

Industrial policy indicators and analysis

February 2014

SPECIAL FEATURE: Task Force on Advance Manufacturing for Clean Production

Manufacturing production falls in December but 2013 overall a good year for industry and good prospects remain for 2014

EU manufacturing production decreased in the EU during December 2013 by 0.7%. Despite this 2013 was positive overall with a total increase of 0.9% compared to 2012, and nearly all MS experiencing growth. Manufacturing exports remained strong during 2013 with a positive trade balance of over 350 billion euros during the first eleven months of the year. Prospects for 2014 are positive with manufacturing expected to be pulling the overall economic upturn. This translates into forecasts of 2014 and 2015 for GDP growth of 1.5% and 2.0% respectively. However, investment levels remain bleak putting at risk the continuation of growth in the long-term.



Task Force "Sustainable industrial policy, construction and raw materials", key lines of action

Advanced manufacturing technologies have been identified as a priority action of industrial policy. These technologies are a crucial input for process innovation in any manufacturing sector.

The Task Force on Advanced Manufacturing for Clean Production was created at the beginning of 2013. In light of the growing importance of the industrial internet and the use of "big-data" in the manufacturing process, the scope of the Task Force has been strengthened by the 2014 Industrial Policy Communication.

So far, the Task Force has focused on three short-term lines of action:

- 1) Achieving faster commercialisation of new advanced manufacturing technologies.
- 2) Removing obstacles to demand for advanced manufacturing technologies.
- 3) Reducing skills shortages and competence deficits.

In 2014 the Commission services will continue the partnership with Member States, Regions and industry to discuss potential measures in the medium-term.

On 22nd January 2014 the Commission has adopted the Communication "For an European Industrial Renaissance".

The 2014 Communication fully endorses the industrial policy approach put forward in the 2010 and 2012 Communications while highlighting the need to take action now in order to assure their full implementation. In particular it identifies seven key priorities for policy guidance:

1. Mainstreaming industrial competitiveness objectives
2. Accessing financial resources to make the industrial renaissance happen
3. Improving the business framework
4. Easier access to critical production inputs
5. Maximise the potential of the internal market
6. Internationalization of EU firms
7. Improving education and training –facilitating mobility

This note is prepared by Directorate General Enterprise and Industry - Unit A4 "Industrial Competitiveness Policy for Growth".

Previous issues are available here:

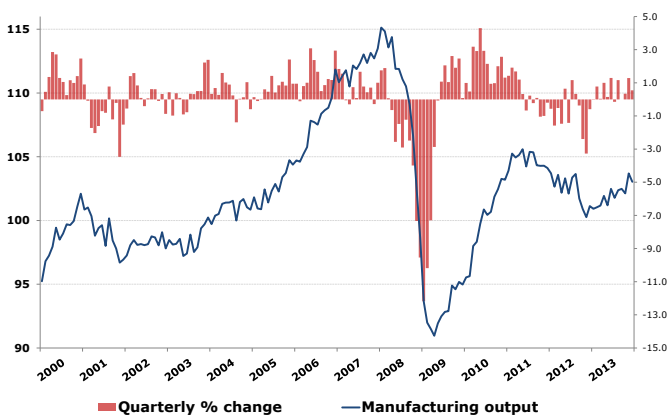
http://ec.europa.eu/enterprise/policies/industrial-competitiveness/economic-crisis/monthly_notes_en.htm

1 Monthly developments in the EU¹

Manufacturing production down by 0.7% in December

Industrial production in the EU fell in December 2013, by 0.7% compared to the previous month while in annual terms it grew by 0.9%. The intermediate goods category, which experienced a growth of 0.7%, and the non-durable consumer goods which rose 0.1% were the only exceptions to the contraction in industrial production, which followed an increase in November. Out of the seven member states that account for 75% of total industrial production², only the UK saw an increase in production (0.4%). Only Slovenia, Greece and Portugal experienced increased industrial production in December 2013.

Graph 1 – EU Manufacturing production

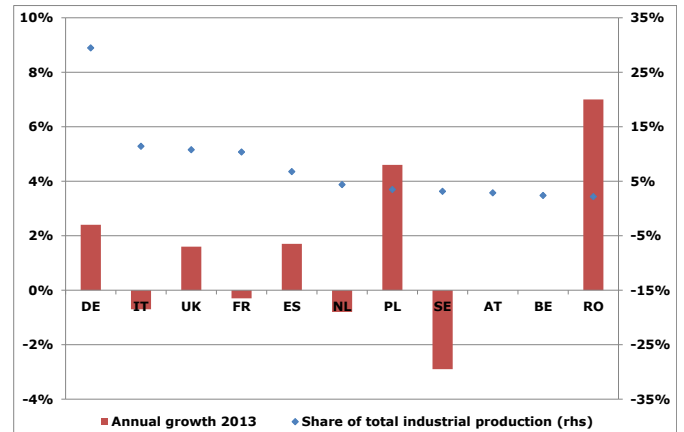


Source: Eurostat

However, 2013 was a year of recovery for European manufacturing...

Despite the downturn in December, industrial production grew by 0.9% during 2013 reaching production levels close to those of the peak of the rebound of production in 2010, but still far from the levels prior to the start of the crisis. Manufacturing growth was just slightly below GDP growth (1.0%). Growth was higher for intermediate goods (3.7%) and to a lesser extent for capital goods (0.7%) while energy and durable consumer goods experienced a decrease of production during last year. Out of the seven biggest industrial member states², France, Italy and the Netherlands experienced a decrease in industrial production. On the other hand, manufacturing witnessed the highest growth rates in Germany (2.4%) and Poland (4.6%) (graph 2).

