

China Hardware/Semi

Reality check on smartphone supply chain: Prefer Apple and RF names

Following prelim results released in Jan 2023, the sector started to rally substantially despite a mixed or disappointing set of results. In our view, the rebound is mainly due to: 1) a relief rally with better-than-feared results; 2) rising expectation for economy rebound on China reopening; 3) accelerated localization trend under the backdrop of Sino-US tensions. However, based on our checks with semi contacts in China and analysis of recent results from major global/Chinese semi companies, we think the consumer electronic market will remain challenging in 1H23, and recovery may come in 2H23 the earliest. Overall, we **prefer Apple supply chain** over Android, and **RF names** over CIS names. Maxscend (300782 CH) is currently trading at 45x 2023E P/E, a valuation that we think is elevated and needs substantial growth in earnings to support. Any pullbacks in the market may present a better entry point.

Conservative smartphone outlook from recent results and major forecasts.

For 2023, global No.1/No.2 brands Apple/Samsung remained conservative on outlook, and Samsung expected YoY contraction. In addition, majority of market forecasts expected no major rebound amid macro headwinds: Counterpoint/IDC/Digitimes projected a mild recovery of 2-3% growth, while Gartner/Strategy Analytics believe the market will continue to contract. Given ongoing Android channel correction and demand concerns, we expect semi names with higher Apple exposure to outperform peers as investors embrace the upcoming iPhone 15 upgrade cycle. On the other hand, we believe Android names will see suppressed sales and GM through 1H23E.

RF names are likely to outperform CIS names. CIS players, Sony/Samsung, guided cautious outlook into 1Q23E, while smartphone RF, Qorvo/Skyworks, also indicated concerns over demand weakness in 1Q23E. In terms of inventory, we believe CIS still has above average inventory to digest and RF has relatively lower inventory concerns. Overall, we think RF names will bottom out earlier than CIS players, as inventory restocking will boost demand recovery in 2Q23E.

Expect positive sentiment in near term; Cautious on slower-than-expected recovery. Semiconductor is highly cyclical industry with 3-5 year length. However, we believe global economy pressure is likely to weigh on the market and delay demand rebound in 2023. In the near term, market sentiment will remain strong with consumer demand recovery on China re-opening. Looking into 2Q23E, we think market enthusiasm will fade as recovery of global consumer spending (timing and magnitude) may come in below investor expectations. Overall, we recommend to accumulate Apple supply chain and RF names with fundamental improvements.

Valuation Table

Name	Ticker	Rating	Mkt Cap (USD mn)	Price (LC)	TP (LC)	Up/Down -side	P/E (x)		ROE	
							FY22E	FY23E	FY22E	FY23E
Maxscend	300782 CH	BUY	10,304	133.97	107.80	-19.5%	57.7	44.8	14.4%	15.9%
Willsemi	603501 CH	HOLD	16,384	94.00	72.00	-23.4%	103.3	38.4	5.8%	13.3%
Vanchip	688153 CH	NA	3,072	52.03	NA	NA	292.9	75.9	2.4%	10.2%
Skyworks	SWKS US	NA	19,075	119.61	NA	NA	10.8	12.8	31.2%	25.3%
Qorvo	QRVO US	NA	10,492	103.31	NA	NA	8.6	18.1	29.3%	14.2%

Source: Bloomberg as of 12 Feb 2023, CMBIGM estimates

MARKET PERFORM (Maintain)

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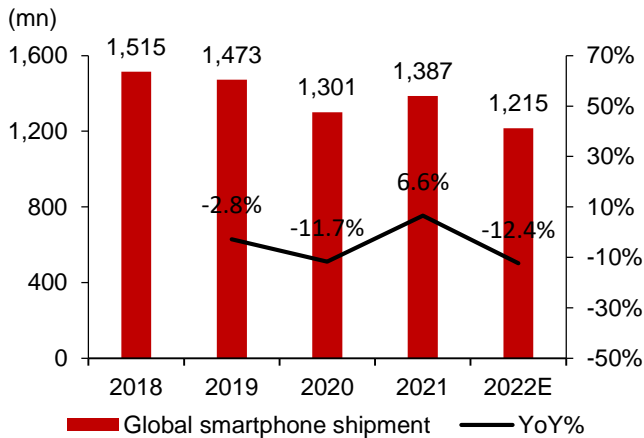
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Cautious Smartphone Outlook on Economic Headwinds

