

China PCB Sector

Modest growth in global PCB sales; headwinds persist as high copper price weighs on margin

Following marginal growth of 1.0% YoY in 2022, **the global PCB market declined by 15% YoY in 2023 to US\$69.5bn**, due to subdued demand across end markets and the digestion of excess inventory. **The quarterly revenue of the top 40 PCB suppliers fell YoY consecutively in 2023, but managed to grow QoQ in 3Q/4Q, suggesting the industry is bottoming out gradually.**

For 2024, we expect the PCB sector to have a modest recovery, following its emergence from the trough in 2H23. We tracked the top 20 PCB suppliers' revenue forecasts. Bloomberg consensus estimate their **aggregated revenue will increase 10.4% YoY in 2024/25E.** We expected slightly smaller growth for the worldwide PCB market sales. In the long term, the sector is expected to grow at 5.4% 2023-28E CAGR per Prismark.

The key material of PCB is copper and its price is surging. We have predicted for a potential increase in copper price back in March ([report](#)), when we observed the copper concentrates TC index reached a historical low at US\$11/tonne. The copper concentrate TC index, a key indicator for copper price, collapsed by more than 90% from six months ago due to a confluence of factors, such as copper supply shortage and smelters' capacity expansion. Meanwhile, there has also been speculation regarding potential cuts to Fed interest rates later this year. These catalysts collectively have propelled the copper price to advance further. **LME copper price (3M) was US\$9,342/tonne on 11 Apr 2024, marking a roughly 10% from US\$8,533/tonne at the beginning of the year.**

Copper price is likely to maintain its momentum in the near term given the continuously tight supply. We recommend investors to monitor copper price movements closely that may be affected by: 1) the timing of a more enduring rebound in major global economies, 2) the timing of potential US Fed interest rate cuts and 3) impacts from a meaningful cut in major smelter's production or extended maintenance shutdowns of their factories. Each of the factor above will have either a positive or negative impact on copper price, **which will eventually impact the supply chain's sales and margins.**

Shennan Circuit (002916 CH): Maintain Hold with TP adjusted to RMB84, based on 27x 2024E P/E. We expect Shennan to have a modest recovery this year. 2024 revenue growth is projected to be 12.5% from a low base in 2023, since utilization rates of both PCB and substrate businesses are up. We expect a stronger recovery for Shennan in 2H24/FY25, considering ongoing price erosion in PCB products and weak demand in the telecom market in 1H. We slightly revised up 2024 GPM forecasts by 2% as we acknowledge that PCB manufacturers will likely to experience rising material costs over a more extended period than previously anticipated. The stock is currently trading at 31x 24E P/E, which is fair.

OUTPERFORM
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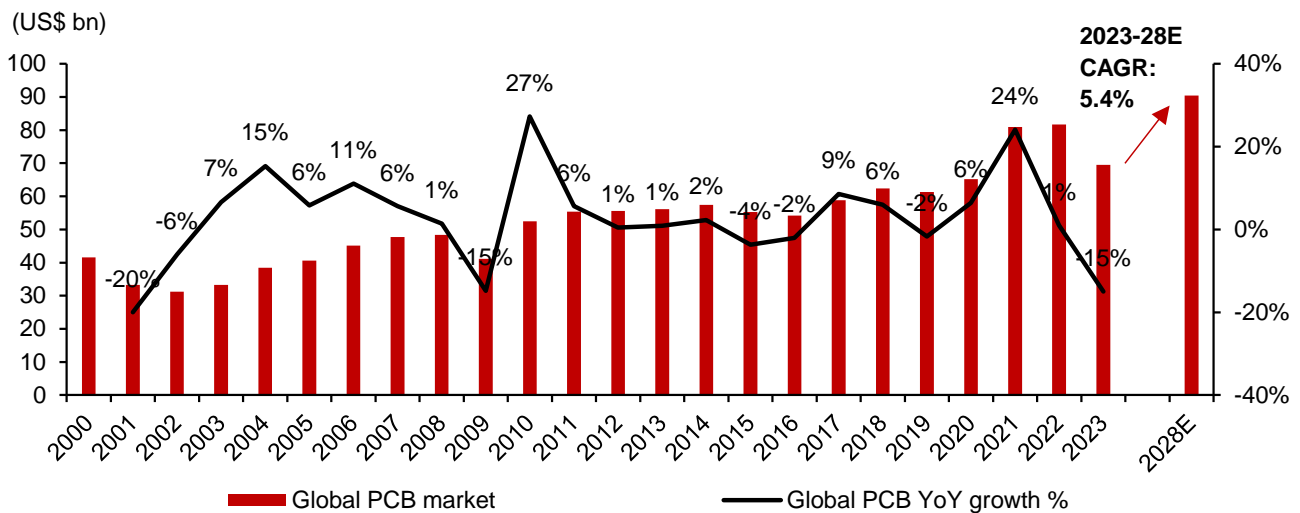
Global PCB market: anticipated modest recovery in 2024

