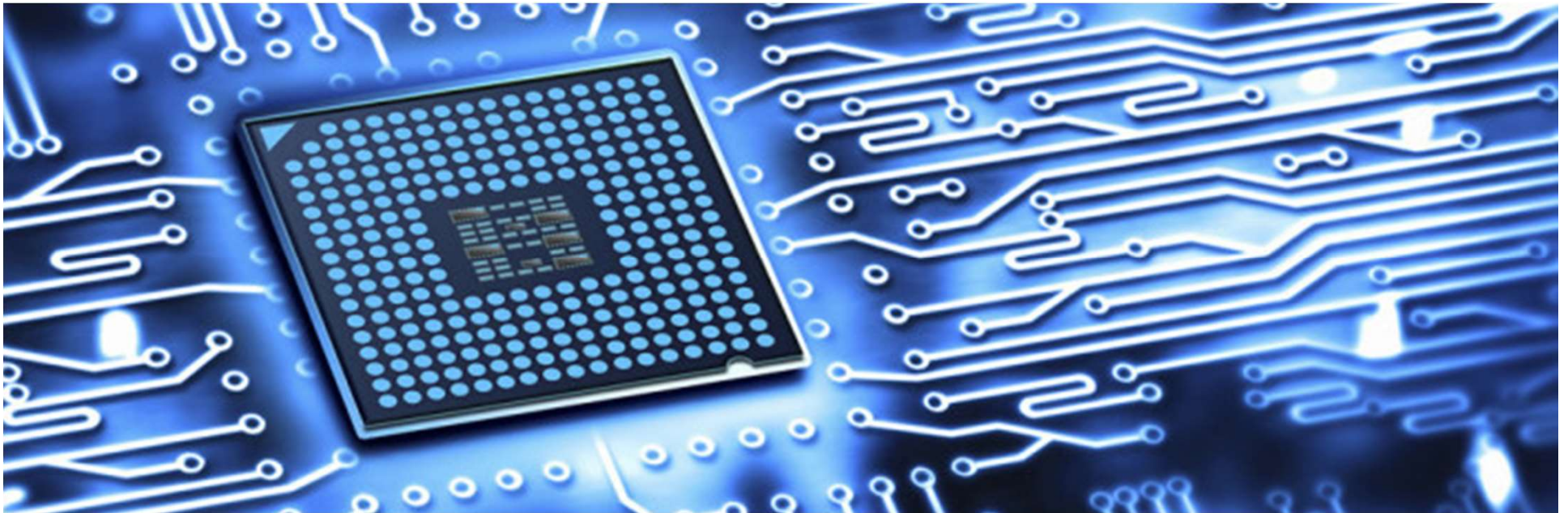


Don't be Encumbered by History...

CY22 Semiconductor Outlook

SIA Webinar Panelist Discussion

February 28, 2022



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Key Message

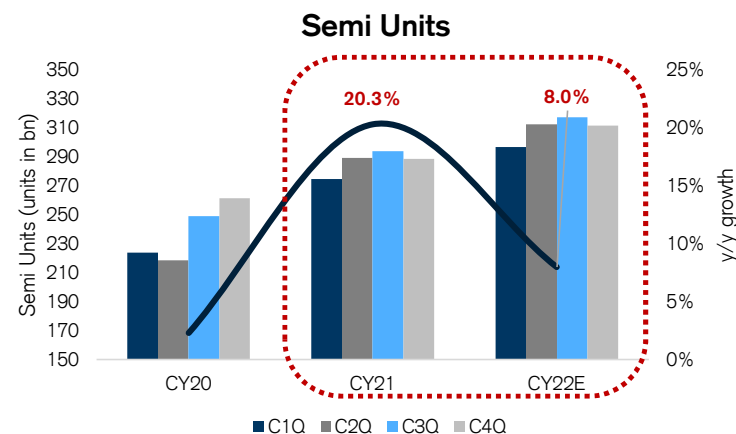
- After increasing 26.5% in CY21, we estimate CY22 Semi Rev will grow ~16% y/y – the key drivers of our assumption is ~8% unit growth y/y and ~8% ASP growth.
- By 2HCY22, we expect to see signs of accelerating supply growth based upon CapEx response upturn-to-date. Accelerating supply growth increase risk of cyclical correction.
- Our base-case assumption for CY23 is for Semi Rev to decline mid-to-high single digit y/y with unit correction more prevalent in 1H and ASP correction in the 2H.
- Mitigating variables makes it more likely that cyclical peak is pushed out than pulled in, albeit, industry cyclical is likely to increase not decrease going forward.
- Secular view is unchanged – Semi CAGR accelerating from 3-5% to AT LEAST 6-8% with upside to 9-12%. Data Economy and implications of AI/ML still woefully under-modeled.
- Semis value to the global economy peaked in 2000 at 4%, troughed in 2015 at 1.5% and is ~3.5% today - we see upside to Semi Rev of \$1 tn and value of 6-8% by 2030.