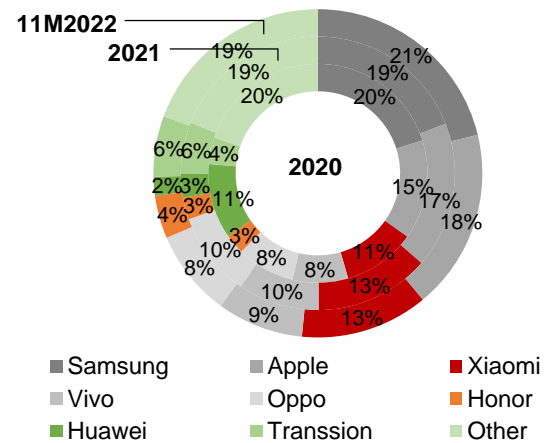
Global smartphone shipment declined 12% YoY to 1.2bn in 2022. By OEM, Apple is gaining shares from Android camp, except Samsung and Honor.

Figure 1: Global smartphone shipment declined 12% YoY in 2022



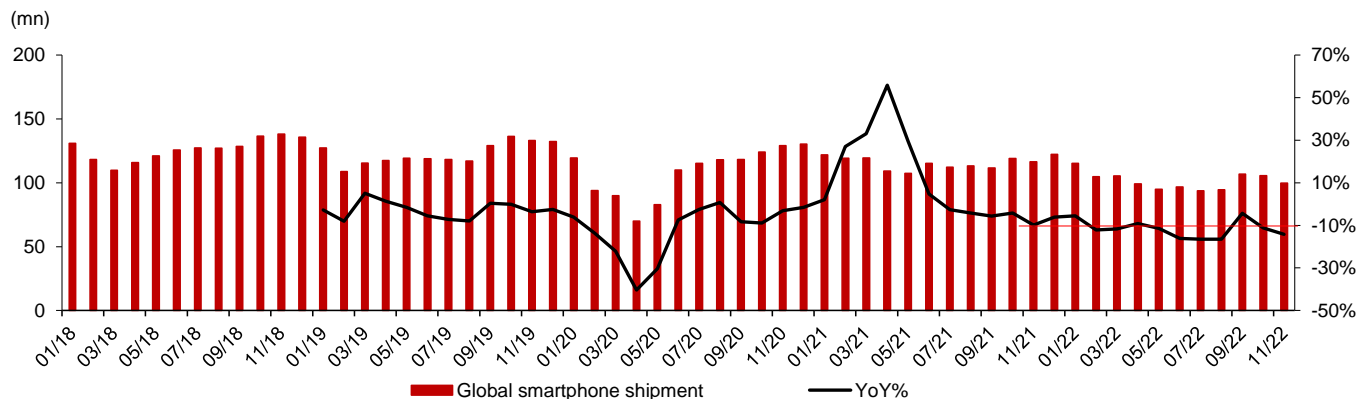
Source: Counterpoint, CMBIGM estimates

Figure 2: OEMs' market share change



Source: Counterpoint, CMBIGM estimates

Figure 3: Global smartphone shipment declined 11.7% monthly on average (Jan. 22 – Nov. 22)



Source: Counterpoint, CMBIGM estimates

Figure 4: OEMs' market share YoY% change (in terms of unit shipment)

	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22
Samsung	1.61%	1.66%	2.58%	3.74%	3.06%	3.88%	3.28%	2.71%	1.15%	-0.01%	0.59%
Apple	0.38%	1.51%	0.69%	0.40%	0.25%	1.19%	1.26%	1.12%	1.42%	1.97%	-0.14%
Xiaomi	-1.13%	-1.03%	-1.89%	-2.44%	-2.03%	-3.45%	-3.44%	-1.11%	1.57%	0.45%	0.97%
Vivo	-0.80%	-1.14%	-1.14%	-1.24%	-1.21%	-1.46%	-1.36%	-1.57%	-1.49%	-1.49%	-0.92%
Oppo	-2.36%	-2.81%	-1.92%	-2.21%	-2.19%	-1.54%	-1.34%	-1.45%	-1.49%	-1.30%	-0.41%
Honor	3.06%	2.20%	2.15%	2.25%	2.29%	2.86%	2.02%	0.89%	0.08%	0.54%	0.37%
Transsion	0.47%	0.83%	0.69%	0.45%	-0.18%	-0.51%	-0.09%	-0.43%	-0.87%	-0.85%	-0.38%
Other	-1.23%	-1.22%	-1.16%	-0.95%	0.01%	-0.97%	-0.33%	-0.16%	-0.37%	0.69%	-0.08%