Global PCB Market is poised for a modest recovery in 2024, following its emergence from the trough in 2H23

Following nominal growth of 1.0% in 2022, the global PCB market declined by 15% in 2023 to US\$69.5bn, attributed to diminished demand across end markets and the process of inventory adjustments. The quarterly revenue of the top 40 PCB suppliers fell YoY consecutively in 2023, but managed to grow QoQ in 3Q/4Q, signaling the end of its downward trajectory.

Looking ahead in 2024, the PCB sector is anticipated to experience a modest resurgence after navigating through the trough in 2H23. In the long term, the sector is expected to grow at 5.4% 2023-28E CAGR per Prismark.

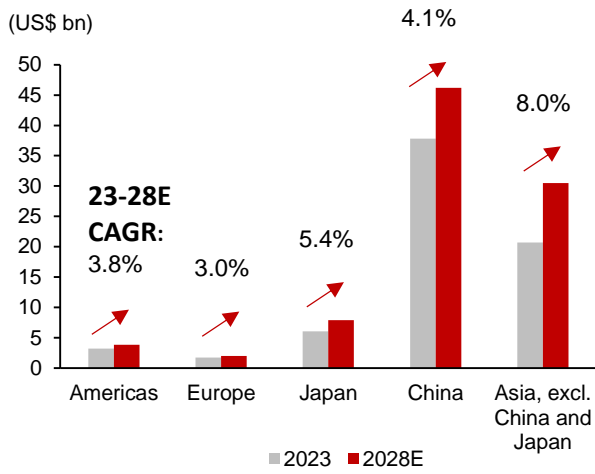
Figure 1: Global PCB sales is expected to grow at 5.4% 2023-28E CAGR



Source: Prismark, company filings, CMBIGM estimates

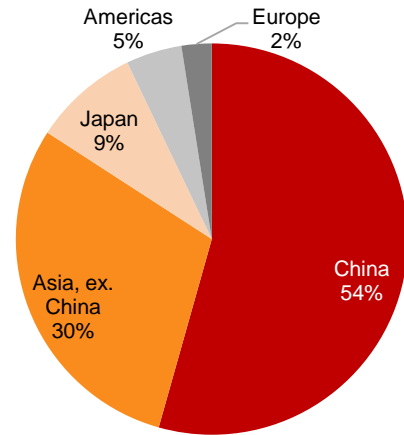
China remains the predominant global PCB manufacturing hub with over 50% market share. The regional output decreased 13.2% in 2023, affected by industry headwinds and supply chain diversification. Despite these headwinds, China will maintain its greatest share in PCB manufacturing. Per Prismark, China PCB output is forecasted to grow at 4.1% 2023-28E CAGR.

Figure 2: Prisma forecasts China PCB output to grow at 4.1% 2023-28E CAGR



Source: Prisma, company filings, CMBIGM estimates

Figure 3: China remains the predominant PCB manufacturing hub with over 50% market share



Source: Prisma, company filings, CMBIGM estimates

The aggregated revenue of the 20 leading PCB manufacturers is forecasted to grow 10%/15% in 2024/25E

The 20 leading PCB manufacturers, which accounted for ~55% of industry sales, reported an aggregated revenue decline of 17% in 2023, mirrored the broader market's challenges in 2023 with a 15% YoY decline in PCB industry sales.

Looking ahead, Bloomberg consensus indicates an optimistic turnaround for the 20 leading PCB entities. Their revenues combined are anticipated to increase by 10.4% and 15.2% YoY in 2024/25E. These projections largely align with our expectations for a comparable worldwide PCB market sales growth.

