DE-INDUSTRIALIZATION IN EUROPE?

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Abstract

In this second edition of our RBI Quarterly series, we turn our attention to the topic of looming de-industrialization in Europe. We first show that although the share of manufacturing in total value added in Europe has declined from the level it was at in the mid-1990s, it remained roughly stable since 2010. However, the current energy crisis has raised fears of de-industrialization. On the following pages we assess the impact of the energy crisis on European industry: Which sectors are particularly affected? To what extent are Europe's industrial companies considering offshoring their manufacturing operations? These are the questions at the heart of our analysis. In this analysis, we reach three conclusions:

- Prosperity in Europe depends on a strong industrial sector. De-industrialization endangers prosperity
- A full-scale exodus of industry from Europe is not to be expected
- A smart EU industrial policy can help Europe safeguarding its position as an industrial location

De-industrialization in Europe: Not a new subject

De-industrialization is the talk of the town these days, but this discussion is nothing new. Jean Fourastié's three-sector hypothesis, developed in the 1950s, already described the decline of the industrial sector and the rise of the service sector as a natural evolution on the path to greater prosperity for all. In the 1970s, economists

wondered whether we might even be witnessing a transition to post-industrial societies. Margaret Thatcher and Ronald Reagan, too, assumed that the industrial production of goods in wealthy countries was on the way out. Everything in the wealthy industrialized nations that could not be outsourced to countries with lower labor costs would, they believed, be automated bit by bit until a post-industrial society slowly but surely emerged. So much for the theory. What does the empirical evidence say?

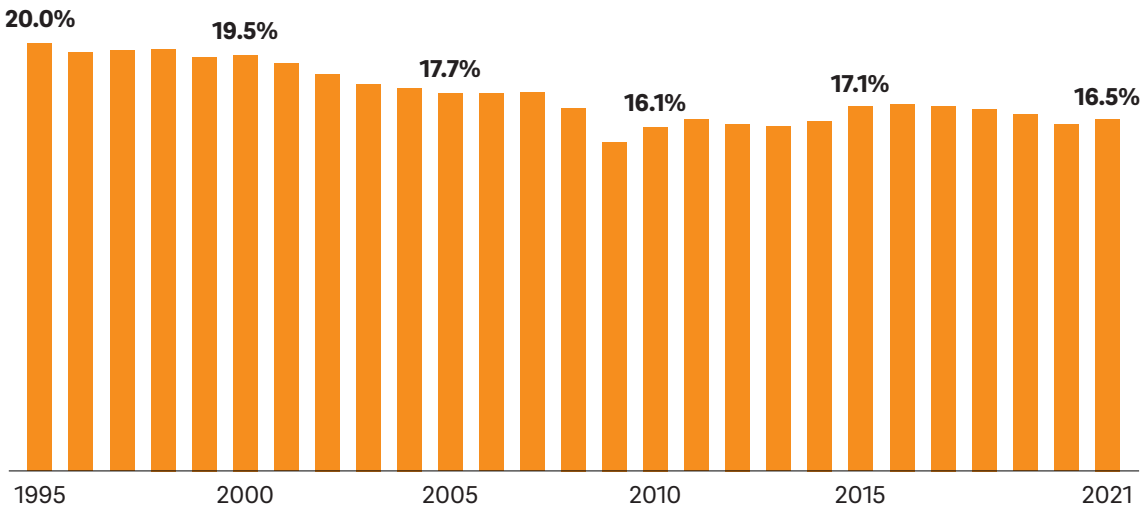
Steady decline of European industry

De-industrialization can be described as a process of economic and social transformation characterized by a decline in the importance of the industrial sectors, particularly manufacturing and heavy industry. The level of importance is regularly measured as the share in value added. Where the level of economic development is high, industrial production loses importance relative to services, which doesn't necessarily mean that the absolute GVA in manufacturing declines.

Indeed, many of today's leading economies have gone through such a process. The most prominent example may be the United States of America: In the 1970s, many US companies began closing their factories in the USA and relocating them to the newly industrialized, low-wage countries of South Korea, Hong Kong, Taiwan, and Singapore. Factories remaining in Detroit were automated and remnant parts of the workforce were replaced by robots.

Workers displaced by the foreign competition and robots were forced to seek employment in lower-paying service industries, while industrial production in the United States was eroded. Emblematic of this change is the city of Detroit, which once had a population of nearly two million but shrank to less than 700,000 with the decline of the American auto industry.

