Willsemi (603501 CH)

Long-term positive view unchanged with non-mobile CIS to power future growth

Willsemi released 3Q21 results. Rev./NP of RMB5.9bn/1.3bn (-1.0%/73.1% YoY), largely in-line with preannouncement of net profit earlier, due to weak smartphone sales and supply chain constraints. Considering underlying negative factors which would last longer, we revised down our FY21E-23E rev. forecasts, but raised margin est. due to improved product mix. We remain positive on Willsemi and believe its non-mobile CIS business will maintain strong momentum and power the company's future growth. **Maintain BUY rating with TP slightly adjusted to RMB346.6,** given expected weak performance in global smartphone sales and fast growth seen in non-mobile CIS business.

- **3Q mobile CIS business was challenging; new products will help gain market share in FY22E.** 3Q global smartphone shipment declined by 6% YoY (Counterpoint) due to component shortage and weak consumer demand. Stronger sales were observed in mid- to high-end models (evidenced by recovering Sony's CIS sales in 3Q). Although we hold a neutral view on smartphone market growth into 2022, especially for non-Apple brands, we believe Willsemi can still gain share (in RMB1k-2k and RMB3k+ models) with its new 50MP/100MP/200MP products.
- **GPM improved to 35.5% as non-mobile CIS accounted for 50% of 3Q CIS sales.** Non-mobile CIS continued lifting Company's profitability. GPM improved to 35.5% (vs. 29.9%/33.7% in 2020/2Q21). We believe the trend is sustainable with rapid growth in auto, AR/VR segments. We are positive on Willsemi's auto CIS business considering the growth from both surging market demand and increasing market share. Auto CIS market is experiencing a similar path of smartphone, with higher ASP/quantity. Willsemi is closing its market share gap with On semi. We expect to see continuous strong growth in its auto CIS business despite the prolonged chip shortage issue.
- **Maintain BUY rating with revised TP of RMB346.6 based on 50x FY22E P/E.** We cut our FY21E-23E revenue forecast by 8%-16%, considering weak estimates of global smartphone sales and prolonged supply chain constraints. Meanwhile, we raised our margin estimates by 1pt-1.3pt due to improved product mix. Potential upsides include: 1) faster-than-expected ease of supply chain constraints; 2) new device/killer app released in VR/AR. Potential risks include: 1) worse-than-expected global economy that curbs consumer spending and 2) overhung chip shortage led to unfilled demand.

Earnings Summary

(YE 31 Dec)	FY19A	FY20A	FY21E	FY22E	FY23E
Revenue (RMB mn)	13,632	19,824	24,470	32,968	41,635
YoY growth (%)	-	45.4%	23.4%	34.7%	26.3%
Gross profit (RMB mn)	3,734	5,930	8,261	11,260	14,293
Gross profit margin %	27.4%	29.9%	33.8%	34.2%	34.3%
Net profit (RMB mn)	466	2,706	4,656	6,180	8,056
Net profit margin %	3.4%	13.7%	19.0%	18.7%	19.3%
EPS (RMB)	0.76	3.21	5.22	6.93	9.04
YoY growth (%)	-	322.4%	62.7%	32.7%	30.3%
Consensus EPS (RMB)	-	3.21	5.30	6.76	8.48
P/E (x)	350.0	82.9	50.9	38.4	29.4
P/B (x)	20.6	20.0	15.1	10.2	7.3
ROE (%)	5.9%	23.5%	29.1%	26.0%	24.4%
Net gearing (%)	23.5%	6.7%	net cash	net cash	net cash

Source: Company data, Bloomberg, CMBIS estimates

BUY (Maintain)

Target Price	RMB 346.60
(Previous TP	RMB 346.90)
Up/Downside	+30%
Current Price	RMB 266.00

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Stock Data

Mkt Cap (RMBmn)	231,182
Avg 3 mths t/o (RMBmn)	2,116
52w High/Low (RMB)	345/184.99
Total Issued Shares (mn)	869.1