Source: Counterpoint, CMBIGM estimates

For 2023, most market forecasts expected no major rebound: Counterpoint/IDC/ Digitimes projected a mild recovery of 2% to 3% growth, while Gartner/Samsung/Strategy Analytics believe the market will continue to contract.

Figure 5: Global smartphone market forecasts for 2023

Global smartphone shipment			
	2023E growth	Comments on global market	Comments on China market
Counterpoint	2.0%	<p>“...It is expected to <u>continue underperforming through H1 2023 and only start to grow from Q3 2023.</u> <u>OEMs focusing on the premium segment, which is more resilient</u> than the low to mid-end... <u>...annual smartphone shipments are unlikely to come back to pre-COVID levels for the short-term...</u>”</p>	
IDC	2.8%	<p>IDC reduced its 2023 smartphone forecast by roughly 70 million units, given the ongoing macroeconomic environment and its overall impact on demand. “...Global smartphone market will <u>remain challenged through the first half of 2023</u>, with hopes that recovery will improve around the middle of next year and <u>growth across most regions in the second half...</u>”</p>	
Canalys	Flat to marginal growth	<p>“<u>Conditions remain tough.</u> The macro economy will have adverse effects on mid-to-high-end phone markets in Western Europe and North America.”</p>	<p>China’s reopening from Covid-19 lockdown could improve domestic markets. But the <u>positive effects will show effects in six to nine months while demand will remain challenging in short term.</u></p>
Gartner	-4%	<p>“<u>Consumers are holding onto their phones longer than expected</u>, from 6 to 9 months, and moving away from fixed to flexible contracts in the absence of meaningful new technology... In addition, <u>vendors are passing on inflationary component costs to users, which is dampening demand further.</u> End-user spending on mobile phones is projected to decline 3.8% in 2023.”</p>	
Samsung	Market to contract	<p><u>In 1Q23, demand across all smartphone segments is expected to decrease QoQ.</u> “Amid prolonging geopolitical issues, continued inflation and the continuous global economic slowdown, <u>the smartphone market to contract in 2023. It’s a mass market impacted the most.</u>”</p>	
Strategy Analytics	-5%	<p>“Global smartphone shipment volume will <u>hit the lowest level since 2014.</u> <u>...Samsung and Apple will maintain the top two list</u> with the improved market share during the forecast window. In contrast, <u>Xiaomi, OPPO (OnePlus) and vivo etc. would underperform</u> overall market and follow the downturn track in 2022 and 2023...”</p>	
Digitimes	2.3%	<p>“<u>2023 is shaping up to be a year of gradual recovery. Negative factors from 2022 will still linger,</u> which limits how much the smartphone market can bounce back. <u>More major growth is likely only coming in 2024.</u> <u>Most brands have a more conservative approach</u> to avoid building up inventory, <u>believing that market demand will still be weak in the first half of the year and only see recovery in the second half.</u> Nearly all brands predicted that their YoY growth for 2023 will be in the single digits, with most placing the figure below 5%.”</p>	<p>“<u>Shipment in China is predicted</u> to go from 255.2 million units in 2022 to 260.1 million units in 2023, <u>a slight YoY increase of 1.9%.</u>”</p>

Source: Counterpoint (12/2022), IDC (12/2022), Canalys (1/2023), Gartner (1/2023), Strategy Analytics (1/2023), company info, Bloomberg and CMBIGM estimates

The consumer sentiment will likely remain weak and negative factors will linger, at least during 1H23. Some investors expect the market to recover in 2H23 and Android names bottom out from channel correction, while others think positive sign may come later in 2024.

For China market, the reopening improves domestic traffic and some categories of consumer spending (such as catering, entertainment and tourism). However, Canals warned positive effect on smartphone market may take 6 to 9 months to appear and demand will remain challenging in short term.

