ITALIAN TRADE AGENCY

ITA Beijing Office

Desk Macchine Utensili ICE Pechino

CHINA'S MACHINE TOOL INDUSTRY, MARKET AND REGULATIONS

Newsletter July 2024

Issue no. 2

Table of Contents

1. Machine Tool Industry in China

1.1 Overview of China's economy, market performance and main indicators of the machine tool industry

1.1.1 Main economy indicators (May 2024)

China's economy is experiencing a slow yet steady rebound, constantly displaying positive economic trends

According to the latest data from the Chinese National Bureau of Statistics, the overall production and supply experienced steady growth in May 2024. The general economy maintained a robust expansion, with a year-on-year (here-in-after written as Y-o-Y) increase of 5.6% in the added value of industrial enterprises above *the designated size* – enterprises with yearly main business income over 20 million yuan.

Summary of the highlights:

Rapid growth in industrial production with strong momentum in equipment and high-tech manufacturing.

- The added value of equipment manufacturing increased by 7.5%, while high-tech manufacturing increased by 10.0%.
- By product, the production of 3D printing equipment, new energy vehicles, and integrated circuit products increased by 36.3%, 33.6%, and 17.3% Y-o-Y, respectively.
- From January to May 2024, the added value of industrial enterprises above the designated size in China increased by 6.2% Y-o-Y. China's industrial enterprises *above the designated size* achieved a total profit of 2094.7 billion RMB yuan, showing a Y-o-Y increase of 4.3%.

Industrial producers price declines.

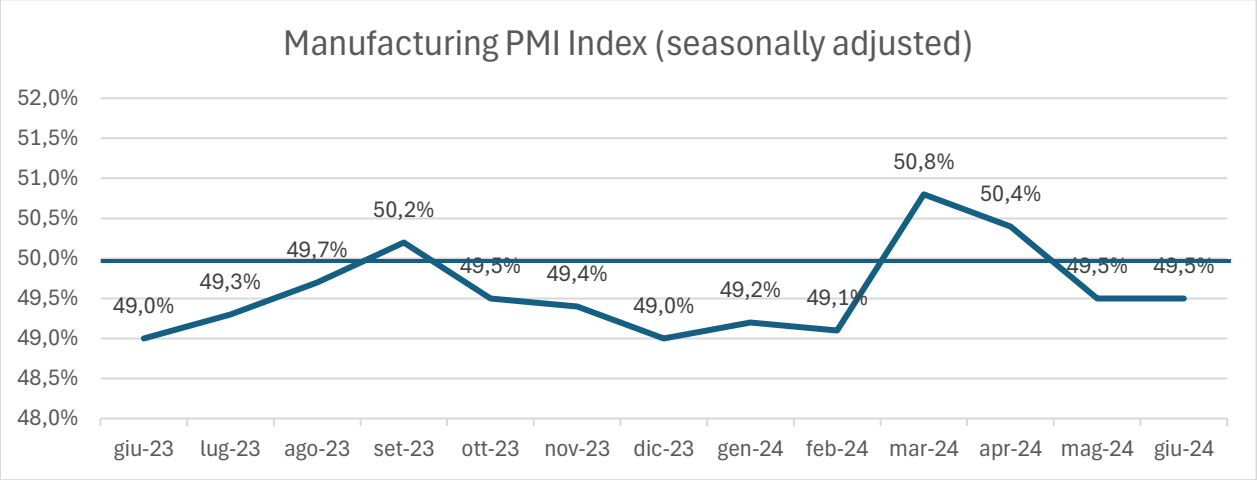
- In May 2024, the ex-factory prices of Chinese industrial producers decreased by 1.4% Y-o-Y.
- The purchasing prices of Chinese industrial producers decreased by 1.7% Y-o-Y (increased by 0.3% on a month-on-month basis).

Market demand and investment are steadily increasing

- Driven by factors such as the May Day long holiday, early "6-18" online shopping promotions, and consumer goods trade-in policies, market demand registered a steady increase. In May 2024, total retail sales of consumer goods rose by 3.7% Y-o-Y (and rose by 1.4% compared to last month).
- From January to May 2024, China's fixed assets investment recorded a growth of 4.0% Y-o-Y, with manufacturing and high-tech industry investments maintaining most rapid growth, which are 9.6% and 10.4% respectively. The "large-scale equipment renewal policy" has accelerated investments in equipment and tools, contributing 52.8% to the overall investment growth.

The manufactures PMI performance in China (June 2024)

In June 2024, the Purchasing Managers Index (PMI) for the manufacturing industry was 49.5%, unchanged compared to the previous month, indicating a stable outlook for the manufacturing industry.



**Notes: A PMI index over 50 represents growth or expansion within the manufacturing sector compared with the prior month. A reading under 50 represents contraction, and a reading at 50 indicates an equal balance between manufacturers reporting advances and declines in their business.*

PMI and component index of China's manufacturing industry (June 2023-June 2024).

Unit: %

	PMI	Production	New order	Raw material inventory	Employee	Supplier delivery time
Jun 2023	49.0	50.3	48.6	47.4	48.2	50.4
Jul 2023	49.3	50.2	49.5	48.2	48.1	50.5
Aug 2023	49.7	51.9	50.2	48.4	48.0	51.6
Sep 2023	50.2	52.7	50.5	48.5	48.1	50.8
Oct 2023	49.5	50.9	49.5	48.2	48.0	50.2
Nov 2023	49.4	50.7	49.4	48.0	48.1	50.3
Dec 2023	49.0	50.2	48.7	47.7	47.9	50.3
Jan 2024	49.2	51.3	49.0	47.6	47.6	50.8
Feb 2024	49.1	49.8	49.0	47.4	47.5	48.8
Mar 2024	50.8	52.2	53.0	48.1	48.1	50.6
Apr 2024	50.4	52.9	51.1	48.1	48.0	50.4
May 2024	49.5	50.8	49.6	47.8	48.1	50.1
Jun 2024	49.5	50.6	49.5	47.6	48.1	49.5

- Manufacturing enterprises are maintaining expansion in production.
- A slight decline in the manufacturing market demand compared to the previous month.
- The inventory of raw materials in the manufacturing industry continues to decrease.
- The overall employment situation of manufacturing enterprises is stable.
- Compared to the previous month, the delivery times for raw material suppliers in the manufacturing industry has shown a certain extension.