Figure 4: 20 leading PCB manufacturers

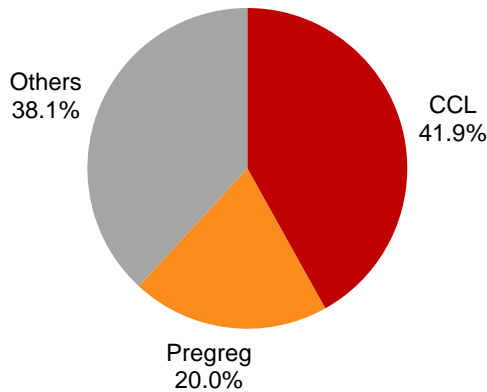
Company	Ticker	Revenue (US\$m)			YoY growth (%)		
		2023	2024E	2025E	2023	2024E	2025E
Zhen Ding	4958 TT	4,858	5,176	5,610	-15.5%	6.6%	8.4%
Dongshan Precision	002384 CH	4,522	5,264	6,092	-3.7%	16.4%	15.7%
Unimicron	3037 TT	3,338	3,726	4,580	-29.2%	11.6%	22.9%
Ibiden	4062 JP	2,717	2,534	2,808	-15.2%	-6.7%	10.8%
TTM	TTMI US	2,240	2,334	2,494	-10.4%	4.2%	6.9%
Compeq	2313 TT	2,152	2,330	2,608	-16.1%	8.2%	12.0%
Shennan Circuit	002916 CH	1,869	2,102	2,405	-3.3%	12.5%	14.4%
Tripod	3044 TT	1,889	2,048	2,289	-14.5%	8.4%	11.8%
AT&S	ATS AV	1,630	2,035	2,719	-19.9%	24.8%	33.6%
Kinwong	603228 CH	1,548	1,794	2,072	-1.0%	15.9%	15.5%
Shinko	6967 JP	1,501	1,578	1,776	-35.4%	5.1%	12.6%
Nan Ya PCB	8046 TT	1,356	1,256	1,596	-37.5%	-7.4%	27.1%
WUS	002463 CH	1,262	1,579	1,885	1.8%	25.1%	19.4%
Meiko	6787 JP	1,252	1,295	1,417	-1.8%	3.4%	9.4%
Victory Giant	300476 CH	1,230	1,601	1,932	4.9%	30.1%	20.7%
FLEXium	6269 TT	1,050	1,042	1,062	-21.9%	-0.8%	1.9%
Gold Circuit	2368 TT	964	1,244	1,475	-12.4%	29.1%	18.5%
Kinsus	3189 TT	861	994	1,176	-39.6%	15.5%	18.3%
Simmttech	222800 KS	798	927	1,057	-39.4%	16.1%	14.0%
Top 20 total		37,077	40,938	47,173			
Average YoY growth					-17.0%	10.4%	15.2%

Source: Prismark, Bloomberg, CMBIGM estimates

Near-term headwinds from surging copper price

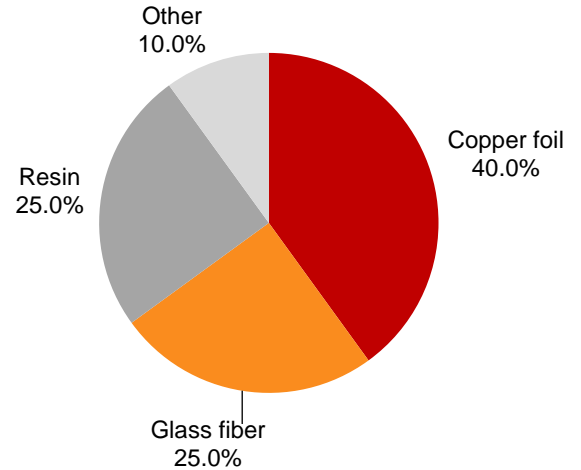
Despite prevailing uncertainties, price of copper is expected to continue its upward trajectory in the near term. Copper is a key material for PCB. The largest material cost is CCL (approx. 30-70% depending on the type of PCB), of which copper foil (30-50%), glass fiber (~25%) and resin (~25%) are the biggest cost contributors. The reliance on copper as a primary material underscores the vulnerability of PCB manufacturing costs to fluctuations in copper prices.

