ITALIAN TRADE AGENCY
ICE - Italian Trade Commission
Trade Promotion Office of the Italian Embassy

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CHINA'S MACHINE TOOL INDUSTRY, MARKET AND REGULATIONS

Newsletter November 2024

Issue no. 6

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

1.1.1 Main economy indicators (Summary of the highlights)

A reasonable increase in the total retail sales of consumer goods, consistent with the trend throughout the year

In September 2024, the total retail sales of consumer goods amount to 4111.2 billion yuan, up by 3.2% year-on-year (1.1 percentage points higher than the previous month). It is worth pointing out that retail sales of all goods excluding automobiles amount to 3657.3 billion yuan, up by 3.3% year-on-year.

By operating location of business entities, retail sales of consumers goods in cities and towns amounts to 3504.4 billion yuan, up by 3.1% year-on-year, while the same index in villages amounts to 606.8 billion yuan, up by 3.9% year-on-year. By retail business format, from January to September 2024, retail sales of convenience stores, specialty stores and supermarkets above the designated quota displays a year-on-year increase of 4.7%, 4.0%, 2.4% increase, respectively. In comparison, retail sales from department stores drops by 3.3%.

A continued recovery of national consumer prices, despite on a smaller scale compare to the previous month

In September 2024, the national retail price rises by 0.4% year-on-year. The index is 0.4% in urban areas and 0.6% in rural areas.

Among them, food price increases by 3.3% year-on-year, non-food price falls by 0.2%, consumer goods price increases by 0.5% and service price increases by 0.2%.

The average increase of national retail price is 0.3% from January to September.

An upward trend in industry output, with the biggest increase in shipbuilding & aerospace industry

In September 2024, the value-added of industry above the designated size grows by 5.4% year-on-year in real terms, 0.9 percentage points higher than the previous month. The same index averaged from January to September is 5.8%.

By sector, value-added of oil and gas mining sector increases by 2%, wine & beverage & tea manufacturing sector increases by 5.6%, electric power & heat production sector increases by 10.2%, and aerospace & shipbuilding sector shows the biggest increase by an astonishing 13.7%.

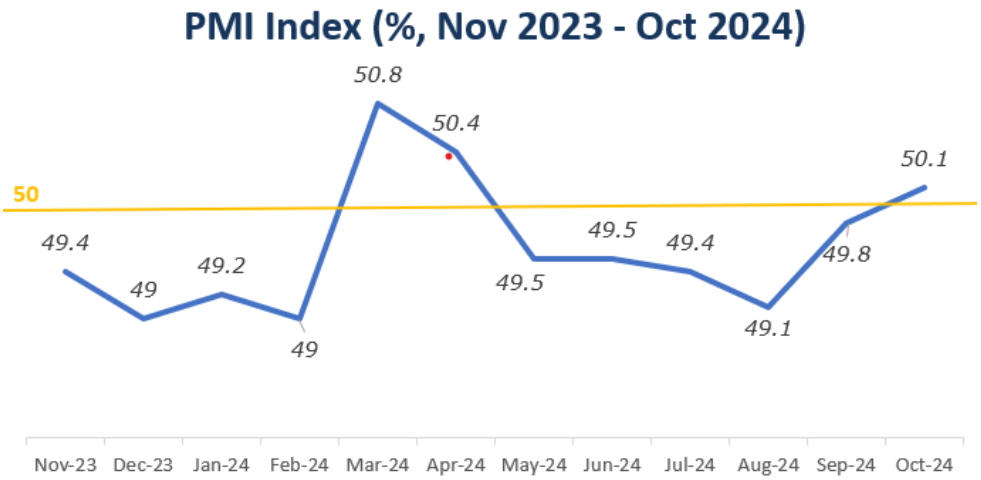
Manufacturer PMI index (October 2024)

In October 2024, the Purchasing Manager Index (PMI) for the manufacturing industry is 50.1%, 0.3 percentage points higher than the previous month, indicating an expansion of the manufacturing industry after an extended period of decline.

Reasons for the first expansion since May 2024 are:

1) Some sectors have come to the "busy season" of the year (periods of the year with more business activities)

2) A series of supportive policies (lower bank reserve rate requirement, lower real-estate mortgage rate, huge monetary injection) carried out by the central government at the end of September significantly facilitates the recovery of the general economy including the manufacturing industry, but it cannot be told how long the positive policy impacts can be lasting.



**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 indexes (%) of China's manufacturing industry

	PMI	Production	New order	Raw material inventory	Employee	Supplier delivery time
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
Jul 2024	49.4	50.1	49.3	49.9	48.3	49.3
Aug 2024	49.1	49.8	48.9	47.6	48.1	49.6
Sep 2024	49.8	51.2	49.9	47.7	48.2	49.5
Oct 2024	50.1	52	50	48.2	48.4	49.6

- The manufacturing industry is showing an expansion (despite moderate) after an extended period of decline.
- The production of the manufacturing industry is significantly improving.
- New market order remains unchanged compared to the previous month.
- The overall employment situation is still to-some-extent worsening.
- A slight extension on the delivery time of raw materials can be observed.