Source: Bloomberg

Shareholding Structure

Yu Renrong	30.85%
SX Weihao Equity Invest. FD	9.30%
HKSCC	5.18%

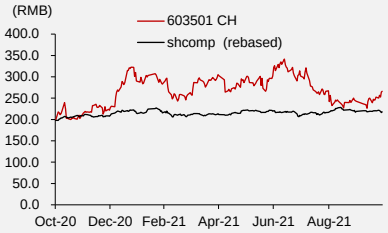
Source: Company data

Share Performance

	Absolute	Relative
1-mth	9.0%	8.7%
3-mth	-15.3%	-18.6%
6-mth	-12.8%	-14.5%

Source: Bloomberg

12-mth Price Performance



Auditor: BDO

Recent report:

1. China CIS market: Beginning of multi-year growth cycle; Initiate BUY on Willsemi and GalaxyCore – 24 Aug 2021 (Link)
2. The next chapter beyond mobile CIS is coming – 27 Aug 2021 (Link)

3Q21 Results Review

Figure 1: 3Q21 results review

RMB mn	1Q20	2Q20	3Q20	4Q20	1Q21	2Q21	3Q21	QoQ	YoY
Revenue	3,817	4,226	5,926	5,855	6,212	6,236	5,866	-5.9%	-1.0%
Gross Profit	1,230	1,371	1,653	1,675	2,014	2,105	2,082	-1.1%	25.9%
Operating Profit	489	559	797	1,110	1,175	1,358	1,378	1.5%	72.8%
Net profit	445	545	736	980	1,041	1,203	1,275	6.0%	73.1%
EPS (RMB)	0.53	0.67	0.64	1.37	1.20	1.39	1.47	5.8%	129.7%
Gross Margin	32.2%	32.4%	27.9%	28.6%	32.4%	33.7%	35.5%	1.7 ppt	7.6 ppt
Operating Margin	12.8%	13.2%	13.5%	19.0%	18.9%	21.8%	23.5%	1.7 ppt	10 ppt
Net Margin	11.7%	12.9%	12.4%	16.7%	16.8%	19.3%	21.7%	2.4 ppt	9.3 ppt

Source: Bloomberg, CMBIS estimates

Earnings revision

Figure 2: CMBIS earnings revisions

	New			Old			Change (%)		
RMB mn	FY21E	FY22E	FY23E	FY21E	FY22E	FY23E	FY21E	FY22E	FY23E
Revenue	24,470	32,968	41,635	29,203	36,723	45,061	-16%	-10%	-8%
Gross Profit	8,261	11,260	14,293	9,482	12,176	14,987	-13%	-8%	-5%
Operating Profit	5,146	6,801	8,885	5,433	6,936	8,818	-5%	-2%	1%
Net profit	4,656	6,180	8,056	4,862	6,196	7,876	-4%	0%	2%
EPS (RMB)	5.222	6.932	9.035	5.598	7.480	9.047	-7%	-7%	0%
Gross Margin	33.8%	34.2%	34.3%	32.5%	33.2%	33.3%	1.3 ppt	1 ppt	1.1 ppt
Operating Margin	21.0%	20.6%	21.3%	18.6%	18.9%	19.6%	2.4 ppt	1.7 ppt	1.8 ppt
Net Margin	19.0%	18.7%	19.3%	16.6%	16.9%	17.5%	2.4 ppt	1.9 ppt	1.9 ppt