Graph 2 – Growth of manufacturing in 2013 and relative share of total EU manufacturing for main industrial MS



Source: Eurostat

...and 2014 starts with strong confidence from industry

Despite the decrease of industrial production in December 2013, business confidence and economic sentiment indicators continued showing an upward trend in the first two months of 2014.

In February 2014, firms perceived an overall improvement in business conditions. The manufacturing PMI (Purchasing Manager's Index)³ reached 53.2, a slight decrease from its 32-month peak in January but still confirming that the manufacturing recovery has completed its eighth successive month. Manufacturing still outperforms services in this respect.

The confidence indicator continued improving thanks to solid expansions in production, new orders and new export orders which are at the fastest rates for almost the last three years. Overall, the rate of growth signaled by the PMI in the euro area is consistent with the expected GDP growth as shown in graph 3.

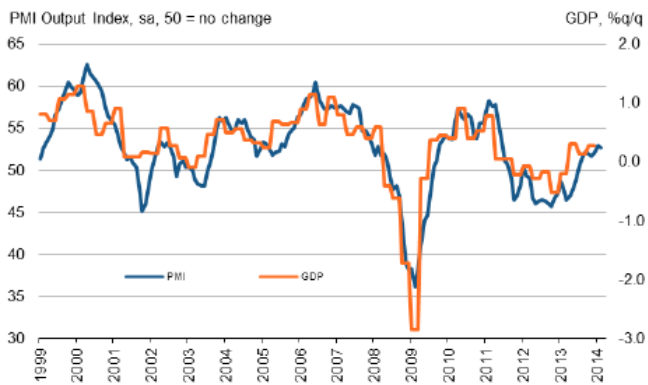
Further to improvements in production, during the first two months of 2014, job creation was reported for the first time since 2011. Although still modest, the level of job creation was the steepest since September 2011. Jobs were created in Germany, Italy, Ireland, Austria and Spain. Higher employment, together with growth in purchase of inputs, signal that the expansion in output can be maintained during the upcoming months.

³ The PMI index is based on a questionnaire to a panel of managers in industry, who are asked about the state of business conditions for a number of variables (e.g. output, stocks, new orders, employment, and delivery time). Their answers are computed into the index whose value varies between 0 and 100; a value above 50 signals an increase or improvement on the previous month.

¹ Based on Eurostat and the ECB Monthly Bulletin (cut-off date 14 February 2014). Text and statistics for the EU refer to EU28.

² DE, ES, FR, IT, NL, PL and UK using data from 2013Q3.

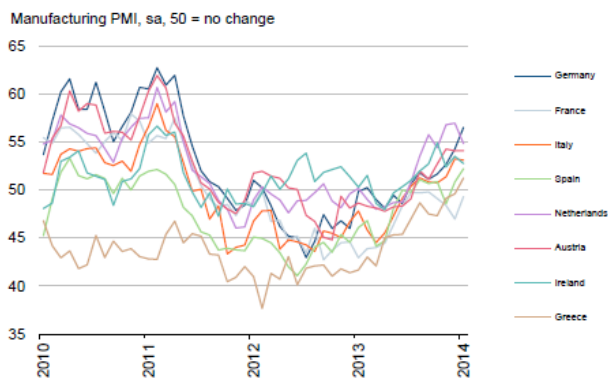
Graph 3 – Eurozone PMI and GDP



Source: Markit, Eurostat

The most striking feature of the improvement in overall operating conditions was the expansion of the recovery to the European Union’s periphery (graph 3). Greece has come back to growth figures for the first time since 2009, and both Italy and Spain are seeing strong growth of output and order books.

Graph 4 – Manufacturing PMI in some MS

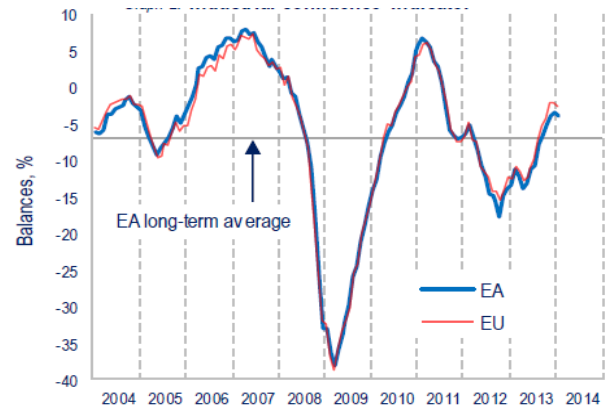


Source: Markit

The Economic Sentiment Indicator (ESI)⁴ increased in December by 0.5 points in the euro area (to 100.9) and 0.9 points in the EU (to 104.7). While the upward trend observed since May 2013 has continued, the magnitude and sectoral scope of the improvement in confidence has moderated. In particular the industrial sector experienced a small decrease in confidence (0.5), resulting from a worsening assessment of stocks of finished products. Nevertheless it remains above its long-term average (Graph 5).

⁴ The Commission’s Directorate for Economic and Financial Affairs (DG ECFIN) conducts regular harmonized surveys for different sectors of the economies in the EU and in the applicant countries. They are addressed to representatives of the industry (manufacturing), the services, retail trade and construction sectors, as well as to consumers. These surveys allow comparisons among different countries’ business cycles. DG ECFIN’s ESI is a summary indicator of five sectors confidence indicators which reflect overall perceptions and expectations based on a monthly survey of over 200 000 industries and consumers.

