Institut der deutschen Wirtschaft Köln Consult GmbH

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Industry as a growth engine in the global economy

Executive Summary

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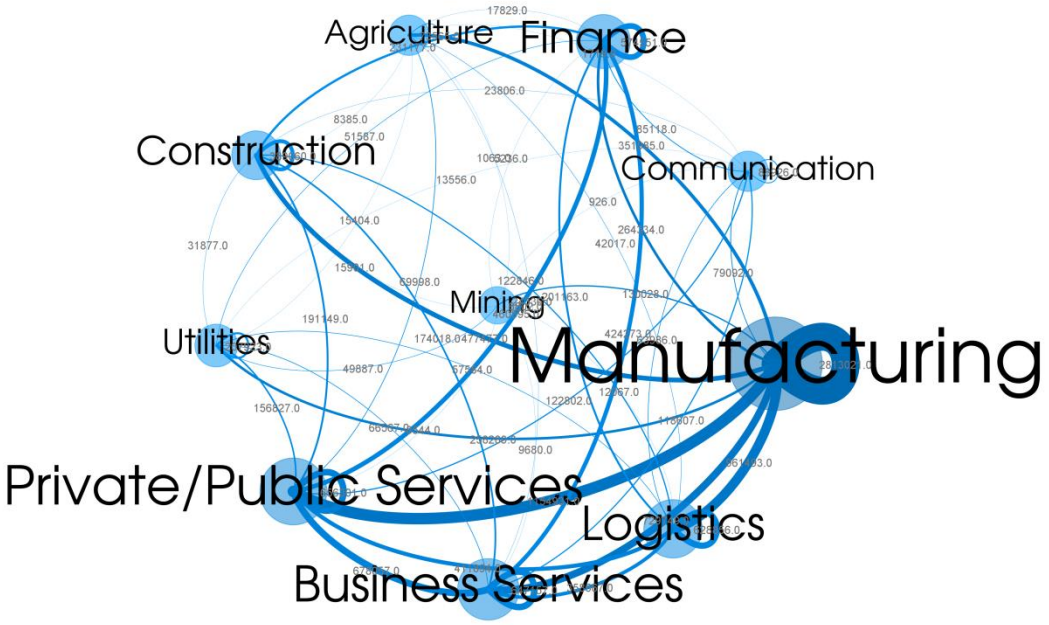
Executive summary

Industry – the backbone of the economy

Industry[1] is the backbone of the economy. Due to strong spillover effects to other sectors, manufacturing is significantly more important to the overall economy than it is often given credit for. The following findings vividly illustrate the relevance of industry in various dimensions.

Figure 0-1: EU production network illustrated by intermediate inputs (2011)



Source: own illustration, graph made with Gephi.

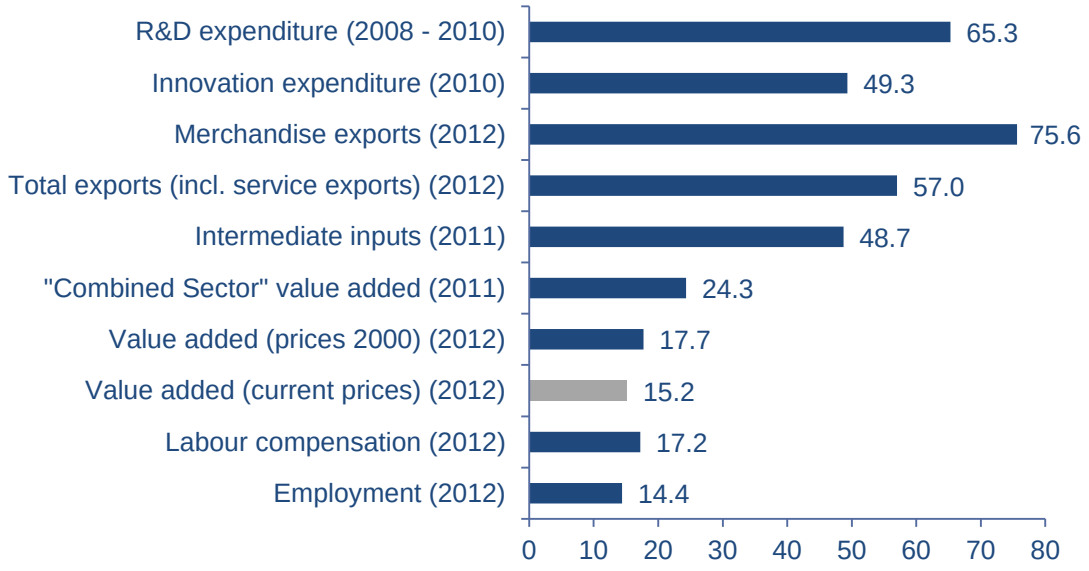
[1] Industry is defined throughout the study in a narrow sense as the manufacturing sector. Thus, the terms industry and manufacturing are used synonymously.

