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Institute for Economic Research and Policy Consulting

Policy Paper Series [PP/03/2015]

The industrial sector of Ukraine: Trends, challenges and policy options

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Berlin/Kyiv, June 2015

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The industrial sector of Ukraine: Trends, challenges and policy options

Executive Summary

Ukraine's industry is subject to a short-term fall in output and a long-run process of relative decline due to incomplete structural change. The long run incorporates a gradual structural change from an emphasis on heavy to light industry and a trend towards a more even distribution of industry across the country.

The heavy industry remains very important for Ukraine. Metals, mining and machine accounted for almost 50% of industrial sales in 2013. However, lighter industry subsectors such as food processing, furniture and chemicals/pharma outperformed the heavy industry in the growth of sales in 2010-2013, before the present crisis. At 26% of industrial sales, food processing also was the single largest subsector in 2013.

In 2010-2013, industrial sales in the West and Centre of Ukraine grew considerably faster than in the South and East. The growth differential was partly caused by the difference in subsector structure in the regions, with the industry in West and Centre concentrated on the faster-growing food processing subsector and the industry in South and East dominated by the mining/metals complex that did not grow as quickly. Yet, even the heavy subsectors grew more strongly in the West and Centre of Ukraine than in the South and East. This is due to different structure at a deeper level, including newer, smaller companies and more focus on growing markets.

The long run trend will be reinforced by current developments: The depreciation of the Hryvnia improved the wage competitiveness and thus further favours the labour-intensive light industry. The decline of exports to Russia is strongest in the heavy part of machine building, which will have to reorientate its exports. Also, the conflict in the East of Ukraine mainly affects the heavy metal industry, as a significant share of the Ukrainian production of metals stems from the Donbas.

To strengthen Ukraine's industry in these difficult times, government should prioritise supporting the existing growth in light industry through low-cost, high-visibility measures such as the establishment of cluster-councils. In the medium term, a modernization and restructuring of the heavy industry should also be facilitated.

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Acknowledgements

The authors would like to express their gratitude to Alexander Markus and Robert Kirchner for very helpful comments and suggestions and Woldemar Walter and Sergiy Golovin for excellent research assistance

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1. Introduction

Ukraine's industry is undergoing a strenuous phase. Industrial production has drastically shrunk in the first half of 2015. Although this drastic reduction of production is largely due to the present conflict in Eastern Ukraine, severe permanent challenges exist. The loss of access to the Russian export market, which accounted for around 25% of exports in the past decade, and the loss of territory in highly industrialised Eastern Ukraine have to be considered as threats for the future. Moreover, these short-run developments must be seen in the context of a long-run process of structural change in industry. The relative importance of the industrial sector has continuously declined since the end of the Soviet Union. The share of industry in Ukraine's economy has significantly declined since the end of the Soviet Union, from around 50% of Gross Value Added (GVA) in 1991 to now 27% including energy and water supply. New sources of growth have not yet been able to compensate for stagnant or diminishing performance of old industrial substance. Identifying and strengthening these new sources of growth will be the key to securing Ukraine's status as an industry-based economy.

In this paper, we first analyse the short- and long term trends faced by Ukrainian industry, both at aggregate, subsector and regional level. We then point out three challenges – structural change from capital to labour intensity, change of export market focus and the possible lasting effects of the present conflict – faced by the industrial sector before we proceed to outline policy options to exploit new potential for industrial growth and stabilise the existing industrial sector.

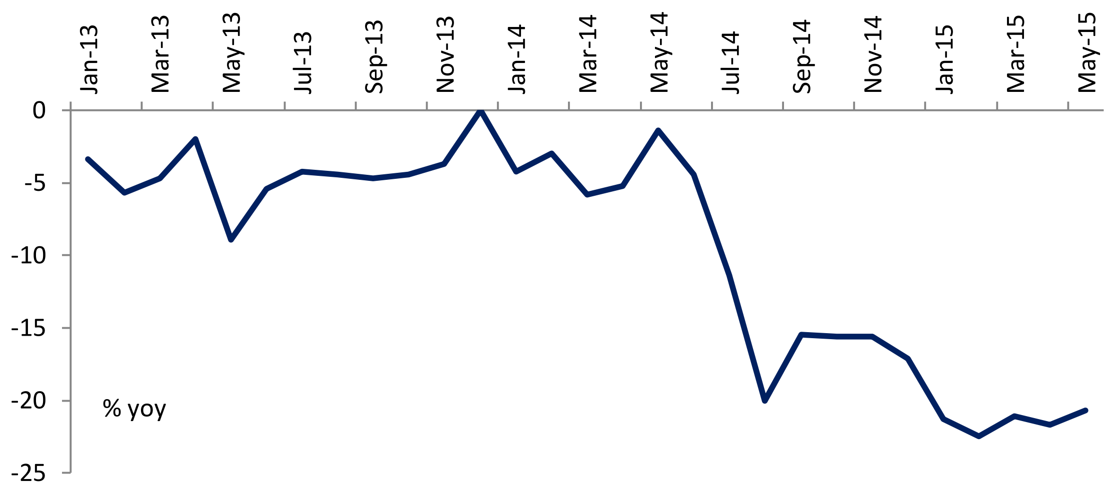
2. Trends

2.1 Aggregate view

Since shortly after the beginning of the conflict in Eastern Ukraine, industrial production in Ukraine has sharply declined. Production began to sharply decline in June 2015 and has not recovered since.