Graph 5 – Industrial confidence indicator



Source: European Commission Services

The Commission also unveiled the results of the quarterly survey on manufacturing. Capacity utilization has increased to 80 per cent and new orders continued increasing, and overall current orders assure more than 4 months of production.

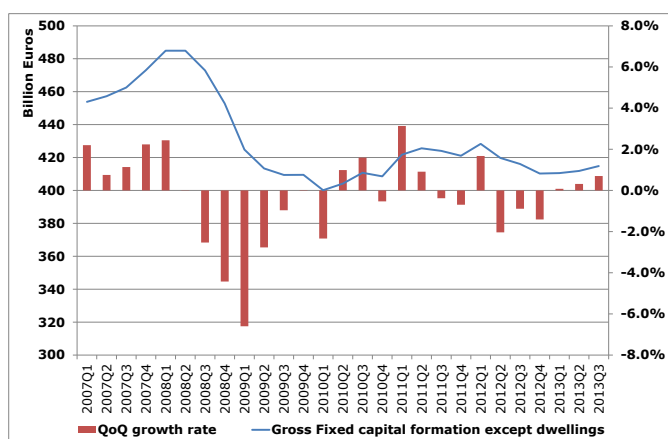
Strong export base remains

During 2013, the EU28 recorded a trade in goods surplus of nearly 50 billion euros compared to a deficit of 115 billion in 2012. Detailed results covering the first eleven months of the year show that the trade balance for manufactured goods increased to over 350 billion mainly due to a decrease of 3% in imports, while exports remained more or less constant. A decrease of exports from the chemicals sector was compensated by an increase of other manufactured goods other than machinery and vehicles. The main destination of EU28 exports remain the US, Switzerland, Russia and China; With trade surplus for the EU with the former two and deficit with the latter.

Investment still not gaining momentum

Despite the good perspective of the industrial sector sketched above, investment is still not taking off. The Industrial Policy Communication identifies the lack of investment as a clear threat to the future competitiveness of the European Industry. Even when gross capital formation in all assets except dwelling experienced a third consecutive increase during the third quarter of 2013, the increases remain feeble (0.7%) and investment levels are still 14% lower than the pre-crisis peak back in the first quarter of 2008 (Graph 6).

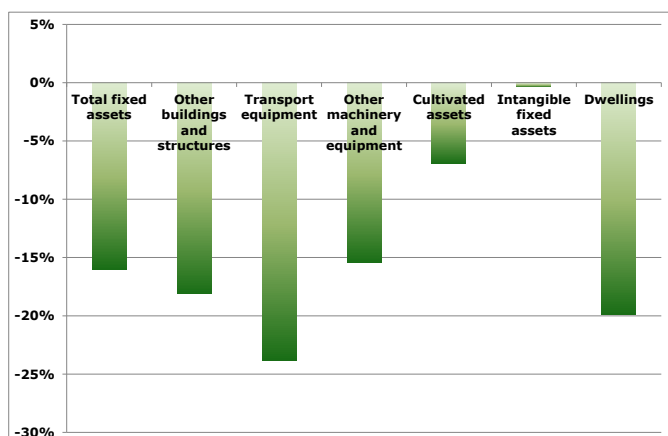
Graph 6 – Gross capital formation except dwellings



Source: Eurostat

Comparing the different components of gross capital formation we can see that the highest drop compared to the pre-crisis peak is in transport equipment followed by other machinery and equipment, both of which are more than 15% below the pre-crisis peak (Graph 7). On the other hand, investment in intangible assets has already reached the same level as the pre-crisis peak.

Graph 7- Comparison of Q3-2013 levels of investment to pre-crisis peak levels see comment to graph2



Graph 8 – GDP, employment and investment growth forecasts

Source: EC Winter 2014 Forecast

After declining strongly for several quarters, investment has rebounded and is expected to gain momentum over the forecast horizon, also to some extent in construction. Diminishing uncertainty should underpin stronger demand, which is expected to be the key driver of growth. Investment is forecasted to grow at 3.0% in 2013 and further speed to 4.2% in 2015. Only three member states will see investment contraction in 2014 (FI, SI and CY) while in 2015 all member states are forecasted to experience investment growth.

The labour market is characterized by slowly stabilizing employment. This increase will not yet be sufficient to significantly reduce unemployment levels but should stabilize current ones.

Conclusions

EU manufacturing growth halted during December 2013. Despite the negative trend for this month, the prospects for 2014 remain positive and are slowly reaching all member states. Growth forecasts are starting to have a positive effect on employment too, however, to significantly reduce unemployment levels a much higher growth rate is needed.

Recovery strengthens in winter 2014 forecasts

The European Commission unveiled its winter 2014 forecasts on 25 February. They foresee a continuation of the economic recovery in most Member States and in the EU as a whole. After exiting recession in spring 2013 and three consecutive quarters of subdued recovery, the outlook is for a moderate step-up in economic growth. Following real GDP growth of 1.5% in the EU and 1.2% in the euro area in 2014, activity is seen accelerating in 2015 to 2.0% in the EU and 1.8% in the euro area (Graph 8). These figures each represent an upward revision of 0.1 percentage points compared with the autumn 2013 forecast.

Investment levels remain weak and therefore increased growth rates are not assured, however the Commission’s Winter 2014 forecast shows that the trend might be strengthened in the near future. As mentioned in the Industrial Policy Communication, additional efforts are needed to increase investment, especially in innovation. A better understanding of the barriers to investment is needed. The Survey on Access to Finance of SMEs in the Euro Area (SAFE) conducted by the ECB which will be available in April might give us further information to confirm the consolidation of conditions that could bring investment rates back to pre-recession levels.

