

Our view

Inventory woes at leading customer Intel appear imminent. Coupled with the entry of Korean flip-chip makers, NYPCB's 1H09F margins will be pressured. Although we have cut FY08-10F earnings, NYPCB's high dividend yield (FY09F: 12%), solid balance sheet and potential market share gains keep our NEUTRAL call intact.

Anchor themes

- ⚓ The flip-chip substrate sector looks to be in oversupply, with layer counts remaining stagnant and demand still weak. On top of this is the increasing risk of inventory woes at Intel and AMD, which account for 60% of industry flip-chip demand.
- ⚓ Japanese substrate makers have retained their technological lead in the flip-chip market, though Ibiden and Shinko look to be widening the gap versus NGK. Among the Asian players, SEMCO's success marks the entry of Korean flip-chip makers into the Intel supplier camp, which could give rise to price pressure.

CPU inventory woes to hit 1H09F margins — a repeat of 1H07?

- NGK's plan to raise prices could spell lower share
- Intel's workdown of 1H09F inventory: a repeat of 1H07?
- PC demand shift to low-priced units threatens substrate industry
- Balance sheet remains the strongest in the sector
- Still NEUTRAL with price target at NT\$69.90

① NGK's plan to raise prices could spell lower share

NGK Spark Plug (NYPCB's partner in Japan) has suffered a dramatic depletion of its competitiveness in the flip-chip (FC) industry. NGK posted a record quarterly operating loss of ¥5bn for 3Q08, citing low yields at its new FC plant. At its analyst briefing (13 November), NGK had been expected to outline turnaround plans. We were hoping for a restructuring initiative involving more outsourcing to NYPCB, but now this looks unlikely. NGK said it planned to negotiate higher prices with its CPU customers in a bid to narrow losses. In such an environment, rising prices inevitably spell loss of market share. Moreover, in a bid to improve in-house yields, NGK could reel in orders to its internal plants, and away from NYPCB. On our estimates, NGK accounts for 14% of NYPCB's FY08F sales, and this business is at risk of declining.

② Intel's workdown of 1H09F inventory: a repeat of 1H07?

We also flag the rising risk of inventory woes at CPU majors. With Intel slashing its 4Q08F sales guidance (it now expects sales to fall by 9-15% q-q, versus a range of +7% to -1% previously), the key issue is inventory-related fallout. With a 12-13-week manufacturing cycle for wafers, it is impossible for Intel to cut wafer starts midway, making higher inventories in 4Q08F appear inevitable.

Closing price on 17 Nov	NT\$71.5
Price target	NT\$69.9
Upside/downside	-2.2%
Difference from consensus	-32.0%
FY09F net profit (NT\$m)	5,775
Difference from consensus	-8.7%

Source: Nomura

Nomura vs consensus

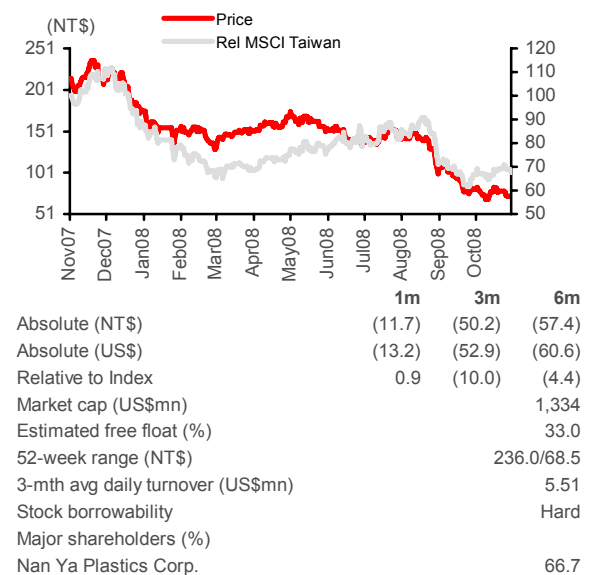
We are below consensus on FY09F earnings, reflecting our view on Intel clearing inventory in 1H09F, posing a risk of margin pressure at NYPCB.