Our Expectations for CY22 Semi Rev

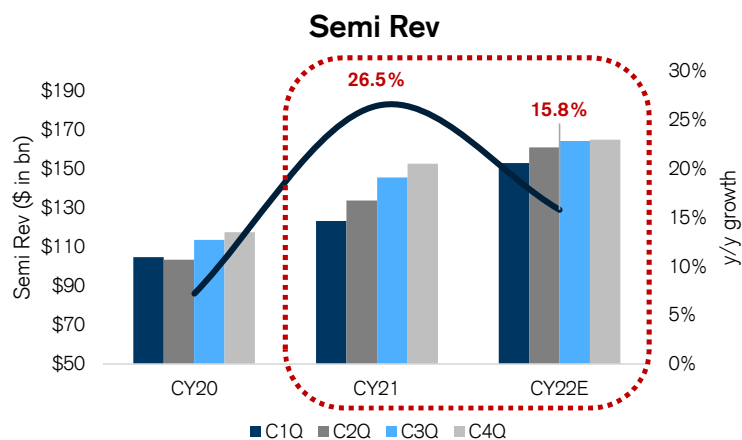
Our View:

- After growing +21.5% in CY21, we expect CY22 Rev to grow +15.8% vrs consensus of +8-12%.
- After growing +20.3% in CY21, we expect CY22 Units to grow +8.0%.
- After growing +5.1% in CY21, we expect CY22 ASPs to grow +7.3%.

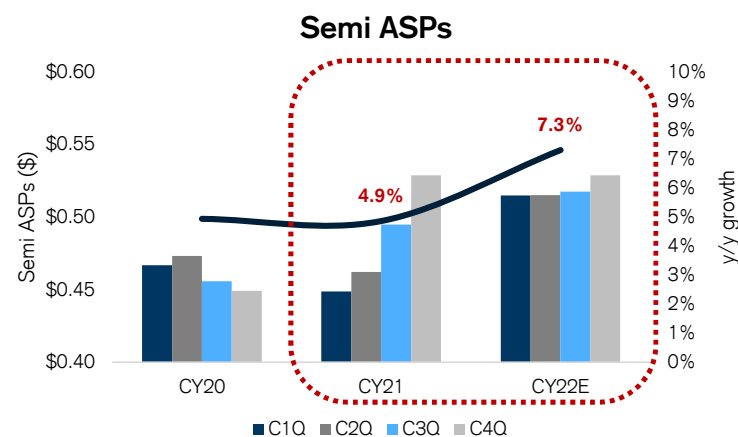
Expect CY22 Semi Units ~INLINE w/ 8% Trend



Expect CY22 Semi Rev to grow ~16% y/y



Expect CY22 ASP Tailwinds to Accelerate



Expect Cyclical Tailwinds to Slow by 2HCY22

Our View:

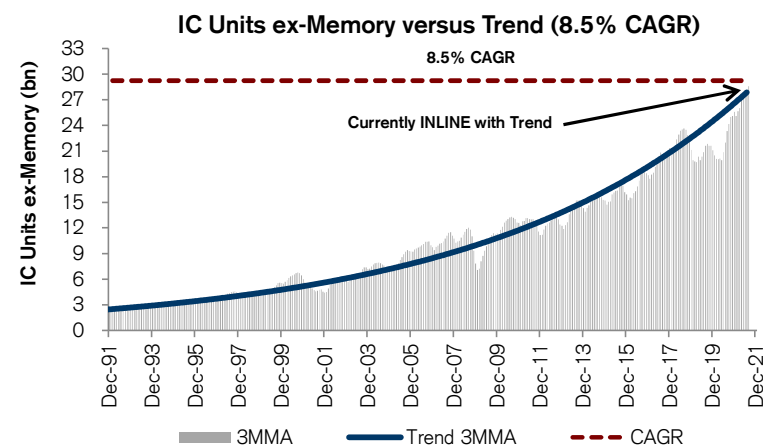
- Duration of current upturn is 18 months vrs. average of 19 months and longest of 30 months.
- Units troughed at 23% BELOW trend and are just now approaching trend, units tend to peak 10-15% ABOVE trend.
- CapEx response cycle to date should drive accelerating supply growth in 2HCY22 – increasing the risk of cyclical correction.