Did you know?

- ✓ Advanced manufacturing are solutions that can improve productivity (production speed, operating precision, energy and materials consumption) or to improve waste and pollution management
- ✓ The global market for industrial automation solutions is estimated at \$155 billion in 2011, 35 % of it in Europe, and is forecast to reach \$190 billion by 2015
- ✓ Certain fast growth advanced manufacturing segments, such as 3D printing, are expected to more than triple their global market volume in the next 7 years, from \$1.5 billion in 2012 to \$5 billion by 2020.

2 The Task Force on Advance Manufacturing⁵

2.1 Definition and key figures

Advance manufacturing comprises technologies and production processes that have the potential to enable manufacturing industries to improve productivity - production speed, operating precision and energy and materials consumption - and/or to improve waste and pollution management.

Advance Manufacture: a sector independent, relative and evolving concept

The definition of advanced manufacturing is sector independent. It does not refer exclusively to high technology manufacturing. Advanced manufacturing can also originate or find applications in low tech, traditional manufacturing sectors.

Advanced manufacturing is a relative concept. It is advanced compared to the common manufacturing practice. Moreover, the advanced nature of manufacturing changes over time, i.e. what is advanced today may not be advanced tomorrow and it changes in space, i.e. what is advanced in one manufacturing context may not be advanced in another one.

The following are examples of advance manufacturing, taken from a broad range of technologies both for discrete and continuous process manufacturing⁶:

- *Sustainable manufacturing technologies*: technologies to increase manufacturing efficiency in the use of energy and materials and drastically reduce emissions (e.g. process control technologies, efficient motor systems, efficient separation technologies, novel sustainable process inputs, product lifecycle management systems)

- *ICT-enabled intelligent manufacturing*: integrating digital technologies into production processes (e.g. smart factories).
- *High performance manufacturing* combining flexibility, precision and zero-defect (e.g. high precision machine tools, advanced sensors, 3D printers).

Numerically controlled or multitasking equipment is currently considered the state of the art in the machine tools market. However, significant productivity gains due to resource efficient production processes can be obtained by introducing other manufacturing practices that are advanced compared to the state of the art.

Non-technological innovation such as design⁷ or advanced workplace organisation can also contribute to increasing the productivity and efficiency of manufacturing processes.

Due to the variety of relevant technologies it is difficult to quantify the total market volume of advanced manufacturing. To give a rough indication, the global market for industrial automation solutions⁸ is estimated at \$155 billion in 2011, 35 % of it in Europe, and is forecast to reach \$190 billion by 2015⁹.

Certain advanced manufacturing segments with particularly high growth, such as 3D printing, are expected to more than triple their global market volume in the next 7 years, from \$1.5 billion in 2012 to \$5 billion by 2020¹⁰.

⁵ This paragraph is based on the report of the Task Force on Advance Manufacturing for Clean Production, SWD XXX(2014).

⁶ Discrete manufacturing is the production of a finished good from components, e.g. cars, machinery or semiconductors. Process manufacturing is a continuous production process of materials or chemicals (e.g. chemicals, steel, and pulp).

⁷ For example, mass customisation requires the integration of design and manufacturing. A design-driven manufacturing environment can help to reduce time-to-market for new technologies. Design tools are important for the resource-efficient manufacturing of complex structures.

⁸ Including industrial robots, sensors, valves, drives & motors, product lifecycle management systems, and industrial control systems.

⁹ Credit Suisse, Global Industrial Automation (Global Equity Research, August 2012).

¹⁰ Wohlers Report 2012, Additive Manufacturing and 3D Printing State of the Industry.

2.2 Scope

Due to their cross-cutting nature, providing a crucial input for process innovation in any manufacturing sector, advanced manufacturing technologies have been identified as a priority action of industrial policy. In this light and in order to 'foster the development and adoption of Advanced Manufacturing for Clean Production technologies by European industry' the European Commission established the Task Force on Advanced Manufacturing for Clean Production at the beginning of 2013.

The Task Force coordinates efforts in relevant Commission services aiming at fostering all production solutions that can improve the productivity or resource efficiency of manufacturing production, both in traditional sectors and emerging industries. The ultimate objective is to improve the competitiveness of EU's manufacturing industry as a whole.

In light of the growing importance of the industrial internet and the use of "big-data" in the manufacturing process, the scope of the Task Force has been strengthened by the recently adopted Communication "For a European Industrial Renaissance" (see January Monthly Note) to cover the integration of digital technologies in the manufacturing process.

The European Union is not the only advanced economy taking policy measures to promote the development of advanced manufacturing technologies. In 2011 the US launched the Advanced Manufacturing Partnership to improve the competitiveness of their manufacturing industry. In 2012 the US administration launched the National Network of Manufacturing Innovation and promoted investment in advanced manufacturing R&D.

2.3 Short-term actions

To foster the development and adoption of Advanced Manufacturing for Clean Production technologies by European industry, the Task Force has focused so far on three main lines of action:

- 1) Achieving faster commercialisation of new advanced manufacturing technologies
- 2) Removing obstacles to demand for advanced manufacturing technologies
- 3) Reducing skills shortages and competence deficits

Putting priorities in motion

Individual EU Member States have already adopted strategies on advanced manufacturing, but enhanced coordination both across Member States and between national initiatives and EU initiatives seems necessary to maximise the impact of such strategies.