Key financials & valuations

31 Dec (NT\$m)	FY07	FY08F	FY09F	FY10F
Revenue	38,704	38,266	33,845	39,889
Reported net profit	8,597	7,088	5,775	7,336
Normalised net profit	8,597	7,088	5,775	7,336
Normalised EPS (NT\$)	14.29	11.49	9.36	11.89
Norm. EPS growth (%)	(16.0)	(19.6)	(18.5)	27.0
Norm. P/E (x)	5.0	6.2	7.6	6.0
EV/EBITDA (x)	3.3	3.6	4.2	3.5
Price/book (x)	1.1	1.2	1.2	1.1
Dividend yield (%)	18.0	14.5	11.8	15.0
ROE (%)	21.8	18.2	15.1	18.8
Net debt/equity (%)	net cash	net cash	net cash	4.6
Earnings revisions				
Previous norm. net profit		7,358	8,291	9,267
Change from previous (%)		(3.7)	(30.3)	(20.8)
Previous norm. EPS (NT\$)		11.93	13.43	15.02

Source: Company, Nomura estimates

Share price relative to MSCI Taiwan



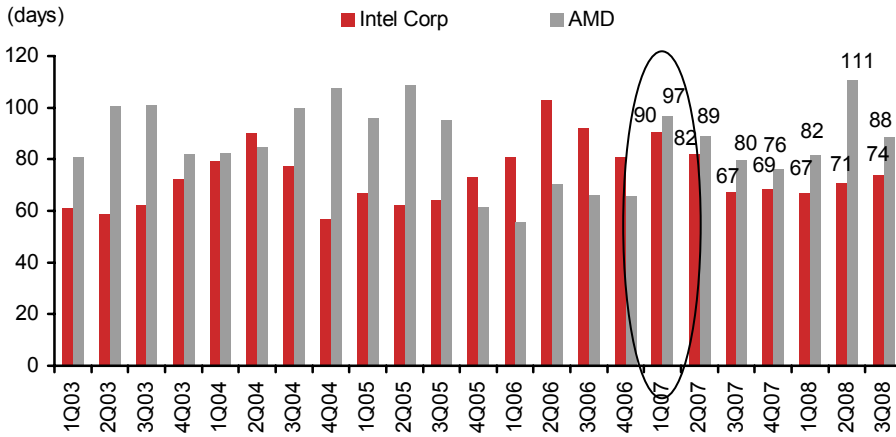
Source: Company, Nomura estimates

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With inventory at Intel and AMD already on the rise (Exhibit 1), further increases in 4Q08F would clearly define inventory days as a problem area. NYPCB's sales show an inverse correlation with Intel's inventory (Exhibit 2), which is hardly surprising with Intel accounting for 35-40% of NYPCB's FY08F sales.

