to have 50% of capacity at the 30nm node at end-September and move to 100% at end-December. Elpida Memory also plans pilot runs at the 25nm node from July 2011, in a bid to once again lead the way in smaller process sizes.

We expect earnings to improve on lack of problems with sourcing materials

We think this progress to smaller process sizes should improve Elpida Memory's positioning within the industry. Moreover, issues with procuring silicon wafers appear to have been resolved, and we think wafers could well be in plentiful supply from July. Although supplies for June are a concern, we think the use of non-epi (polished) wafers should mean the company avoids any shortfalls. Management has said that there is almost no difference in yield between epi and non-epi wafers, and indeed the use of non-epi wafers could help cut costs. It plans to use them in mass production once it gets them approved. With further moves to smaller process sizes that offer greater investment efficiencies, we expect an improvement in earnings provided there is no major deterioration in prices.

Valuation methodology

Owing to considerable volatility in DRAM prices, we avoid valuations based on fiscal year profits/losses. In calculating our target price, we refer to three theoretical ranges: (1) ¥239–2,384, derived from the P/B range from the most recent cycle of 0.2–2.0x and the latest (end-March 2011) BPS of ¥1,192, (2) ¥33–1,711, derived from a historical EV/EBITDA multiple range of 3–6x and our 12/3 estimate, and (3) ¥650–1,961, derived from our DCF model that assumes WACC of 6–9% and terminal growth of 0–2%. We calculate our target price of ¥1,300 by taking the average of ¥1,371, derived from the market P/B of 1.15x end-March 2011 BPS, as we expect earnings to recover even though the company is currently making losses, ¥1,221, a 40% premium to the average derived from the EV/EBITDA multiples, and ¥1,306 as an average from our DCF model.

Investment risks

We identify more intense price competition for DRAM as a major downside risk to our target price. Prices for DRAM and other types of semiconductor memory are susceptible to supply-demand conditions, and excessive capex at new entrant producers in particular can result in oversupply.

Fig. 61: Elpida Memory [6665]: consolidated financial data

(¥bn, except where noted)

	10/3	11/3	12/3E	13/3E	14/3E
Sales by segment					
Computing DRAM	346.0	358.1	270.0	260.0	270.0
% y-y	82.0	3.5	-24.6	-3.7	3.8
Premium DRAM	121.0	156.2	250.0	300.0	330.0
% y-y	-14.2	29.1	60.0	20.0	10.0
Total	467.0	514.3	520.0	560.0	600.0
% y-y	41.1	10.1	1.1	7.7	7.1
DRAM bit growth (%)	51	33	53	40	40
DRAM bit price (%)	-7	-17	-34	-23	-23

Source: Company data, Nomura estimates

Fig. 62: Elpida Memory [6665]: consolidated financial data

(¥bn, except where noted)

	10/3	11/3	12/3E	13/3E	14/3E
Income statement					
Sales	**467.0**	**514.3**	**520.0**	**560.0**	**600.0**
% -y	41.1	10.1	1.1	7.7	7.1
COGS	378.0	412.8	410.0	438.0	466.0
Gross profits	89.0	101.5	110.0	122.0	134.0
Margin (%)	19.1	19.7	21.2	21.8	22.3
SG&A expenses	62.1	65.7	70.0	72.0	74.0
As % of sales	13.3	12.8	13.5	12.9	12.3
Operating profits	**26.8**	**35.8**	**40.0**	**50.0**	**60.0**
% y-y	-	33.3	11.8	25.0	20.0
Margin (%)	5.7	7.0	7.7	8.9	10.0
Nonoperating income	2.4	2.3	0.8	0.8	0.8
Interest & dividends received	1.1	0.2	0.3	0.3	0.3
Other	1.3	2.1	0.5	0.5	0.5
Nonoperating expenses	17.0	24.2	10.8	10.8	10.8
Interest paid	10.6	9.9	8.8	8.8	8.8
Other	6.4	14.3	2.0	2.0	2.0
Recurring profits	**12.3**	**13.9**	**30.0**	**40.0**	**50.0**
% y-y	-	12.7	2.2x	33.3	25.0
Margin (%)	2.6	2.7	5.8	7.1	8.3
Extraordinary gains	1.9	5.7	0.0	0.0	0.0
Extraordinary losses	5.3	2.8	0.0	0.0	0.0
Pretax profits	8.9	16.8	30.0	40.0	50.0
Corporation tax	1.7	1.6	4.0	5.0	5.0
Effective tax rate (%)	19.3	9.6	13.3	12.5	10.0
Minority interests	4.1	13.1	6.0	10.0	15.0
Net profits	**3.1**	**2.1**	**20.0**	**25.0**	**30.0**
% y-y	-	-32.1	950.0	25.0	20.0
Margin (%)	0.7	0.4	3.8	4.5	5.0
Depreciation	121.8	125.8	135.0	130.0	130.0
As % of sales	26.1	24.5	26.0	23.2	21.7
Capex	43.8	117.6	80.0	100.0	100.0
As % of sales	9.4	22.9	15.4	17.9	16.7
R&D expenses	34.5	39.7	43.0	45.0	46.0
As % of sales	7.4	7.7	8.3	8.0	7.7

Source: Company data, Nomura estimates

Nanya Technology 2408.TW 2408 TT

MEMORY

NOMURA
EQUITY RESEARCH

The uphill battle continues

Continues to struggle to compete

May 25, 2011

Rating Remains	Reduce
Target price Remains	TWD 5.3
Closing price May 19, 2011	TWD 12.7
Potential downside	-58.3%

Action: An uphill battle continues; maintain REDUCE
Due to the lack of exposure to specialty DRAM and a lag in technology migration, Nanya's OP came in below even our bearish forecast. We believe Nanya faces an uphill battle from here on. We maintain REDUCE.

Catalysts: Lacklustre migration may further erode profitability
Should the PC DRAM price remain below Nanya's per-Gb cost, we expect the company's net assets will be further eroded.

Valuation: PT of NT$5.3 on 1.4x at 1yr-fwd BVPS of NT$3.7
Given the book value depreciation, we believe current valuation of 3.5x 1yr-fwd BVPS cannot be supported. We maintain REDUCE with a target price of NT$5.3. Our target price is based on 1.4x 1yr-fwd BVPS of NT$3.7.

31 Dec	FY10	FY11F		FY12F		
Currency (TWD)	Actual	Old	New	Old	New	
Revenue (mn)	56,545	63,634	63,634	82,051	82,051	
Reported net profit (mn)	-15,100	-16,391	-16,391	1,457	1,457	
Normalised net profit (mn)	-15,100	-16,391	-16,391	1,457	1,457	
Normalised EPS	-4.2	-4.1	-4.1	0.4	0.4	
Norm. EPS growth (%)	na	na	na	na	na	
Norm. P/E (x)	na	na	na	41.2	35.1	N/A
EV/EBITDA	32.7	40.7	40.7	7.6	7.6	N/A
Price/book (x)	1.6	3.2	3.2	2.9	2.9	N/A
Dividend yield (%)	na	na	na	na	na	N/A
ROE (%)	-43.2	-67.2	-67.2	8.6	8.6	
Net debt/equity (%)	246.2	623.9	623.9	556.3	556.3	

Source: Nomura estimates

Key company data: *See page 2 for company data, and detailed price/index chart.*
Rating: *See report end for details of Nomura's rating system.*

Anchor themes

We find a rapid shift in demand – from feature phones to Smartphones, and from PC to tablets. However, we believe Nanya will barely benefit from the transition due to its weak cost competitiveness and poor product portfolio.