Germany follows the agenda "Industry 4.0" to use the potential of cyber-physical systems ('the Internet of Things') to maintain industrial leadership¹¹.

The UK has undertaken a growth review on advanced manufacturing and launched the Advanced Manufacturing Supply Chain Initiative funding R&D and skills development as well as the "High-Value Manufacturing Catapult"¹².

Finland's innovation agency "Tekes" focuses R&D&I support in manufacturing to ICT-enabled manufacturing and sustainable manufacturing¹³.

France has included factories of the future and robotics among the 34 initiatives identified for reindustrialisation¹⁴.

1) Achieving faster commercialisation of new advanced manufacturing technologies

Continued investment in R&D for advanced manufacturing technologies is of prime importance for the competitiveness of manufacturing industry in the EU. In Horizon 2020, the EU's Framework Programme for Research and Innovation, a significant part of the 2014-2020 budget (17.6%) will be dedicated to promoting leadership in enabling and industrial technologies, including advanced manufacturing technologies.¹⁵

However, it is not the excellence in research, but innovation - the commercialisation of research results on the market - that generates turnover and jobs in industry. In general, Europe suffers from weak industrial exploitation of new technologies stemming from research undertaken in the EU, mainly due to the current low growth prospects and insufficient exploitation of the potential of the single market.

¹¹ <http://www.bmbf.de/en/19955.php>.

¹² <http://news.bis.gov.uk/Press-Releases/Advanced-manufacturing-supply-chain-fund-to-create-thousands-of-new-jobs-6887c.aspx>. In addition, the UK has undertaken a foresight project on the future of manufacturing: <http://www.bis.gov.uk/foresight>.

¹³ <http://www.tekes.fi/en/community/Home/351/Home/473>.

¹⁴ <http://www.redressement-productif.gouv.fr/nouvelle-france-industrielle>.

¹⁵ Horizon 2020 funding for "Leadership in enabling and industrial technologies" also includes nanotechnologies, advanced materials, biotechnology, information & communication technologies, cross-cutting KETs and space technologies.

Therefore, the European Commission will ensure financial support for market oriented pre-competitive R&D&I in advanced manufacturing via several PPPs¹⁶.

Better conditions and contractual commitments have been put in place to enable commercialisation of research results by European manufacturing industry as they will benefit from a preferential access to research results for exploitation.

Horizon 2020 provides the opportunity to bridge the gap between research and its exploitation. Europe-wide demonstration of advanced manufacturing technologies (e.g. Living Labs, small-scale projects as well as large-scale demonstrator projects) addressing users in various industries will further strengthen commercialisation.

The Task Force has been consulted on the strategic roadmaps 2014-2020 of the Factories for the Future and SPIRE PPPs to ensure that appropriate measures are included to ensure dissemination and commercialisation for the successful exploitation of research results.

Examples of Private Public Partnerships

The 'Factories of the Future' PPP covers the full spectrum of discrete manufacturing across many sectors. From the processing of raw materials to the delivery of manufactured products to customers, covering both, large-volume and small-scale production, dealing with issues such as mobile and virtual factories, material processing and handling, customer-driven design and production, energy efficiency, emissions reductions, new processing technologies, upgrading of existing machines and technologies, including use of information and communication technologies (ICT). The indicative budget of 'Factories of the Future' in Horizon 2020 is €1.15 billion.

The Sustainable Process Industry through Resource and Energy Efficiency (SPIRE) PPP will be established for advanced manufacturing technologies for continuous process manufacturing with an indicative budget of €875 million. The objective is to develop new technologies and solutions for industry to reduce energy intensity by up to 30% and the use of non-renewable primary raw materials by up to 20%. SPIRE brings together cement, ceramics, chemicals, engineering, minerals and ores, non-ferrous metals, steel and water sectors.

The Commission services are working closely with the

European Technology Transfer Office (TTO) Circle¹⁷ and other TTOs, to focus on easing the commercialisation of research results by public research organisations in advanced manufacturing technologies.

2) Removing obstacles to demand for advanced manufacturing technologies

The European producers of advanced manufacturing technologies currently have a strong position in the global market.¹⁸ In robotics and factory automation, the global market share of EU producers is around 50%.¹⁹ In process automation, the global market share of EU producers is around 30%.

The largest markets for industrial robots are Japan, Korea and China, while only 25% of sales of industrial robots go to Europe. Some 44% of European machine tools are exported outside Europe, particularly to Asia, that accounts for more than 60% of world sales in machine tools.²⁰

While exports to third countries can be an important driver of demand, there are also risks attached to relying only on exports. First, the interface between producers and users is considered crucial for technology development. If the users of new technologies are exclusively in other regions, Europe may risk losing its ability to innovate in the longer term.²¹ Second, exports of advanced manufacturing technologies are an indicator of the competitiveness of European producers of advanced manufacturing technologies, but a wider impact on the EU industry requires broader market uptake of advanced technologies in Europe.

Low internal demand is a constraint for deploying advanced manufacturing technologies in Europe. Against the background of continued uncertainty and sluggish growth, many firms have held back new investment in equipment. Demand for machine tools in the EU has dropped from €18 billion in 2008 to €12 billion in 2012.²²

According to stakeholders consulted by the Task Force, the main obstacles for European manufacturers purchasing advanced manufacturing technologies are related to access to finance and low awareness and

¹⁷ The Circle operates as a laboratory for the exchange of best practice in technology transfer, mainly among public research organisations.