Figure 1: **Share of manufacturing GVA in the EU's total GVA**



Source Eurostat

Roland Berger

In Europe, too, a fall in industry's share in gross value added (GVA) can be observed since 1995: Overall, manufacturing's share of GVA in the European Union shrank from 20% in 1995 to 16.5% in 2021.

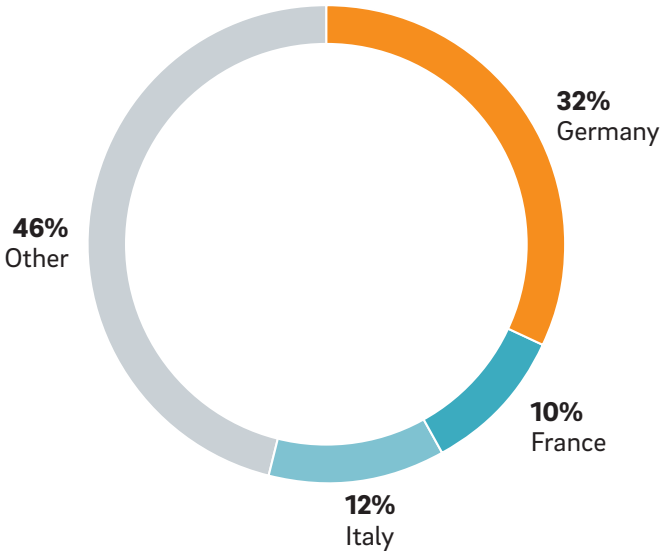
Nevertheless, even in light of these recent developments, it is not arguable to speak of a post-industrial society in the sense of a disappearance of industrial production across the board. Such a scenario would not be desirable either as it would represent an immense risk to prosperity in the developed economies. This is because an intact industrial core is essential to the lasting prosperity of an economy. The manufacturing sector creates a large amount of value added, acts as an important buyer of goods and services provided by other economic sectors, salaries are often higher than elsewhere, and the innovative power is strong, which in turn also benefits other sectors. The strong integration of the economic clusters in Europe moreover helps to strengthen the innovative power of the individual industrial sectors and leads to a more stable supply chain.

What is the current significance of industry for Europe as a business location?

What does this mean for the present and future of economic prosperity in Europe? Around one-sixth of the EU's gross value added was generated in the manufacturing sector in 2021. Some 31.5 million people (16%) work in manufacturing companies in the European Union.

It is worth noting that Europe's three major economies – Germany, France, and Italy – are responsible for more than half of the manufacturing GVA in the EU.

Figure 2: **Regional distribution of manufacturing GVA, 2021**



Source Eurostat

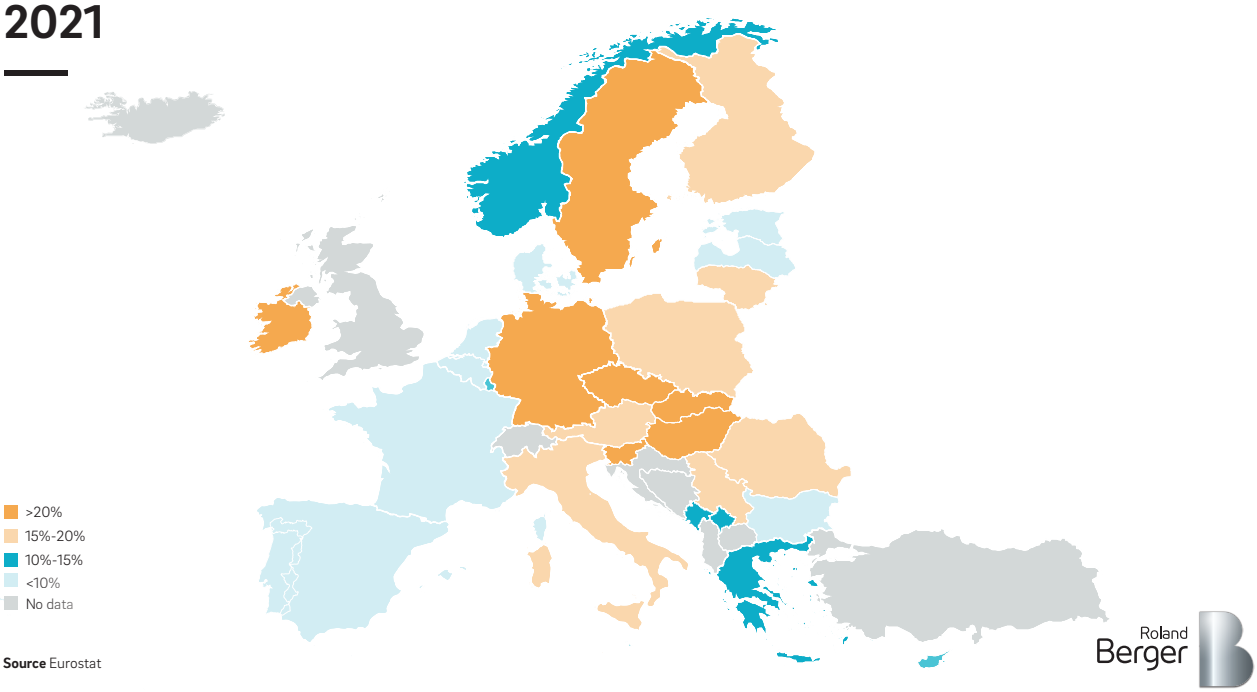
The manufacturing sector also plays an instrumental role in progress and innovation in Europe: At last count, just over 50% of all R&D spending by European companies came from the industrial sector.[1] The resulting innovations are what ensure that an economy can grow and thus prosper.

