

The electronics supply chain has crossed an inflection point

Where manufacturers are moving, what it costs to follow, and who wins through 2030

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Executive Summary

The electronics supply chain is undergoing its biggest global shift in a generation, and companies have just 24 to 36 months to decide and act.

Over the past decade, tariffs, export controls, and health shocks heavily disrupted the electronics industry. Unprecedented national industrial policies effectively ended the single-country concentration that defined the market. This geographic shift is moving rapidly and reshaping trade, capital, talent, and margin flow globally through 2030 and likely beyond. The industry is now moving faster than most corporate strategic planning cycles allow. Companies face a critical and immediate window to act.

Boston Consulting Group (BCG) works across the entire electronics value chain. Our experience spans semiconductor design, fabrication, electronic components, modules, and finished consumer devices. Over the past five years, we have supported manufacturers, government agencies, and investors navigating this changing landscape. We have successfully completed more than 60 footprint-expansion planning, landed cost optimization, and offshore operation transformations.

This extensive industry experience has informed three layers of analysis outlined in this report. First, we track the manufacturing footprint movements of 942 listed companies with annual revenue exceeding US\$500 million over the past decade. Second, we evaluate whether these geographic shifts made economic sense. Third, we quantify the landed cost implications for the next five years. This process is informed by UN Comtrade trade flows from 2017–25, publicly available announcements of plant investments, government and institutional databases, and BCG cost benchmarks.

Why now. We believe that nostalgia is not a strategy and the past 25 years of supply chain consolidation is behind us. Original equipment manufacturers (OEMs) will continue to push for supplier resilience as a consequence of tariff impacts and in the wake of pandemic disruption. Yet, manufacturers only have a limited time window to respond as each destination's resources are limited and OEMs have competing options. In addition, as landed costs are not projected to ease in coming years, the subsidies available will likely diminish over time.

We have identified five decisive factors in this shift

- **Value is consolidating upstream.** Semiconductor design and wafer fabrication together gained more than 22 percentage points of total industry net operating profit

after tax (NOPAT) share between 2001 and 2025, while OEMs lost 10 percentage points. The most profitable parts of the value chain are also the most concentrated: in semiconductor design, foundry, and integrated device manufacturing (IDM), the top five players capture 70% to 90% of segment NOPAT.

- **The footprint shift is broad but uneven.** Among Greater China - headquartered manufacturers, the share of manufacturers that have established an overseas footprint rose from 12% in 2017 to 56% in 2026. Original design manufacturers (ODMs) and electronics manufacturing services (EMS) led decisively. This was followed by components, while capital-intensive semiconductor segments largely stayed home. The rule of thumb is straightforward: speed of movement is highly correlated to capex intensity, distance to OEM, and end-market location.
- **Expansion is associated with stronger outcomes—but execution, not movement alone, explains the premium.** Players that expanded geographically between 2017 and 2026 saw average market capitalization grow 7.0x over the period, against 3.4x for those that remained domestic. The pattern is consistent with capital-market recognition of more resilient, customer-aligned manufacturing networks. The important point is not that expansion guarantees outperformance, it is that well-executed expansion has increasingly become a marker of strategic readiness. On NOPAT, the message is even clearer: roughly one in four expansions destroyed value. This underscores that landed-cost discipline, customer qualification, and operational readiness determine whether diversification creates or erodes value.
- **Destinations are specializing, not generalizing.** Among Greater China manufacturers that have expanded to Southeast Asia, roughly 76% concentrate in just three countries—Vietnam, Thailand, Malaysia—and each is developing a distinct sector specialty rather than competing across the full value chain. Competition to attract corporate investment is fierce: 82% of expanding manufacturers choose just one country as their primary destination.
- **Cost exposure extends beyond tariffs.** The most significant compounding cost items are bill of materials (BOM) evolution, direct labor, and oil-linked utilities and logistics. Each could carry an additional 0.1 to 3.5 percentage points of exposure, depending on the scenario and destination.



The harmonized supply chain is gone

The global electronics supply chain operated as a single integrated system for two decades. That system is being dismantled and will not return to its original form.

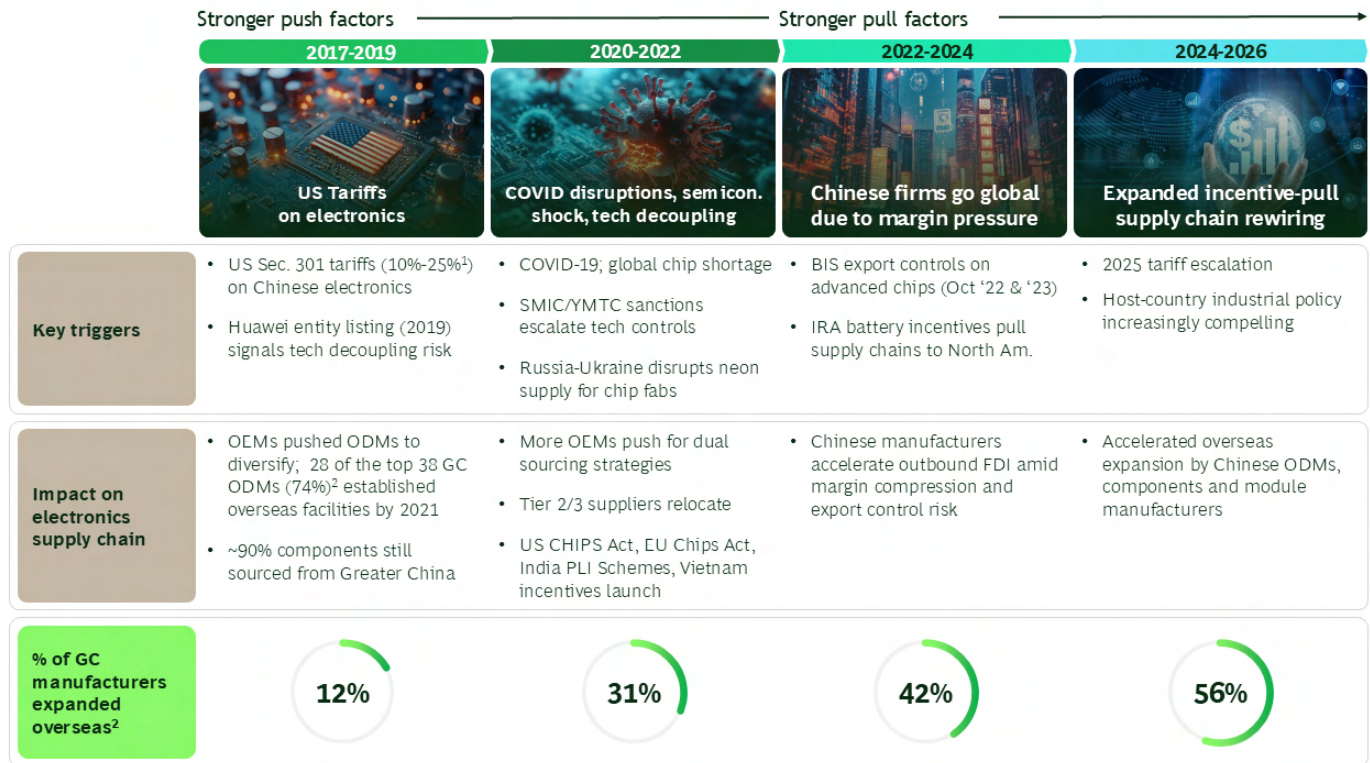
The electronics supply chain industry operated on a coherent set of operating assumptions from the early 2000s through the mid-2010s. These assumptions included concentrated manufacturing capacity in major clusters, low cross-border tariffs, and predictable logistics. Sourcing decisions prioritized the lowest landed cost, which rarely conflicted with government policies. That system delivered extraordinary efficiency gains for end customers—and produced a generation of large, geographically concentrated manufacturing champions.

