

## Equities

6 December 2011 | 52 pages

# Hollysys Automation Technologies (HOLI)

## Initiating at Buy: The Little Simba in Industrial Automation

- Company Update
- Initiation of Coverage

■ **Initiate coverage at Buy, US\$13.60 target price, >50% upside** – Hollysys is a leading Chinese developer and provider of automation and control technologies; it was founded by China's automation pioneer, Dr. Wang Changli. Around 60% of revenue comes from industrial automation and ~40% from railway signaling. Competing with foreign giants, it offers own-developed products to 2,000+ customers among SOEs, MNCs, and MoR. We believe the positives include: 1) secular growth potential in industrial automation amid rising labor costs; 2) market-share gain opportunities from foreign players; and 3) a relatively good position in the railway market. TP is based on a P/E of 15x FY12E, a 15% premium over global peers given its higher earnings-growth potential.

■ **Market share upside** – With currently only a 10% share in the DCS market and 1% in PLCs, we believe Hollysys has potential to gain market share from foreign players due to its value-for-money products, quicker and closer service, more diversified application fields, and closer cultural ties with users. With expansion in the installed base, long-term revenue growth should also come from further monetization through more customization and services.

■ **Relatively well-positioned in railways** – Despite of our bearish view on railway construction and cautious view on equipment, we believe signaling systems are relatively better positioned vs constructors due to being later in the cycle and replacement/upgrade demand. Lowering of speed standards from 350km/h to 250km/h is also incrementally positive to Hollysys due to its higher share in the 250km/h market.

■ **Catalysts: MoR report, order momentum** – Shares trade on a P/E of 10x '12E amid negative sentiment on railways. We believe catalysts could come from industrial automation order momentum and the release of the July accident investigation report.

■ **High rev visibility, strong balance sheet** – Backlog represents 87% of our FY12E revenue forecast, providing high revenue visibility, while the company holds net cash, providing downside protection.

### Statistical Abstract

Year to 30 Jun	Net Profit (US\$M)	Diluted EPS (US\$)	EPS growth (%)	P/E (x)	P/B (x)	ROE (%)	Yield (%)
2010A	26	0.50	260.9	18.1	2.3	13.3	0.0
2011A	41	0.75	52.2	11.9	1.9	17.4	0.0
2012E	51	0.90	19.7	9.9	1.6	17.4	0.0
2013E	58	1.02	13.4	8.8	1.4	16.9	0.0
2014E	68	1.18	14.8	7.6	1.2	16.7	0.0

Source: Powered by dataCentral

<b>Buy</b>	<b>1</b>
Price (02 Dec 11)	US\$8.98
Target price	US\$13.60
Expected share price return	51.4%
Expected dividend yield	0.0%
<b>Expected total return</b>	<b>51.4%</b>
Market Cap	US\$500M

### Price Performance (RIC: HOLI.O, BB: HOLI US)



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See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

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Fiscal year end 30-Jun	2010	2011	2012E	2013E	2014E
<b>Valuation Ratios</b>					
P/E adjusted (x)	18.1	11.9	9.9	8.8	7.6
EV/EBITDA adjusted (x)	12.0	8.6	6.9	5.7	4.5
P/BV (x)	2.3	1.9	1.6	1.4	1.2
Dividend yield (%)	0.0	0.0	0.0	0.0	0.0
<b>Per Share Data (US\$)</b>					
EPS adjusted	0.50	0.75	0.90	1.02	1.18
EPS reported	0.50	0.75	0.90	1.02	1.18
BVPS	3.94	4.82	5.64	6.56	7.63
DPS	0.00	0.00	0.00	0.00	0.00
<b>Profit &amp; Loss (US\$M)</b>					
Net sales	174	263	345	400	463
Operating expenses	-142	-218	-288	-334	-385
<b>EBIT</b>	<b>33</b>	<b>45</b>	<b>57</b>	<b>66</b>	<b>77</b>
Net interest expense	-1	-2	-2	-2	-2
Non-operating/exceptionals	4	5	3	3	4
<b>Pre-tax profit</b>	<b>35</b>	<b>48</b>	<b>58</b>	<b>67</b>	<b>79</b>
Tax	-8	-6	-8	-9	-11
Extraord./Min.Int./Pref.div.	-2	0	0	0	0
<b>Reported net income</b>	<b>26</b>	<b>41</b>	<b>51</b>	<b>58</b>	<b>68</b>
Adjusted earnings	26	41	51	58	68
Adjusted EBITDA	35	49	62	72	84
<b>Growth Rates (%)</b>					
Sales	10.5	51.0	31.1	16.2	15.5
EBIT adjusted	686.4	37.3	26.9	16.3	17.4
EBITDA adjusted	nm	39.5	27.0	15.4	16.4
EPS adjusted	260.9	52.2	19.7	13.4	14.8
<b>Cash Flow (US\$M)</b>					
<b>Operating cash flow</b>	<b>30</b>	<b>-2</b>	<b>21</b>	<b>40</b>	<b>48</b>
Depreciation/amortization	3	4	6	6	6
Net working capital	-1	-45	-49	-33	-37
<b>Investing cash flow</b>	<b>-21</b>	<b>-29</b>	<b>-10</b>	<b>-10</b>	<b>-10</b>
Capital expenditure	-21	-16	-10	-10	-10
Acquisitions/disposals	-1	-13	0	0	0
<b>Financing cash flow</b>	<b>-18</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>
Borrowings	-20	-4	0	0	0
Dividends paid	0	0	0	0	0
<b>Change in cash</b>	<b>-9</b>	<b>-29</b>	<b>11</b>	<b>30</b>	<b>38</b>
<b>Balance Sheet (US\$M)</b>					
<b>Total assets</b>	<b>385</b>	<b>459</b>	<b>552</b>	<b>641</b>	<b>742</b>
Cash & cash equivalent	124	95	105	136	174
Accounts receivable	125	202	264	307	355
Net fixed assets	65	60	64	68	71
<b>Total liabilities</b>	<b>171</b>	<b>193</b>	<b>236</b>	<b>266</b>	<b>299</b>
Accounts payable	54	65	85	99	114
Total Debt	50	49	49	49	49
<b>Shareholders' funds</b>	<b>213</b>	<b>266</b>	<b>316</b>	<b>375</b>	<b>443</b>
<b>Profitability/Solvency Ratios (%)</b>					
EBITDA margin adjusted	20.2	18.7	18.1	18.0	18.2
ROE adjusted	13.3	17.4	17.4	16.9	16.7
ROIC adjusted	21.7	23.7	22.2	22.3	23.3
Net debt to equity	-34.6	-17.4	-18.0	-23.3	-28.2
Total debt to capital	19.0	15.5	13.3	11.5	9.9

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# Investment Highlights

Anything that can be automatically done *for* you can be automatically done *to* you.

---- Wyland's Law of Automation

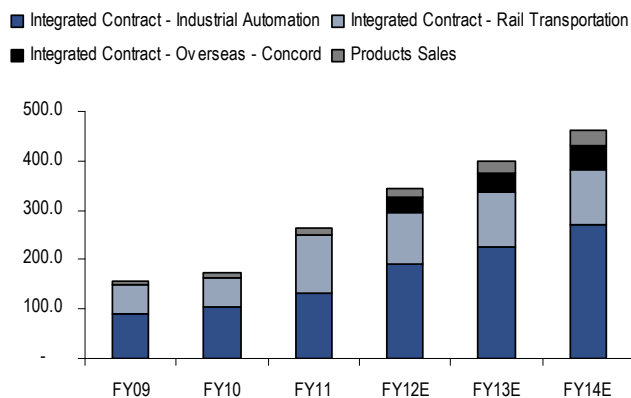
## Initiate at Buy: TP at US\$13.6, >50% upside

We initiate coverage on Hollysys with a Buy rating and 12-month target price at US\$13.6, implying over 50% upside from the current share price level. Our target price is based on 15x FY12E P/E, a 15% premium to its global direct peers Honeywell and Emerson (12-14x forward P/E), as we believe Hollysys is gaining market share from foreign players and has higher long-term EPS growth-rate potential. We forecast CY11-13E EPS CAGR of 16% for Hollysys, 11% for Honeywell and 12% for Emerson.

**2,000 customers for more than 10,000 projects; 10% share in China DCS market, following ABB, Emerson & Honeywell**

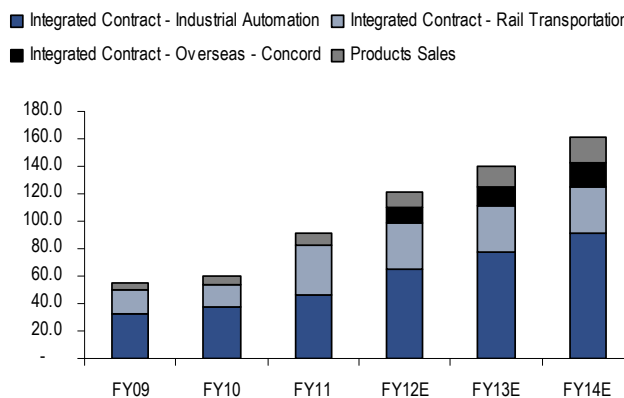
Hollysys is a leading Chinese developer and provider of automation and control technologies founded by China's automation pioneer Dr. Wang Changli, with ~60% revenue from industrial automation and ~40% from railway signaling and supervision. Competing with foreign giants, it offers own-developed products to 2,000+ customers, including SOEs, MNCs, MoR, etc. on over 10,000 projects.

Figure 1. Hollysys – Revenue by category (US\$m)



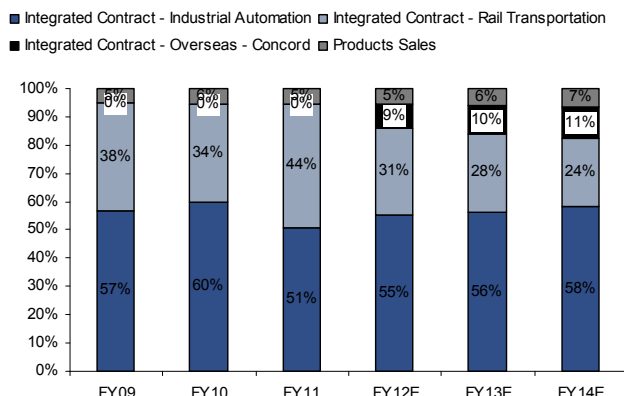
Source: Company Reports and CIRA Estimates

Figure 2. Hollysys – Gross Profit by category (US\$m)



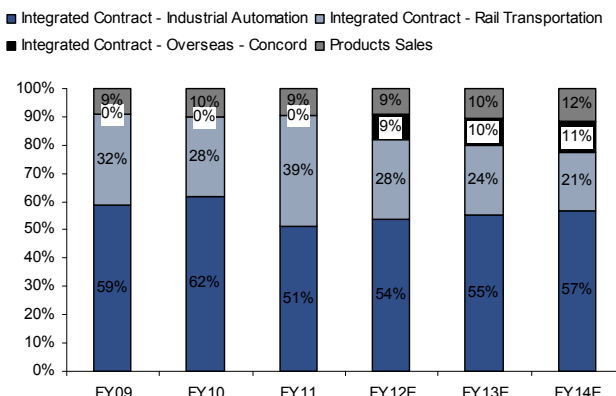
Source: Company Reports and CIRA Estimates

Figure 3. Hollysys – Revenue by category (%)



Source: Company Reports and CIRA Estimates

Figure 4. Hollysys – Gross Profit by category (%)



Source: Company Reports and CIRA Estimates

### Gaining market share in a secularly growing market

Against a background of labor cost inflation and industrial equipment upgrades, we believe Hollysys is well positioned in the industrial automation sector, with potential for market share gains from foreign players due to its value-for-money products, quicker and closer after-sales service, more diversified application fields, and closer cultural ties with end users. With expansion in the installed base, we believe long-term growth potential is assured with ramping up of service revenue as well as replacement, upgrade, and customization needs.

### July train accident investigation report could remove the overhang regarding its responsibility.

Despite our cautious view on high-speed railway construction during the 12<sup>th</sup> 5-Year Plan period, we believe Hollysys is relatively well positioned in the sector, being later in the cycle than track construction with on-track signaling systems, continuous demand for on-train signaling equipment, as well as long-term replacement and upgrade demand. We think **near-term catalysts** will include the release of the July train accident investigation report which should remove the overhang regarding its responsibility, as well as continuously strong order momentum over the next few quarters.

### Strong secular growth from industrial automation

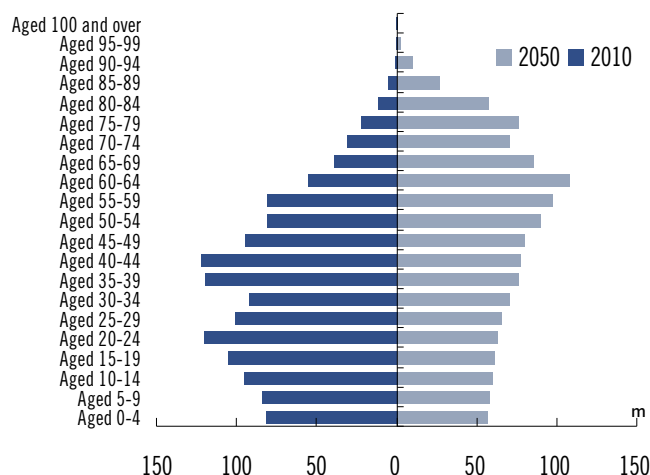
**DCS (Distributed Control System) - First designed to replace operational amplifiers used in the chemical industry, now mainly used in continuous process control such as power, chemical, water processing, cement, and so on.**

The low fertility ratio, aging population and inflating wage levels in China has blown the alarm whistle calling for industrial automation, implying the end of unlimited cheap labor supply and the Lewis turning point. With the spread of university education, blue-collar labor cost, particularly in manufacturing and utilities, has outperformed growth in IT wages, making industrial automation more cost effective than manual work. Although the 7% annual growth in the DCS market and 15% in the PLC market in next a few years on our estimates do not look extremely high, we believe such secular growth could be continued for the next few decades and even has potential to accelerate at some point.

**PLC (Programmable Logic Controller) - First designed to replace large-scale relay circuits used in auto industry, now mainly used in discrete manufacturing controls, such as auto, electronics, machinery, and so on.**

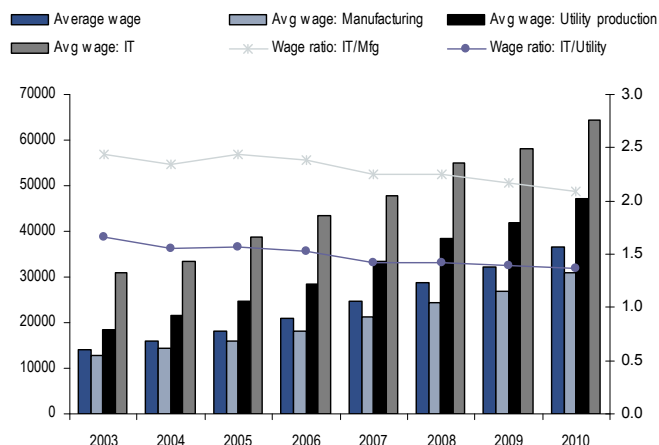
Industrial automation also fulfills two categories of the “*Seven Strategic Industries*” encouraged and supported by the State Council: next-generation information technology, and high-end equipment manufacturing. More friendly government policies may surprise us on the upside over the next few years.

Figure 5. China – Demographic Structure 2010 vs. 2050



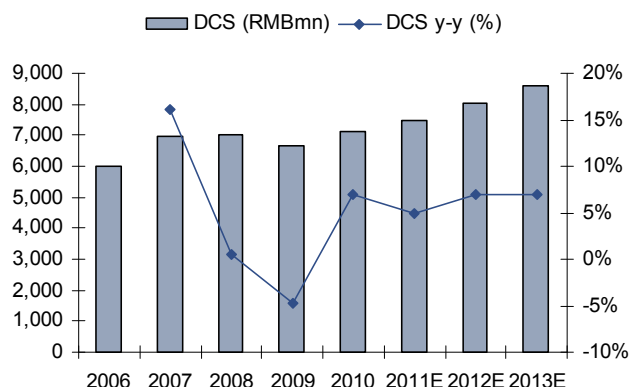
Source: UN, Citi Investment Research and Analysis

Figure 6. China – Average wage (RMB/year)



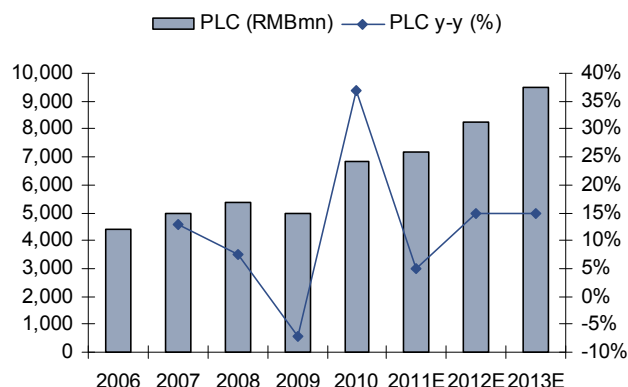
Source: CEIC, Citi Investment Research and Analysis

Figure 7. China – DCS Market Size (RMBmn)



Source: Gongkong, CIRA estimates

Figure 8. China – PLC Market Size (RMBmn)



Source: JLCK, CIRA estimates

## Installation-base expansion & service strength

We believe Hollysys is well positioned to gain market share from foreign players, as currently it has only 10% market share in the DCS market and 1% in the PLC market. We believe Hollysys has strengths in several areas.

**High R&D investment (7% of revenue)  
with high cost-efficiency of Chinese  
engineers**

■ **A diversified portfolio of industrial applications** – While most foreign players have concentrated their products on key applications, such as for power and chemicals, Hollysys has switched from being a thermo power player to a full-scale automation products supplier. Significant achievements have been made in emerging industries, such as municipal projects including urban heat supply and water processing, waste-heat recycling, rubbish-burning power generation, building-materials production, including cement and glass, as well as other industries, including metallurgy and paper. The diversified portfolio helps Hollysys to avoid the downcycle in thermo power capacity expansion, as well as expanding the installed base of its products. R&D on the base layer could be allocated to more sectors and purchases of hardware components could also benefit from economies of scale.

**941 sales & engineering staff in 42 local offices in China**

**Expansion of installed base under way, future long-term monetization opportunities**

■ **Deep-penetration distribution network & service strength** – Hollysys has built nation-wide distribution network and service team in 2<sup>nd</sup> and even 3<sup>rd</sup>-tier cities. Such a strategy has not only helped it reduce staff costs but also enables it to reach clients faster than peers whenever required. The replacement of malfunctioning components by Hollysys is also a lot faster than foreign players can offer. The continuous touching-base by its engineers with clients' technicians also helps them to understand client needs better and to provide feedback to R&D for more customization work. The cultural tie is important in this industry, as exemplified by global peers, thus Hollysys has an advantage in securing clients. So far, 941 sales and engineering staff have been allocated across 42 local offices in China.