Significant variation within Europe in terms of industry's share in GVA

That said, there are striking differences across Europe in the level of industrialization in the various countries: While Germany still has a share of around 21% of gross value-added originating in industry and the Czech Republic has as much as 25%, the industrial GVA in France is significantly lower, at around 11%.

The share of industrial GVA in Europe's largest industrialized nations has shrunk in recent years, significantly in some cases. In France, the share of industrial GVA was around 16 percent in 2000, whereas by 2021 it was some 6 percentage points lower. In Italy, too, industry's share in gross value added fell by about 3.5 percentage points over the same period. While Germany's industrial GVA remained stable at around 22 percent of the total for a long time, the figure has been falling slowly but steadily since 2016, although even now it still stands at around 20.8 percent.

Figure 3: **Share of manufacturing GVA in European countries, 2021**



The current energy crisis: Which sectors are particularly hard hit?

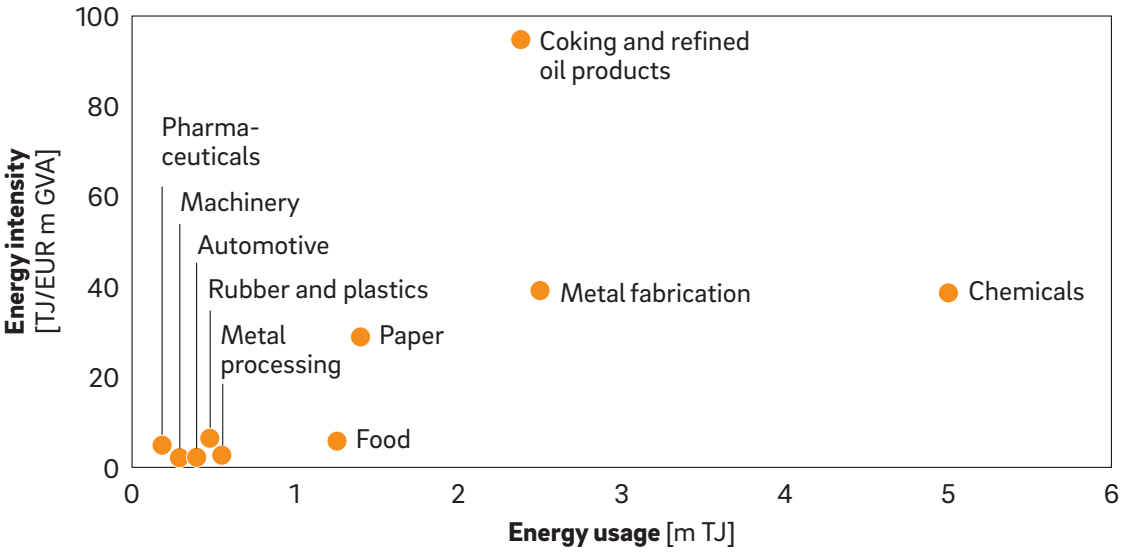
Against this backdrop of a decline in the importance of the industrial sector to varying degrees across Europe, the energy crisis triggered by the war in Ukraine and the associated cutting of the gas supply must now be examined. How is it affecting the

[1] Data refer to 2019, as data were not available for all EU countries for later dates.

different sectors? One thing is clear: The current gas and energy crisis is hitting industry particularly hard, given that this sector of the economy, alongside transportation, is among the biggest consumers of energy.