Starting in 2017 and intensifying through 2026, the operating environment has shifted along three reinforcing dimensions. [Exhibit 1.]

- **Push factors.** Tariff measures on a widening list of electronics categories, expanded export controls covering advanced computing, and tightening due-diligence requirements on critical inputs have raised the cost and risk of single-country production for a growing share of end markets.
- **Pull factors.** A wave of national industrial policies, including semiconductor strategies, production-linked incentives, capex grants, infrastructure corridors, and special economic zones have materially altered the relative attractiveness of alternative manufacturing locations. The size and specificity of these packages have grown each year. Several have published expiry dates.
- **Demand-side pressure.** Lead customers—large global OEMs and hyperscale data-center operators in particular—have moved from accepting single-source supply to actively requiring multi-country networks as a qualification condition. Resilience is now an underwriting criterion, not a value-add.

EXHIBIT 1

Site expansion has evolved from a tariff hedge to a structurally incentivized supply chain reconfiguration – now driven by policy pull as much as push



1. List 1/2/3 rates applied between 2017-2019, before the US-China Phase One deal in Jan 2020;
 2. From analyzing announced footprints of publicly listed, manufacturers listed in Greater China, n=314;
 Source: Capital IQ, Press search, BCG analysis

The shift is structural, not cyclical. Even under the most benign scenario examined in this report—a managed de-escalation of trade frictions and a return to rules-based norms—the supplier qualification standards now embedded in lead-customer procurement, and the policy capital already

committed by destination governments, set a floor below which the prior concentration is unlikely to return. The relevant planning question is no longer whether to diversify. It is where, when, how fast, and at what cost.

A NOTE ON PACE

Speed of movement is dictated by capital intensity. Asset-light, labor-enabled assembly can shift in 12 to 24 months. Capital-intensive segments such as wafer fabs, advanced packaging, and frontier equipment require three to five years and a qualified ecosystem to make a move economic. Industry-wide averages obscure this divergence. Segment-level pacing should drive planning.



Value is consolidating upstream

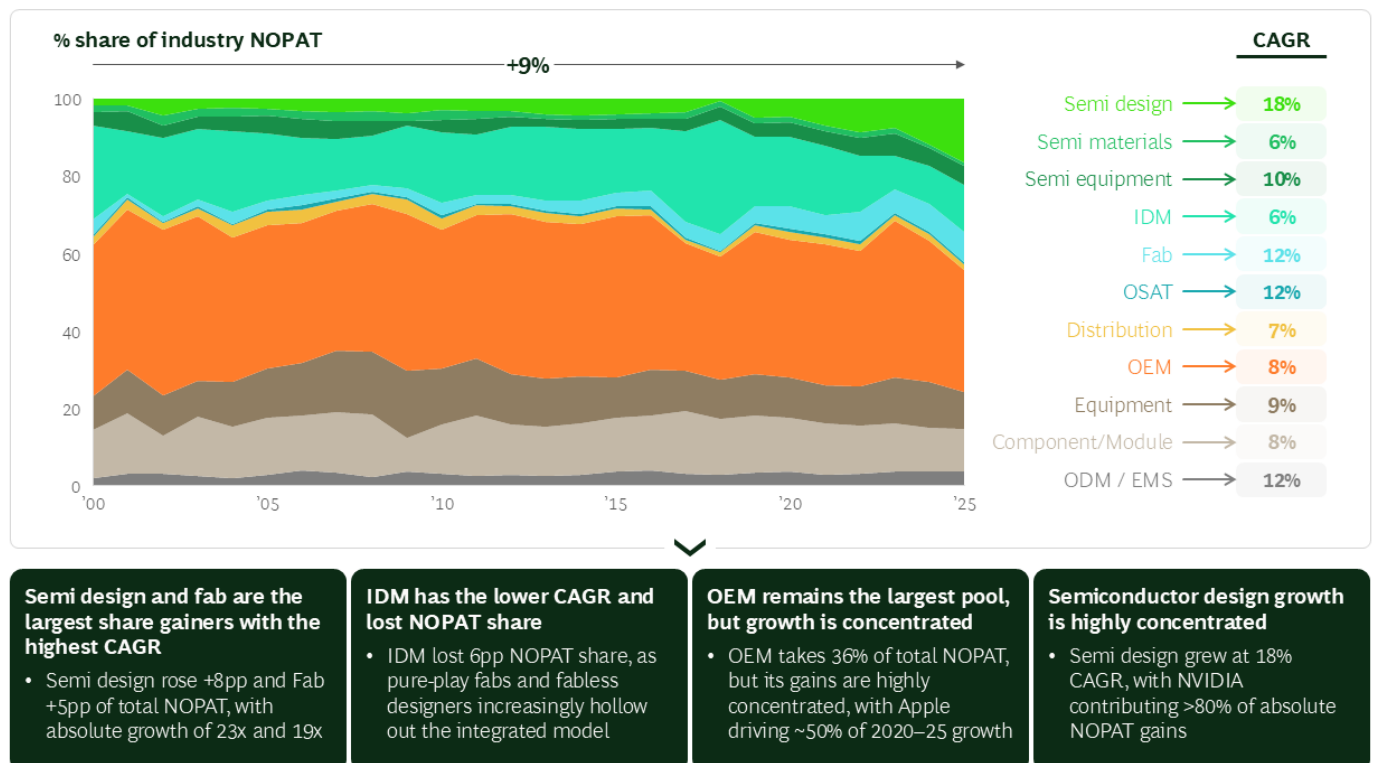
Before deciding where to build new manufacturing capacity, companies must examine where industry profits actually accumulate. Two decades of data provide a clear answer:

value sits upstream and is becoming increasingly concentrated.