Nomura vs consensus

We see limited potential for a strong recovery in PC DRAM and so our PT is lower than consensus by 55%.

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Key data on Nanya Technology

Income statement (TWDmn)

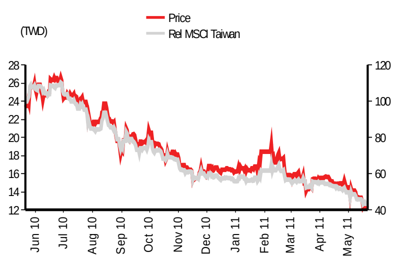
Year-end 31 Dec	FY09	FY10	FY11F	FY12F
Revenue	**42,456**	**56,545**	**63,634**	**82,051**
Cost of goods sold	-52,630	-59,971	-65,651	-68,008
Gross profit	**-10,174**	**-3,427**	**-2,017**	**14,043**
SG&A	-5,746	-8,426	-9,888	-10,075
Employee share expense				
Operating profit	**-15,919**	**-11,853**	**-11,905**	**3,968**
EBITDA	**-1,158**	**4,021**	**3,744**	**19,635**
Depreciation	-12,387	-13,880	-13,675	-13,693
Amortisation	-2,374	-1,995	-1,974	-1,974
EBIT	-15,919	-11,853	-11,905	3,968
Net interest expense	-1,679	-1,644	-2,040	-2,450
Associates & JCEs				
Other income	-3,155	-1,603	-2,447	-61
Earnings before tax	**-20,754**	**-15,100**	**-16,391**	**1,457**
Income tax	0	0	0	0
Net profit after tax	**-20,754**	**-15,100**	**-16,391**	**1,457**
Minority interests				
Other items				
Preferred dividends				
Normalised NPAT	**-20,754**	**-15,100**	**-16,391**	**1,457**
Extraordinary items				
Reported NPAT	**-20,754**	**-15,100**	**-16,391**	**1,457**
Dividends	0	0	0	0
Transfer to reserves	**-20,754**	**-15,100**	**-16,391**	**1,457**
Valuation and ratio analysis				
FD normalised P/E (x)	na	na	na	35.1
FD normalised P/E at price target (x)	na	na	na	14.7
Reported P/E (x)	na	na	na	35.1
Dividend yield (%)	na	na	na	na
Price/cashflow (x)	na	27.6	na	3.8
Price/book (x)	0.8	1.6	3.2	2.9
EV/EBITDA (x)	na	32.7	40.7	7.6
EV/EBIT (x)	na	na	na	37.7
Gross margin (%)	-24.0	-6.1	-3.2	17.1
EBITDA margin (%)	-2.7	7.1	5.9	23.9
EBIT margin (%)	-37.5	-21.0	-18.7	4.8
Net margin (%)	-48.9	-26.7	-25.8	1.8
Effective tax rate (%)	na	na	na	0.0
Dividend payout (%)	na	na	na	0.0
Capex to sales (%)	35.5	38.1	18.9	14.6
Capex to depreciation (x)	1.2	1.6	0.9	0.9
ROE (%)	-63.3	-43.2	-67.2	8.6
ROA (pretax %)	-13.6	-9.8	-9.2	2.9
Growth (%)				
Revenue	16.9	33.2	12.5	28.9
EBITDA	na	na	-6.9	424.4
EBIT	na	na	na	na
Normalised EPS	na	na	na	na
Normalised FDEPS	na	na	na	na
Per share				
Reported EPS (TWD)	-7.25	-4.24	-4.06	0.36
Norm EPS (TWD)	-7.25	-4.24	-4.06	0.36
Fully diluted norm EPS (TWD)	-8.67	-3.74	-4.06	0.36
Book value per share (TWD)	15.61	8.08	4.02	4.38
DPS (TWD)	0.00	0.00	0.00	0.00

Source: Nomura estimates

Notes

We expect the company to record an operating loss throughout 2011.

Price and price relative chart (one year)



(%)	1M	3M	12M
Absolute (TWD)	-13.3	-28.0	-47.2
Absolute (USD)	-12.5	-26.7	-41.3
Relative to index	-16.8	-28.1	-64.9
Market cap (USDmn)	1,776.6		
Estimated free float (%)	40.8		
52-week range (TWD)	27.26/12.2		
3-mth avg daily turnover (USDmn)	4.32		
Major shareholders (%)			
Nanya Plastics	29.4		
Formosa Chem.	4.9		

Cashflow (TWDmn)

Year-end 31 Dec	FY09	FY10	FY11F	FY12F
EBITDA	-1,158	4,021	3,744	19,635
Change in working capital	-12,490	697	-5,761	-1,884
Other operating cashflow	2,567	-2,863	-6,799	-4,148
Cashflow from operations	**-11,081**	**1,855**	**-8,815**	**13,602**
Capital expenditure	-15,086	-21,569	-12,000	-12,000
Free cashflow	**-26,167**	**-19,714**	**-20,815**	**1,602**
Reduction in investments	4,692	-2,893	0	0
Net acquisitions				
Reduction in other LT assets	2,585	5,238	334	5,471
Addition in other LT liabilities	-90	-150	327	107
Adjustments	-6,509	-6,214	-662	-5,578
Cashflow after investing acts	**-25,489**	**-23,733**	**-20,815**	**1,602**
Cash dividends	0	0	0	0
Equity issue	-24,465	10,422	0	0
Debt issue	9,532	122	19,966	5,466
Convertible debt issue				
Others	51,579	1,086	0	0
Cashflow from financial acts	**36,646**	**11,630**	**19,966**	**5,466**
Net cashflow	**11,157**	**-12,102**	**-849**	**7,068**
Beginning cash	2,506	13,663	1,561	712
Ending cash	13,663	1,561	712	7,780
Ending net debt	67,991	80,216	101,031	98,187

Source: Nomura estimates

Notes

We forecast 2011 capex of NT$12bn

Balance sheet (TWDmn)

As at 31 Dec	FY09	FY10	FY11F	FY12F
Cash & equivalents	13,663	1,561	712	7,780
Marketable securities	290	0	0	0
Accounts receivable	12,972	8,876	14,312	16,090
Inventories	7,827	8,700	14,029	15,771
Other current assets	2,543	2,184	3,522	3,960
Total current assets	**37,296**	**21,321**	**32,575**	**43,602**
LT investments	15,974	19,157	19,157	19,157
Fixed assets	68,597	80,426	79,751	82,057
Goodwill				
Other intangible assets	13,794	12,290	12,290	12,290
Other LT assets	-2,708	-7,945	-8,280	-13,751
Total assets	**132,953**	**125,249**	**135,493**	**143,356**
Short-term debt	35,684	43,871	49,863	51,354
Accounts payable	10,661	6,755	10,893	12,246
Other current liabilities	2,579	3,599	5,803	6,524
Total current liabilities	**48,924**	**54,226**	**66,559**	**70,125**
Long-term debt	45,970	37,905	51,880	54,613
Convertible debt				
Other LT liabilities	684	534	861	968
Total liabilities	**95,578**	**92,665**	**119,300**	**125,706**
Minority interest				
Preferred stock	0	0	0	0
Common stock	34,047	40,324	40,324	40,324
Retained earnings	-9,888	-25,094	-41,485	-40,028
Proposed dividends				
Other equity and reserves	13,216	17,354	17,354	17,354
Total shareholders' equity	**37,375**	**32,584**	**16,193**	**17,650**
Total equity & liabilities	**132,953**	**125,249**	**135,493**	**143,356**
Liquidity (x)				
Current ratio	0.76	0.39	0.49	0.62
Interest cover	-9.5	-7.2	-5.8	1.6
Leverage				
Net debt/EBITDA (x)	na	19.95	26.98	5.00
Net debt/equity (%)	181.9	246.2	623.9	556.3
Activity (days)				
Days receivable	77.5	70.5	66.5	67.8
Days inventory	47.5	50.3	63.2	80.2
Days payable	64.9	53.0	49.1	62.3
Cash cycle	60.1	67.8	80.6	85.7

Source: Nomura estimates

Notes

Due to the lack of earnings generation capability, we expect Nanya's net debt/equity to further rise in 2011.