The sectors of basic industry are particularly badly affected. By far the most energy is consumed in Europe in the chemical sector (about 5 million TJ), followed by the metal industry (about 2.5 million TJ) and in coking (about 2.4 million TJ). If we put this intensive energy usage in relation to the amount of GVA generated, these three industries also emerge as the ones most heavily affected by the current gas and energy crisis (see Figure 4). By contrast, industries from downstream sectors, such as automotive and machinery, consume significantly less energy (both in absolute terms and relative to their gross value added).

Figure 4: **Energy consumption and energy intensity in EU's manufacturing industries, 2021**



Source Eurostat

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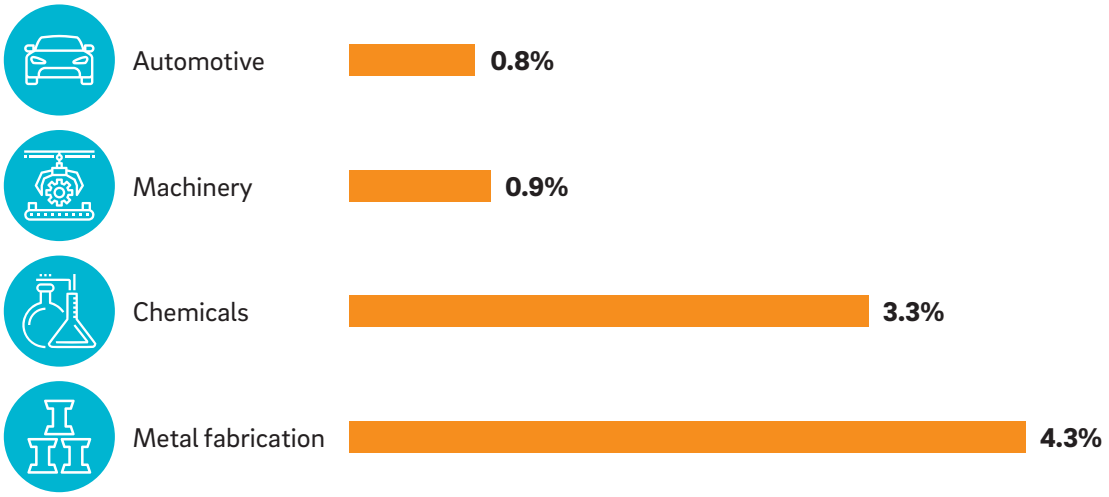
A look at the respective balance sheets of companies in these industries confirms this analysis.[2] The average share in revenues accounted for by energy is around 3.3% in Germany's chemical industry and around 4.3% in metal fabrication. In downstream sectors such as the machinery industry, on the other hand, energy costs make up less than 1% of revenues.

Assuming a fairly conservative estimate of a four-fold increase in the cost of energy for Germany, this would mean that companies in chemical or metal production would have to spend almost three quarters of their revenue on power – in the automotive sector or mechanical engineering, by contrast, the share would still be less than 5%.

[2] The figures were calculated by multiplying the average energy consumption of companies in respective sectors by the average electricity prices of industrial customers in Germany and then relating these energy costs to the average revenue of the companies. Self-generated electricity was not taken into account.

Figure 5: **Share of energy costs in German companies' revenues, 2020**



Source Eurostat

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Nevertheless, the rise in energy costs is not without consequences for companies in the downstream sectors. These companies rely on the products of materials industry. When the cost of intermediate goods rises, downstream industry is affected by that in a second round of effects beyond the direct impact of the higher energy costs.

High prices and uncertainty around energy supplies weigh on industry

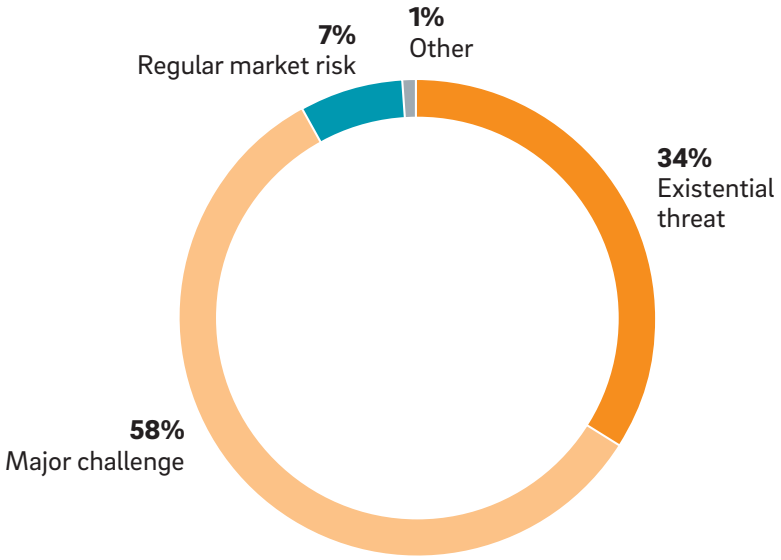
If the companies in an industrial sector find it difficult or impossible to pass through the rising costs to their customers, profit margins will inevitably decrease. Whether and to what extent companies can pass through rising costs depends, on the one hand, on the competition in their respective market and, on the other hand, on what the price level currently is. In sectors such as the automotive industry, where competition, especially among suppliers, is high, or the metal industry, where there is little scope for price changes due to the homogeneous product structure in global markets, it is companies' margins that will increasingly have to cover the price rises.