Industry features as an economic hub to the economy because it offers an important market for suppliers from other sectors, as highlighted in Figure 0-1:

- The function of industry as a hub for the economy is underlined by the fact that the manufacturing sector accounts for 49 per cent of intermediate input transactions in the EU economy, while its share in total value added (VA) and employment amounts to 15 and 14 per cent, respectively (Figure 0-2).[2]

Figure 0-2: Manufacturing's share in the total economy in various dimensions

in per cent



Source: Eurostat (2013), OECD (2013), WIOD (2013), WTO (2013), own calculations

- Business services as well as other non-industry sectors strongly benefit from industry's demands in the course of upstream and downstream value chains. In fact, for every one euro of manufacturing output in the EU, 34 cents of input comes from other supply sectors.
- The symbiosis of industry and other sectors on the input level can be termed "Joint Production".[3] This deep and mutually productive integration, particularly with the service

[2] Industry's share in VA would be nearly 18 per cent (Figure 0-2) if prices in industry had risen to the same degree as in the total economy. Instead, industry's productivity advantage mentioned below and international competition mainly explains why industrial prices have increased at a considerably slower pace than in the overall economy. As a result of the lower price dynamic, industry contributes to rising real incomes.
[3] "Joint Production" is measured in terms of net intermediate input transactions among different sectors.

sector, renders the traditional dichotomy and antagonism between industry and services obsolete.

- Combined with this “Joint Production”, the relevance of industry is considerably higher than it is often given credit for. In the EU, this “Combined Sector” accounts for 24.3 per cent of VA in the total economy (Figure 0-2) compared to a world average of 20.8 per cent. Furthermore, the share of the “Combined Sector” remained more or less constant between 2005 and 2011 in the EU.

- In Europe in particular, the manufacturing sector is a major hub for the organisation of value chains. While “Joint Production” accounts for only 3.7 per cent of total VA in the world on average, its share in the EU is considerably higher at 8.5 per cent.

Due to this interconnectedness, industry generates strong positive spillovers to other sectors:

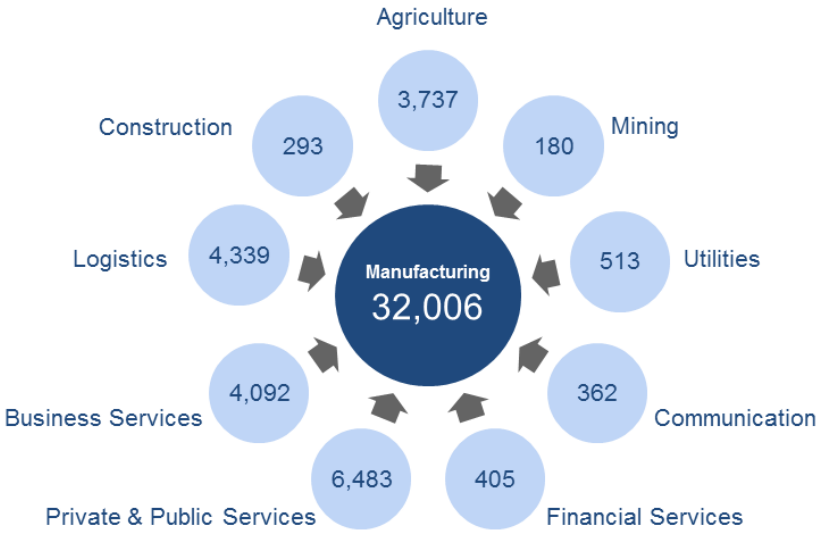
- Industry exerts higher multiplier effects on the total economy than other sectors. In fact, every unit of additional demand in the manufacturing sector generates 1.68 units of additional output in the total economy.