Source: Company data, CMBIS estimates

Figure 3: CMBIS estimates vs consensus

	CMBIS			Consensus			Diff (%)		
US$mn	FY21E	FY22E	FY23E	FY21E	FY22E	FY23E	FY21E	FY22E	FY23E
Revenue	24,470	32,968	41,635	27,671	34,963	42,366	-12%	-6%	-2%
Gross Profit	8,261	11,260	14,293	8,937	11,111	13,426	-8%	1%	6%
EBITDA	5,146	6,801	8,885	5,190	6,674	8,365	-1%	2%	6%
Net profit	4,656	6,180	8,056	4,594	5,878	7,421	1%	5%	9%
EPS (RMB)	5.222	6.932	9.035	5.298	6.760	8.478	-1%	3%	7%
Gross Margin	33.8%	34.2%	34.3%	32.3%	31.8%	31.7%	1.5 ppt	2.4 ppt	2.6 ppt
EBITDA Margin	21.0%	20.6%	21.3%	18.8%	19.1%	19.7%	2.3 ppt	1.5 ppt	1.6 ppt
Net Margin	19.0%	18.7%	19.3%	16.6%	16.8%	17.5%	2.4 ppt	1.9 ppt	1.8 ppt

Source: Bloomberg, CMBIS estimates

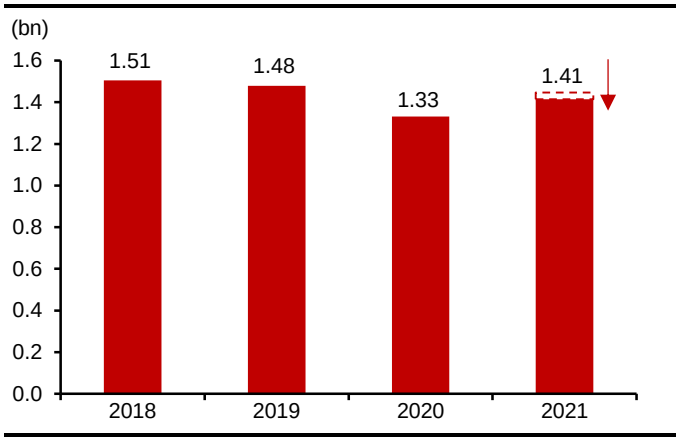
CIS: non-mobile CIS will maintain strong momemtum while smartphone market is weak

Weak smartphone sales in FY21E; expect modest mobile CIS growth in FY22E

Full year smartphone shipment forecast has been cut to 1.41bn units (6% YoY) from previous 1.45bn units (9%), according to Counterpoint. The shipment rebounded in 3Q20 after the logistic resumed from COVID-19 disruption, but was negatively affected again in 2Q21 due to semiconductor shortage. The situation got worse in 3Q21 before peak season. Canalys's estimated global smartphone shipment for the third quarter was a 6% YoY decline.

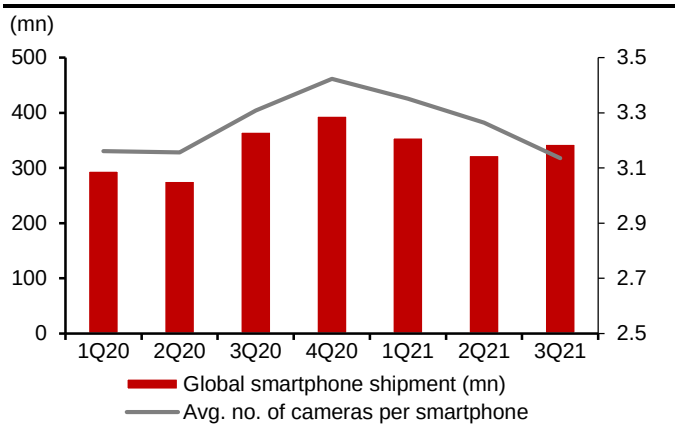
Looking forward, we expect Q4 shipment will have some sequential recovery during the holidays. However, we do not expect the rebound will be significant given 1) continued semi shortage, 2) increasing cost of certain components and 3) ASP pressure from peers (the discount this year will not be aggressive as Apple did not raise the price of its new 13 series).

