

Solar Sector

- Positive
- Neutral (unchanged)
- Negative

Liquidity stress test

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- Altman Z-score test indicates our top buys look safe, while nine large solar companies could face more challenges
- We see a high possibility of industry consolidation among polysilicon makers
- Recent bankruptcy filings should not cut capacity but may bring near-term pricing pressure on inventory liquidations

■ What's new

We have conducted a financial health check for solar companies globally following bankruptcy-protection filings by three companies over recent days.

■ What's the impact

Most companies that have filed for bankruptcy protection are in the areas of exotic/expensive technology (Evergreen – string-ribbon wafer and Solyndra – cylindrical CIGS) or are small companies (Spectrawatt – solar cell). Therefore, we do not envisage any supply cutbacks. (We do not have ratings on any of the three companies.)

In contrast, we believe some financially weak companies may now sell inventory for cash in order to maintain liquidity, which might lead to near-term pricing pressure despite a pick-up in demand in 3Q11.

In the supply-chain, production-/processing-cost variations are highest among the polysilicon makers, followed by wafer and module makers. Polysilicon makers' production costs vary from US\$22-65/kg, while module makers' non-silicon processing costs vary from US\$0.72-0.86/W. Therefore, the polysilicon industry is likely to undergo significant consolidation during the price-adjustment phase, in our view.

In the polysilicon space, our Altman Z-score tests reveal that LDK Solar (Not rated), Renewable Energy Corp (REC) (Not rated) and MEMC Electronics (Not rated) are at greater liquidity risk. Importantly, their production costs do not look competitive. OCI (010060 KS, W267,000, Buy [1]) scores high on the Z-score test due to its recent US\$700m equity funding. GCL Poly Energy (3800 HK, HK\$3.11, Buy [1]) does not appear to have much liquidity risk, while its financing agreement with China Development Bank should improve its Z-score in the future.

Other large companies with Altman Z-scores of below 1.8 (indicating a high liquidity risk) are Q-cell (Not rated), Renesola (Not rated), Suntech Power (STP US, US\$4.38, Outperform [2]), Yingli Solar (Yingli) (YGE US, US\$4.80, Underperform [4]), Solon (Not rated) and Conergy (Not rated). However, we believe companies such as Suntech Power (Suntech) and Yingli will receive local-government/bank support to see through any liquidity issues. Trina Solar (TSL US, US\$11.34, Outperform [2]), which has strong financial health and a competitive cost structure, should be able to gain market share in a US\$1.0/W module-price world.

In our recent sector report, [Winners in the race to grid parity](#), of 7 September, we have mentioned such possibilities, and accordingly have selected: 1) low-cost producers with flexible cost structures, and 2) financially healthy companies as investment targets during this price-discovery phase. The stocks on which we have Buy (1) or Outperform (2) ratings have Z-scores of 2.4 or above, except Suntech.

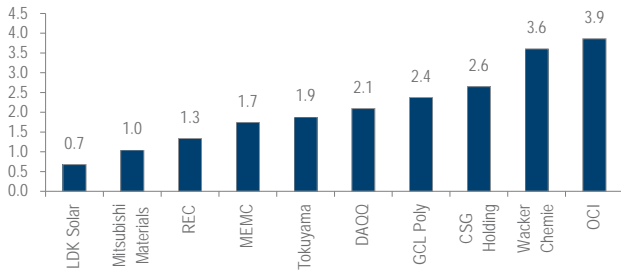
■ What we recommend

We maintain our recommendation that investors adopt a hedged position – long GCL, OCI and Giga Solar Materials (3691 TT, NT\$406.0, Buy [1]), short pure-cell/multi-wafer and non-bankable module makers – as we expect ROICs for the solar industry to bottom out in 2012.

■ How we differ

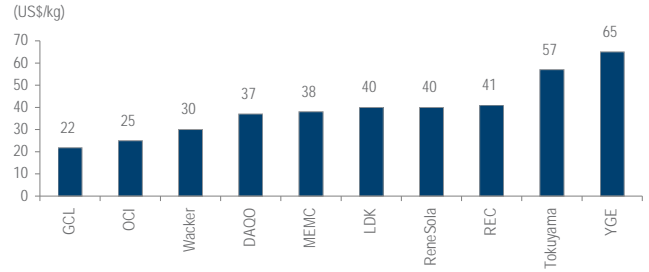
Our 2012 EPS forecasts for the solar companies we cover are 18-44% lower than those of the Bloomberg consensus, as we believe pricing pressure in the solar market is not over yet.

