

China's Fasteners Accelerate Transformation

Smart Manufacturing, Material Breakthroughs & Global Expansion

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Over the past decade, global perceptions of China's fastener industry have largely remained anchored in "low cost, high volume, and standardized products." However, with the comprehensive upgrade of China's manufacturing sector, the explosive growth of the EV industry, and the rapid adoption of smart manufacturing technologies, **China's fastener industry is no longer confined to a low-end contract manufacturing role within the global supply chain. Instead, it is steadily moving toward higher value-added, technologically advanced, and globally integrated development.**

Notably, this wave of transformation is not limited to isolated upgrades. It represents a structural shift encompassing factory equipment, material R&D, application markets, and overseas investment. For Taiwan's fastener industry, long recognized for its strengths in technology and quality, China's upmarket move is evolving from a phase of "catching up" into a new source of competitive pressure.

China's Transformation

1



Smart
Factory

2



High-end
Material

3



EV

4



Overseas
Investment

5



Robot / Drone

» Smart Factory Construction Gains Momentum

One of the most visible changes in China's fastener industry in recent years is the rapid development of smart factories. In the past, many Chinese plants were associated with labor-intensive operations and rudimentary management. Today, however, newly built facilities are benchmarking directly against European and American smart factory standards. From automated warehousing and MES systems to autonomous transport vehicles and digital production traceability, the scale of transformation is significant.

Hisener's smart factory serves as a representative example. It not only features highly automated production lines but also emphasizes digital management and real-time production data, enhancing both efficiency and quality stability. Meanwhile, China's first intelligent production line for large-diameter, high-strength bolts has been launched in Chengdu. Utilizing a domestically developed hot forging technology, the line has improved production efficiency by 50%, marking a further breakthrough in China's capability to manufacture large, high-end fasteners.



These investments reflect Chinese companies' strong ambition to move into high-end manufacturing. In contrast, many small and medium-sized fastener manufacturers in Taiwan have yet to fully digitalize their processes, and equipment upgrades tend to be more conservative. While Taiwan has long led with stable quality and flexible manufacturing, Chinese players are rapidly closing the gap through bold, large-scale capital investments.

In addition, China's support for smart manufacturing has evolved from fragmented local subsidies to centrally coordinated, large-scale industrial upgrade programs. These include equipment subsidies, digital transformation incentives, and the development of industrial parks, all of which are accelerating the industry's overall advancement.

“China's fastener industry is shifting from a cost-driven advantage to a more comprehensive edge built on efficiency, technology, and scale.”

Advancing High-end Material Development

Beyond manufacturing upgrades, China is actively pursuing breakthroughs in high-end materials. One example is Pangang Group's successful development of 1500 MPa ultra-high-strength, high-toughness titanium alloy wire rod. This achievement is significant because it meets the stringent requirements of aerospace fasteners. Aerospace fasteners are widely regarded as the pinnacle of high-end fasteners, requiring not only exceptional strength but also lightweight properties, corrosion resistance, and fatigue durability. Historically, this segment has been dominated by a small number of suppliers from Europe, the United States, and Japan.

China's progress in ultra-high-strength titanium alloys indicates its gradual entry into high-value sectors such as aerospace, advanced defense, and new energy equipment. This represents more than a single material breakthrough—it signals a broader transition from “processing and manufacturing” to “materials technology.” If China succeeds in building a comprehensive high-end materials supply chain, its impact on the global fastener market will be profound, as material capability ultimately defines the technological ceiling of an industry.



exceptional
strength



lightweight
properties



corrosion
resistance

» EV Boom Creates Upgrade Opportunities

The rapid expansion of the global EV market has also become a key driver of China's fastener industry upgrade. Competition in China's EV sector has shifted from battery range to smart cockpits, autonomous driving, and integrated in-vehicle systems, leading to increased demand for specialized fasteners. Zhejiang Huayue Auto Parts has noted that rising demand for smart cockpit features has driven rapid growth in sales of high-precision, high-value customized fasteners. This indicates that Chinese fastener companies are no longer limited to supplying standard automotive components but are increasingly involved in next-generation vehicle design and system integration.

More importantly, China is the world's largest EV market, with vast domestic demand and a highly integrated supply chain. From BYD to Xiaomi Auto, and from batteries and electronic control systems to structural components, Chinese companies have built a highly localized ecosystem. This allows fastener manufacturers to participate quickly in product development and validation—a proximity advantage that export-oriented economies often lack. As China's new energy vehicle sector continues to expand, demand for high-end automotive fasteners will grow in tandem, further driving technological upgrades.

» Accelerating Overseas Expansion

Amid global supply chain restructuring and geopolitical risks, Chinese fastener companies are actively expanding overseas. For example, Shandong Tengda Fasten Tech has announced plans to invest RMB 200 million to establish a plant in Thailand. Chinese firms have also been actively exploring high-end manufacturing and new energy vehicle component markets in Malaysia to mitigate trade risks through Southeast Asian diversification.