Figure 4: Global smartphone shipments forecast (2021E) lowered to 6% YoY from previous 9% YoY



Source: Counterpoint, CMBIS estimates

Figure 5: Market concerns over sluggish smartphone shipment and lower No. of cameras used per smartphone（289 latest models of top brands)*



Source: Counterpoint, nanoreview, kimovil, devicespecifications and CMBIS estimates
* Samsung/ Xiaomi/ Oppo/ vivo/ Honor (1Q20 to 3Q21)

Given the recent weak smartphone sales, the market is conservative in mobile CIS market growth given that 1) the constraints of smartphone sales will not ease in near-term (such as semi shortage, power shortage, rising foundry costs, etc.), 2) the mobile camera shipment was sluggish since 2Q21 driven by slower penetration of triple-/quad-cameras in latest models of smartphones and 3) the de-spec concern.

We have studied 289 latest models (released from 1Q20-3Q21) from the top Andriod brands, including Samsung/ Xiaomi/ Oppo/ vivo/ Honor, we did see the trend of slowing down penetration of multi-cameras. We think the main reason is the increasing bill of materials ("BOM") that put a lot of pressure on smartphone makers. It is a mixed result from 1) smartphone upgrade (rising cost due to additional frequency coverage, better camera resolution, larger storage, etc.), 2) tight supply chain and 3) peers pressure such as new pricing strategy of Apple series 13.

These headwinds are likely to continue into 1H22E. Although we hold a neutral view on smartphone market growth into 2022, especially for non-Apple brands, we believe Willsemi

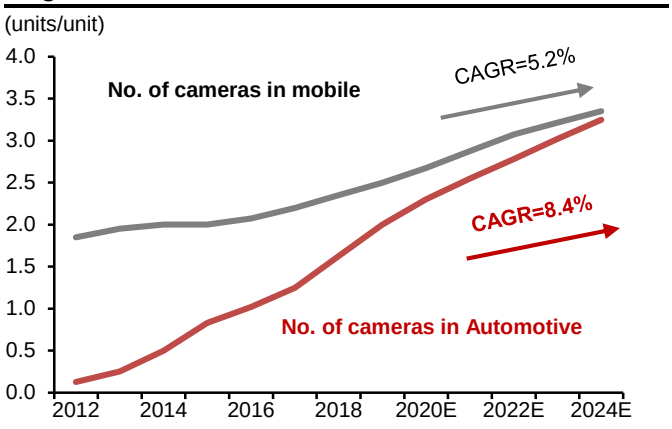
can still gain share (in RMB1k-2k and RMB3k+ models) with its new 50MP/100MP/200MP products. The Company is deeply engaged with Chinese mobile manufacturers and will ride the tailwind of their market expansions (Oppo/vivo/Honor). We saw the Company's mobile CIS products has penetrated into rear main cameras since last year. Based on the study of 289 latest models, we found their CIS products in certain Xiaomi/Oppo/Huawei's models. One interesting thing to note is that these models released in 2021 are mostly mid-ranged and flagship models, with higher ASP compared with that of last year (mostly budget and mid-ranged models). The spec has also increased to 48MP/50MP/64MP this year (vs. 13MP/16MP/48MP in 2020). We believe the penetration will continue given the uncertainty of Sino-US trade tension and Willsemi's leading market position in CIS and advanced technology.

Auto market is also affected by chip shortage but we hold positive view on auto CIS market growth as the demand is certain

Although IHS Markit has cut their forecasts for 2021E-23E light vehicle production by 6.2%/9.3%/1.1%, the growth for 22E/23E will still be 9.3%/11.4% YoY, driven by strong demand for auto cameras (such as ADAS). We are very positive on auto CIS market growth as it is likely to replicate the path of mobile CIS with higher ASP and larger number of cameras per vehicle.