Figure 5: CCL is key material of PCB



Source: Shengyi Electronics, CMBIGM estimates

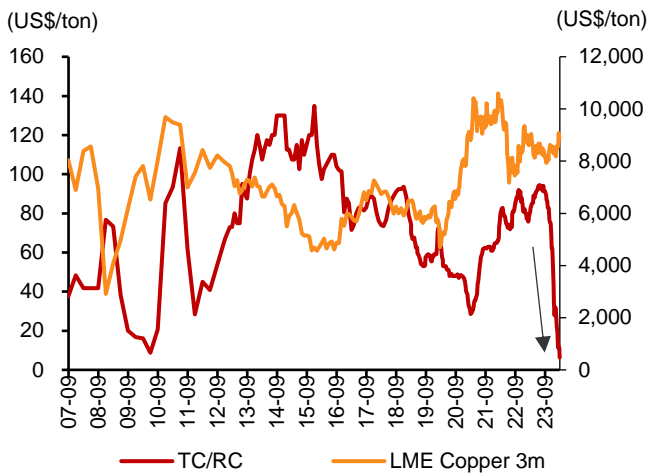
Figure 6: CCL material cost breakdown



Source: Shengyi Electronics, CMBIGM estimates

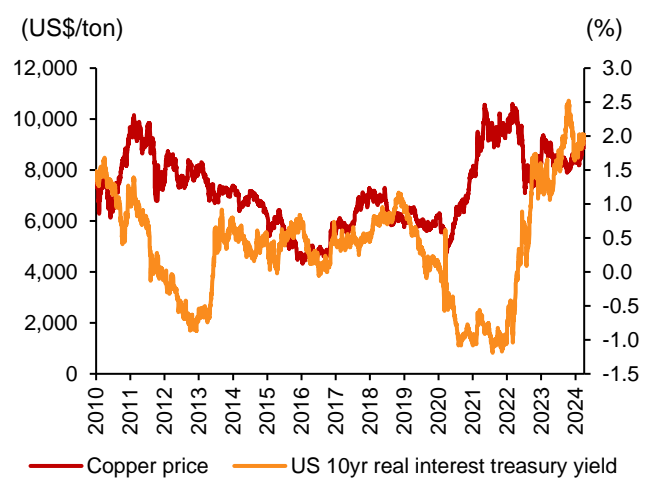
We highlighted an imminent potential for an increase in copper price in March ([report](#)) when we observed the copper concentrates TC index reached a historical low at US\$11/tonne. The copper concentrate TC index, a key indicator for copper price, collapsed by more than 90% from six months ago due to copper supply shortage and smelters' capacity expansion. During this period, there was also widespread speculation regarding potential cuts to US Fed interest rates later in 2024. These factors altogether served as catalysts in exerting upward pressure on copper prices.

Figure 7: Copper prices vs. TC/RC trend



Source: Wind, CMBIGM estimates

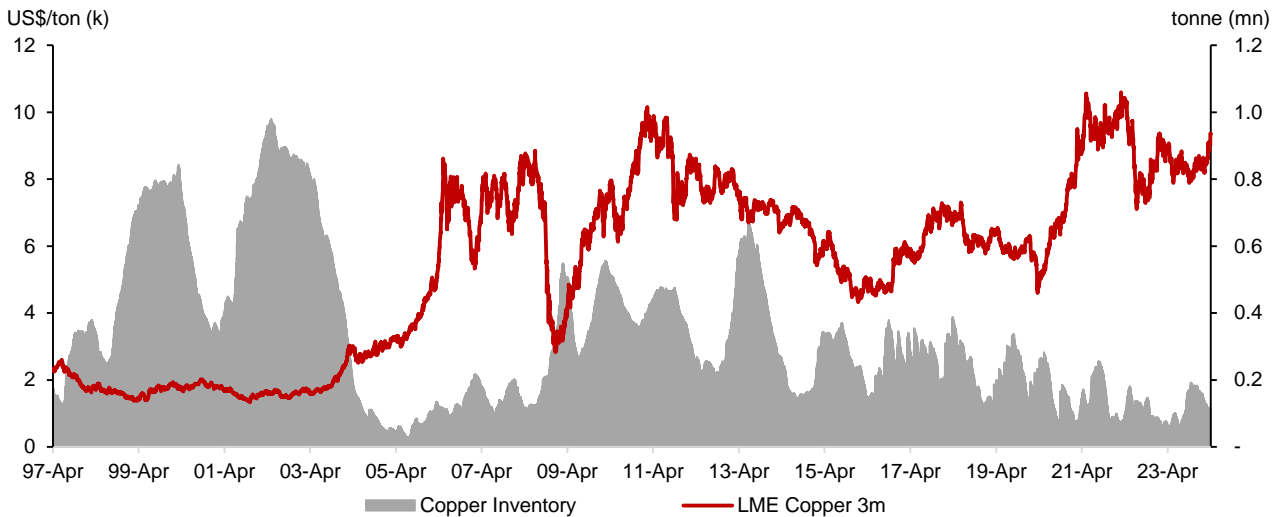
Figure 8: Copper prices vs. 10-yr interest rates



Source: Wind, CMBIGM estimates

Since then, the copper price has advanced further. LME copper price (3M) was US\$9,342/tonne on 11 Apr 2024, increased by ~10% from US\$8,533/tonne at the beginning of the year. The rise was mainly due to 1) low supply due to mining disruptions, 2) increasing demand from resumed economic activities, clean energy transitions and AI demand and 3) anticipation for US interest rate cut.