The competition will continue to be challenging for Nanya

Looking ahead, we forecast the recovery of DRAM prices and the cost reduction activities will help the company return to profitability. However, we expect it will not be able to generate positive operating profit within 2011. In our view, whether it can be profitable hinges on: 1) the successful ramp-up of the specialty DRAM and 2) smooth migration into 40nm and 30nm technology. Overall, we believe Nanya will continue to face difficulties in competing against the leading memory players.

We forecast 2011F bit growth at 115% y-y and for its ASP to decline by 43% y-y. We estimate Nanya's 2011F revenue at NT$63.6bn (up 12% y-y) and operating loss at NT$11.9bn, or an OP margin of (19%).

Maintain Reduce and PT of NT$5.3

Given the leading memory names' faster migration pace and the company's yet-to-be-proven technology in specialty DRAM, we believe Nanya will continue to struggle in generating sufficient operating cash flow, critical for further investment for migration.

1Q11-end BVPS stood at NT$5.8 and we believe it will rapidly decline to around NT$3.7 within one year (i.e., by 2Q12-end). Given the book value depreciation, we believe current valuation of 3.5x of 1yr-fwd BVPS cannot be supported. We maintain REDUCE with a target price of NT$5.3. Our target price is based on 1.4x 1yr-fwd BVPS of NT$3.7.

Fig. 63: Nanya's DRAM revenue and cost forecast

	2009	1Q10	2Q10	3Q10	4Q10	2010	1Q11	2Q11F	3Q11F	4Q11F	2011F
DRAM sales (NT$, mn)	**38,428**	**13,018**	**14,639**	**13,957**	**10,991**	**52,606**	**9,938**	**14,588**	**17,707**	**18,213**	**60,446**
QoQ		-16%	12%	-5%	-21%		-10%	47%	21%	3%	
YoY	**22%**	138%	104%	35%	-29%	**37%**	-24%	0%	27%	66%	**15%**
DRAM sales (US$, mn)	**1,171**	407	458	437	363	**1,665**	337	495	600	617	**2,049**
QoQ		-15%	12%	-5%	-17%		-7%	47%	21%	3%	
YoY	**16%**	153%	112%	38%	-24%	**42%**	-17%	8%	37%	70%	**23%**
Shipment (1Gb eq, mn)	**670**	160	164	190	257	**772**	309	396	462	494	**1,660**
QoQ		-8%	2%	16%	35%		20%	28%	17%	7%	
YoY	**36%**	6%	0%	6%	48%	**15%**	93%	141%	142%	92%	**115%**
ASP (1Gb eq, $)	**1.7**	2.5	2.8	2.3	1.4	**2.2**	1.1	1.3	1.3	1.3	**1.2**
QoQ		-8%	10%	-18%	-38%		-23%	15%	4%	-4%	
YoY	**-14%**	139%	111%	31%	-49%	**23%**	-57%	-55%	-43%	-12%	**-43%**
Cost (1Gb eq, $)	**2.5**	2.8	2.9	2.5	2.5	**2.6**	1.9	1.6	1.3	1.3	**1.5**
QoQ		3%	4%	-13%	1%		-24%	-19%	-14%	-5%	
YoY	**-38%**	4%	26%	13%	-6%	**7%**	-31%	-46%	-47%	-50%	**-44%**
DRAM OP (NT$, mn)	**-15,675**	**-1,141**	**-432**	**-1,193**	**-8,608**	**-11,374**	**-7,535**	**-3,501**	**-409**	**-146**	**-11,590**
OP margin	**-41%**	-9%	-3%	-9%	-78%	**-22%**	-76%	-24%	-2%	-1%	**-19%**

Source: Company data, Nomura estimates

Inotera Memories 3474.TW 3474 TT

MEMORY

NOMURA
EQUITY RESEARCH

Tough fight continues

A battle too challenging for second tiers

May 25, 2011

Rating Remains	**Reduce**
Target price Remains	TWD 7.8
Closing price May 19, 2011	TWD 13.4
Potential downside	-41.8%

Action: Tough fight continues; reaffirm REDUCE

Given leading memory names' faster migration pace and Inotera's yet-to-be proven technology in specialty DRAM, we believe the company will continue to struggle to generate sufficient operating cash flows, which we believe is critical for further investments for migration. We reaffirm our REDUCE rating and our price target of NT$7.8.

Catalyst: Lower PC DRAM price will further erode NAV

Should PC DRAM prices remain below Inotera's per-Gb cost, the company's net assets will continue to be eroded.

Valuation: Maintain TP of NT$7.8 at 1.0x 1yr fwd BVPS of NT$8

Given book value depreciation, we believe the current valuation of 1.7x 1-year-fwd BVPS cannot be supported. We maintain our REDUCE rating and price target of NT$7.8. Our price target is based on 1.0x and 1-yearfwd BVPS of NT$8. In light of negative ROE forecast over the next two years, we believe a discount to the current valuation is warranted.

31 Dec	FY10	FY11F		FY12F	
Currency (TWD)	Actual	Old	New	Old	New
Revenue (mn)	41,504	43,772	43,772	50,841	50,841
Reported net profit (mn)	-10,661	-11,291	-11,291	-7,393	-7,393
Normalised net profit (mn)	-10,661	-11,291	-11,291	-7,393	-7,393
Normalised EPS	-2.3	-2.5	-2.5	-1.6	-1.6
Norm. EPS growth (%)	na	na	na	na	na
Norm. P/E (x)	na	na	na	na	na
EV/EBITDA	5.8	6.5	6.5	6.0	6.0
Price/book (x)	1.2	1.5	1.5	1.9	1.9
Dividend yield (%)	na	na	na	na	na
ROE (%)	-20.9	-23.8	-23.8	-19.4	-19.4
Net debt/equity (%)	128.2	176.3	176.3	206.1	206.1

Source: Nomura estimates

Key company data: *See page 2 for company data, and detailed price/index chart.*
Rating: *See report end for details of Nomura's rating system.*

Anchor themes

We are seeing a rapid shift in demand – from feature phones to Smartphones, and from PCs to tablets. But Inotera does not look well placed to benefit from the transition, given weak cost competitiveness and a lacklustre product portfolio.

Nomura vs consensus

We see limited prospects of a strong recovery in PC DRAM prices. Our PT is lower than consensus by 51%.