Across 942 listed manufacturers spanning the full electronics value chain, industry NOPAT has grown at a ~9% compound annual growth rate (CAGR) over the last two decades. The headline growth, however, masks a sharper underlying shift in where that growth has accrued. [Exhibit 2.].

EXHIBIT 2

Semi design and fab are gaining share as the IDM model loses ground



Analysis includes 942 publicly listed companies with US \$500M+ annual revenue across key segments of electronics manufacturing

THREE STRUCTURAL PATTERNS SHAPE THE IMPLICATIONS:

- **Concentration is intensifying in the most profitable upstream segments.** Semiconductor design and wafer fabrication have moved from the periphery of industry economics to its center. In both segments, the top five players capture 70% to 90% of segment NOPAT. This concentration has tightened over time. A small number of players have absorbed the majority of incremental industry profit growth over the last five years.
- **Integration is unwinding in semiconductors.** The integrated device model has lost 6 percentage points of its industry NOPAT share, and more than a quarter of its share in semiconductor segments. Pure-play foundries and

fabless designers have eroded the integrated proposition. The implication for footprint planning is that capital is consolidating in fab and design, while back-end (OSAT, advanced packaging) is emerging as a separately scalable battleground.

- **Components and modules are fragmenting.** In contrast to upstream concentration, the components and modules layer is becoming more fragmented over time. The top-five share has fallen from 33% in the period 2001–2005 to 19% in 2021–2025. This is the layer with the largest absolute number of midsized players, the broadest geographic spread of expansion activity, and the largest open pool of potential partners for destination-country incumbents.

WHAT THIS MEANS

Different segments offer different prize sizes and different incumbency dynamics. **Upstream segments (fab, design) are high-prize, high-incumbency battles** where second-mover catch-up is structurally difficult. **Components and modules offer a far more open competitive landscape** with many partnership and acquisition entry points, but with thin per-deal economics. Destination strategies should **match policy intensity to the structure of each segment, not to the value chain as a whole.**

The footprint shift is broad, but uneven

In 2026, 56% of manufacturers listed in Greater China operated production bases abroad, up from 12% in 2017. This headline figure hides three distinct trends that outline exactly how leaders should respond.

Movement is led by ODM/EMS, but components are catching up

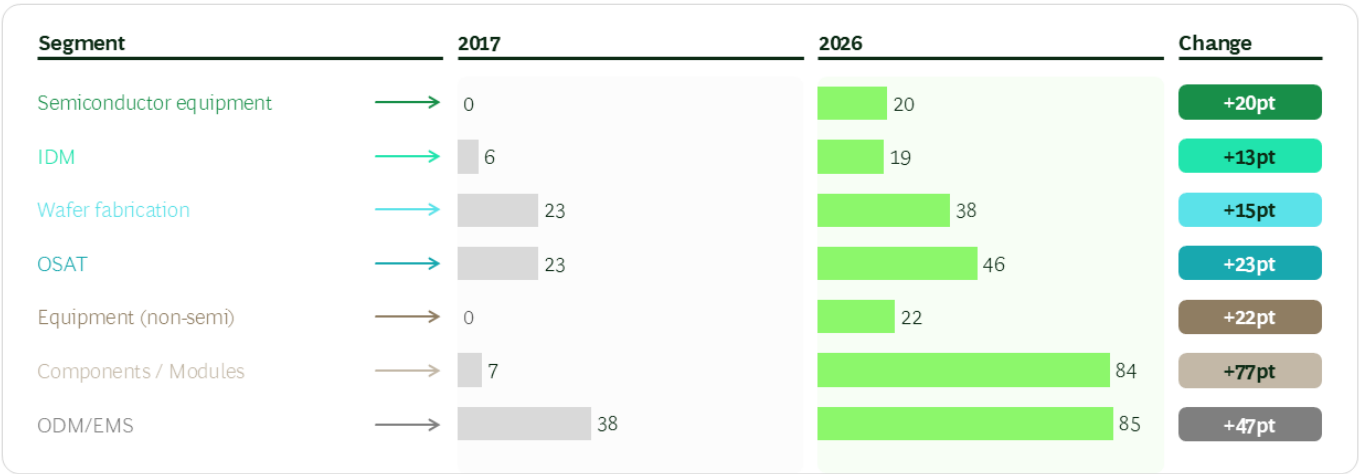
Ecosystem comprehensiveness is arguably one of the most critical factors for manufacturers to assess when considering expansion, as it deeply impacts profitability. As a consequence, contract manufacturers—who are often responsible for the final assembly of products—led the industry’s global expansion.

By 2026, only 15% of Greater China manufacturers maintained a single-country footprint, down from 62% in 2017. [Exhibit 3.] Large brand customers initially drove this shift to secure alternative supply sources, a move later accelerated by rising tariffs.

Components and modules followed with a steady expansion over the 2017–2026 period, though unevenly across sub-segments. Categories with high process know-how and tight qualification cycles—notably display and certain sensor categories—remained relatively sticky. Standardized, automated, or labor-intensive categories (connectivity, mechanical, PCB/PCBA, power and battery) saw the largest cross-border shifts.

Capital-intensive semiconductor segments (wafer fabs, IDMs, advanced OSAT, semiconductor equipment) have shown materially less footprint movement. High capital investments, long equipment lifespans, and multiyear customer approvals create steep barriers to relocation. If domestic demand can buy the factory output, staying home makes the most financial sense.

EXHIBIT 3
Share of Greater China firms with at least one footprint outside Greater China, by segment



Source: BCG analysis of public filings, plant-level disclosures, and trade press, n=314.

Larger companies led the shift, leaving midsize firms most vulnerable

Within each segment, large companies with revenues exceeding US\$3 billion led the global migration. By 2026, only 21% of the largest tier remained single-country, against ~50% of midsize (US\$1 billion to US\$3 billion) and ~50% of smaller (US\$0.5 billion to US\$1 billion) players. [Exhibit 4.]

