CELIMO
European Trade Association for Machine Tools, Tooling and Technologies

CELIMO International Meeting

EMO Hannover, Wednesday 18th September 2019

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International Forming Technology Exhibition

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EMO Hannover
16-21·9·2019

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European Association for Machine Tools, Tooling and Technologies

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Geoff Noon

CELIMO Secretary

EMO Hannover 16-21-9-2019

Overview of the European Economy

- **GDP growth weakened in Q2-19 …**
- **… but not everywhere, although the weakness in Germany (and Italy) is a concern for everyone.**
- **Industrial production has two periods of decline in the past 12 months …**
- **… with the Automotive industry key to these trends**

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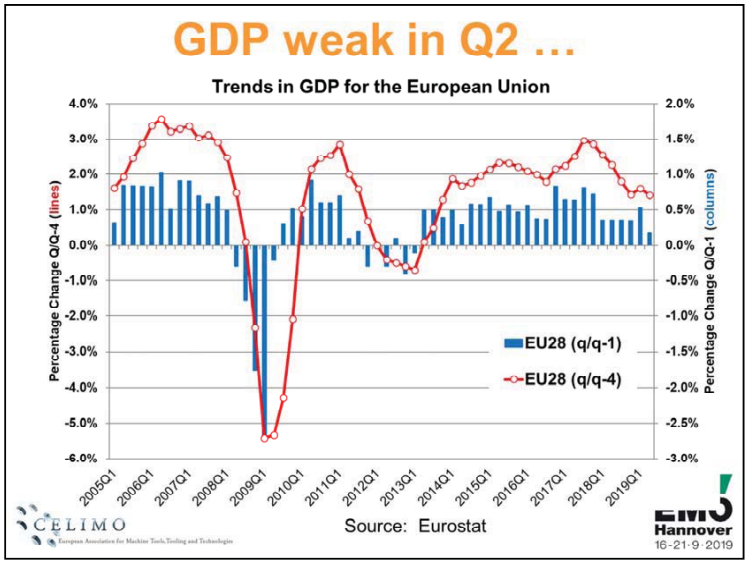
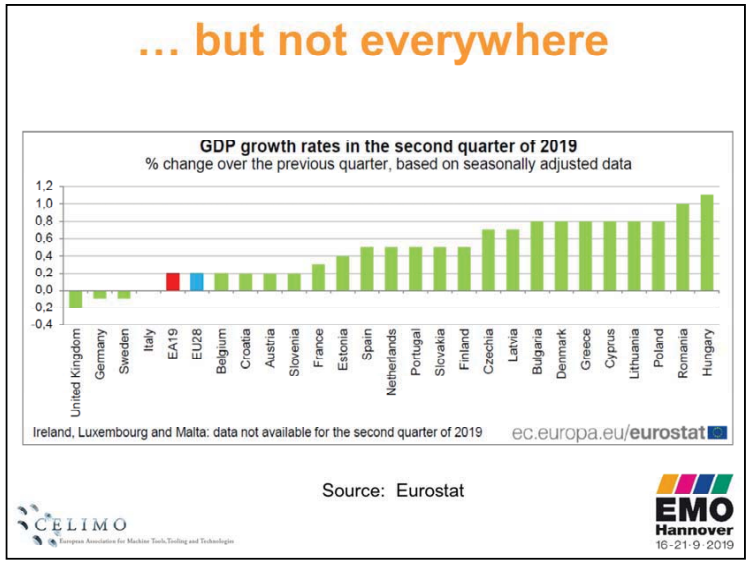
GDP weak in Q2 …



Economic growth in Europe peaked around the time of the last EMO (Q3-17) and since then there has been a steady slowing of growth that appears to have flattened out in 2019 at around the average level in the period since 2005.

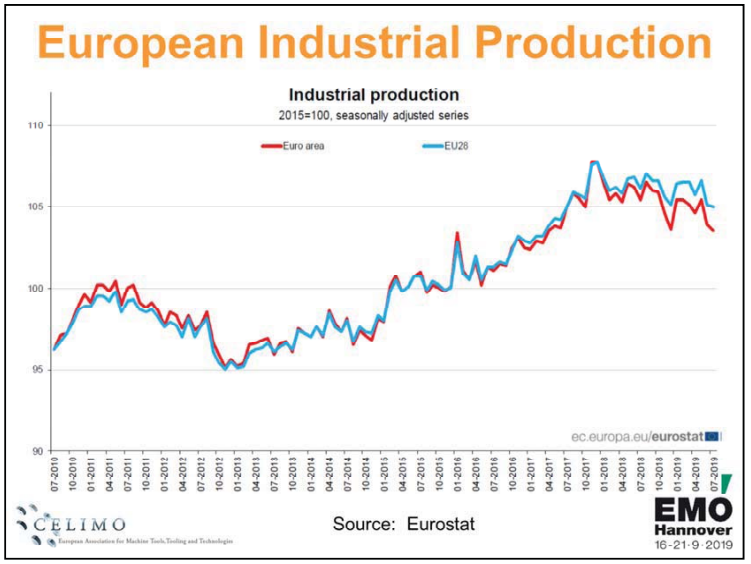
Although this appears to be a return to a "normal" position, there is some concern in the detail. In the latest data period (Q2-19), three countries saw their economies contract.



Some one-off factors related to Brexit are behind the UK situation, but the contraction in Germany is of particular concern given its' dominance of the European economy.

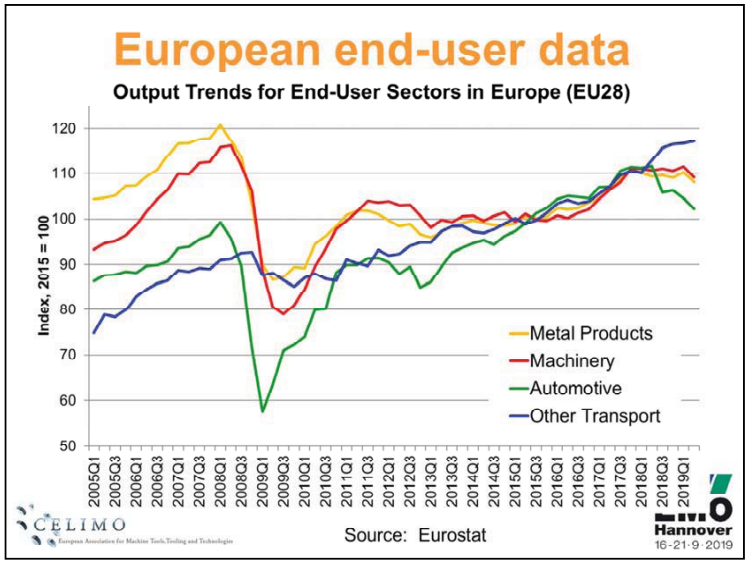
After a peak at the end of 2017, industrial production levelled off before a dip at the end of 2018; there was a recovery from that in the EU28 overall, although not for the Euro-zone and we have seen a further fall in the past few months.

However, we still have some way to go before this becomes a crisis.



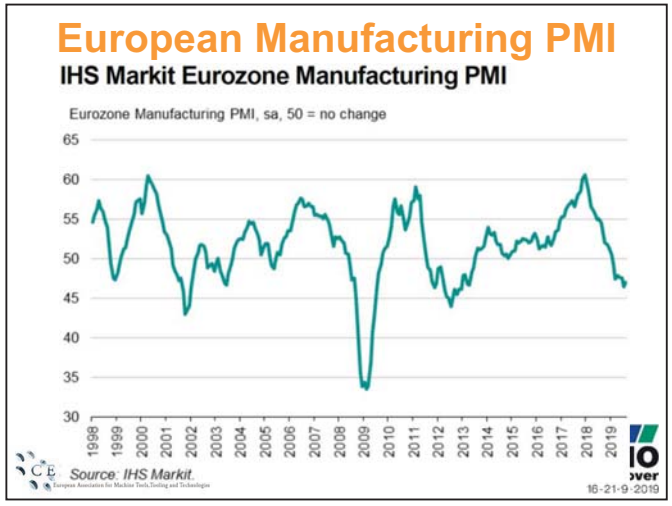
This chart looks at the key customer industries ("Other Transport" is mainly Aerospace, but also includes railway equipment).