Figure 1

Dynamics of Ukrainian industry, % change over same month, previous year



Source: NBU, Ukrstat

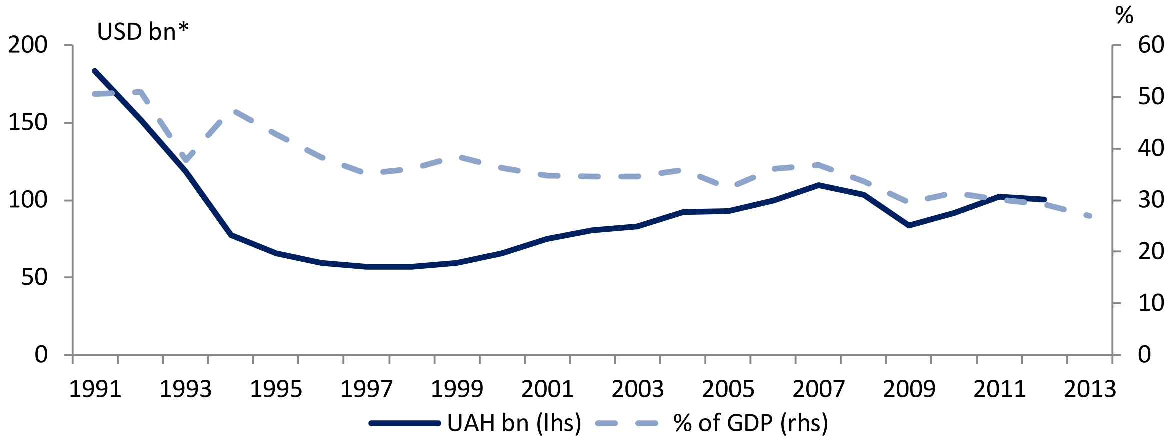
In April 2015, the volume of industrial production in Ukraine was at only 78.3% of the level of April 2014. The magnitude of this reduction is probably not exclusively due to the immediate effects of armed conflict. In addition to the destruction of facilities, the disruption of work processes and supply chains, foreign investors have postponed or abandoned projects and the political side of the conflict with Russia has disrupted trade ties.

However, it is not only the short run that poses a challenging situation for Ukraine's industry. The past years and decades have seen a protracted decline of the relative importance of industry in the economy, from a GDP share of over 50% in the early 1990s down to 27% in 2013. Clearly, the very high share in the 1990s was partly due to Soviet forms of organisation of production. Industrial conglomerates themselves provided many services that are now the domain of dedicated services companies and are hence counted under the services sector. This part of the reduction of the industry share was an outcome of the adaptation of market-orientated forms of organisation that only affected accounting, without real effect on the importance of industrial production.

The real reductions were severe as well, though, as significant parts of the industrial structure inherited from the Soviet Union could not survive under market conditions. Particularly until 1997, there was a strong and real reduction of industrial output. Since then, industry has again grown in absolute, real terms, but the decline of the industry share of GDP has continued from 33% in 2008 to 27% in 2013.

Figure 2

Value added in industry



*Source: World Bank, *values in constant 2005 prices*

This is still a relatively high share, above for example the EU average of 24%. Yet, the continuing trend indicates that structural change is ongoing and the decline may continue. Other transition economies such as Poland, Hungary and the Slovak Republic have been able to successfully transform their industries, stabilising the industry share at around 30% of GDP. Less competitive companies or subsectors decayed, but new firms in new areas produced stable growth and incomes. This turnaround point of deindustrialisation and of successful structural change has not yet been reached in Ukraine.

Conclusion 1: Ukraine's industry is subject to severe short-run shocks, but also to a long-run process of decline. The industrial share of GDP has continuously declined from around 50% in the '90s to 27% in 2013.

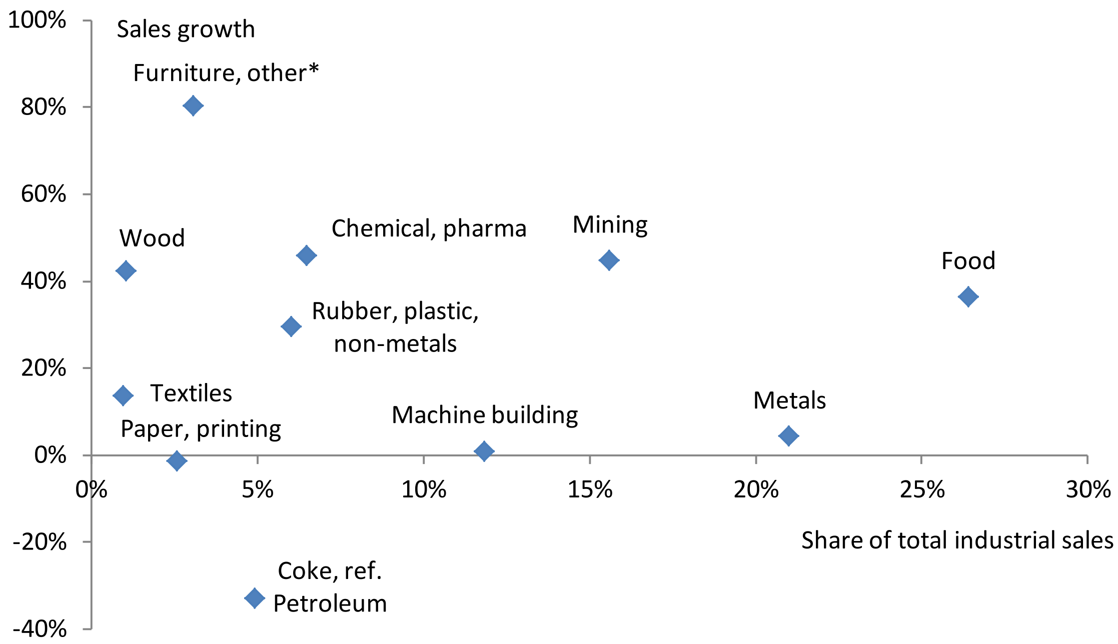
2.2 Industry subsector performance

Ukraine's industry[1] is comprised "light", labour intensive subsectors such as textile manufacturing and "heavy", capital and technology-intensive subsectors such as metal processing or aircraft manufacturing. Ukraine has a long and strong tradition in the heavy industry, which had been an important part of the industrial complex of the Soviet Union. The heavy subsectors of metals, mining and machine building remain a very strong component of Ukraine's industry and accounted for almost 50% of industrial sales in 2013, before the current conflict had an impact on the data.

However, there is more to Ukraine's industry than the heavy subsectors. Food processing, a relatively labour-intensive light subsector accounting for 26% of industrial sales in 2013 is the largest single subsector of industry[2]. Other "light" industry sectors such as textiles, wood processing, rubber and plastic are much smaller in proportion at present, but on average, the light subsectors were growing faster than the heavy ones already before 2013.