1.1.2 Machine Tool Industry Indicators

- Data from China Machine Tool Industry Association: from January to August 2024, the operating revenue of key contact enterprises declines by 3.5% year-on-year, and the total profit falls by 9.9% year-on-year. New order for machine tools increases by 3.5% year-on-year, and the existing order on hand decreases by 0.3%.
- Data from the National Bureau of Statistics: from January to August 2024, enterprises above the designated size achieve the production 447,000 units of metal-cutting machine tools (+7.7% year-on-year) and 112,000 units of metal-forming machine tools (+6.7% year-on-year).
- Data from the China customs: from January to September 2024, the export and import value of cutting tools amount to 18.99 billion (+11.64% year-on-year) and 6.36 billion (-1.88% year-on-year) RMB, respectively. The export and import value of measuring tools (量具)& gauges（量仪）is 1.57 billion (+28.0%) and 1.12 billion (-16.4%) RMB.
- Metal-cutting machine tool production across regions in September 2024

Location	Sep (1,000 units)	Jan-Sep Total (1,000 units)
Liaoning	**0.21**	**2.05**
Jiangsu	**0.66**	**5.44**
Zhejiang	***1.73***	***16.16***
Anhui	**0.18**	**1.45**
Fujian	**0.10**	**0.94**
Shandong	**0.61**	**5.55**
Guangdong	**1.5**	**11.31**
Yunnan	**0.22**	**2.41**
Shaanxi (陕西)	**0.09**	**1.08**

1.2. Overview of European machine tool manufacturers in China (other than Italians)

1.2.1 European machine tool manufacturers market landscape

The European machine tool market plays a crucial role in the global landscape. According to CECIMO (the European Association of Manufacturing Technologies), the machine tool industry in Europe in 2023 has achieved a turnover of 27.2 billion euros, sharing around 33% of the global output, indicating its leadership in the machine tool sector.

Export of machine tools from EU-28 to the world (by classification):

*It can be observed that the export ramps up quickly after COVID-19, with 12% increase from 2019 to 2013.

European Union (EU 28)'s exports to world

HS code	Producut label	MT family	Value in 2019	Value in 2020	Value in 2021	Value in 2022	Value in 2023
'8456	Machine tools for working any material by removal of material, by laser or other light or photon **...**	Non-conventional	2264155	1806417	2195453	2611682	2680163
'8457	Machining centres, unit construction machines "single station" and multi-station transfer machines **...**	Cutting	3766544	2711969	2992888	3297146	3678267
'8458	Lathes, incl. turning centres, for removing metal	Cutting	2433233	1731622	1954410	2105785	2263312

'8459	Machine tools, incl. way-type unit head machines, for drilling, boring, milling, threading **...**	Cutting	1579856	1233756	1378457	1451304	1587696
'8460	Machine tools for deburring, sharpening, grinding, honing, lapping, polishing or otherwise **...**	Cutting	1915810	1316274	1320815	1456521	1763101
'8461	Machine tools for plane(ing), shaping, slotting, broaching, gear cutting, gear grinding or gear **...**	Cutting	1115374	792001	911991	1032238	1182408
'8462	Machine tools, incl. presses, for working metal by forging, hammering or die forging (excl. **...**	Forming	4203556	3435921	3888705	3854405	4457193
'8463	Machine tools for working metal, sintered metal carbides or cermets, without removing material **...**	Forming	785480	561558	613332	734576	884347
'8464	Machine tools for working stone, ceramics, concrete, asbestos-cement or like mineral materials **...**	Non-metal	1312574	1101125	1353131	1375141	1385154
'8465	Machine tools, incl. machines for nailing, stapling, glueing or otherwise assembling, for working **...**	Non-metal	4400377	3866138	4472832	4985600	5056496
'8466	Parts and accessories suitable for use solely or principally with the machines of headings **...**	Accessories/Parts	8420425	6751960	7901220	8829228	9302829
Total Export (Unit : Euro thousand)			**8420425**	**6751960**	**7901220**	**8829228**	**9302829**

Source: International trade center

Probing on specific countries:

Germany's machine tool industry is renowned for its high precision, quality and innovation, accounting for over 30% of total production in the European machine tool market and significantly contributing to EU's exports and technological advancements, as per a report of Virtue Market Research, 2024. According to Gardner Intelligence, Germany emerges as the world's largest machine tool exporter in 2023 (exports valued at 9.5 billion euros); follows by China (7.6 billion euros), Japan (4.0 billion euros), and Italy (2.5 billion euros).

Italy is also a heavyweight in the European machine tool market, ranking second in terms of machine tool exports (behind Germany). With a rich history and extensive product line in the sector (particularly in heavy-duty machine tools and high-precision machining equipment), in

2022, Italy's machine tool production reached approximately 6.5 billion euros, with exports valued at around 3.03 billion euros, according to UCIMU and CECIMO.

1.2.2 German machine tool producers in China

Germany is one of the largest foreign machine tool exporters to China, with 13 machine tool facilities in China. According to a survey by VDW (German Machine Tool Builders' Association), in 2022, Germany machine tool export was valued at 811 million euros, nearly a quarter of which was purchased by China. In 2023, German machine tool export to China was valued at approximately 1.65 billion euros, accounting for about 17% of total German machine tool exports during the year.

