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Monthly Report

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The Vienna Institute for International Economic Studies
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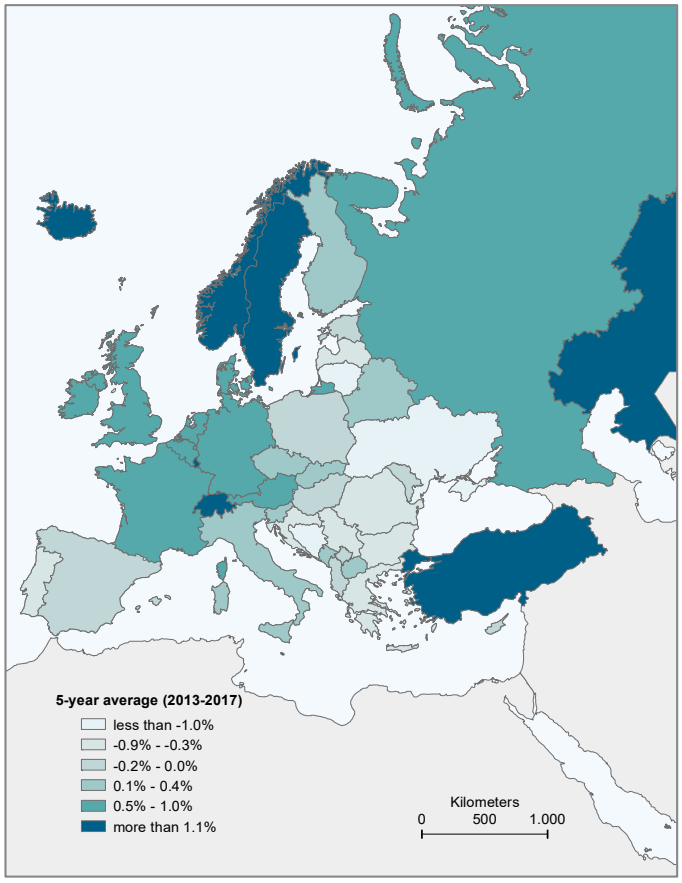
Sample figure from the *wiiw Handbook of Statistics 2018*:
Population change, growth in %



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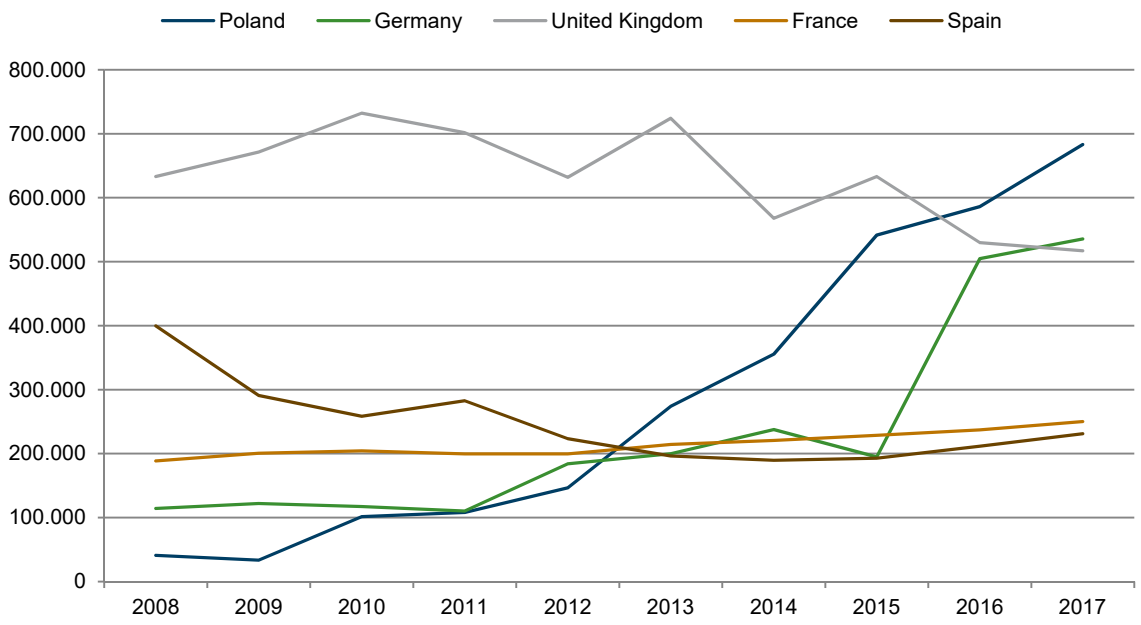
Immigration into the EU: Top five destination countries, 2008-2017



Note: Top five destination countries as of 2017. First residence permits or authorisations to reside (for three months or above) issued to third-country nationals (persons who are not EU citizens).
Source: Eurostat.