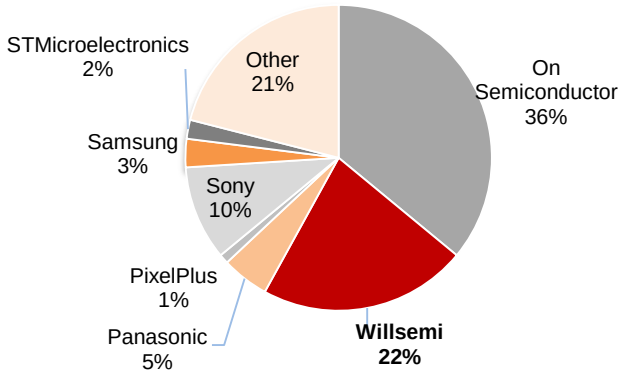
We think Willsemi will be a key beneficiary of auto CIS growth. The Company currently provides CIS for European auto manufacturers and eyes on expansion in U.S. market. Willsemi has also worked closely with ADAS developers, such as Mobileye. The certification for auto-related production (e.g. IATF 16949) will take longer time to obtain and the requirements will be much stricter. Willsemi ranked as No.2 among auto CIS suppliers, but is closing its market share gap with On semi. We expect to see continuous strong growth in its auto CIS business despite the prolonged chip shortage issue.

Figure 6: Avg. number of cameras per mobile/vehicle to grow at 5.2%/8.4% CAGR



Source: Canalys, CMBIS

Figure 7: On Semi, Willsemi, Sony share 68% of the automotive imaging sensor market (2018)



Source: Yole, CMBIS

Earnings forecasts

Figure 8: P&L forecast

RMB mn	FY19	FY20E	1Q21	2Q21	3Q21	4Q21	FY21E	FY22E	FY23E
Revenue	**13,632**	**19,824**	**6,212**	**6,236**	**5,866**	**6,156**	**24,470**	**32,968**	**41,635**
…YoY	-	*45.4%*	*62.8%*	*47.6%*	*-1.0%*	*5.1%*	*23.4%*	*34.7%*	*26.3%*
Gross profit	**3,734**	**5,930**	**2,014**	**2,105**	**2,082**	**2,059**	**8,261**	**11,260**	**14,293**
GPM (%)	27.4%	29.9%	32.4%	33.7%	35.5%	33.5%	33.8%	34.2%	34.3%
SG&A	(1,132)	(1,147)	(314)	(299)	(285)	(265)	(1,162)	(1,418)	(1,749)
…% of rev	*-8.3%*	*-5.8%*	*-5.1%*	*-4.8%*	*-4.9%*	*-4.3%*	*-4.8%*	*-4.3%*	*-4.2%*
R&D	(1,282)	(1,727)	(469)	(537)	(513)	(487)	(2,007)	(2,637)	(3,248)
…% of rev	*-9.4%*	*-8.7%*	*-7.6%*	*-8.6%*	*-8.7%*	*-7.9%*	*-8.2%*	*-8.0%*	*-7.8%*
Operating profit	**785**	**2,956**	**1,175**	**1,358**	**1,378**	**1,234**	**5,146**	**6,801**	**8,885**
OPM (%)	*5.8%*	*14.9%*	*18.9%*	*21.8%*	*23.5%*	*20.1%*	*21.0%*	*20.6%*	*21.3%*
…YoY	-	*276.5%*	*140.4%*	*142.8%*	*72.8%*	*11.2%*	*74.1%*	*32.1%*	*30.6%*
Net profit	**466**	**2,706**	**1,041**	**1,203**	**1,275**	**1,137**	**4,656**	**6,180**	**8,056**
NPM (%)	*3.4%*	*13.7%*	*16.8%*	*19.3%*	*21.7%*	*18.5%*	*19.0%*	*18.7%*	*19.3%*
…YoY	-	*481.2%*	*133.8%*	*120.7%*	*73.1%*	*16.1%*	*72.1%*	*32.7%*	*30.3%*

Source: Company data, CMBIS estimates

Valuation

Maintain BUY with new TP of RMB346.6 (30% upside)

We maintain BUY rating and adjust our TP to RMB346.6 (based on 50x FY22E P/E). We cut our FY21E-23E revenue forecast by 8%-16%, considering weak estimates of global smartphone sales and prolonged supply chain constraints. Meanwhile, we raised our margin estimates by 1pt-1.3pt due to improved product mix.