Below is a list of German machine tool builders with a strong presence in China:

Company	Background
TRUMPF SE + Co. KG	▪ Founded in 1923, TRUMPF has now established itself as a technological and market leader, particularly in flexible sheet metal processing. ▪ TRUMPF holds a significant global market share for machine tools and industrial lasers.
GROB-WERKE GmbH & Co. KG	▪ Founded in 1926 (and commonly known as Grob), Grob-Werke GmbH & Co. KG, is a prominent manufacturer of CNC machines tools and production systems, especially for the automotive industry.
INDEX-Werke GmbH & Co. KG	▪ Founded in 1914, INDEX-Werke Gmbh & Co.KG is known for its high-precision automated lathes and multi-purpose machining centers. ▪ Consisting of two (INDEX and TRAUB) prominent brands, the INDEX Group is today one of the world's leading manufacturers of CNC lathes.
Hermle AG	▪ Founded in 1938, Hermle is a leading manufacturer of CNC milling machines and high-precision machine tools, with a focus on sectors such as aerospace, automotive, medical technology and optics.

HERMLE	▪ Hermle initially produced bolts and machine screws before extending into milling machines in 1957.

1.2.3 Other European machine tool producers in China

Apart from Germany and Italy, other European countries also have unique characteristics in machine tool manufacturing:

UK -- efficient grinding machines

Austria –- diverse modular designs and vocational training systems

Spain –- technological innovation (concentrated in a few brands)

France –- high-precision processing and comprehensive solutions, particularly in the aerospace and automotive industries

Switzerland – exceptional precision and stability of machine tools

Below is a list of major producers from the respective countries:

Company	Country	Background
EMCO GmbH emco	Austria	▪ EMCO has a rich history that dates back to its founding in 1947. Until now the company has evolved from producing lathes to specializing in CNC (computer numerical control) machines, including lathes, milling machines, and automation systems.
Colchester Machine Tool Solutions Ltd. Colchester Machine Tool Solutions	UK	▪ As one of the UK's oldest machine tool manufacturers with the history dating back to 1886, Colchester is famous for its durable lathes and milling machines, which are widely used around the world.
HARRISON LATHE HARRISON LATHES 600 Group	UK	▪ Founded in 1898, Harrison is known for its high-quality lathes and CNC machine tools, which are widely used in industries such as automotive and aerospace. ▪ The company offers various models of CNC and manual lathes.

Fagor Arrasate S.Coop.	Spain	▪ Founded in 1957 as part of Mondragón Corporation (one of Europe's largest industrial groups), FAGOR specializes in forming and cutting solutions for materials.
DANOBAT Group	Spain	▪ Founded in 1954, DANOBAT provides high-end metal processing solutions covering turning, milling and grinding; Widely used in the automotive and aerospace industries.
Five Groups	France	▪ Founded in 1812, Fives is a leading global engineering group specializing in high-precision machine tools and automation solutions. ▪ The product portfolio covers many fields such as machining, turning, milling, and grinding.
Mikron Group	Switzerland	▪ Focusing on the development and production of high-precision automation solutions, machining systems and cutting tools. ▪ Mikron originated in the watchmaking industry in 1908, and has now extended the operations into multiple industries, including pharmaceuticals, medical technology, consumer goods, automotive and general engineering.
Schaublin Machines SA	Switzerland	▪ Founded in 1915, Schaublin is famous for its high-precision lathes and milling machines, especially in the fields of watchmaking and precision engineering.
Tornos AG	Switzerland	▪ Founded in 1914, Torns has been focusing on the development and production of high-precision automatic lathes and multi-spindle machine tools. ▪ As a pioneer in Swiss-type lathe technology, Tornos enjoys a strong reputation in multiple industries including automotive, medical, micromachining and electronics.
Starrag Group	Switzerland	▪ Starrag, founded in 1897, specializes in the production of high-precision machine tools for

		milling, turning, boring and grinding of metals, composites and ceramic materials.
GF Machining Solutions 	Switzerland	▪ GF Belongs to the 200-year-old Georg Fischer Group, which was founded in 1802. ▪ GF has been focusing on providing high-end machine tools, automation solutions & services, and precision components to the mold manufacturing industry.

1.2.4 Chinese business license main information, products and downstream applications

Name of the Chinese HQ	Year of establishment & Province	Registered Capital	Main products	Main application sectors
TRUMPF China Co., Ltd. 通快（中国）有限公司	Jiangsu (2007)	3,089,000 EURO	▪ CNC machine tools ▪ Laser cutting machine ▪ Bending machine	▪ Automotive ▪ Aerospace ▪ Electronic ▪ Medical
GROB MACHINE TOOLS (CHINA) Co., Ltd. 格劳博机床（中国）有限公司	Liaoning (2010)	7,895,000 EURO	▪ Universal machine tools (GROB produces 4- and 5-axis universal machining centers suitable for machining precision parts) ▪ Assembly lines and system solutions ▪ Horizontal machining centers ▪ Flexible manufacturing systems	▪ Automotive ▪ Aerospace ▪ Energy ▪ Medical
INDEX Machine Tools (Taicang) Co., Ltd. 因代克斯机床（太仓）有限公司	Jiangsu (2019)	310,000 EURO	▪ Universal lathe ▪ Turning and milling center	▪ Automotive ▪ Aerospace ▪ Mechanical Engineering