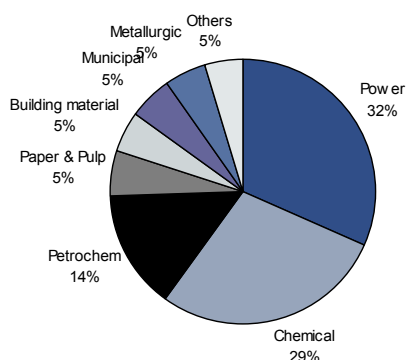
■ **Securing clients and long-term monetization** – This industry is relatively sticky as the installed base and track record are important in choosing suppliers. The revenue growth of Hollysys at this moment is still on installation expansion, and long-term monetization opportunities are present with further customization for clients, upgrades for latest products, ramping up service revenue, in addition to securing new clients.

**Figure 9. China – DCS competitive strengths by players**

	Power	Chemical	Petrochem	Paper & Pulp	Bldg Mat	Municipal	Metallurgic
ABB	000	0	00	000	000	00	00
Emerson	000	00	000	0	0	0	0
Honeywell	0	000	000	00	0	0	00
<b>Hollysys</b>	<b>00</b>	<b>00</b>	<b>00</b>	<b>0</b>	<b>00</b>	<b>000</b>	<b>0</b>
Yokogawa	0	00	000	0	0	00	00
Supcon	0	000	00	00	0	0	0
Siemens	000	0	00	00	00	0	00
Invensys	00	0	00	0	0	0	0
GE Xinhua	00	0					
Zhishen	00	0				0	
Metso	0	0		000			
Xinhua Group		0		0	0		0

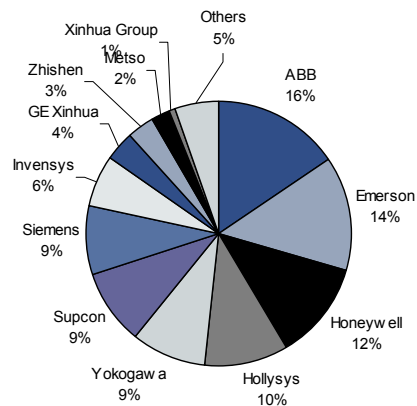
Source: MIR, Citi Investment Research and Analysis

**Figure 10. China – DCS by industry demand (2009)**



Source: MIR, Citi Investment Research and Analysis

**Figure 11. China – DCS market share by players (2009)**



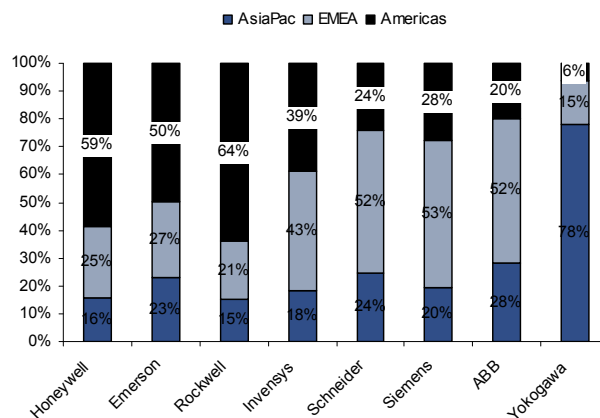
Source: MIR, Citi Investment Research and Analysis

Figure 12. Hollysys – Exposure of Distribution Network



Source: Company Reports

Figure 13. Global Automation Players – Revenue by region (2010)



Source: Company Reports

## High-speed rail exposure: relatively well-positioned

Equipment suppliers better placed than constructors due to late cycle effect and replacement demand

The train makers are usually trading at a higher P/E than railway constructors, mainly due to the later-cycle effect of revenue contribution and replacement demand. It should be noted that the on-track railway signaling systems are usually installed at the late stage of railway construction, and have a replacement or upgrade need every ten years, and on-train signaling systems like ATP follows train manufacturing and also has replacement demand. Therefore, in terms of peaking in the cycle, we believe railway construction comes the earliest, followed by signaling installation, and finally a gradual ramping up of train density after the opening of new lines. In terms of replacement demand, it hardly exists for railway constructors, but exists for both train makers and signaling systems, though electric components need to be replaced every ten years while the lifespan for a train is 25 years.

Shift from 350km/h to 250km/h is incrementally positive to Hollysys on its higher share in the 250km/h market

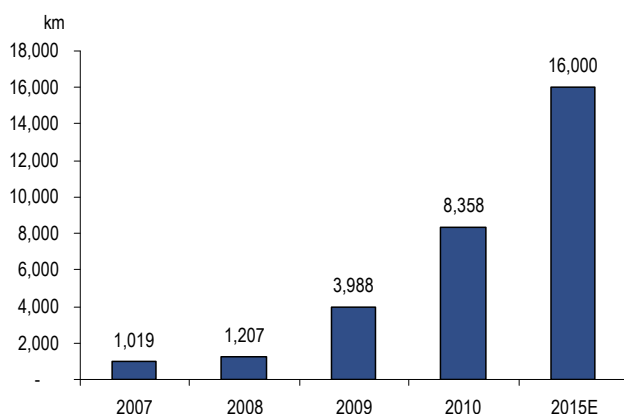
The latest development of MoR policy is to reduce the speed standard of some planned 350km/h lines to 250km/h. With higher market share in the 250km/h (50%) signaling market than in the 350km/h (30%) market, we believe this is incrementally positive to Hollysys as well.

Figure 14. Comparison of Railway Constructor & Equipment makers

	Listed players	Peaking cycle	Positive?	Replacement cycle	Positive?	Deserved P/E
Railway constructors	CRG, CRCC	Early	X	No	X	Low
Railway signaling providers	CRSC, Hollysys, CARS, CASCO	Middle	--	~10 years	V	Middle
Rolling-stock manufacturers	CSR, CNR, BST	Late	V	~25 years	--	Middle
Train components makers	CSR Times, Midas, Jinxi Axle	Late	V	10-25 years	V	High

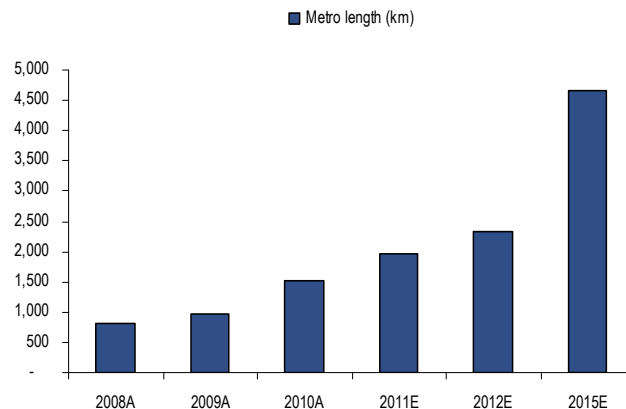
Source: Citi Investment Research and Analysis

Figure 15. China – High-speed Railway Length (km)



Source: MoR, Citi Investment Research and Analysis

Figure 16. China – Urban Railway Length (km)



Source: Various sources, Citi Investment Research and Analysis

## Near-term catalysts: “Not-guilty” report, order momentum

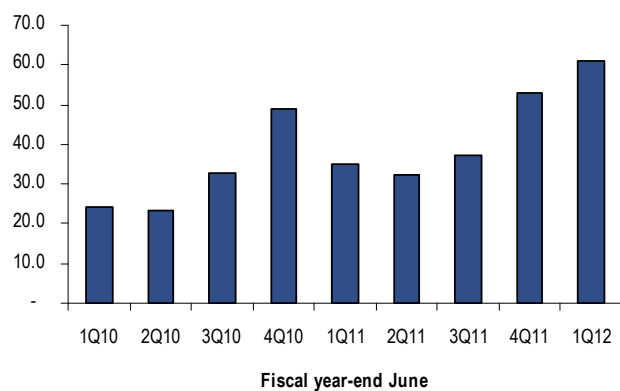
**July accident investigation report could be an immediate catalyst**

We believe the formal release of investigation report on the July Wenzhou high-speed train accident could remove an overhang regarding responsibility and be a positive catalyst for Hollysys’ share price. We do not expect Hollysys to lose market share in the railway market simply due to this accident.

**Strong order momentum on industrial automation should boost higher confidence**

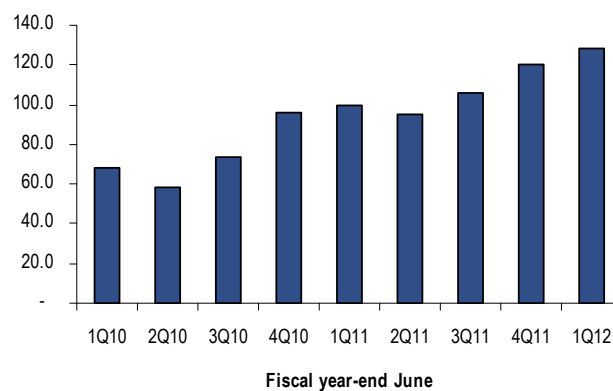
The continuously strong order momentum in industrial automation could give further visibility to its upcoming earnings. Traditionally, the quarter ending in June is the peak season for new orders, but in 1Q12 we have seen even stronger growth in new industrial automation orders, with 74% y-y and 15% q-q growth. We believe the distribution network could bring more new orders to the company and be a share price catalyst in next 12 months.

Figure 17. Hollysys – New orders on Industrial Automation (US\$mn)



Source: Company Reports

Figure 18. Hollysys – Backlog on Industrial Automation (US\$mn)



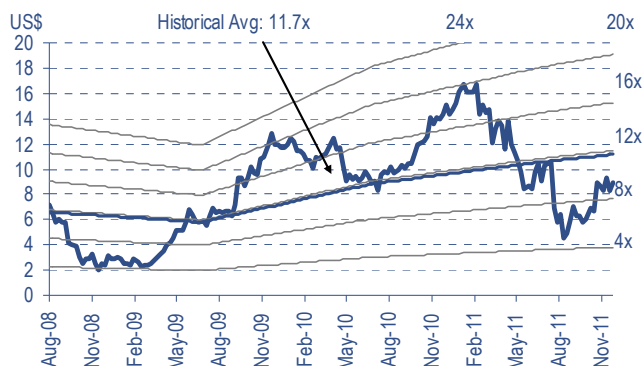
Source: Company Reports

## Valuations: Undemanding

### Historical comparison and share price movement

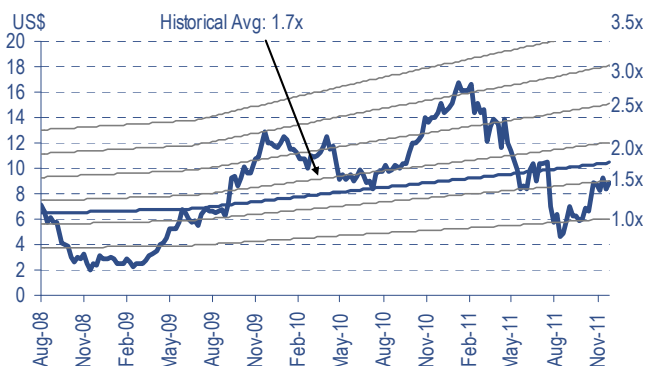
Historically, the company was trading at a peak of 20x forward P/E at the beginning of the year due to high expectations from high-speed railways by the equity market, and trough of 5x forward P/E in August due to the July high-speed train crash, and contagion effects of some US-listed Chinese companies with corporate governance issues. With the value in its industrial automation is gradually being recognized by investors, and we believe the valuation could return to a reasonable level.

Figure 19. Hollysys – 12-month forward P/E band



Source: Company Reports and CIRA Estimates

Figure 20. Hollysys – 12-month forward P/B band



Source: Company Reports and CIRA Estimates

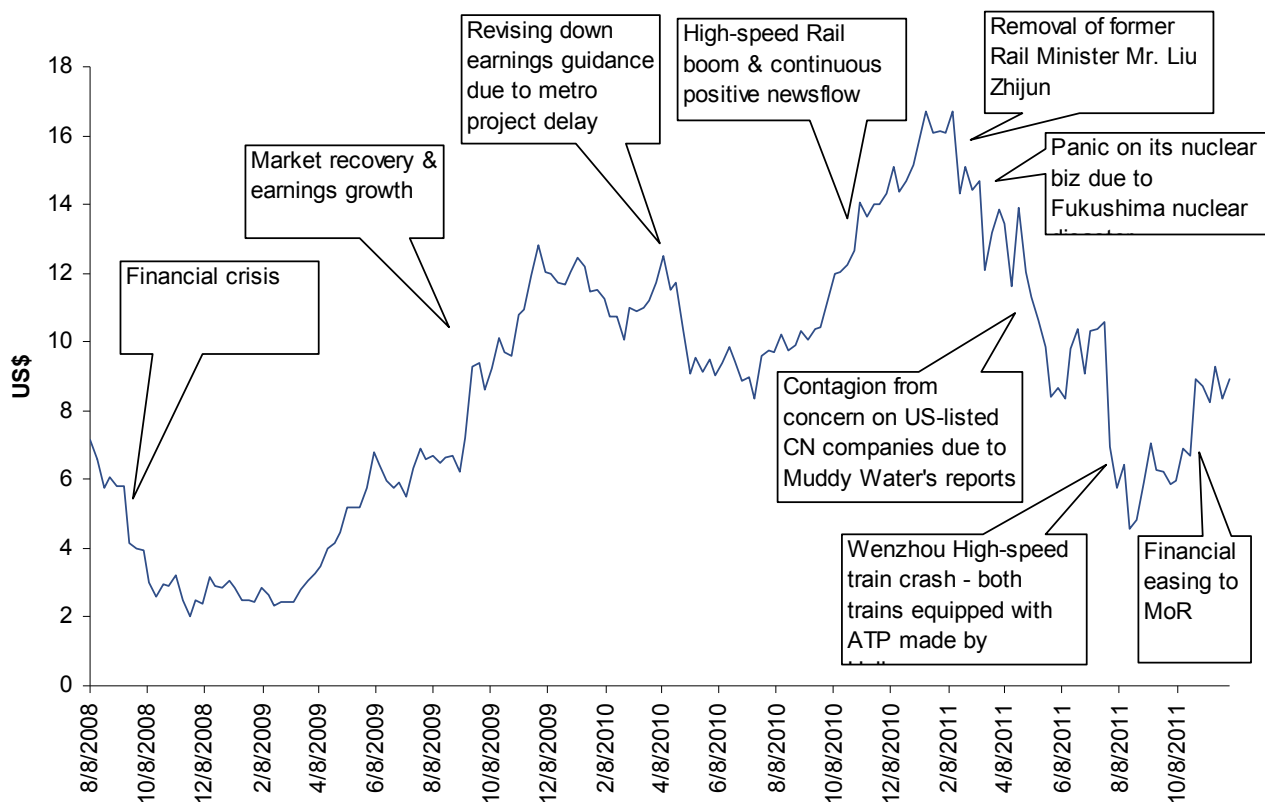
**Valuation up and down due to railway sentiment, but true value of the company lies in industrial automation**

While we believe the true fundamental value of the company mostly lies in its industrial automation segment, the share price has been heavily driven by newsflow from high-speed railways. Its share price has been dragged high in 2H 2010 due to high-speed railway boom in China and continuous positive newsflow, and the removal of former Railway Minister Mr. Liu Zhijun in February has triggered a decline from the peak 20x forward P/E. In March, the nuclear disaster in Fukushima also negatively affected its share price as it has low single-digit revenue generated from nuclear plant automation. The concerns about US-listed Chinese companies' corporate governance due to Muddy Water's reports also had a contagion effect on Hollysys, as it got listed through a reverse acquisition three years ago. The July Wenzhou train accident once again hit the share price, though some rebound occurred in October due to the MoR's financial easing.

**10-month backlog coverage and net cash position provide adequate downside protection**

We believe railways should have less and less impact on its share price movement in future, and investors will gradually realize the underlying value of its industrial automation segment for its long-term secular growth potential. At the end of Sep 2011, the company's backlog makes up 87% of our FY12E revenue forecast, which provides high visibility to our revenue forecast. The company also holds net cash, which provides adequate downside protection should there be any unexpected economic downturn.

Figure 21. Hollysys – Share price movement & causes



Source: Bloomberg, CIRA

## Global comparison vs growth prospects

The global directly-comparable peers of Hollysys include Honeywell, Emerson, Rockwell, Invensys, etc. Honeywell is trading at 12.2x '12E P/E, and Emerson at 14.3x. We believe currently 9.8x '12E P/E of Hollysys is not excessive, given its exposure in China and higher CY11-13E EPS CAGR outlook of 16%, compared to 11% for Honeywell and 12% for Emerson.

## Target price: US\$13.6, based on P/E of 15x '12E

Our 12-month target price is set at US\$13.6, implying over 50% upside from current share price. Our target price is based on 15x FY12E P/E, a 15% premium on its global direct peers Honeywell and Emerson (12-14x forward P/E) as we believe Hollysys is gaining market share from foreign players and has higher long-term EPS growth rates. We are seeing CY11-13E EPS CAGR of 16% for Hollysys and 11% for Honeywell and 12% for Emerson.