Source: National Bureau of Statistics of China

1.1.2 Main machine tool industry indicators (May 2024)

- From January to May 2024, the operating revenue of major lathe enterprises declined by 2.3% Y-o-Y, while total profits fell by 3.6% Y-o-Y. Despite the overall declines, many sub-industries remained profitable. New orders for metal processing machine tools rose by 3.9% Y-o-Y, and the backlog of orders decreased by 7.4% Y-o-Y.
- According to data from the National Bureau of Statistics, from January to May, enterprises above the designated size in China produced 273,000 units of metal-cutting machine tools, marking a Y-o-Y increase of 4.2%. In contrast, the production of metal-forming machine tools decreased by 12.0% Y-o-Y, totaling 66,000 units.
- China's customs data from January to May 2024 indicate that machine tools' total import and export value amounted to 12.79 billion USD, representing a Y-o-Y decline of 2.7%. Imports were valued at 4.23 billion USD (10.7% decrease Y-o-Y), while exports reached 8.56 billion USD (1.8% increase Y-o-Y).
- Metal-cutting machine tool production across various regions in May 2024

Location	May (1,000 units)	Jan-May Total (1,000 units)
Liaoning	*2.3*	*11.5*
Jiangsu	*6.4*	*28.3*
Zhejiang	*21.2*	*88.4*
Anhui	*1.1*	*5.6*
Fujian	*1.2*	*5.2*
Shandong	*6.5*	*29.9*
Guangdong	*10.5*	*62.2*
Yunnan	*3.2*	*13.4*
Shaanxi	*1.6*	*6.6*

Source: CMTBA and National Bureau of Statistics of China

1.2 Overview of China's local machine tools manufacturers (1)

1.2.1 Segmentation of local machine tools manufacturers

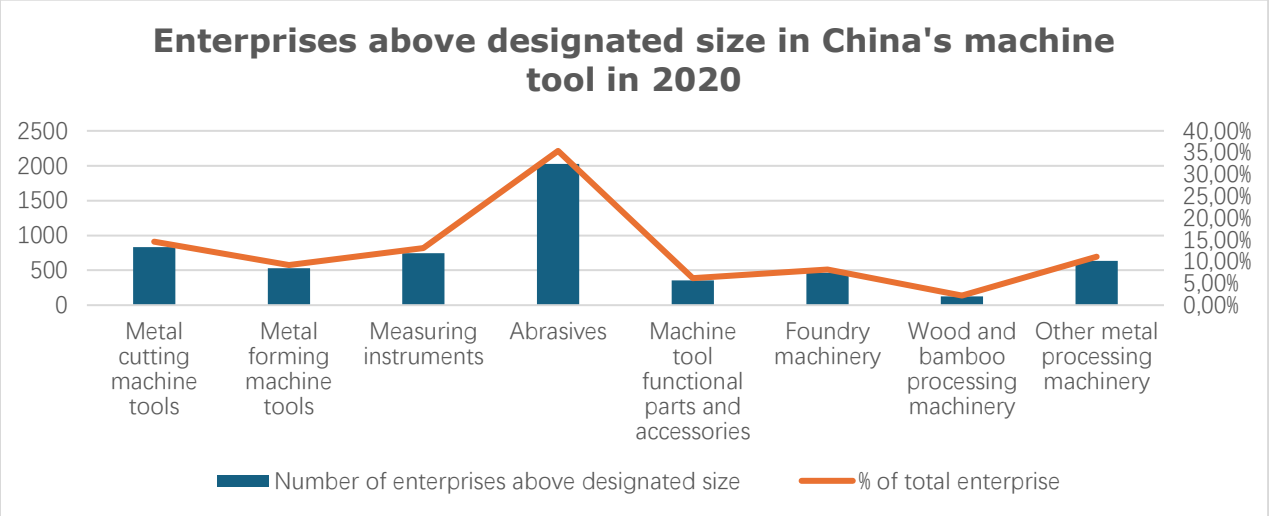
To categorize different machine tools, different classification methods can be applied, based on distinct evaluative criteria such as processing method, size, control method, structure, and application of the machine tools.

Criteria	Classification
Different processing method	**Metal cutting MT: Lathes, milling machines, planers, grinders, drilling machines, boring machines, broaching machines, gear processing machines, etc.** **Metal forming MT: Bending machines, shears, punches, forging machines, etc.**
Different size	**Instrument machine tools, small and medium-sized machine tools, large machine tools (10~30t), heavy machine tools (30~100t), super heavy machine tools (more than 100t).**
Different control method	**Traditional machine tools and CNC machine tools**
Different structure of the machine	**Vertical, horizontal, gantry machine tools, etc.**
Different application	**General machine tools, and special machine tools (designed and manufactured for processing a specific part or process)**

Among the various criteria used, processing and control methods are the most extensively referenced in the classification of machine tools.

- ✧ Analyzing the sector from the processing method point of view, in 2022, China's total metal processing machine tool production value reached 182.30 billion yuan (27.11 billion USD), of which the metal cutting machine tool production value was 115.84 billion yuan (17.22 billion USD), accounting for 64% of the total production value. Meanwhile, the production value of metal forming machine tools was 66.46 billion yuan (9.88 billion USD), accounting for the remaining 36% of the total production value.

In terms of the number of above-the-designated size manufacturers, in 2020, the number of metals cutting MT enterprises above the designated size was 833, compared to the number of 529 metal forming MT enterprises above the designated size. So, there are around 300 differences between those two different types of enterprises.