			▪ Production automatic lathe ▪ Multi-axis CNC multi-function machine tools ▪ Automatic center lathe ▪ Automation solutions	▪ Electronic Engineering
Hermle (Shanghai) Instrument Technology Co., Ltd. **贺默(上海)仪器科技有限公司**	Shanghai (2011)	300,000 USD	▪ CNC miling machine ▪ High-Performance Line ▪ Automation Solutions	▪ Medical ▪ Aerospace ▪ Automotive ▪ Optics
EMCO Machinery (Taicang) Co., Ltd **艾莫科机械（太仓）有限公司**	Jiangsu (2014)	100,000 USD	▪ Turning Machines ▪ Milling machines ▪ Automation solutions ▪ Educational Machines ▪ Universal Machining Centers	▪ Industrial Manufacturing ▪ Education ▪ Tool and Mold Making
Fagor Forging Machine Tools (Kunshan) Co., Ltd. **法格锻压机床(昆山) 有限公司**	Jiangsu (2006)	9,420,000 USD	▪ Mechanical and Hydraulic Presses ▪ Complete Stamping Systems ▪ Transfer Presses ▪ Cutting Lines ▪ Metal Forming Equipment	▪ Automotive ▪ Steel ▪ Home appliances ▪ General Metal Fabrication
DANOBAT Group （China） **达诺巴特集团（中国）**	Shanghai (2010)	10,000 EURO	▪ Grinding equipment ▪ Milling equipment ▪ Turning equipment ▪ Automation system	▪ Aerospace ▪ Automotive ▪ Energy ▪ Rail transit
Fashi Machine Tool Technology (Shanghai) Co., Ltd.法世机床技术（上海）有限公司	Shanghai (1998)	750,000 USD	▪ Machine Tools ▪ Process Equipment ▪ Automation Solutions	▪ Aerospace ▪ Automotive ▪ Cement and Minerals
Mikron Industrial Equipment (Shanghai) Co., Ltd. **米克朗工业设备（上海）有限公司**	Shanghai (2008)	3,800,000 USD	▪ Automation solutions ▪ Processing system ▪ Cutting tools	▪ Pharmaceuticals ▪ Medical ▪ Consumer goods ▪ Automotive ▪ General engineering

Schaublin (Shanghai) Machine Tool Co., Ltd. **肖布林（上海）机床有限公司**	Shanghai (2020)	100,000 EURO	▪ CNC turning ▪ Conventional turning ▪ Turning grinding ▪ Hard turning	▪ Automotive industry ▪ Optical instruments ▪ Micromachines ▪ Aerospace ▪ Medical and dental ▪ Defense equipment
Tornos Trading (Shanghai) Co., Ltd. **托纳斯贸易（上海）有限公司**	Shanghai (2008)	500,000 USD	▪ Swiss type slitting automatic lathe ▪ Multi-axis automatic lathe ▪ Milling ▪ application software	▪ Automotive ▪ Micromechanical Electronics ▪ Medical and Dental
Starrag Machine Tool (Shanghai) Co., Ltd. **斯达拉格机床（上海）有限公司**	Shanghai (2007)	200,000 USD	▪ Vertical lathe ▪ Gantry machining center ▪ Medium general machining center ▪ Milling and turning combined machining center	▪ Aerospace ▪ General machining ▪ Energy ▪ Transporation ▪ Micromechaninges
GF Machining Solutions (Shanghai) Ltd **乔治费歇尔精密机床（上海）有限公司**	Shanghai（2004）	3,010,000 EURO	▪ High-end machine tools ▪ Automation solutions	▪ Automotive ▪ Medical ▪ Packaging ▪ Aerospace ▪ Electronic components and ICT

Note: Colchester Machine Tool Solutions Ltd. and T. S. Harrison and Sons Ltd. do not explicitly mention having an entity or office in China in the available research results.

1.3. Overview of the downstream industry, company geographical distribution and the demand trends

1.3.1 Major downstream application overview: shipbuilding industry

The application of machine tools has significantly improved the efficiency, precision, and flexibility in major shipbuilding machining processes, such as:

- Precision cutting and forming: CNC machine tools are capable of conducting high-precision cutting and forming operations, and therefore are applied in the manufacturing of ship hulls, decks and internal structures.
- Mold manufacturing: CNC machine tools can quickly and accurately produce complex-shaped molds, and therefore are applied in forming the curves and complex structures of ship hulls (shortening the production cycle; improving the mold consistency& repeatability).
- Rib and stringer processing: key components in the hull structure processed by CNC machine tools.
- Deck dressing: CNC machine tools are used for cutting, grinding, and dressing decks to ensure the flatness of the deck surface.