Figure 22. Valuation Comparison

December 3, 2011		Rating	Curr	Price (Local)	Market cap (US\$ mn)	Core P/E (X)			P/B (X)			ROE (%)			EV/EBITDA (X)			Dvd yield (%)			EBITDA CAGR (11E-13E)	EPS CAGR (11E-13E)
						11E	12E	13E	11E	12E	13E	11E	12E	13E	11E	12E	13E	11E	12E	13E		
Zhuzhou CSR Times Electric	3898.HK	2	HKD	18.24	2,546	13.0	10.2	8.3	3.0	2.5	2.1	25.6	27.1	27.7	9.6	7.6	5.9	3.1	3.9	4.8	25.8	25.4
China South Locomotive - H share	1766.HK	3	HKD	5.18	7,895	12.9	10.5	8.7	2.2	1.9	1.6	18.6	19.3	19.8	8.1	7.2	5.9	1.6	1.9	2.3	21.3	21.5
Hollysys Auto	HOLI.OQ	NR	USD	8.86	493	11.7	9.8	8.6	1.8	1.6	1.4	17.4	17.4	16.9	8.5	6.8	5.6	0.0	0.0	0.0	21.1	16.5
Automation & Railway equipment - AeJ																						
CNR - A share	601299.SS	NR	CNY	5.05	6,590	14.6	11.5	9.8	1.5	1.4	1.2	11.3	12.6	13.0	7.2	5.3	5.1	1.6	2.2	3.2	22.8	21.9
CSR - A share	601766.SS	NR	CNY	5.32	7,895	16.1	13.2	10.9	2.8	2.4	2.0	18.6	19.3	19.8	8.8	6.9	5.6	1.6	1.9	2.3	21.3	21.5
China ITS Holdings	1900.HK	NR	HKD	1.17	243	5.1	5.5	n/a	0.6	0.6	n/a	8.8	11.0	n/a	6.1	2.8	n/a	0.0	0.0	n/a	n/a	n/a
China Automation Group	0569.HK	NR	HKD	2.34	310	6.5	5.2	4.8	1.1	0.9	0.8	16.9	17.9	18.2	5.2	4.3	3.3	3.9	4.0	4.7	19.3	16.3
MIDAS Holdings	1021.HK	NR	HKD	1.99	332	9.2	8.0	7.0	0.7	0.7	0.6	7.6	8.2	9.0	29.4	24.4	21.9	2.6	3.1	3.7	15.9	14.7
United Group	UGL.AX	1	AUD	12.9	2,188	13.0	12.2	10.9	1.8	1.7	1.6	14.1	14.5	15.5	8.2	7.8	7.0	5.4	5.7	6.4	7.2	8.9
Downer EDI	DOW.AX	1	AUD	3.2	1,403	7.0	7.4	6.6	0.8	0.8	0.8	12.4	12.1	12.3	3.9	3.5	3.3	0.0	0.0	7.6	10.3	3.5
Average						10.2	9.0	8.3	1.3	1.2	1.2	12.8	13.6	14.6	9.8	7.8	7.7	2.2	2.4	4.6	16.1	14.5
Median						9.2	8.0	8.4	1.1	0.9	1.0	12.4	12.6	14.3	7.2	5.3	5.4	1.6	2.2	4.2	17.6	15.5
Automation & Railway equipment - Europe & US																						
General Electric	GE.N	1	USD	16.09	169,868	11.7	10.4	8.9	1.3	1.2	1.1	11.7	12.0	13.0	1.9	1.6	1.4	3.4	3.8	4.2	3.1	14.6
Honeywell	HON.N	1	USD	54.13	41,869	13.4	12.2	10.9	2.6	2.3	2.2	21.1	20.0	20.7	7.8	6.5	5.6	2.2	2.2	2.2	12.1	10.5
Emerson	EMR.N	1	USD	51.36	37,788	15.8	14.3	12.7	3.7	3.3	3.5	23.9	24.2	26.6	8.4	7.6	6.7	2.8	3.2	2.5	8.6	11.8
Siemens AG	SIEGn.DE	1	EUR	75.16	92,094	9.7	9.6	9.1	2.2	1.9	1.7	22.9	20.7	19.3	6.6	5.7	5.3	4.0	4.1	4.3	9.2	3.0
ABB	ABB.N.VX	1	CHF	17.29	43,445	13.2	12.1	10.8	2.6	2.3	2.1	20.6	20.0	20.2	7.6	7.2	6.3	3.7	4.3	4.8	9.6	10.6
Schneider	SCHN.PA	2	EUR	42.17	31,017	11.2	11.2	9.6	1.4	1.4	1.3	13.3	12.5	13.6	8.3	7.8	6.7	4.1	4.5	5.0	9.3	7.9
Invensys	ISYS.L	1	GBP	2.09	2,643	8.8	8.7	8.6	3.3	2.6	2.2	44.7	33.3	27.5	7.1	6.4	6.2	1.9	2.9	3.4	4.2	1.4
ALSTOM	ALSO.PA	2	EUR	25.66	10,133	7.5	7.0	6.5	1.9	1.6	1.4	25.1	24.7	22.9	6.6	5.7	4.9	2.4	2.4	3.9	21.7	7.5
Bombardier Inc	BBDn.TO	1	CAD	4.05	6,998	10.3	8.5	5.7	4.7	4.0	2.5	59.2	51.5	54.7	4.5	3.8	2.9	2.7	3.1	3.7	23.5	34.6
Rockwell	ROK.N	NR	USD	74.62	10,590	15.6	14.0	12.6	6.1	4.4	3.5	43.5	37.9	32.3	9.9	8.8	7.6	2.0	2.2	2.4	10.5	11.0
Ansaldo	STS.MI	NR	EUR	7.345	1,378	12.5	11.4	10.6	2.3	2.0	1.8	20.2	19.8	19.1	5.8	5.1	4.5	3.1	3.4	3.5	9.7	8.6
Average						11.8	10.8	9.6	2.9	2.5	2.1	27.8	25.1	24.5	6.8	6.0	5.3	2.9	3.3	3.6	11.0	11.0
Median						11.7	11.2	9.6	2.6	2.3	2.1	22.9	20.7	20.7	7.1	6.4	5.6	2.8	3.2	3.7	9.6	10.5
Automation & Railway equipment - Japan																						
Hitachi	6501.T	1	JPY	436	25,247	8.8	9.3	8.7	1.4	1.2	1.1	17.5	15.0	14.4	6.1	6.3	5.4	1.8	1.4	1.8	2.8	0.7
Toshiba Corp	6502.T	1	JPY	349	18,945	11.2	11.3	9.0	1.7	1.7	1.5	16.6	15.0	17.5	5.6	4.9	4.3	1.4	2.3	2.6	11.5	11.6
Mitsubishi Heavy	7011.T	2	JPY	328	14,106	36.5	22.9	14.5	0.9	0.9	0.8	2.4	3.8	5.8	7.3	6.9	5.9	1.2	1.8	1.8	9.7	58.9
Kawasaki Heavy	7012.T	NR	JPY	214	4,586	13.8	10.8	9.3	1.2	1.1	1.0	9.1	11.0	11.5	n/a	n/a	n/a	1.4	1.9	2.2	12.6	21.7
Nabtesco Corp	6268.T	1	JPY	1739	2,818	16.4	13.7	13.3	2.4	2.2	1.9	15.8	16.7	15.3	7.6	6.3	5.8	1.4	2.0	2.3	17.3	11.0
Toyo Electric	6505.T	NR	JPY	302	187	20.3	12.1	9.1	n/a	n/a	n/a	5.1	7.5	9.0	n/a	n/a	n/a	2.0	2.0	2.6	20.8	49.4
Nippon Signal	6741.T	NR	JPY	430	344	10.2	13.4	7.5	0.5	0.5	0.5	5.4	4.3	7.0	n/a	n/a	n/a	3.0	2.6	2.8	10.0	16.6
Yokogawa	6841.T	NR	JPY	753	2,486	n/a	27.9	16.1	1.4	1.3	1.2	n/a	4.7	8.2	n/a	n/a	n/a	0.0	0.8	1.3	23.5	n/a
Average						16.7	15.2	10.9	1.4	1.3	1.2	10.3	9.7	11.1	6.6	6.1	5.3	1.5	1.8	2.2	13.5	24.3
Median						13.8	12.8	9.2	1.4	1.2	1.1	9.1	9.2	10.3	6.7	6.3	5.6	1.4	1.9	2.2	12.0	16.6
China Construction Companies - H Shares																						
CRG	0390.HK	3	HKD	2.64	7,239	8.3	9.5	9.3	0.7	0.6	0.6	8.1	6.7	6.4	3.0	4.0	4.3	1.7	1.7	1.7	10.3	(5.8)
CRCC	1186.HK	3	HKD	4.77	7,576	6.7	7.4	8.4	0.8	0.7	0.7	11.8	10.0	8.2	1.5	2.5	3.1	4.4	4.0	3.5	1.4	(10.5)
Average						7.5	8.4	8.9	0.7	0.7	0.6	10.0	8.3	7.3	2.3	3.2	3.7	3.0	2.9	2.6	5.8	(8.1)
Median						7.5	8.4	8.9	0.7	0.7	0.6	10.0	8.3	7.3	2.3	3.2	3.7	3.0	2.9	2.6	5.8	(8.1)

Source: dataCentral, CIRA estimates, IBES for NR companies

## Risks

### Price cut by foreign automation players

For foreign automation companies, China is their most promising market. Although in general customers in this field are not that price-sensitive, the competition may still escalate should there be any significant price cuts by foreign companies. However, we believe the R&D overhead of Hollysys is still much lower than in foreign companies, as the wages of Chinese engineers are still a lot lower.

### Wage inflation of engineers & sales people

The wages of engineers and sales people are also inflating, which may create margin pressure for Hollysys if higher-than-expected inflation is triggered by a talent war. To echo this, Hollysys has increasingly recruited local people as service engineers and sales people in local offices, and shifting R&D work from Beijing to Xi'an, where average wage is a lot lower than in first-tier cities.

### Challenges in keeping quality standards

Historically many foreign small automation companies encountered a growth plateau when they expanded to some level, due to the difficulty in keeping to the same quality standards. Hollysys faces the same risk. Therefore, monthly performance reviews, quarterly meetings and annual training are conducted by the company to keep up the same service and quality standards.

### Capex slowdown in power & chemical industries

Although Hollysys now relies less and less on power, chemical and petrochemical sectors for its DCS products, these traditional fields still account for 40-45% of its DCS sales. Should there be any slowdown of capital expenditure in power and the chemical/petrochemical industries, downside pressure on new orders may emerge.

### Fierce competition in metro SCADA market

The competition in the metro SCADA market is escalating as there are 6-8 players able to compete. Margins are also lower than in high-speed rail-signaling systems. Therefore, Hollysys is now sticking to first-tier cities for the metro SCADA market, and market share loss is possible in this field if the competition becomes any fiercer.

### Contagion by US-listed Chinese company scandals

Previously there were some scandals on corporate governance of some US-listed Chinese companies. Although we have confidence in Hollysys, contagion effects may result in downward pressure on its share price due to its reverse-acquisition listing history over three years ago.

### VAT rebate policy on software revenue

The VAT rebate policy on software expired in 2011, and its renewal takes some time. Although in principle it has been passed by government authorities, some implementation details still take time. Therefore, we have only assumed a US\$5m annual VAT rebate for FY12/13/14E, compared to US\$10.8m received by Hollysys in FY11. Should this come in lower or later than expected, it may affect earnings negatively.

# Industrial Automation Overview

## Demographic dividend, Lewis turning point and labor-cost inflation

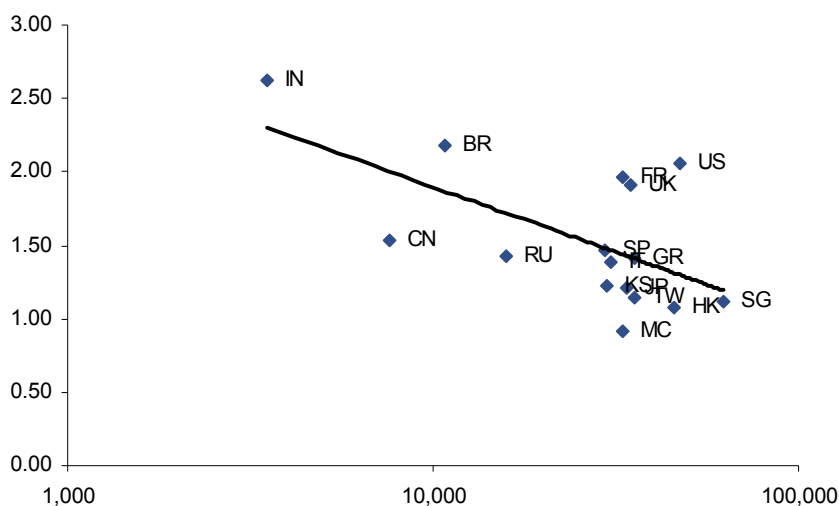
### The end of an unlimited, cheap labor supply

With a 1.3bn population, China was once considered to have an unlimited supply of labors. However, such a perception quickly changed during past a few years, with labor costs rising at double-digit rates and recruitment becoming increasingly difficult.

Globally, as an economy develops and GDP per capita increases, normally the fertility ratio (children born per woman) decreases. We plot the below figure using GDP per capita (PPP) as the X-axis and fertility ratio as the Y-axis.

China, Taiwan, Hong Kong, Macau, Singapore and South Korea have low fertility ratios, while US, UK, France, Brazil and India have high ratios.

Figure 23. World – GDP per Capita (PPP) as X-axis and fertility ratio as Y-axis

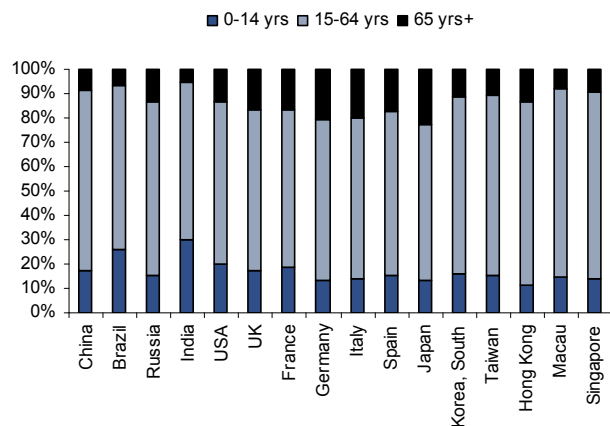


Source: CIA, Citi Investment Research and Analysis

Confucianism cultural countries tend to have lower fertility ratios with similar GDP per capita, while countries with relatively open immigration policies have higher.

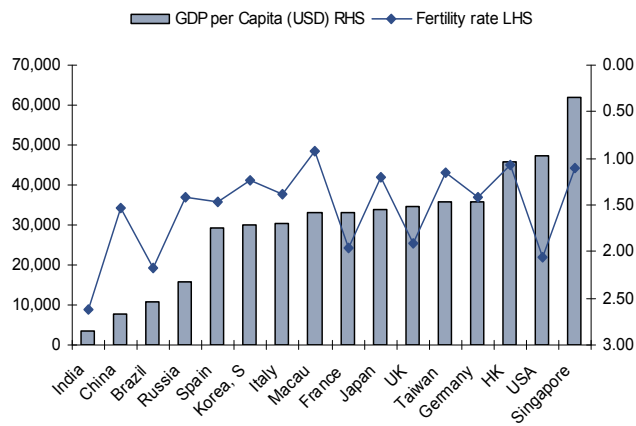
We see that, with similar GDP per capita, the Eastern-Asian Confucianism cultural cycle countries such as China, Taiwan, Hong Kong, Macau, Singapore and South Korea normally sit below the fitting line with lower fertility ratios, while countries with relatively open immigration policies such as the US, UK and France sit above the regression line with higher fertility ratios.

Figure 24. World – Population Aging Structure (2010)



Source: CIA, Citi Investment Research and Analysis

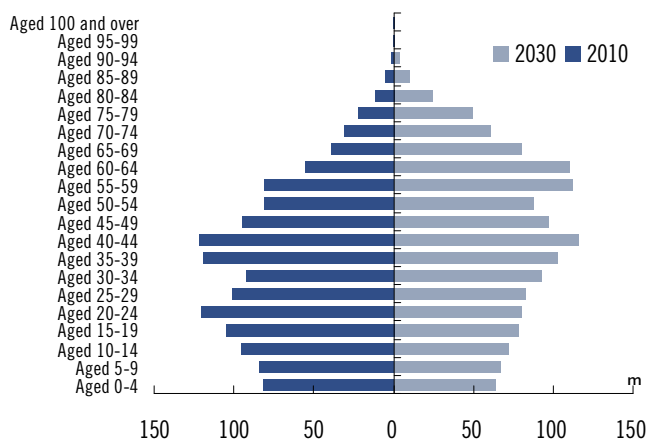
Figure 25. World – Fertility Rates and GDP per Capita (PPP)



Source: CIA, Citi Investment Research and Analysis

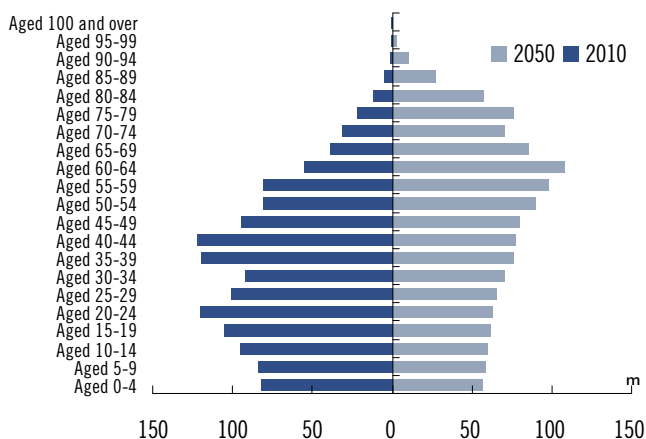
The One-Child Policy of China since 1980 has particularly accelerated the aging process of whole population. According to UN study, by 2030 the median age of Chinese will be between 40 and 44, and by 2050 it will be between 45 and 49.

Figure 26. China – Demographic Structure 2010 vs. 2030



Source: UN, Citi Investment Research and Analysis

Figure 27. China – Demographic Structure 2010 vs. 2050

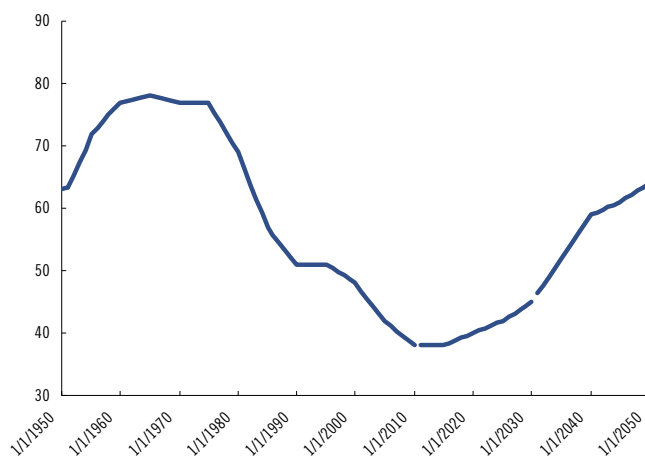


Source: UN, Citi Investment Research and Analysis

The dependency ratio, meaning the ratio of the population aged 0-14 and 65+ per hundred of the population aged 15-64, has declined from a peak of 78 in 1965, to bottom of 38 in 2010, and is expected to rebound to 64 by 2050. Previously the high dependency ratio was mainly due to the large amount of children, but going forward it's mainly due to increasing retired-aged population.

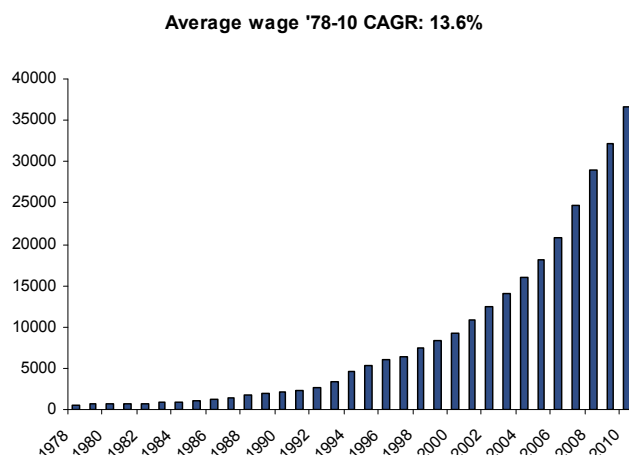
The average wage of China has been growing at CAGR of 14% since 1978, partly due to the GDP growth, and partly due to a decline in the labor supply/demand ratio, in our view.