- Regarding employment, while manufacturing directly provides 32 million jobs in the EU, more than 20 million jobs indirectly depend on industry in related supply sectors (Figure 0-3).

- Thus, a vibrant and thriving industry in Europe will also benefit the economy overall.

Figure 0-3: Direct and indirect employment in the manufacturing sector (2012)

in 1,000 persons



Source: Eurostat (2013), WIOD (2013), own calculations.

Industry fosters important growth factors

- Manufacturing businesses account for a significant share of research. With a share of 15 per cent of VA in the total economy, industry is responsible for 65 per cent of research and technological development (R&D) expenditure and for 49 per cent of innovation expenditure (Figure 0-2). Large manufacturing firms' innovation intensity is twice as high as in large companies in other sectors.

- Industry relies heavily on employees with STEM (science, technology, engineering and mathematics) skills. These qualifications are considered particularly important when it comes to innovative capacity required to develop more efficient production processes. Moreover, STEM skills and practical experience are necessary throughout manufacturing firms to generate new, better and more marketable products.

- Industrial businesses are a motor for internationalisation (Figure 0-2). In the EU, they are responsible for 76 per cent of merchandise exports and 57 per cent of total exports (including service exports). In addition, the EU boasts a world export market share in manufacturing of 42 per cent.

- EU industry is strongly integrated into global value chains (GVCs) with particularly intense cross-border intermediate linkages among EU countries.

- The above factors enable the manufacturing sector to be more productive than other sectors. In industry, an hour of work generates nearly €32 of VA, a productivity level that is about 15 per cent higher than the average in all sectors.[4]

- As a result, manufacturing provides a large number of high-quality jobs that offer higher wages and better income prospects than many other sectors. While industry concentrates on employees who have completed secondary education, industrial wages are above average in every skill class.

Industry is a growth driver

- Considering the relevance of industry for the above-mentioned growth drivers, it comes as no surprise that a strong industrial base goes hand in hand with higher economic growth and technical progress.

- In countries with an above-average specialisation in industry,[5] the growth of Gross Domestic Product (GDP) has been stronger since 2000 (+149 per cent on average in euro terms) than in the comparison group of countries with below-average specialisation (+35 per cent on

[4] This calculation for all sectors excludes the real estate sector where price bubbles distort the picture.
[5] Included are the 50 most industrialised countries; industrial-oriented countries are defined as having a manufacturing share of VA above the world average (17.4 per cent in 2012).

average). The same is true for the European Union but at a lower level: the industry-oriented Member States[6] grow by 43 per cent, the comparison group by 38 per cent.

- Moreover, when the industry share (in the total economy VA) increases by one percentage point, total factor productivity (a measure for technical progress) rises on average by 0.28 per cent (Stöllinger et al. (2013)).

Due to these beneficial spillover effects, a renaissance of industry would also have an important social dimension: it can help Europe to get out of the current crisis and reduce the burden of excessive unemployment in many parts of the EU.

Apart from this outstanding macroeconomic relevance, industry offers solutions to societal challenges. The innovative and creative capacities of manufacturing businesses are essential to tackle many future challenges, e.g. population growth in emerging economies or dwindling natural resources.