Current Cyclical Upturn in Historical Context

IC Units ex-Memory 3MMA Peak to Trough (ABOVE/BELOW Trend)			
Cycle	8	9	Current
Trough	01/31/12	02/29/16	06/30/20
% BELOW Trend	(14.2%)	(16.1%)	(23.0%)
Peak	09/30/13	08/31/18	12/31/21
% ABOVE Trend	2.1%	5.6%	0.2%
Duration (months)	19.0	30.0	18.0
Recovery (P-T)	16.4%	21.7%	23.2%
Peak Units	15,227,070	23,525,631	29,298,706
Peak-Peak Growth	14.4%	54.5%	24.5%

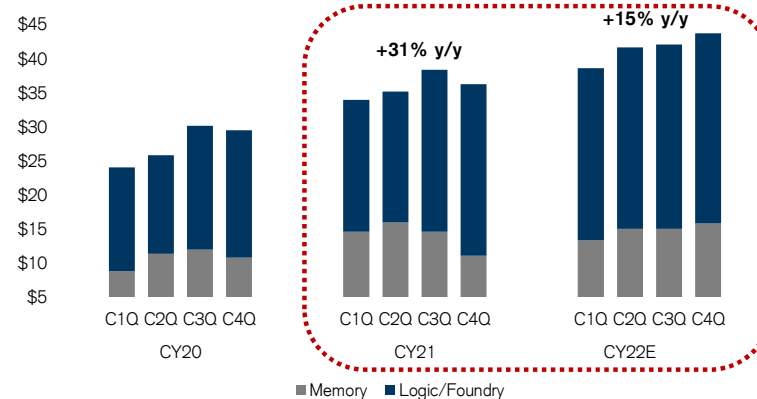
	Avg	Median
% BELOW Trend	-14.2%	-12.5%
% ABOVE Trend	12.0%	12.7%
Duration (months)	19.3	19.0
Recovery (P-T)	26.1%	22.0%
Peak-Peak Growth	30.3%	28.7%

IC Units ONLY at Trend, Usually Peak ~15% ABOVE



CapEx Response Accelerating

Quarterly Semi CapEx

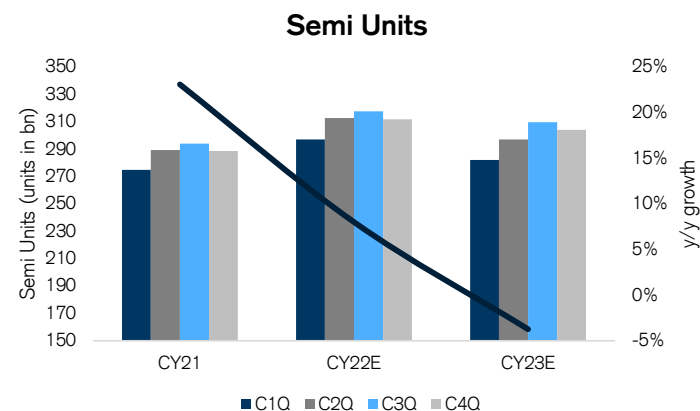


Base Case for CY23 – Modest Cyclical Correction

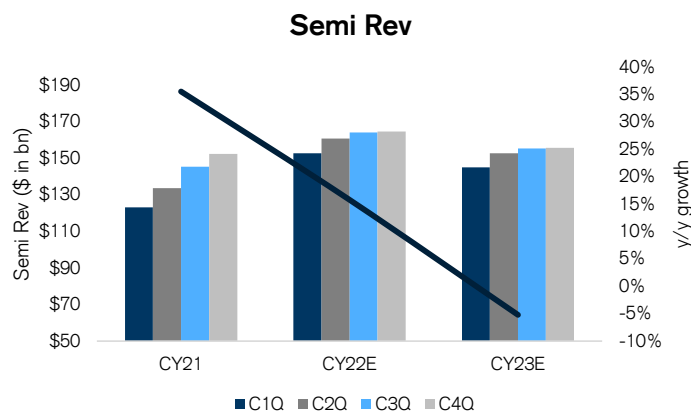
Our View:

- We are modeling a 5.3% decline in Semi Rev in CY23 to reflect a modest cyclical correction.
- We expect a Unit correction in 1H, with units down mid-single-digits % y/y in CY23.
- We expect a ASP correction in 2H, with ASPs down low-single-digits % y/y in CY23.

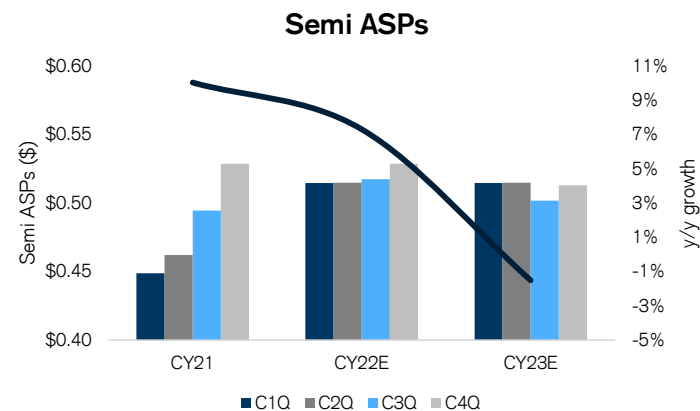
Expect 1HCY23 Units BELOW Trend



Expect Modest 5% Decline in CY23 Rev



Expect 2HCY23 ASPs to Moderate

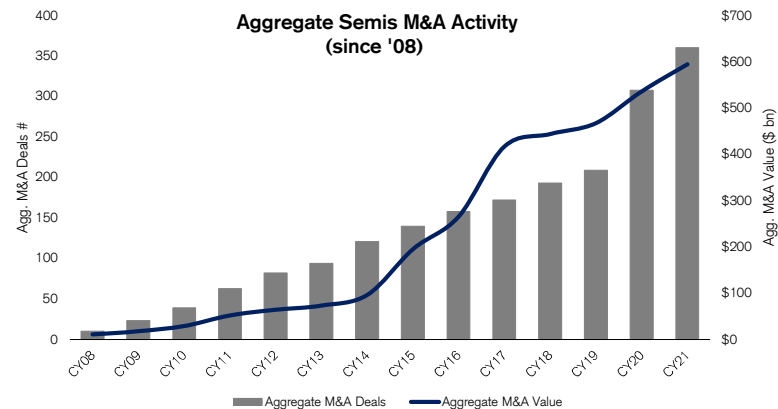


Peak More Likely Pushed-out than Pulled-in

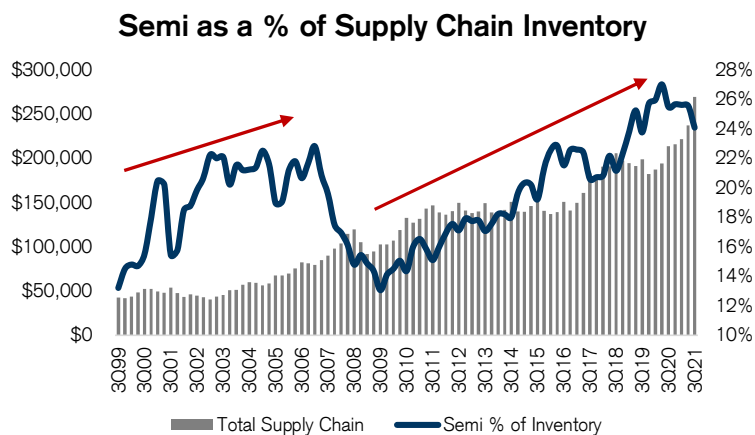
Our View:

- No one knows the new normal for inventory management, post-COVID JIT likely moves to JIC.
- There is still a meaningful deficit in global supply created by significant consolidation.
- Semis and Semi domestic production is now being viewed as strategic and essential.