But prices are not the only cause for concern in industry. Many companies are also worried about the security of their energy supplies, having seen a once-important pillar of German energy policy crumble with the loss of natural gas from Russia, and observing that the expansion of renewable energies is still not progressing fast enough.

As a result of this, companies in many sectors are already talking about pulling the ripcord. Business and industry associations are at pains to point out that their member companies may be forced to take drastic measures to prevent potential damage from the rise in gas and energy prices we are currently seeing. Measures they are considering taking include cutting production or even offshoring it to other countries.

A survey by the Federation of German Industries (BDI) in September 2022 reveals that the situation is threatening the future of many companies in the industrial sector. Around one in three of the businesses polled see increased energy and raw material costs as an existential threat. Overall, 92% of the companies in the poll stated that the challenges they are currently facing are at least severe.[3]

Figure 6: **Share of companies that consider the higher energy and raw material cost to be a/an ..., 2022**



Source BDI

Around 9% of the companies that took part in the survey also stated that they had cut back or completely reduced their manufacturing in Germany. Some 17% of the businesses surveyed are specifically considering offshoring production. The percentage is even higher in the automotive industry, where according to the German Association of the Automotive Industry (VDA) around 22% of companies are thinking about relocating investments abroad.[4]

These data and survey results demonstrate that the current energy crisis threatens Germany's position as a location for industry, and indeed Europe's. So, does the energy crisis bring the risk of a widespread relocation of German or European industry to countries outside of Europe?

Is there a risk of manufacturing being offshored?

One thing is for sure: German manufacturing, which accounts for around one-third of all the value added by manufacturing in Europe (see Figure 2), has been hit extremely hard by the current energy crisis, since natural gas, especially from Russia, was particularly important in Germany's energy mix as a bridging technology for the transition to a climate-neutral economy.

[3] 593 companies from all industrial sub-sectors participated in the survey
[4] These are companies in manufacturer groups two (manufacturers of trailers, bodies and buses) and three (automotive suppliers).

Since the end of August, no more gas has been flowing to Germany through the Nord Stream 1 pipeline. Overall, gas deliveries from Russia to the EU in 2022 were down over 50% year on year by the second week of November; and by the end of November, this figure was even as high as 78%. European industry is gradually adjusting to imports of costlier liquefied natural gas with the help of LNG terminals, some of which are still to be built, pushing the already high cost of energy in Europe even higher and making Europe a less attractive location for industrial production.

The current rise in gas and energy prices could therefore turn out to be a strategic gamechanger as companies are now considering other locations for their manufacturing operations. Many businesses, especially those in the energy-intensive sectors, have already exhausted all their short-term options to cut gas usage apart from curbing production. Any further measures, such as switching to other energy sources, would require enormous investments. According to further studies, some companies do indeed want to counter the current energy crisis by investing in energy efficiency. However, it is particularly difficult for energy-intensive industries to finance these investments at all nowadays, as ESG regulations make it difficult for them to obtain financing. However, other companies indicated that they instead plan to relocate production, which is likely to be a major challenge, especially in sectors with complex production facilities such as the materials industry.

CEOs might now ask themselves: why not seize the opportunity and make the investments in places where energy is already much cheaper? Or go where renewable energies will soon be available in large quantities?

The answers to these questions will probably depend crucially on how long the instability on the European gas and electricity markets continues, or when and indeed whether prices return to pre-crisis levels, and ultimately on the availability of energy in general.

Where might the most affected sectors move to?

When it comes to alternatives to Europe as a manufacturing location, the United States and China are most often mentioned as potential locations for European industry should it turn its back on its home continent.