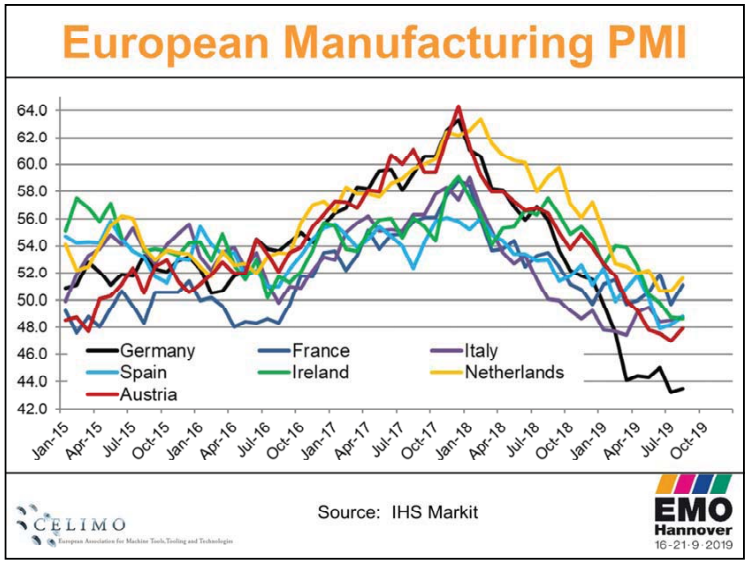
Since the 2nd half of 2018, while output of the Machinery and Metal products industries have been flat (with a dip in the latest period - Q2-19), the Automotive and Other Transport Equipment industries have diverged.



Output growth for Aerospace does not seem to have been hit by the problems in that industry - probably because of the still long backlogs - but the well publicised difficulties for the Automotive industry have seen output in this industry decline significantly over the past year.

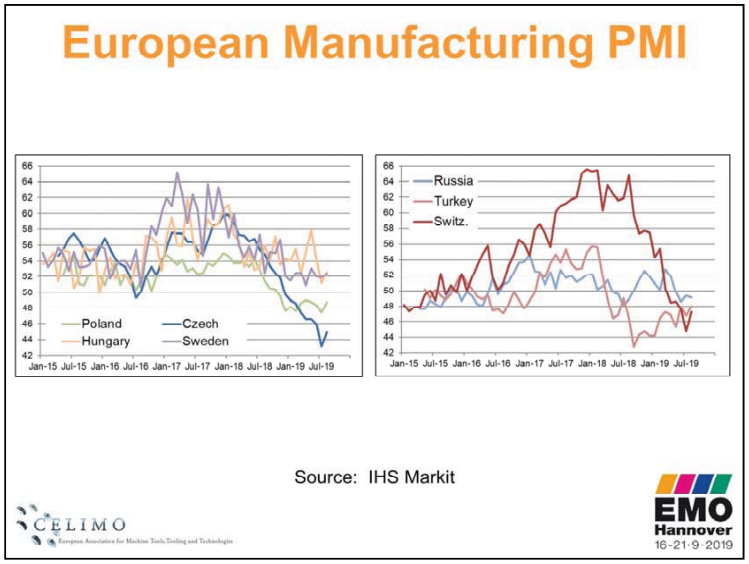
In particular, in the 1st half of 2019, automotive output has fallen in Germany (-12%), Italy (-10%) and the UK (-12%).





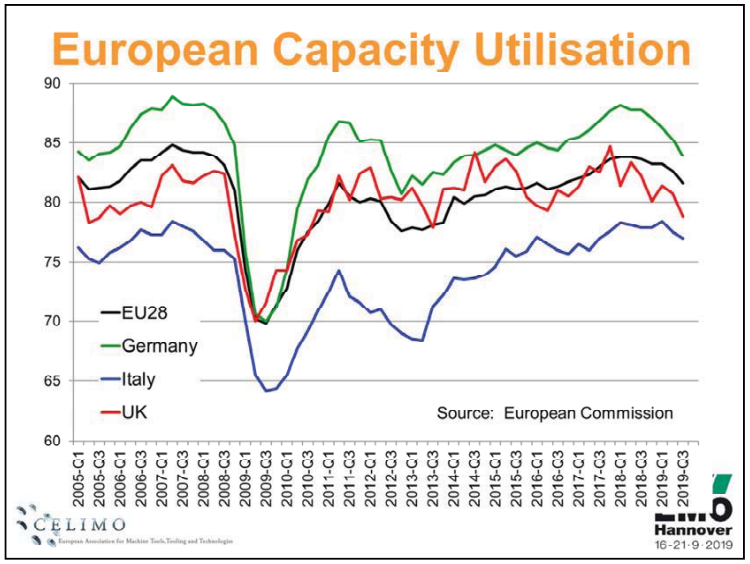
The Euro-zone PMI for manufacturing peaked at the end of 2017 - in line with the timing of the industrial output data - and has been on a continual decline in most months since that point. It fell below the crucial 50 level that marks the boundary between expansion (>50) and contraction of the sector (<50) in February 2019.

While the general trend has been shared by all of the Euro-zone countries covered by the IHS Markit data, since January 2019, Germany has been in negative territory and at levels that were last seen in 2012-13 at the time of the Euro crisis.



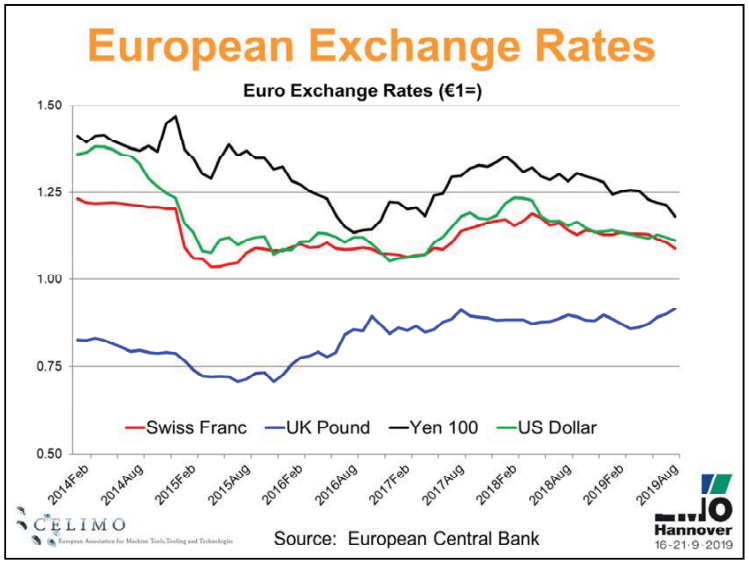
Although Hungary and Sweden have managed to avoid negative manufacturing PMI readings, the impact of the downturn in Germany is clear in the data for Czech Republic, Poland and Switzerland is clear.

The economies of these countries, and in particular their manufacturing industries, are closely linked to the supply chains of German manufacturers.



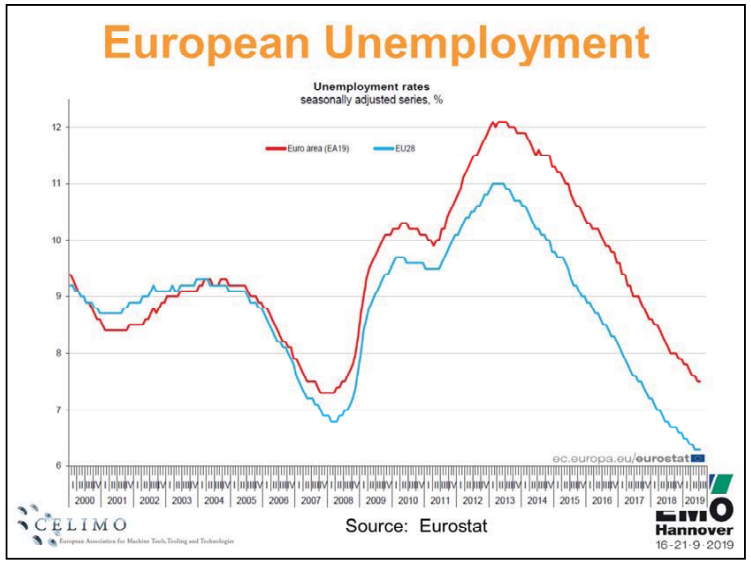
While there is often a lag with the capacity utilisation data, it is clear that this also peaked at around the same point as the manufacturing PMI and output trends. The levels for the EU28, Germany and the UK are now back below the pre-recession peak.

Note: While the chart shows the data for the individual countries, you should note that the levels and trigger points for investment to expand capacity will vary between countries; you cannot, therefore, make a direct comparison of the levels, although the trends within and between the countries are valid.