1.3.2 Shipbuilding companies' geographical distribution in China

China is home to several of the world's largest and most influential shipbuilding companies:

Company	HQ location	Introduction
China State Shipbuilding Corporation (CSSC) 中国船舶集团有限公司	Beijing	▪ CSSC is the largest shipbuilding company in the world, formed in 2019 through the merger of two major entities - China Shipbuilding Industry Corporation (CSIC) and the former CSSC. It commands about 20% of the global market share. ▪ By the merger of former CSSC and CSIC, the group now owns 104 scientific research institutes, business units and listed companies. CSSC also has the largest shipbuilding and repair base in China. ▪ CSSC specializes in building a wide range of vessels, including LNG carriers, Very Large Crude Carriers (VLCCs), and military warships. Its major shipyards include Jiangnan Shipyard, Hudong-Zhonghua Shipbuilding, and Shanghai Waigaoqiao Shipbuilding.
China Shipbuilding Industry Corporation (CSIC) 中国船舶工业集团有限公司	Beijing	▪ As part of the post-merged CSSC, CSIC remains a significant entity within the industry, focusing on naval shipbuilding and advanced marine engineering projects. ▪ CSIC has contributed to China's defense capabilities and has a strong presence in military ship construction.
Dalian Shipbuilding Industry Company (DSIC) 大连船舶重工集团有限公司	Liaoning	▪ As one of the largest shipbuilders in China (also part of CSSC), DSIC has a long history and is known for building a variety of vessels, including naval ships and commercial vessels. ▪ It operates extensive facilities in Dalian, with capabilities for large-scale production and advanced technology integration.

Shanghai Waigaoqiao Shipbuilding (SWS) 上海外高桥造船有限公司	Shanghai	▪ SWS is a leading ship manufacturer in Shanghai, renowned for its specialization in large container ships and offshore platforms. ▪ SWS has delivered numerous complex vessels and is a significant player in both domestic and international markets.
COSCO Shipping Heavy Industry 广东中远海运重工有限公司	Guangdong	▪ As a subsidiary of COSCO Shipping, COSCO Shipping Heavy Industry focuses on building various types of vessels, including bulk carriers and specialized ships.
Hudong-Zhonghua Shipbuilding (Group) Co., Ltd. 沪东中华造船（集团）有限公司	Shanghai	▪ As another major subsidiary under CSSC, Hudong-Zhonghua specializes in high-tech vessels such as LNG carriers. ▪ Hudong-Zhonghua recently secured contracts for ultra-large LNG carriers, partly attributed to advanced maritime technologies.

1.3.3 Demand trends of the shipbuilding industry

- The global shipbuilding industry continues to experience a significant development

Based on Statista, the global shipbuilding market size is expected to increase from 152 billion USD in 2022 to 195 billion USD in 2030, with a CAGR of 3.2%. The growth in the shipbuilding sector is driven by factors such as an increased demand for energy-efficient vessels out of climate change concern, rising seaborne trade, and supportive government policies from global dominant shipbuilding nations like China, South Korea and Japan.

- China's shipbuilding industry is also expanding, and taking up a large market share in the world
  - According to China Association of the National Shipbuilding Industry, in the first half of 2024: China's shipbuilding completion volume (bulk carriers, container ships, sophisticated naval vessels, etc.) reaches 25.02 million deadweight tons (year-on-year increase of 18.4%).
  - The number of new orders placed is equivalent to 54.22 million deadweight tons (year-on-year increase) of 43.9%; the number of existing orders is equivalent to 171.55 million deadweight tons (year-on-year increase of 38.6%).
  - China is taking up a large market share in the global shipbuilding industry (75% of the world's new ship orders flow to China, ranked 1st in the international market share for 14 consecutive years till 2023), with rapidly-increasing orders for high-end ships and projected annual profits three times over 2023.
- The expansion of the shipbuilding industry, both home and abroad, drives up the demand for the upstream machine tool sector

With the expansion of the shipbuilding industry, the demand for large, high-precision machine tool equipment has increased significantly. The modern shipbuilding process requires a large number of high-performance machine tools, such as CNC gantry boring & milling machines and five-axis linkage CNC machine tools, that are mainly used to process key components of medium-and-low speed diesel engines and large propellers.

2. Policy initiatives: Action Plan for Digital Transformation of the Manufacturing Industry

On May 11, 2024, "Action Plan for Digital Transformation of the Manufacturing Industry" was approved by Premier Li Qiang in the State Council, as a crucial step towards building a modern industrial system. This action plan includes the following key points:

- Developing smart factories and digital workshops

The development of smart factories and digital workshops can help improve industrial efficiency and thus foster new forms of productivity.

- Targeted Digital Transformation by Industry

The digital transformation process should be tailored to the unique characteristics and needs of each different industry. It is important to accelerate the R&D breakthrough and real-life adoptions of the core technologies, given the specific industrial application scenarios.

- Support for Small and Medium-Sized Enterprises (SMEs)

SMEs tend to be more hesitant to take on the risks of digital transformation due to a weaker financial flow and lack of resources. To cope with this problem, the government should put out efforts, such as large-scale equipment upgrades, technological renovation and public service platform improvement, to help SMEs transition to a digital structure and therefore foster new growth engines.

2.1 Historical evolution of the Digital Transformation policy initiative

Dec 2021

The Ministry of Industry and Information Technology (MIIT), along with several other departments, issued the "14th Five-Year Plan for Intelligent Manufacturing Development", with the following goals:

1) 70% of large-scale manufacturing enterprises to achieve digital networking by 2025; digital networking to be fully implemented throughout the sector by 2035.
2) Establishing over 500 intelligent manufacturing demonstration factories.
3) Significantly improving production efficiency, product quality, and utilization.