Research analysts

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Key data on Inotera Memories

Income statement (TWDmn)

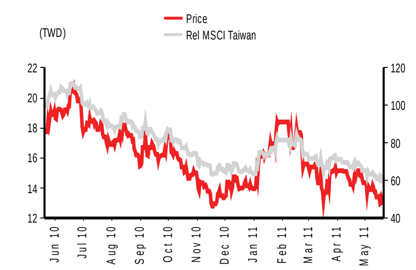
Year-end 31 Dec	FY09	FY10	FY11F	FY12F
Revenue	**36,104**	**41,504**	**43,772**	**50,841**
Cost of goods sold	-44,743	-48,915	-52,030	-55,028
Gross profit	**-8,639**	**-7,411**	**-8,259**	**-4,187**
SG&A	-1,002	-1,803	-1,506	-1,556
Employee share expense				
Operating profit	**-9,641**	**-9,214**	**-9,765**	**-5,743**
EBITDA	**20,154**	**22,895**	**21,235**	**22,377**
Depreciation	-29,603	-31,332	-30,218	-27,338
Amortisation	-192	-777	-782	-782
EBIT	-9,641	-9,214	-9,765	-5,743
Net interest expense	-1,697	-1,324	-1,660	-1,690
Associates & JCEs				
Other income	-139	-123	134	40
Earnings before tax	**-11,477**	**-10,661**	**-11,291**	**-7,393**
Income tax	0	0	0	0
Net profit after tax	**-11,477**	**-10,661**	**-11,291**	**-7,393**
Minority interests				
Other items				
Preferred dividends				
Normalised NPAT	**-11,477**	**-10,661**	**-11,291**	**-7,393**
Extraordinary items				
Reported NPAT	**-11,477**	**-10,661**	**-11,291**	**-7,393**
Dividends	0	0	0	0
Transfer to reserves	**-11,477**	**-10,661**	**-11,291**	**-7,393**
Valuation and ratio analysis				
FD normalised P/E (x)	na	na	na	na
FD normalised P/E at price target (x)	na	na	na	na
Reported P/E (x)	na	na	na	na
Dividend yield (%)	na	na	na	na
Price/cashflow (x)	4.0	2.8	3.7	3.1
Price/book (x)	1.0	1.2	1.5	1.9
EV/EBITDA (x)	6.1	5.8	6.5	6.0
EV/EBIT (x)	na	na	na	na
Gross margin (%)	-23.9	-17.9	-18.9	-8.2
EBITDA margin (%)	55.8	55.2	48.5	44.0
EBIT margin (%)	-26.7	-22.2	-22.3	-11.3
Net margin (%)	-31.8	-25.7	-25.8	-14.5
Effective tax rate (%)	na	na	na	na
Dividend payout (%)	na	na	na	na
Capex to sales (%)	21.7	120.6	58.3	35.4
Capex to depreciation (x)	0.3	1.6	0.8	0.7
ROE (%)	-23.2	-20.9	-23.8	-19.4
ROA (pretax %)	-8.0	-7.3	-7.1	-4.3
Growth (%)				
Revenue	-3.8	15.0	5.5	16.2
EBITDA	129.0	13.6	-7.2	5.4
EBIT	na	na	na	na
Normalised EPS	na	na	na	na
Normalised FDEPS	na	na	na	na
Per share				
Reported EPS (TWD)	-3.19	-2.34	-2.48	-1.62
Norm EPS (TWD)	-3.19	-2.34	-2.48	-1.62
Fully diluted norm EPS (TWD)	-3.19	-2.34	-2.43	-1.59
Book value per share (TWD)	13.56	11.69	9.01	7.42
DPS (TWD)	0.00	0.00	0.00	0.00

Source: Nomura estimates

Notes

Due to lagging technology, it is not easy to cut costs enough to generate profit in the mid-term, in our view.

Price and price relative chart (one year)



(%)	1M	3M	12M
Absolute (TWD)	-2.1	-14.8	-36.0
Absolute (USD)	-2.0	-9.8	-31.6
Relative to index	-5.6	-26.8	-46.2
Market cap (USDmn)	2,111.5		
Estimated free float (%)	36.6		
52-week range (TWD)	/		
3-mth avg daily turnover (USDmn)	7.54		
Major shareholders (%)			
Nanya Technology	29.8		
Micron Technology	29.7		

Cashflow (TWDmn)

Year-end 31 Dec	FY09	FY10	FY11F	FY12F
EBITDA	20,154	22,895	21,235	22,377
Change in working capital	-2,640	5,843	1,989	90
Other operating cashflow	-4,951	-5,975	-5,902	-2,038
Cashflow from operations	**12,564**	**22,763**	**17,322**	**20,429**
Capital expenditure	-7,818	-50,069	-25,500	-18,000
Free cashflow	**4,746**	**-27,305**	**-8,178**	**2,429**
Reduction in investments				
Net acquisitions				
Reduction in other LT assets				
Addition in other LT liabilities				
Adjustments	1,232	1,101	-5,900	0
Cashflow after investing acts	**5,978**	**-26,204**	**-14,078**	**2,429**
Cash dividends	0	0	0	0
Equity issue	-1,289	4,441	-11,461	-7,393
Debt issue	-11,642	8,423	10,056	-1,944
Convertible debt issue				
Others	6,920	13,074	18,538	7,729
Cashflow from financial acts	**-6,011**	**25,937**	**17,133**	**-1,608**
Net cashflow	**-34**	**-267**	**3,055**	**821**
Beginning cash	5,410	5,376	5,109	8,164
Ending cash	5,376	5,109	8,164	8,985
Ending net debt	59,586	68,276	73,706	70,941

Source: Nomura estimates

Notes

Negative free cash flow expected in FY11F

Balance sheet (TWDmn)

As at 31 Dec	FY09	FY10	FY11F	FY12F
Cash & equivalents	5,376	5,109	8,164	8,985
Marketable securities	0	0	0	0
Accounts receivable	9,529	7,233	9,717	10,724
Inventories	3,456	4,506	6,356	7,015
Other current assets	555	2,311	428	473
Total current assets	**18,917**	**19,159**	**24,665**	**27,196**
LT investments	0	0	0	0
Fixed assets	97,685	121,264	108,842	99,505
Goodwill				
Other intangible assets	5,800	3,338	3,338	3,338
Other LT assets	-2,006	-1,492	7,447	7,053
Total assets	**120,396**	**142,269**	**144,292**	**137,092**
Short-term debt	22,783	19,881	36,006	36,006
Accounts payable	3,725	9,105	12,231	13,499
Other current liabilities	2,852	3,825	5,138	5,671
Total current liabilities	**29,361**	**32,811**	**53,375**	**55,175**
Long-term debt	42,179	53,504	45,864	43,920
Convertible debt				
Other LT liabilities	28	2,685	3,245	3,581
Total liabilities	**71,568**	**89,000**	**102,484**	**102,677**
Minority interest				
Preferred stock	0	0	0	0
Common stock	39,775	45,560	46,390	46,390
Retained earnings	-24,068	-33,847	-46,138	-53,531
Proposed dividends				
Other equity and reserves	33,121	41,556	41,556	41,556
Total shareholders' equity	**48,828**	**53,269**	**41,808**	**34,415**
Total equity & liabilities	**120,396**	**142,269**	**144,292**	**137,092**
Liquidity (x)				
Current ratio	0.64	0.58	0.46	0.49
Interest cover	-5.7	-7.0	-5.9	-3.4
Leverage				
Net debt/EBITDA (x)	2.96	2.98	3.47	3.17
Net debt/equity (%)	122.0	128.2	176.3	206.1
Activity (days)				
Days receivable	62.0	73.7	70.7	73.6
Days inventory	26.1	29.7	38.1	44.5
Days payable	29.6	47.9	74.8	85.6
Cash cycle	58.5	55.5	33.9	32.5

Source: Nomura estimates

Notes

Equity value continued to be eroded, resulting in net debt/equity continuing to rise.