Figure 28. China – Dependency Ratio (Ratio of population age 0-14 and 65+ per hundred population age 15-64)



Source: UN, Citi Investment Research and Analysis

Figure 29. China – Average wage (1978-2010) RMB/year



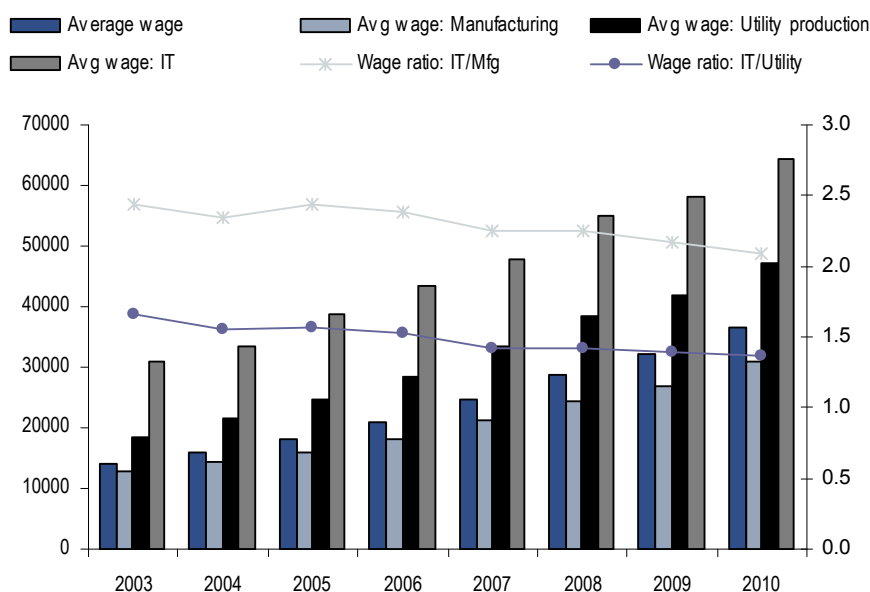
Source: CEIC, Citi Investment Research and Analysis

## Not all labor costs inflate the same way

However, not all labor costs inflate the same way. While the increasing income gap and rising Gini Index may give a perception that the labor cost for high-end talent inflates faster, the statistics shows the blue-collar labor cost inflates faster than white-collar costs. The chart below shows the average wage ratio of IT staff versus manufacturing has declined from 2.4 in 2003 to 2.1 in 2010, and the average wage ratio of IT staff versus utility staff has declined from 1.7 to 1.4 over the same time.

Relatively speaking, IT staff are becoming cheaper in China compared to manufacturing and utility staff.

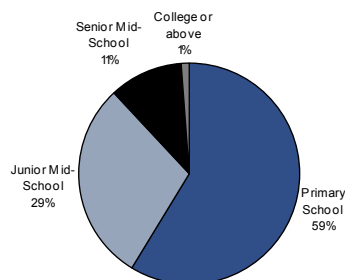
Figure 30. China – Average wage (RMB/year)



Source: CEIC, Citi Investment Research and Analysis

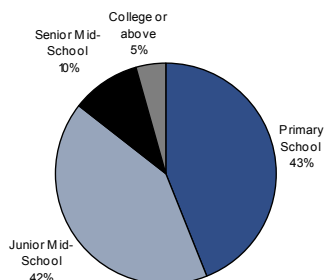
The main reason for the outperformance of blue collar labor versus white collar, in our view, is improvement in educational levels. The population with a college degree has risen from 1% in 1982, to 5% in 2000 and 10% in 2010.

Figure 31. China – Population education (1982)



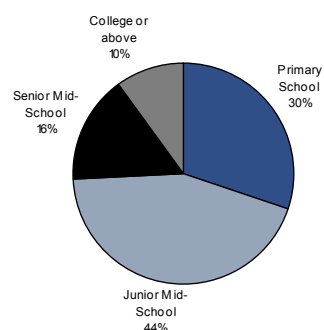
Source: CEIC, Citi Investment Research and Analysis

Figure 32. China – Population education (2000)



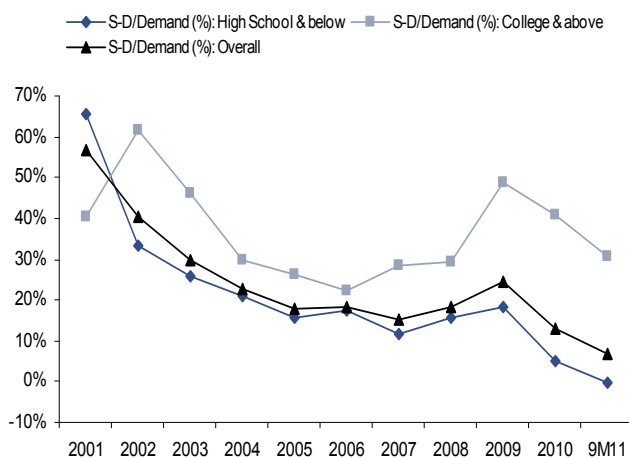
Source: CEIC, Citi Investment Research and Analysis

Figure 33. China – Population education (2010)



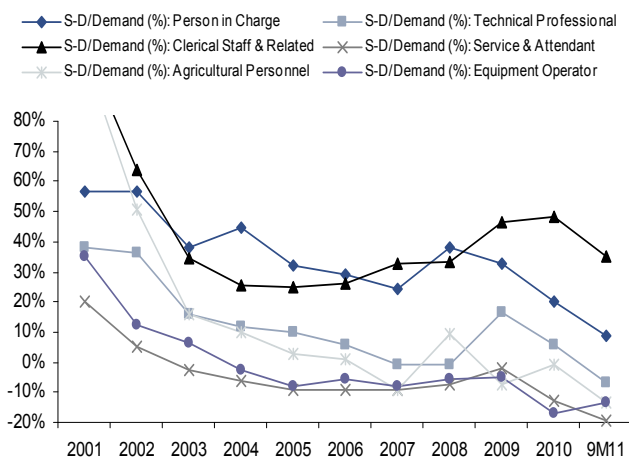
Source: CEIC, Citi Investment Research and Analysis

Figure 34. China – Labor oversupply by education



Source: CEIC, Citi Investment Research and Analysis

Figure 35. China – Labor oversupply by job nature



Source: CEIC, Citi Investment Research and Analysis

### Talent is getting cheap and labor getting expensive

According to CEIC data, the labor oversupply has declined dramatically during past ten years, from 57% in 2001 to 7% in 9M2011. While the labor market oversupply for jobs needing a high school education or below has declined from 66% in 2001 to 0% in 9M11, the oversupply for jobs with college or above has stayed at 31%, echoing media reports that university graduates are finding it increasingly difficult to find jobs.

### Equipment operators are in undersupply while there is an oversupply of clerks

By job nature, in 9M11 clerical staff and related shows highest oversupply of 35%, administrative personnel follows with 9%, while service and attendants show undersupply of 20%, followed by equipment operators, which shows 14% undersupply, according to CEIC data.

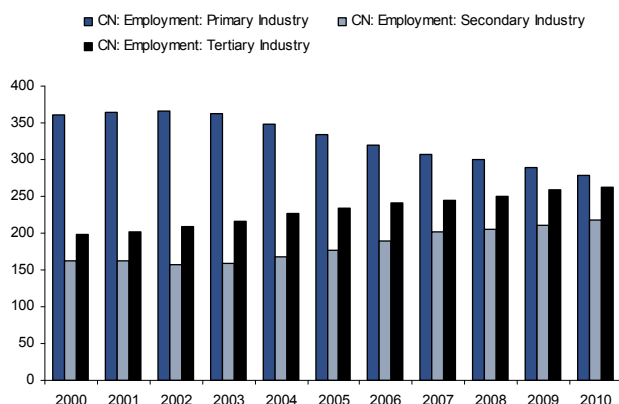
Wage inflation has continuously exceeded GDP per employment, increasing difficulties for labor-intensive industries

## Industrial automation becomes the only choice

From 1978 to 2010, the GDP per employment in secondary industry in China has been growing at a CAGR of 11.6%, and average wages growing at CAGR of 13.6%, only 2 percentage points higher. However, the cumulative effect is huge; if we measure the compounding effect, the GDP per employment on secondary industry of 2010 is 34 times that of 1978, but the average wage of 2010 is 59 times that of 1978.

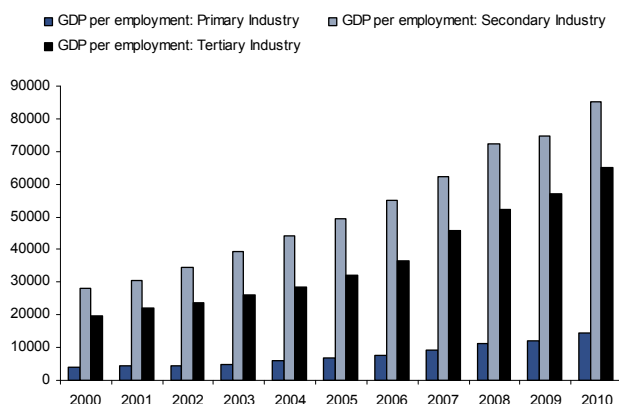
The gap between GDP per employment and average wage has even widened post year 2000. The '2000-10 CAGR of GDP per employment for secondary industry was 11.8%, but wages grew 14.6%. While the GDP per employment for secondary industry in 2010 is three times 2000's level, the average wage is four times higher. With wages rising ahead of working efficiency despite of continuous improving GDP per employment, the eventual solution for manufacturing can only be automation.

Figure 36. China – Employment of each industry (mn)



Source: CEIC, Citi Investment Research and Analysis

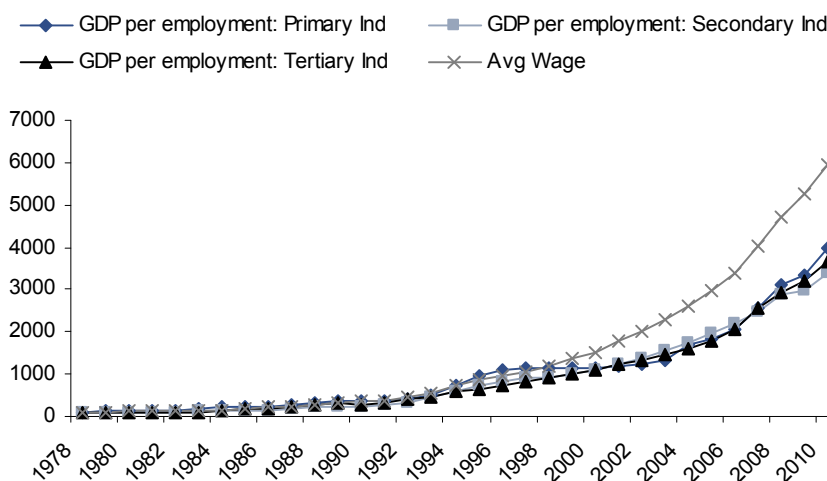
Figure 37. China – GDP per employment (RMB/year)



Source: CEIC, Citi Investment Research and Analysis

GDP per employment in secondary industry of 2010 is 34 times that of 1978, but average wages of 2010 is 59 times

Figure 38. China – GDP per employment vs. average wage (1978=100)



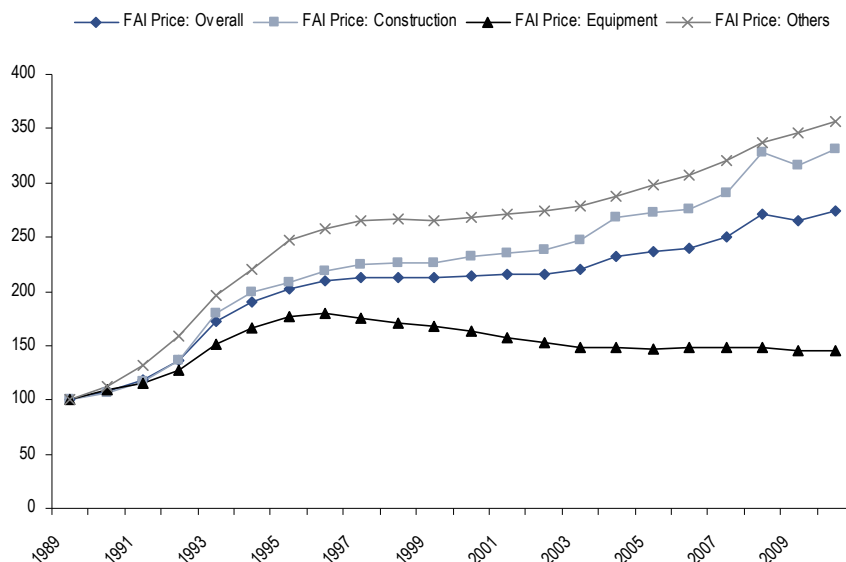
Source: CEIC, Citi Investment Research and Analysis

## What is the price change of equipment?

While labor cost is inflating, equipment prices in general are not. From the FAI Price Index provided by CEIC, the equipment price index has been steadily declining since 1996 while the construction price index has been continuously rising. As a result, the construction price of 2010 is 3.3 times of 1989 level, while equipment only 1.5 times. Compared to 1996 level, while construction is 52% more expensive, equipment is 19% cheaper. The main reason, in our view, is that while labor cost and material costs are rising, the equipment makers can absorb it by improving efficiency through product standardization and manufacturing automation, but the constructors cannot, due to customization needs, and the resource- and labor-intensive nature of construction activities using low-skill labor, and complex organizational structures.

Construction is getting more expensive as it is labor and resource-intensive, but equipment is getting cheaper due to scale economies and engineering knowledge accumulation.

Figure 39. China – Price index of construction and equipment



Source: CEIC Data Company Limited

Labor cost inflates at double-digit, while automation equipment price declining 5-8% every year.

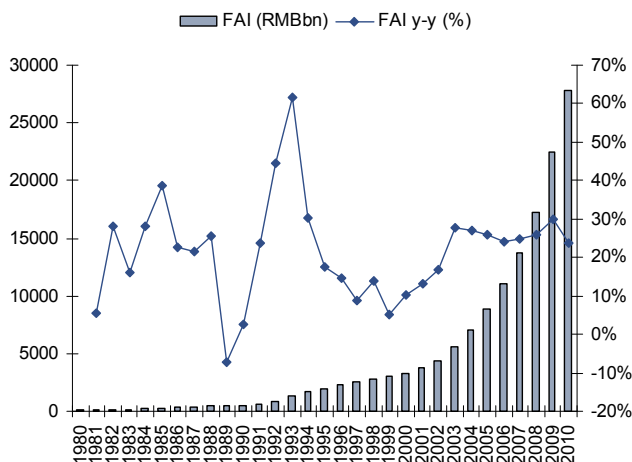
While labor costs are inflating, the price of automation equipment is declining every year at a rate of 5-8%, as per our channel check. However, with accumulation of engineering knowledge and standardization of a programming library, the profitability of automation companies is not really hurt. As per our discussion with Hollysys CEO Dr. Wang Changli, the automation products are now less than 1/3 of the cost 17 years ago when the company was founded, but the operating margin is better than at that time due to knowledge accumulation and scale economies.

## FAI – Where does it go?

**When infrastructure and property FAI slows down, where does the FAI go?**

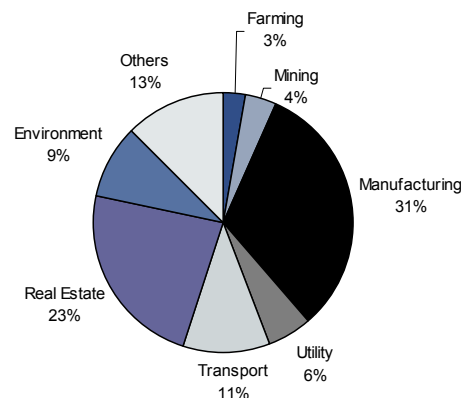
While the market is increasingly concerned about the slowdown of infrastructure and real estate fixed asset investment, the total FAI has still been growing fast at over 20% in recent years, and our economics team does not expect a sharp decline. By category, manufacturing is single largest segment of FAI, taking 31% of total FAI in 2010, real estate follows with 23% share and transport 11%. In the current macro environment, our economics team expects manufacturing FAI to outperform infrastructure and property FAI.

Figure 40. China – Fixed Asset Investment



Source: CEIC, Citi Investment Research and Analysis

Figure 41. China – FAI by category (2010)



Source: CEIC, Citi Investment Research and Analysis

## Capex in exchange of Opex

**More Capex for less Opex**

With continuous capital formation and an aging population, we believe the labor-intensive industries will be gradually replaced by capital-intensive and knowledge-intensive ones in China. With equipment prices declining and labor cost rising, we believe increased capital expenditure in manufacturing will be added to reduce the operating expenditure, particularly labor and fuel costs. The industrial automation sector is thus a key beneficiary of this big trend.

**Foxconn to rely more on robots; could use 1 million in three years.**  
---- Reuters, Aug 1, 2011

A concrete example is Taiwan's Foxconn Technology Group, known for assembling Apple's iPhones and iPads in China, which plans to use more robots, with one report saying the company will use one million of them in the next three years, to cope with rising labor costs. Foxconn's move highlights an increasing trend toward automation among Chinese companies as labor issues such as high-profile strikes and workers' suicides plague firms in sectors from autos to technology. Foxconn employs about 1.2 million workers, one million of which are based in mainland China, according to China Business News. Since last year, China has been struck by a series of labor-related issues, as heady economic growth fueled the need for wage increases.

## Automation products overview

### How does automation work? Eye/brain/hand

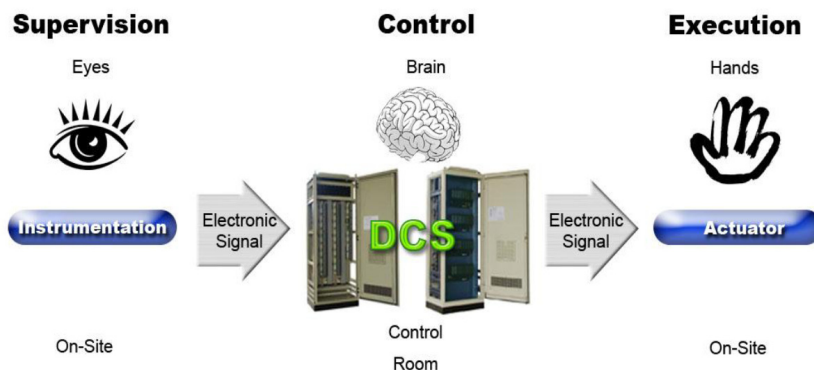
The automation process involves three steps: supervision, control and execution. Human beings use eyes to receive signal input, use brains to think and analyze, and use hands to execute. As a whole system, normally input is by instrumentation such as detectors or indicators, and then processed with DCS or PLC, and finally execution is done by actuators, such as valves or motors.