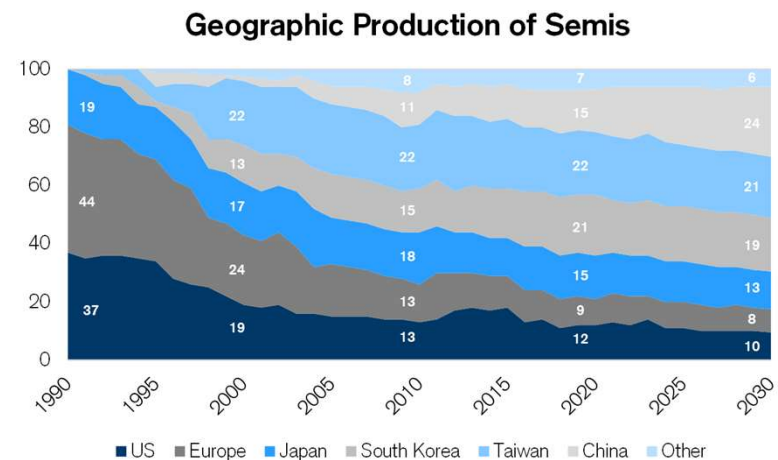
Significant Consolidation has Dramatically Reduced IDM Capacity



Inventory Burden Likely Migrates Downstream



Domestic Production of Semis Is A Strategic Imperative

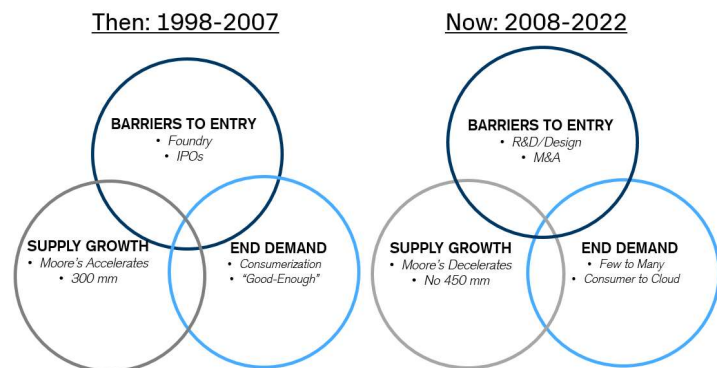


We Remain Structurally Positive

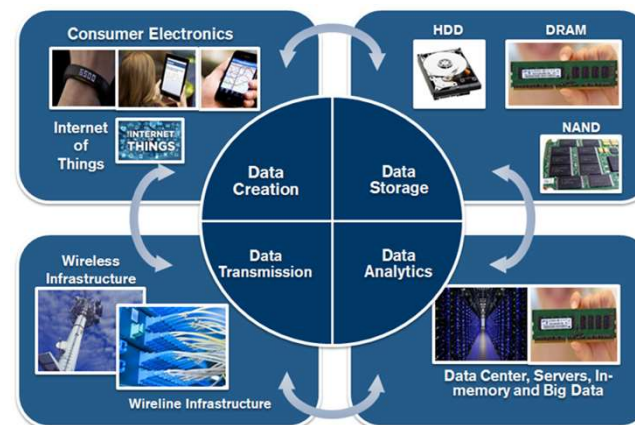
Our View:

- Despite our cyclical concerns, we continue to see Semi CAGR accelerating from 3-5% to AT LEAST 6-8%, with upside to 9-12%.
- Rising barriers to entry, structurally slowing supply and improving demand mix establish a foundation for Semis to outgrow nominal GDP consistently.
- Our Data Thesis provides incremental drivers and foundation for \$1 tn Industry by CY30.