Apr 2024

MIIT Vice Minister stated that the efforts would focus on accelerating the construction of digital infrastructure, including the industrial internet, gigabit optical networks, and computing power centers.

May 2024

The National Development and Reform Commission (NDRC), and the National Data Bureau issued the "Digital Economy 2024 Work Guidelines", outlining nine priorities, including accelerating industrial digital transformation, fostering digital technology innovation, improving public services, strengthening digital governance, and enhancing digital security.

May 2024

Liu Liehong, a member of the NDRC, emphasized the focus on green and low-carbon development in the process of digital transformation, with the goal of building a circular and environmental-friendly economy.

2.2 Supportive policies from local governments

Beijing

Implementation Plan for the Digital Transformation of the Manufacturing Industry (2024-2026)

Main Goals

- Achieve full digitalization: Establish a complete set of standards to help manufacturing companies transition through digital & intelligent upgrades.
- Enhance the supply capability of digital transformation: Increase the supply of intelligent equipment, industrial software, and system solution.
- Improve the effectiveness of digital transformation: Focus on Beijing's high-end cutting-edge industries, establish national-level intelligent manufacturing demonstration companies ("world lighthouse factories")
- Enhance the Beijng-Tianjin-Hebei Coordinated Smart Manufacturing Ecosystem: Establish secondary industrial internet identification nodes in the three regions, with over 60,000 service nodes.

Supportive Measures

- Companies that have been in operation for over two years are encouraged to fully embrace digital transformation, supported by Beijng's local policies. For new companies, the level of digitalization is considered as part of the evaluation criteria for privileged land use and talent policies.
- Qualified companies listed on the Beijing Stock Exchange are encouraged to apply for national programs and relevant awards, funded by the government.
- Financial institutions and industrial investment funds (particularly equity investments) are incentivized to support the digital transformation of the manufacturing enterprises.

Shanghai

Action Plan for Coordinated Digital and Green Transformation of the Manufacturing Industry (2024-2027)

Main Goals

- Enhance green and intelligent manufacturing productivity: by 2027, over 85% of large-scale manufacturing enterprises to complete digital transformation; industrial labor productivity to exceed 500,000 RMB per person; the scale of green and low-carbon industry to surpass 5 trillion RMB.
- Use digital technologies for energy conservation and emission reduction: promote the application of smart green technologies and equipment, especially for high-energy-consuming industries and enterprises.
- Create demonstration projects: Cultivate 20 green intelligent industry leaders and 50 system solution providers; build 20 green smart demonstration parks and and 50 demonstration factories.
- Improve the policy environment: Introduce public service platforms and collaborative technical standards; incentivize widespread adoption of green and digital integrated

production methods.

Supporting Measures

1. **Improve Institutional and Policy Support**
   Integrate industrial development with energy-saving and emission reduction funding; provide support & rewards for companies adopting new technologies, materials and equipment; digital & green transformation criteria will be incorporated into the evaluation system for new major manufacturing projects.

2. **Enhance Domestic and International Collaboration**
   Strengthen collaboration between Shanghai and the Yangtze River Delta Region on digital & green transformation; engage in international carbon border adjustment systems; deepen international cooperation.

Jiangsu

Three-Year Action Plan for Intelligent Transformation and Digitalization of the Manufacturing Industry (2022-2024)

Main Goals

- **Improvement in digital and intelligent levels**: Focus on large-scale industrial enterprises fully implementing intelligent transformation and digitalization.
- **Increase in labour productivity**: Annual labour productivity growth rate exceeds the value-added growth rate of the manufacturing industry; the numerical control rate of key processes in major enterprises reaches 65%; 90% of the companies adopt digital R&D and design tools; digital management covers over 80% of the companies.
- **Development of new business models and economic drivers**: the goal is to establish a national demonstration zone for high-quality manufacturing development.

Supporting Measures

1. **Financial Support**
   Allocate 1.2 billion RMB in special funds, such as loan interest subsidies and investment subsidies, to support manufacturing enterprises' intelligent transformation and digitalization process; establish a fund management system to support local government in matching the funds to desired destinations; establish a green channel for "specialized, refined, and innovative enterprises".

2. **Talent Support**
   Build a "Smart Transformation and Digitalization Talent Knowledge Platform" to attract top-notch technology talents; strengthen industry-university collaboration to cultivate high-skill workers.

3. **Implementation of monitoring mechanisms for the industry dynamics**
   Establish a comprehensive evaluation system combined with third-party assessment outcomes to monitor the transformation process and therefore inform macro-level policy making decisions.

4. **Creating opportunities for knowledge exchange**
   Organize experience-sharing sessions with leading enterprises and research institutions; Host events (such as Manufacturing and Iot Expo) for knowledge exchange business collaboration.