Chinese automotive brands have also been rapidly gaining traction in South Africa, driving parallel growth in demand for automotive fasteners. As Chinese carmakers globalize, their fastener supply chains can “go global” alongside them. This marks a shift from simple export activity to the establishment of overseas production bases, logistics hubs, and localized supply capabilities.



» Rising Global Market Share

While the value of China's fastener exports to Japan has remained relatively stable at around USD 330–340 million, its share by volume has exceeded 70%, indicating Japan's growing reliance on Chinese supply. In contrast, Taiwan's market share has been declining year by year. **Some Japanese industry players have begun to recognize that Chinese products are gradually replacing domestic suppliers,** raising concerns about a potential "China shock" over the next decade.

“China's export competitiveness in fasteners has improved significantly in recent years and is rapidly penetrating the Japanese supply chain.”

In Latin America, China is the largest fastener supplier to Brazil, Argentina, Chile, and Peru, and the second largest to Mexico, with market shares ranging from 20% to 35%. **China is steadily dominating the fastener import market across Central and South America.** Against the backdrop of U.S.-China tensions, its expansion in the region—accelerated during the Trump era—has intensified and continues to reshape global dynamics.

» AI Robotics and Drones Open New Markets

The rapid growth of China's AI robotics and drone industries is creating new blue ocean opportunities for the fastener sector. Humanoid robots, industrial robots, and low-altitude economy applications all require miniature, high-precision, and lightweight fasteners. The drone industry, in particular, relies heavily on aluminum alloys, titanium alloys, and specialized structural components, necessitating high-performance fastening solutions.

“China is already a global hub for the drone industry, and with AI robotics designated as a national strategic priority, demand for related fasteners is expected to surge.”

For Chinese fastener companies, early entry into these emerging supply chains offers the potential to secure higher margins and stronger technological positioning.

» Future Outlook for Chinese Fasteners

Overall, China's fastener industry is shifting its focus from “manufacturing” to “technology.” Smart factories, advanced materials, EVs, global expansion, and AI-driven applications are collectively driving this transformation. However, challenges remain, including the establishment of a high-end brand image and geopolitical concerns surrounding reliance on Chinese supply chains.

Looking ahead, several key opportunities stand out: further breakthroughs in aerospace and defense markets; new applications driven by the EV sector; and the development of localized manufacturing capabilities amid global supply chain restructuring. China's fastener industry is evolving rapidly—and this transformation is only just beginning.

Aerospace and
defense
markets

EV-Driven
Applications

Localized
Manufacturing

» China vs. Taiwan—Diverging Trajectories, Widening Competitive Gap

As the “China shock” enters a truly globalized phase, an important question emerges: is Taiwan—a key competitor with China in overseas export markets—seeing its room for survival squeezed? Clues can be found in customs data. According to statistics from General Administration of Customs of China (**Figure 1**), China's fastener exports to the world during January–May from 2022 to 2026 were USD 4.025 billion, 3.977 billion, 3.700 billion, 4.102 billion, and 4.185 billion, respectively. In other words, after bottoming out in 2024, global demand for fasteners rebounded.

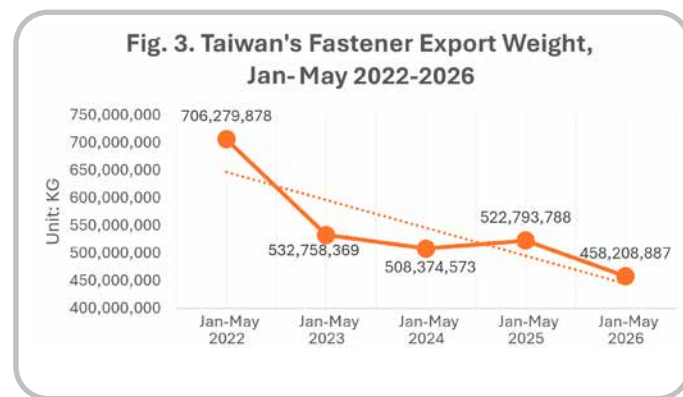


As overseas buyers resumed procurement, China's exports rose 10.8% from USD 3.70 billion to USD 4.102 billion, not only recovering to but surpassing the 2022 level of USD 4.025 billion. In the first 5 months of this year, exports climbed further to USD 4.185 billion, confirming a clear upward trend. Taiwan's fastener export value to the world (**Figure 2**), however, tell a completely different story. Over the same January–May periods from 2022 to 2026, export values were USD 2.643 billion, 2.051 billion, 1.788 billion, 1.796 billion, and 1.675 billion, respectively. Although export value bottomed out in 2024 and saw a slight rebound in 2025, the recovery margin was minimal—just 0.4%.



This year, the export value fell again to a new low, indicating that the downward trend has yet to reverse (the same applies to export weight; see **Figure 3**). As the world's largest and second-largest fastener exporters respectively, the gap between China and Taiwan has widened significantly. In the same period of 2022, the difference was USD 1.382 billion; by 2024 it had expanded to USD 1.911 billion; and in the same period of 2026, it surged to USD 2.509 billion. In other words, over the past 5 years, the export competitiveness gap has ballooned by 81.5%.