¹⁸ European Competitiveness Report 2013, SWD(2013) 347.

¹⁹ International Federation of Robotics, World Robotics 2012.

²⁰ Competitiveness of the European Machine Tool Industry, CECIMO, 2011.

²¹ Evidence from a US perspective in President's Council of Advisors on Science and Technology, Report to the President on Ensuring American Leadership in Advanced Manufacturing, June 2011.

²² Source: CECIMO.

¹⁶ The 'Factories of the Future', SPIRE (Sustainable Process Industry through Resource and Energy Efficiency), Robotics PPP and Photonics PPP.

prioritisation of process innovation and energy efficiency investments.

Demand for advanced manufacturing can be stimulated via several instruments, varying from regulation and support to testing and deployment activities and public procurement. The Task Force has identified the following:

Strengthening the cooperation with the European Investment Bank (EIB). The EIB will increase its lending for 2013-2015 to EUR 180 billion in additional investment across a set of critical priorities (e.g. innovation and skills, SME access to finance, resource efficiency, and strategic infrastructures). For this, a new financial instrument has been developed under Horizon 2020 which will cover a broad range of products to help fill the market gap in financing the deployment of advanced manufacturing technologies in the EU industry.

In the context of its Memorandum of Understanding with the Commission, the EIB signed, in 2013, credit lines for €1.3 billion in the area of advanced manufacturing technologies.

Integrating advanced manufacturing in regional strategies when appropriate: as outlined in the 2014 Industrial Policy Communication²³, €100 billion has been made available within the 2014-2020 European Regional Development Fund (ERDF) to Regions interested in modernising their manufacturing sectors. The possibility to invest in advanced manufacturing is included under thematic objective 1 on research and innovation. However, as a precondition for the use of the funds, the needs for such investments should be included in the smart specialisation strategy.²⁴

In line with the Industrial Policy Communication, the Commission services will continue providing a platform to assist EU countries and regions to develop, implement and review their national and regional research and innovation smart specialisation strategies. In the platform, all interested parties can consult these strategies, including how advanced manufacturing aspects are integrated. Workshops with regional and industry stakeholders on advanced

manufacturing and smart specialisation will be organised in 2014.²⁵

Increasing the awareness of process innovation and clean production technologies. Existing initiatives could be replicated at national level or in other Member States. This is the case for example of the Sustainable Industry Low Carbon (SILC)²⁶ EU grant scheme, and of a set of national policies promoting sustainable business models for the manufacturing industry.

The Commission services are taking the necessary steps to ensure that demonstration projects on new business models and process innovation are, in principle, eligible for funding under LIFE²⁷ funding, and where relevant, under Horizon 2020.

In line with the Communication 'A policy framework for climate and energy in the period from 2020 to 2030'²⁸ the Commission will explore alternative funding schemes, such as an expanded NER300 system²⁹ as a means of directing revenues from the ETS towards the demonstration of innovative low carbon technologies in the industry sector.

Strengthening industry's involvement in the implementation of the Energy Efficiency Directive.³⁰ In particular, the requirement to make widely available and facilitate the implementation of energy audits in industry. Also SMEs should become a powerful driver of investment in energy efficiency.

Developing innovative incentive schemes in advanced manufacturing. The Commission will continue the 'ICT Innovation for Manufacturing SMEs' initiative³¹ under

²⁵ Regional Innovation Monitor, RIM+, <http://ec.europa.eu/enterprise/policies/innovation/policy/regional-innovation/monitor/>

²⁶ The SILC scheme launched by the EU under the Competitiveness and Innovation Framework Programme supports European manufacturers in finding technological and non-technological innovation measures that help energy-intensive manufacturing reduce its greenhouse gas emissions while maintaining competitiveness.

²⁷ Regulation No 1293/2013 of 11 December 2013 on the establishment of a Programme for the Environment and Climate Action (LIFE) and repealing Regulation (EC) No 614/2007

²⁸ COM(2014) 15

²⁹ NER300 is a funding programme for innovative low-carbon energy demonstration projects. It is funded from the sale of 300 million emission allowances from the new entrants' reserve (NER) set up for the third phase of the EU emissions trading system (EU ETS). The scope of the current NER300 system includes demonstration of environmentally safe carbon capture and storage and innovative renewable energy technologies.

³⁰ Directive 2012/27/EU on energy efficiency.

³¹ €77 million funding over the period 2013-2016. In total, about 200 SMEs are expected to take part in I4MS with more than 150 innovation experiments over the next 3 years. The innovation of the initiative is that only half of the experiments have been defined at the time of launch. There is plenty of opportunity for interested companies to apply for being part of the action through responding to open calls. For additional information see <http://i4ms.eu/>

²³ COM (2014) 14

²⁴ Smart Specialisation is a strategic approach to economic development through targeted support to Research and Innovation. It is a process of developing a vision, identifying competitive advantage, setting strategic priorities and making use of smart policies to maximise the knowledge-based development potential of any region. It is an inclusive, bottom-up 'entrepreneurial discovery' process that involves a broad range of stakeholders (e.g. businesses, technology and competence centres, universities and public agencies, science and business parks, civil society, etc.).

Horizon 2020. The aim is to accelerate the uptake of advanced manufacturing technologies and to explore synergies with the EIB lending schemes. Public procurement of innovative solutions supporting AMCP could be considered for inclusion in future work programmes of Horizon2020.