With its migration slower than the leaders, it is difficult to turn to black

We forecast that a recovery in DRAM prices and the company's cost reduction activities will help Inotera move back to profitability. However, we expect the company will not be able to generate positive operating profit by 2011. Whether it can reach positive profitability hinges on: 1) the successful ramp-up of specialty DRAM and 2) smooth migration to 40nm and 30nm technology. Overall, we believe Inotera will continue to find it difficult to compete against leading memory players.

We forecast 2011F bit growth at 108% y-y, and expect ASP to decline by 45% y-y. We forecast Inotera's 2011F revenue and operating loss at NT$43.8bn (up 5% y-y) and NT$9.8bn, or OP margin of (-)22%.

Off the NT$55bn capex in 2010, Inotera announced only NT$12.5bn of capex in 2011. Management said it may spend more, apart from the announced amount, for the ramp-up of 3xnm technology. However, we believe this additional capex is at risk given the continued difficulty in technology migration as well as budget constraints.

Maintain Reduce and TP of NT$7.8

Given leading memory names' faster migration pace and the company's yet-to-be-proven technology in specialty DRAM, we believe Inotera will continue to struggle to generate sufficient operating cash flow, which we believe is critical for further investment in migration.

1Q11-end BVPS was NT$10, and we believe it will decline further to around NT$8 within the next one year (by end-2Q12). Given book value depreciation, we believe the current valuation of 1.7x 1yr-fwd BVPS cannot be supported. We maintain our REDUCE rating and price target of NT$7.8. Our price target is based on 1.0x 1yr-fwd BVPS of NT$8. In light of negative ROE forecast over the next two years, we believe a discount to the current valuation is warranted.

Fig. 64: DRAM earnings forecast

	2009	1Q10	2Q10	3Q10	4Q10	2010	1Q11	2Q11F	3Q11F	4Q11F	2011F
DRAM sales (NT$, mn)	**36,104**	**11,518**	**11,258**	**9,963**	**8,765**	**41,504**	**9,586**	**11,128**	**11,283**	**11,774**	**43,772**
QoQ	**0%**	-10%	-2%	-12%	-12%	**0%**	9%	16%	1%	4%	**0%**
YoY	**-4%**	81%	51%	4%	-31%	**15%**	-17%	-1%	13%	34%	**5%**
DRAM sales (US$, mn)	**1,098**	360	352	312	289	**1,314**	327	380	385	402	**1,494**
QoQ	**0%**	-9%	-2%	-12%	-7%	**0%**	13%	16%	1%	4%	**0%**
YoY	**-8%**	93%	56%	7%	-27%	**20%**	-9%	8%	24%	39%	**14%**
Shipment (1Gb eq, mn)	**659**	206	176	178	296	**857**	401	452	453	476	**1,782**
QoQ	**0%**	-3%	-14%	1%	66%	**0%**	36%	13%	0%	5%	**0%**
YoY	**-13%**	94%	18%	-7%	39%	**30%**	95%	156%	154%	61%	**108%**
ASP (1Gb eq, $)	**1.7**	1.7	2.0	1.7	1.0	**1.5**	0.8	0.8	0.9	0.8	**0.8**
QoQ	**0%**	-6%	14%	-12%	-44%	**0%**	-17%	3%	1%	-1%	**0%**
YoY	**6%**	-1%	32%	15%	-47%	**-8%**	-53%	-58%	-51%	-14%	**-45%**
Cost (1Gb eq, $)	**2.1**	1.9	2.2	2.2	1.5	**1.9**	1.1	1.0	1.0	1.0	**1.0**
QoQ	**0%**	11%	14%	0%	-33%	**0%**	-23%	-12%	0%	-2%	**0%**
YoY	**-11%**	-36%	-3%	18%	-15%	**-11%**	-41%	-55%	-55%	-34%	**-46%**
DRAM OP (NT$, mn)	**-9,641**	**-1,219**	**-1,142**	**-2,581**	**-4,520**	**-9,461**	**-3,773**	**-2,120**	**-1,991**	**-1,881**	**-9,765**
OP margin	**-27%**	-11%	-10%	-26%	-52%	**-23%**	-39%	-19%	-18%	-16%	**-22%**

Source: Company data, Nomura estimates

Appendix A-1

Analyst Certification

We, Changwon Chung, Marcello Seongsoo Ahn, Masaya Yamasaki and Tetsukazu Tsuruhama, hereby certify (1) that the views expressed in this Research report accurately reflect our personal views about any or all of the subject securities or issuers referred to in this Research report, (2) no part of our compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this Research report and (3) no part of our compensation is tied to any specific investment banking transactions performed by Nomura Securities International, Inc., Nomura International plc or any other Nomura Group company.

Issuer Specific Regulatory Disclosures

Mentioned companies

Issuer name	Ticker	Price	Price date	Stock rating	Sector rating	Disclosures
Hynix Semiconductor	000660 KS	32,200 KRW	20-May-2011	Neutral	Not rated	3,4,47,118
Inotera Memories	3474 TT	13.2 TWD	20-May-2011	Reduce	Not rated	
Nanya Technology	2408 TT	12.4 TWD	20-May-2011	Reduce	Not rated	
Samsung Electronics	005930 KS	882,000 KRW	20-May-2011	Buy	Not rated	4,106
Elpida Memory	6665 JP	1,127 JPY	20-May-2011	Neutral	Bullish	8,12,47,48,49,50,81
Toshiba	6502 JP	435 JPY	20-May-2011	Buy	Bullish	4,12,49,50,81

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47 **Manager/Co-Manager in the past 12 months**
Nomura Securities International Inc. and /or its affiliates has managed or co-managed a public or Rule 144A offering of the company's securities in the past 12 months.

48 **IB related compensation in the past 12 months**
Nomura Securities International, Inc and/or its affiliates has received compensation for investment banking services from the company in the past 12 months.

49 **Possible IB related compensation in the next 3 months**
Nomura Securities International, Inc. and/or its affiliates expects to receive or intends to seek compensation for investment banking services from the company in the next three months.

50 **Nomura Beneficial Ownership of Securities Disclosures**
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Disclosures required in the European Union

3 **Lead manager/co-lead manager of securities/related derivatives offering**
Nomura International plc or an affiliate in the global Nomura group has been lead manager or co-lead manager over the previous 12 months of a publicly disclosed offer of the issuer's securities or related derivatives

4 **Market maker**
Nomura International plc or an affiliate in the global Nomura group is a market maker or liquidity provider in the securities / related derivatives of the issuer.