Guangdong
Digital Transformation Implementation Plan for the Manufacturing Industry (2021–2025)

Main Objectives

1. **Significant improvement in digital transformation**: 30,000 large-scale industrial enterprises to achieve digital transformation; 80,000 enterprises to adopt cloud computing solutions (reduce costs, improve quality & efficiency); develop a group of demonstration enterprises for digital transformation.
2. **Further improvement of infrastructure:** build industrial internet infrastructure covering key industries; further promote the application of 5G equipment; construct over 50 secondary nodes for industrial internet identification and resolution.
3. **Continuous Technological Innovation:** Achieve technological breakthroughs in core areas such as security, micro-level chips, industrial software, and control systems.
4. **More Robust Industrial Ecosystem:** Introduce 500 service providers for manufacturers' digital transformation; build 5 national-level general industrial internet platforms and 20 specialized industrial internet platforms; establish a comprehensive industrial internet security assurance system.

Supportive Measures

1. **Strengthening Talent Support**
   Attract and cultivate high-level, interdisciplinary talents, as well as establish a robust talent evaluation mechanism. Encourage institutions like universities, vocational schools and technical colleges to train digital professionals integrated with the industry practice.

2. **Enhancing Financial Services**
   Incentivize financial institutions to actively participate in the digital transformation of the manufacturing industry; promote information sharing between financial institutions, government departments and other relevant parties to build a digitalization credit assessment and risk management system; protect the intellectual property of industrial internet platforms and software.

3. **Encouraging outstanding enterprises to "go global"**

Support outstanding digitalized enterprises and associated service providers to develop overseas market, while enhancing the advertising and dissemination of successful digital transformation experiences.

Liaoning Province

Notice from the Provincial Development and Reform Commission on the Establishment of the Liaoning Provincial Digital Transformation Promotion Centre

Main goals

- **Joint-innovation incubation for enterprises:** promote collaborative innovation between enterprises, industry platforms, and financial institutions; facilitate the sharing of resources such as technology, data, general-purpose assets, market channels and middleware, to drive coordinated innovation and development.
- **Industry-academia-research-application integration:** collaborate with key universities & disciplines to cultivate the technical talent required for digital transformation; offer education programs to enhance the digital skills of current employees; accelerate the commercialization of research findings and promote the application of digital technologies.
- **Support for Transformation and Development:** provide customized solutions for enterprises undergoing digital transformation; focus on the digital development of public service areas, such as smart cities, digital brains, elderly care and transportation.

Support Measures

At present, the notice does not specify detailed support measures. It is likely that corresponding policies, financial resources, and technical support will be formulated based on the actual progress and needs of implementation.

2.3 Market Leaders' strategy for digital transformation

A. Comau's Automation Innovation Integrated with Digital Technology

Comau entered China's new energy sector in 2016, and has been actively driving the automation and digitalization of electric vehicles (EV) since then. At the "2024 2nd ATC New Energy Three Electric Manufacturing Technology Week" on July 17, 2024, Comau showcased a series of its latest automation solutions (etc. the Hairpin flat-wire stator production line for

electric motor manufacturing), which integrates high-precision automation modules with digital technology.

Benefits of the automation solution:

1) Supports multi-variety flat-wire motor production

2) Improves product pass rates

3) Enables flexibility in product changes and upgrades

B. Pama (Shanghai) Machine Tool Co., Ltd. - Localization and Smart Manufacturing

As an enterprise that specializes in the production and localization of CNC (computer numerical control) machine tools, Pama has been actively advancing digitalization and smart manufacturing technology in order to strengthen its presence in the Chinese market. In May 2024, Pama completed the expansion of one factory, in which the procurement and production of most components are localized (except the spindle boxes and certain accessory heads). Pama's localization efforts enable the factory to 1) Reduce production costs and improve supply chain flexibility. 2) Shorten delivery and repair times.

On top of that, this expansion has facilitated the implementation of a digital production system, which will further enhance Pama's technological capabilities in smart manufacturing and increase its competitiveness on the global stage.

C. Mazak's Digital Transformation and Automation Equipment Innovation

Mazak, one of the world's leading machine tool manufacturers, has a long-established strategy in the Chinese market. Since the opening of its Liaoning factory in 2013, Mazak has been committed to developing smart manufacturing and digital technologies, continuously launching automation products that cater to varying industry needs in China.

At the "DISCOVER 2024" Automation Exhibition on May 30,2024, Mazak showcased its highly-customized automation solutions for industries such as new energy, mold manufacturing and aerospace, with the following features:

1) Precision Automation (offering automation products tailored to different industry needs)

2) Green Smart Manufacturing (adhering to a sustainable development philosophy)

3) Smart Production Based on Industrial Internet (integrating industrial internet technologies)

4) Robotic Automation (applying robots in the manufacturing process)

Part 3 Machine Tool Industry Exhibitions: Recent highlights

Yuhuan International Machine Tool Exhibition 2024 (YME 2024, 玉环国际机床展览会) was held in Yuhuan, Zhejiang, from 18th to 22nd October. With 2,500 booths in place, this exhibition attracted more than 50,000 visitors as well as 862 exhibitors, reaching an on-site turnover of 0.79 billion RMB and intentional turnover of 1.21 billion RMB. The venue was divided into six exhibition zones: metal-cutting machine tools, metal-forming machine tools, smart factory, robot application & intelligent welding, cutting & measuring tools, and machine tool accessories.