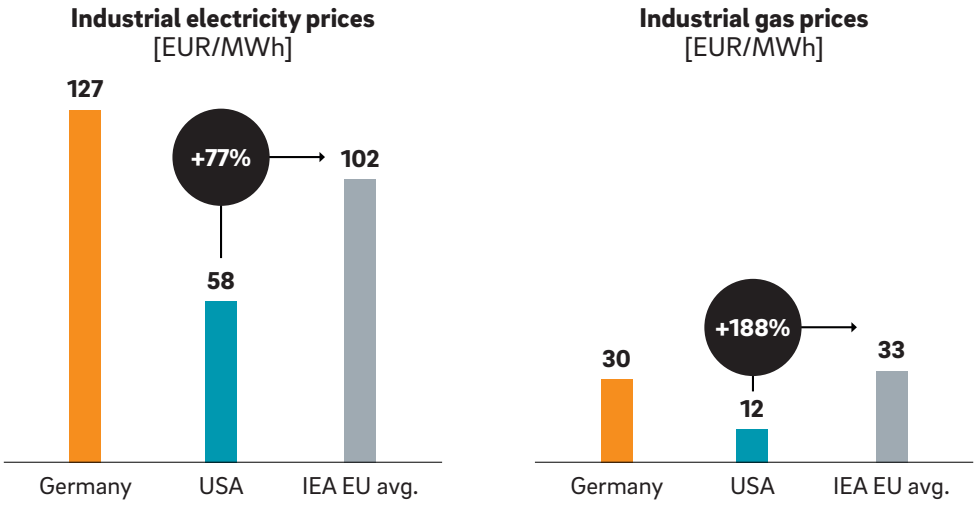
Many companies view China as an attractive location, with the country set to become the world's most significant economy in the foreseeable future, offering great opportunities across many sectors. However, China's industrial policy means that these opportunities can – in the main – only be developed if the company concerned has a local presence.

The United States, for its part, is luring foreign companies by promising cheaper energy and lower taxes. In addition, the USA and the EU are currently outdoing each other with subsidy programs aimed at attracting or retaining companies. At present, it appears that the US maintains the upper hand with its recent inflation reduction act, the infrastructure bill, and the CHIPS act.

Decisions on where to locate a business are built on a mix of location factors
Decisions on relocating manufacturing locations are made with a mid- to long-term view and based on a wide range of factors. Aside from the cost of energy and its availability, the key location factors include the cost and availability of qualified labor, the tax burden, the rule of law, the quality of infrastructure and geopolitical risks.

European gas and electricity costs by comparison with the USA and Asia
In terms of energy costs, Europe has long been a significantly more expensive location for industrial production than for instance the United States, as illustrated in Figure 7.

Figure 7: **Comparison of energy costs in Germany, the EU and the USA**



Note: Prices shown are the average prices from 2012-2019 including taxes for industrial customers

Source IEA

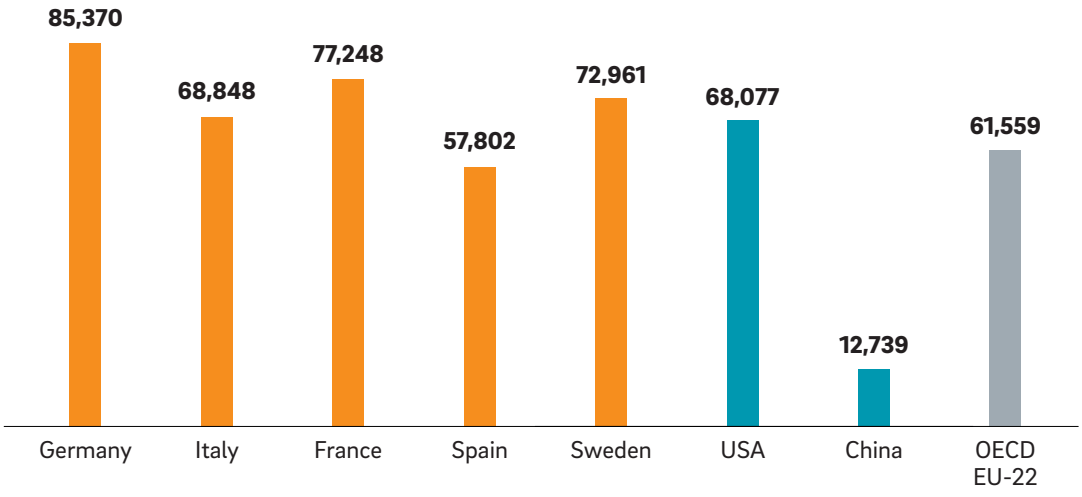
Between 2012 and 2019, natural gas prices in the EU on average were around 188% higher than in the US.