Apple expected March quarter to accelerate compared to December quarter. Samsung shared some color on demand recovery expectation, which they believe will be in 2H23. Both companies noticed a positive change from domestic traffic/demand in December in China.

Figure 6: Key takeaways from Apple and Samsung's latest earnings calls

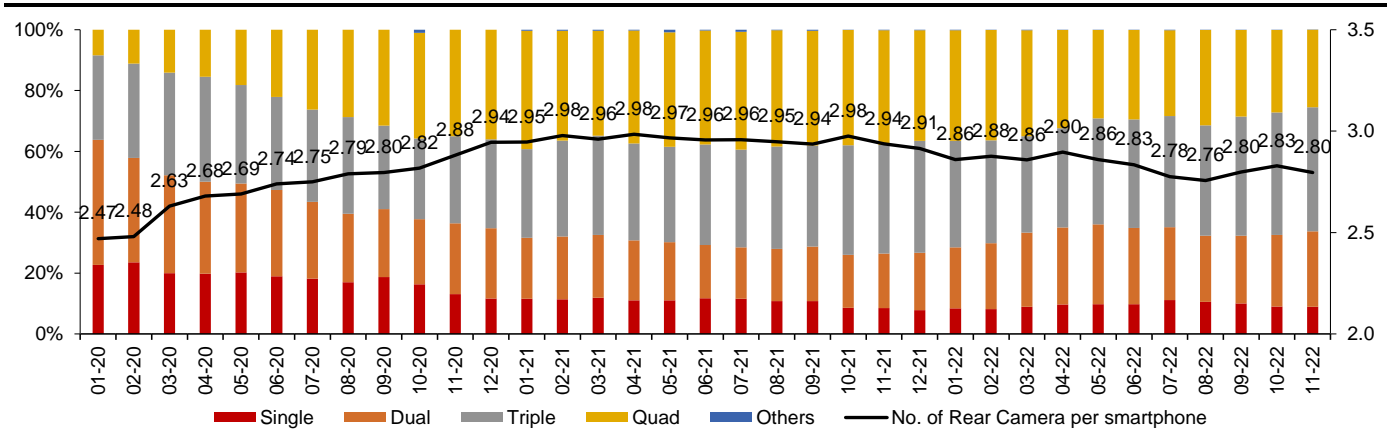
Mobile business outlook		
	Comments on Company's mobile business	Comments on China market
Apple	<p><u>"Macroeconomic outlook and COVID-related impacts to our business do not worsen..."</u></p> <p><u>March quarter year-over-year revenue performance to accelerate relative to the December quarter</u> year-over-year revenue performance."</p>	<p><u>China market</u> "declined by 7% on a reported basis, but <u>actually grew on a constant currency basis</u> ...despite some significant supply constraints..."</p> <p>...<u>saw a marked change in traffic</u> in our stores as compared to November, <u>and</u> that followed through to <u>demand</u> as well."</p>
Samsung	<p>2023 outlook: "<u>consumer sentiment is likely to keep muted</u> due to various macro issues. However, our <u>demand may recover relatively in the second half of the year</u>, thanks to the high-density trends and the spread of new competitors in smartphones....</p> <p><u>Consumer preference for premium tablets and smartphones should remain solid.</u>"</p>	<p>"...demand was sluggish especially in China... until early December..."</p> <p>Considering out numerous barriers affecting demands such as inflation and interest rate trends as well as China's easing COVID-19 policy and economic stimulus packages, we will continue to observe market conditions for variable scenarios."</p>

Source: Company info, Bloomberg and CMBIGM estimates

Smartphone CIS

Counterpoint estimated global smartphone CIS revenue declined 6% in 2022, a mixed impact of 1) a 12% decrease in smartphone shipment, 2) lower number of camera per smartphone due to BOM pressure and 3) increase in \$ content of CIS per smartphone.