Source: CMTBA, in3act analysis

**Notes: Since 2021, the data collection has been discontinued, but the number of enterprises above the designated size remains stable.*

✧ From the perspective of control method, compared to traditional machine tools, CNC (computer numerical control) machine tools have become prominent in the Chinese modern machine tool industry due to their efficiency and accuracy, and the dynamic application possibilities in those downstream industries which require high levels of automation and production efficiency, such as new energy vehicles, aerospace, national defense, and military industries.

Main advantages of CNC machines compared to traditional machines	
1	High processing precision and stable processing quality
2	Able to process complex parts
3	The production efficiency is 3-5 times that of traditional machine tools
4	The high degree of automation, reducing the operating intensity of operators

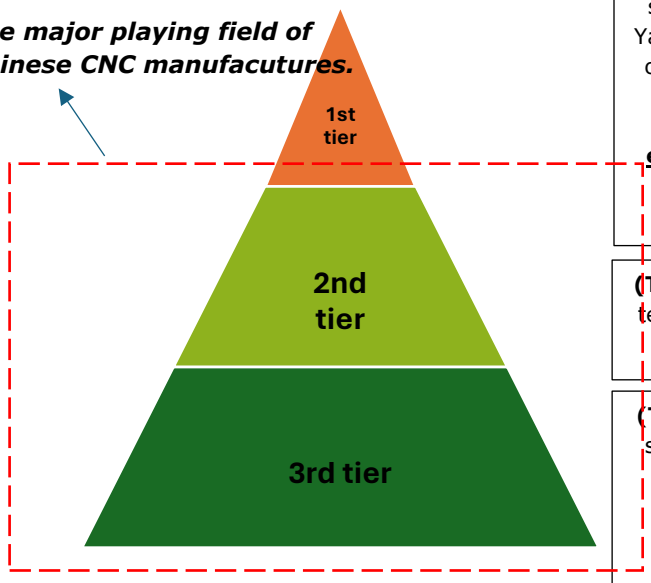
According to Chinese think-tank Qianzhan (https://d.qianzhan.com/), in 2023, the total number of active/existing enterprises in China's CNC machine tool industry is 8,382. The number of production/manufacturing companies that are still active in the CNC machine tool industry is 1,574, accounting for 18.8% of the total number.

The production capability of high-end CNC machine tools* also reflects the overall competitiveness in the field of machine tools. Most of the main local Chinese players (refer to section 1.2.2 below) are from the CNC machine tool sector and have actively invested in R&D to develop high-end CNC machine tools.

**Notes: High-end machine tools often refer to CNC machine tools equipped with CNC systems and capable of achieving high-precision, high-complexity, efficient and dynamic processing. Divided from the number of linkage axes, the current maximum number of linkage axes of CNC machine tools is five-axis linkage, which refers to the machine tool's basic three linear axes X, Y, Z and two of the additional rotation axes A, B, and C. The axes move simultaneously, and the posture of the tool or workpiece can be adjusted arbitrarily to realize the processing of complex spatial surfaces. But it is evident that the absolute number of machine tool axes is not a criterion for measuring the advanced level of CNC machine tools. The focus is on the number of linkage axes.*

In 2022, the CNC rate of metal cutting machine tools was 46.3%, while the CNC rate of metal forming machine tools was 11.3%. However, among the developed countries, the numerical control rate of machine tools remains above 80% in Japan, and over 70% in both the United States and Germany (CMTBA). A significant gap exists between China's domestic mid-to-high-end CNC machine tools and the international leading level in terms of machine reliability, processing accuracy & efficiency, life of the machine & key components, and intelligence level.

The major playing field of Chinese CNC manufacutures.



(Tier 1) Foreign-funded enterprises with a long history and product strength: their main business is high-end CNC machine tools, such as Yamazaki Mazak, DMG Mori, GROB, Hemler and Comau. At present, most of them are present in China through wholly foreign investment or joint ventures. **Currently, some Chinese companies,** Qinchuan Machine Tool & Tool Group Share Co., Ltd. (QCMTT), **have entered the high-end market with key products through core technology upgrade especially the 5-axis machining center research and development.**

(Tier 2) Private and state-owned domestic enterprises: they have certain technical strength, financial strength, stable quality and brand influence, such as China General Technology, Neway Machine Tools.

(Tier 3) Small-scale private enterprises with low competitiveness: small-scale, low-tech small private enterprises that specialize in low-end CNC machine tools. The product is low-priced and does not require high product processing accuracy. It is mainly used in general civilian products, rough machining of automobile parts and other fields.

A leading Chinese CNC machine tool builder Kede CNC (https://www.dlkede.com/) has once pointed out in 2018 in their prospectus that the self-sufficient rate (Made in China) of China's medium and low-end CNC machine tools is around 65% and 82%, respectively, but the self-sufficient rate of high-end CNC machine tools is only around 6%. Although Chinese officials have never disclosed the self-sufficiency rate of high-end machine tools, many research institutions held the same speculation and stated that the self-sufficiency rate of high-end machine tools is less than 10% and rely heavily on imports. This indicates a significant scarcity in China's advanced machine tool technology localization. The key Chinese companies have continuously been trying to enter the high-end market to get global recognition.

1.2.2 Top 10 domestic machine tool producers (players, main products and applications)

China has maintained its status as the world's largest machine tool producer, importer, and consumer. Despite its massive production, as written above, the products produced locally are used by the mid- to low-end users, and the domestic production rate of high-end CNC machine tools is definitively lacking behind the mainstream powers as Germany, Japan, Italy, and the United States.