Figure 3

Industry subsectors: Sales growth 2010-2013 and share of total industrial sales, 2013



Source: Ukrstat, own calculations
**Incl. repairs and other manufacturing*

Whereas most large, heavy subsectors – metals, machine building and coke/refined petroleum, but mining exhibited very little or no sales growth during 2010-2013, many light subsectors grew at higher rates. This does not only include the large food processing industry, but also wood-

[1] In our analysis of industry, we here exclude the (largely publicly run and thus less interesting for the purposes of this paper) energy and water sectors and thus focus on the subsectors in mining and manufacturing exclusively.
[2] In a breakdown by gross value added, however, mining (which of course uses fewer inputs than processing sectors) is the single largest subsector of industry.

processing, furniture (and other manufacturing). The chemical/pharma and rubber, plastic and non-metallic minerals sector are somewhat intermediate cases between heavy and light industry, but also grew more strongly than the traditional heavy-industry complex of Ukraine.

Part of the pattern in the data may be due to the decline of the world market prices for metals from 2011 onwards[3]. However, this decline is widely expected not to reverse in the near future[4], as a supply-side reaction has compensated the increased demand by China and the BRICs countries during the 2000s. The data thus indicates that structural change from heavy to light industry was underway in Ukraine's industry already before the conflict in Eastern Ukraine erupted in 2014. The higher growth rates of the light subsectors have not been able to compensate for the stagnation or decline in most heavy subsectors to stabilise the GDP share of industry, but the subsector composition of Ukraine's industry has started moving away from the traditional emphasis on heavy, capital intensive metal manufacturing, processing and machine building.

Short-run developments - essentially the economic effects of the conflict in the East of Ukraine – are in line with this long-run trend. Particularly the output of the heavy sectors has sharply dropped in the first months of 2015 compared to the same period of 2015 (see Annex 1). This is essentially a pure coincidence that is caused by the concentration of the heavy industries in the East of Ukraine. However, it means that, the policy responses to the crisis can be consistent with the structural change affecting Ukraine in the long run.

Conclusion 2: A process of structural change is underway in which mostly lighter industry subsectors are growing more strongly than the large established heavy industry subsectors.

2.3 Regional dynamics

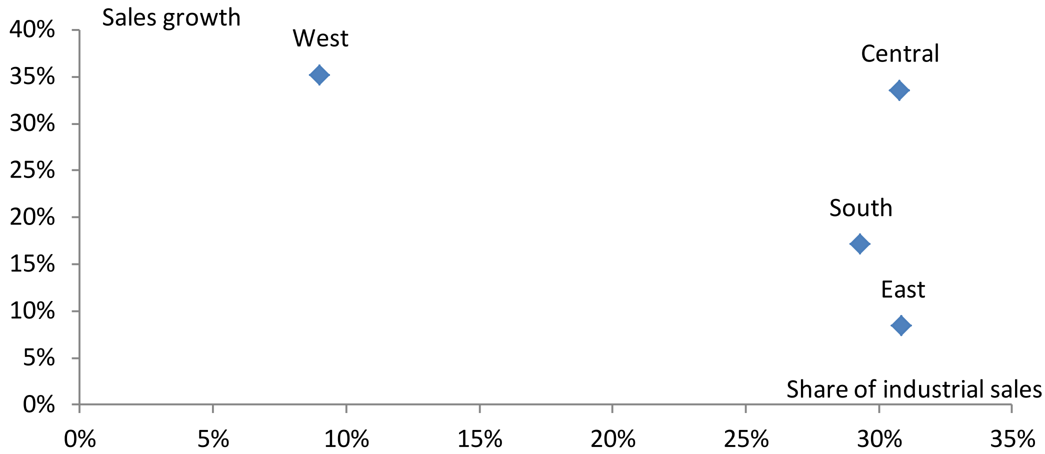
Structural change in Ukraine's industry also affects the regional distribution of industry. Traditionally, the South and East, where the heavy industry is concentrated, are thought of as the principal industrial regions of the country whereas the West is more associated with agriculture and trade activities and the importance of the Centre of Ukraine for industry is often almost overlooked. However, in the past years, the traditional industrial regions in the East and South of Ukraine have grown considerably weaker than the West and Centre of the country.

[3] Cf IMF Commodity Price Index

[4] See e.g. OECD, 2013, Overcapacities in the Steel industry, http://www.oecd.org/sti/ind/Item%208.%20%20KcKinsey%20-%20Overcapacities%20in%20the%20steel%20industry%20%28OECD%29_final.pdf

Figure 4

Regions[5]: Industrial sales growth, 2010-2013 and share of industrial sales

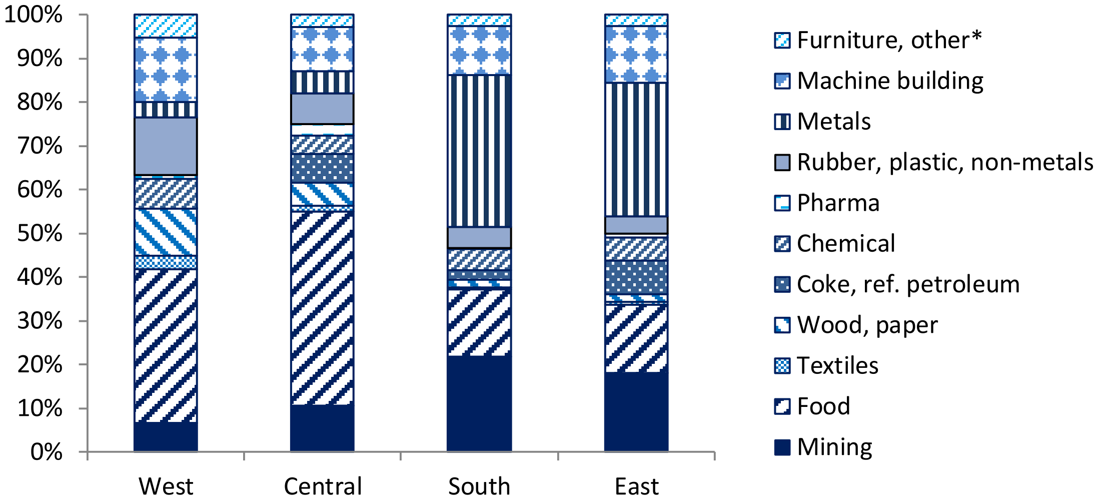


Source: Ukrstat, own calculations

Different industrial structures may partly explain this growth differential between regions. The industry in the West and Centre of Ukraine is dominated by food processing and other, smaller light industries, whereas in the east and south the metal industry (and mining) are the dominant subsectors.