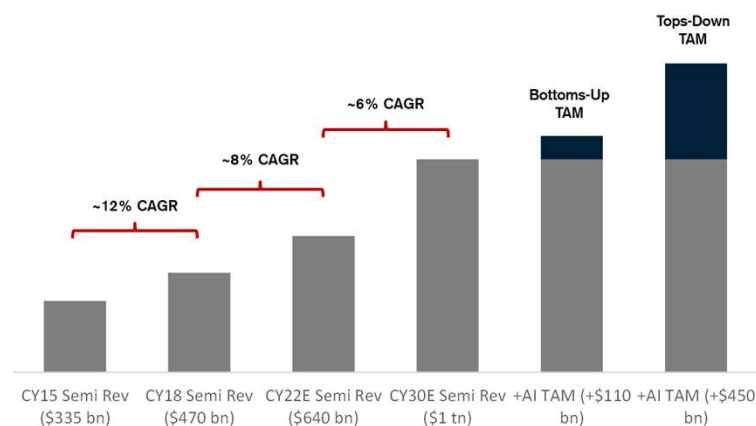
Semis Moving from GDP Minus to GDP Plus Growth



Our Data Paradigm



Semi Rev to \$1 tn by CY30

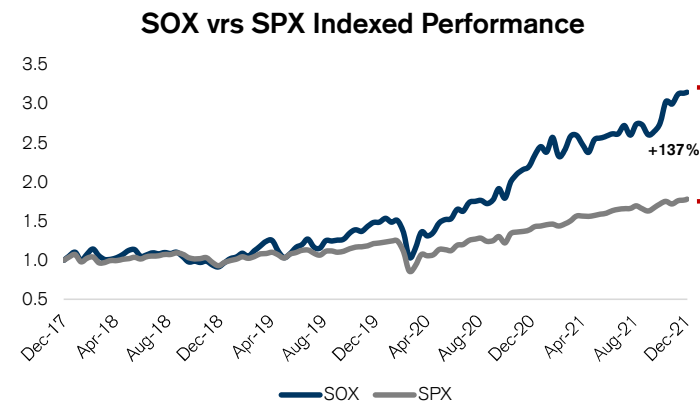


Semi Revaluation Higher Still Mid Stream

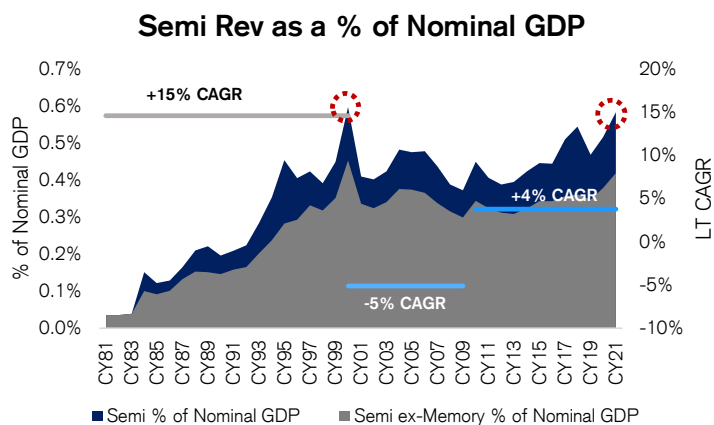
Our View:

- Semis re-learning how to capture relative value to the economy.
- The market has already begun to recognize the improving secular backdrop for Semis.
- Semi MrktCap as a % of total Global MrktCap peaked in CY00 at 4%, troughed in CY15 at 1.5% and is at 3.5% today. We see upside to 6-8% by CY30.

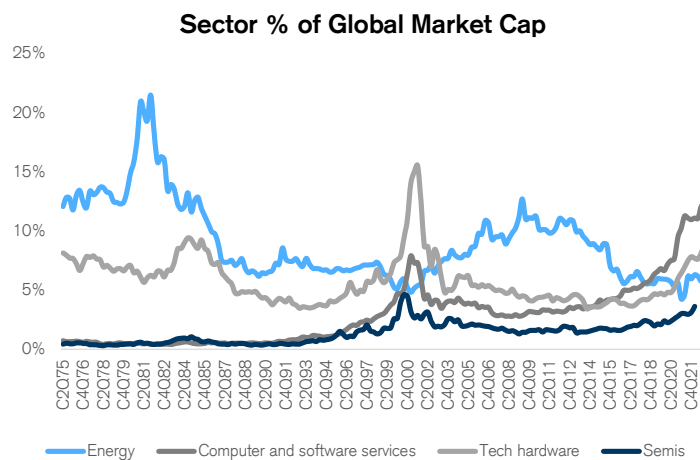
Consistent Outperformance Since CY17



Semis Re-learning How to Capture Value



Semis Have Upside to ~8% of Global Mrkt Cap



Disclosure Appendix

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