Inventory woes at Intel to hurt substrate ASPs and margins

Exhibit 1. Inventory days at CPU majors

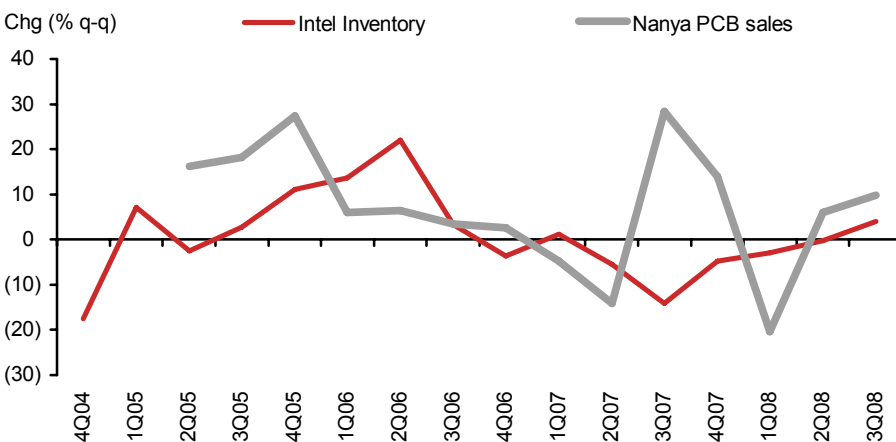


Source: Company data, Nomura Singapore

Intel last experienced inventory problems in 1Q07, when its inventory days rose to 90 (circled area in Exhibit 1). Price-cutting ensued as Intel tried to clear its inventory. CPU substrate ASPs fell by 5-8% q-q, squeezing NYPCB's EBIT margin by about 8pp over 4Q06-2Q07. (Note: substrate comprises 8-10% of CPU cost, and is thus a major cost component). We could argue that price pressure should ease as the Japanese (with a circa 60% share of the FC substrate market) are under pressure from an appreciation of the yen. However, we are concerned about fresh competition for Intel suppliers in form of Samsung Electro-Mechanics (SEMCO). The Korean players CPU shipments grew by 50% q-q in 3Q08, and the company is targeting further share gains at Intel in 4Q08F. To reflect Intel's inventory clearing in 1H09F, along with new competition, we forecast NYPCB's EBIT margin to narrow from 19.2% in 3Q08, to 15.9% in 4Q08F and 13.5% in 1Q09F.

With the entry of SEMCO, the competitive landscape is not likely to improve

Exhibit 2. Growth in Intel's inventory vs NYPCB's sales



Source: Company data, Nomura Singapore

③ PC demand shift to low-priced units threatens substrate industry

On 14 November, AMD projected that industry CPU and GPU unit shipments — a proxy for PC unit growth — would rise by just 4-5% in 2009F. With shrinkage at the high end, much of the growth in the PC market is coming from low-cost notebooks, helped by the ramping of Intel's Atom CPU (priced at US\$40). This look negative for the product mix of FC substrate makers. Atom uses four-layer substrates (the current CPUs use six to eight layers) and is 60% smaller than conventional CPU packages, translating into lower ASPs. Nanya's partner NGK expects FC sales to fall 13% in the year to March 2009, reflecting the product mix shifting to Atom, and we believe more suppliers could be affected by changing product mix.

Another major technological change is due in 2H09F: the launch of Intel's new CPU architecture, Nehalem, integrating Northbridge and CPU. Based on our checks, this will happen for servers at end-2008F and for mainstream desktops in mid-2009F. We highlight two effects:

- CPU layer counts will rise as Northbridge functionality is "sucked" into the CPU; substrates will fall from 25-20um to 10um.
- Southbridge will likely move from PBGA to FC, but FC substrate makers' margins for this product are uncertain. Southbridge will be a six-layer product, versus eight layers for mainstream Northbridge, signalling lower margins.

We don't expect the net effect to become apparent until FY09F. For NYPCB, the issue is how the aforementioned changes will affect Northbridge shipments (35% of total FC shipments), which may be replaced by lower-margin products (ie, Southbridge) — ie, the risk of a deteriorating product mix

Product mix set to worsen with low-priced PCs driving growth

Launch of Intel's new architecture scheduled in 2H09F

Two effects: 1) Northbridge functionality sucked into CPU; 2) Southbridge moves to FC

④ Balance sheet remains the strongest in the sector

NYPCB shares have largely been performing in line with the market, underperforming by 2.7% in the past six months. We believe this reflects NYPCB's strong balance sheet and the highest dividend yields in the substrate sector. We note net cash has declined from NT\$6.2bn (17% of equity) at end-FY07, to NT\$1.8bn (5% of equity) at end-3Q08 due to: a) NYPCB dipping into its cash balance in FY07 and FY08F to pay dividends; b) loans to Formosa group affiliates. As of September 2008, NYPCB had NT\$7bn of loans outstanding to related parties, or 20% of assets. Despite this, its balance sheet remains the strongest in the sector.

Net cash as a percent has been falling, from 17% in end FY07, to 5% at end 3Q08

⑤ Still NEUTRAL with price target at NT\$69.90

We have revised down FY09F sales to an 11.6% decline (previous: 12.0% growth) to reflect: 1) inventory clearance by Intel in 1H09F; 2) NYPCB's FC units in FY09F to fall by 4% (previous: +10%), along with intensifying ASP pressure as product mix shifts towards the low end. Given the high operating leverage of the substrate business, the impact on margins is far more severe. We lower EBIT margins to 15.3% for FY09F and 17.4% for FY10F (from 19.8% and 20.8%, respectively). Hence, we cut earnings for FY09F and FY10F by 30% and 21%, respectively.