Figure 9: LME 3M copper price is stabilizing at around US\$9,300/tonne level



Source: Wind, CMBIGM

Looking forward, the near-term outlook suggests copper prices may continue to trend higher due to ongoing tightness in supply. However, investors are advised to closely monitor copper price movements, as uncertainties could sway market dynamics. These factors include the potentially negative effect of high prices on demand should global economic recovery lag further. Second, the implications of US interest rate adjustments (Figure.8), and the impact of any significant production cuts or extended maintenance within the smelting sector. Each of these factors can affect copper prices with consequential effects on the supply chain's sales and margins.

Shennan Circuits (002916 CH, HOLD, TP: RMB84)

We expect Shennan to have a mild recovery this year, with projected revenue growth of 12.5% from a relatively low base in 2023. The forecast is also supported by increased utilization rates in both its PCB and substrate businesses.

However, a more complete recovery for Shennan is not anticipated in 1H24. This cautious outlook is due to ongoing price erosion within the PCB sector and persistently weak demand in the telecom market, both globally and domestically. We slightly revised up 2024 GPM forecasts by 2% as we acknowledge that rising material costs will likely be felt by PCB manufacturers over a more extended period than previously anticipated.

We maintain **HOLD** rating with TP adjusted to RMB84, based on 27x 2024E P/E. The stock is currently trading at 31x 24E P/E, which is fair in our view.

Earnings Summary

(YE 31 Dec)	FY22A	FY23A	FY24E	FY25E	FY26E
Revenue (RMB mn)	13,992	13,526	15,212	17,408	19,794
YoY growth (%)	0.4	(3.3)	12.5	14.4	13.7
Net profit (RMB mn)	1,641	1,398	1,602	1,988	2,471
YoY growth (%)	10.8	(14.8)	14.6	24.1	24.3
EPS (Reported) (RMB)	3.22	2.72	3.11	3.86	4.80
P/E (x)	30.6	36.2	31.6	25.5	20.5
ROE (%)	13.4%	10.6%	11.2%	12.6%	14.0%

Source: Company data, CMBIGM estimates

Figure 10: CMBIGM estimates vs. consensus

RMB mn	CMBI estimates			Consensus			Diff (%)		
	FY24E	FY25E	FY26E	FY24E	FY25E	FY26E	FY24E	FY25E	FY26E
Revenue	15,212	17,408	19,794	15,777	18,249	20,821	-4%	-5%	-5%
Gross Profit	3,726	4,386	5,102	3,856	4,548	5,242	-3%	-4%	-3%
Net profit	1,602	1,988	2,471	1,677	2,013	2,485	-4%	-1%	-1%
EPS (RMB)	3.11	3.86	4.80	3.29	3.97	4.84	-5%	-3%	-1%
Gross Margin	24.5%	25.2%	25.8%	24.4%	24.9%	25.2%	0.1 ppt	0.3 ppt	0.6 ppt
Net Margin	10.5%	11.4%	12.5%	10.6%	11.0%	11.9%	-0.1 ppt	0.4 ppt	0.5 ppt