■ **Polysilicon makers: Altman Z-scores**



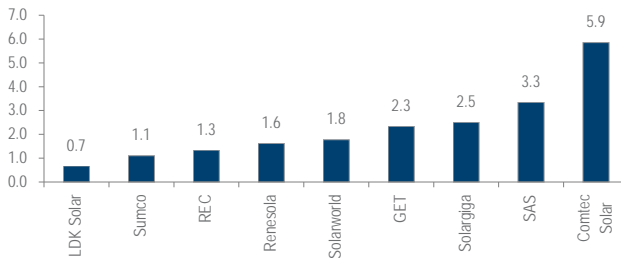
Source: Bloomberg

■ **Polysilicon makers: cost comparison (2Q11)**



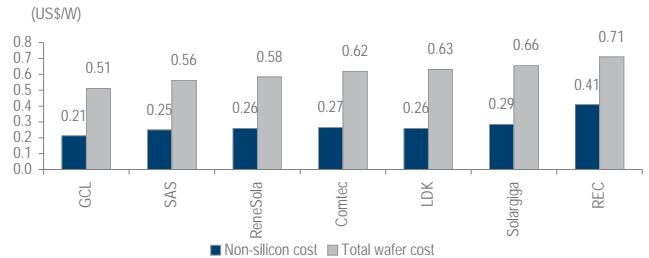
Source: Companies, Daiwa

■ **Wafer makers: Altman Z-scores**



Source: Bloomberg

■ **Wafer makers: cost comparison (2Q11)**



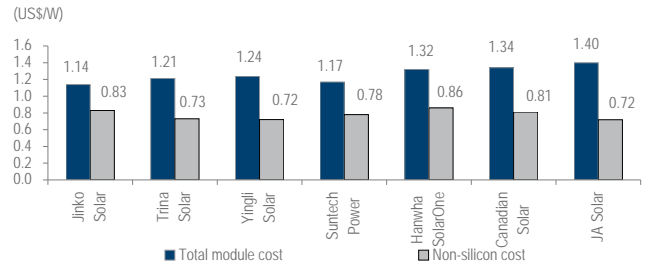
Source: Companies, Daiwa

■ **Cell/module makers: Altman Z-scores**



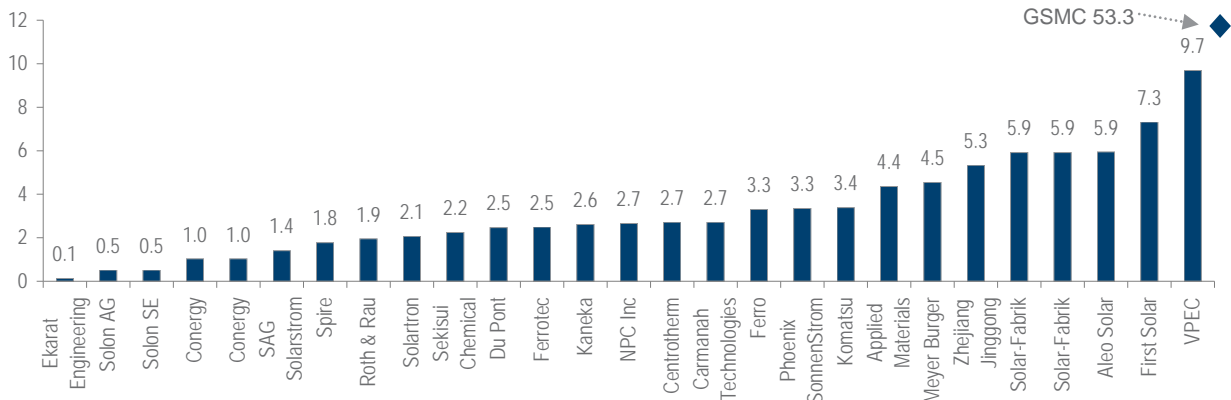
Source: Bloomberg

■ **Module makers: cost comparison (2Q11)**



Source: Companies, Daiwa

■ **New technology/materials/equipment/others**



Source: Bloomberg

Note: Z-score test: Designed by Edward I. Altman, the Z-score uses multiple corporate-income and balance-sheet items to measure the financial health of a company. **Zones of Discrimination:** $Z > 2.99$ - 'Safe' Zones, $1.81 < Z < 2.99$ - 'Grey' Zones, $Z < 1.81$ - 'Distress' Zones. **Altman's Z-Score** = $1.2 \times (\text{Working Capital} / \text{Tangible Assets}) + 1.4 \times (\text{Retained Earnings} / \text{Tangible Assets}) + 3.3 \times (\text{EBIT} / \text{Tangible Assets}) + 0.6 \times (\text{Market Value of Equity} / \text{Total Liabilities}) + (\text{Sales} / \text{Tangible Assets})$

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