Opinion corner*: Global Compact for Migration: 'Eppur si muove'

BY ISILDA MARA

In order to form an opinion on the Global Compact for Migration – the non-binding, intergovernmentally negotiated agreement led by the United Nations – we should first take a look at migration history, its evolution over time and its complexities. We should also address the question whether, in the globalised world that we live in, is it better to follow 'do it yourself' migration policies – being picky – or to opt for cooperation. Lastly, we should evaluate what the new Global Compact for Migration can offer.

People stopped moving freely almost one century ago. Nevertheless, facts show that despite the restrictions to mobility being in place since 1914[1], the mobility of people worldwide is not less strong than a century ago (Keeling, 2011, 2018). Besides, the imposed restrictions – such as legal restrictions to mobility[2], visa regimes, and entry or employment quotas – resulted in the mobility of people being less properly controlled and well-managed (Keeling, 2011, 2018). In the last five decades the stock of international migrants rose from 2.2% (85 million) of the world population in 1970 to 3.3% (244 million) in 2015 (WMR, 2018).

So far the phenomenon of migration has generated winners and losers, especially as concerns attracting talent and high-skilled migrants (Beine et al., 2008; Docquier and Rapoport, 2012). It is well documented that the United States, but also Australia, have been benefiting the most from international migration. One important push factor for migration has been represented by war conflicts, which are in many cases driven by powerful economic interests especially in those regions rich in natural resources (e.g. Iraq or Sudan). Another reason is economic mismanagement, as exemplified, for instance, by the most recent humanitarian crisis in Venezuela which has generated a flux of 3 million migrants. In these cases, massive migration has been more of a reaction, a consequence rather than the cause of the problem.

* Disclaimer: The views expressed in the Opinion Corner section of the Monthly Report are exclusively those of the authors and do not necessarily represent the official view of wiiw.

[1] According to some studies, restrictions have been imposed already since 1880: 'migration from China to America had been halted by ethnically explicit legal restriction already in the 1880s, although permanent quotas and passport requirements were widely applied to non-coerced migration only from the 1920s' (Keeling, 2018).

[2] In a number of studies the paragon of Adam Smith's arguments about imposed tariffs and their effect on trade in goods and services has been brought into the discussion of people's mobility and how efficient restrictions on mobility might be (e.g. Rauhut, 2011).

MIGRATION TO THE EU COULD ONLY BE REDUCED VIA BILATERAL AGREEMENTS – NOT WALLS AND FENCES

The European Union is stubbornly divided in particular when it comes to the issue of 'how to deal with irregular migrants and refugees'. The fall of the Berlin Wall thirty years ago contrasts with 1,000 km of walls and fences being built from Spain to Latvia between 1990 and 2017 (Benedicto and Brunet, 2018). The new walls were built with the purpose of preventing the entry of refugees or irregular migrants, especially from 2015 onwards. It is a fact that the exact number of irregular migrants[3] in the EU is unknown. However, estimates for the EU-15 suggest a number between 1.8 and 3.3 million of irregular migrants and workers (Clandestino, 2009). For example, Austria and Hungary are among the top ten EU-28 counties as concerns the number of detected irregular migrants (35,000 and 12,000, respectively, in 2014) (European Parliament, 2015).[4] Experts estimate that 70 per cent of irregular migrants in the EU tend to be employed (Boswell and Straubhaar, 2004).[5]

Evidence shows that walls, fences and more restrictive migration policies may have discouraged new migration waves. Nonetheless, the entry of irregular migrants into the EU has persisted over time despite being more risky, and has become more profitable for traffickers and smugglers of human beings. According to UNODC (2018), this illicit activity is worth USD 10 billion a year – which corresponds to one third of the EU budget for management of the EU border planned for 2021-2027. According to the IOM's Counter-Trafficking Data Collaborative, between 2006 and 2016, the number of detected and assisted victims of human trafficking is estimated at around 50,000, a number which probably represents less than 1% of what could be the real number of victims of trafficking and exploitation.[6] It is therefore in the interest of the EU to be a protagonist and a supporter of initiatives aimed at dealing with such challenging issues in a systematic and comprehensive way.