Figure 5

Composition of industrial sales by region, 2013



Source: Ukrstat, own calculations
** Incl. repairs and other manufacturing*

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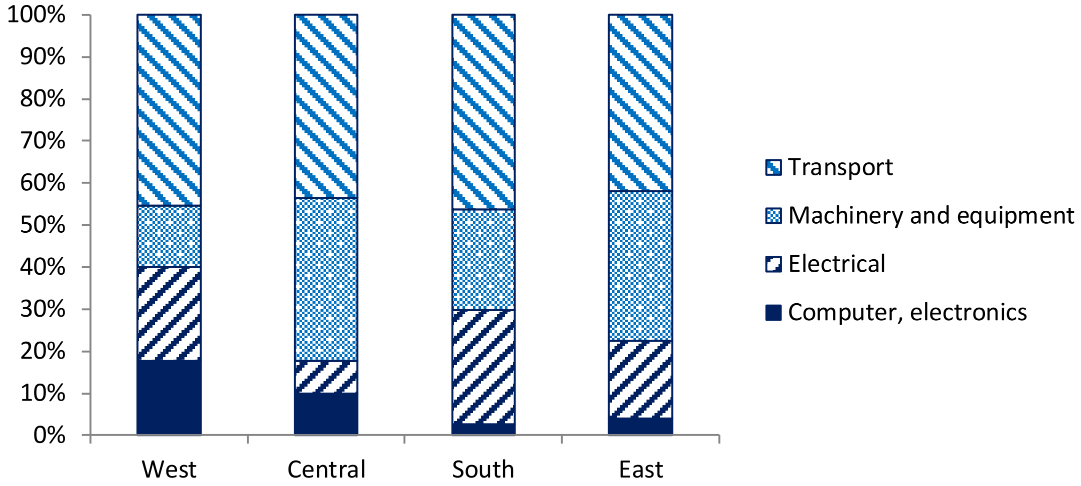
[5] See the Annex for our classification of oblasts into four region

Whereas the food industry accounted for 45% and 35% of sales in the Centre and West of Ukraine in 2013, it made up only around 15% of sales in the South and East. Conversely, the mining and metal industries together accounted for 56% of sales in the South, 49% in the East, but only 10% and 16% in the West and Centre of Ukraine. The different general growth dynamics of these major subsectors – fast growth of food processing, slow growth of the metal industry – may thus explain a large share of the regional growth differential.

It is remarkable in Figure 5 that machine-building, the third largest subsector of industry, has a relatively similar share between 10-15% of sales in all regions of Ukraine. This subsector is usually regarded as a heavy industry and associated with the "traditional" industrial regions in the East and South of Ukraine. However, considering the structure of subsectors *within* machine building, differences of the structure particularly in the West of Ukraine can be observed.

Figure 6

Composition of machine building sales, 2013



Source: Ukrstat, own calculations

As the industry in the West of Ukraine is relatively small and accounted for only 9% of industrial sales in 2013, the overall importance of machine building in the West is still a relatively small and most of the subsector is still located in the other regions of Ukraine. Nevertheless, it is striking that the "smart" subsectors (electrical and particularly computer/electronics) account for a considerably larger share of sales in the West than in the other regions of Ukraine and the relative importance of the general "machinery and equipment" subsector of Ukraine (which is the least productive subsector of machine building in Ukraine in terms of Gross Value Added per employee[6]) is smallest in the West.

This different composition of machine building in the West is consistent with the fact that this region is home to a growing cluster of companies supplying the EU and global automotive manufacturing industry. These companies are integrated in international supply chains and supply leading global

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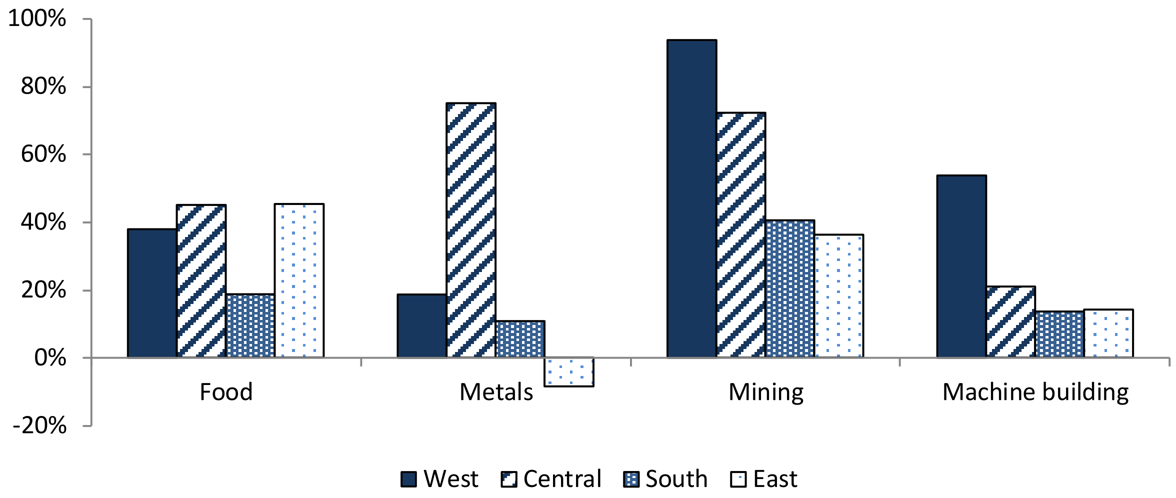
[6] Cf PP/02/2014 German Advisory Group, Ukrainian Machine Building: Strategic options and short term measures in view of trade disruptions with Russia

companies. This "light" machine building contrasts with many large companies in the East/South that are often operating with an outdated capital stock, lack investment, dynamic management and depend on trade links with Russia and can explain why it was in the West of Ukraine that machine building sales grew most between 2010 and 2013.