Applying technology-neutral internal market legislation. As part of the modernization of internal market legislation³², the Commission has taken further action with the Regulatory Fitness and Performance Programme (REFIT) to ease the regulatory burden on businesses. REFIT demonstrates the Commission's commitment to provide a clear, stable and predictable regulatory framework in all policy fields.³³ In order to avoid any unnecessary barriers for the timely take-up of new technologies and market introduction of innovations, the Commission will take into account innovation and technological developments in the elaboration of any new proposals in the internal market for industrial products.³⁴ Moreover, cooperating world-wide on common research topics through activities on standardisation and interoperability issues will help to ensure win-win situations by capturing market developments globally and fostering the participation of European companies in global value chains.³⁵

Implementing State aid modernisation. In the context of the State aid reform programme contained in the Communication on State aid modernisation³⁶, the Commission is currently reviewing different State aid frameworks. Among others, the new Framework for State aid for Research & Development & Innovation (R&D&I), and the new General Block Exemption Regulation (GBER) is expected to significantly extend the forms of aid that can be put in place by Member States to support advanced manufacturing.

3) Skills shortages and competence deficits in advanced manufacturing

European data show³⁷ engineering is among the top three bottleneck occupations on the European labour market. The development of mobility instruments for EU students and workers has potential to address

skills mismatches and shortages effectively. Persistent skills shortages, particularly in engineering, could be addressed in mobility schemes organised by European Employment Services (EURES)³⁸. Schemes such as 'Your First EURES Job' could be highly relevant for young engineering graduates.

The Task Force invites advanced manufacturing stakeholders to become involved in the multi-stakeholder partnership called "the Grand Coalition for Digital Jobs"³⁹ and to become associated with targeted actions around training, mobility, digital entrepreneurship, qualifications recognition and the attractiveness of ICT careers.

Links between education and training, on the one hand, and industry, on the other, could be usefully improved via enhanced partnerships between education, training providers and industry. In this context, the Task Force highlights the role of existing structured partnerships such as Knowledge Alliances and the Sector Skills Alliances. Advanced manufacturing has been included as an eligible sector for funding under the relevant calls for proposals.⁴⁰

The Task Force also underlines that lifelong learning is highly important to ensure the supply of a skilled workforce. Employers should also be incentivised to invest in the training of workers. For this, a clearer picture of future skill needs and of current investment would be welcome. In particular, the Sector Skills Councils could be a good place to promote and identify specific skills needs for advanced manufacturing also in training and lifelong learning. The Commission has included workplace innovation aspects in the R&D&I programmes for advanced manufacturing⁴¹ to explicitly include R&D on human-centred manufacturing to enhance the active and innovative role of people in factories and to design the workplaces of the future.

³² The Communication "A vision for the internal market for industrial products" presents a vision to achieve a more integrated internal market based on rationalising the existing regulatory framework.

³³ COM(2013) 685 "Regulatory Fitness and Performance (REFIT): Results and Next Steps". New fitness checks will be launched, inter alia, on waste policy and chemicals legislation not covered by REACH.

³⁴ COM(2014) 25, A vision for the internal market for industrial products.

³⁵ An example of international collaboration on manufacturing is the EU participation to IMS (Intelligent Manufacturing System). More information at www.ims.org

³⁶ COM (2012) 209.

³⁷ European Vacancy and Recruitment Report, 2012.

³⁸ EURES (European Employment Services) is a cooperation network designed to facilitate the free movement of workers within the European Economic Area. Switzerland is also involved. Partners in the network include public employment services, trade union and employers' organisations. The network is coordinated by the European Commission. The main objectives of EURES are: to inform, guide and provide advice to potentially mobile workers on job opportunities as well as living and working conditions in the European Economic Area; to assist employers wishing to recruit workers from other countries; and to provide advice and guidance to workers and employers in cross-border regions.

³⁹ <https://ec.europa.eu/digital-agenda/en/grand-coalition-digital-jobs-0>

⁴⁰ Erasmus + Programmes, Knowledge Alliances and Sector Skills Alliances, https://eacea.ec.europa.eu/erasmus-plus/funding/knowledge-alliances-sector-skills-alliances-eacs1113_en

⁴¹ <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/2183-fof-04-2014.html>

2.4 Conclusions

The Task Force has so far focused on short-term deliverables. The line of action on advanced manufacturing has been explicitly welcomed by the European Parliament.⁴² The wide range of actions identified in this report demonstrates the added value of coordinating policies at EU level. Taking into account the vital importance of advanced manufacturing technologies to foster the competitiveness of the industrial base in the EU, the role of the Task Force should be reinforced, in particular to address the issues negatively affecting the demand and to support companies' transition towards more competitive and clean manufacturing and a more resource efficient production model.

A structured dialogue between Member States, regional governments, industry and Commission services on topics of advanced manufacturing can contribute to raising public awareness about the imperative of modernising industry with a view to assuring an advanced and clean manufacturing production in Europe.

In 2014 the Commission services will continue the partnership with Member States, Regions and industry to discuss potential mid-term measures term that would have an even stronger impact on the development of advanced manufacturing technologies and to contribute to substantial improvements in the productivity and competitiveness of EU manufacturing industry. Such potential measures for discussion could include *inter alia* initiatives to quantify and address the state of obsolescence of production processes and equipment and other possible barriers to the uptake of innovations in manufacturing.