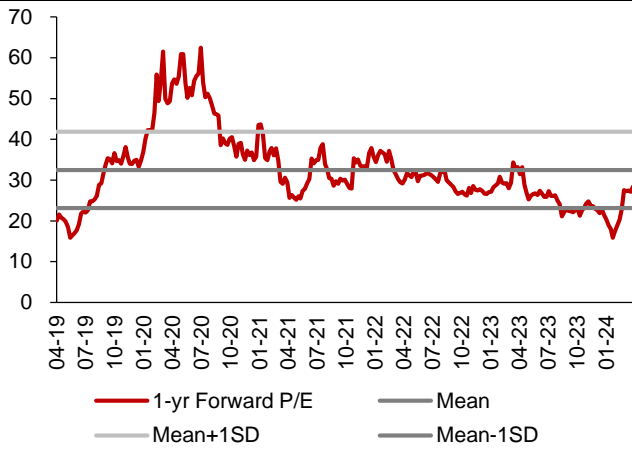
Source: Company data, CMBIGM estimates

Figure 11: Earnings revision

RMB mn	New			Old			Diff (%)		
	FY24E	FY25E	FY26E	FY24E	FY25E	FY26E	FY24E	FY25E	FY26E
Revenue	15,212	17,408	19,794	15,212	17,461	19,850	0%	0%	0%
Gross Profit	3,726	4,386	5,102	3,659	4,376	5,105	2%	0%	0%
Net profit	1,602	1,988	2,471	1,538	1,971	2,468	4%	1%	0%
EPS (RMB)	3.11	3.86	4.80	2.99	3.83	4.80	4%	1%	0%
Gross Margin	24.5%	25.2%	25.8%	24.1%	25.1%	25.7%	0.4 ppt	0.1 ppt	0.1 ppt
Net Margin	10.5%	11.4%	12.5%	10.1%	11.3%	12.4%	0.4 ppt	0.1 ppt	0.1 ppt

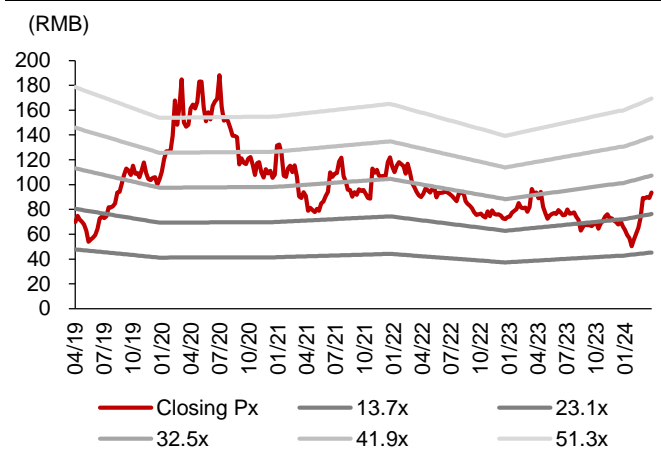
Source: Company data, CMBIGM estimates

Figure 12: 12M forward PE band



Source: Company data, CMBIGM estimates

Figure 13: 12M forward PE chart



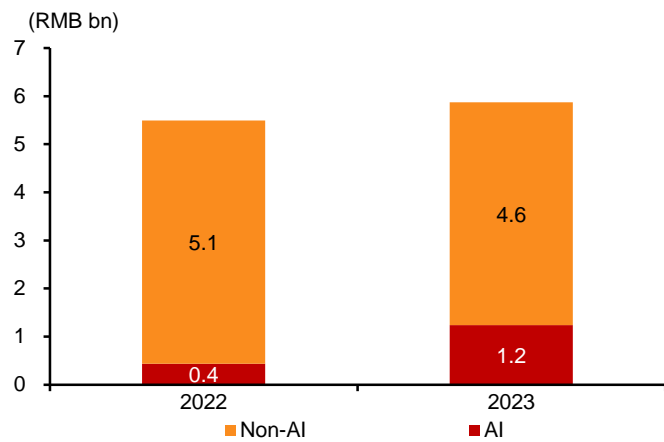
Source: Company data, CMBIGM estimates

WUS Printed Circuit (002463 CH, NR)

In 2023, the rapid adoption of AI technologies and the escalating need for compute power fueled a surge in demand for AI servers and high-speed network systems, directly benefitting WUS Holdings, another globally leading PCB player. AI momentum significantly increased the demand for large-sized, high-speed, multi-layer PCBs. As a result, the company’s Enterprise Communication segment showed a 6.8% YoY revenue increase, with GPM also rising by 18 ppts.

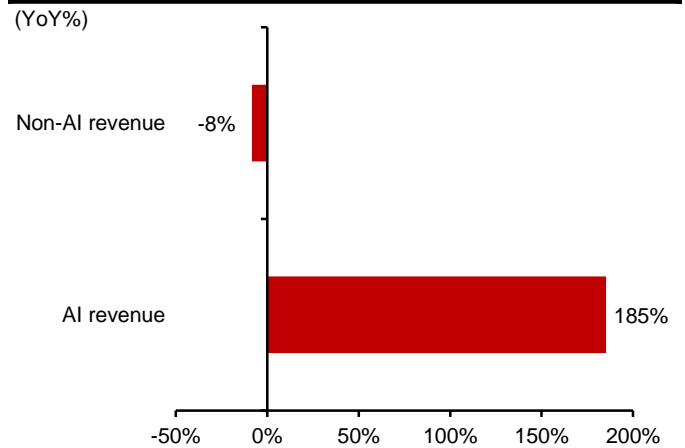
Notably, the revenue from AI server and HPC-related PCB products as a percentage of total revenue grew from 7.9% YoY in 2022 to 21.1% YoY in 2023. While we observed meaningful revenue growth at 186.1% YoY in the company's AI revenue, its non-AI revenue declined by 8.5% YoY in 2023 due to persistent weakness in the telecom market.