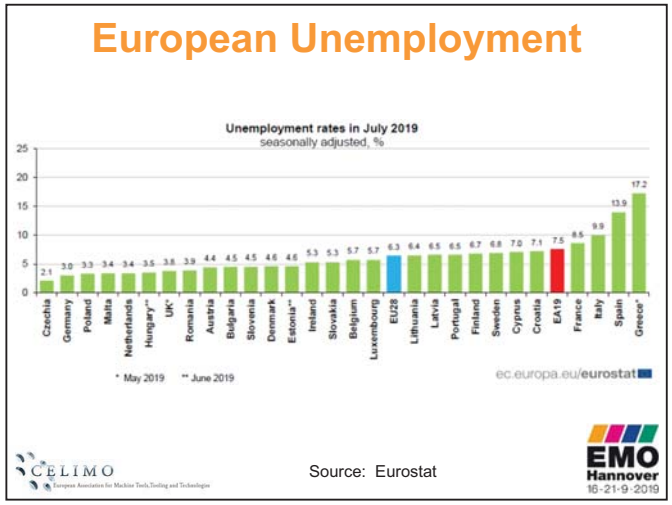
Exchange rates are a key driver of relative competitiveness between economies. It is also worth bearing in mind that the drivers of this can come from either one of the currencies involved or both at the same time and not necessarily in the same direction.

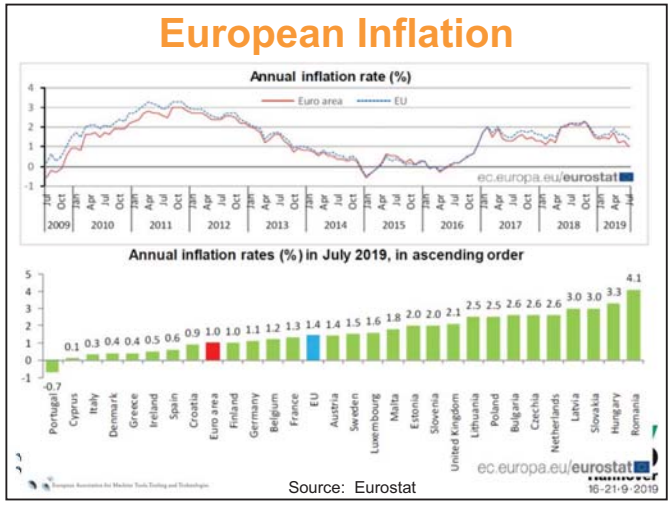
The Euro has generally been weakening over the past couple of years following a period of strengthening to around the end of 2017. The exception, of course, is against the GB£ which has been influenced by the Brexit process.

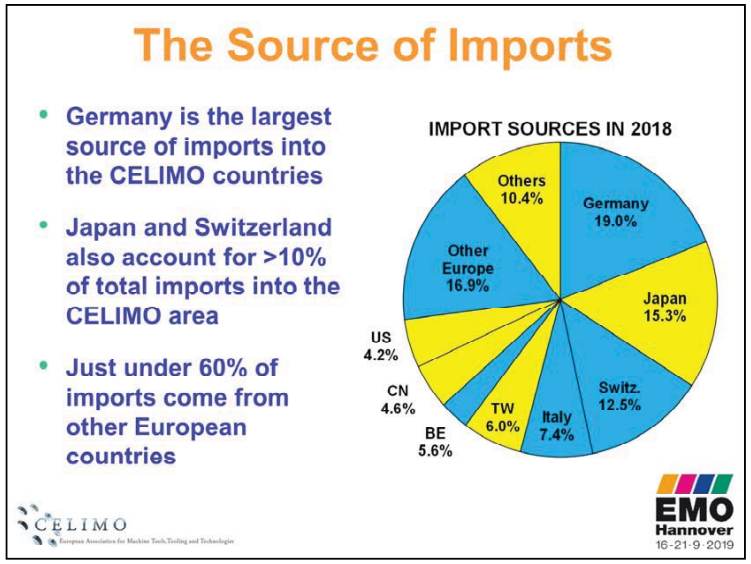


Despite the weak economy, unemployment continues to fall. The Euro-area unemployment rate of 7.5% in July is the lowest since July 2008; for the EU28, the rate of 6.3% in July is the lowest since the data series began in January 2000. In the separate countries, the unemployment rate ranges from 2.1% in Czech Republic up to 13.9% in Spain (overall, some areas much less, others much more) and 17.2% in Greece.

The rate of inflation has been in the range between 1% and 2% since the start of 2017, apart from a brief period just above that in the middle of 2018. The latest reading for the Euro-zone was right on 1.0% - the lowest since the end of 2016.



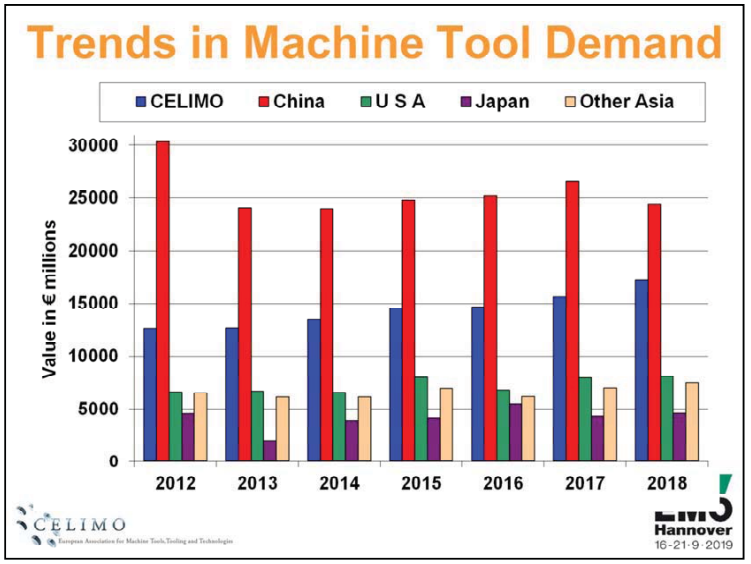




We have data for the source of imports into the CELIMO countries, although not the value of imports from the smaller European countries which were not included in the analysis, except where some respondents have given the data for one or two extra countries. Another complication is the re-exports from Belgium; some of these originated in Europe, while others came from outside the region.

Including all imports from Belgium, 58.5% of total imports into the CELIMO countries came from elsewhere in Europe; excluding all imports from Belgium reduces the percentage to 55.5%. However, allowing for "genuine" exports from Belgium of machines originating in other European countries, the final percentage will lie between these two figures.

Germany remains the most important source of imports into the CELIMO countries, with Switzerland the most important source of machine tool imports into Germany.

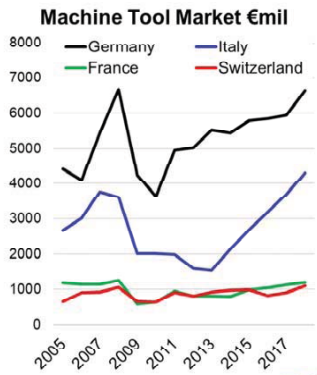


This is calculated using Production - Exports + Imports; any issues with any of these series can affect the result. Other Asia in this case is defined as South Korea + Taiwan + India.

Consumption of machine tools also saw an increase in 2018, but it is still just short of the peak of £17.187 billion that was recorded in 2000. China saw machine tool demand fall in 2018, but it remains, by far the largest market in the world.

Major European Markets

- The largest machine tool markets in CELIMO are Germany, Italy, France and Switzerland.
- Germany and Italy have now recovered to pre-recession levels.
- Recovery in France and Switzerland mean these are the only other markets above €1 billion in 2018



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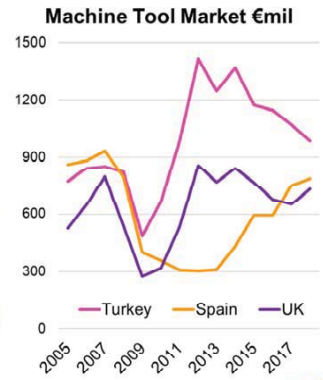
The German machine tool market got back to its pre-recession "boom" level in 2018; it accounts for just under 40% of the European market

The Italian market has grown strongly since 2013, helped recently by incentives to invest in high-technology equipment.

Growth in the past couple of years has brought both the French and Swiss markets back above €1 billion.

Medium-sized Markets

- Turkey has dropped back partly because of the weakness of the currency which reduces the value when converted to Euro
- Spain, like Italy, has recovered since 2013, but is still short of its pre-recession level.
- The UK is also affected by exchange rate changes.



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The trend for both Turkey and the UK is distorted by exchange rate changes. Despite this, both remain significant markets, along with Spain which, like Italy, has recovered since 2013. However, it has not yet reached its pre-recession levels.