Challenges and opportunities for EU industry

However, despite this huge potential and the disproportionate relevance of industry for the total economy, the manufacturing sector has come under pressure from various angles in recent years.

From an economic perspective, challenges for EU industry have arisen due to important megatrends: tertiarisation (increasing relevance of services), globalisation and knowledge intensification. They comprise, for example, a shift in global demand from goods to services, more intense competition from emerging markets, and challenges for low-skilled jobs/sectors from technology-driven rationalisation.

However, these megatrends also provide opportunities to increase the competitiveness of manufacturing and thus to tackle the challenges (see below). In addition, future global demand patterns will tend to favour manufactured goods, in particular investment goods. Huge global trends – such as ageing, urbanisation and climate change – improve business prospects in fields like life sciences, transport infrastructure and environmental technologies.

Additional challenges for industry have been induced by policies. This is indicated by the IW Competitiveness Index, which focuses on factors that are important for the competitiveness of manufacturing businesses.

The index makes it possible to gauge the quality of the policy and economic frameworks for the 50 most important developed and emerging countries.[7] Strikingly, on average the EU lies behind relevant competitors in all applicable competitiveness fields. However, a considerable divergence between EU regions/countries has been identified. While North-Western Europe on average scores significantly better than the group of other developed economies outside the EU, Southern and Eastern Europe lag

[6] European Member States with a manufacturing share of VA above 15.2 per cent.
[7] It measures the position of the 50 most important developed and emerging countries (EU-27 states, OECD and BRICS countries) using 60 relevant indicators clustered around the areas of government and governance, infrastructure, human capital, innovation, labour relations, energy and raw materials, capital markets, cost, market and customers, value chains and economic openness.

behind. Furthermore, these two latter EU regions already lag behind South Korea and China, both of which have improved their competitiveness frameworks considerably over time.

The EU strategy in the energy and environmental field has also affected the international competitiveness of EU industry in recent years. The lack of progress towards an international climate agreement has challenged the frontrunning strategy of the EU in combating climate change. Moreover, the discovery of large shale gas reserves has led to a renaissance of the United States as a manufacturing production location. While worthy in themselves, these developments tend to erode the international level playing field for EU industry. In addition, incentives for production dislocation have increased and established value chains in the EU have become endangered.

These various challenges have exerted significant pressure on EU industry. As a result, the industrial share in total VA in the EU has declined to 15 per cent on average. However, the manufacturing sector is a growing market globally in absolute terms and thus continues to offer opportunities. The worldwide gross VA increased from €5.9 trillion (2000) to €8.4 trillion (2012); in the EU, it increased from €1.5 trillion to €1.8 trillion.

The way forward

In view of these challenges and opportunities, the renaissance of EU industrial policy after the financial crisis is most welcome. This is also true for the new EU goals to increase the manufacturing share in total VA to 20 per cent by 2020. While this target appears highly ambitious, it rightly provides a clear direction and anchor for future EU industrial policy. To get there, the main aim is to increase industrial competitiveness in a broad and encompassing sense.

Key success factors for businesses and industrial competitiveness

Improving industrial competitiveness and growth across Europe is not going to be easy. It is mainly the task of businesses to achieve this aim. This necessitates not only increasing cost efficiency and staying ahead of competitors by innovating and upgrading, but also requires EU industry to better differentiate and adapt their product portfolios in accordance with changing demand patterns.

These objectives are demanding, therefore more enterprises in the EU should actively use the success factors offered by the above-mentioned economic megatrends: industry-service integration, internationalisation (exports, global sourcing and international production) and R&D activities. The strategies have been widely shown to be closely connected to business success and industrial competitiveness in this and many other studies.

For example, service integration helps to improve cost competitiveness, and internationalisation and R&D activities improve growth perspectives on the business, sectoral and economic level.