Figure 14: Enterprise Communication segment revenue breakdown in 2023



Source: Company data, CMBIGM estimates

Figure 15: AI revenue vs. non-AI revenue growth in 2023



Source: Company data, CMBIGM estimates

Figure 16: Peers table

Company	Ticker	Mkt Cap US\$(mn)	Price (LC)	P/E (x)			ROE (%)			EPS (US\$)		
				FY24E	FY25E	FY26E	FY24E	FY25E	FY26E	FY24E	FY25E	FY26E
PCB manufacturers												
SCC	002916 CH	6,860	90.0	29.4	24.4	20.0	11.7	12.8	14.1	0.5	0.6	0.7
Shengyi Tech	600183 CH	5,319	15.7	21.6	17.1	14.7	11.9	13.9	15.1	0.1	0.1	0.2
Dongshan Precision	002384 CH	3,248	13.6	9.0	7.2	6.4	13.2	14.4	15.7	0.2	0.3	0.3
Unimicron	3037 TT	9,168	192.5	22.4	13.5	11.9	14.6	19.5	16.8	0.3	0.4	0.5
Ibiden	4062 JP	5,663	6,189.0	25.3	20.3	14.4	8.1	9.4	11.8	1.6	2.0	2.8
Shinko	6967 JP	4,943	5,590.0	30.9	20.0	15.8	9.1	12.7	14.1	1.2	1.8	2.3
Nan Ya PCB	8046 TT	3,984	199.5	33.1	16.8	14.0	8.2	14.5	10.7	0.2	0.4	0.4
WUS	002463 CH	7,989	28.8	26.5	21.3	17.6	19.2	19.6	19.5	0.2	0.2	0.2
Victory Giant	300476 CH	2,851	23.1	17.3	13.7	-	14.3	15.6	-	0.2	0.2	NA
Gold Circuit	2368 TT	3,498	229.5	18.0	13.9	10.0	32.6	32.9	-	0.4	0.5	0.7
Kinsus	3189 TT	1,377	101.0	19.6	13.4	10.0	5.6	8.4	7.7	0.2	0.2	0.3
Average				23.0	16.5	13.5	13.5	15.8	14.0	0.4	0.6	0.8
Median				22.4	16.8	14.2	11.9	14.4	14.1	0.2	0.4	0.5
CCL manufacturers												
Shengyi Tech	600183 CH	5,319	15.7	21.6	17.1	14.7	11.9	13.9	15.1	0.1	0.1	0.2
Kingboard	148 HK	2,192	16.2	4.4	3.6	3.3	6.2	7.3	6.6	0.4	0.5	0.6
Holycore	603186 CH	454	22.9	15.3	9.5	-	9.3	11.8	-	0.2	0.3	NA
Epoxy Base	603002 CH	818	5.2	32.6	14.9	-	5.1	10.4	-	0.0	0.0	NA
Average				18.5	11.3	9.0	8.1	10.9	10.9	0.2	0.3	0.4
Median				18.5	12.2	9.0	7.8	11.1	10.9	0.2	0.2	0.4