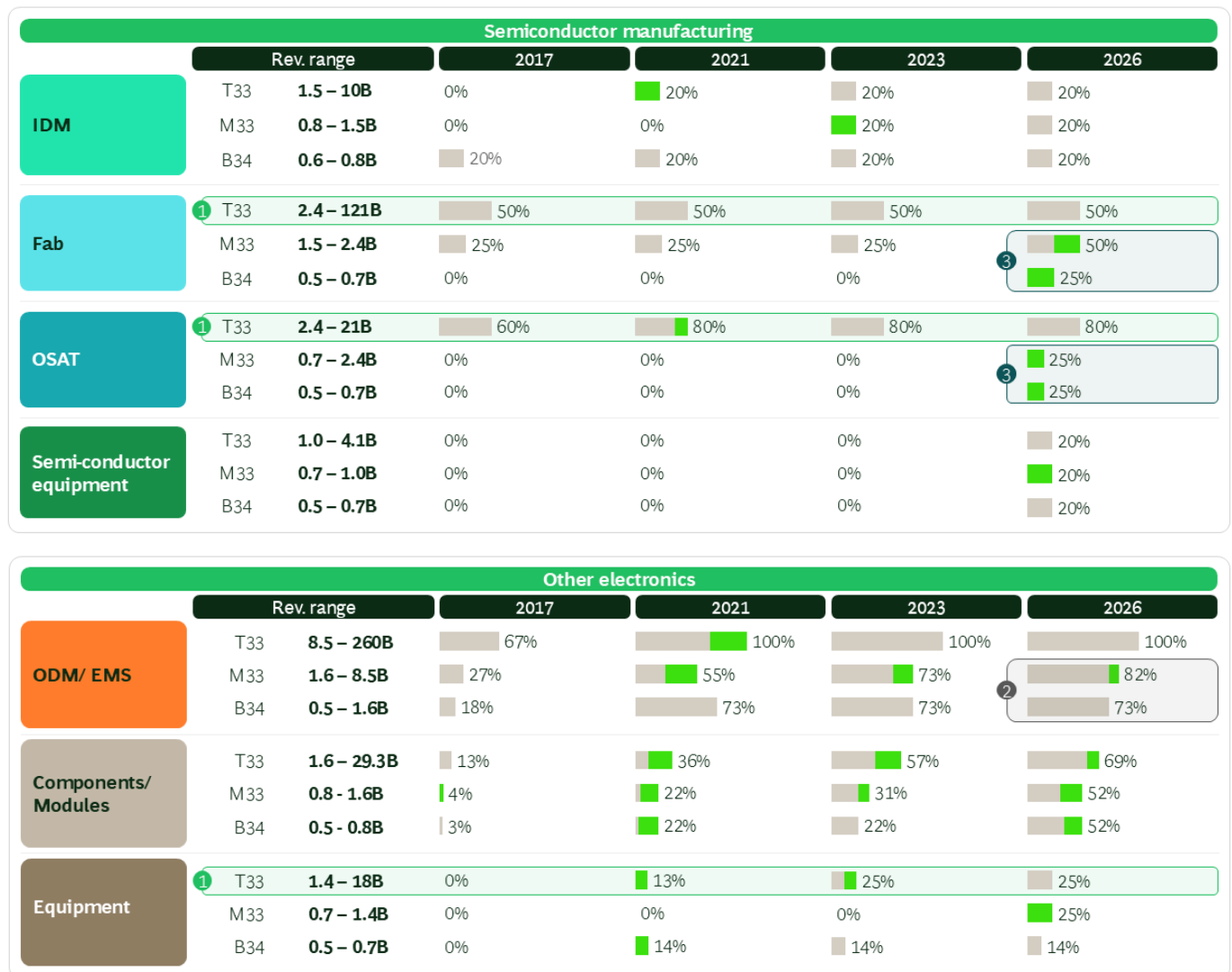
Midsize companies represent the largest remaining group that has yet to move, and they face the most urgent deadline. Their natural anchor customers have already moved. Based on discussions with CEOs and leaders of these midsize companies, the primary source of hesitation comes from self-doubt as to their global operation capabilities, high capex spend, and uncertainty around the profitability based on observation. Yet, the priority industrial zones in destination countries are filling. The incentive packages they could most readily access have published expiry dates over the next two to three years.

EXHIBIT 4

Geographic expansion is led by larger players across segments, with early movements since 2017 and continued leadership in 2026

% of GC listed manufacturers  Increase from previous time stamp

Manufacturers listed in Mainland China, Taiwan and Hong Kong 



① Large players established footprints outside GC early

② A meaningful minority of ODMs have not expanded, creating a clear pool for target deep dives

③ Recent expansion is driven by smaller players, potentially reacting to regional customer pull

Note: Companies are split into 3 buckets per segment based on 2025 revenue, T33 = Above 67th percentile, M33 = Above 34th percentile, B34 = remaining companies
Source: Capital IQ, Company announcements, financial reports, sustainability reports, news articles, BCG analysis

Capital markets reward expansion when execution holds

Companies that expanded their manufacturing footprints between 2017 and 2026 achieved the highest returns. [Exhibit 5.] Their average market capitalization increased 7.0x over the period, against 3.4x for those that remained domestic and 4.8x for those already multinational in 2017. This financial premium is highest in contract manufacturing (ODM/EMS),

which saw 5.9x relative growth. Component and module makers followed at 3.5x. Semiconductor manufacturing remains the primary exception. Investors generally did not reward expansion in this sector, reflecting the strong domestic demand and the massive capital expenditures required to build duplicate factories abroad.

EXHIBIT 5

Footprint expansion with positive NOPAT may be rewarded by the capital markets

Manufacturers listed in Mainland China, Taiwan and Hong Kong, n=314¹

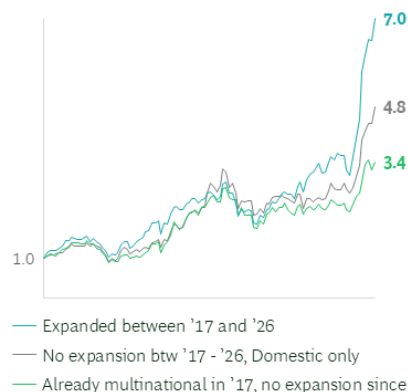
Market cap trends reinforce a structurally expanding hardware market, providing a clear signal to scale footprint

Market cap. trends by footprint strategy 2017–2025

Manufacturing footprint movement	Positive	Negative
No expansion between '17 –'26, domestic only	92 (67%)	45 (33%)
Already multinational in '17, no expansion since	23 (82%)	5 (18%)
Expanded between '17 and '26	114 (77%)	34 (23%)
Total	229 (73%)	84 (27%)