Our price target is NT\$69.90, based on DCF method with 15.6% cost of equity and 3% terminal growth. We maintain our NEUTRAL rating given NYPCB's strong competitive position versus substrate peers. Upside risks: 1) the benefits of lower raw material costs offsetting slowing demand; 2) NGK decides to outsource more to NYPCB.

Exhibit 3. DCF breakdown

(NT\$m)	FY04	FY05	FY06	FY07	FY08F	FY09F	FY10F
NOPLAT	793	3,778	9,495	7,768	6,957	5,752	7,372
Investment in working capital	213	(132)	(2,043)	(2,110)	(1,123)	671	(1,662)
Gross capex	(1,116)	(4,103)	(8,800)	(2,155)	(3,000)	(3,000)	(5,000)
Depreciation/amortisation	1,365	1,477	2,544	2,767	3,157	3,547	4,188
Free cashflow to firm	1,256	1,020	1,196	6,270	5,991	6,970	4,899
Stage 1: Discounted value of cashflow (FY08-10F)				9,696			
Stage 2: Discounted value of cashflow (FY11-15F)				13,323			
Stage 3: PV of terminal value				17,269			
Total value of firm				40,289			
Net cash / (debt) on balance sheet				2,850			
Equity value				43,138			
Equity value per share (NT\$)				69.90			
- at which FY08F P/BV (x)				1.14			
Upside (%)				(4.2)			

Assumption:

- (a) Actual forecasts until FY10F
- (b) Growth over FY11-15F = 3.5%
- (c) Terminal growth = 3%
- (d) WACC = 15.59%

Source: Company data, Nomura Singapore

⑥ Sensitivity to global recession; trough valuation**Earnings and price target sensitivity**

With financial turmoil in the US and EU worsening in 3Q08, it is clear that problems in the financial system are likely to affect the real economy in more advanced economies throughout most of 2009F.

We now expect sub-zero growth rates at least until 2Q09F in advanced economies including the US, the EU and Japan. In the US, we believe the credit crunch will be prolonged, even though systemic risk in the financial system is likely to be averted via various measures, including injections of public funds into banking institutions and coordinated reductions in policy interest rates. In the Eurozone, the knock-on effect of the situation in the US is likely to keep the real economy stagnant, with real growth in 2009F projected at *negative* 0.8%. Japan will suffer as a result of lower demand for its exports and yen appreciation, as well as lower stock prices. The cumulative impact on Asia ex-Japan is a tough 2009F all round.

Increasing risk of economic contraction in the West

- Our **Base Case**, to which we assign 60% probability, assumes that US real GDP is set to shrink by 1% in 2009F. We think US economic growth will remain negative sequentially until 2Q09F, and we have slashed our Asian growth forecasts across the board. China and India remain relatively resilient.

Sub-zero US growth is assigned 60% probability

Exhibit 4. Asia: 2009F real GDP growth forecasts

(%)	Base Case	Upside Scenario	Downside Scenario
China	8.0	9.0	7.7
Hong Kong	0.5	1.9	(2.0)
Taiwan	0.6	2.1	(1.5)
Korea	2.7	3.8	1.0
Singapore	0.3	2.4	(2.7)
Malaysia	2.0	3.3	0.3
Thailand	3.2	4.5	1.5
Indonesia	4.5	5.5	3.5
Philippines	3.0	3.9	1.6
Vietnam	5.5	6.9	4.7
India	6.9	7.5	5.7
Australia	2.0	3.0	1.2