We are still positive on Willsemi. For mobile CIS, the Company is currently a leading supplier for main rear cameras in certain models (<RMB1k and RMB2k-3k). Although we hold a neutral view on smartphone market growth into 2022, especially for non-Apple brands, we believe Willsemi can still grow share (in RMB1k-2k and RMB3k+ models) with its new 50MP/100MP/200MP products. For non-mobile CIS, we believe the growth will come from both surging market demand and the Company's market share as the auto CIS market is experiencing a similar path of smartphone, with higher ASP and quantity.

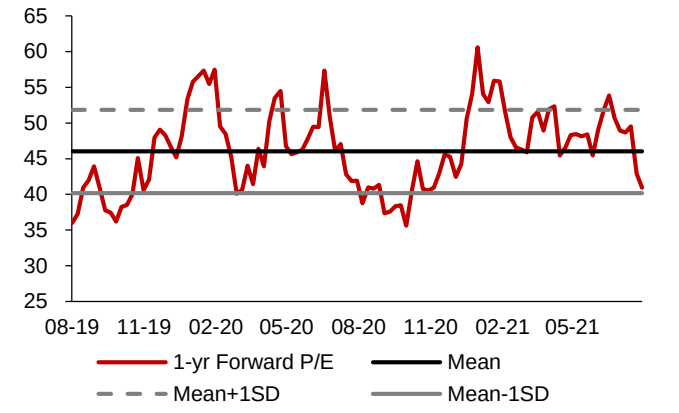
Potential upsides include: 1) faster-than-expected ease of supply chain constraints; 2) new device/killer app released in VR/AR. Potential risks include: 1) worse-than-expected global economy that curbs consumer spending and 2) overhung chip shortage led to unfilled demand.

Figure 9: Peers valuation

Company	Ticker	Mkt Cap US$(mn)	Price (LC)	P/E (x) FY21E	P/E (x) FY22E	P/B (x) FY21E	P/B (x) FY22E	ROE (%) FY21E	ROE (%) FY22E
Global CIS peers									
Willsemi	**603501 CH**	**36,091**	**266.00**	**50.9**	**38.4**	**15.1**	**10.2**	**29.1**	**26.0**
GalaxyCore	**688728 CH**	**11,602**	**29.74**	**51.3**	**31.0**	**12.0**	**8.5**	**23.4**	**27.6**
Sony	SONY US	146,018	115.79	14.3	20.3	3.2	2.7	23.4	13.2
Samsung	005930 KS	354,492	69800.00	11.8	10.7	1.6	1.4	14.0	13.7
STMicroelectronics	STM FP	42,989	40.92	23.9	20.0	4.5	3.8	19.4	20.3
ON Semi	ON US	20,696	48.07	19.5	17.3	4.7	4.0	24.5	23.2
Peers Avg.				**28.6**	**23.0**	**6.8**	**5.1**	**22.3**	**20.7**
	Peers Median			**21.7**	**20.2**	**4.6**	**3.9**	**23.4**	**21.8**
China fabless peers									
Willsemi	**603501 CH**	**36,091**	**266.00**	**50.9**	**38.4**	**15.1**	**10.2**	**29.1**	**26.0**
GalaxyCore	**688728 CH**	**11,602**	**29.74**	**51.3**	**31.0**	**12.0**	**8.5**	**23.4**	**27.6**
Gigadevice	603986 CH	17,617	169.51	58.3	45.6	9.0	7.8	15.3	17.3
Maxscend	300782 CH	16,10	309.19	48.5	36.4	17.5	12.1	45.6	39.0
Goodix	603160 CH	7,327	102.39	47.2	35.9	5.4	4.7	11.6	14.2
SG Miceo	300661 CH	11,892	324.00	132.7	96.9	37.6	28.2	29.4	30.1
Peers Avg.				**64.8**	**47.4**	**16.1**	**11.9**	**25.7**	**25.7**
Peers Median				**51.1**	**37.4**	**13.5**	**9.3**	**26.2**	**26.8**