The general outlook is one of economies that are weakening (but remaining in growth in most cases). Global trade is weak and the automotive industry has some specific problems and both of these are having the most significant impact on Germany. The machine tool market figures are slightly misleading as a result of long order backlogs.

The major unknown is around what will happen with Brexit.

EMO 2019
CELIMO International Meeting

18th SEPTEMBER 2019

presented by
Japan Machine Tool Distributors Association
(JMTDA)

Japan Machine Tool Distributors Association (JMTDA)

ESTABLISHED: 1970

NUMBER OF MEMBERS :

REGULAR MEMBERS - 81 COMPANIES

(BOTH WHOLE SELLERS AND DIRECT DISTRIBUTORS)

ASSOCIATE MEMBERS - 69 MACHINE TOOL BUILDERS

- 10 LEASING COMPANIES

TOTAL 160 COMPANIES

A TOTAL SALES OF REGULAR MEMBERS COVERS APPROX.70% OF DOMESTIC MACHINE TOOL SALES.

JMTDA Topics

The educational course, SE (Sales Engineer) Certification System, for sales personnel of member companies and related industries has 29 years history since its initiation in 1991.
Total number of students exceeded 8,800 and the number of the students with SE qualification reached 3,414 last year.

In this June, new board members were elected and Mr. Tomoki YODA, President & CEO of Mitsubishi Corporation Technos, was elected as a new chairman of the board.

New Chairman, Mr. Tomoki YODA

Mr Nakajima (Executive Director, JMTDA) and Mr Goto (Director for International Relations, JMTDA) introduced their association to the delegates. They noted that sales cover about 70% of the Japanese market as many Japanese manufacturers sell via distributors in their home market.

One of their main activities is education and, in particular, the Sales Engineers training course.

JMTDA - One of Main Activities: Education

1) Basic Course: Acquiring basic knowledge of Machine Tools for new employees
2) SE Course: Providing further knowledge and skills for Sales Engineers. Qualification Certificate will be given after examination.
3) Permanent SE Course: Higher training for the SE qualified persons.

JAPANESE ECONOMY OUTLOOK

Slow recovery of Japanese economy continues since its bottom in November 2012, the longest recovery period after the WWII.

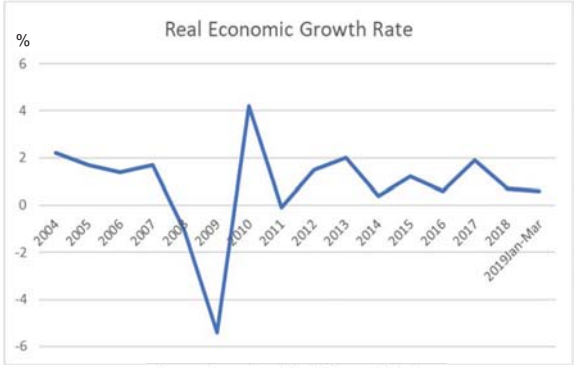
Thanks to the 3 policies of "***Abenomics***", which are bold Monetary Policy, flexible Financial Policy and Growth Strategy of attracting private investments, the corporate profits marked the record high, which results in improvement of labor and wage environment.

The effective ratio of job offers to applicants marked 1.63 in December 2018, record high since January 1974 and the unemployment rate is low as 2.3% in June 2019. Many companies suffer from shortage of labor.

On the other hand, the growth rate of export becomes lower and we enter into the situation where we must keep high attention to the rise of uncertainty from world political reasons, such as trade conflict between US and China or hard-landing Brexit.

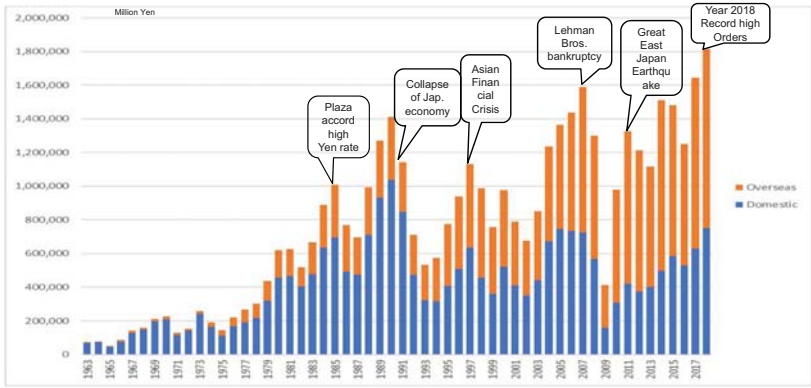
(Source: Cabinet Office, Japanese Government)

Trend of Japan's Economic Growth Rate



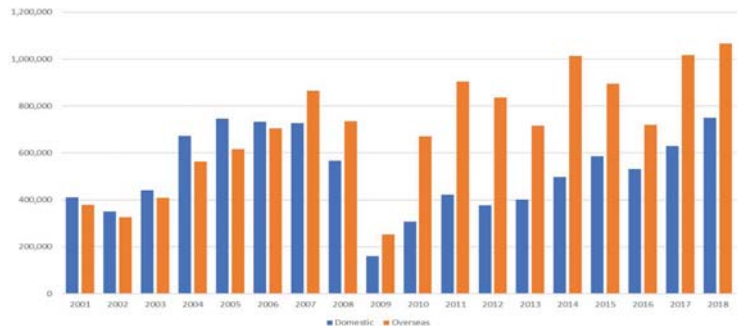
Source : Economic and Social Research Institute

Machine Tool Order by Calendar Year



Source: Japan Machine Tool Builder's Association (JMTBA)

New Orders Domestic & Overseas Demand

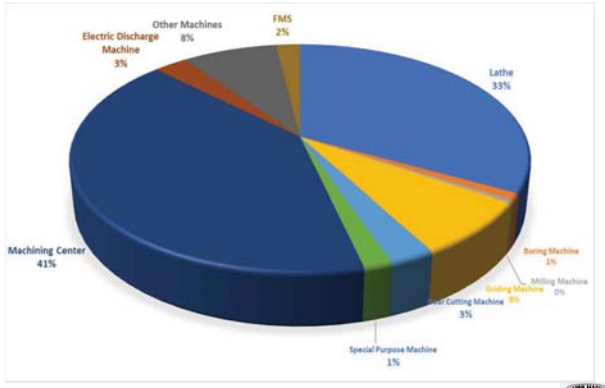


Source: Japan Machine Tool Builders Association

New orders(Domestic Demand) by Industry

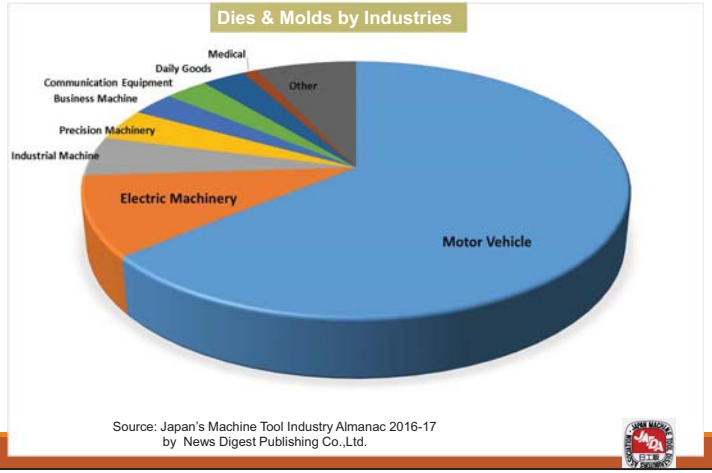
Source: Japan Machine Tool Builder's Association (JMTBA)

New Order by Machine Type (Year of 2018)



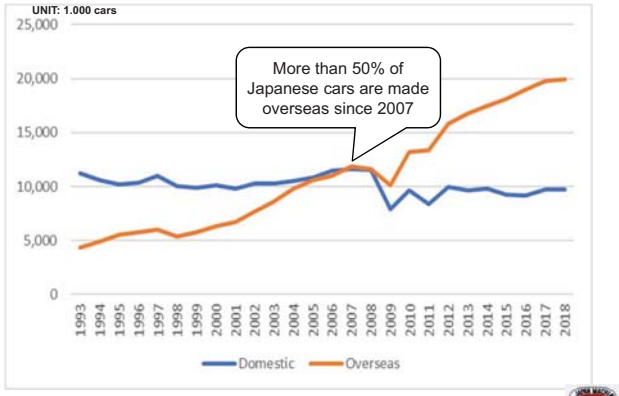
Source: Japan Machine Tool Builder's Association (JMTBA)

Dies & Molds by Industries



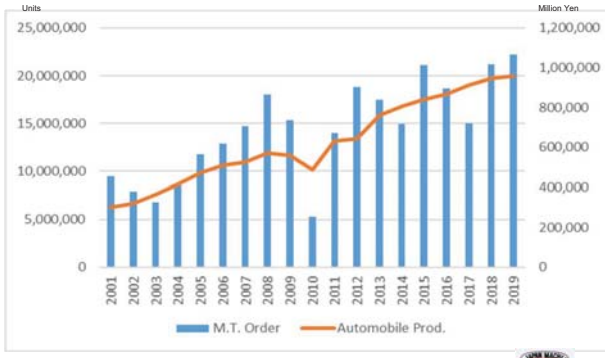
Source: Japan's Machine Tool Industry Almanac 2016-17
by News Digest Publishing Co.,Ltd.