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Disclosures required in Korea

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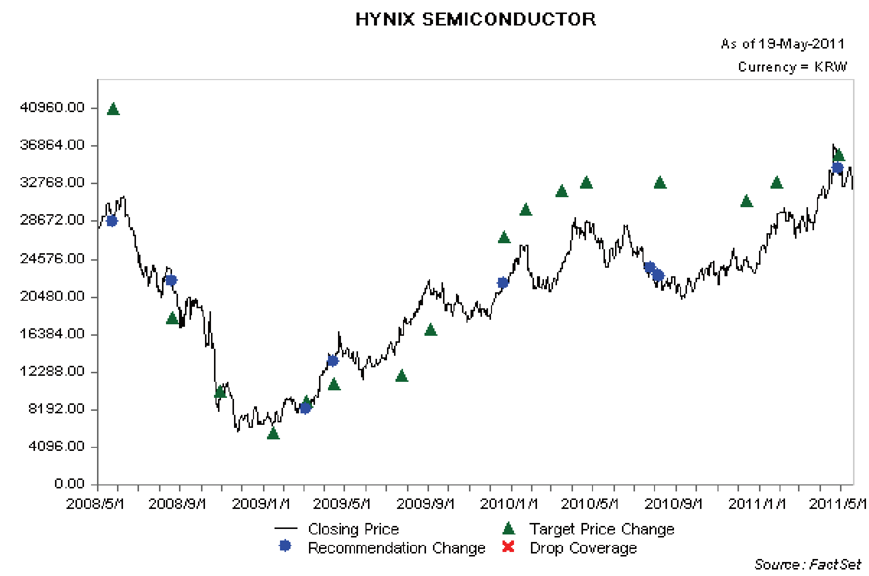
118 **Liquidity Provider for Equity Linked Warrant**
Nomura Financial Investment (Korea) Co., Ltd. is a liquidity provider (LP) or LP & issuer for ELW which the underlying is Hynix Semiconductor (000660.KS), and holds 54,703,850 warrants as of 24-May-2011.

Previous Rating

Issuer name	Previous Rating	Date of change
Hynix Semiconductor	Buy	29-Apr-2011
Inotera Memories	Neutral	01-Sep-2008
Nanya Technology	Sell	04-Jul-2008
Samsung Electronics	Neutral	03-Jul-2009
Elpida Memory	Not Rated	06-Jan-2009
Toshiba	Neutral	11-Jun-2009

Hynix Semiconductor (000660 KS) **32,200 (20-May-2011)** Neutral (Sector rating: Not rated)

Rating and target price chart (three year history)



Date	Rating	Target price	Closing price
28-Apr-2011		36000.00	34350.00
28-Apr-2011	Neutral		34350.00
28-Jan-2011		33000.00	29500.00
13-Dec-2010		31000.00	24350.00
09-Aug-2010		33000.00	22700.00
09-Aug-2010	Buy		22700.00
06-Aug-2010	Not Rated		22850.00
27-Jul-2010	Suspended		23500.00
23-Apr-2010		33000.00	28500.00
16-Mar-2010		32000.00	23600.00
22-Jan-2010		30000.00	26100.00
22-Dec-2009		27000.00	21900.00
22-Dec-2009	Buy		21900.00
04-Sep-2009		17000.00	20800.00
24-Jul-2009		12000.00	16350.00
15-Apr-2009		11000.00	13450.00
15-Apr-2009	Reduce		13450.00
05-Mar-2009		9200.00	8270.00
05-Mar-2009	Neutral		8270.00
16-Jan-2009		5700.00	6950.00
30-Oct-2008		10200.00	10750.00
20-Aug-2008		18300.00	22100.00
20-Aug-2008	Reduce		22100.00
26-May-2008		41000.00	28600.00
26-May-2008	Strong Buy		28600.00

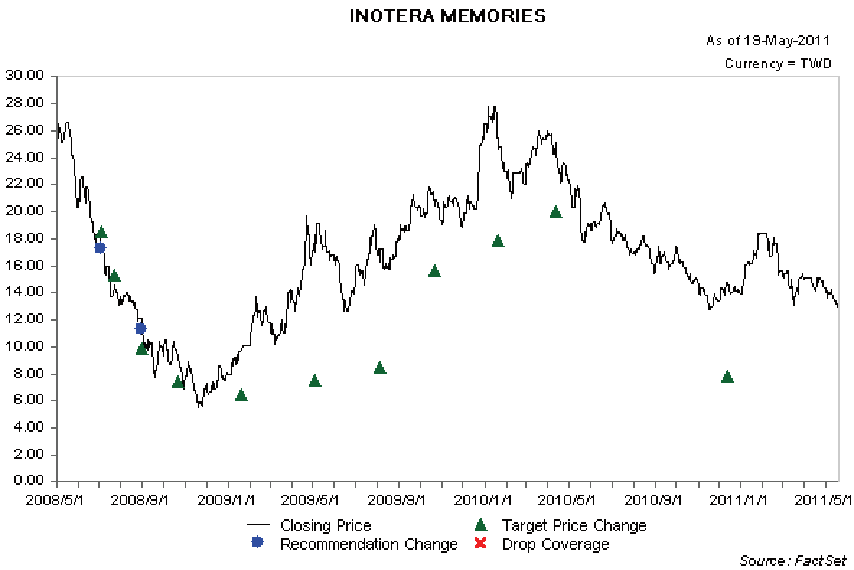
For explanation of ratings refer to the stock rating keys located after chart(s)

Valuation Methodology Our target price of W36,000 is based on a 2.0x target P/B multiple and 12M forward BVPS of W18,000. Given c.20% of ROE over the next two years, we believe a 2.0x target multiple is appropriate.

Risks that may impede the achievement of the target price Risks to our view include: (a) Hynix' faster-than-expected DRAM migration may have actual performance come above our forecast, while (b) a faster-than-expected decline in specialty DRAM price may have the actual results come below our forecast.

Inotera Memories (3474 TT) **13.2 (20-May-2011)** Reduce (Sector rating: Not rated)

Rating and target price chart (three year history)



Date	Rating	Target price	Closing price
13-Dec-2010		7.80	14.55
13-Apr-2010		20.00	24.40
20-Jan-2010		17.90	25.51
22-Oct-2009		15.60	20.49
06-Aug-2009		8.50	17.19
04-May-2009		7.50	18.32
20-Jan-2009		6.50	9.75
22-Oct-2008		7.40	9.10
01-Sep-2008		9.90	11.23
01-Sep-2008	Reduce		11.23
23-Jul-2008		15.30	14.33
04-Jul-2008		18.50	17.24
04-Jul-2008	Neutral		17.24

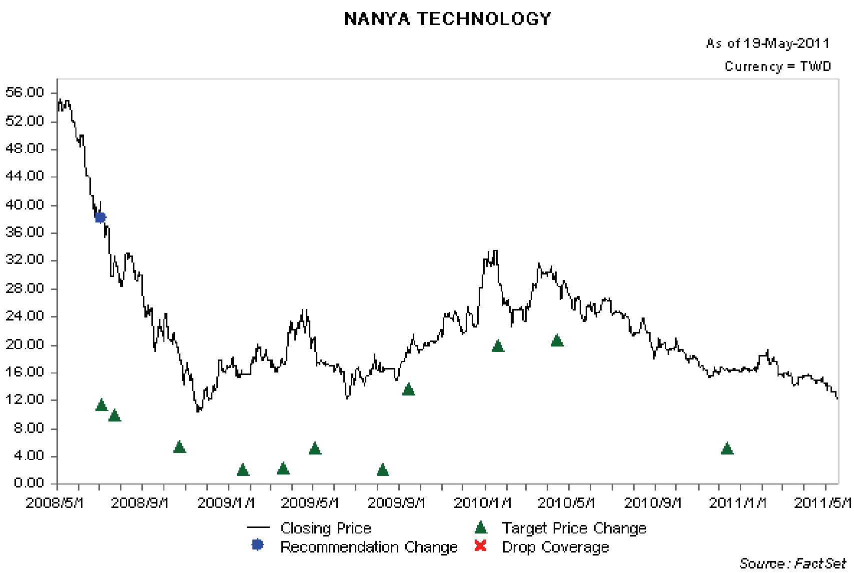
For explanation of ratings refer to the stock rating keys located after chart(s)

Valuation Methodology Our target price of NT$7.8 is based on 1.0 x and 1yr-fwd BVPS of NT$8. In light of negative ROE forecast over the next two years, we believe a discount to the current valuation is warranted.