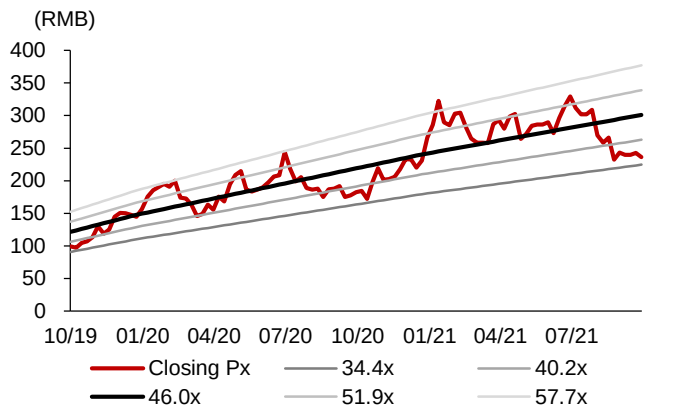
Source: Bloomberg and CMBIS, as of 30 Aug 2021.

Figure 10: 12M forward P/E chart



Source: Company data, CMBIS estimates

Figure 11: 12M forward P/E band



Source: Company data, CMBIS estimates

Financial Summary

Income statement

YE 31 Dec (RMB mn)	FY19A	FY20A	FY21E	FY22E	FY23E
Revenue	**13,632**	**19,824**	**24,470**	**32,968**	**41,635**
COGS	-9,898	-13,894	-16,209	-21,707	-27,342
Gross Profit	**3,734**	**5,930**	**8,261**	**11,260**	**14,293**
SG&A	-1,132	-1,147	-1,162	-1,418	-1,749
R&D exp.	-1,282	-1,727	-2,007	-2,637	-3,248
Financing exp.	-274	-275	-337	-343	-319
Other opex	-260	176	392	-62	-93
Operating profit	**785**	**2,956**	**5,146**	**6,801**	**8,885**
Non-operating income	6	44	1	37	25
Non-operating exp.	-6	-9	-4	-10	-10
Pre-tax profit	**784**	**2,991**	**5,144**	**6,828**	**8,900**
Income tax expenses	-79	-308	-434	-575	-750
Net profit	**705**	**2,683**	**4,710**	**6,253**	**8,150**
Non-controlling interests	240	-23	54	72	94
Net profit to shareholders	**466**	**2,706**	**4,656**	**6,180**	**8,056**
Adj. EBITDA	**1,363**	**3,722**	**5,997**	**7,730**	**10,017**

Cash flow summary

YE 31 Dec (RMB mn)	FY19A	FY20A	FY21E	FY22E	FY23E
Pretax profit	**705**	**2,683**	**4,710**	**6,253**	**8,150**
D&A	578	765	850	930	1,132
Change in working capital	-1,037	-221	-2,142	-1,796	-2,363
Others	560	117	6	555	633
Net cash from operating	**805**	**3,345**	**3,425**	**5,942**	**7,552**
Capex	-743	-1,133	-1,028	-1,525	-1,918
Purchase/sale of	-93	-373	-178	-128	-142
Purchase/sale of subs	-805	-1,163	-607	42	42
Other	-87	38	527	123	104
Net cash from investing	**-1,728**	**-2,631**	**-1,287**	**-1,489**	**-1,914**
Change in shares	380	683	-97	2,153	1,725
Change in debt	1,017	1,567	3,373	1,614	-190
Dividend/interests paid	-319	-413	-644	-938	-1,124
Other	41	-3	321	-157	81
Net cash from financing	**1,120**	**1,835**	**2,953**	**2,672**	**493**
Net change in cash	**198**	**2,548**	**5,091**	**7,125**	**6,131**
Cash, beginning	2,921	3,116	5,423	10,452	17,516
Exchange difference	-2	-241	-61	-61	-61
Cash, end	**3,116**	**5,423**	**10,452**	**17,516**	**23,586**