Figure 7

Growth in four largest subsectors by region, 2010-2013



Source: Ukrstat, own calculations

Indeed, in the four largest industry subsectors of Ukraine, sales grew quicker in the West and Centre than in the South and East between 2010 and 2013 (growth in the food industry in the East being the only exception). This indicates that part of the reason for the regional growth differential is to be found at a deeper level of industrial structure: In the West and Centre, industry is generally composed of smaller companies with less influence of major business groups and more foreign investor involvement than in the South and East. Also, a better business climate and institutional framework, particularly in the West, have contributed to this trend, which will lead to a more even distribution of Ukraine's industry between regions in the long run.

Again, the short-run developments – the sharp drop in industrial production particularly in the Eastern areas affected by conflict – go into the same direction as the long-run trend. This should not distract from the fact that these are severely negative developments for Ukraine's industry. But as the growth trend was stronger in the West and Centre of Ukraine, sustained growth in these regions may help compensating some of the negative short-run developments.

Conclusion 3: Industry in the West and Centre of Ukraine is growing faster than in the traditional industrial regions in the South and East in the pre-conflict trend. This is due to the combination of a concentration on faster-growing subsectors, different deeper industrial structures at firm level and a better business environment.

3. Challenges

The long-run and short-run trends in the data on Ukraine's industry are remarkably consistent: A changing subsector structure from heavy to light industry and an increasing economic importance of industry in the West and Centre of Ukraine. For the future, three underlying challenges will drive the further development of industry:

- The evolution of the comparative advantages of the Ukrainian economy and the consequent structural change
- The diminishing relevance of Russia as an export market for Ukrainian companies
- Potential long-run effects of the conflict in the east

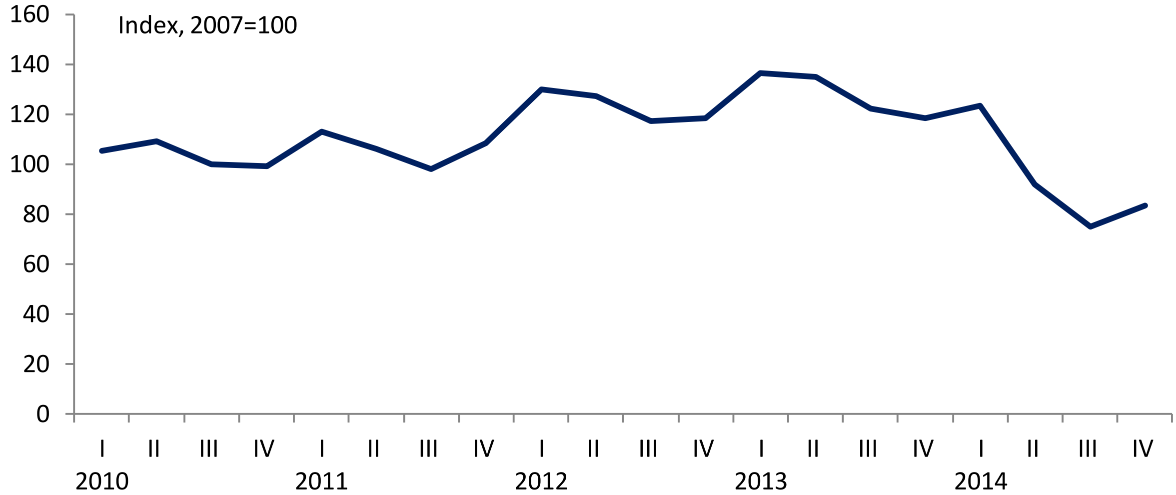
These challenges are key underlying drivers of the trends observed in the previous section and need to be taken into account when designing economic policy measures aimed at preserving and developing the economic potential of Ukraine's industry.

3.1 The evolution of the comparative advantages of Ukraine

The structural change from heavy to light industry in Ukraine that is visible in the pre-2013 data is partly the result of a comparative advantage in labour-intensive production that has been further increased by the recent depreciation of the Hryvnia.

Figure 8

Real effective exchange rate of Ukraine, based on unit labour cost



Source: NBU, own calculations

The real effective exchange rate of Ukraine, here calculated on unit labour cost rather than consumer prices to provide an economically sound measure of the real wage competitiveness of Ukraine versus a weighted average of its trading partners, has depreciated by 32% between the first and fourth quarter of 2014. The sharp depreciation of the exchange rate in the first quarter of 2015 will have further drastically improved Ukraine's wage competitiveness and it is highly unlikely this will be reduced in the short run as neither upward pressure on wages nor on the exchange rate exists at present. Hence, the comparative advantage in labour-intensive light industrial production that Ukraine already enjoyed 2014 has further increased and will remain for the foreseeable future.

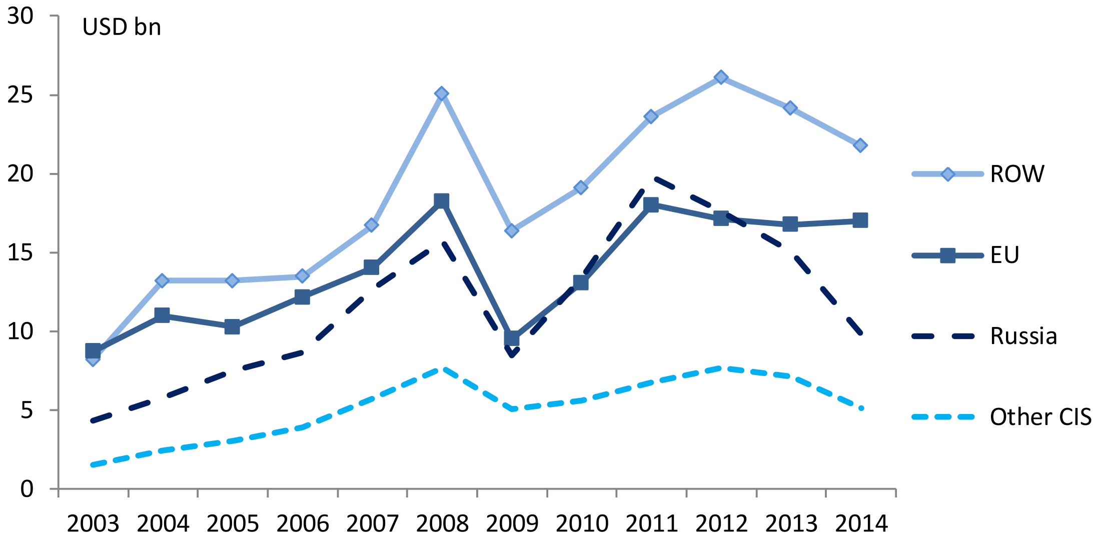
Conclusion 4: The depreciation of the Hryvnia has further increased the wage competitiveness of Ukraine. This will further favour the growth of the labour-intensive light industry and a continuation of the ongoing pattern of structural change.