In China's machine tool industry, the main local players are typically leading manufacturers that are publicly listed CNC companies, positioned in the second tier of the industry hierarchy. (see the pyramid above)

Based on their projected revenues in 2023, from different sources, the top 10 local producers are as follows:

No.	Company name (Chinese)	Company name (English)	Year of establishment & HQ (province)	Registered capital (million RMB)	Revenue 2023 (Billion RMB)
1	秦川机床工具集团股份公司 https://www.qinchuan.com/ 股票代码：000837 QCMT&T 秦川机床工具集团	Qinchuan Machine Tool & Tool Group Share Co., Ltd.	1998 Shaanxi	1009.89	3.76
2	广东创世纪智能装备集团股份有限公司 http://www.gdcci.com/	Guangdong Create Century Intelligent	2003 Guangdong	1685.09	3.53

		Equipment Group Corporation Limited			
3	宁波海天精工机械有限公司 https://haitianprecision.com/ HAITIAN PRECISION	Ningbo Haitian Precision Machinery Co., Ltd.	2002 Zhejiang	522.00	3.32
4	纽威数控装备（苏州）股份有限公司 http://www.newaycnc.com/ NEWAY 纽威数控装备	Neway CNC Equipment (Suzhou) Co., Ltd.	1997 Jiangsu	326.67	2.32
5	武汉华中数控股份有限公司 https://www.huazhongcnc.com/ 华中数控	Wuhan Huazhong Numerical Control Co., Ltd.	1994 Hubei	198.69	2.11
6	浙江日发精密机械股份有限公司 https://www.rifapm.com/ RIFA 日发精密机械股份有限公司	Zhejiang Rifa Precision Machinery Co., Ltd.	2000 Zhejiang	800.24	2.08
7	江苏亚威机床股份有限公司 https://www.yawei.cc/ Yawei 亚威	Jiangsu Yawei Machine Tool Co., Ltd.	2000 Jiangsu	549.76	1.93
8	沈阳机床股份有限公司 http://www.smtcl.com/ 通用技术沈阳机床股份有限公司 GENERTEC SHENYANG MACHINE TOOL CO., LTD.	Generic Shenyang Machine Tool Co., Ltd.	1993 Liaoning	2064.75	1.5
9	湖南宇晶机器股份有限公司 http://www.hnyj-cn.com/ YUJING	Hunan Yujing Machinery Co., Ltd.	1998 Hunan	203.96	1.3
10	南通国盛智能科技集团 https://www.ntgszk.com/ 国盛集团 GUOSHENG	Nantong Guosheng Electromechanical Industry Co., Ltd.	1999 Jiangsu	132	1.1

Classification of the companies by their products and top application industries:

No.	Company	Main CNC products	Top 3 application industries
1	Qinchuan Machine Tool & Tool Group Share Co., Ltd.	Gear grinders, thread grinders, cylindrical grinders, hobbing machines, gear turning machines, general CNC lathes and machining centres, gantry turning, milling and boring composite machining centres, precision and efficient broaching machines, plastic machinery (hollow machine) and other high-end CNC equipment.	▪ Aviation, aerospace, navigation (such as aircraft engines and marine gas turbines) ▪ Auto & EV ▪ Rail
2	Guangdong Create Century Intelligent Equipment Group Corporation Limited	Drilling and milling machining centre, vertical machining centre, gantry machining centre, horizontal machining centre CNC lathe, precision carving machining centre, and five-axis machining centre.	▪ 3C products (the 3C sector has always been its main field of application) ▪ Auto & EV ▪ Mould
3	Ningbo Haitian Precision Machinery Co., Ltd.	CNC gantry machining centre, CNC horizontal machining centre, CNC horizontal lathe, CNC vertical machining centre, CNC vertical lathe.	▪ Aviation & Aerospace ▪ Rail ▪ Auto parts and mould
4	Neway CNC Equipment (Suzhou) Co., Ltd.	Large machining centre, vertical CNC machine tools, horizontal CNC machine tools.	▪ Auto & EV ▪ Mould ▪ Hydraulics
5	Wuhan Huazhong Numerical Control Co., Ltd.	CNC lathe, CNC milling machine, CNC machining centre, CNC grinder, high-end CNC system	▪ CNC (to supply its CNC system to other major CNC producers) ▪ Aviation, Aerospace, shipping ▪ Auto & EV
6	Zhejiang Rifa Precision Machinery Co., Ltd.	In 2014, Rifa Precision Machinery acquired 80% of the equity of Italian MCM Spa (Italy). MCM is the world's leading manufacturer of large horizontal machining centers, heavy-duty machine tools and key components. This has boosted the production capability of Zhejiang Rifa on high-end machines.	▪ Aviation & Aerospace ▪ Auto & EV ▪ Energy and oil and gas
7	Jiangsu Yawei Machine Tool Co., Ltd.	CNC bending machines, CNC turret punches, presses and other host products, as well as sheet metal automated flexible processing equipment, coil processing machinery, etc.	▪ Home appliances ▪ 3C ▪ Auto & EV
8	Shenyang Machine Tool Co., Ltd.	CNC lathes, CNC milling and boring machines, vertical machining centres, horizontal machining centres, gantry machining centres, CNC drilling machines, heavy and large CNC machine tools, high-speed milling centres, laser cutting machines.	▪ Auto & EV ▪ Aviation & Aerospace ▪ Mould

9	Hunan Yujing Machinery Co., Ltd.	Positioned in the field of precision processing machine tools for hard and brittle materials, mainly multi-wire cutting machines, grinding and polishing machines and other precision processing machine tools for hard and brittle materials.	▪ Auto & EV ▪ Photovoltaic ▪ Rail
10	Nantong Guosheng Electromechanical Industry Co., Ltd.	Focus on CNC metal cutting machine tools including five-axis five-linkage gantry, five-axis five-linkage vertical machining, high-speed and high-precision vertical machining, high-speed and high-precision gantry, precision horizontal machining, horizontal boring, large and complex gantry, pentahedral gantry, turning-milling machine tools.	▪ Shipping (i.e. marine engine block) ▪ Aviation & Aerospace ▪ Auto & EV