The paradigm for the EU: “Moving Forward Together in Europe”

To better exploit these success factors, EU businesses should increasingly follow the concept of “Moving Forward Together in Europe” – the paradigm for the EU pointed out in this study. It essentially requires better use of the potential of cooperation and integration in value chains across firms, sectors

and national borders. This increasing interconnectedness will be key for the revitalisation of EU industry. It will foster better utilisation of the above-mentioned success factors. Competitiveness of EU manufacturing can thus be reinforced from the very core.

The paradigm's main dimensions comprise:

- progressive cooperation between industry and services along the domestic and EU value chains and also in hybrid business models;
- strong intra-industrial linked networks, including energy- and material-intensive sectors, which are needed in the EU;
- increasing integration in international value chains via industrial hub sectors to target customers all over the world and to use the efficiency potential of labour sharing across borders; and
- more cooperation on R&D activities and innovation along the value chain and increasingly in a cross-border context, both within the EU and internationally.

The paradigm for the EU also extends to the cooperative potential of the internet to manage value chains (across firms, sectors and borders) with completely new digital production systems. As distance and borders matter much less in this new digital production world, all EU Member States can benefit. In fact, Europe has the opportunity to take a leading role in developing internet-based networking solutions for industrial production.

Beneficial effects of cooperation and value chain integration

This study provides ample empirical and qualitative evidence to prove the beneficial effects of more cooperation and value chain integration. For example:

- The integration of services in industrial processes and goods offers important potential to differentiate and upgrade manufacturing products. Therefore, hybrid business models (which combine goods and services) can be shown to be particularly successful.
- Integration in GVCs clearly strengthens productivity, competitiveness and export success at the country level. Despite an increasing share of foreign inputs in EU industrial exports, in absolute terms the manufacturing VA contained in these exports has greatly increased. Obviously, the exploitation of international value chains has enhanced industrial competitiveness and could thus considerably boost EU industrial exports.
- Cooperation in R&D and innovation has been widely shown to foster innovation in the economic literature. As a result, research-oriented cooperation improves business performance in terms of employment, turnover and return.

Potential for cooperation between smaller and larger players

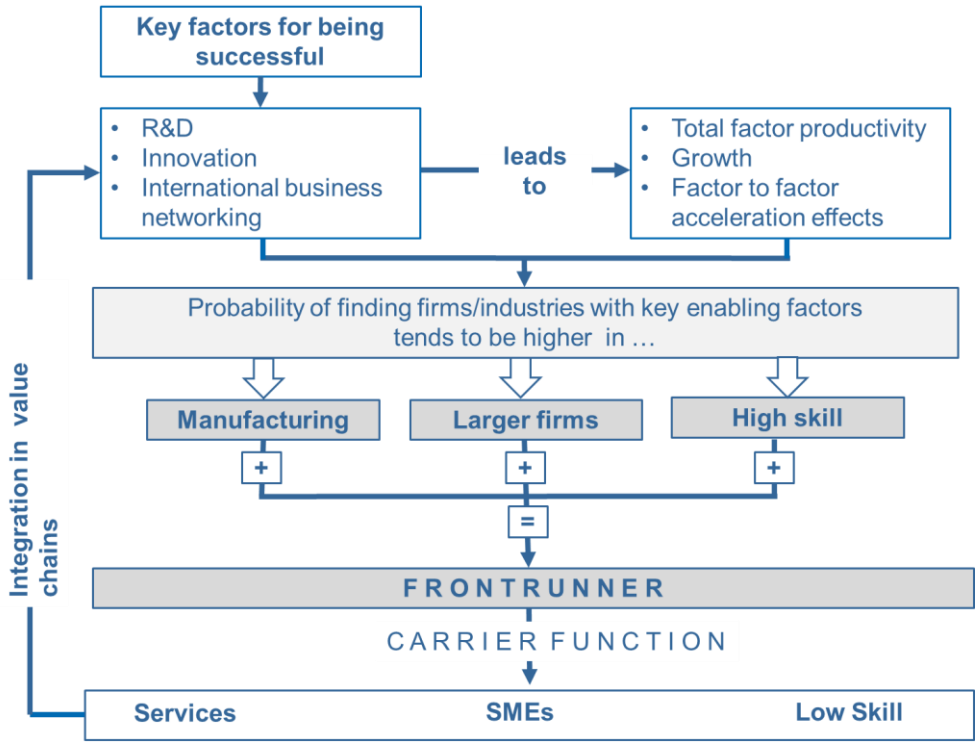
These opportunities for cooperation and integration are particularly relevant for small and medium-sized enterprises (SMEs) in Europe. Primarily due to a lack of scale effects, SMEs tend to lag behind larger firms, especially in exploiting the success factors of internationalisation and innovation. To