In the future, Europe will likely continue to lose out to the United States in terms of the cost of gas. Forecasts predict that the gas price in Europe will remain significantly higher than in the USA in the coming year. Current futures prices for natural gas in Europe suggest that the price on the gas exchange will settle somewhere around the EUR 30/MWh mark in the medium term, almost twice as high as in the period 2015-2019 – in other words, prior to the outbreak of the Covid-19 pandemic and the war in Ukraine.

Europe also has historically higher electricity prices as compared to the US. According to the IEA, industrial electricity cost around 77% more on average in Europe than in the US. European electricity prices are also expensive compared to China. The average industrial electricity prices in China in 2018, for example, across all company sizes and all provinces were around EUR 95.04/MWh. This is still around 7% less than the EU's average price of EUR 101.95/MWh.

The labor market situation: Comparing Germany against China and the USA
The EU tends to be in the upper-mid range of the major economic blocs in terms of labor costs, too. Particularly in China, despite a steady rise in the education level in recent years, the average cost of labor is significantly lower than in the Western world.

Figure 8: **Average annual wage costs for a single worker, with no children earning 100% of the national average wage** [USD, ppp.]



Source OECD

In the United States, by contrast, labor costs are around 11% higher than the EU average – but are still far lower than in Germany or France and roughly the same as in Italy. The gap in employment costs between European countries and the US has hardly changed over the past 20 years or, in the case of Germany, has even increased.

Nevertheless, the average cost of employment in the EU is somewhat lower than in the US. This is mainly since, in addition to the high-wage countries Germany and France, there are also countries with lower employment costs, such as Spain or Eastern Europe.

Unlike Europe's job markets, however, the US labor market is currently extremely tight. In September of this year, there were around 1.88 job vacancies for every unemployed person. Although there are certainly local variations in these statistics, the lack of available labor will probably make it more difficult for European corporates to expand to any significant degree in the United States – not least because of the considerably more favorable labor market conditions in various other countries of Europe.

Tax burden very unevenly distributed among companies in Europe
When it comes to the tax burden on companies, the European Union on average compares favorably with other countries. The average EU-wide tax burden in 2021 was around 21.3% of corporate profits. By comparison, companies in the United States had to hand over 25.8% of their profits to the tax authorities in 2021.

The corporate income tax rate in China is 25% for China-based companies. However, there are many exceptions and incentives there, with the result that some sectors pay just 15% tax.

However, the tax burden as a location factor also varies considerably within Europe. In France, the tax rate on profits is 28.4% and in Germany it is 29.9%. At just under 27.8%, Italy, too, has higher tax rates than the USA.

Europe's advantages as an industrial location

After having analyzed the "hard" location factors of energy costs, labor costs and tax burden, the current European industrial powerhouses do not appear to come off as the single-best option as a production location. One might now ask why industrial companies have not already re-located, but still produce in Europe?

The answer is that although countries like Germany or France are not clear winners when it comes to hard location factors, they have strong advantages in other, more "soft" location factors, which significantly improve the overall picture. In the following, we elaborate on some of these advantages.

These soft location factors include the high density of companies, the strength of the sales market and the high quality of the workforce, to name just a few. One of Europe's key advantages is the high density of companies and the resulting short distances between businesses and their suppliers and competitors – and also their customers. That holds many advantages for industrial companies, including lower logistics costs, higher spillover effects and better identification of customer needs. A special feature of these economic clusters in Europe is the close connection between universities and companies. When business and science work together successfully, students can benefit from practical knowledge and scientific findings can be directly applied in business - a win-win situation for both sides.

Moreover, the prevailing prosperity in Europe means that the continent will likely remain an important sales market for companies. Combined with the customer proximity already mentioned, this ensures that companies have strong sales potential on the one hand and are also able to realize this potential through the information advantage resulting from being close to their customers.

Another advantage that Europe has in international comparison is the high-quality level of its workforce. Especially in the field of engineering, which is so relevant for industrial sectors, the proportion of tertiary graduates is significantly higher in European countries than in the USA: While around 7% of students in the US graduated as engineers in 2020, the figure in Italy and France was at 14% and in Germany even at 23%. Highly trained, skilled workers who can handle the latest technology are extremely important for industry. Particularly given the backdrop of increasing automation and the transformation of production processes towards green technologies, this requires high adaptability and permanent upskilling of the workforce in the manufacturing sector.

Conclusions

1 Prosperity in Europe depends in part on a strong industrial sector

While manufacturing was considered an outdated sector with no role to play in the knowledge and service society, the facts tell a different story: De-industrialization endangers prosperity.