Production of Motor Vehicle by Calendar Year



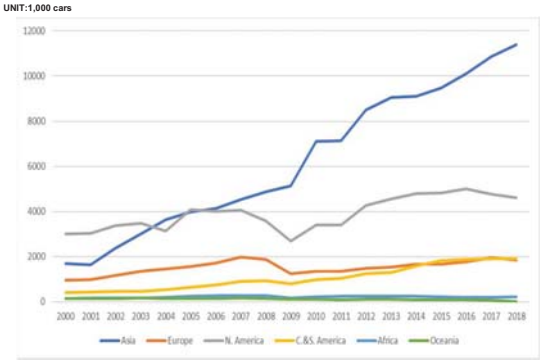
Source: Japan Automobile Manufactures Association, Inc.

Overseas Machine Tool Order vs. Overseas Automobile Production



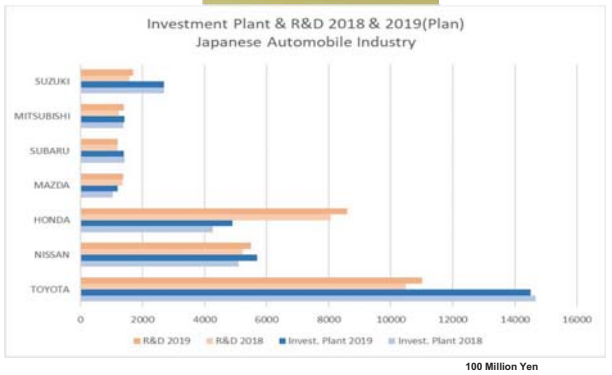
Source: JMTBA & JAMA

Overseas Production by Japanese Motor Vehicle Manufacturers



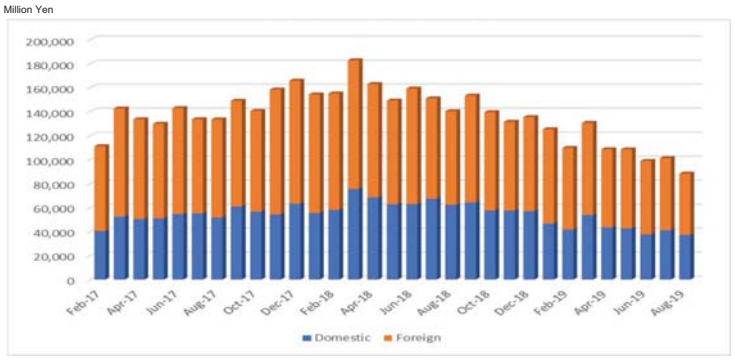
Source: Japan Automobile Manufactures Association, Inc.

Investment Plant & R&D



Source: Announcement from Motor Vehicle Manufactures

Recent Trend of Machine Tool Order by Month



Source: Japan Machine Tool Builder's Association (JMTBA)

Recent Trend of Machine Tool Order for Overseas

Source: Japan Machine Tool Builder's Association (JMTBA)

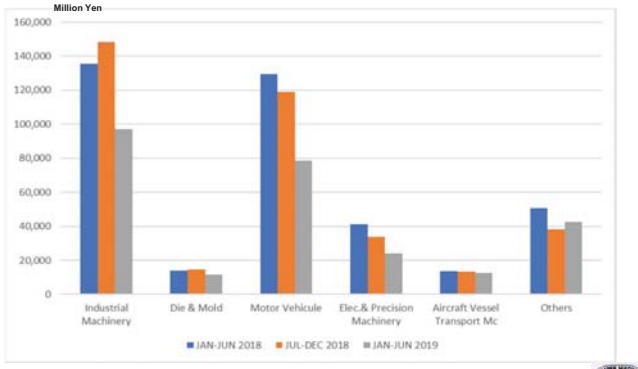
New Orders (Overseas Demand) by Destination

Source: Japan Machine Tool Builder's Association (JMTBA)

Machine Tool Order for Asia

Source: Japan Machine Tool Builder's Association (JMTBA)

Recent Trend Domestic New Orders by Industry



Source: Japan Machine Tool Builder's Association (JMTBA)

Issues to work on

To catch up the rapid technical advance such as application of IT, IoT, AI or Additive Manufacturing.

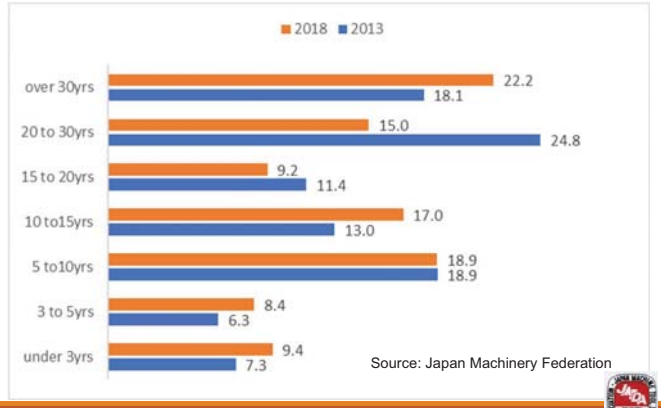
To respond to the market change to be created by C.A.S.E. revolution in Automobile Industry.

To extend and ensure other markets than automobile industry, such as Medical equipment or Aircraft Industry.

To follow the developing market of automatization created by the shortages of workers.

To continue to deal with the expansion of overseas production of our client manufacturers.

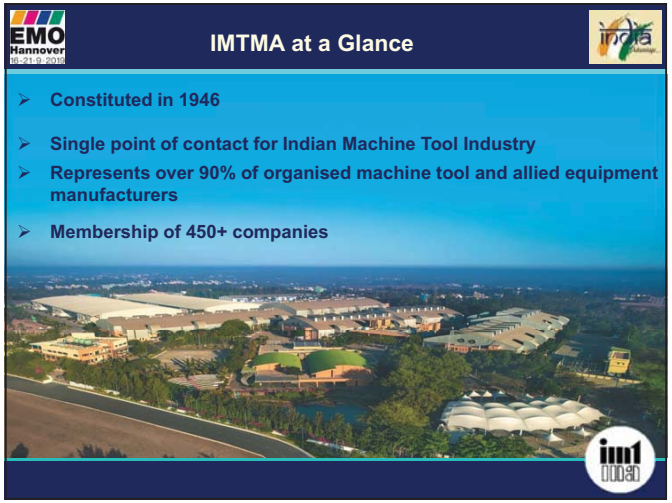
Age of Machine Tools possessed by Domestic Industry

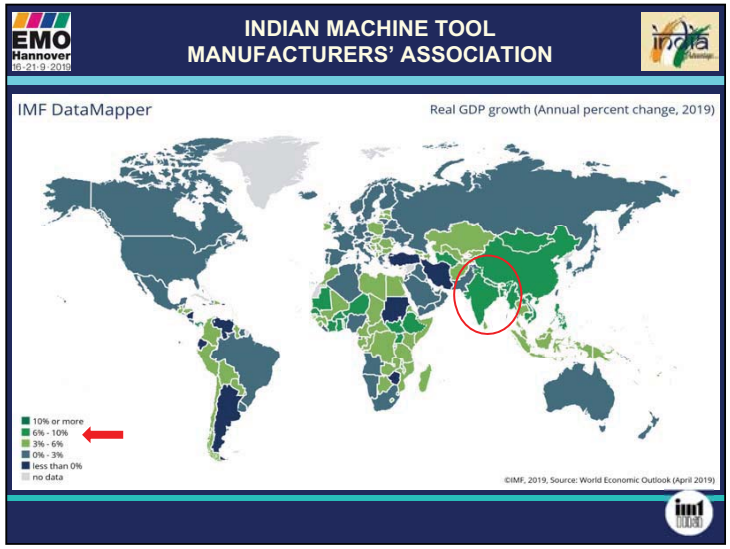


Source: Japan Machinery Federation

Thank you for your attention !