The electric tapping machine attracted the attention of many visitors during the fair. Designed for the tapping tasks of metallic materials, the electric tapping machine consisted of mounting base, balance bar, servo drive, serve motor, quick-change decoupling, and overload-protection torque chuck. The electric motor adopted 220V single-phase AC servo motor equipped with micro-computer controlling tapping system, which could adapt to different workpiece materials and also achieve high efficiency and precision.

Features of the electric tapping machine:

1) Numerical computer control; can manually set the torque depth; the tap(丝锥) won't break.
2) Free switching between positive teeth and reverse teeth.
3) Intelligent and convenient, lowering the skill requirements of operators.

Another infrequent product present in YME 2024 was the high-speed CNC drilling & milling machine, which was mainly used for the drilling, milling, tapping, reaming and boring of the structural parts such as flanges, flat plates and automotive components. The entire process was digitalized, with easy operation and high efficiency.

Features of the high-speed CNC drilling & milling machine:

1) Ensured stability and accuracy for long-term use.
2) Adopting fix-beam moving-column gantry structure, which was stable in operation and could reduce the occupied area of the machine tool bed.

3) The machine can be equipped with optional toolkits, to realize the function of automatic tool change for all machining processes, and therefore improve the production efficiency.

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

Italy's machine tool imports and exports with Asian region

(In millions of Euro)

	Import			Export		
	Value	YOY change 2023-2024	Percentage share	Value	YOY change 2023-2024	Percentage share
Asia	166.3	-46.9%	26.9%	398.0	+8.0%	17.7%
Oriental Asia	160.6	-46.2%	26%	165.9	-12.7%	7.4%
China	37.8	-22.9%	6.1%	120.5	-12.9%	5.3%
Worldwide total	617.7	-42.7%		2254.3	+8.4%	

Italy's machine tool imports and exports with China by category

(In millions of Euro)

Marked blue are the respective indicators for worldwide total

	Value	**YOY change**	**Percentage share of worldwide total**

Metal-cutting machine tools	Import	13.4 (417.1)	-23.8% (-41.4%)	3.2%
	Export	88.6 (989.5)	-18.8% (+9.5%)	9.0%
Metal-forming Machine tools	Import	9.2 (110.2)	-22.3% (-44.0%)	8.3%
	Export	23.0 (1023.0)	+49.3% (+7.0%)	2.2%
Non-conventional technology machine tools	Imports	15.3 (90.4)	-22.4% (-46.5%)	16.9%
	Exports	8.8 (241.8)	-35.7% (+10.1%)	3.7%

Main takeaways :

- Italy's machine tool import from the world is cut by close to a half on a year-on-year basis, in line with the import dynamics from China despite on a smaller scale (down by close to a quarter).
- Oriental Asia countries (China, Japan, South Korea) purchase the vast majority of Italy's machine tool export to Asia; in terms of Italy's machine tool import from Asia, Oriental Asia countries and non-Oriental Asia countries are of similar importance for the product supply.
- Italy's machine tool trade with China is on a significant decline, except a large rise in Italy's metal-forming machine tool export to China.

Part 5 Tenders and bids

Announcement of Procurement for Comprehensive Experimental Platform for CNC Machine Tools Required by Yangzhou University **Action deadline: Nov 1, 2024**
Announcement of Procurement for Instrument Lathe Required by Datong North Tianli Boosting Technology Co., Ltd **Action deadline: Nov 3, 2024**

Announcement of Procurement for Three Times of Wire EDM Machine Tool and Threaded Steel Rapid Sawing Machine (Section 001) Required by Shanxi Liliu Coking Coal Group Liulin Co., Ltd **Action deadline: Nov 4, 2024**
Announcement of Procurement for Weak Precision Five Axis Machining Center Required by Wuhan Heavy Machine Tool Group Co., Ltd **Action deadline: Nov 4, 2024**
Announcement of Procurement for Medium wire cutting machine Required by Baomake (Hefei) Technology Co., Ltd **Action deadline: Nov 5, 2024**
Announcement of Procurement for Double Head Pipe Cutting Machine Required by Baomake (Hefei) Technology Co., Ltd **Action deadline: Nov 5, 2024**
Announcement of Procurement for Cutting Machine Tool (Second Time) Required by Sichuan Hongjian Heavy Machinery Manufacturing Co., Ltd **Action deadline: Nov 12, 2024**
Announcement of Procurement for Vertical CNC Lathe Required by Luoyang Bearing Group Co., Ltd **Action deadline: Nov 12, 2024**
Announcement of Procurement for Dual Spindle CNC Cutting Machine Required by Guizhou Aerospace Precision Manufacturing Co., Ltd **Action deadline: Nov 14, 2024**
Announcement of Procurement for 2 CNC Double End Grinding Machines Required by Jiangsu Qianchao Bearing Co., Ltd

Action deadline: Nov 20, 2024
Announcement of Procurement for CNC Lathe Required by Henan Aerospace Precision Manufacturing Co., Ltd **Action deadline: Nov 22, 2024**
Announcement of Procurement for Wheel Hub Bearing CNC Vertical Internal Pulling Machine Required by Wanxiang Precision Jiangsu Co., Ltd **Action deadline: Nov 22, 2024**
Announcement of Procurement for Dual Spindle CNC Cutting Machine Required by China Aviation Industry Standard Parts Manufacturing Co., Ltd **Action deadline: Nov 27, 2024**