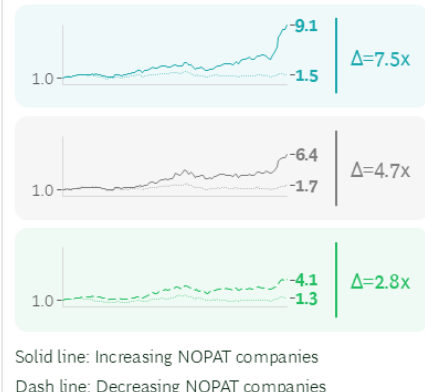
The capital market rewards recent active expansions, as divergence start to widen since 2024

Average market cap. trends by footprint type 2017 market cap. indexed to 1



Regardless of footprint strategy, lack of NOPAT discipline is punished by the capital market

Average market cap. trends by footprint type & positive/negative NOPAT 2017 market cap. indexed to 1



Excludes OEM, Semi materials

Profit outcomes are more mixed. Among expanded players, roughly 27% saw NOPAT decline over the period, against 34% of non-expanders. [Exhibit 6.] The implication is clear that expansion correlates with better outcomes on average but does not guarantee them. Sub-segments where expanders

underperformed—notably PCB/PCBA, power and battery, and parts of camera and display—point to landed-cost discipline, operations transfer, and customer mix as the variables that separate value-creating from value-destroying moves.

EXHIBIT 6

The electronics manufacturing industry NOPAT is growing, with diversified players outperforming the market

Manufacturers listed in Mainland China, Taiwan and Hong Kong, n=314¹

Early footprint expansion (pre-2017) delivers the highest NOPAT growth, reinforcing expansion premium

Average NOPAT trends by footprint strategy (2017–2025)
2017 NOPAT indexed to 1



Expansion drives NOPAT uplift – but 27% firms fail to manage cost and deployment effectively

NOPAT trends by footprint strategy (2017–2025)

Manufacturing footprint movement	+ve NOPAT	-ve NOPAT
No expansion between '17 – '26, domestic only	90 (66%)	47 (34%)
Already multinational in '17, no expansion since	21 (75%)	7 (25%)
Expanded between '17 and '26	109 (73%)	40 (27%)
Total	229 (73%)	84 (27%)

- Limited NOPAT growth without geographic expansion as supply chain resilience demands it
- Ability to manage expansion cost & deployment is critical, yet only 65-75% companies do well

Note: TSMC accounts for ~50% of total NOPAT for the whole industry, and has grown by 5x over the period; solid blue line(s) exclude its effect.

1. Excludes OEM, Semi materials, Semi design and distribution

THE EXECUTION GAP

Roughly one in four cross-border expansions analyzed resulted in NOPAT decline over the observation period. In our experience the dominant root causes are: (i) an **underestimated bill-of-materials premium in the new location** during the first two to three years before the local ecosystem matures, (ii) **productivity and ramp-up timelines** that fall behind the company plan, and (iii) **tariff or origin-of-content treatment** that proves more restrictive than initial modeling assumed.

Destinations are specializing, not generalizing

Manufacturing expansion in the region is highly concentrated. Among Greater China manufacturers expanding into Southeast Asia, roughly 76% focus on just three countries. Each of these nations is developing a distinct industry specialty rather than competing across the entire value chain.

No country will own the full value chain

Our analysis shows that no single destination is positioned to capture the full value chain through 2030. On the other hand, the country that wins a segment is likely to capture a disproportionate share of that segment for the next decade as anchor investments lock in supplier ecosystems. [Exhibit 7].

EXHIBIT 7

Country view | Combined GC-HQ + RoW-HQ view – India, Mexico, Vietnam, Thailand, Malaysia emerge as the top scaled hubs

>=10 >=5 XX (YY): #companies with presence in the country in 2026 (Change in # of companies from 2017 to 2026)

All companies globally Global public companies, n=624

L1 + L2 segment		#Firms	IN	MX	VN	TH	MY	ID	PH	SG	CZ	KSA	USA	PL
Components / Modules	ODM / EMS	43	15 (+8)	27 (+13)	23 (+19)	10 (+8)	15 (+6)	3 (+2)	3 (+2)	3 (+1)	4 (+1)	(-)	3 (+2)	(-)
	Audio & acoustics	6	1 (+1)	2 (+2)	5 (+2)	3 (+1)	2 (+2)	(-)	1 (+1)	1 (+1)	1 (+1)	(-)	1 (-)	(-)
	Camera	22	2 (+2)	2 (+2)	9 (+4)	3 (+2)	1 (+1)	(-)	2 (+1)	(-)	(-)	(-)	2 (-)	(-)
	Connectivity	48	5 (+3)	9 (+3)	15 (+11)	5 (+4)	10 (+5)	4 (+2)	3 (+2)	3 (+2)	(-)	(-)	3 (-)	(-)
	Display	34	2 (+2)	2 (+1)	7 (+6)	2 (+1)	2 (+1)	1 (-)	1 (-)	(-)	(-)	1 (+1)	3 (+1)	(-)
	Other electronics ¹	85	16 (+7)	18 (+7)	11 (+7)	14 (+6)	12 (+5)	5 (+3)	6 (+3)	2 (+2)	1 (+1)	2 (+1)	15 (+2)	3 (+2)
	PCB / PCBA	55	3 (+1)	3 (+1)	8 (+4)	22 (+19)	7 (+7)	2 (-)	(-)	1 (-)	2 (-)	(-)	3 (+1)	3 (-)
	Power & battery	55	13 (+3)	11 (+7)	17 (+14)	12 (+10)	6 (+5)	3 (+2)	1 (-)	1 (+1)	(-)	1 (+1)	7 (+1)	(-)
	Sensor	31	4 (+4)	8 (+8)	1 (+1)	3 (+2)	5 (+4)	1 (+1)	1 (+1)	(-)	(-)	(-)	(-)	(-)
	Mechanical	23	4 (+3)	5 (+5)	11 (+10)	5 (+4)	3 (+3)	1 (-)	2 (+2)	(-)	(-)	(-)	1 (+1)	(-)
Equipment		111	26 (+12)	21 (+14)	10 (+5)	7 (+5)	14 (+7)	8 (+6)	4 (+2)	4 (+2)	(-)	2 (+1)	6 (-)	(-)
IDM		40	5 (+2)	2 (+1)	6 (+1)	6 (+1)	14 (+3)	3 (+1)	11 (+2)	4 (-)	(-)	(-)	3 (+2)	(-)
Semi equipment		39	1 (+1)	2 (+2)	2 (+1)	5 (+3)	7 (+6)	(-)	3 (+1)	5 (+3)	(-)	(-)	5 (+3)	(-)
Fab		17	2 (+1)	(-)	(-)	(-)	2 (-)	(-)	(-)	3 (+1)	(-)	(-)	3 (-)	(-)
OSAT		15	(-)	1 (-)	2 (+2)	(-)	6 (+3)	(-)	2 (+1)	2 (-)	(-)	(-)	1 (-)	1 (+1)
Total		624	99	113	127	97	106	31	40	29	8	6	56	7