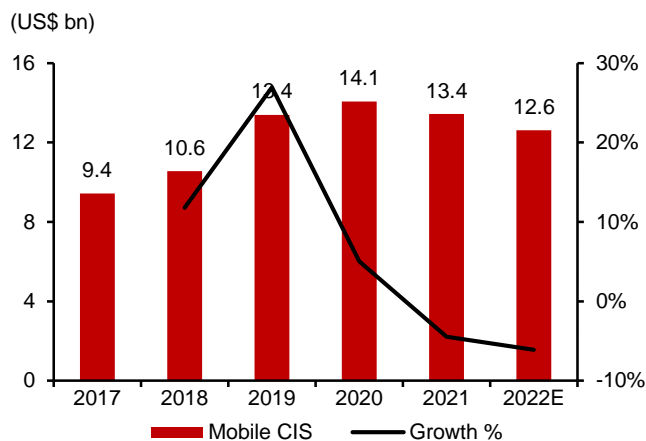
Figure 7: Market share by primary camera setup reflected continues OEMs' cost pressure



Source: Counterpoint, CMBIGM estimates

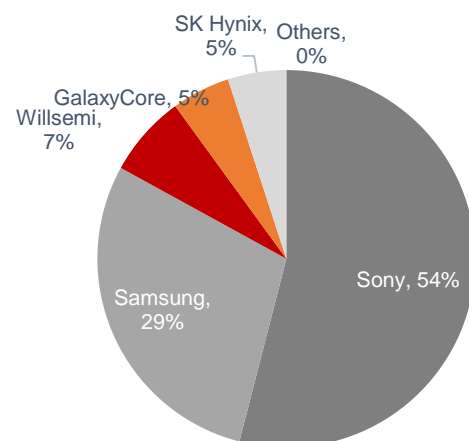
Sony was the only supplier that delivered revenue growth and gained share (+5%) in the smartphone CIS market, thanks to Apple's share expansion and camera upgrades. Samsung lost 1% due to shipment decline, however, the negative impact was milder compared to Willsemi. The latter lost 3.5% of market share (Counterpoint) and is still in the inventory correction process.

Figure 8: Counterpoint estimated global smartphone CIS revenue to decline 6% in 2022



Source: Yole, Counterpoint and CMBIGM estimates

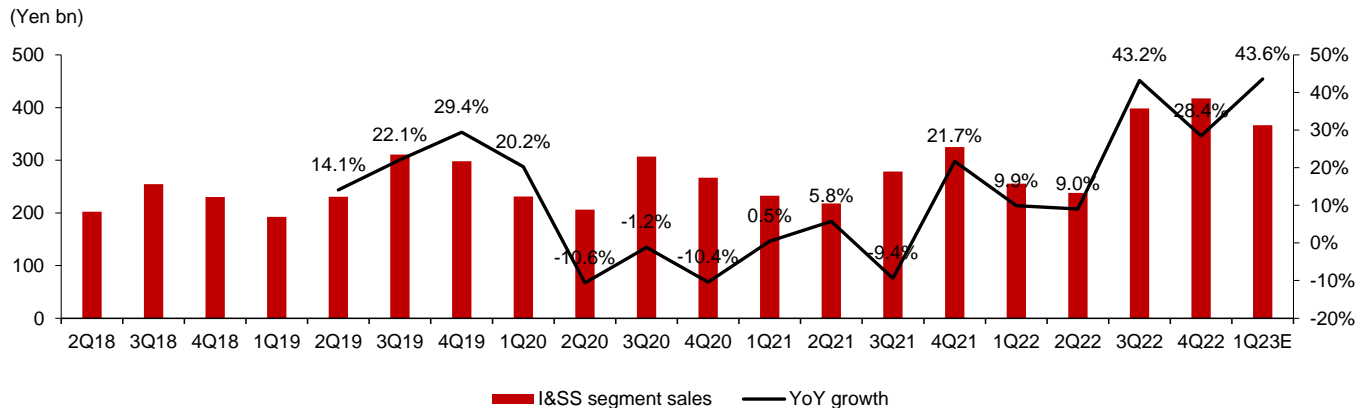
Figure 9: Global smartphone CIS market share (in terms of revenue)



Source: Counterpoint, CMBIGM estimates

In the latest earning's call, Sony slightly lowered 1Q23 sales forecast for imaging and sensing solutions (I&SS) by 1%, due to decrease in unit sales for smartphone CIS, partially offset by product mix improvement. According to the Company's guidance, I&SS segment revenue is estimated to grow 44% YoY and decline 12% QoQ in 1Q23.

Figure 10: Sony's imaging and sensing solution segment quarterly sales



Source: Company info, CMBIGM estimates

Samsung provided a more cautious view for sensors. Samsung thinks it is “difficult to avoid weak sales of major component such as sensors”, given the sluggish demand and continuous inventory correction.