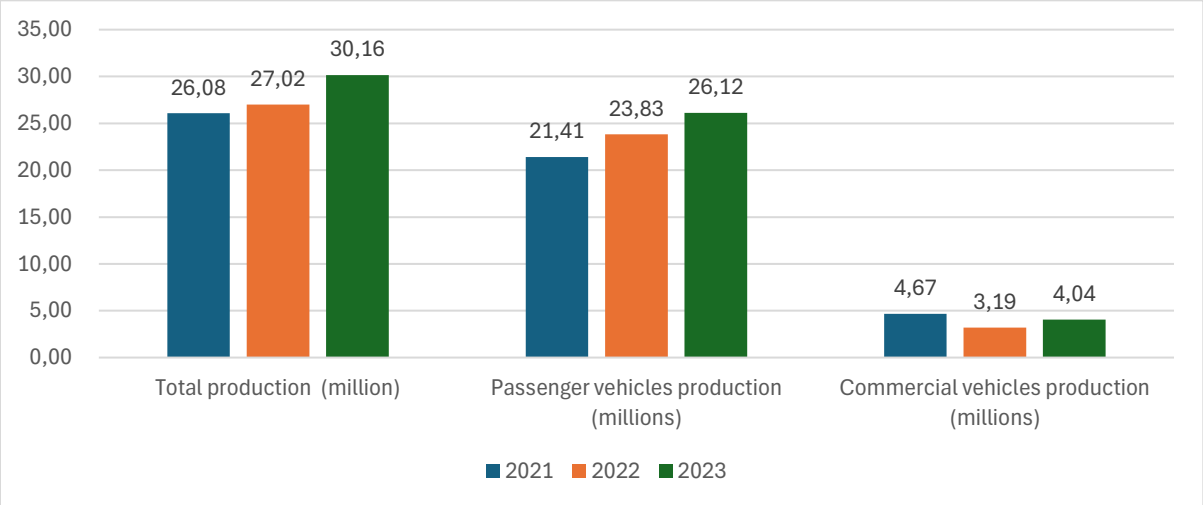
1.3 Overview of the downstream industries, geographical distribution and trend of the demand

1.3.1 Automotive industry

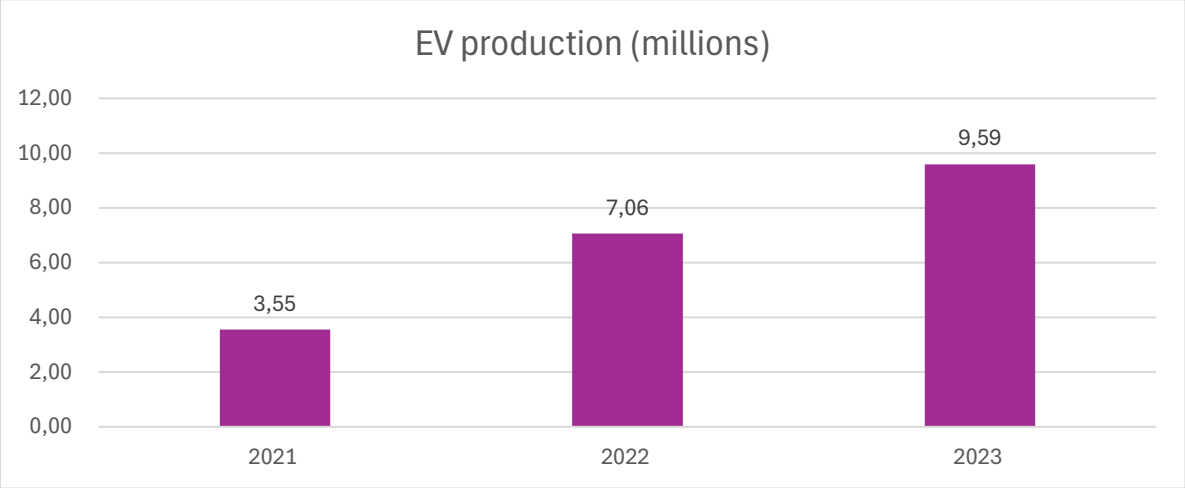
Automotive is the largest downstream industry of machine tools (accounting for more than 40% of the market demand for CNC machine tools).

The automotive sector in China, which can be divided into passenger, commercial, and electric vehicles, is undergoing a remarkable expansion, primarily driven by a surge in consumer demand for electric vehicles (EVs) amidst a growing emphasis on curbing carbon emissions vehicles production.

China's automobile production (2021-2023)



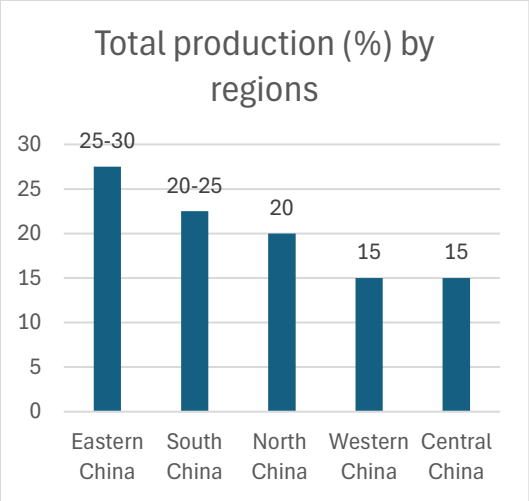
EV production (millions)

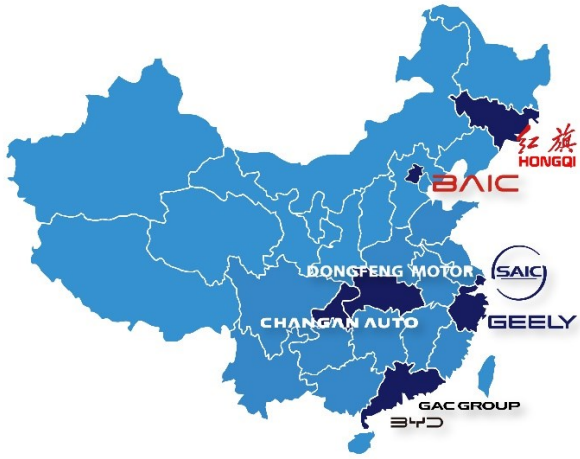


Source: China.gov

In recent years, overall vehicle production has steadily increased, with commercial vehicle numbers remaining relatively stable. However, electric vehicle (EV) production has been experiencing a rapid growth.