⁴² European Parliament Resolution of 15 January 2014 on reindustrialising Europe to promote competitiveness and sustainability

3 Statistical annex

TARGET INDICATORS

	Target 2020	Latest figure Quarter III 2013	Changes in percentage points compared to:		
			Quarter II 2013	Quarter III 2012	Pre-crisis peak Quarter I 2008
Manufacturing value added (% of total VA)	20				
EU		15	-0.1	-0.2	-1.1
Euro area		15.7	-0.1	-0.1	-1.2
Gross fixed capital investment (% of GDP)	23				
EU		17.3	0.1	-0.5	-4.1
Euro area		17.7	0.1	-0.6	-4.2
Investment in other machinery and equipment (% of GDP)	9				
EU		4.4	0.00	-0.2	-0.9
Euro area		3.4	-0.01	-0.1	-0.6
Intra-EU exports as a % of GDP *	25	21.9			

Source: Eurostat

*Annualised values. Latest available data correspond to Quarter IV 2012

PRODUCTION AND COMPETITIVENESS

	Quarter III 2013	Changes in percentage points compared to:		
		Quarter II 2013	Quarter III 2012	Pre-crisis peak Quarter I 2008
Manufacturing Production (Index 2010=100)				
EU	102.1	0.2	-0.8	-12.4
Euro area	101.2	-0.1	-1.3	-14.4
Value added (Index 2010=100)				
Manufacturing	104.6	-0.2	-0.9	-4.1
Business services	111.3	0.9	1.9	6.6
All NACE activities	106.0	0.3	0.3	3.4
Labour productivity (Index 2010=100)				
EU	106.6	-0.1	0.4	8.7
Euro area	106.8	0.1	1.6	8.4
Labour cost per unit (Index 2010=100)				
EU	113.2	0.5	2.4	14.7
Euro area	112.7	0.3	2.4	14.1

Source: Eurostat

TRADE

Extra-EU trade				
	2012	2011	2010	2009
Trade in services as a % of GDP	11.1	10.7	10.4	9.9
Value of Extra EU Exports as % of GDP:				
Goods	13.2	12.3	11.1	9.5
Services	5.2	4.8	4.5	4.3
Intra-EU trade				
	2012	2011	2010	2009
Intra-EU exports of goods as a % of GDP	21.9	22.2	20.9	18.5
Trade in services as % of GDP	6.1	6.0	5.8	5.6
Trade in goods % of GDP	21.9	22.2	20.9	18.5

Source: Eurostat

ACCESS TO FINANCE

Lending conditions expressed as net % of banks tightening credit standards				
	2013 Q4	2013 Q3	2012 Q4	Pre-crisis peak 2008 Q1
Euro area	5.0	6.0	15.0	39.0
Loan flows in billion euros (three months total)				
	Nov 2013	Oct 2013	Nov 2012	Pre-crisis March 2008
Euro area	-34.7	-31.4	-38.4	142.0

Source: European Central Bank

INNOVATION

	2012	2011	2010	2009
Percentage of R&D as a % of GDP	2.1	2.0	2.0	2.0
Patents applications per million habitants		107.5	109.6	111.4

Source: Eurostat

SMEs

	2013e	2012e	2011e	2010	2009
Number (millions)	20.6	20.4	20.7	20.9	20.0
VA (bio €)	3430.0	3395.4	3439.6	3374.4	3234.1
Jobs (% of total)	67.0	66.0	67.0	67.0	67.0

Source: Eurostat

INDUSTRIAL CONFIDENCE

	Index Jan 2014	Changes in points compared to		
		Dec 2013	Jan 2013	Pre-crisis March 2008
Industrial confidence (Standard deviation)				
EU	-2.6	-0.6	9.9	-4.1
Euro Area	-3.9	-0.5	9.4	-5.3
Production expectations (Standard deviation)				
EU	11.1	-0.4	13.3	0.3
Euro Area	8.0	-0.3	12	-1.4
Assessment of stock levels (Standard deviation)				
EU	3.6	0.7	-2.7	-3.3
Euro Area	3.0	1.3	-2.2	-3.6
Assessment of order books (Standard deviation)				
EU	-15.2	-0.7	13.9	-15.8
Euro Area	-16.8	-0.1	14	-18.3

 Source: DG ECFIN Consumer and business Survey http://ec.europa.eu/economy_finance/db_indicators/surveys/
MACRO FORECASTS (Winter 2014)

	Percentage change on preceding year		
	2013	2014	2015
Gross Domestic Product			
EU	0.1	1.5	2
Euro area	-0.4	1.2	1.8
Total Investment			
EU	-2.5	3.0	4.2
Euro area	-3.0	2.3	3.6
Investment in equipment			
EU	-1.3	4.8	6.2
Euro area	-2.2	4.6	6

 Source: DG ECFIN, European Economic Forecasts. http://ec.europa.eu/economy_finance/publications/european_economy

4 METHODOLOGY

This outlook takes into account the most recent macroeconomic information and the domestic and international market developments and expectations. Data is subject to retrospective review.

As of 1 July 2013, Croatia joined the EU. Therefore, the EU total now refers to EU28.

SOURCES

- EUROSTAT Quarterly data
- ECB Monthly Bulletin, Survey on the Access to Finance of Small and Medium-Size Enterprises
- DG ECFIN European Economic Forecast Autumn 2013 and Consumer and Industrial Survey
- DG ECFIN Economic Sentiment indicators (ESI)
- PMI Markit Business Confidence Indicators



This note has been edited by Beatriz Velazquez and Jesús Barreiro-Hurle

DISCLAIMER: While all efforts are made to reach robust estimates uncertainties on results may still remain. This publication does not necessarily reflect the official opinion of the European Union.

© European Union, 2014 - Reproduction authorized provided the source is acknowledged