Supervision normally involves detectors and indicators.

Control is done by DCS or PLC.

Execution is by actuators such as valves, motors, switches and relays.

Figure 42. Eye / brain / hand



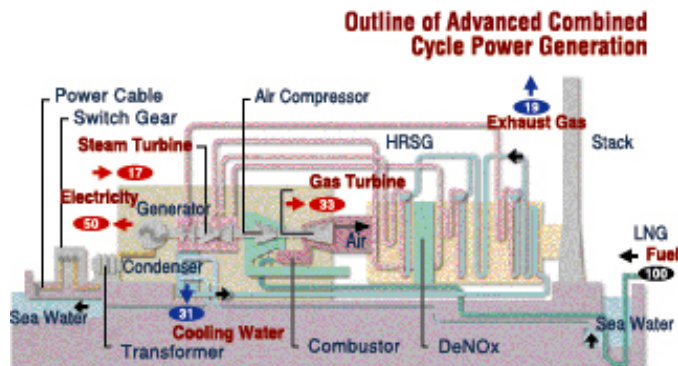
Source: Hollysys, Citi Investment Research and Analysis

### Brain part: DCS vs. PLC, process vs. discrete

Continuous process (electricity, oil, chemical, water, cement, etc.) vs. step-by-step discrete production (automobile, electronics, machineries, etc.)

In industrial productions, basically there are two ends of production types: one is continuous process such as power generation, chemical or petrochemical productions, pulp & paper production, cement production and water processing; the other end is discrete production that involves a lot of different steps to make a complicated item, such as automobile assembly, electronic devices production, machinery assembly, etc. The former is more to make "stuff" and the latter is more downstream to make "items".

Figure 43. Power Generation Process



Source: TEPCO, Citi Investment Research and Analysis

Figure 44. Automobile Assembly



Source: BMW, Citi Investment Research and Analysis

The major automation control devices for process and discrete automation are DCS and PLC respectively.

**DCS – First designed to replace operational amplifiers used in the chemical industry, now mainly used on continuous process control, such as power, chemical, water processing, cement, and so on.**

**PLC – First designed to replace large-scale relay circuits used in auto industry, now mainly used on discrete manufacturing controls such as auto, electronics, machinery, and so on.**

**DCS (Distributed Control System)** – A distributed control system (DCS) refers to a control system, usually of a manufacturing system, process or any kind of dynamic system, in which the controller elements are not central in location but distributed throughout the system, with each component sub-system controlled by one or more controllers. The entire system of controllers is connected by networks for communication and monitoring. DCS was first developed in the 1970s by a team of engineers within Honeywell, and was originally designed to replace operational amplifiers used in the chemical industry.

**PLC (Programmable Logic Controller)** – A programmable logic controller (PLC) is a digital computer used for automation of electromechanical processes, such as control of machinery on factory assembly lines, amusement rides, or light fixtures. PLCs are used in many industries and machines. Unlike general-purpose computers, the PLC is designed for multiple inputs and output arrangements, extended temperature ranges, immunity to electrical noise, and resistance to vibration and impact. Programs to control machine operations are typically stored in battery-backed-up or non-volatile memory. A PLC is an example of a hard real-time system since output results must be produced in response to input conditions within a bounded time, otherwise unintended operation will result. PLC was first developed in the 1970s to replace the large-scale relay circuits used in the US auto industry.

Figure 45. Comparison between DCS & PLC

	DCS	PLC
Application	Control and monitor over small areas e.g. a process unit	Over large geographical areas
Scale	Large, extensive applications with many control and data transfer analog control processing	Small medium-sized applications with majority open/close control
Signalling	Direct control, output directly to field actuators	Send set points to local controllers
Vendor	Single vendor solution	With third party hardware and software
Focused industry	Process industry - Power, chemical, oil, paper, water processing, cement, and etc.	Discrete production industry - Auto, electronics, machineries, and etc.
Interaction	Inter-related continuous complex processes	Batch processing with low level of process interaction
Storages	Application stored on one database	Application data are divided over several databases
Speed	Fast with complex control	Fast when used in logical application
Predictability	Predictable, real time	Not completely predictable
Control points	Handle many controls	Limited number of controls
Pricing	Expensive hardware but engineering is comparatively cheaper	Hardware cheaper than DCS but engineering is expensive

Source: Citi Investment Research and Analysis

Figure 46. Illustration of DCS



Source: Company Reports

Figure 47. Illustration of PLC



Source: Company Reports

## Intermigration of DCS and PLC

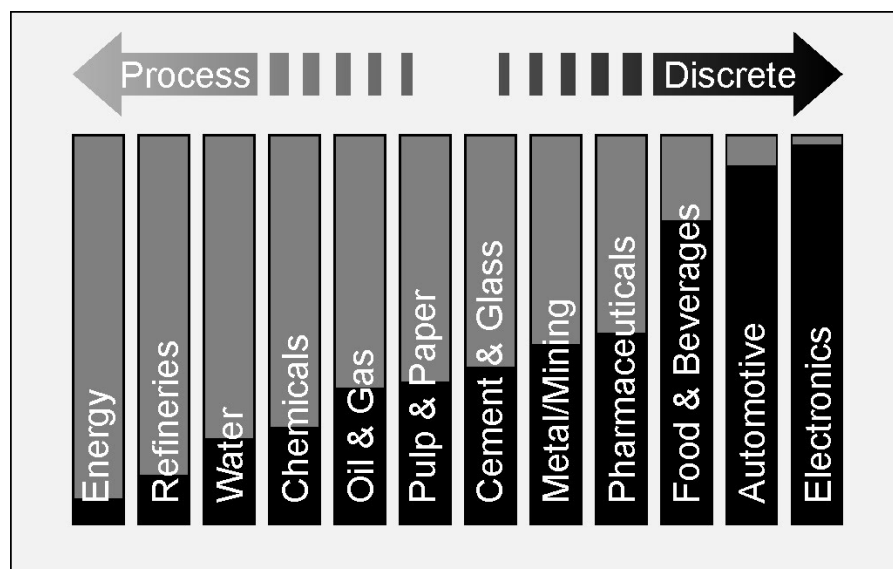
As technology develops, DCS and PLC are absorbing the strengths of each other and the barriers between DCS and PLC are becoming less defined. Due to pricing strength, PLC is replacing some small-scale DCS applications. And DCS hardware is becoming more and more affordable, holding its own ground.

Some industries are sitting in between or have a combination of process production and discrete production, such as food & beverage, and pharmaceuticals. In these industries, the productions mainly involve two stages: 1) process, such as cooking of food, producing beverages, or boiling of pharmaceuticals; 2) discrete, such as packaging of food and beverage and so on. In these areas, a combination of two systems is becoming more common.

Some control systems now combine DCS and PLC technologies into a hybrid controller suitable for medium-to-large scale processes and discrete project applications. These bring together the performance usually found within a discrete control in a PLC and the redundancy and reliability aspects within DCS process control. The result is a hybrid control solution applicable for the mid-to-large scale project at reasonable pricing without compromising reliability, performance, and safety.

Some control systems now combine DCS and PLC technologies into a hybrid controller suitable for medium-to-large scale processes and discrete project applications. These bring together the performance usually found within a discrete control in a PLC and the redundancy and reliability aspects within DCS process control. The result is a hybrid control solution applicable for the mid-to-large scale project at reasonable pricing without compromising reliability, performance, and safety.

Figure 48. Process vs. Discrete Automation



Source: Siemens, Citi Investment Research and Analysis

## Threat from PC-based soft PLC

We have a few embedded PC's/SoftPLC's and getting a call at 4am telling you they have a system32.dll error is not my way of starting bright and early.

---- Comments on plctalk.net (2009)

The threat from industrial personal computer (IPC), and of soft PLC, has been discussed for years. PCs have a large consumer basis and thus have lower average cost, lower prices and have much faster evolution than either DCS or PLC. While some industrial participants have been predicting soft PLC will supersede PLC like PLC replaced relay circuits 30 years ago, this has not occurred. The key shortcoming of PC-based soft PLC is on its reliability, which has not improved too much over years. Also, some PLCs are embedded in machineries and PCs are obviously too big to be fixed in. Therefore we do not see serious threat from soft PLC to this industry.

## The China market for DCS and PLC

The customers of DCS are mainly end users, such as power plants, chemical factories, oil refineries companies, water processing factories, and cement makers. Customers of PLC include both equipment users and equipment makers, and the latter is mainly on OEM basis.

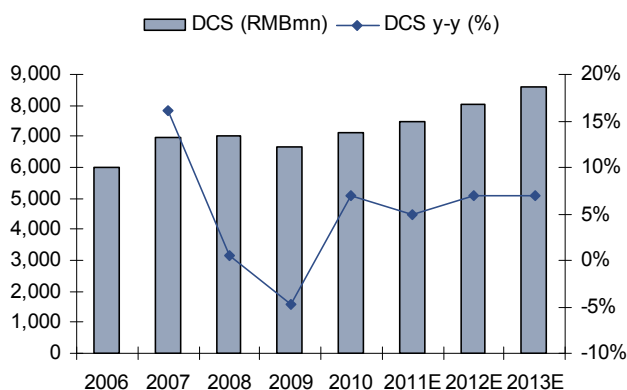
**Market size: DCS was bigger, but PLC will be.**

The market size of DCS or PLC in China was about US\$1bn each. Relatively speaking, the DCS market was slightly bigger than PLC during past a few years but PLC was growing at a faster pace than DCS. The main reason for the relatively stagnant growth of DCS was mainly the decline of new thermo power capacity added in recent years, partially offset by increasing capacity added in the chemical and petrochemical industries, building materials including cement and glass, municipal projects including urban heat supply, water processing, as well as new energies including waste-heat recycling and rubbish-burning power generation. The DCS market in China was growing at a CAGR of 4.4% in 2006-10. Considering some replacement and upgrade needs for power generation capacity added in early '00s as the DCS life cycle is around ten years, we are expecting 7% annual growth for this market in the next two years.

**We expect 7% annual growth rate for DCS market and 15% for the PLC market in next two years.**

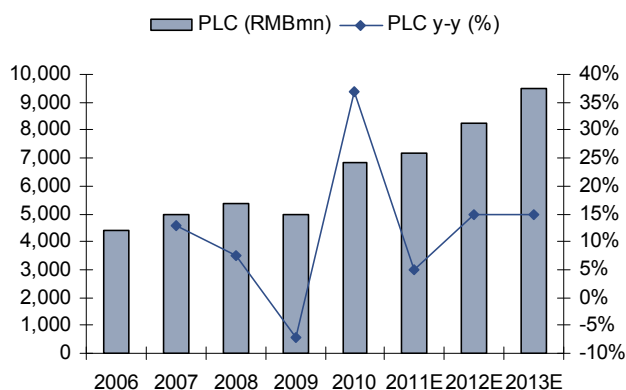
The brighter growth prospect is on PLC market, as we believe the labor shortage and wage inflation will urge manufacturing industry to go for automation. The downstream machinery makers and electronics companies in China are still highly reliant on manual work and a lot of the production lines are still constructed with relays and simple logic circuits, which creates huge potential demand for PLC products. Our economic team also found many small and medium enterprises cannot take the inflation in wages and want to switch to automation. These companies include diversified machinery and parts makers. Bearing this in mind, while the 2006-09 CAGR for China PLC market was 11.5%, we expect 15% annual growth for PLC market in next two years.

Figure 49. China – DCS Market Size (RMBmn)



Source: Gongkong, CIRA estimates

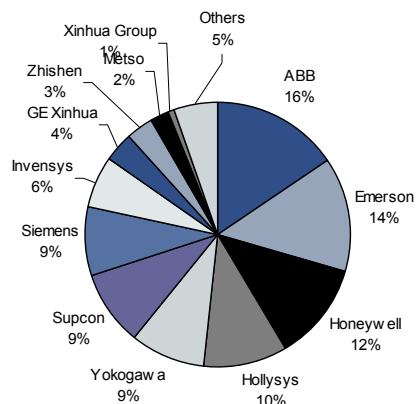
Figure 50. China – PLC Market Size (RMBmn)



Source: JLCK, CIRA estimates

Based on industrial consulting firm MIR's data, we estimate power generation takes 32% of DCS demand by value, followed by 29% from chemical and 14% from petrochemical. Paper & pulp, building materials, municipal projects, metallurgic and others should take around 5% each. ABB is currently the biggest player with 16% market share, followed by Emerson (14%), Honeywell (12%), Hollysys (10%), Yokogawa (9%), Supcon (9%), Siemens (9%), Invensys (6%) and GE Xinhua (4%).

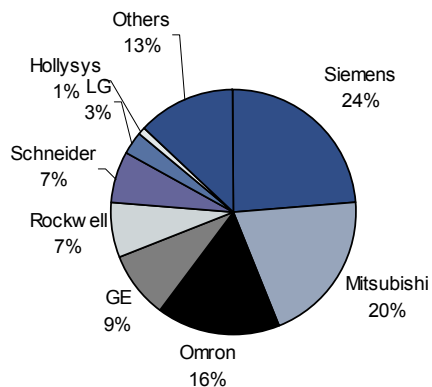
**Figure 52. China – DCS market share by players (2009)**



Source: MIR, Citi Investment Research and Analysis

PLC, on the other hand, has a more diversified end demand across manufacturing, with market leaders including Siemens, Mitsubishi, Omron, GE, Rockwell and Schneider, according to industry website JLCK.

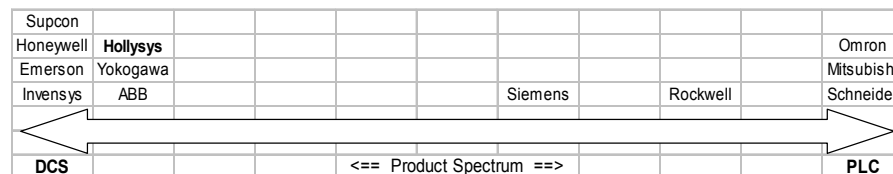
**Figure 54. China – PLC market share by players (2009)**



Source: JLCK, Citi Investment Research and Analysis

### Mixed players: Siemens and Rockwell

**Figure 55. Global players – Product Spectrum**



Source: Citi Investment Research and Analysis

## Competition in industrial automation

### Fighting vs Farming: the importance of installed base

Automation is a relatively sticky market,  
as track record is a key consideration.

One of the key considerations in choosing automation system suppliers is track record. Customers usually prefer existing suppliers if they are already using similar products without too much trouble. There are several reasons for this tendency:

- System operators are usually reluctant to learn a new interface provided by the second supplier. Training cost and learning curves are barriers for new entrants to grab market share from existing players.
- Users are usually more willing to take the monetary cost rather than risk of system failure. The automation controls system usually represents only a low single digit proportion of the whole plant equipment, but risk of failure is too high to bear.

Power: Siemens & ABB;  
Chemical & Petrochem: Honeywell &  
Yokogawa;  
Paper & Pulp: Metso...

Meanwhile, for newly built plants, the customers also want to see the track record of the automation system suppliers, particularly in same industry. For example, when a new large power plant (say, 1GMW) is under construction, electric giants such as Siemens and ABB would have strengths with their past experience and ability to provide a full range of products needed. Similarly, when a chemical plant or petrochemical refinery is under construction, Honeywell and Yokogawa would automatically have advantages. The Finland background paper making equipment supplier Metso has strengths in the Paper and Pulp industry.

Hollysys: switched from thermo power  
players to full-scale supplier

Hollysys has historically enjoyed a dominant market share in small-scale (300MW and below) thermo power plants in China. At peak levels, it took over 50% of domestic 300MW and below thermo power plant market share, and thermo power takes over 75% of its industrial automation revenue. However, it changed strategy starting from about two years ago in expectation of the slowing down of new thermo power capacity additions, switching from being a thermo power player to a full-scale automation products supplier. To avoid direct competition within the strongest players in traditional application fields, it has made significant in-roads into emerging industries, such as municipal projects including urban heat supply and water processing, waste-heat recycling, rubbish-burning power generation, building materials production including cement and glass, as well as other industries including metallurgy and paper.

Invensys in China exposed to Petrochem  
safety control. Supcon to Chemical &  
Petrochem

Similar full-scale product suppliers include Invensys, who entered a lot of industries previously through M&A activity, but more the important exposure of Invensys in China is in petrochemical critical and safety control products and, it hopes, railway signaling systems as well. Another important Chinese player, Supcon, has strength in Chemicals and Petrochem with its industry background.

“Fighting” means user-base expansion,  
“Farming” means providing more service  
to each customer.

After discussion with the CEO and founder, Dr. Wang Changli, we believe Hollysys is still in the installed-base expansion stage, which it considers to be like “fighting for more land”. Over the long run, the focus would be gradually shifted to “farming on the land”, which means providing more services to the existing customer base, including further customization and more prompt upgrades. We believe the nature of the industry provides long-term growth opportunities to Hollysys, similar to the user-base expansion and ARPU enhancement story in TMT industry.

In the PLC market, generally European and US firms have taken the large-size market and Japanese firms are more present in the small-size market. Hollysys is still a relatively small player here but we think huge potential lies there.