1. Other electronics include cable and passives. RoW excludes Semiconductor design, OEMs and Distributors.

Source: Capital IQ, Company announcements, financial reports, sustainability reports, news articles, BCG analysis



Image generated with AI

The closing window for government incentives

Inside an 18-month window, four Southeast Asian governments launched national semiconductor strategies backed by substantial financial commitments. These programs feature reinvestment allowances, tax holidays for high-value manufacturing, and capital expenditure support. Crucially, these major incentive packages will expire over the next two to three years. This indicates that the cost of relocating will be lower over the next two years than in any future period. Yet, we believe these programs will soon become more sector specific as resources become more scarce.

Major investments are reshaping local supply ecosystems

As the industry recognizes that it is unlikely to recreate another ecosystem centralizing around Greater China, the probable outcome will be formation of a series of regional and themed supply chains with embedded resilience. More specifically, large manufacturers are rapidly reshaping local supply networks with major initial investments. For example, premium industrial zones in the most established Vietnamese parks have reached 85% to 95% occupancy. Tier-2 and Tier-3 suppliers that secure space early can typically negotiate

favorable land, utility, and qualification terms. Those that arrive later face higher input costs and a narrower set of remaining slots.

How origin geographies shape destination strategies

Global manufacturing expansion does not follow a single path. Instead, companies follow distinct investment patterns based on their home countries. Destination governments that recognize these unique footprints easily outperform those that offer generic pitches.

These origin-specific behaviors reveal clear regional strategies. For example, manufacturers listed in Greater China concentrate their expansion entirely within Southeast Asia. Meanwhile, US-headquartered firms prioritize facilities close to their final consumer markets or choose the largest assembly hubs in Southeast Asia. Japanese corporations distribute their investments broadly across the region. On the other hand, South Korean firms heavily prefer Vietnam, where major anchor facilities from Samsung and LG have established deep local supply networks.

Host governments must tailor their proposals to the specific preferences of each country. Broad, generic incentive packages are no longer competitive. [Exhibit 8].

1. Excludes Semiconductor design, OEMs and Distributors 2. EU includes Austria, Belgium, France, Germany, Ireland, Italy, Netherlands, Sweden
Source: Capital IQ, Company announcements, financial reports, sustainability reports, news articles, BCG analysis

EXHIBIT 8

Origin country | Hardware foreign direct investment follows clear origin-country patterns, requiring destination government to align with distinct investor preference to compete

		>=20 >=10 >=5 Rest of World RoW-HQ public companies¹ in 2026, n=310											
HQ countries	Total count	IN	MX	VN	TH	MY	ID	PH	SG	CZ	SA	US	PL
United States	94	21 (22%)	41 (44%)	6 (6%)	11 (12%)	27 (29%)	2 (2%)	14 (15%)	11 (12%)		2 (2%)	26 (28%)	
Japan	82	10 (12%)	7 (9%)	21 (26%)	26 (32%)	21 (26%)	10 (12%)	11 (13%)	4 (5%)		1 (1%)	7 (9%)	
South Korea	49	6 (12%)	5 (10%)	17 (35%)	2 (4%)	4 (8%)	3 (6%)	1 (2%)				1 (2%)	
EU	44	8 (18%)	9 (20%)			9 (20%)	1 (2%)	4 (9%)	5 (11%)	1 (2%)	1 (2%)	8 (18%)	2 (5%)
India	16	16 (100%)	1 (6%)	1 (6%)			1 (6%)						
Switzerland	6	2 (33%)		2 (33%)	1 (17%)	1 (17%)	1 (17%)		1 (17%)				
United Kingdom	5	3 (60%)	4 (80%)	1 (20%)	1 (20%)	1 (20%)	1 (20%)					1 (20%)	2 (40%)
South Africa	2												
Canada	2	1 (50%)	2 (100%)		1 (50%)	1 (50%)	1 (50%)		1 (50%)			1 (50%)	
Israel	2		1 (50%)									1 (50%)	
Saudi Arabia	2										1 (50%)		
Brazil	1		1 (100%)										
Cayman Islands	1				1 (100%)								
Egypt	1												
Norway	1					1 (100%)				1 (100%)		1 (100%)	1 (100%)
Peru	1												
Turkey	1												
Total	310	67	71	48	43	65	20	30	22	2	5	46	5

1. Excludes Semiconductor design, OEMs and Distributors 2. EU includes Austria, Belgium, France, Germany, Ireland, Italy, Netherlands, Sweden
Source: Capital IQ, Company announcements, financial reports, sustainability reports, news articles, BCG analysis

Tariffs and the associated risks to total landed cost

Companies deciding whether or where to relocate cannot separate their timing from total landed costs. Over a five-year horizon, the long-term cost outlook is more favorable than headline tariffs suggest, provided companies maintain disciplined execution. However, volatile supply chains still put up to 8 percentage points of cost at risk.



Our forward landed cost model covers three factory archetypes: (1) assembly-intensive, (2) module, and (3) passive-component. It analyzes four priority manufacturing geographies, namely Greater China, Vietnam, India, and Mexico. The cost structure of a representative assembly-intensive factory provides the baseline. [Exhibit 9.]

EXHIBIT 9

Cost structure of a representative assembly-intensive factory (% of revenue)

Cost bucket	% of revenue	Principal driver
Materials (BOM)	81–88%	Industrial PPI + sourcing mix + import tariffs
Non-BOM consumables	1–3%	Local industrial PPI
Direct labor	3–5%	Local wage rates net of productivity
Repair and maintenance	1–2%	Local PPI and labor
Overhead (lease, etc.)	2–3%	Industrial facility lease rates
Utilities	0.5–2%	Oil-sensitive via power-generation mix
Inbound logistics	1.6–1.8%	Oil-linked freight
Outbound logistics	1.9–2.3%	Oil-linked freight
Operating margin	2.5–5%	Residual

Source: BCG cost-model benchmarks derived from public filings across ODM/EMS and adjacent peer set



The model is projected to 2031 under four macro scenarios. [Exhibit 10.] These scenarios cover lower costs with stabilized blocks through to a scenario of chronic industry fragmentation

looking at changing assumptions of trade policy, tariffs, and oil prices.