3.2 Changing patterns of export trade

Export trade with Russia is collapsing at present due to the state of political relations between the countries and a recovery in the short run seems highly unlikely. However, the reduction of Russia's importance as an export market has begun in 2011, when no political difficulties existed. The short-run collapse thus takes place in the context of a long-run reduction, which is due to increased competition and an industrial strategy of import substitution being pursued by Russia, even more openly since 2014[7]. On the other hand, the role of the EU market in Ukraine's export portfolio is becoming more important and has not weakened in 2014. The signing and provisional implementation (from 2016 onwards) of the Ukraine-EU DCFTA will further strengthen trade links.

Figure 9

Export volumes of Ukraine with EU, Russia and other CIS countries



Source: UN Comtrade, own calculations

As a consequence, industry areas heavily dependent on the Russian export market are likely to face intense pressure in the coming years as they will have to reorientate their exports towards new markets or shoulder significant reductions in sales. This particularly affects the machine building industry, which is the subsector most exposed to the Russian market[8], whereas the role of the Russian market is less important for the metal and food processing subsectors (which, due to the commodity nature of their products would be less challenged by export reorientation anyway). Nevertheless, even within machine building, the impact will be heterogenous as not all components of the machine building subsector are equally dependent on Russia. Whereas Russia was the single

[7] See e.g. http://www.beiten-burkhardt.com/index.php/en/component/attachments/download/3955

[8] See Technical Note TN/03/2014 German Advisory Group, Ukrainian exports to Russia: Sector and regional exposure and PP/02/2014 German Advisory Group, Ukrainian Machine Building: Strategic options and short term measures in view of trade disruptions with Russia

most important market for exports of transport equipment and general machinery and equipment, exports of electrical and electronic equipment to all EU countries already surpassed those to Russia in 2013.

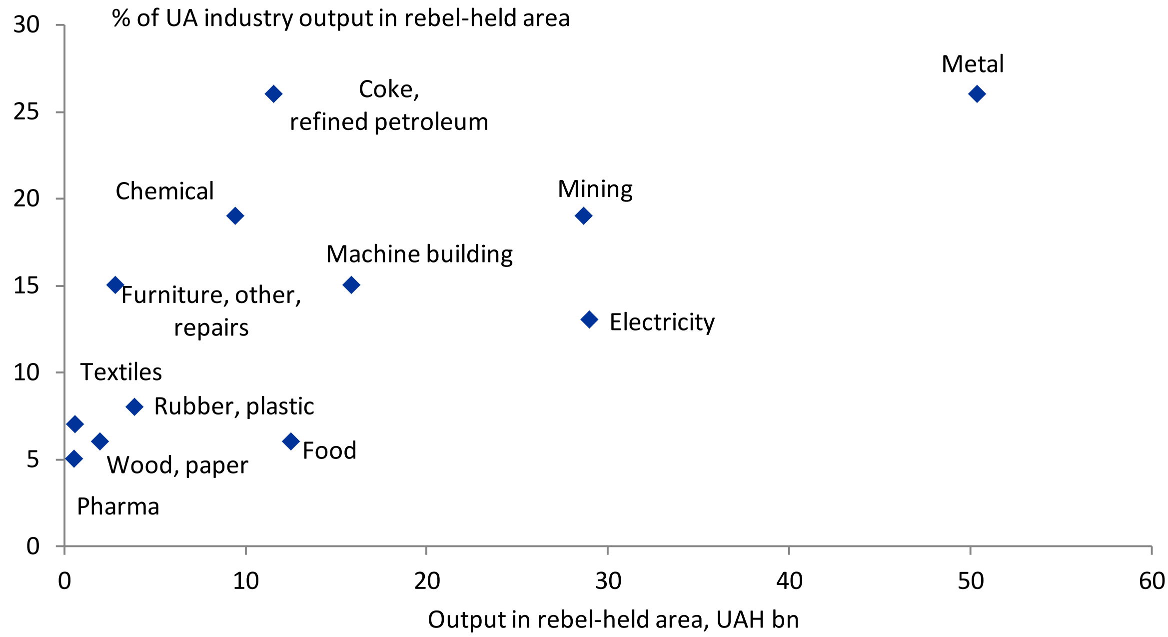
Conclusion 5: The ongoing deterioration of the export trade with Russia partly explains the slow growth of major components (largely located in South and East Ukraine) of the machine-building subsector and will continue to slow their growth in the coming years.

3.3 Long-run economic effects of the present conflict

The principal long-run economic danger of the conflict in the East of Ukraine is, aside from the consequent deterioration of trade relations with Russia analysed above, a potential permanent loss of access to industries in the affected area.

Figure 10

Industrial output in rebel-held area, 2013



Source: Own calculations

The economy in the Donbas and the rebel held area in particular exhibits a strong focus on the heavy subsectors of metals, mining and coke/petroleum. Most importantly, 26% of the metal industry's output in Ukraine originated in the now rebel held area. However, the loss would largely accrue in heavy subsectors in need of modernisation, which have exhibited low growth rates in the recent past. It would not accrue in the light sectors that have been the engine of industrial growth in the past and are likely to continue to play this role in the immediate future.