One could argue that from 2023 to 2024, global inventory destocking caused exports from both China and Taiwan to decline. However, what followed is more concerning: the historical correlation between the two has broken down, and the gap has continued to widen. This suggests that Taiwan's export competitiveness has yet to bottom out, and that its market share is being steadily absorbed by China.



Tables 1 and 2 present the top 10 export destinations and values for China and Taiwan over the same period, along with a comparison between the two. The results show that China has pivoted toward emerging markets, with a highly diversified export destination structure. Taiwan, by contrast, continues to focus primarily on Europe and the U.S. But in the context of a “Globalized China shock,” is this strategy still viable?

Table 1 shows that China's export values to emerging markets far exceed Taiwan's. Moreover, China's export value to Germany—one of Taiwan's key target markets—is already 37.6% higher than Taiwan's, while its export value to Japan exceed Taiwan's by 62.4%. Among the top 10 destinations listed in **Table 1**, Taiwan surpasses China only in the U.S. market, by 32.9%—and even that advantage is partly supported by the current geopolitical and economic environment between the U.S. and China.

▼ Table 1

Top 10 Export Destinations and Value of Chinese Fasteners [Jan-May, 2022-2026, in USD]			Compared with Taiwan's Export Value [in USD]
1	U.S.A	527,707,727	701,718,482
2	Vietnam	306,015,151	19,248,301
3	Russia	199,329,756	5,414,871
4	Germany	191,124,380	138,856,323
5	Thailand	166,865,075	30,446,218
6	Japan	141,244,574	86,946,228
7	India	133,005,976	24,120,478
8	Australia	124,161,201	23,100,262
9	S. Korea	123,515,003	4,678,573
10	Malaysia	119,314,510	7,978,417



Table 2 further reveals that, aside from the U.S., Taiwan only outperforms China in exports to the Netherlands (by 49.1%). In nearly all other advanced markets that Taiwan traditionally targets, China has already overtaken Taiwan. This is a clear warning sign: *Taiwan has not only failed to catch up with China in emerging markets, but is also being surpassed in its core markets in Europe and North America.* As Chinese fasteners “bloom everywhere,” Taiwan risks being left with diminishing options if it continues to rely solely on its traditional focus on American and European markets.

▼ Table 2

Top 10 Export Destinations and Values of Taiwanese Fasteners (Jan-May, 2022-2026, in USD)			Compared with China's Export Value (in USD)
1	U.S.A	701,718,482	527,707,727
2	Germany	138,856,323	191,124,380
3	The Netherlands	86,946,228	58,306,476
4	Japan	84,008,071	141,244,574
5	Canada	79,126,538	82,982,858
6	Mexico	57,287,558	112,655,445
7	UK	51,332,342	111,024,081
8	China	49,673,285	---
9	France	34,028,260	35,007,341
10	Spain	32,585,660	48,554,627



Crisis or Opportunity? For Taiwan, the “China shock” Presents Both a Warning and a Call to Action

Taiwan has long enjoyed a reputation for high quality and strong service—advantages that once made it difficult for China to compete head-on. Today, however, China’s rapid transformation, driven by smart manufacturing, is breaking that balance. Increasing numbers of Chinese fastener manufacturers now boast monthly production capacities in the tens of thousands of tons. More advanced, larger-scale smart and low-carbon factories are becoming the standard for new fastener plants in China.

Chinese manufacturers are adopting electric furnaces and low-carbon wire materials, while Taiwan CSC is still working to develop and improve such materials—and continues to face relatively higher cost structures. In these areas, Chinese firms are already competing directly with Taiwan and beginning to show tangible results, as evidenced by the customs data.

Taiwan also faces the structural challenge of the “five highs”:



These factors weaken Taiwan’s price competitiveness against China. At the same time,

China is rapidly moving into higher value-added segments, leaving Taiwan little room to proceed gradually. Greater investment in high-end, high-value fastener products is now essential.

There is, however, a potential path forward worth considering. The South Korean government has announced plans to invest the equivalent of approximately NTD 17 trillion, led by major corporations such as Samsung Electronics and SK Hynix, to build a domestic semiconductor production base, including four new memory chip fabs. Similarly, TSMC continues to expand its wafer fabrication facilities in the U.S. These industry leaders are taking the initiative to secure their future by building and strengthening semiconductor ecosystems. China, for its part, has already established large-scale industrial and research parks hosting many fastener companies.

Could Taiwan’s fastener industry follow suit—led by its leading firms and supported by government—to build its own “fastener science parks,” perhaps starting in Southeast Asia?

As China’s fastener giants continue to emerge, Taiwan can no longer rely on going it alone. It must collaborate with government, understand its competitors deeply, and respond proactively. In a global market that is shifting from globalization toward regionalization and more diversified sourcing, decisive action is essential to secure a place. Do not just wait. Do not “see how things go.” Only by acting now can this crisis be turned into an opportunity for Taiwan’s fasteners. ■