JMTDA

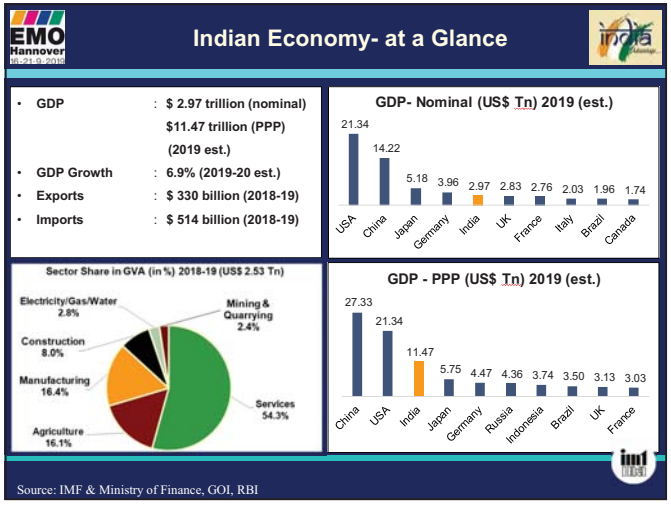


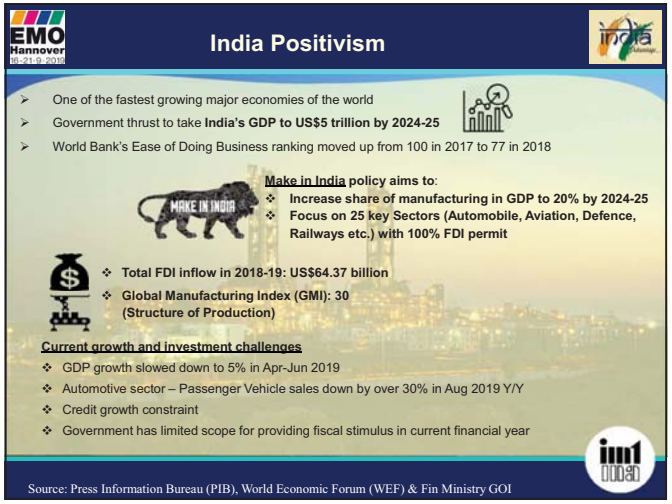


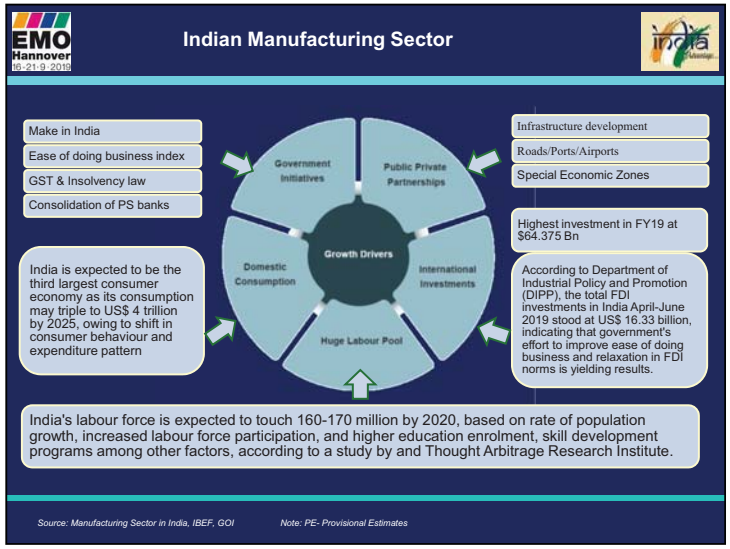
Mr Anbu, Director General and CEO of IMTMA, noted that India is one of the fastest growing economies with growth of around 7% in 2019-20. This makes India a similarly sized economy to the UK and France.

Manufacturing and Agriculture account for a similar proportion of Indian GDP, but services make up over 50% of the economy. The Government is aiming for India to be in the top 25 countries for investment and for manufacturing to account for more than 20% of GDP.

He noted that the Automotive industry has weakened over the past year or so, but this is mainly in passenger vehicles.







The five main drivers of the Indian manufacturing sector were highlighted on this slide.

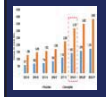
Mr Anbu made particular mention of the “Made in India” policy, the consolidation of the banking industry and the “one country, one tax” system. India is expected to be the 3rd largest nation for the consumer sector by 2025 as the pattern of consumption within the country matures.

In the last financial year, Indian consumption of machine tools reached US$3.2 billion, with imports accounting for just over half of the total; this is expected to rise to US$3.5 billion by the end of the current financial year.

Indian Machine Tool Industry

- India Ranked **9th in Production** and **7th in the Consumption** as per the latest Gardner's report on World Machine Tool Survey.

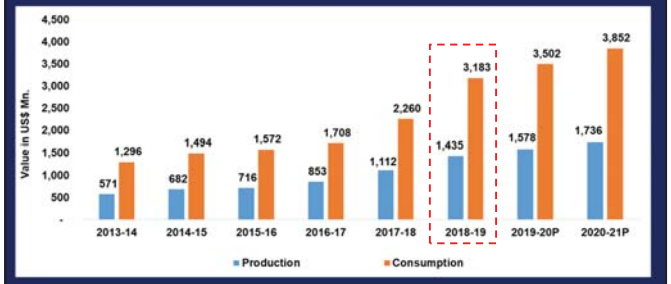
- Consumption of Indian machine tool industry is around US**$3.2 billion** of which the **domestic production** accounts for about **45% of the total consumption.**
- Machine tool **Production is estimated to have grown by 29% Y/Y and consumption by 40% Y/Y during FY2018-19 in US$ terms.**



- Forecasted machine tool production during 2019-20 would touch US**$1.6 billion** and consumption may touch US**$3.5 billion**. **Production** and **consumption** is forecasted to grow around **10%** during the period.

Source: IMTMA

Machine tool industry growth trends from 2013-14 to 2020-21



- **Production had grown by 29% Y/Y and consumption by 40% Y/Y during FY2018-19 in US$ terms.**
- **Production** and **consumption** is projected to grow around **10%** till 2020-21.

Source: IMTMA; Exchange rate: RBI

Indian Machine Tool Industry Growth Drivers

- **Indian Automotive industry aims to become third largest in the world by 2026**
- **Automobile manufacturing to be the main driver of Make In India, contributing 12% of India's GDP by 2026 and generating over 65 million additional jobs**

- **Defence manufacturing** opened to private sector. Defence capital outlay estimated at US$15.5 billion for 2019-20

- **Domestic aviation** market is projected to rank 3rd globally by 2024 with the industry contributing US$30 billion to India's GDP
- Government of India aims to invest US$1.4 trillion in infrastructure over the next five years

- **Five-year** capital expenditure programme of **US$132 billion** for modernisation of Indian Railways
- Demand for **Consumer durables** holding up – estimated to reach US$36 billion by 2023

Source: Automotive Mission Plan 2016-26, www.makeinindia.com; www.bcg.com/en-in/default.aspx

There are ambitious investment plans for most of the key sectors of the machine tool industry. This on-going process has helped Indian manufacturers double their output between 2015-16 to 2018-19.

As a result, most of the indicators suggest that the machine tool sector in India will continue to be strong over the next two years.

The presentation concluded with an overview of the companies in the sector and their presence at EMO.

Indian Machine Tool Industry

India makes Standard Products and Special Purpose Machines

Major products

- CNC Turning Machines
- Machining centers
- Grinding machines
- Boring machines
- Vertical Turret Lathe
- EDMs / Wire EDM
- Inspection and CMMs
- Special Purpose Machines
- Metal Forming Machines
- Presses and Press brakes

Important Manufacturers

ACE Designers, AMS, BFW, Jyoti CNC, Micromatic Grinding, LMW, Lokesh, HMT, Electropneumatics, ISGEC, Hindustan Hydraulics & others..