**Figure 56. China – PLC competitive strength by players**

	Large-size	Middle-size	Small-size
Siemens	000	000	000
Mitsubishi	0	00	000
Omron	0	00	000
GE	00	00	0
Rockwell	000	0	0
Schneider	000	0	0
LG	0	0	0
<b>Hollysys</b>	<b>0</b>	<b>0</b>	<b>0</b>

Source: JLCK, Citi Investment Research and Analysis

**Figure 57. China – DCS competitive strengths by players**

	Power	Chemical	Petrochem	Paper & Pulp	Bldg Mat	Municipal	Metallurgic
ABB	000	0	00	000	000	00	00
Emerson	000	00	000	0	0	0	0
Honeywell	0	000	000	00	0	0	00
<b>Hollysys</b>	<b>00</b>	<b>00</b>	<b>00</b>	<b>0</b>	<b>00</b>	<b>000</b>	<b>0</b>
Yokogawa	0	00	000	0	0	00	00
Supcon	0	000	00	00	0	0	0
Siemens	000	0	00	00	00	0	00
Invensys	00	0	00	0	0	0	0
GE Xinhua	00	0					
Zhishen	00	0				0	
Metso	0	0		000			
Xinhua Group		0		0	0		0

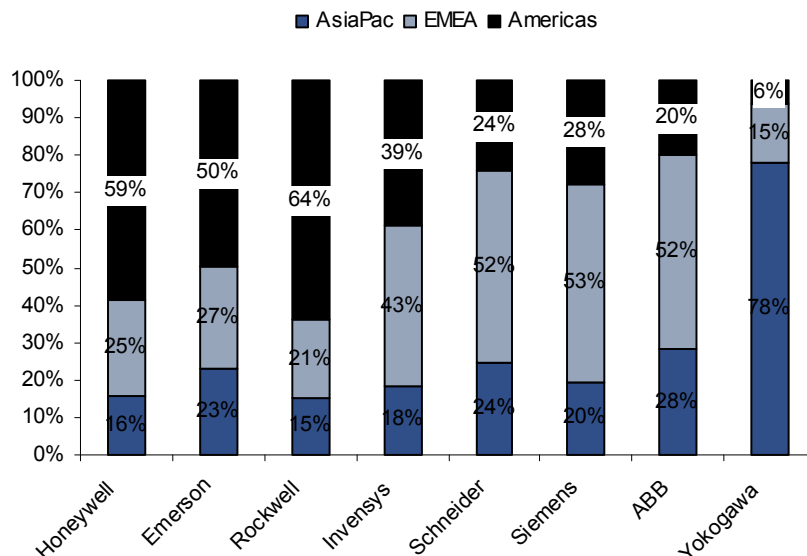
Source: MIR, Citi Investment Research and Analysis

**The automation market shows locality due to cultural ties and relationships with customers.**

## Cultural ties with users and service adequacy

The cultural side and relationship with customers is another important reason for choosing one supplier over another. The supplier's engineers usually work closely with the customer's counterparts for months on installation, test-running and optimization of the processes. Therefore, we could see some localities in this market. US firms, including Honeywell, Emerson and Rockwell all derive over 50% revenue from the Americas and only 20%+ from Europe. European firms like Schneider, Siemens and ABB have over 50% revenue from EMEA and only 20%+ from Americas. Japanese firm Yokogawa has 78% revenue from AsiaPac. The only exception is Invensys, which has balanced revenue from Europe and Americas as it previously acquired some subsidiaries in the US. Hollysys so far has minimal revenue outside of China, but hopefully some breakthrough could be made in ASEAN and the Middle East after its recent acquisition of Concord.

**Figure 58. Global Automation Players – Revenue breakdown by region (2010)**



Source: Company Reports

We believe locality and cultural ties are positive for Chinese makers like Hollysys. Starting from summer of 2010, Hollysys has been investing heavily in building a nation-wide distribution network.

Figure 59. Hollysys – Exposure of Distribution Network



Source: Company Reports

Figure 60. Hollysys – Sales offices in China

Region	Offices
Northeast	Shenyang, Jilin, Harbin
North	Zhengzhou, Shijiazhuang, Tangshan, Taiyuan, Luohe, Tongliao, Hohhot
Northwest	Xi'an, Urumqi, Lanzhou, Yinchuan, Jiayuguan, Yulin, Jinchang, Shihezi, Gomud
East	Jinan, Qingdao, Hefei, Xuzhou, Quzhou, Jining, Weifang, Binzhou
Southeast	Hangzhou, Nanjing, Yancheng, Fuzhou
Central	Wuhan, Yichang, Changsha, Nanchang
South	Guangzhou, Nanning, Haikou
Southwest	Chengdu, Chongqing, Kunming, Guiyang

Source: Company Reports

**Fast response to clients' issues is critical, and Hollysys has strength due to the closer proximity of engineers.**

The response time to issues and malfunctions is important as well for this industry. The costs of suspending production line are huge, especially for continuous process production lines, such as in the chemical and refinery industries. So whenever the system breaks down or shows error signals, the response time of the suppliers' service team is critical. Hollysys has strength in this due to the closer physical proximity of their engineers. The internal rule of them is to respond within 30 minutes for repair request by phone or fax, and to finish self-made hardware repairs by three working days. For the same province users, the service team could physically reach the clients' sites in 24 hours.

**Closer ties enable better understanding of clients' needs and thus leads to more customization work.**

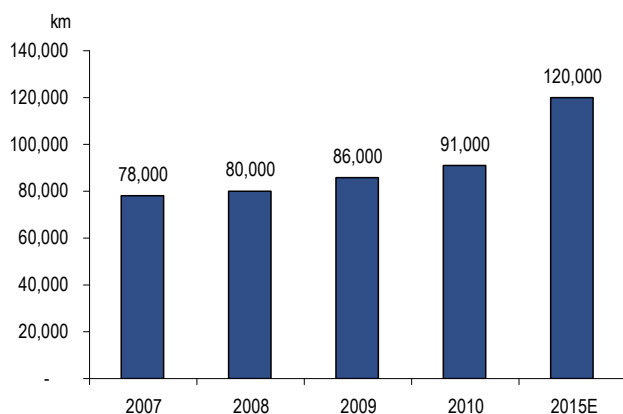
Another strength of closer ties with clients is that engineers can understand users' needs better and provide feedback to the R&D team. Therefore, more customization work could be done to fit the exact needs of clients. Such feedback is actually treasured by the R&D team, and helps it build its knowledge library for different industries.

# Rail Transport Market

## High-Speed Rail & Metro plan of China

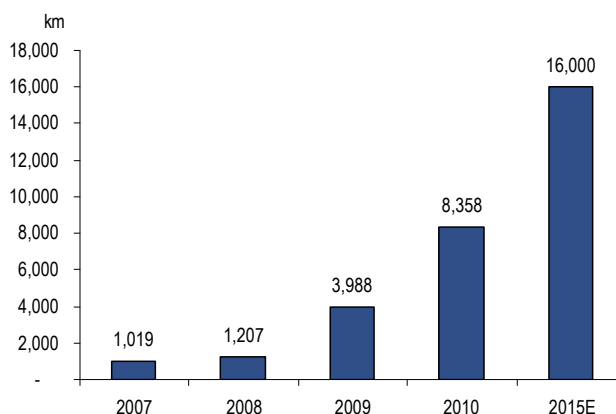
By 2015, China is expected to have a railway length of 120,000 kilometers, from 91,000 kilometers in 2010. The high-speed railway length target is 16,000 kilometers by 2015, from 8,358km in 2010.

Figure 61. China – Total Railway Length (km)



Source: Citi Investment Research and Analysis

Figure 62. China – High-speed Railway Length (km)

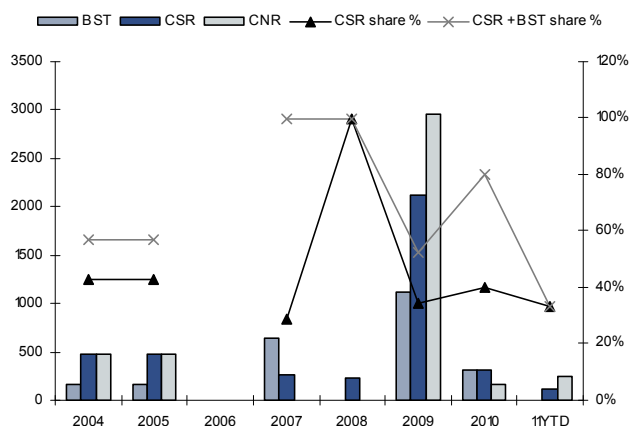


Source: Citi Investment Research and Analysis

The MoR has currently given total orders of over 10,000 high-speed multiple-unit trains, and close to 1,000 trains mixed with 8-carriage standard units and 16-carriage long units.

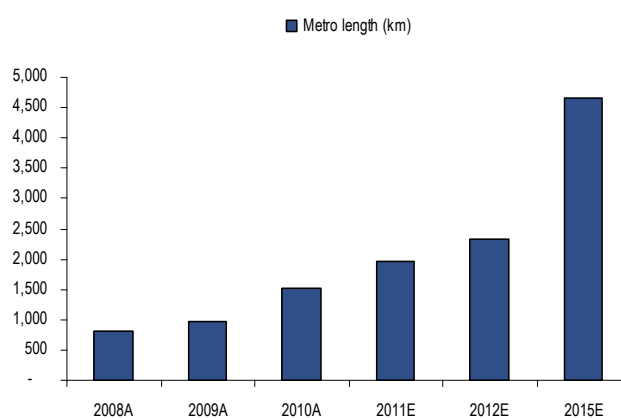
The total length of the urban rapid transit railways was close to 1,500km by 2010, but according to plans of local governments, the target cumulative length is 4,600km by 2015, implying 3,000km of newly-added lines during these five years. Considering the different execution power and financial competence of different cities, we believe the total length could still reach 4,000km by 2015.

Figure 63. China – Historical MU orders (Carriages)



Source: Citi Investment Research and Analysis

Figure 64. China – Total Metro Length (km)

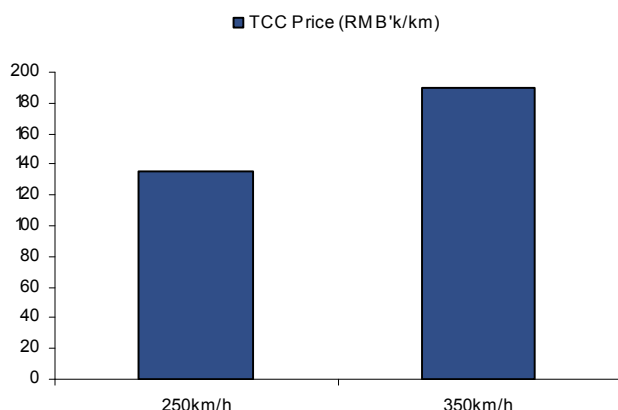


Source: Citi Investment Research and Analysis

The high-speed railways are equipped with Train Control Center (TCC). As per our discussion with industry professionals, one set of TCC needs to be put in for every 15-20km length of railways and the selling price is about RMB3mn per set. This means the TCC cost per kilometer of high-speed railways on average is about RMB150-200K. Based on the announced orders Hollysys received, we calculate the average cost on TCC per kilometer of high-speed railway is about RMB135K for 250km/h and RMB190K for 350km/h.

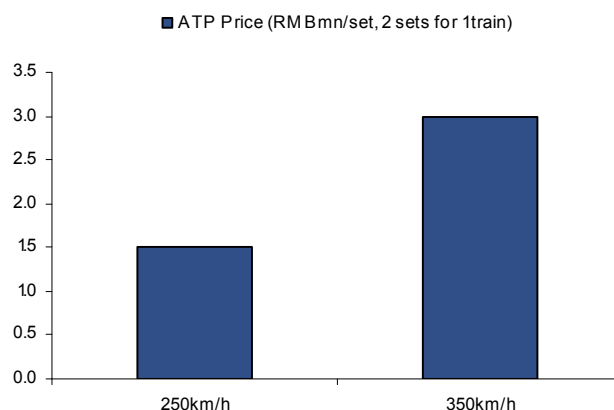
The high-speed trains are equipped with Automatic Train Protection (ATP). Our check shows that each train, 8-carriage standard or 16-carriage-long units, has two sets of ATP installed at both ends. The selling price of 250km/h ATP is about RMB1.5mn per set, while for 350km/h ones the price is about RMB3mn per set.

Figure 65. TCC – Average price per kilometer railway (RMB'000)



Source: Company Reports and CIRA Estimates

Figure 66. ATP – Average price per set (RMBmn) 2 sets for one train



Source: Company Reports and CIRA Estimates

Based on MoR's plan and recent news on reducing the construction standard from 350km/h to 250km/h for some high-speed lines in western China, by the end of 2015, the 350km/h length will represent about 40% and 200-250km/h length will take 60%.

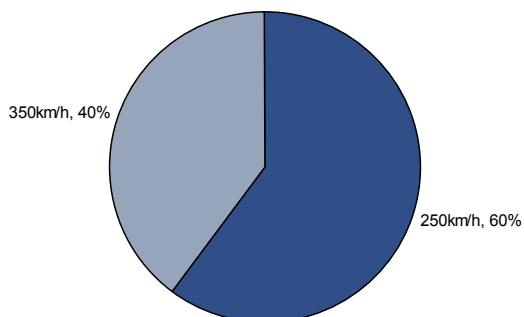
**Nowadays 25-30% of trains on 350km/h lines are 250km/h trains.**

Based on the train schedules at the opening of Beijing – Shanghai line, we estimate 25% of the trains put on line were 250km/h ones and 75% were 350km/h ones. After the call-back of CRH380B trains and addition of some CRH380A trains in August, we estimate about 30% train in use were 250km/h ones. Based on this assumption, we estimate as at end of 2015, when 350km/h railways take 40% length, 30% of the high-speed train owned will be 350km/h ones and 70% 250km/h ones.

**Eventual ownership may be 30% 350km/h trains and 70% 250km/h trains.**

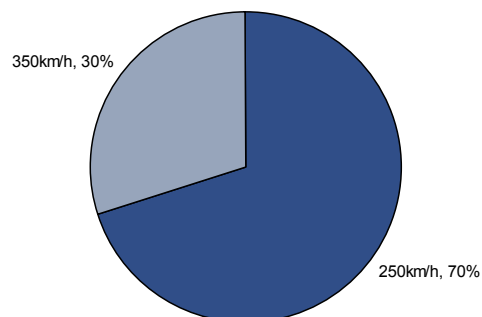
Previously the orders of trains were biased to 350km/h ones, we believe the reasons include 1) MoR encourages train makers to develop the CRH380 trains and organize production accordingly; 2) 350km/h trains need more preparation time for production due to their complexity and component supply issues; 3) previously on 350km/h lines only 350km/h trains were operating; and 4) former Railway Minister Mr. Liu Zhijun prefers higher speed ones. After the mixed-speed plan announced by new minister Mr. Sheng Guangzu in Apr. 2011, some 250km/h trains were also put on 350km/h lines, and thus we believe new orders will be more biased to 250km/h ones.

Figure 67. High-speed Railway Length by Speed Standard by 2015



Source: Citi Investment Research and Analysis

Figure 68. High-speed Trains Ownership by Speed Standard by 2015



Source: Citi Investment Research and Analysis

Figure 69. ATP – Unit price and as % of train cost

	ATP Unit Price (RMBmn/set, 2 sets for 1 train)	Standard-unit Train Price (RMBmn)	Long-unit Train Price (RMBmn)	% share in Standard- unit	% share in Long-unit
250km/h standard	1.5	128	256	2.3%	1.2%
350km/h standard	3.0	192	384	3.1%	1.6%

Source: Company Reports and CIRA Estimates

Figure 70. TCC – Contract price and implied cost per km

	Speed level	Amount (US\$mn)	Amount (RMBmn)	Length (km)	Amount/km (US\$'k)	Amount/km (RMB'k)
Beijing-Shijiazhuang-Wuhan	350km/h	33.6	223.8	1200	28.0	186.5
Qinhuangdao-Shenyang	350km/h	11.8	79.5	404	29.2	196.8
Hankou-Yichang	250km/h	5.6	38.2	282	19.9	135.5
Xiamen-Shenzhen	250km/h	2.9	19.6	144	20.1	136.1

Source: Company Reports

Figure 71. China HSR – “4-verticals & 4-horizontals”

From	To	Speed (km/hr)	Length (km)	Duration (hr)	Commencement	
Beijing	Shanghai	350	1318	4.0	Jun-2011	Vertical
Beijing	Shijiazhuang	350	281	1.0	Dec-2011	
Shijiazhuang	Wuhan	350	841	2.5	Dec-2011	
Wuhan	Guangzhou	350	995	3.0	Dec-2009	
Guangzhou	Shenzhen	350	105	0.5	May-2011	
Shenzhen	Hong Kong	200	26	0.1	2014	
Beijing	Shenyang	350	684	2.0	2012	
Shenyang	Dalian	350	400	1.5	Oct-2011	
Dalian	Harbin	350	904	2.5	Oct-11	
Shanghai	Hangzhou	350	158	0.5	Oct-2010	
Hangzhou	Ningbo	350	150	0.5	Dec-2011	
Ningbo	Wenzhou	200	268	1.5	Sep-2009	
Wenzhou	Fuzhou	200	298	1.5	Sep-2009	
Fuzhou	Xiamen	200	273	1.5	Apr-2010	
Xiamen	Shenzhen	200	502	2.5	Jun-2012	
Xuzhou	Zhenzhou	350	362	1.0	Dec-2012	Horizontal
Zhenzhou	Xi'an	350	485	1.5	Oct-2009	
Xi'an	Baoji	350	138	0.5	2012	
Baoji	Lanzhou	250	401	1.5	2012	
Hangzhou	Changsha	250	927	4.0	Jul-2013	
Changsha	Kunmin	250	1175	5.0	Jul-2013	
Shijiazhuang	Taiyuan	250	190	0.8	Apr-2009	
Qingdao	Jinan	250	363	1.5	Dec-2008	
Jinan	Shijiazhuang	250	319	1.5	Dec-2012	
Nanjing	Hefei	250	166	1.0	Apr-2008	
Hefei	Wuhan	250	359	1.5	Dec-2008	
Wuhan	Yichang	200	291	1.5	2012	
Yichang	Chongqin	200	277	1.5	Apr-2010	
Chongqing	Lichuan	200	264	1.5	2012	
Chongqing	Chengdu	350	302	1.0	2014	

Source: MoR, Citi Investment Research and Analysis

Figure 72. China – Metro planned length by cities (km)

Length by city (km)	2005A	2008A	2009A	2010A	2011E	2012E	2015E	2020E
Shanghai	106	263	343	415	517	605	615	1,172
Beijing	115	200	228	336	389	516	700	1,000
Guangzhou	37	117	150	236	243	313	504	677
Shenzhen	22	22	22	99	179	179	356	597
Tianjin	26	71	79	130	130	130	218	470
Chongqing	19	19	19	24	76	120	200	354
Nanjing	22	22	22	85	85	85	280	380
Wuhan	10	10	29	29	58	74	147	238
Hangzhou	-	-	-	-	52	52	134	285
Dalian	-	49	49	49	49	49	122	193
Changchun	-	31	31	52	52	52	94	257
Shenyang	-	-	-	28	47	47	122	189
Chengdu	-	-	-	16	16	39	147	292
Suzhou	-	-	-	-	26	26	117	180
Harbin	-	-	-	-	-	14	14	46
Ningbo	-	-	-	-	-	-	72	248
Hefei	-	-	-	-	-	-	56	181
Zhengzhou	-	-	-	-	-	-	45	96
Foshan	-	-	-	19	19	19	79	128
Xiamen	-	-	-	-	-	-	-	97
Xi'an	-	-	-	-	21	21	88	117
Qingdao	-	-	-	-	-	-	28	87
Kunming	-	-	-	-	-	-	42	162
Dongguan	-	-	-	-	-	-	59	122
Wuxi	-	-	-	-	-	-	56	100
Nanchang	-	-	-	-	-	-	35	70
Fuzhou	-	-	-	-	-	-	29	55
Changsha	-	-	-	-	-	-	61	116
Urumqi	-	-	-	-	-	-	24	53
Nanning	-	-	-	-	-	-	52	93
Guiyang	-	-	-	-	-	-	56	139
Changzhou	-	-	-	-	-	-	-	54
Taiyuan	-	-	-	-	-	-	49	116
Lanzhou	-	-	-	-	-	-	23	37
Quanzhou	-	-	-	-	-	-	-	73
Wenzhou	-	-	-	-	-	-	-	80
Xuzhou	-	-	-	-	-	-	32	100
Shijiazhuang	-	-	-	-	-	-	18	54
<b>Total</b>	<b>357</b>	<b>804</b>	<b>972</b>	<b>1,518</b>	<b>1,959</b>	<b>2,341</b>	<b>4,673</b>	<b>8,707</b>

Source: Citi Investment Research and Analysis

## On track vs on train, replace or not?

Cycle stage and replacement demand are two important factors to consider on railway industry value chain

The train makers are usually trading at a higher P/E than railway constructors, mainly due to the later cycle effect of revenue contribution and replacement demand. It should be noted that the on-track railway signaling systems are usually installed at the late stage of railway construction, and have a replacement or upgrade needs every ten years, and on-train signaling system like ATP follows train manufacturing and also has replacement demand. Therefore, in terms of peaking in the cycle, we believe railway construction comes the earliest, followed by signaling installation, and finally a gradual ramping up of train density after the opening of new lines. In terms of replacement demand, it hardly exists for railway constructors, but exists for both train makers and signaling systems, though electric components need to be replaced every ten years, while a train's lifespan is 25 years.