Geographical Distribution of Automotive Production





Source: experts, in3act analysis

The auto manufacturing enterprises are mainly concentrated in first and second-tier cities with developed economies and excellent industrial foundations.

Technological Trends in Machine Tools

Technology	Level of technology adaption	Key benefits	Major implementers
Automation and Robotics	Mid-high	Enhanced precision and reduced production time	SAIC Motor and BYD
Artificial Intelligence	Mid	Real-time quality control and predictive maintenance	Geely and NIO
Sustainable manufacturing	Mid	Energy efficiency and reduced carbon footprint	Tesla and Dongfeng Motor

Data sources: Boston Consulting Group, experts, in3act analysis

Most automotive manufacturers in China have now adopted automated production lines and robotics. However, compared to global leaders, Chinese factories still need to advance in the area of integrating artificial intelligence and sustainable production technologies.

Key Government Policies and Impact on the Automotive Industry

Key Policies	Key measures	Impact on industry
EV Subsidies	Financial incentives for EV buyers	Increased EV adaption, boosted demand for machine tools
R&D Tax Incentives	Tax breaks for R&D investments	Encouraged innovation, reduced development costs
EV Infrastructure Investments	Funding for EV charging stations	Enhanced EV infrastructure, supported market growth
Made in China (2025)	Focus on advanced manufacturing technologies	Increased use of automation, AI, and sustainable practices

Source: China Council for the Promotion of International Trade (CCPIT)

China's national policies have greatly promoted the production and consumption of EV, and helped Chinese EV enterprises maintain considerable competitiveness.

2 Government policies in China

2.1 Industrial equipment upgrading action plan and consumer goods trade-in initiatives

China' s economy is at present navigating through a complex phase marked by the interplay of inventory and industry cycles, with a large amount of industrial equipment yet to be replaced after the initial purchase, which was possibly acquired decades ago, compounded by the downward economic pressure, particularly from the real estate sector.

In this context, the central government is focusing on the promotion of large-scale equipment renewal and consumer good trade-ins to facilitate the transition of inventory cycles and mitigate the economic drag stemming from underperforming sectors.

The current wave of equipment renewal action plan aims primarily at accelerating the replacement of middle to low-end imported products through fiscal budget enhancements and subsidies, emphasizing product upgrading, energy efficiency and adherence to standards.

Another objective of the plan is to increase the integration of smart and digital technologies while steadily promoting high-quality products. However, it is worth mentioning that this action plan mostly favors large enterprises and state-owned capital.

On top of equipment renewal, consumer good trade-in initiatives are introduced to further increase demand and stimulate consumption of downstream machine tools. This round of consumer good trade-in focuses primarily on automotives and household appliances, to promote the influx of high-quality durable consumer goods into households, enhance spending upgrades, and boost consumer confidence.

Estimates suggest that in the automobile trade-in sub-market, approximately 1.5 million new energy vehicles and 1.4 million conventional fuel vehicles will be traded in, collectively driving the automotive transaction value to around 436.6 billion RMB. In the household appliances sector, the policy is expected to stimulate the trade-in of approximately 60 million units, translating into a value of roughly 100 billion RMB.

From the perspective of Italian enterprises, these policies show pros and cons, which can be summarized as follows:

Pros:	*Cons:*
Increased market expansion opportunities: technology transfer and collaboration opportunities increased demand due to environmental standards	**Market access restrictions**: the policies may favor domestic products, leading to restrictions on market access and unfair competition for foreign enterprises.
Technology transfer and collaboration opportunities: foreign enterprises can participate in equipment and consumer goods renewal projects in the Chinese market through technology transfer and collaboration, thereby enhancing market share and partnerships.	**Technological standard differences**: China may enforce standards that require adaptation and adjustments by foreign enterprises, increasing entry costs and risks.
Increased demand due to environmental standards: the policies promoting energy efficiency and environmental protection requirements will drive demand for products which meet international environmental standards, providing opportunities for active players in technology and environmental technologies.	**Risk of trade disputes**: if foreign enterprises perceive policies as discriminatory or unfavorable, it may lead to trade disputes and international trade frictions, affecting the stability of bilateral trade relations.

Notes: Foreign companies can benefit from the policy under the same conditions as domestic firms, provided that there is no competition from Chinese companies. This is due to the limited incentive budgets, which necessitates government prioritization when numerous applications are received.

Policy briefings:

Advanced Equipment Upgrades: accelerate the replacement of outdated and inefficient equipment, upgrade to high-end advanced equipment, and modernize testing and inspection equipment.

Digital Transformation: promote the adoption of smart manufacturing equipment, accelerate the establishment of smart factories, and strengthen digital infrastructure construction.

Green Equipment Promotion: speed-up the greening of production equipment, promote energy efficiency upgrades for key energy-consuming equipment, and expedite the adoption of solid waste treatment and water-saving equipment.

Safety Improvement: drive the safe renovation of outdated equipment in the petrochemical industry, enhance the intrinsic safety levels of the explosives industry, and promote the use of advanced safety equipment suitable for specific applications.

Specific supports from the central government

Three-pillar fiscal support that ranges between 33-55 billion yuan annually. The measure is active in the following situations:

1. Eligible equipment renewal and recycling projects will be funded by central government.
2. Establish special funds to support qualified localities with the recycling and disposal of discarded electrical and electronic products.
3. Special bonds will be issued focusing on key areas such as technology innovation, urban-rural integration, regional coordinated development, food and energy security and high-quality population development.