EXHIBIT 10

Four scenarios for 2027–2031, with central tariff and oil-price assumptions

Scenario	Trade-policy assumption	Oil price	Tariff: Mainland China-origin	Tariff: non-Mainland China origin
Lower costs, stabilized blocs	Managed de-escalation; rules-based trade broadly persists	US\$70–US\$90/bbl	0%	0%
Baseline drift (most likely)	Current measures sustained; bilateral focus on domestic priorities	US\$90–US\$100/bbl	~6%	0.5–5%
Accelerated decoupling	Trade-policy escalation extends across the electronics value chain	US\$100–US\$120/bbl	25–30%	0.5–5% (Western-aligned); 26–46% (Mainland China-linked content)
Chronic fragmentation	Wide-spectrum protectionism; closed regional blocs	US\$120–US\$150/bbl	40–50%	25–35%

Source: BCG scenario construction; tariff bands reflect publicly disclosed policy ranges as of 2026. Central probability weighting concentrated on the middle two scenarios.

Where the variance comes from

Total landed-cost changes depend on five primary structural drivers. Tariffs create the largest immediate profit risks across different market scenarios. However, long-term cost variations depend heavily on component supply evolution, localized labor productivity, and capital intensity. Understanding these underlying factors helps companies evaluate their long-term relocation strategies:

- **Tariff is the single dominant risk driver.** In the assembly-intensive archetype, tariff exposure can shift landed cost by up to 33.8 percentage points in the most adverse scenario for Mainland China-origin exports, and by up to 25 percentage points for non-Mainland China origin. In the most benign scenario, tariff exposure is effectively neutralized. Ultimately, tariffs drive more inter-scenario variance than all other cost categories combined.
- **BOM dynamics improve over time.** During the first two years after expansion, a new facility typically faces a 15% to 25% local sourcing premium compared to its home country. Over five years, the premium shrinks. Local costs fall by approximately 10% as scale builds in the new ecosystem, while imported components from the originating country see price erosion as scale shifts away. Managing the source mix is a critical strategic lever.
- **Direct labor is a small expense but major differentiator.** Wage and labor productivity (quality) trajectories diverge sharply by destination. In some near-final-market locations, wage inflation and declining productivity could add up to 3.5 percentage points of cost by 2031. In one mid-cost Southeast Asian destination, productivity growth is projected to outpace wage inflation, modestly improving the labor line. Labor is a small share of total cost but a large share of inter-location difference. In fact, as wages in most destination countries will rise as their economies mature, we expect the level of automation deployed at the expansion site will be a critical strategic decision that could underpin long-term competitive advantage.

- **Utilities and logistics are oil-sensitive but modest.**

Across the four scenarios, utilities and logistics combined contribute 0.1 to 0.7 percentage points of variance. While meaningful for low-margin businesses, tariff and BOM shifts easily overshadow this metric for most product archetypes. Long-term strategic logistics contracts can partially hedge cost spikes.

- **Capital intensity slows movement in semiconductor segments.** While this analytical framework remains valid for capital-intensive segments, the time horizon required to break even is materially longer. For wafer fabrication and advanced packaging, the primary challenge is around the size and certainty of the fiscal support, qualified ecosystem, and customer offtake to underwrite the capital.

Applying the model to a single corridor shows how these cost drivers evolve. In 2026, a hypothetical assembly-intensive facility in Northern Vietnam may carry a higher operating cost than an equivalent plant in China's Pearl River Delta. This initial difference equates to approximately 2.7 percentage points of revenue.

By 2031, that position reverses to an advantage of 1.0 percentage point. This shift occurs as the local supplier ecosystem matures and productivity-adjusted labor costs improve. [Exhibit 11.] The long-term trajectory, not the day-one gap, must govern your decision. Evaluate site selection against a five- to ten-year landed-cost timeline.

EXHIBIT 11

Incremental cost of a Northern Vietnam facility versus a Mainland China (Pearl River Delta) baseline, assembly-intensive archetype, baseline drift scenario

Cost bucket	Difference vs. baseline, pp of revenue, 2026	Difference vs. baseline, pp of revenue, 2031	Principal driver for change
Materials (BOM)	+3.4	0.0	Local sourcing premium unwinds as the Vietnamese supplier ecosystem matures and scale builds
Non-BOM consumables	+0.1	0.0	
Direct labor	-1.5	-1.9	Productivity growth outpaces wage inflation in Vietnam
Repair and maintenance	+0.8	+0.7	Gap narrows as local equipment-servicing providers gain capability
Overhead (lease, etc.)	-0.7	-0.5	Vietnam lease-rate advantage erodes as sustained demand lifts industrial park rates
Utilities	+0.5	+0.4	Limited impact from stable energy prices under the baseline drift scenario
Inbound logistics	+0.2	+0.2	
Outbound logistics	+0.1	+0.1	
Total incremental cost	+2.7	-0.9	Equivalent to a 2.7pp operating-margin disadvantage in 2026, turning to a 0.9pp advantage by 2031

Note: A positive figure denotes a higher cost in Northern Vietnam than in the Mainland China baseline; the operating-margin impact is the inverse. Figures are incremental percentage points of revenue, not absolute cost shares (see Exhibit 9 for the underlying cost structure). Excludes tariff and duty effects, which are modeled separately (see Exhibit 10). Figures may not sum due to rounding.

Source: BCG landed-cost model; BCG cost-model benchmarks derived from public filings across ODM/EMS and adjacent peer set.

THE COST-LEAKAGE OPPORTUNITY

Even in the most likely scenarios, **up to 8 percentage points of landed cost remain structurally at risk**. However, companies can actively mitigate these threats by **optimizing their sourcing mix, co-locating suppliers at new sites**, and increasing productivity. **Structuring long-term energy contracts** and managing product tariffs also help shield thin margins. In an industry with tight operating margins of 2% to 8%, these operational changes determine whether an expansion creates or destroys value.