Figure 73. Comparison of Railway Constructor & Equipment makers

	Listing players	Peaking cycle	Positive?	Replacement cycle	Positive?	Deserved P/E
Railway constructors	CRG, CRCC	Early	X	No	X	Low
Railway signaling providers	CRSC, Hollysys, CARS, CASCO	Middle	--	~10 years	V	Middle
Rolling-stock manufacturers	CSR, CNR, BST	Late	V	~25 years	--	Middle
Train components makers	CSR Times, Midas, Jinxi Axle	Late	V	10-25 years	V	High

Source: Citi Investment Research and Analysis

## Competitive landscape of the signaling market

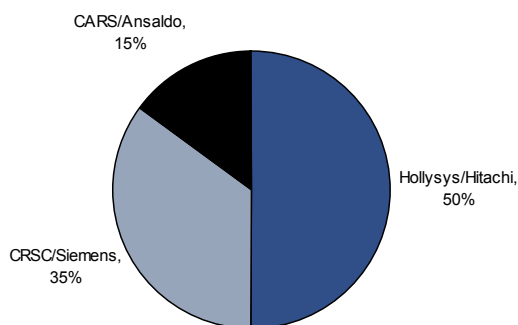
In China's CTCS-2, or 250km/h ATP market, Hollysys in partnership with Hitachi takes around 50% market share by installed base, followed by China Railway Signaling and Communication Corporation (CRSC) partnering with Siemens (~35%) and China Academy of Railway Science (CARS) partnering with Italian company Ansaldo.

In the CTCS-3 or 350km/h market, however, CRSC partnering with Bombardier takes about 70% market share, while Hollysys partnering with both Hitachi and Ansaldo takes the remaining 30% share.

In 2010, CSR has partnered with Invensys hoping to enter the railway signaling system market, but so far we have not yet seen any significant progress in orders or production.

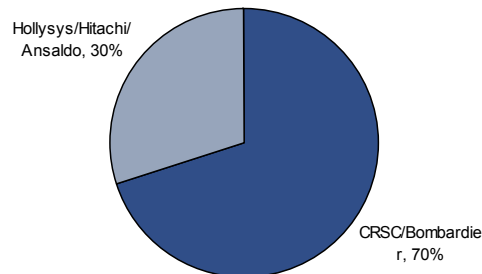
The lowering of some construction standards from 350km/h to 250km/h could be incrementally positive for Hollysys due to its higher market share in the 250km/h market.

Figure 74. China – 200-250km/h HSR Signaling Market share



Source: Company Reports and CIRA Estimates

Figure 75. China – 300-350km/h HSR Signaling Market share



Source: Company Reports and CIRA Estimates

**Hollysys claims its products were working properly at the moment of the crash**

**Well-trained railway operators could have avoided the tragedy**

**On-train ATP and on-track TCC communicate with each other to form a signaling system**

## Recent accident and its implications

The July Wenzhou train accident has caused a panic sell-off of Chinese railway stocks. While the formal investigation report has not yet been published by the government, we have seen continuous news on the causes. The signaling system consists of ATP on trains and TCC on tracks. The ATPs of both crashing trains were made by Hollysys and the TCC on Ningbo-Wenzhou line were made by China Railway Signaling and Communication Corp (CRSC). Two days after the crash, Hollysys made an announcement stating its ATPs were free of malfunction at the time of the crash, based on the data it collected from the railway operator. Four days after the crash, CRSC issued letter of apology on its website saying it was willing to be undergo investigation.

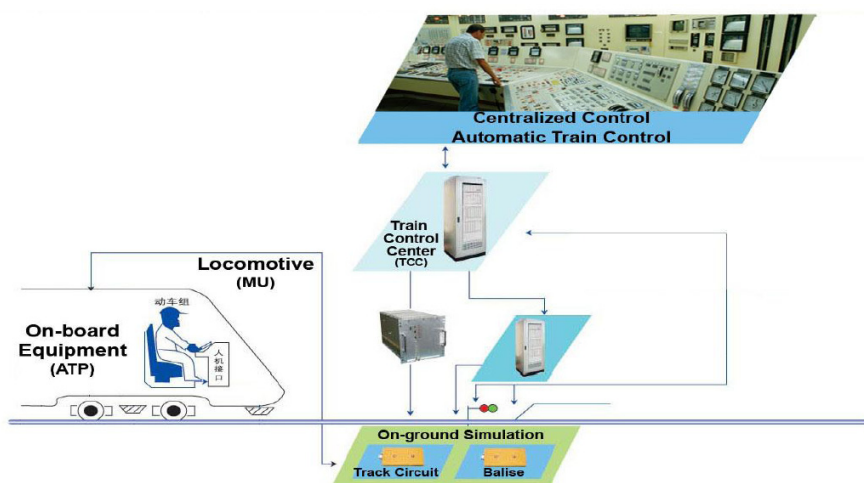
While properly-running equipment and/or a well-trained operator could have avoided the accident, the latest news we collected suggests that the government seems more intent to conclude that responsibility lies with the operators, given the opinion that no equipment could be absolutely error-free and well-trained operators could have stopped the disaster during system-failure time.

Nevertheless, we believe the release of the formal investigation report could remove the overhang and be a positive catalyst for Hollysys' share price. We do not expect Hollysys to lose market share in the railway market simply due to this accident.

## How the signaling system works on rail

The railway signaling system consists of on-board equipment, Automatic Train Protection (ATP) and on-track Train Control Center (TCC). Electronic ATP involves track to train transmission of signal aspects and their associated speed limits. On-board equipment will check the train's actual speed against the allowed speed and will slow or stop the train if any section is entered at more than the allowed speed.

Figure 76. Railway Signaling System – Illustration of working principle



Source: Company Reports

# Business Review & Financial Forecast

## Assumptions on business lines

### Industrial Automation – the key growth driver

**Growth backed by strong order momentum, with 51%, 46% and 65% y-y growth on new orders in the past three quarters**

In industrial automation segment, we are forecasting 42% revenue growth in FY12E, and 19% in FY13E and FY14E. During the latest three quarters, i.e. the quarter ended Mar 2011, Jun 2011 and Sep 2011, we are seeing 51%, 46% and 65% y-y growth on new orders, which gives us confidence on this assumption. We estimate the nuclear power sub-segment now under industrial automation could contribute US\$9-10mn revenue each year in FY12-14E, as the backlog as at Jun 2011 of nuclear was still US\$18mn, and annual investment in nuclear power plant hasn't slowed down post the Fukushima accident.

**PLC – now small, but growing fast**

We estimate at this stage PLC takes only 8-10% of Hollysys' industrial automation business and remainder is still mostly DCS. However, the PLC business is growing at 80-100% annually, which could become significant in a couple of years. Within the DCS market, though investment in thermo power plants has been weak in recent years, the expansion into relatively new industries has brought Hollysys significant growth and market share gain.

### Railway signaling – conservatively assumed

**Conservatively assumed only US\$106mn revenue for 12E compared to US\$157mn backlog at Sep 2011**

We are conservatively assuming 8% decline of rail transportation segment for FY12E, and 4% and 1% growth in FY13E and FY14E respectively. We believe this assumption already factored in a lot of delays on railway projects, as the company still has US\$157mn backlog as at end of Sep 2011, compared to our US\$106mn revenue forecast for FY12E.

We are modeling revenue and gross profit contribution by Concord for FY12E US\$30mn and US\$10.5mn only, we believe this is again conservative as the earn-out breakeven line for Concord's management was US\$10mn for US-GAAP net income.

We are assuming flattish gross margin for each business line despite upside potential coming from economies of scale.

We believe the revenue and gross profit contribution of industrial automation will gradually expand compared to rail transportation.

Figure 77. Hollysys – New orders on Industrial Automation (US\$m)

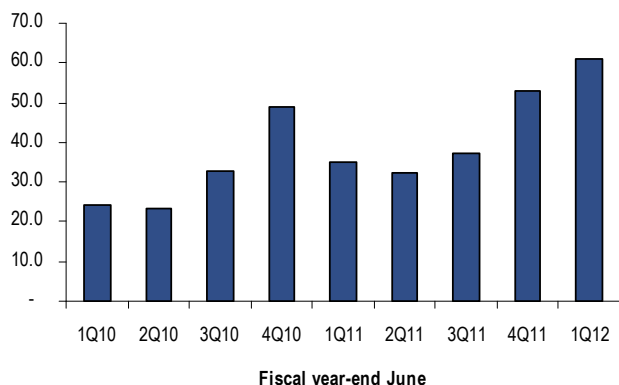
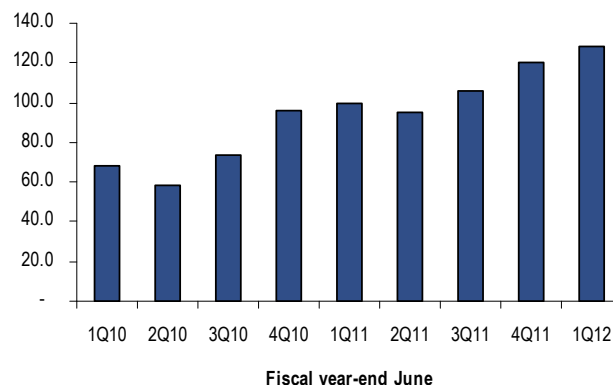


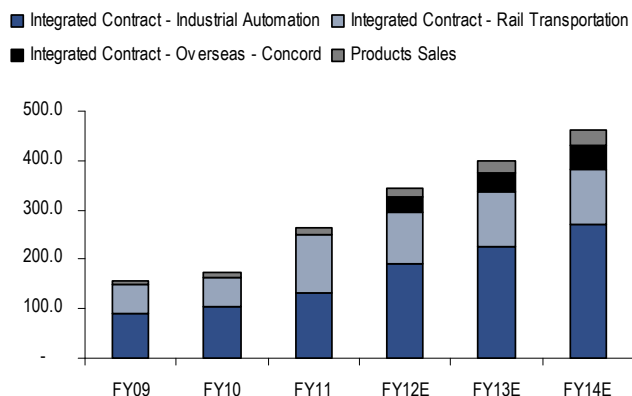
Figure 78. Hollysys – Backlog on Industrial Automation (US\$m)



Source: Company Reports

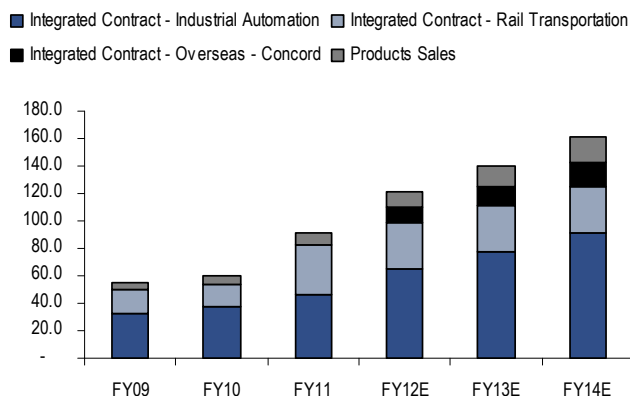
Source: Company Reports

**Figure 79. Hollysys – Revenue by category (US\$mn)**



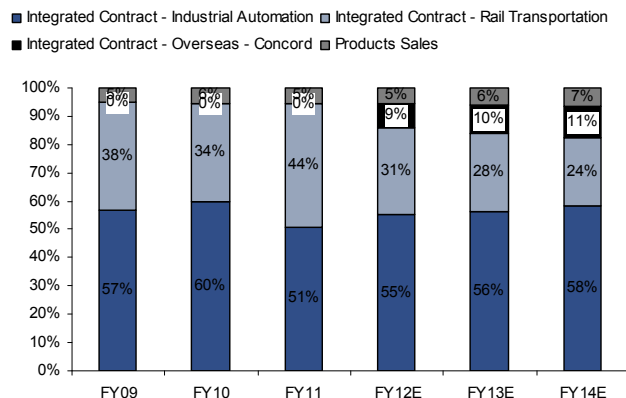
Source: Company Reports and CIRA Estimates

**Figure 80. Hollysys – Gross Profit by category (US\$mn)**



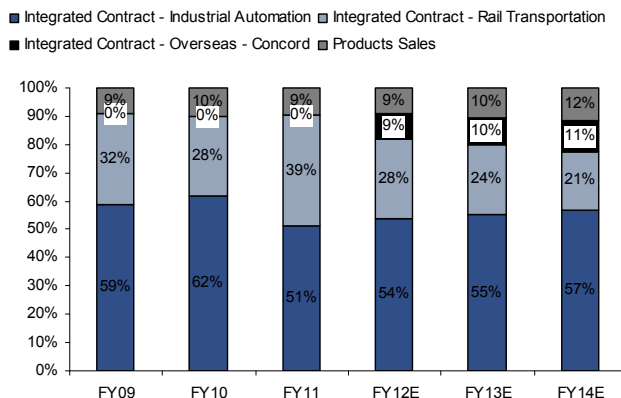
Source: Company Reports and CIRA Estimates

**Figure 81. Hollysys – Revenue by category (%)**



Source: Company Reports and CIRA Estimates

**Figure 82. Hollysys – Gross Profit by category (%)**



Source: Company Reports and CIRA Estimates

## Income statement analysis & forecast

We are forecasting 31%, 16% and 16% revenue growth for FY12E, FY13E and FY14E respectively, and a gross margin generally flattish at around 35%. With top-line leverage, SG&A as percentage of revenue should slightly come down by 40 basis points each year.

Due to the policy uncertainty, we only factored in a US\$5mn VAT refund and government grant each year for FY12-14E, while in FY11 the company received US\$10mn. We believe there may be upside surprise on this, as the government wants to promote “Seven Strategic Industries”, including next-generation information technology and high-end equipment manufacturing.

Figure 83. Hollysys – Consolidated Income Statement

(In US\$m except otherwise indicated)	FY09	FY10	FY11	FY12E	FY13E	FY14E
<b>Revenue (net of business tax)</b>	<b>158</b>	<b>174</b>	<b>263</b>	<b>345</b>	<b>400</b>	<b>463</b>
<i>YoY growth</i>	30%	11%	51%	31%	16%	16%
	0%	0%	0%	0%	0%	0%
COGS	(103)	(114)	(172)	(224)	(261)	(301)
<b>Gross profit</b>	<b>55</b>	<b>60</b>	<b>91</b>	<b>121</b>	<b>140</b>	<b>162</b>
<i>YoY growth</i>	49%	10%	51%	33%	16%	16%
<i>Gross profit margin</i>	34.7%	34.6%	34.7%	35.1%	34.9%	35.0%
SG&A	(28)	(39)	(57)	(69)	(79)	(89)
Other operating income/expense	(32)	11	10	5	5	5
<b>EBITDA</b>	<b>(3)</b>	<b>35</b>	<b>49</b>	<b>62</b>	<b>72</b>	<b>84</b>
<i>YoY growth</i>	-143%	-1165%	40%	27%	15%	16%
<i>EBITDA margin</i>	-2.1%	20.2%	18.7%	18.1%	18.0%	18.2%
Depreciation	(2)	(3)	(4)	(6)	(6)	(6)
Amortization	-	-	-	-	-	-
<b>EBIT</b>	<b>(6)</b>	<b>33</b>	<b>45</b>	<b>57</b>	<b>66</b>	<b>77</b>
<i>YoY growth</i>	-194%	-686%	37%	27%	16%	17%
<i>EBIT margin</i>	-3.5%	18.7%	17.0%	16.5%	16.5%	16.7%
Net interest expense	(1)	(1)	(2)	(2)	(2)	(2)
Gain on disposal of property, plant and equipment	0	-	1	-	-	-
Share of profit/(loss) of associates & JV	0	4	3	3	3	4
Foreign exchange gain/(loss)	0	(0)	1	-	-	-
<b>Pretax income</b>	<b>(6)</b>	<b>35</b>	<b>48</b>	<b>58</b>	<b>67</b>	<b>79</b>
<i>YoY growth</i>	-349%	-729%	36%	21%	16%	18%
<i>Pretax income margin</i>	-3.6%	20.2%	18.2%	16.9%	16.9%	17.1%
Income tax	(3)	(8)	(6)	(8)	(9)	(11)
<i>Effective tax rate (%)</i>	-55%	22%	13%	13%	14%	14%
Minority interest (I/S item)	(5)	(2)	0	0	0	0
<b>Net income, post-exceptionals</b>	<b>(14)</b>	<b>26</b>	<b>41</b>	<b>51</b>	<b>58</b>	<b>68</b>
<i>YoY growth</i>	726%	-286%	61%	22%	15%	17%
<i>Net margin</i>	-8.8%	14.8%	15.8%	14.7%	14.6%	14.7%
Post-tax exceptionals	(40)	(1)	(1)	(1)	(1)	(1)
<b>Net income, pre-exceptionals</b>	<b>26</b>	<b>26</b>	<b>42</b>	<b>51</b>	<b>59</b>	<b>69</b>
<i>YoY growth</i>	67%	2%	60%	22%	15%	17%
<i>Net margin</i>	16.3%	15.1%	16.0%	14.9%	14.8%	14.9%

Source: Company Reports and CIRA Estimates

## Balance sheet & cash-flow statement

The company still holds net cash, which provides downside protection should there be any further tightening policies.