Figure 11: Key takeaways from Sony and Samsung's latest earnings calls

Mobile business outlook	
Comments on Company's image sensor business	
Sony	Sony revised down Imaging & Sensing Solutions Segment (I&SS Segment)'s full year sales forecast (FY ended in March) by 1%. The downward revision is mainly due to lowered estimates for mobile CIS, a mixed impact from 1) decrease in unit sales and 2) improvement in product mix.
Samsung	“In the first quarter, impact of sluggish demand and inventory adjustment are expected to continue for the time being. And it may be difficult to avoid weak sales of major component such as SoCs and sensors.”

Source: Company info, Bloomberg and CMBIGM estimates

We think Sony's 2022 outperformance is largely due to Apple's camera upgrades. Looking into 1Q23, Sony's sales growth projection for its sensor business is in line with Apple's prediction of an accelerating mobile revenue performance for March quarter.

As the demand outlook for premium/flagship segment seems to be more resilient, it is likely that Sony may maintain its leading position in 2023. For Android CIS suppliers, we are cautious that inventory correction may last longer, which could weigh on domestic suppliers' mobile CIS outlook. Beyond demand concern and channel inventory, margin pressure may also challenge their bottom lines.

Smartphone RF

Smartphone RF supplier, Qorvo, expressed similar concerns of ongoing demand weakness but expected inventory will return to normal level later this year. Skyworks thinks there could be opportunities in Android portfolio when inventory correction is completed, but the tone remains cautious at the moment.

Both companies expected China market to improve in 2H23. Qorvo thinks revenue from China-based smartphone OEMs will remain flat in 1H23 and achieve strong YoY growth in 4Q23-1Q24. Skyworks thinks inventory correction will continue in 1Q23 and there will be some improvements from 2Q23.

Figure 12: Key takeaways from Skyworks and Qorvo's latest earnings calls

Takeaways from Company's earnings calls		
	Comments on Company's business outlook	Comments on China market
Skyworks	<p><u>"...expect that the days of inventory will come down back to more normalized level in the second half of the calendar year."</u></p> <p>...We are starting to <u>get back on the saddle here with the Android portfolio</u>. And as you know, we actually had been holding back, because it was some inventory in that channel, I think there still is...</p> <p>And the opportunity for us to have incremental gains there is very high, given the fact that we kind of stayed on the sidelines until these inventory levels got to a more normalized position.</p> <p>It's not about the product, the products are ready to roll. <u>We've got everything we need to drive that business, but we just want to be careful as the markets move forward.</u> But we have the design win momentum for sure."</p>	<p>"...Some of the markets in China are a little bit more volatile, but in those cases we have very little exposure."</p> <p><u>Android: "December was low, March will continue to remain low, especially China with Vivo, Xiaomi, and to a certain extent Samsung as well are still going through this inventory burn-off process."</u></p> <p><u>...will start seeing some improvements in the June quarter, and then for sure in the back half of calendar year 2023."</u></p>
	<p>For 1Q23, "...there'll be rather <u>modest declines in dollar terms</u> for our guide, biggest driver of course is ACG" (cellular RF solutions for smartphones and other devices)...</p> <p><u>"...Our current view reflects ongoing demand weakness</u> across end-markets as well as our expectations for <u>further consumption of channel inventory</u>."</p> <p>...expect Qorvo's inventory position will decline in March but remain elevated.</p> <p><u>...anticipate the channel to normalize later this calendar year."</u></p>	<p>In 1Q23, "expect our <u>China-based smartphone OEMs in dollar terms to be roughly flat</u>. But overall, our Android revenue to be up.</p> <p>... In terms of revenue, we would <u>expect June to be roughly flattish</u>. There could be a bit higher or a bit lower depending on your view of the economy or China's reopening. We don't have terribly ambitious expectations for the reopening at this point...</p> <p><u>... expect September to see significant sequential growth and then December and the March 2024 quarters to be back to strong annual growth...</u></p> <p><u>...see some early signs of life</u> in China and the smartphone sales through, first few weeks of January look promising. But we <u>need to see a couple of months of that</u>. I think our customers do as well before they really start <u>to gain confidence</u> there. So right now, the purchase order patterns, the forecast remains very cautious.</p>

Source: Company info, Bloomberg and CMBIGM estimates

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