How sustainability regulations expand landed costs

Sustainability-linked compliance costs are rising across all four market scenarios. Carbon-related border adjustments are projected to add up to 3% to landed cost for low-metal-content electronics, and 3% to 8% for metal-intensive electronics, in scenarios where European-style frameworks

remain in force. Stricter supply chain due diligence rules introduce transaction overhead that expands alongside a geographic network. While these headline numbers appear modest, they permanently elevate the minimum operating standard for any new facility. Companies must integrate these regulatory considerations from the start rather than retrofitting operations later as carbon emission controls and environmental, social, and governance (ESG) considerations directly influence long-term success.



Four audiences, four agendas

The implications differ across four audiences, each facing different decisions, constraints, and timelines.

1. FOR MID-TIER MANUFACTURERS WEIGHING THE MOVE

Midsize manufacturers (annual revenue between US\$1 billion and US\$3 billion) face an urgent timeline when evaluating footprint expansion. Disciplined landed-cost management and advanced digital tools can help protect corporate value during this transition.

- **The strategic action window is brief.** Companies have 24 to 36 months to decide and act, which will be followed by another 24 to 36 months to stabilize production. Reaching operational readiness by 2028 requires a firm approval decision in 2026. During the 2026–2028 window, government incentives, industrial park vacancies, and customer demand align best.
- **Inaction creates severe commercial risks.** Relying on a single manufacturing country increasingly disqualifies suppliers during procurement reviews by major customers.

Failing to act carries a high financial cost.

- **Evaluate expansion by business segment.** Footprint strategies must focus on specific product segments rather than the entire corporation. A company might move one division urgently while keeping another at home.
- **Landed-cost discipline determines profit.** One in four expanding manufacturers in this segment destroyed corporate value. These losses occurred due to unmanaged sourcing mixes, factory launch delays, and unexpectedly restrictive rules-of-origin treatments.
- **Digital/AI could accelerate factory readiness.** AI tools can compress the production setup timeline from over 24 months to fewer than 12. Effective solutions include procurement benchmarking, inventory optimization, and automated manufacturing control towers.

2. FOR INCUMBENTS IN DESTINATION COUNTRIES

Local businesses in host countries face a moment of opportunity as they look to integrate into shifting industry networks. Securing these positions requires immediate, targeted outreach and modernized operational capabilities.

- **Lock in early partnerships.** A brief window exists to secure relationships with expanding manufacturers seeking local ecosystems. Local businesses can readily position

themselves as Tier-2 or Tier-3 suppliers in these newly anchored value chains.

- **Conduct proactive outreach.** Most expanding manufacturers do not know the full range of potential regional partners in their new location. Direct outreach by local firms is therefore highly effective.
- **Capitalize on customer receptivity.** Primary customers are unusually receptive to qualifying new vendors. Their corporate resilience policies demand a broader, more diversified base of suppliers.
- **Modernize operations to qualify.** Long-term competitive advantage requires operational upgrades, not just strong historical relationships. Increasingly, global customers expect AI-enabled and digitally integrated operations as a standard part of supplier qualification.

3. FOR DESTINATION-COUNTRY GOVERNMENTS AND ECONOMIC-DEVELOPMENT BOARDS

Regional investment boards must shift from generic promotions to targeted, country-specific strategies. Host countries can optimize their policy targeting by focusing on unique regional strengths and maintaining rigorous market data.

- **Focus on unique national strengths.** Competing across every investment criterion is impossible. Sustainable success requires a distinct position built entirely on a country's existing relative advantages.
- **Acknowledge winner-takes-all competition.** Corporate investment decisions are highly concentrated rather than diffuse. Our data shows that 70% of expanding manufacturers select only a single Southeast Asian nation, leaving no secondary options.
- **Tailor proposals by investor origin.** Marketing pitches must match the specific operational requirements of each home country. Highly customized proposals consistently outperform generic incentive packages.

4. FOR INSTITUTIONAL INVESTORS

Institutional investors face a widening performance gap between electronics companies that expanded globally and those that remained local. Evaluating a firm's manufacturing

footprint has become a critical requirement for accurately assessing long-term investment risk.

- **Valuation gaps are widening across the sector.** Companies that expanded their manufacturing footprints between 2017 and 2026 generated approximately twice the market-cap growth. In the highest-performing sub-segment, expanding firms outperformed domestic competitors by 7.5 times. This rapid growth was driven primarily by demand for AI data center optical transceivers.
- **Footprint diversification is a primary diligence metric.** Asset managers must audit geographic footprints alongside traditional metrics like customer concentration and technical capabilities. Electronic manufacturers that fail to establish international facilities by 2027 face structurally rising operational and transition costs.



Image generated with AI

Strategic imperatives for global electronics manufacturers

The global supply chain shift has already passed its turning point. Since 2017, the share of manufacturers with an overseas footprint in the electronics sector has increased fivefold and continues to accelerate.

Companies need to recognize that the market will not reset. Now, executives must decide where to position their businesses and how to minimize transition costs. Four priorities apply broadly across the industry:

- **Manage landed costs over a five-to-ten-year horizon.** Initial site selection does not determine long-term financial success. The largest cost variations stem from changing tariff trajectories, BOM evolution, and labor productivity gains as local ecosystems mature.
- **Finalize footprint decisions within two years.** Even if a physical expansion takes longer, companies must decide and act within the next 24 to 36 months. Factory construction, partner identification, and production stabilization typically require 24 to 36 months. Moving within the next two to three years secures the best combination of government incentives, industrial space, and customer demand. Delaying these decisions severely narrows available strategic options.
- **Prioritize AI tools during early cost baselining.** When companies evaluate their cost baselines, they must embed AI into their landed-cost plans before making site decisions. Tools for construction benchmarking and supply optimization should not be retrofitted after a move. In our experience, these digital solutions compress production setup timelines from over 24 months to under 12. They also return 3 to 5 percentage points of cost to the operator within the first three years.

- **Design regional networks for long-term optionality.** Key customers are tightening procurement criteria from simple 'diversified' sourcing to 'multi-country networked' models. Companies should design their first overseas facility layout, supply base, and operational backbone to make future expansions significantly cheaper. Relying on a single alternative country outside Mainland China is no longer a sufficient strategy.

THE TAKEAWAY

The fully integrated global supply chain will not return. In its place, a new system of specialized regional hubs is emerging. Each hub captures a specific slice of the value chain, anchored by long-term industrial policies and strict customer requirements. These **structural changes will outlast individual trade cycles.** The companies and countries that succeed will be those that **select a clear position, commit early, and execute their operations with absolute discipline.**

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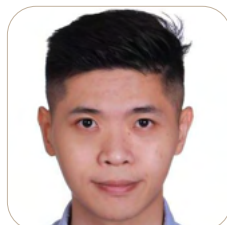
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