Figure 84. Hollysys – Consolidated Balance Sheet

(In US\$m except otherwise indicated)	FY09	FY10	FY11	FY12E	FY13E	FY14E
<b>Assets</b>						
Bank balances and cash	129	120	91	101	132	169
Inventories	19	24	28	36	42	49
Trade receivables	57	64	98	128	149	172
Bill receivables	51	61	104	136	158	182
Other receivables and prepayments	19	26	25	33	38	44
Pledged bank deposits	6	4	4	4	4	4
Other current assets	4	3	13	13	13	13
<b>Total current assets</b>	<b>284</b>	<b>301</b>	<b>362</b>	<b>452</b>	<b>537</b>	<b>634</b>
<b>Net PP&amp;E/fixed assets</b>	<b>47</b>	<b>65</b>	<b>60</b>	<b>64</b>	<b>68</b>	<b>71</b>
Interest in JV/Associates	14	17	19	19	19	19
Deferred tax assets	1	1	1	1	1	1
Others LT assets	0	-	17	17	17	17
<b>Total assets</b>	<b>345</b>	<b>385</b>	<b>459</b>	<b>552</b>	<b>641</b>	<b>742</b>
<b>Liabilities</b>						
Trade payables	37	41	63	83	96	111
Bill payables	11	13	2	2	3	3
Other payables and accruals	37	57	68	89	103	119
Provisions	2	2	3	4	4	5
Tax payable	1	6	5	7	8	9
Bank borrowings	11	15	17	17	17	17
Other current liabilities	2	3	3	3	3	3
<b>Total Current liabilities</b>	<b>101</b>	<b>136</b>	<b>161</b>	<b>204</b>	<b>234</b>	<b>267</b>
Long term bank borrowings	48	35	32	32	32	32
<b>Total non-current liabilities</b>	<b>48</b>	<b>35</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>
<b>Total liabilities</b>	<b>149</b>	<b>171</b>	<b>193</b>	<b>236</b>	<b>266</b>	<b>299</b>
<b>Shareholders' equity</b>						
Share capital	0	0	0	0	0	0
Reserves	173	213	265	316	374	442
<b>Total shareholders' equity</b>	<b>174</b>	<b>213</b>	<b>265</b>	<b>316</b>	<b>374</b>	<b>442</b>
<b>Minority interests</b>	<b>22</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Total liabilities and equity</b>	<b>345</b>	<b>385</b>	<b>459</b>	<b>552</b>	<b>641</b>	<b>742</b>

Source: Company Reports and CIRA Estimates

**Figure 85. Hollysys – Consolidated Cash-flow Statement**

(In US\$mn except otherwise indicated)	FY09	FY10	FY11	FY12E	FY13E	FY14E
<b>Operating activities</b>						
Pre-tax profit	2	(6)	35	48	58	67
Depreciation and amortization	2	2	3	4	6	6
Net profit/loss on asset sales	0	(0)	-	(1)	-	-
Increase/decrease in working capital	(28)	5	(1)	(45)	(49)	(33)
Interest expense	4	1	1	2	2	2
Income tax paid	-	-	-	-	(8)	(9)
Other operating cash flow items	15	38	(8)	(9)	13	9
<b>Net cash flow from operating activities</b>	<b>(4)</b>	<b>40</b>	<b>30</b>	<b>(2)</b>	<b>22</b>	<b>42</b>
<b>Investing activities</b>						
Interest received	-	-	-	-	-	-
Capital expenditure	(10)	(9)	(21)	(16)	(10)	(10)
Acquisition/Divestiture	(0)	(3)	(0)	(17)	-	-
Proceeds from disposal of assets	0	0	0	0	-	-
Decrease/(increase) in pledged time deposits	(0)	(2)	(1)	4	-	-
Other investment cash flow items	(2)	1	1	0	-	-
<b>Net cash flow from investing activities</b>	<b>(13)</b>	<b>(12)</b>	<b>(21)</b>	<b>(29)</b>	<b>(10)</b>	<b>(10)</b>
<b>Financing</b>						
Share repurchase/issue (chg. in common stock)	89	-	-	-	(0)	0
Capital contribution	-	-	1	1	-	-
Increase/decrease in LTD, STD, notes payable	(30)	36	(20)	(4)	-	-
Interest paid	-	-	-	-	(2)	(2)
Other financing cash flow items	9	1	1	5	-	-
<b>Net cash flow from financing activities</b>	<b>68</b>	<b>36</b>	<b>(18)</b>	<b>2</b>	<b>(2)</b>	<b>(2)</b>
<b>Total cash flow</b>	<b>52</b>	<b>65</b>	<b>(9)</b>	<b>(29)</b>	<b>11</b>	<b>30</b>

Source: Company Reports and CIRA estimates

## Management Background & Shareholdings

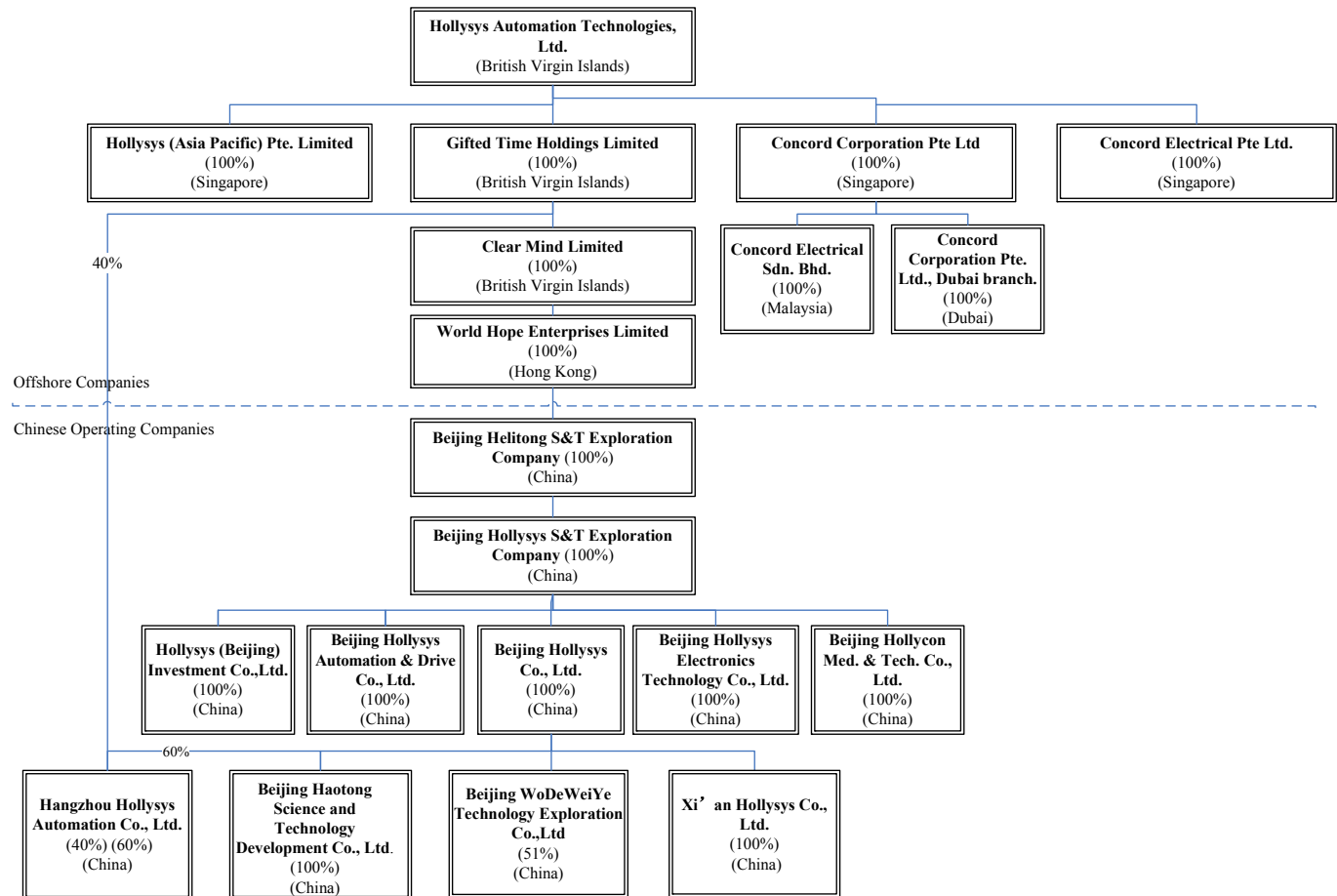
The founder and CEO, Dr. Changli Wang, is a well-respected leader in China's automation industry. Prior to founding Beijing Hollysys in 1993, Dr. Wang worked for the No. 6 Institute of Electronic Industry Department, the predecessor of Beijing Hollysys. Dr. Wang also has been the Vice Chairman of the Chinese Automation Association since 2003. Dr. Wang received his Bachelor's degree in Automation from Tianjin University in 1984 and his Ph.D in Automation from Lancaster University in 1988.

Figure 86. Hollysys – Management Background

Name	Age	Since	Current Position	Description
<b>Dr. Changli Wang</b>	48	2010	Chairman of the Board, President, CEO	Dr. Changli Wang is Chairman of the Board, President, Chief Executive Officer of Hollysys Automation Technologies, Ltd. He has been the company's director and Chief Executive Officer since September 2007 and has been the company's Chairman since May 2010. Since 1999, Dr. Wang has also been the Chief Executive Officer and Vice Chairman of the company's subsidiary, Beijing Hollysys. Prior to founding Beijing Hollysys in 1993, Dr. Wang worked for the No. 6 Institute of Electronic Industry Department, the predecessor of Beijing Hollysys. Dr. Wang also has been the Vice Chairman of the Chinese Automation Association since 2003. Dr. Wang received his Bachelor's degree in Automation from Tianjin University in 1984 and his Ph.D in Automation from Lancaster University in 1988.
<b>Peter Li</b>	47	2009	Chief Financial Officer	Mr. Peter Li is Chief Financial Officer of Hollysys Automation Technologies, Ltd since February 1, 2009. Mr. Li has also served, since August 2008, as a Director of CS China Acquisition Corp. (CSACF.OB), an OTCBB listed company engaging in seeking business combination with a Chinese operating company; has served since November 2008, as an independent director and audit committee chairman for China Valves Technology, Inc. (CVVT.OB), an OTCBB listed company of manufacturing metal valves in China; and has served since June 2008, as an independent director and audit committee chairman for Yuhe International Inc., an OTCBB listed company (YUHL.OB) in the broiler breeding business in China. Prior to joining, Mr. Li served Yucheng Technologies Ltd. ("Yucheng") (NASDAQ: YTEC), a IT service provider to banking industry in China as a Senior Advisor, from February 2008 to February 28, 2009, and as CFO from October 2004 through February 2008. Prior to his tenure at Yucheng, Mr. Li worked in corporate financial management with various companies, including as Internal Controller at Lenovo, one of the world's makers of personal computers. Mr. Li graduated from Beijing Foreign Studies University with a B.A. and received a Master of Education from the University of Toronto. Mr. Li is a Certified General Accountant in Ontario, Canada, and is fluent in English and Mandarin.
<b>Dr. Jianyun Chai</b>	49	2008	Independent Director	Dr. Jianyun Chai is Independent Director of Hollysys Automation Technologies, Ltd. since June 2, 2008. Dr. Chai is currently a professor and the head of the Institute of Power Electronic and Electrical Machine System at Tsinghua University in China. Before he joined Tsinghua University as an Associate Professor in 1999, Dr. Chai spent eight years working in the motor and information industries in Japan. Dr. Chai is also a member of various societies and organizations, including the China Renewable Energy Society, the Chinese Society for Electrical Engineering, and the Chinese Wind Energy Association. Dr. Chai received a Bachelors degree and a Ph.D in Electrical Engineering from Tsinghua University in 1984 and 1989, respectively.
<b>Qingtai Chen</b>	73	2008	Independent Director	Mr. Qingtai Chen is Independent Director of Hollysys Automation Technologies, Ltd. since June 2, 2008. Mr. Chen has worked for the Dong Feng Motor Group for over 22 years and served as its General Manager prior to joining the Company. While employed by the Dong Feng Motor Group, Mr. Chen also served in various positions, including as a member of the First Session of the Monetary Policy Committee of the People's Bank of China, as a deputy director of the State Council Economic and Trade Office, as a deputy director of the State Economic and Trade Commission, and as a deputy director of the Development Research Center of the State Council. Mr. Chen also served from 2000 to 2006 as an independent director of Sinopec Corp. Mr. Chen received his Bachelors of Science degree in power and dynamics engineering from Tsinghua University and has been recognized as a National Excellent Entrepreneur and National Economic Reform Talent in China. Mr. Chen currently serves as a standing member of National Committee of the Chinese People's Political Consultative Conference and as the Dean of the School of Public Policy and Management at Tsinghua University. He also serves as an independent director for the Bank of Communications, which is listed on both Shanghai Stock Exchange and Hong Kong Stock Exchange, and as an independent director of Mindray Medical International Limited, which is listed on New York Stock Exchange.
<b>Colin Sung</b>	45	2008	Independent Director	Mr. Colin Sung is Independent Director of Hollysys Automation Technologies, Ltd. since February 2008. Mr. Sung is currently the Chief Financial Officer and President of China Cablecom, a U.S. public company that provides provider cable television services in China. He previously served as Chief Financial Officer of Linktone Ltd. from June 2005 to January 2008. He also served as the acting Chief Executive Officer of Linktone from February 2006 to April 2006. From June 2004 until April 2005, Mr. Sung served as Corporate Controller of UTi United States, Inc., a subsidiary of UTi Worldwide Inc., a global integrated logistics company. From August 2001 until May 2004, he was the Vice President of Finance and Corporate Controller of USF Worldwide, Inc., a subsidiary of USF Corporation, a transportation industry leader, which was acquired by GPS Logistics in October 2002. Prior to that, he was Vice President and Corporate Controller of the US operations of Panalpina Inc. Mr. Sung is a Certified Public Accountant and has a Bachelor of Science degree from William Paterson University and a Master of Business Administration degree from American Intercontinental University.
<b>Jerry Zhang</b>	39	2007	Independent Director	Ms. Jerry Zhang has been our director since September 2007. Ms. Zhang is currently the Head of Financial Institutions, Standard Chartered Bank (China) Limited. She leads a group of professional bankers, who are responsible for providing banking solutions to banks and non-bank financial institutions (including government, NGOs etc) present and doing business in China. She joined Standard Chartered Bank in 1994. For years she hold the role of the Head of Investors & Intermediaries, responsible for relationship management of broker dealers, insurance companies, fund managers, development organizations, finance/trust companies and professional firms throughout China. Prior to re-joining the Bank in April 2009, she was a Chief Representative of Fidelity International Asset Management Co. Beijing Representative Office. Ms. Zhang received her Bachelor's degree in electronic and mechanical engineering and obtained an MBA from Lancaster University in the United Kingdom in 2000.

Source: Company Reports

Figure 87. Hollysys – Latest Group Chart



Source: Company Reports

## Hollysys Automation Technologies

### Company description

Hollysys Automation Technologies Ltd. (Hollysys), formerly HLS Systems International, Ltd., is a provider of automation and control technologies and applications in the People's Republic of China. Its technologies are applied in product lines, including distributed control systems (DCS) and programmable logic controllers (PLC), for the industrial sector, railway signaling systems for train control centers (TCC), and automatic train protection (ATP), subway supervisory and control platform (SCADA), and nuclear conventional island automation and control systems. Its DCS have been used in the industries involving continuous flow material handling, such as power generation, petro-chemical, chemical, cement manufacturing, paper mills and waste-water recycling. PLCs are integrated together into machines providing control for the unit. In July 2011, the Company acquired Concord Corporation Pte Ltd.

### Investment strategy

We rate Hollysys as BUY with PT US\$13.6. Under the labor cost inflation and industrial equipment upgrade background, we believe Hollysys is well positioned in the industrial automation sector, with potential for market share gains from foreign players due to its value-for-money products, quicker and closer after-sales service, more diversified application fields, and closer cultural ties with end users. With expansion in the installed base, we believe long-term growth potential will be assured with ramping up of service revenue as well as replacements, upgrades, and customization needs.

### Valuation

Our price target is based on 15x FY12E P/E, a 15% premium to its direct global peers, Honeywell and Emerson (12-14x forward P/E), as we believe Hollysys is gaining market share from foreign players and has a higher long-term EPS growth rate. We forecast CY11-13E EPS CAGR of 16% for Hollysys and 11% for Honeywell and 12% for Emerson.

### Risks

Risks to our positive stance include: 1) Price cut by foreign automation players; 2) Wage inflation of engineers & sales people; 3) Challenges in keeping up quality standards; 4) Capex slowdown in power & chemical industries; 5) Fierce competition in the metro SCADA market; 6) Contagion from US-listed Chinese company scandals; and 7) VAT rebate policy on software revenue.

## Notes

## Notes

## Notes

## Appendix A-1

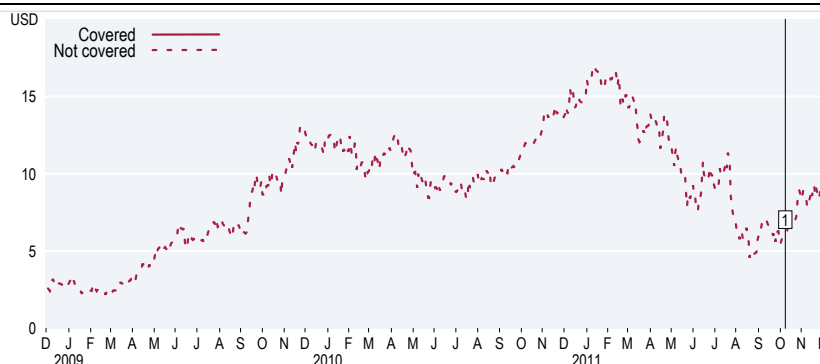
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Ratings and Target Price History  
Fundamental Research



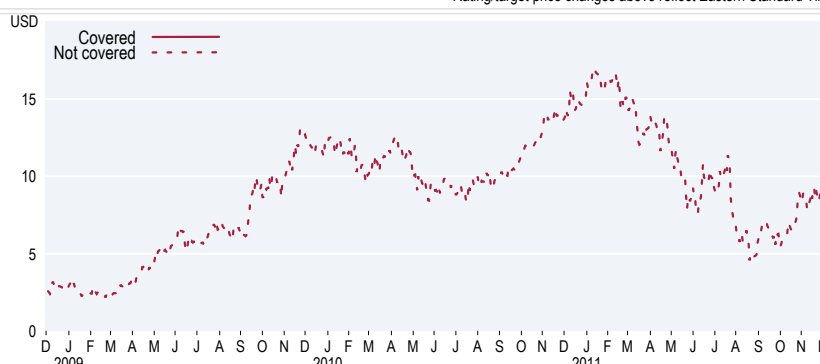
	Date	Rating	Target Price	Closing Price
1	8-Oct-11	Stock rating system changed		

\* Indicates change

Rating/target price changes above reflect Eastern Standard Time

#### Hollysys Automation Technologies (HOLI.O)

Ratings and Target Price History  
Best Ideas Research  
Relative Call (3 Month)



\* Indicates change

Rating/target price changes above reflect Eastern Standard Time

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