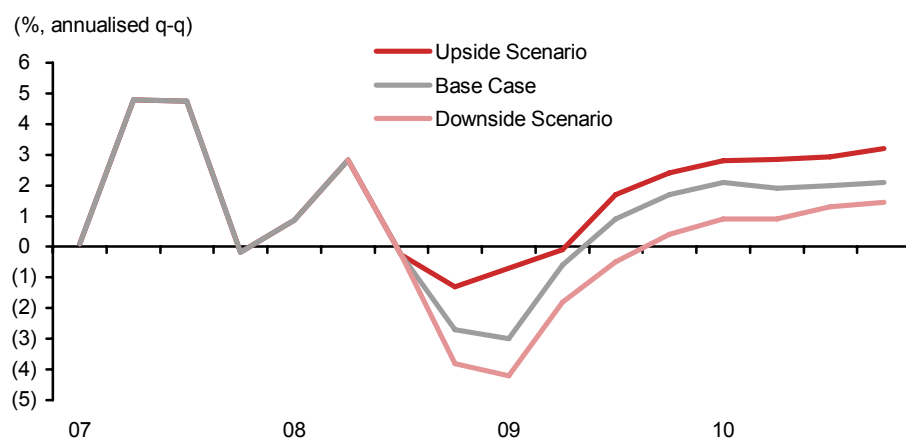
Source: Nomura estimates

- We assign 30% probability to our latest **Downside Scenario**, a 2% contraction in US real GDP in 2009F. This implies a rather bleak outlook for Asia's large export-driven economies, three of which register a 2%-plus growth decrements from the base case and slip into contraction. Our projections are 1.5% real GDP shrinkage for Taiwan, 2.0% shrinkage for Hong Kong, and a crushing 2.7% contraction for Singapore. China and India stay relatively strong with growth of 7.7% and 5.7%, respectively.
- Our **Upside Scenario**, with 10% probability, looks for the US to eke out 0.1% real GDP growth in 2009F. The swing factor benefits those most vulnerable on the downside: 2.1% growth in Taiwan, 1.9% in Hong Kong, and 2.4% in Singapore.

A steeper US decline (30% chance) would hurt Singapore, Taiwan and Hong Kong most

US growth (10% chance) would benefit Taiwan and Singapore the most

Exhibit 5. US real GDP growth assumptions under different scenarios



Source: Nomura estimates

Specifically for NYPCB, our main assumption in the **Base Case** is for FY09F sales to decline by 11.6%. This results in FY09F normalised earnings of NT\$5.8bn and a DCF-based price target of NT\$69.90.

Our **Downside Scenario** assumes an FY09F sales decline of 15%, driven by exacerbated inventory woes at Intel. Our **Upside Scenario** assumes FY09F sales growth of 8%, assuming NYPCB's historical growth resumes.

The table below summarises our price target and FY08-09F earnings forecasts under each economic scenario. Note: these upside/downside estimates are approximate and are based on the scenarios outlined above, assuming all else remains equal.

Exhibit 6. Earnings and price target sensitivity

(NT\$m)	Base Case: 60% probability	Downside Scenario: 30% probability	Upside Scenario: 10% probability
FY08F earnings	7,088	6,500	7,440
FY09F earnings	5,775	5,350	6,115
Price target (NT\$)	69.90	60.0	77.8

Source: Nomura estimates

Trough valuation

How far above the historical trough valuation? N/A

NYPCB was listed in April 2006 and hence has a limited trading history. Still, its P/BV is at its lowest point since listing.

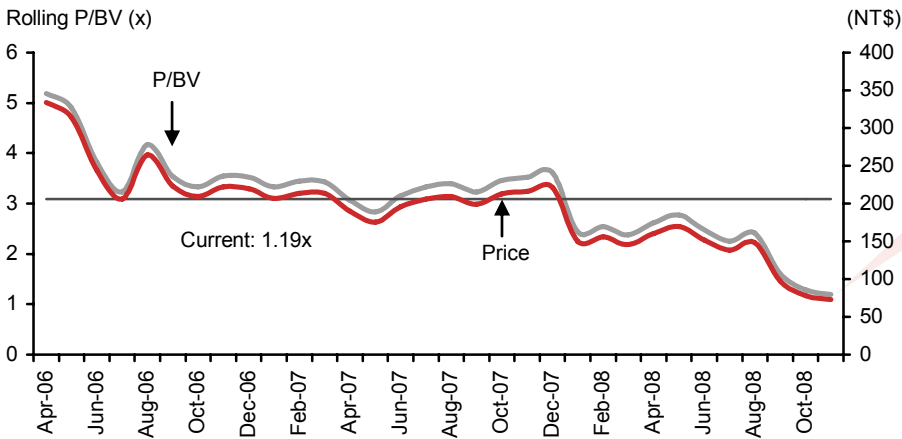
Support or breakdown?