Risks that may impede the achievement of the target price If Inotera's migration to 42nm occurs faster than we expect, margins could exceed our forecasts. In contrast, slower migration may erode the profitability.

Nanya Technology (2408 TT) **12.4 (20-May-2011)** Reduce (Sector rating: Not rated)

Rating and target price chart (three year history)



Date	Rating	Target price	Closing price
13-Dec-2010		5.30	16.40
14-Apr-2010		20.80	28.49
21-Jan-2010		20.00	29.38
16-Sep-2009		13.70	18.81
10-Aug-2009		2.20	16.81
05-May-2009		5.20	19.61
20-Mar-2009		2.40	17.31
21-Jan-2009		2.20	15.74
23-Oct-2008		5.50	18.49
24-Jul-2008		10.10	32.64
04-Jul-2008		11.50	38.10
04-Jul-2008	Reduce		38.10

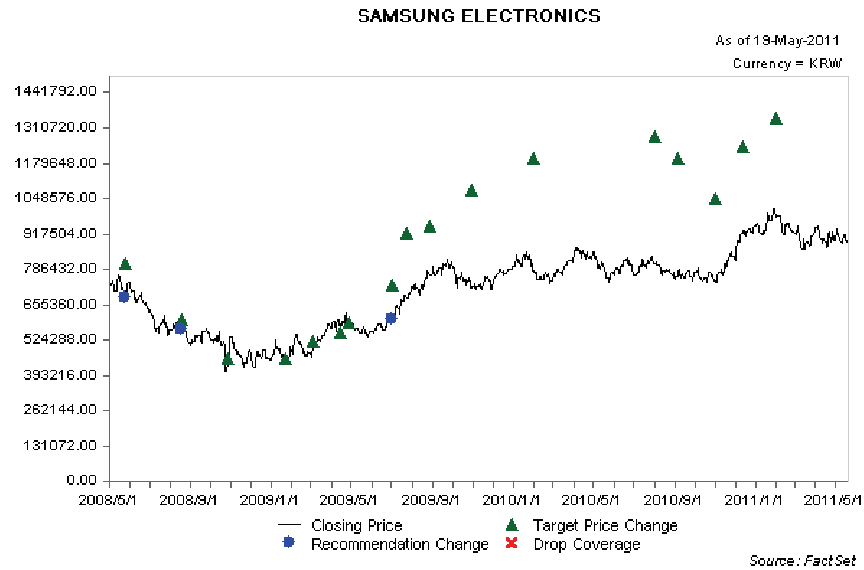
For explanation of ratings refer to the stock rating keys located after chart(s)

Valuation Methodology Our target price of NT$5.3 is based on 1.4x 1yr-fwd BVPS of NT$3.7.

Risks that may impede the achievement of the target price If Nanya's migration into 42nm is faster than expected, its margin may come in above our baseline number. Also, the exit of weaker DRAM players and a stronger-than-expected DRAM market recovery could push Nanya's 2011F results higher than our forecasts.

Samsung Electronics (005930 KS) **882,000 (20-May-2011)** Buy (Sector rating: Not rated)

Rating and target price chart (three year history)



Date	Rating	Target price	Closing price
31-Jan-2011		1350000.00	981000.00
13-Dec-2010		1240000.00	930000.00
01-Nov-2010		1050000.00	747000.00
06-Sep-2010		1200000.00	780000.00
02-Aug-2010		1280000.00	810000.00
01-Feb-2010		1200000.00	777000.00
30-Oct-2009		1080000.00	723000.00
28-Aug-2009		950000.00	764000.00
24-Jul-2009		920000.00	683000.00
03-Jul-2009	Buy		601000.00
03-Jul-2009		730000.00	601000.00
27-Apr-2009		590000.00	585000.00
15-Apr-2009		550000.00	585000.00
05-Mar-2009		520000.00	503000.00
23-Jan-2009		454000.00	442000.00
27-Oct-2008		454000.00	438000.00
19-Aug-2008		600000.00	564000.00
19-Aug-2008	Neutral		564000.00
26-May-2008		810000.00	679000.00
26-May-2008	Buy		679000.00

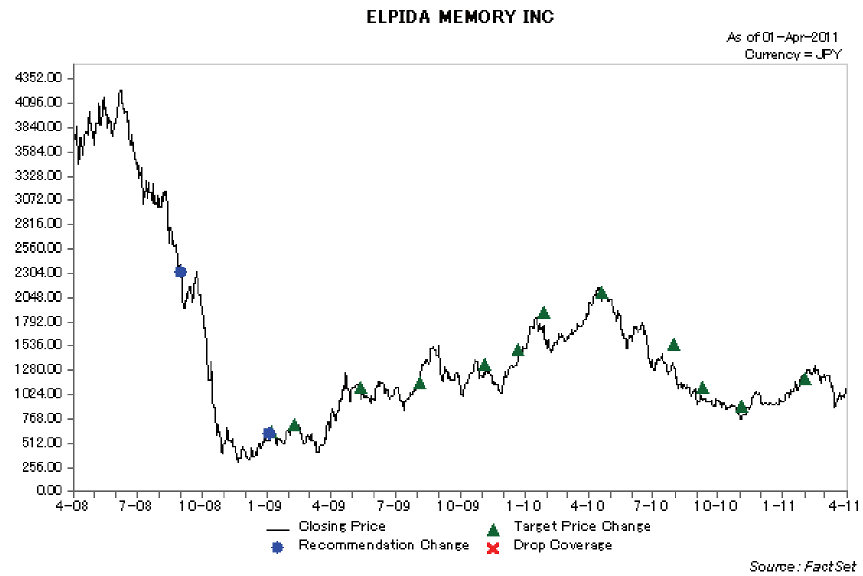
For explanation of ratings refer to the stock rating keys located after chart(s)

Valuation Methodology Our target price of KRW1,350,000 is based on 2.0x 12-month forward BVPS of KRW693,400. Given our forecast for continued high-teen ROE for FY11F and FY12F, we believe our target multiple of 2.0x is justified.

Risks that may impede the achievement of the target price Risks to our view include: 1) faster-than-expected KRW appreciation; 2) increased competition in the smartphone space; and 3) excessive industrywide capex in NAND.