The People's Bank of China (PBOC) has announced another 500-billion-yuan re-lending program after 2022.

In 2022, the PBOC launched a special re-lending program for equipment renewal and transformation of a size of 200 billion yuan, which turned out to be a big success because facilitated almost fully the amount of equipment renewal and transformation loans.

To push this process further, on April 7th, 2024, the PBOC allocated another 500 billion yuan in a new re-lending program (interest rate of 1.75%, one-year term, extendable twice with each extension lasting one year) to drive the financial institutions into providing credit support in the key areas like digitalization, smart technology, hi-tech, green technology as well as equipment renewal. This program targets 21 financial institutions, including the China Development Bank, Postal Savings Bank of China and joint-stock commercial banks.

Worth noticing: Supports from regional governments are based on local conditions and financial capabilities. The provincial governments have issued local implementation plans and employed various methods to support large-scale equipment renewal and consumer goods trade-in comprehensively. Some regions have already achieved initial results in this effort.

Area	Focus	Goal
Shanghai	Digitalization and intelligent upgrading of production equipment Green renewal and transformation of energy-consuming equipment Low-carbon transformation of data centres	Complete the comprehensive intelligent transformation of large-scale enterprises, accelerate the application of smart manufacturing equipment, medical equipment, testing equipment, basic software, and industrial software, and promote the pilot and application of new materials.
Beijing	Digitalization and greening of manufacturing enterprises Low-carbon transformation and intelligent computing in data centers	Focus on supporting large-scale manufacturing enterprises to achieve comprehensive digitalization and green transformation compliance. Foster the upgrade of a batch of smart factories, accelerate the deployment of new digital infrastructure at scale, encourage the transformation of enterprise intranets and extranets, support the renewal of pilot testing and inspection equipment, and promote the secure transformation of aging equipment in key industries.
Jiangsu	Technical transformation projects for industrial upgrading.	6000 industrial projects are to be completed. Over 600 new smart manufacturing workshops and more than 200 smart manufacturing factories are to be established. Create approximately 10 benchmark enterprises.
Liaoning	Large-scale equipment renewal for key industrial sectors	Accelerating technological upgrades in key industrial sectors through specialized funds. Direct subsidies are capped at 5% of project investment, with individual project limits set at 10 million RMB. Approximately 1,000 equipment renewal and technology upgrade projects are targeted annually, aiming to lead the province's cumulative industrial fixed asset investment to exceed one trillion RMB by 2027.

Guangdong	Application of smart manufacturing software and hardware products. Acceleration of the construction and widespread application of industrial internet. Strict enforcement of mandatory standards for energy consumption, emissions, quality and safety	Implementing actions to enhance industrial technology and equipment renewal for improved efficiency and quality. Promoting the adoption of advanced energy-saving and carbon-reduction technologies, processes, equipment, and products. Strictly enforcing mandatory standards for energy consumption, emissions, quality, safety, and equipment elimination catalogues, lawfully eliminating non-compliant equipment.
Zhejiang	Completion of industrial digitization transformation Acceleration of technological transformation in key industries Implementation of energy efficiency standards leadership	Promote intelligent upgrades of equipment, production lines, and workshops, with plans to establish 80 future factories and 600 digital workshops (smart factories) by 2027. Implement a hundred-billion technological transformation investment project, organizing approximately 5,500 technical transformation projects annually. Achieve an update rate of over 70% of old production facilities by 2027. By 2027, ensure that production lines (facilities) in key sectors such as steel meet or exceed benchmark energy efficiency levels, with over 50% of production capacity achieving benchmark efficiency levels.

Additional notes:

Enterprises receiving financial and tax support from multiple government levels are generally state-owned or those involved in national strategic programs. Foreign-funded enterprises can access these benefits by forming joint ventures or engaging in technological partnerships with such entities, especially when local competition for incentives is limited, as regional governments often prioritize local firms. However, small and medium-sized Italian enterprises frequently face challenges in accessing these policies due to limited availability of relevant information.

3 Machine Tools Industry Exhibitions: Recent Highlights

Product highlights of the machine tool sector on XME 2024

The Xi'an International Machine Tool Exhibition (XME) is one of the leading industrial exhibitions in the central and western regions of China. It aims to facilitate business connections within Northern and Middle Asia. XME 2024 was organized in a 40,000-square-meter exhibition hall, divided into six thematic zones: Metal Cutting, Metal Forming, Grinding and Measuring Tools, Accessories, Robotics and Automation, and Electrical Machining.

The main trends emerged at XME were:

- ***Single-machine*** automated machining
- ***Hybridization and customization*** processing lines
- ***Mixing lathes and milling machines,*** (with 5-axis machine tools) being predominant.

Three novelty products have been presented, by both Chinese and foreign leading companies.

A leading Chinese company showed horizontal lathe with efficiency and precision. For example, its maximum rotary diameter φ360mm, maximum machining diameter φ100mm, maximum bar diameter φ35mm, electric spindle output power 5.5kW), it adopts direct-drive unit (high efficiency) and C-axis arbitrary indexing (the spindle positioning and indexing time of 0.5s, the indexing accuracy of 0.003 degrees). The

processing roughness can reach Ra0.4 can reach Ra0.4 for non-ferrous metals, and Ra0.8 for ferrous metals.

A leading foreign company showed turning and milling compound machining center. Characterized by 1500mm between apexes, 1st and 2nd spindles (for turning and milling) with max. speed of 4000r/min and operating power of 30/26KW respectively, and milling spindles with maximum speed of 12,000r/min and operating power of 24kW, this compound machining center can realize 3 types of gear machining: scraping, hobbing, and milling.