Conclusion 6: A potential loss of access to industrial production in the parts of Donbas affected by conflict would reduce the output of the slower-growing heavy industry of Ukraine, but not in the faster-growing light industry.

4. Policy options

Economic policy in Ukraine needs to face a complex situation concerning the country's industrial sector. The key objective should be to develop and realise the growth potential in this important sector that continues to be a core component of the economies of many high-income nations. Nevertheless, industry is subject to short-run shocks and a long run trend contributing to structural change from an emphasis on the "traditional" heavy subsectors towards new, light subsectors.

Ideally, policy would address both the light and heavy industries. Although the three challenges addressed in the previous section are more favourable for the light industry, this does not imply that the heavy industry cannot grow as well, provided it undergoes modernisation and restructuring. Ukraine's heavy industry is to a large extent inherited from the Soviet Union. Many companies operate with an outdated capital stock, old technology and sometimes poor management. Partly because of difficult ownership structures (state companies are heavily protected and often have "strategic" status, inhibiting foreign investment; private companies mostly belong to major business groups, whose records with regard to modernisation and investment are generally sketchy), the required investments have not taken place in past.

A modernisation programme for the heavy industry could be designed along the lines of that outlined for the machine building industry in a previous paper[9], involving investment facilitation and export promotion. However, attracting investments into the heavy industry will be very difficult in the short run as this industry is generally situated nearer to the conflict zone, requires large investment volumes and has not performed well in recent past.

For this reason and considering the fact that the government has only very limited financial and administrative leeway at the moment, we advise to prioritise supporting the growth of the light subsectors of the Ukrainian economy with low-cost, high-impact policy tools. As these subsectors have been growing well in recent years and will be less if at all negatively affected by short-run developments, attracting investment in these subsectors will be less difficult.

One attractive tool that requires little financial and other involvement of the government, yet may generate high visibility of success stories to international investors – hence attracting new investment – is the establishment of "cluster councils" (see Box) for successful business clusters in Ukraine's industry.

[9] See Policy Paper PP/02/2014 German Advisory Group, Ukrainian Machine Building: Strategic options and short term measures in view of trade disruptions with Russia

Box: Supporting business clusters[10]

Business clusters are generally geographic concentrations of interconnected businesses, suppliers, and associated institutions in a particular field. In the context of Ukraine, companies in the West, supplying global supply chains in the automotive industry, are an example of a successful business cluster.

Supporting business clusters through explicit policy measures has started in the 1990s. The reason behind this is that strengthening cluster networks improves the dialogue and interface with public administration and research institutions and strengthens the cooperation and innovation in and between firms. Firms have an interest in a vibrant and growing cluster due to factors such as improved cooperation possibilities, a larger pool of qualified labour and public institutions better adjusted towards the cluster's needs. Through increased visibility of the companies through the cluster format, the visibility of the potential in the cluster is magnified and further investment is attracted.

The most common method for strengthening a cluster through policy is the establishment of a "cluster council" ("cluster management", "cluster initiative"). Such a council is usually comprised of a small number of employees. These cluster managers are mainly tasked with facilitating the networking within the cluster and with the government as well as increasing the outside visibility of the cluster. The positions are often initially paid for by government but should eventually be financed by membership fees of the cluster's constituent companies. A fully business-owned cluster council then has the advantage of requiring little to no public resources whilst providing the cluster with a genuine voice both for interactions with government and potential new investors.

Identifying and supporting successful clusters, particularly in the growing light industry in the West and Centre of Ukraine appears to be the easiest method to strengthen Ukraine's industry, particularly in the short run. Nevertheless, in the medium term, it should also be attempted to improve general business conditions for industry in areas such as Value Added Taxation and administrative burdens as well as facilitating the modernisation and restructuring of the country's ailing heavy industry.

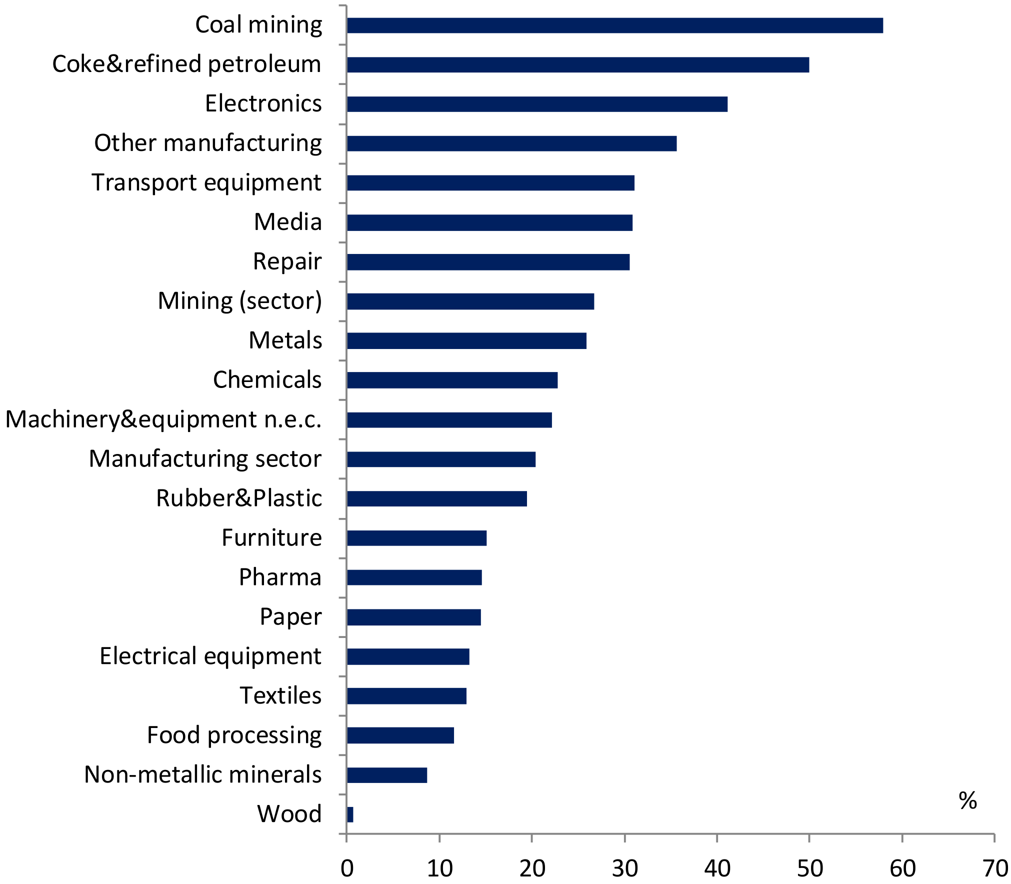
Conclusion 7: In the short run, supporting the growth and investments in the light industry of Ukraine through cost-effective measures such as establishment of cluster councils should be attempted to strengthen existing growth. Modernisation and restructuring in the heavy industry should also be facilitated in the medium term.