better use this potential, the existing sound symbiosis in the EU between smaller and larger firms should be further extended to benefit all participants.

In particular, large global frontrunners are prime examples of how companies can exploit the above-mentioned success factors. They are innovative, experienced in international markets and know the needs of global customers (cp. Figure 0-4) but they also rely on specialised input providers. Thus, frontrunners have an important carrier function because they offer platforms for other firms to integrate in international value chains. As a result, domestically oriented SMEs and service providers also have the chance to tailor their products to better suit world demand and benefit from global growth.

Industrial value chains increasingly cross internal EU borders, supporting linkages between smaller and larger EU countries. This growing cooperation and integration offers the opportunity to better connect industrial hub countries with other countries offering different specialisations, which will be to the benefit of all Member States. The EU market offers the ideal platform to integrate efficient industrial and service suppliers in one EU country with industrial frontrunners in other EU countries. In this respect, this study has demonstrated that a 10 per cent increase in total exports of goods from Germany, France or the UK already leads to a 9 to 11 per cent rise in exports of intermediate goods from EU partners to Germany, France or the UK.

Figure 0-4: Carrier function of frontrunners



Source: own illustration.

Moreover, SMEs can significantly enhance their innovation capacity by cooperating along the value chain or in networks with research institutions. Furthermore, SMEs would disproportionately benefit from larger innovation networks in the EU. In fact, this study demonstrates a large potential in this respect. By using patent statistics, it shows that innovation networks are much less developed than production networks in the EU. This is particularly true for larger EU countries, though is also evident for smaller ones.

However, this new world of ever closer integration across Europe needs active engagement. On the business side, there are important preconditions for companies to become part of cooperation networks or international value chains: to be efficient and reliable as well as to display a suitable specialisation and technological readiness.

The policy challenge: Enabling business to "Move Forward Together"

On the policy side, a new EU Industrial Compact can help to unlock the potential of industry and enable EU companies to "Move Forward Together in Europe". In this respect, enabling does not necessarily mean fostering single sectors and businesses; it is more important to provide a business- and innovation-friendly economic framework. Concerning the IW Competitiveness Index, the responsibility lies mainly in the realm of Member States to improve those policy areas identified as lagging behind.

Regarding the EU overall, much is achieved if policies on the EU (and Member State) level do not unnecessarily burden firms with regulatory costs and administrative problems. Particularly regarding the renewed industrial policy focus – despite intensive proclamations of EU institutions – there is still a significant lack of implementation. Industrial competitiveness and the need to sustain existing and thriving value chains are still too often compromised by EU policy initiatives.

This is particularly relevant regarding the energy and environmental field. Repeatedly, inconsistencies regarding EU competencies – comparing the energy/climate/environment fields with industrial policy – have contributed to an erosion of the international level playing field for many industrial businesses. Looking forward, the new EU Industrial Compact should better balance industrial competitiveness needs with other objectives of EU policymaking.

In addition, industrial policy has to heed the paradigm of cooperation and integration pointed out in this study. The economic framework provided by the EU (and Member States) should enable ever more companies to become sufficiently attractive to join forces with the frontrunners.