We believe valuations are likely to hold at current levels given: 1) NYPCB's balance sheet positions it to weather the downturn better than several of its industry peers; 2) potential for share gains, given that its large Japanese competitors including Ibiden, NGK and Shinko are likely to be hurt by the appreciating yen. Overall, we believe that balance sheet strength and potential share gains will largely offset weakening macro environment.

Last downcycle

The last downcycle was in 2001-03, when the tech bubble burst owing to oversupply. However, this time, demand is at risk.

Exhibit 7. NYPCB: historical P/BV



Source: Bloomberg, Nomura Singapore

Financial statements

Income statement (NT\$m)					
Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Revenue	36,449	38,704	38,266	33,845	39,889
Cost of goods sold	(24,712)	(29,364)	(30,311)	(27,393)	(31,357)
Gross profit	11,736	9,340	7,956	6,452	8,532
SG&A	(1,164)	(1,410)	(1,274)	(1,286)	(1,596)
Employee share expense					
Operating profit	10,573	7,930	6,681	5,166	6,937
EBITDA	13,117	10,696	9,838	8,713	11,125
Depreciation	(2,533)	(2,756)	(3,146)	(3,536)	(4,186)
Amortisation	(12)	(11)	(11)	(11)	(2)
EBIT	10,573	7,930	6,681	5,166	6,937
Net interest expense	214	305	143	23	(36)
Associates & JCEs	492	1,301	1,811	1,811	1,992
Other income	531	524	(12)	-	-
Earnings before tax	11,810	10,060	8,623	7,000	8,892
Income tax	(1,570)	(1,463)	(1,535)	(1,225)	(1,556)
Net profit after tax	10,240	8,597	7,088	5,775	7,336
Minority interests	-	-	-	-	-
Other items					
Preferred dividends					
Normalised NPAT	10,240	8,597	7,088	5,775	7,336
Extraordinary items	-	-	-	-	-
Reported NPAT	10,240	8,597	7,088	5,775	7,336
Dividends	(9,216)	(7,737)	(6,380)	(5,197)	(6,603)
Transfer to reserves	1,024	860	709	577	734

Valuation and ratio analysis

FD normalised P/E (x)	4.2	5.0	6.2	7.6	6.0
FD normalised P/E at fair value (x)	4.1	4.9	6.1	7.5	5.9
Reported P/E (x)	4.2	5.0	6.2	7.6	6.0
Dividend yield (%)	21.4	18.0	14.5	11.8	15.0
Price/cashflow (x)	3.7	5.3	6.0	5.4	5.6
Price/book (x)	1.1	1.1	1.2	1.2	1.1
EV/EBITDA (x)	2.7	3.3	3.6	4.2	3.5
EV/EBIT (x)	3.4	4.2	5.0	6.3	5.2
Gross margin (%)	32.2	24.1	20.8	19.1	21.4
EBITDA margin (%)	36.0	27.6	25.7	25.7	27.9
EBIT margin (%)	29.0	20.5	17.5	15.3	17.4
Net margin (%)	28.1	22.2	18.5	17.1	18.4
Effective tax rate (%)	13.3	14.5	17.8	17.5	17.5
Dividend payout (%)	90.0	90.0	90.0	90.0	90.0
Capex to sales (%)	24.1	5.6	7.8	8.9	12.5
Capex to depreciation (x)	3.5	0.8	1.0	0.8	1.2
ROE (%)	38.7	21.8	18.2	15.1	18.8
ROA (pretax %)	37.2	23.3	20.9	16.6	20.0

Dividend payout of 90% supports sustained high dividend yield

Growth (%)

Revenue	50.8	6.2	(1.1)	(11.6)	17.9
EBITDA	144.8	(18.5)	(8.0)	(11.4)	27.7
EBIT	172.5	(25.0)	(15.7)	(22.7)	34.3
Normalised EPS	119.6	(16.0)	(19.6)	(18.5)	27.0
Normalised FDEPS	119.6	(16.0)	(19.6)	(18.5)	27.0

Per share

Reported EPS (NT\$)	17.0	14.3	11.5	9.4	11.9
Norm EPS (NT\$)	17.0	14.3	11.5	9.4	11.9
Fully diluted norm EPS (NT\$)	17.0	14.3	11.5	9.4	11.9
Book value per share (NT\$)	67.2	64.0	61.4	60.4	63.9
DPS (NT\$)	15.3	12.9	10.3	8.4	10.7