Source: Bloomberg, updated on 12 April 2024

Shennan Circuits (002916 CH) Financial Summary

INCOME STATEMENT	2021A	2022A	2023A	2024E	2025E	2026E
YE 31 Dec (RMB mn)						
Revenue	13,943	13,992	13,526	15,212	17,408	19,794
Cost of goods sold	(10,637)	(10,422)	(10,357)	(11,487)	(13,022)	(14,692)
Gross profit	3,306	3,571	3,170	3,726	4,386	5,102
Operating expenses	(1,406)	(1,691)	(1,558)	(1,888)	(2,108)	(2,338)
SG&A expense	(776)	(926)	(870)	(937)	(1,037)	(1,140)
R&D expense	(782)	(820)	(1,073)	(1,217)	(1,375)	(1,544)
Others	152	55	385	266	305	346
Operating profit	1,899	1,880	1,611	1,838	2,278	2,765
Other income	4	4	5	5	6	6
Other expense	(11)	(7)	(4)	(6)	(6)	(7)
Other gains/(losses)	(175)	(163)	(182)	(145)	(188)	(178)
Interest income	5	22	12	9	14	20
Interest expense	(91)	(92)	(66)	(77)	(83)	(88)
Others	(21)	77	23	54	62	71
Pre-tax profit	1,609	1,720	1,398	1,679	2,083	2,589
Income tax	(128)	(79)	(1)	(77)	(96)	(119)
After tax profit	1,481	1,641	1,398	1,602	1,988	2,471
Minority interest	0	0	(0)	(0)	(0)	(0)
Net profit	1,481	1,641	1,398	1,602	1,988	2,471
BALANCE SHEET						
YE 31 Dec (RMB mn)						
Current assets	7,270	8,578	8,597	9,609	10,912	12,709
Cash & equivalents	620	1,913	853	1,315	1,884	2,739
Account receivables	2,732	2,770	3,091	3,328	3,636	4,065
Inventories	2,527	2,341	2,686	2,852	3,141	3,460
Prepayment	16	49	8	33	37	43
Other current assets	1,377	1,505	1,959	2,081	2,214	2,401
Non-current assets	9,522	12,149	14,010	14,945	15,900	16,925
PP&E	7,789	9,138	10,083	10,970	11,757	12,783
Right-of-use assets	44	37	26	17	7	(3)
Deferred income tax	91	208	272	296	323	357
Intangibles	407	557	544	546	551	560
Goodwill	0	0	0	0	0	0
Other non-current assets	1,191	2,209	3,085	3,116	3,261	3,228
Total assets	16,792	20,727	22,607	24,554	26,811	29,634
Current liabilities	5,948	6,708	6,425	7,111	7,732	8,605
Short-term borrowings	350	0	400	722	746	956
Account payables	1,881	1,638	2,037	2,180	2,386	2,605
Tax payable	78	31	42	45	49	55
Other current liabilities	3,141	4,484	3,291	3,517	3,851	4,210
Contract liabilities	70	93	212	164	174	198
Accrued expenses	428	462	443	482	526	581
Non-current liabilities	2,325	1,765	2,995	3,106	3,272	3,397
Long-term borrowings	1,368	1,175	2,407	2,467	2,574	2,626
Bond payables	0	0	0	0	0	0
Deferred income	317	356	372	404	441	487
Other non-current liabilities	640	235	217	235	257	284
Total liabilities	8,272	8,474	9,420	10,216	11,004	12,002
Share capital	489	513	513	513	513	513
Retained earnings	4,150	5,291	6,179	7,319	8,778	10,593
Other reserves	3,877	6,446	6,492	6,503	6,514	6,524
Total shareholders equity	8,517	12,249	13,184	14,335	15,805	17,630
Minority interest	3	3	3	3	3	2
Total equity and liabilities	16,792	20,727	22,607	24,554	26,811	29,634

CASH FLOW	2021A	2022A	2023A	2024E	2025E	2026E
YE 31 Dec (RMB mn)						
Operating						
Profit before taxation	1,481	1,640	1,398	1,602	1,988	2,471
Depreciation & amortization	863	1,062	1,272	1,390	1,587	1,790
Change in working capital	(363)	180	(364)	9	(34)	(142)
Others	361	281	268	(120)	(17)	(42)
Net cash from operations	2,342	3,163	2,574	2,881	3,524	4,077
Investing						
Capital expenditure	(2,658)	(3,378)	(3,250)	(2,321)	(2,536)	(2,805)
Acquisition of subsidiaries/ investments	(3)	0	0	0	0	0
Net proceeds from disposal of short-term investments	0	0	0	0	0	0
Others	181	(237)	(311)	33	34	36
Net cash from investing	(2,481)	(3,614)	(3,561)	(2,288)	(2,502)	(2,768)
Financing						
Dividend paid	(541)	(565)	(589)	(539)	(612)	(744)
Net borrowings	536	(242)	1,117	382	131	262
Proceeds from share issues	0	2,530	0	0	0	0
Others	266	(26)	(617)	11	11	11
Net cash from financing	261	1,697	(89)	(146)	(470)	(471)
Net change in cash						
Cash at the beginning of the year	504	620	1,912	851	1,313	1,882
Exchange difference	(7)	30	(0)	(0)	(0)	(0)
Others	122	1,263	(1,061)	462	569	856
Cash at the end of the year	620	1,912	851	1,313	1,882	2,737

Source: Company data, CMBIGM estimates. Note: The calculation of net cash includes financial assets.

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