USP of Indian Machine Tools

- Tooled up solutions
- TPM friendly
- Contemporary design
- Reliable performance
- After sales support

- Cost effective, high quality, reliable and customised solutions
- Strong backward integration

Accessories, Tools and Components

Major products:

- Tool turrets
- Rotary tables
- Bar feeders
- Spindles
- Deburring Tools & Moulds
- Cutting tools
- Form tools
- Tool holders
- Special tools
- Chucks
- Chip conveyors
- Coolant systems
- Robotics and Automation

Important Manufacturers:

UCAM, Fenwick & Ravi, Miven Mayfran, Pragati, PARI, Rajamane, Span, Universal, Taegutec, Kennametal, Sandvik, SECO, Walter, Addison, Bhukanwala, Bipico, Chennai Metco, Dagger Master, Forbes, Hittco, Ind-Sphinx and others....

Export Competitiveness

- Major Exports to - China, Germany, Italy, Turkey, Middle East, USA, etc.
- Certified Quality Systems
- Ideal opportunity for dealers to sell competitive products
- Rupee exchange rate advantage

Major Indian Companies with Global Footprints

ACE MICROMATIC, BFW, GRIND MASTER, HMT, JYOTI CNC, UCAM, FENWICK & RAVI and many more.....

India at EMO 2019

- Enter co-operation agreements
- Explore business partnerships
- Strategic partnerships for global markets

Thank You

U.S. MANUFACTURING TECHNOLOGY UPDATE

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NOMINAL GDP

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COUNTRY	2008 GDP	2018 GDP
UNITED STATES	$14,713	$20,580
CHINA	$4,603	$13,593
JAPAN	$5,045	$4,973
GERMANY	$3,764	$3,955
UNITED KINGDOM	$2,929	$2,828

NOMINAL MANUFACTURING VALUE ADDED

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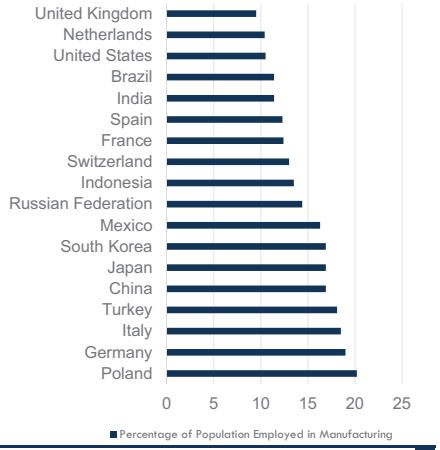
COUNTRY	2007	2017
UNITED STATES	$1,847	$2,173
CHINA	$1,150	$3,558
JAPAN	$997	$1,007
GERMANY	$726	$778
UNITED KINGDOM	$278	$237

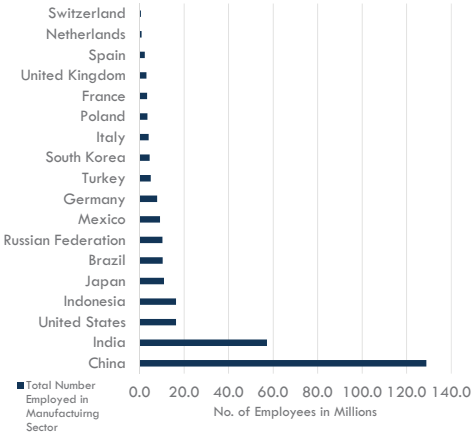
GLOBAL MANUFACTURING SCORECARD: POPULATION PERCENT EMPLOYED IN MFG.

SOURCE: BROOKINGS INSTITUTE



GLOBAL MANUFACTURING SCORECARD: TOTAL MFG. EMPLOYEES

SOURCE: BROOKINGS INSTITUTE



MANUFACTURING DOWNSTREAM IMPACT

$3.60

Manufacturing generates $3.60 in GDP for every $1 put into manufacturing

20%

On average, that is 20% larger than any other sector – service, finance, etc.

11%

Manufacturing without the downstream impact is still 11% of GDP and led us out of the Great Recession in 2009

2018 TOP CONSUMERS AND PRODUCERS

TOP 6 CONSUMERS	VALUE (MILLIONS)
CHINA	$28,840
UNITED STATES	$10,729
GERMANY	$8,114
JAPAN	$6,538
ITALY	$5,363
SOUTH KOREA	$3,942
TOTAL	**$80,204**

TOP 6 PRODUCERS	VALUE (MILLIONS)
CHINA	$23,460
GERMANY	$14,987
JAPAN	$14,765
ITALY	$7,381
UNITED STATES	$6,220
SOUTH KOREA	$5,287
TOTAL	**$91,197**

SOURCE: GARDNER WORLD MACHINE TOOL OUTLOOK

The US market is seeing a fall in orders in 2019 that is expected to be around -20% by the end of the year. However, this is by comparison with 2018 which was a very good year, so the overall level is not too bad. Growth of +4% is anticipated in 2020, although most of this is likely to be in metal forming equipment.

Production of machine tools in the US grew strongly in 2018 and while it will be difficult to match this pace of growth in 2019, order backlogs have grown to 9-12 months so there will be some growth in output in 2019.

U.S. MACHINE TOOL ORDER

FORECAST* (ANNUAL PERCENT CHANGE)

	2014	2015	2016	2017	2018	2019	2020
CUTTING TOOLS	5	-17	-2	8	19	-22	0
FORMING TOOLS	-10	-14	22	3	44	-17	10
ALL MACHINE TOOLS	4	-17	-1	7	20	-20	4

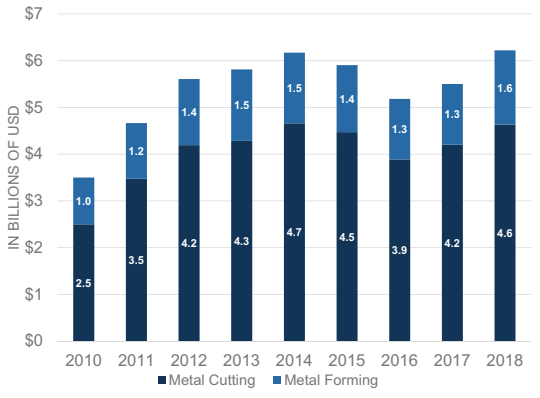
SOURCE: AMT
*ALL ORDERS ARE IN NOMINAL USD TERMS

AMT

U.S. MACHINE TOOL PRODUCTION DATA

SOURCE: U.S. CENSUS – ANNUAL SURVEY OF MANUFACTURERS (ASM)

NOTE: EXCLUDES PARTS, USED AND REBUILT, AND TOOLS FOR HOME WORKSHOPS – ESTIMATES BASED ON CENSUS AND USMTO DATA



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TEN INDICATORS

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SEGMENT BUSINESS CONDITIONS	STATUS	NOTES
Manufacturing Technology Business Conditions	↘	Mfg. Tech. orders are decreasing at a faster pace.. The bottom is likely in early 2020.
Durable Goods Manufacturing Business Conditions	↘	The PMI – a key indicator – suggests contraction in manufacturing in the near term. However, business levels are still significant.

AMT

10

Business conditions are on a downward trend with the slower rate of GDP growth turning manufacturing technology orders negative. The high level of investment over the past couple of years has contributed to this by driving down capacity utilisation rates that leads to lower orders for new equipment.

Looking at the underlying indicators, the PMI in the US fell below 50 for the first time in nearly 4 years and the Metalworking Business Index (MBI), which is a good indicator for the machine tool sector, started to fall in July 2019.

TEN INDICATORS

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ECONOMIC INDICATORS SUMMARY	STATUS	NOTES
Purchasing Managers Index	↓	The purchasing managers index falls to below 50 for the first time since 2009.
Capacity Utilization for Mfg.	→	Capacity Utilization for Manufacturing continues bounce around 76% which is a good level.
Orders for Mfg. Durable Goods	↑	Durable goods orders continue to hold at strong levels.
Housing Starts	→	Housing starts slipped modestly, but remain above 1,1 million per month.
30 Yr. Mortgage Rate	↑	Interest rates low and expectations are that the Fed will hold or lower rates going forward.
Consumer Sentiment	↑	The consumer sentiment index level bounces around 99, which suggest a continued positive environment amongst consumers.
MBI	↓	The MBI, published by GardnerWeb, signals contraction in the metalworking purchasers' plans.
Light Vehicle Sales	↑	Though light vehicle sales are still strong, information on CapEx in the industry suggests less cutting, more forming and R&D.
Baltic Dry Index	↑	The Baltic Dry Index is a gauge of cargo traffic on the ocean. The figures bounced upwards in December but still at low levels.
Restaurant Performance Index	↑	The Restaurant Performance Index continues to be a positive indicator.