Balance sheet

YE 31 Dec (RMB mn)	FY19A	FY20A	FY21E	FY22E	FY23E
Current assets	**10,881**	**13,913**	**21,279**	**32,305**	**41,640**
Cash & equivalents	3,161	5,456	10,469	17,533	23,603
Trade & other receivables	2,577	2,583	3,180	4,448	5,351
Inventories	4,366	5,274	6,912	9,247	11,414
Other current assets	777	600	718	1,077	1,271
Non-current assets	**6,596**	**8,735**	**10,083**	**10,926**	**12,293**
PPE	1,588	1,871	1,770	1,961	2,284
Intangibles	1,334	1,509	1,695	1,453	1,249
Goodwill	2,249	2,800	3,005	2,964	2,922
Other non-current assets	1,425	2,556	3,613	4,549	5,839
Total assets	**17,476**	**22,648**	**31,362**	**43,231**	**53,933**
Current liabilities	**7,606**	**6,845**	**8,565**	**11,781**	**11,664**
ST debt & LT debt to	4,101	3,041	4,177	5,498	4,211
Trade & other payables	3,027	2,544	3,496	4,474	5,564
Other current liabilities	478	1,260	892	1,809	1,889
Non-current liabilities	**1,915**	**4,278**	**6,786**	**7,700**	**9,225**
LT debt	928	3,182	3,193	3,711	4,808
Bonds payables	0	0	2,225	2,000	2,000
Other non-current liabilities	987	1,096	1,368	1,989	2,417
Total liabilities	**9,521**	**11,123**	**15,351**	**19,481**	**20,890**
Total equity	**7,955**	**11,525**	**16,011**	**23,750**	**33,043**
Share capital	864	868	892	892	892
Reserves	6,650	7,248	11,911	12,094	12,277
Retained earnings	1,002	3,895	7,812	12,904	19,530
Other equities	-589	-772	-4,945	-2,553	-163
Minority interests	29	286	341	413	507
Total liabilities and equity	**17,476**	**22,648**	**31,362**	**43,231**	**53,933**

Key ratios

YE 31 Dec (RMB mn)	FY19A	FY20A	FY21E	FY22E	FY23E
Revenue by segment					
CMOS	9,779	14,697	16,861	22,861	29,474
TDDI	0	744	1,756	2,980	3,621
Others	3,853	4,383	5,853	7,127	8,540
Total	**13,632**	**19,824**	**24,470**	**32,968**	**41,635**
CMOS %	*71.7%*	*74.1%*	*68.9%*	*69.3%*	*70.8%*
Growth (%)					
Revenue	40.5%	45.4%	23.4%	34.7%	26.3%
Adj. EBITDA	92.4%	173.1%	61.1%	28.9%	29.6%
Net profit	221.1%	481.2%	72.1%	32.7%	30.3%
Profit & loss ratio (%)					
Gross margin	27.4%	29.9%	33.8%	34.2%	34.3%
EBITDA margin	10.0%	18.8%	24.5%	23.4%	24.1%
Net profit margin	3.4%	13.7%	19.0%	18.7%	19.3%
Balance sheet ratio					
Net debt/total equity (%)	23.5%	6.7%	net	net	net
Debt/EBITDA	3.7	1.7	1.6	1.5	1.1
Interest coverage	4.8	12.5	16.2	16.5	20.0
Cash conversion cycle (days)	130.9	123.1	133.5	128.0	128.5
Profitability (%)					
ROE	5.9%	23.5%	29.1%	26.0%	24.4%
ROA	2.7%	11.9%	14.8%	14.3%	14.9%
Per share data (RMB)					
EPS	0.76	3.21	5.22	6.93	9.04
BVPS	12.94	13.33	17.58	26.17	36.49

Source: Company data, CMBIS estimates

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