[10] See Küpper and Röllinghoff (2004), Cluster Management: Demands on Cities and Regional Networks, German Institute for Urban Studies (http://www.difu.de/publikationen/cluster-management-demands-on-cities-and-regional-networks.html#fn) or Clusters Linked Over Europe, Cluster Management Guide (http://www.interreg4c.eu/uploads/media/pdf/2_Cluster_Management_Guide_CLOE.pdf) for more details on supporting business clusters

Annex 1: Additional Figures

Figure A1

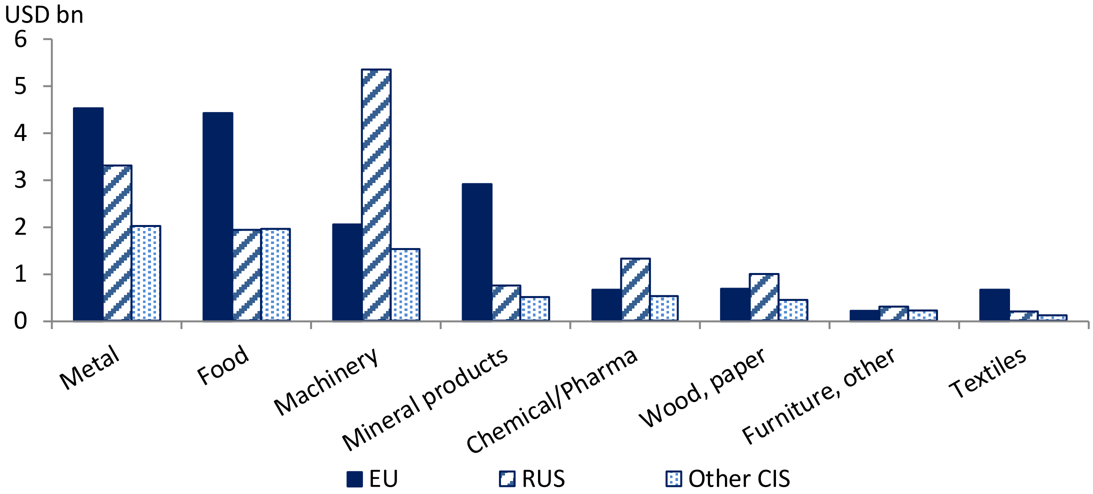
Reductions in industrial output, Jan-Apr 2015 vs Jan-Apr 2014



Source: Ukrstat

Figure A2

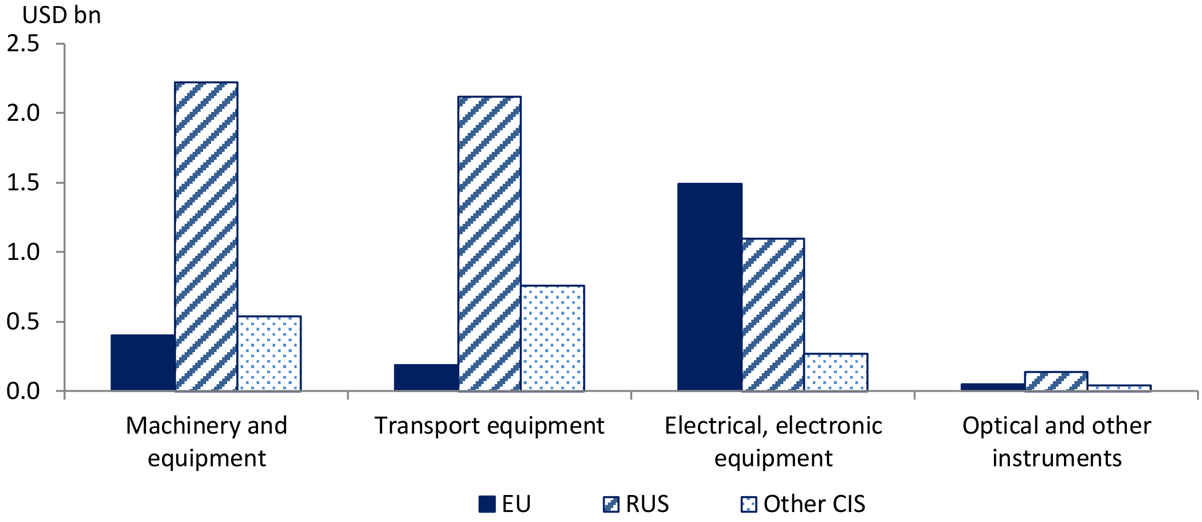
Exports in 7 largest product groups by 3 major destination markets, 2013



Source: UN Comtrade, own calculations

Figure A3

Exports of machinery by subcategory and 3 destination markets, 2013



Source: UN Comtrade, own calculations

Annex 2: Regions of Ukraine

For the breakdown of data into 4 regions of Ukraine, we define the regions by oblasts/city as follows:

- East: Donetsk, Kharkiv, Lugansk
- South: Dnipopetrovsk, Kherson, Mykolayiv, Odessa, Zaporizhia
- Centre: Cherkasy, Chernigiv, Kyiv (city and oblast), Kirovograd, Poltava, Sumy, Vinnytsia, Zhytomyr
- West: Chernivtsi, Ivano-Frankivsk, Khmelnytsky, Lviv, Rivne, Ternopil, Volyn, Zakarpatia

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