Source: Nomura estimates

Cashflow (NT\$mn)					
Year-end 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
EBITDA	13,117	10,696	9,838	8,713	11,125
Change in working capital	(7,825)	(2,142)	(1,123)	671	(1,662)
Other operating cashflow	6,471	(413)	(1,392)	(1,202)	(1,592)
Cashflow from operations	11,763	8,141	7,323	8,182	7,871
Capital expenditure	(8,800)	(2,155)	(3,000)	(3,000)	(5,000)
Free cashflow	2,963	5,986	4,323	5,182	2,871
Reduction in investments	(9,229)	1,243	(1,811)	(1,811)	(1,992)
Net acquisitions					
Reduction in other LT assets	93	1	-	-	-
Addition in other LT liabilities	131	250	-	-	-
Adjustments	(2,137)	885	1,811	1,811	1,992
Cashflow after investing acts	(8,179)	8,365	4,323	5,182	2,871
Cash dividends	(3,602)	(9,046)	(7,737)	(6,380)	(5,197)
Equity issue	20,000	(237)	-	-	-
Debt issue	(1,056)	(1,097)	-	1,000	2,000
Convertible debt issue					
Others	37	(1,001)	-	-	-
Cashflow from financial acts	15,379	(11,381)	(7,737)	(5,380)	(3,197)
Net cashflow	7,200	(3,015)	(3,414)	(197)	(326)
Beginning cash	922	8,123	5,107	1,693	1,495
Ending cash	8,123	5,107	1,693	1,495	1,169
Ending net debt	(7,026)	(5,107)	(1,693)	(495)	1,831

Source: Nomura estimates

Free cashflow can still support dividend payout

Balance sheet (NT\$mn)					
As at 31 Dec	FY06	FY07	FY08F	FY09F	FY10F
Cash & equivalents	8,123	5,107	1,693	1,495	1,169
Marketable securities	3,532	1,157	1,157	1,157	1,157
Accounts receivable	7,712	9,309	9,436	8,809	10,382
Inventories	2,539	2,872	3,322	3,002	3,436
Other current assets	7,431	7,295	7,309	7,320	7,332
Total current assets	29,336	25,739	22,915	21,783	23,477
LT investments	8,044	9,176	10,987	12,798	14,789
Fixed assets	10,362	9,736	9,590	9,055	9,869
Goodwill					
Other intangible assets	35	25	13	2	-
Other LT assets	3	2	2	2	2
Total assets	47,780	44,677	43,508	43,639	48,137
Short-term debt	1,097	-	-	-	-
Accounts payable	1,722	1,718	1,412	1,276	1,460
Other current liabilities	3,556	3,211	2,985	2,857	3,031
Total current liabilities	6,375	4,929	4,397	4,133	4,492
Long-term debt	-	-	-	1,000	3,000
Convertible debt					
Other LT liabilities	988	1,238	1,238	1,238	1,238
Total liabilities	7,363	6,168	5,635	6,372	8,730
Minority interest	-	-	-	-	-
Preferred stock					
Common stock	27,761	27,931	27,931	27,931	27,931
Retained earnings	12,011	11,327	10,690	10,085	12,224
Proposed dividends					
Other equity and reserves	645	(749)	(749)	(749)	(749)
Total shareholders' equity	40,417	38,509	37,872	37,268	39,407
Total equity & liabilities	47,780	44,677	43,508	43,639	48,137

While cash has been falling, balance sheet remains strong

Liquidity (x)

Current ratio	4.60	5.22	5.21	5.27	5.23
Interest cover	na	na	na	na	192.7

Leverage

Net debt/EBITDA (x)	net cash	net cash	net cash	net cash	0.16
Net debt/equity (%)	net cash	net cash	net cash	net cash	4.6

Activity (days)

Days receivable	69.7	80.3	89.6	98.4	87.8
Days inventory	32.9	33.6	37.4	42.1	37.5
Days payable	27.9	21.4	18.9	17.9	15.9
Cash cycle	74.7	92.5	108.1	122.6	109.3

Source: Nomura estimates

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Previous Ratings

Issuer	Previous Rating	Date of change
Nanya PCB	No Rating	22 Sep 2006

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As at 30 September 2008.