Elpida Memory (6665 JP) **1,127 (20-May-2011)** Neutral (Sector rating: Bullish)

Rating and target price chart (three year history)



Date	Rating	Target price	Closing price
02-Feb-2011		1200	1212
04-Nov-2010		900	803
10-Sep-2010		1100	983
30-Jul-2010		1560	1300
20-Apr-2010		2100	2010
29-Jan-2010		1900	1601
22-Dec-2009		1500	1387
06-Nov-2009		1350	1266
05-Aug-2009		1150	1115
13-May-2009		1100	1050
09-Feb-2009		700	725
06-Jan-2009		629	608
06-Jan-2009	Neutral		608
05-Jan-2009	Not Rated		598
02-Sep-2008	Neutral		2310

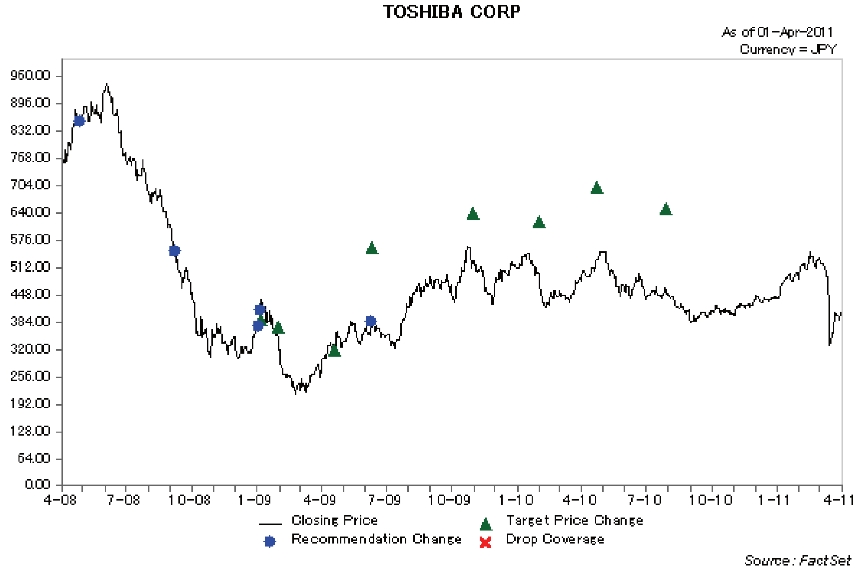
For explanation of ratings refer to the stock rating keys located after chart(s)

Valuation Methodology Owing to considerable volatility in DRAM prices, we avoid valuations based on fiscal year profits/losses. In calculating our target price, we refer to three theoretical ranges: (1) Y239–2,384, derived from the P/B range from the most recent cycle of 0.2–2.0x and the latest (end-March 2011) BPS of Y1,192, (2) Y33–1,711, derived from a historical EV/EBITDA multiple range of 3–6x and our 12/3 estimate, and (3) Y650–1,961, derived from our DCF model that assumes WACC of 6–9% and terminal growth of 0–2%. We calculate our target price of Y1,300 by taking the average of Y1,371, derived from the market P/B of 1.15x end-March 2011 BPS, as we expect earnings to recover even though the company is currently making losses, Y1,221, a 40% premium to the average derived from the EV/EBITDA multiples, and Y1,306 as an average from our DCF model.

Risks that may impede the achievement of the target price We identify fiercer price competition for DRAM as a major downside risk to our target price. Prices for DRAM and other types of semiconductor memory are susceptible to supply-demand conditions, and excessive capex at new entrant producers in particular can result in oversupply.

Toshiba (6502 JP) **435 (20-May-2011)** Buy (Sector rating: Bullish)

Rating and target price chart (three year history)



Date	Rating	Target price	Closing price
29-Jul-2010		650	462
22-Apr-2010		700	531
01-Feb-2010		620	467
30-Oct-2009		640	530
11-Jun-2009		560	384
11-Jun-2009	Buy		384
20-Apr-2009		320	316
30-Jan-2009		373	318
06-Jan-2009		389	409
06-Jan-2009	Neutral		409
05-Jan-2009	Not Rated		374
08-Sep-2008	Neutral		549
28-Apr-2008	Buy		852

For explanation of ratings refer to the stock rating keys located after chart(s)

Valuation Methodology We calculate our target price of Y600 by multiplying our 13/3 EPS forecast of Y44.9 by a P/E of 13.4x, a slight premium to the sector average.

Risks that may impede the achievement of the target price We identify more intense price competition for NAND as a major downside risk. Prices for NAND and other types of memory are susceptible to supply-demand conditions, and excessive capex at suppliers can easily result in oversupply. The company's digital products segment is also susceptible to price competition. We also note project execution risks for nuclear power plants until such time as plants are completed.

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Conflict-of-interest disclosures

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STOCKS

A rating of '**Buy'**, indicates that the analyst expects the stock to outperform the Benchmark over the next 12 months.
A rating of '**Neutral'**, indicates that the analyst expects the stock to perform in line with the Benchmark over the next 12 months.
A rating of '**Reduce'**, indicates that the analyst expects the stock to underperform the Benchmark over the next 12 months.
A rating of '**Suspended'**, indicates that the rating and target price have been suspended temporarily to comply with applicable regulations and/or firm policies in certain circumstances including when Nomura is acting in an advisory capacity in a merger or strategic transaction involving the company.
Benchmarks are as follows: **United States/Europe**: Please see valuation methodologies for explanations of relevant benchmarks for stocks (accessible through the left hand side of the Nomura Disclosure web page: http://www.nomura.com/research);**Global Emerging Markets (ex-Asia):** MSCI Emerging Markets ex-Asia, unless otherwise stated in the valuation methodology.

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A '**Bullish'** stance, indicates that the analyst expects the sector to outperform the Benchmark during the next 12 months.
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Explanation of Nomura's equity research rating system for Asian companies under coverage ex Japan published from 30 October 2008 and in Japan from 6 January 2009

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Stock recommendations are based on absolute valuation upside (downside), which is defined as (Target Price - Current Price) / Current Price, subject to limited management discretion. In most cases, the Target Price will equal the analyst's 12-month intrinsic valuation of the stock, based on an appropriate valuation methodology such as discounted cash flow, multiple analysis, etc.
A '**Buy'** recommendation indicates that potential upside is 15% or more.
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A '**Reduce'** recommendation indicates that potential downside is 5% or more.
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Explanation of Nomura's equity research rating system in Japan published prior to 6 January 2009 (and ratings in Europe, Middle East and Africa, US and Latin America published prior to 27 October 2008)

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Explanation of Nomura's equity research rating system for Asian companies under coverage ex Japan published prior to 30 October 2008

STOCKS

Stock recommendations are based on absolute valuation upside (downside), which is defined as (Fair Value - Current Price)/Current Price, subject to limited management discretion. In most cases, the Fair Value will equal the analyst's assessment of the current intrinsic fair value of the stock using an appropriate valuation methodology such as Discounted Cash Flow or Multiple analysis etc. However, if the analyst doesn't think the market will revalue the stock over the specified time horizon due to a lack of events or catalysts, then the fair value may differ from the intrinsic fair value. In most cases, therefore, our recommendation is an assessment of the difference between current market price and our estimate of current intrinsic fair value. Recommendations are set with a 6-12 month horizon unless specified otherwise. Accordingly, within this horizon, price volatility may cause the actual upside or downside based on the prevailing market price to differ from the upside or downside implied by the recommendation.
A '**Strong buy'** recommendation indicates that upside is more than 20%.
A '**Buy'** recommendation indicates that upside is between 10% and 20%.
A '**Neutral'** recommendation indicates that upside or downside is less than 10%.
A '**Reduce'** recommendation indicates that downside is between 10% and 20%.
A '**Sell'** recommendation indicates that downside is more than 20%.

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A '**Bullish'** rating means most stocks in the sector have (or the weighted average recommendation of the stocks under coverage is) a positive absolute recommendation.
A '**Neutral'** rating means most stocks in the sector have (or the weighted average recommendation of the stocks under coverage is) a neutral absolute recommendation.
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