A Chinese leading company adopted a newly upgraded self-developed optical path space programming technology and patented process algorithms, matching with its laser's self-developed three core components - laser, laser head and thinker operating system in order to achieve control and adjustment of the light spot and path. The cutting efficiency of processing thin stainless steel/copper/aluminum can be increased by up to 200%. Taking cutting 2mm stainless steel with 6000W air as example, the cutting speed can be increased by 79%; cutting 2mm aluminum with 6000W nitrogen, cutting speed can be increased by 50%.

4 Trade Exchange in the Machine Tool Industry between Italy and China (March 2024)

Italy's machine tool imports and exports with Asian region (millions of euro)

	Import			**Export**		
	Value	Y-o-Y change 2023-2024	Share of worldwide total	Value	Y-o-Y change 2023-2024	Share of worldwide total
Asia	*70.3*	*-43.4%*	*28.4%*	*176.9*	*+20.1%*	*19.5%*
Oriental Asia	*68.3*	*-42.3%*	*27.6%*	*83.7*	*+12.7*	*9.2%*
China	*14.1*	*-12.5%*	*5,7%*	*57.9*	*+4.4%*	*6.4%*
Worldwide total	*247.9*	*-38.6%*		*908.4*	*+7.8%*	

Italy's machine tool imports and exports with China by category (millions of euro)

Marked blue are the respective indexes for worldwide total

		Value	Y-o-Y change 2023-2024	Share of worldwide total
Metal-cutting machine tools	Import	*4.8 (178)*	*-10.1% (-33%)*	*2.7%*
	Export	*44 (383.4)*	*+3.5% (-0.4%)*	*11.5%*
Metal-forming Machine tools	Import	*3.3 (38.5)*	*-27.3% (-49.6%)*	*8.7%*
	Export	*10.3 (424.5)*	*+70.5% (+16.4%)*	*2.4%*
Non-conventional technology machine tools	Imports	*6 (31.4)*	*-3.6% (-48.9%)*	*19.1%*
	Exports	*3.6 (100.5)*	*-47.5% (+7.8%)*	*3.6%*

Source: ISTAT.it

Main takeaways:

Italy's import of machine tools from the Asian region is dropping by nearly a half (-43.4%) on a Y-o-Y basis, while the export has seen a substantial increase (+20.1%). Similarly, Italy's trade in machine tools with China reflects this trend, with both imports and exports showing changes, albeit on a smaller scale.

For most categories, Italy's import and export of machine tools to China is decreasing. However, the export of metal-forming machine tools displays a stunning 70.5% Y-o-Y growth.

China is not among Italy's largest markets for machine tool trade globally, accounting for just 5.7% of imports and 6.4% of exports.

5 Tenders and Bids in China (July 2024)

Procurement Project of **Common Lathe** for Chengzhou Zinc Smelter Required by Baiyin Nonferrous Group Co., Ltd. Action deadline: July 1st, 2024
Nac small engine production line technical transformation project - **crankshaft polishing machine tool** - **International Bidding Announcement** Required by Nanjing Automobile Group Co., Ltd. Action deadline: July 2nd, 2024
Complex Tool Industry Chain Strengthening, Supplementing, Empowering And Improving Technology Transformation Project - CNC Gear Turning Machine - **International Bidding Announcement** Required by Hanjiang Tools Co., Ltd. Action Deadline: July 4th, 2024
Procurement Of 0664-2440Sumecf69 Complex Tool Industry Chain Strengthening Chain Supplement Chain Empowerment and Improvement Technology Transformation Project- **CNC Gear Turning Machine** Required by Hanjiang Tool Co., Ltd Action Deadline: July 4th, 2024
Bohai Ship Machinery - **Ordinary Lathe** Required by Huludao Bohai Ship Machinery Engineering CO., LTD Action deadline: July 5th, 2024
Procurement of **CNC horizontal lathes** Required by Lingdong Nuclear Power Co., Ltd. Action deadline: July 5th, 2024
Secondary bidding for **CNC lathes** of Railway Bearing Division Required by Luoyang LYC Bearing Co., Ltd. Action deadline: July 6th, 2024

Lathe procurement of Shouguang Luli Wood Industry Co., Ltd. Required by Shouguang Luli Wood Industry Co., Ltd. Action deadline: July 7th, 2024
Jiaozuo Shenhua Heavy Machinery Manufacturing Co., Ltd. purchases **ordinary lathes** through three rounds of inquiry and comparison Required by Jiaozuo Shenhua Heavy Machinery Manufacturing Co., Ltd. Action deadline: July 8th, 2024
CNC Tool Grinding Machine Procurement Project - **International Tender Announcement** Required by Jinzhou Precision Technology (Kunshan) Co., Ltd. Action Deadline: July 9th, 2024
Procurement of **medium-sized CNC lathes** Required by Shanghai Railway Materials Co., Ltd Action deadline: July 11th, 2024
Procurement of inclined **horizontal CNC lathes and vertical machining centres** by Shanghai Railway Materials Co., Ltd. of Shanghai Railway Bureau Group Co., Ltd Required by Shanghai Railway Materials Co., Ltd Action deadline: July 11th, 2024
Unified procurement and separate signature + Hengtuo hydraulic + **CNC precision automatic lathe** Required by Shanghai Hengtuo Hydraulic Control Technology Co., Ltd. Action deadline: July 12th, 2024
Procurement Announcement for **Ultra Precision Machining Five Axis CNC Lathes** Required by Shenzhen Technology University Action deadline: July 15th, 2024
Procurement Of 0716-244Jsc961059 Jinzhou Precision Technology (Kunshan) Co., Ltd. **CNC Tool Grinding Machine** Procurement Project (Rebidding)

Required by Jinzhou Precision Technology (Kunshan) Co., Ltd. Action Deadline: July 18th, 2024
CNC Tool Grinding Machine Procurement Project (Re-Tender) - **International Tender Announcement** Required by Jinzhou Precision Technology (Kunshan) Co., Ltd. Action Deadline: July 18th, 2024