European industry today employs a total of some 32 million people. It is responsible for almost three-fifths of all exports from the EU and for more than half of all research and development spending. Further, industry is strongly interconnected with other sectors through its value creation networks. Thus, European industrial companies are also one of the most important demand-side consumers for other industrial goods and also for services from the tertiary sector in Europe.

Alongside the other sectors of the economy, it is the people of Europe who particularly benefit from a strong industrial sector. People who are directly employed in industry benefit through their jobs from the above-average wages paid by industry compared with other sectors. Moreover, as mentioned, the demand from industry for the goods and services of other sectors also means that the industrial sector indirectly creates jobs in other sectors of the economy.

And finally, manufacturing industries generate high profits, and the taxes they pay on these profits contribute to the countries' ability to afford a strong welfare state.

De-industrialization puts all of that at risk. If Europe loses its industry, thousands of jobs will be lost, and with them will go prosperity in Europe. Europe's prosperity can only be secured by the three essentials of innovation, competitiveness, and strong exports.

2 A full-scale exodus of industry from Europe is not to be expected

The mix of location factors outlined above, which also highlights some disadvantages of manufacturing in the USA and China, makes a full-scale exodus of European industry from Europe not very likely. Instead, there will probably be a shift in where value is created within the EU. Various countries, including Spain and Sweden, are significantly less affected by the current energy crisis than places like Germany due to their energy mix and lower dependence on Russian gas.

It makes sense for European industrial companies to establish manufacturing in these countries, as they offer the best conditions for climate-neutral electricity generation, for instance through hydropower in Sweden or solar power in Spain. Both countries also offer significant advantages over the German labor market in terms of labor costs, which have become an even larger part in manufacturing companies' costs in recent years. Whereas wage costs for German employers mean that an average salary adds up to about USD 85,000, the annual wage costs for Spanish employers amounts to only around USD 57,000, while in Sweden the figure is USD 73,000.

Finally, both locations are also attractive in terms of taxation: The average tax burden on corporate profits is significantly lower in Spain (25%) and Sweden (21.4%) than it is in Germany, France, or Italy.

Relocating industrial operations to these countries instead of to places outside Europe is therefore attractive from both the "hard" economic and the "soft" environmental perspective. Moving manufacturing there could also help further reduce carbon emissions from industrial production in Europe.

Finally, the fact that companies will still remember the recent supply chain disruptions during the Covid-19 pandemic speaks against the full-scale de-industrialization of Europe. Companies that had outsourced some of their manufacturing to Asia were unable to maintain production back at home because these goods were not able to be delivered or ports were closed.

Many European companies thus indicated in surveys last year that they would do more of their manufacturing locally again in the future. This implies that companies are bringing important manufacturing stages back closer to the final production location to realize shorter transportation routes. First companies are also requiring their Chinese suppliers to set up manufacturing locations in Europe. Renewed supply chain disruptions due to the sanctions against Russia, a significant supplier of all sorts of raw materials, are likely to accelerate this trend rather than slow it down.

3 A smart EU industrial policy must be supportive of European industry

European industrial policy is currently already aiming to support the nearshoring trend. There are various programs to bring future key industries to Europe, e.g. chip or battery manufacturing. While the EU's subsidy programs do put it into competition with other states offering similarly generous subsidies, several big-name companies such as Intel have recently been convinced to relocate their manufacturing to Europe. Yet current efforts are far from sufficient - the US, by comparison, has proclaimed some 1.3 trillion USD via various programs to lure manufacturing companies to the US in an effort to boost re-industrialization.

When it comes to achieving climate targets, it is also in the European Union's interests to encourage industry to remain on the continent through favorable industrial policy. The development of climate technologies is considered one of the most important areas of technology for the future. To remain a leader in this field, the EU needs the expertise of engineers working in European companies. That will enable the EU to use the existing technology base to find new ways to cut carbon emissions with innovative ideas while at the same time enabling growth. Experience shows that it is possible to decouple emissions levels from economic growth. What does not help is the relocation of production companies to countries with less stringent environmental regulations.

In summary, Europe is likely to remain a strong industrial hub despite all the crises it faces. Many industrial companies will not simply turn their backs on the continent, meaning that industrial production will very likely continue to take place in Europe into the future – even if the relocation of some companies can of course not be ruled out. The key question will be how well the current energy crisis is handled: By policies to reduce energy costs in the short-term and by a convincing strategy to ensure a stable and cost-efficient energy supply in the future.

Further reading

- EUROPE'S STEEL INDUSTRY AT A CROSSROADS
- NEXT GENERATION MANUFACTURING
- RISING ENERGY AND CO2 PRICES – AN OPPORTUNITY TO ACT?

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