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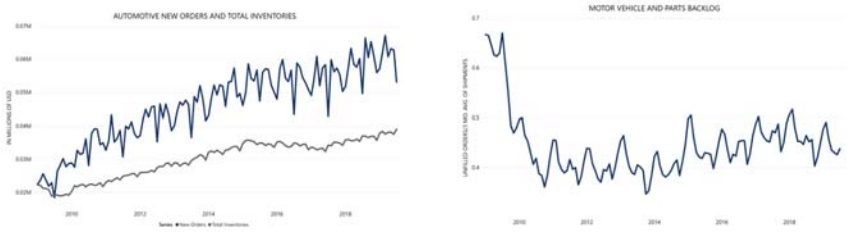
Another factor affecting 2019 is that 25% of all orders last year were in August and September; as this is unlikely to be repeated, 2019 will be a more normal year in terms of the order distribution but also lower in total. The key user industries in the US are in good health with reasonable levels of activity, but they don't need new equipment at the moment.

Housing activity is high, but not growing. Consumer confidence is good which is driving a positive trend for the sales of light vehicles, although this is only maintaining a high rate of demand and there is little growth.

Overall, the downturn in 2019/20 is expected to be both short and shallow.

AUTOMOTIVE



AMT 12

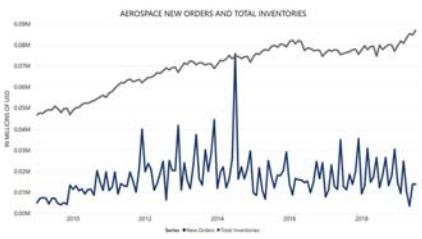
AUTOMOTIVE

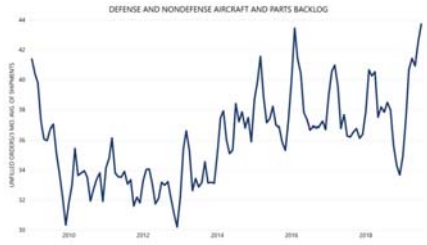
INDUSTRIAL PRODUCTION	131.4
CAPACITY UTILIZATION	78.9
FDI (6 MONTHS)	$2.6 BILLION
ESTIMATED % OF ORDERS	18%

NOTABLE PROJECTS
Fiat - $900M in Detroit, MI
Toyota - $288M in Huntsville, AL
Fiat - $236M in Warren, MI

AMT 13

AEROSPACE





In the US, a capacity utilisation rate of 80% is like a “magic number”; above this level and companies are going to need to invest in new equipment.

The current industrial disputes at General Motors will depress the Automotive output numbers, but an improvement is expected in 2020.

For Aerospace, the current problems with the Boeing 737MAX are having an impact on the sector, but this is cushioned, at least in the supply chain, but the fact that, for now at least, the aircraft are still being made. Demand from the defence market and for helicopters is strong and supporting the overall activity level.

AEROSPACE

INDUSTRIAL PRODUCTION	102.7
CAPACITY UTILIZATION	76.3
FDI (6 MONTHS)	$238 MILLION
ESTIMATED % OF ORDERS	16%

NOTABLE PROJECTS

Firefly Space Systems- $52M in Cape Canaveral, FL
GE Aviation - $50M in Auburn, AL
L3 Technologies - $50M in Salt Lake City, UT

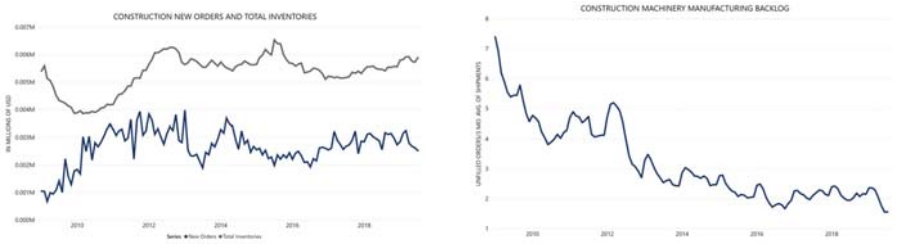
MEDICAL

INDUSTRIAL PRODUCTION	97.3
CAPACITY UTILIZATION	77.3
FDI (6 MONTHS)	$259 MILLION
ESTIMATED % OF ORDERS	6%

NOTABLE PROJECTS

Fujifilm Diosynth Biotechnologies - $91.9M in Morrisville, NC
Kite Pharma - $85M in Urbana, MD
Iovance Biotherapeutics - $75M in Philadelphia, PA

OFF ROAD/ AGRICULTURE/CONSTRUCTION



The medical sector has remained a strong customer and is one of the few industries that has continued growing in 2019. it purchases a wide range of machine types ranging from small dental parts up to large machines needed for the supply chain of MRI manufacturers.

There has been an agreement about federal investment in the roads and power supply network, so this is expected to boost the off-road sector. However, it has not moved yet because there is no clear indication of where the money will come from.

There is also an element of re-shoring in this sector because of the tariff disputes - this is also helping the electronics sector.

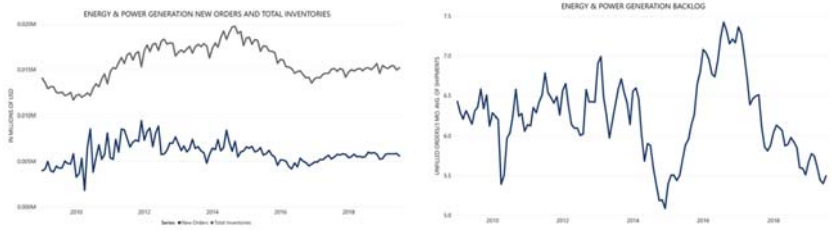
OFF ROAD/ AGRICULTURE/CONSTRUCTION

INDUSTRIAL PRODUCTION	72.3
CAPACITY UTILIZATION	67.4
FDI (6 MONTHS)	$640 MILLION
ESTIMATED % OF ORDERS	7%

NOTABLE PROJECTS

Emerson Electric - $250M in U.S.
Greenheck Fan - $58.8M in Shelby, NC
Weir Group - $50M in Newton, MS

ENERGY EXPLORATION AND POWER GENERATION



ENERGY EXPLORATION AND POWER GENERATION

INDUSTRIAL PRODUCTION	102.9
CAPACITY UTILIZATION	75.5
FDI (6 MONTHS)	$12.8 BILLION
ESTIMATED % OF ORDERS	9%

NOTABLE PROJECTS

Qatar Petroleum (QP) - $9900M in Port Arthur, TX
British Petroleum (BP) - $1292M in U.S.
Tucson Electric Power (TEP) - $370M in Roswell, NM

AMT 20

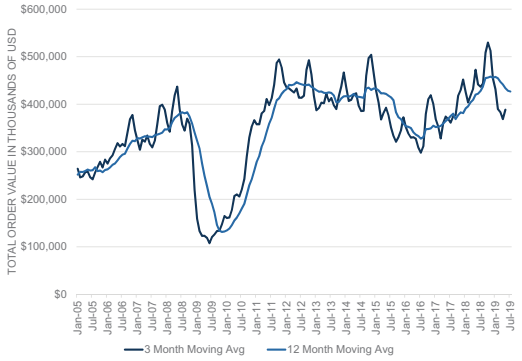
Uncertainty in the Middle East is driving investment in the US market, although this is partly balanced by improvements in productivity. Even the fall of around -20% in 2019 leaves this market at a high level.

There are a number of challenges facing the US manufacturing sector. The impact of the tariffs on steel and aluminum have largely worked through the systemn but the Section 301 action against China is more of a problem. The size of the Chinese market made it sensible to invest in production facilities there but if goods are made there for the US as well, these face tariffs, even if made by US companies.

The rise in oil prices could lead to inflation, but will also drive some investment in North America.

USMTO 3 & 12 MONTH MOVING AVERAGES

SOURCE: USMTO



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U.S. MACHINE TOOL ORDER

FORECAST* (ANNUAL PERCENT CHANGE)

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CUTTING TOOLS	5	-17	-2	8	19	-22	0
FORMING TOOLS	-10	-14	22	3	44	-17	10
ALL MACHINE TOOLS	4	-17	-1	7	20	-20	4

SOURCE: AMT
*ALL ORDERS ARE IN NOMINAL USD TERMS

AMT 22

In the longer-term, while the death of the internal combustion engine is probably at least 5-10 years away, a transition has already started that is affecting investment patterns.

Selling of machines as a service (MaaS) rather than a physical product will also have implications for the business models of small job-shops and, buy extension, the market for machine tools.

The use of Artificial Intelligence (AI) is spreading and will impact all levels of the market from machine to final product customer.

Automation, in the form of robots, is spreading out of the top tier OEM and down the supply chain to the job-shops.