*The Nomura Group as defined in the Disclaimer section at the end of this report.

Explanation of Nomura's equity research rating system in Europe, Middle East and Africa, US and Latin America for ratings published after 27 October 2008:

The rating system is a relative system indicating expected performance against a specific benchmark identified for each individual stock. Analysts may also indicate absolute upside to price target 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.

Stocks:

- A rating of "1", or "**Buy**", indicates that the analyst expects the stock to outperform the Benchmark over the next 12 months.
- A rating of "2", or "**Neutral**", indicates that the analyst expects the stock to perform in line with the Benchmark over the next 12 months.
- A rating of "3", or "**Reduce**", indicates that the analyst expects the stock to underperform the Benchmark over the next 12 months.
- A rating of "**RS-Rating 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:** S&P 500, MSCI World Technology Hardware & Equipment; **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.

Sectors:

A "**Bullish**" stance, indicates that the analyst expects the sector to outperform the Benchmark during the next 12 months.

A "**Neutral**" stance, indicates that the analyst expects the sector to perform in line with the Benchmark during the next 12 months.

A "**Bearish**" stance, indicates that the analyst expects the sector to underperform the Benchmark during the next 12 months.

Benchmarks are as follows: **United States:** S&P 500; **Europe:** Dow Jones STOXX® 600; **Global Emerging Markets (ex-Asia):** MSCI Emerging Markets ex-Asia.

Explanation of Nomura's equity research rating system in Japan (and ratings in Europe, Middle East and Africa, US and Latin America published prior to 27 October 2008):

Stocks:

- A rating of "1", or "**Strong buy**", indicates that the analyst expects the stock to outperform the Benchmark by 15% or more over the next six months.
- A rating of "2", or "**Buy**", indicates that the analyst expects the stock to outperform the Benchmark by 5% or more but less than 15% over the next six months.
- A rating of "3", or "**Neutral**", indicates that the analyst expects the stock to either outperform or underperform the Benchmark by less than 5% over the next six months.
- A rating of "4", or "**Reduce**", indicates that the analyst expects the stock to underperform the Benchmark by 5% or more but less than 15% over the next six months.
- A rating of "5", or "**Sell**", indicates that the analyst expects the stock to underperform the Benchmark by 15% or more over the next six months.
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Sectors:

A "**Bullish**" stance, indicates that the analyst expects the sector to outperform the Benchmark during the next six months.

A "**Neutral**" stance, indicates that the analyst expects the sector to perform in line with the Benchmark during the next six months.

A "**Bearish**" stance, indicates that the analyst expects the sector to underperform the Benchmark during the next six months.

Benchmarks are as follows: **Japan:** TOPIX; **United States:** S&P 500, MSCI World Technology Hardware & Equipment; **Europe,** by sector — *Hardware/Semiconductors:* FTSE W Europe IT Hardware; *Telecoms:* FTSE W Europe Business Services; *Business Services:* FTSE W Europe; *Auto & Components:* FTSE W Europe Auto & Parts; *Communications equipment:* FTSE W Europe IT Hardware; **Ecology Focus:** Bloomberg World Energy Alternate Sources; **Global Emerging Markets:** MSCI Emerging Markets ex-Asia.

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

Stocks:

Stock recommendations are based on absolute valuation upside (downside), which is defined as (Price Target – Current Price) / Current Price, subject to limited management discretion. In most cases, the Price Target 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.
- A "**Neutral**" recommendation indicates that potential upside is less than 15% or downside is less than 5%.
- A "**Reduce**" recommendation indicates that potential downside is 5% or more.
- A rating of "**RS**" or "**Rating 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 subject company.
- Stocks labelled as "**Not rated**" or shown as "**No rating**" are not in Nomura's regular research coverage.

Sectors:

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A "**Bearish**" rating means most stocks in the sector have (or the weighted average recommendation of the stocks under coverage is) a negative absolute recommendation.

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%.

Sectors:

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.

A **"Bearish"** rating means most stocks in the sector have (or the weighted average recommendation of the stocks under coverage is) a negative absolute recommendation.

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