The unprecedented inflow of refugees from the Middle East to the EU diminished not thanks to walls and fences, but thanks to the agreement reached with Turkey and countries in North Africa. This is an example which shows that migration challenges can be addressed in coordination with other countries. Nevertheless, bilateral migration agreements quite frequently suffer from imperfections if they are concluded with countries where the rule of law is weak and human rights are often violated (Benedicto and Brunet, 2018). In a globalised world, a 'do it yourself' type of migration policies is inadequate since the types and forms of migration have become wide and complex. A coordinated and comprehensive framework is needed for providing pragmatic solutions.

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3 'Irregular immigrants are third-country nationals who do not fulfil, or no longer fulfil, the conditions of entry as set out in Article 5 of the Schengen Borders Code or other conditions for entry, stay or residence in that Member State' (European Parliament, 2015) .

4 In Austria, the number of irregular migrants detected in 2014 is comparable to the number of settled migrants from the EU-27 in 2017. According to Austrian statistics, migration from the EU-27 represents 75% of annual net migration to Austria.

5 This phenomenon is common not only in the EU but is also quite widespread in the United States (Martin, 2017). For further details see https://migrationdataportal.org/blog/irregular-migrant-workers-eu-and-us

6 See also https://www.ctdatacollaborative.org/

GLOBAL COMPACT FOR MIGRATION – A FIRST STEP IN THE RIGHT DIRECTION ON A GLOBAL SCALE

The new Global Compact for Migration (GCM),[7] due to be signed at the forthcoming international summit in Marrakesh in December 2018, will be the first ever non-binding intergovernmentally negotiated agreement which aims at managing migration. Its scope is to cover all dimensions of migration, make migration work for all and get all the countries engaged and committed to cooperate for making this happen.

The GCM is not aimed at returning to the policy of open borders at the international level at the expense of state sovereignty, as it is often argued by a number of states. As long as the agreement is not legally binding, there should be no concerns about state sovereignty. The agreement has 23 objectives, such as: improving the evidence base for migration, improving the information at all stages of migration, establishing coordinated efforts at migration management, better management of borders, better assessment and prediction of migration, promotion of demand-driven skills development for optimising the employability of migrants abroad and at home in case of return, and strengthening international cooperation and global partnership for safe, orderly and regular migration. In sum, what the GCM agreement aims at is to bring order and fairness, and contribute to a better managed and balanced mobility of people.

Taking into account that the big winners of international migration in the past, such as the United States and Australia, have taken the position of free riders by not being part of the GCM, this decision leaves Europe – which is one of the main destinations of migration – more exposed to migration challenges. Besides, migration policies are a source of disagreement among the EU countries themselves. The decision not to sign the GCM recently taken by a number of EU-CEE countries – Hungary, the Czech Republic and Poland – but also Austria places them on the wrong side and makes them even more vulnerable in dealing with the controversial aspects of migration. Austria and the EU-CEE countries have been in the corridor of international migration, including irregular migration. Therefore, being left out from this initiative, they bury the chance for being part of the multilateral agreement which could contribute to controlling and better managing migration.

If the declared goal of these countries is having less irregular migrants, wouldn't it be more efficient to collaborate with other countries? For a number of countries whose population is ageing and shrinking, and which are in great demand of people and workers which could counterbalance these phenomena, is the proper solution 'less migrants coming in' or a 'properly managed and regulated process of those who could come in'? The former option will certainly not be beneficial as long as this is a long-term problem which requires long-term solutions. The second option could certainly be part of a well-designed and coordinated systematic solution which the GCM initiative aims to provide for countries. We live in a globalised world and globalisation is not likely to be reversed in the near or long term. No country may hope to remain immune against the turns which the direction and strength of migration might take in the future. It is therefore difficult to view free riding migration policies as efficient: a global phenomenon such as migration requires a global solution.

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[7] The Global Compact for Migration is framed consistent with target 10.7 of the 2030 Agenda for Sustainable Development. https://www.iom.int/global-compact-migration

The Global Compact for Migration may certainly appear ideological, vague with respect to certain aspects of regular and irregular migration, or refugees' or migrant workers' rights, and incomplete as concerns financial aspects, with a lot of open issues. But it is a first step and a breakthrough towards a comprehensive agenda to make migration work for all.

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The Luddite rebellion: Past and present

BY ROMAN STÖLLINGER

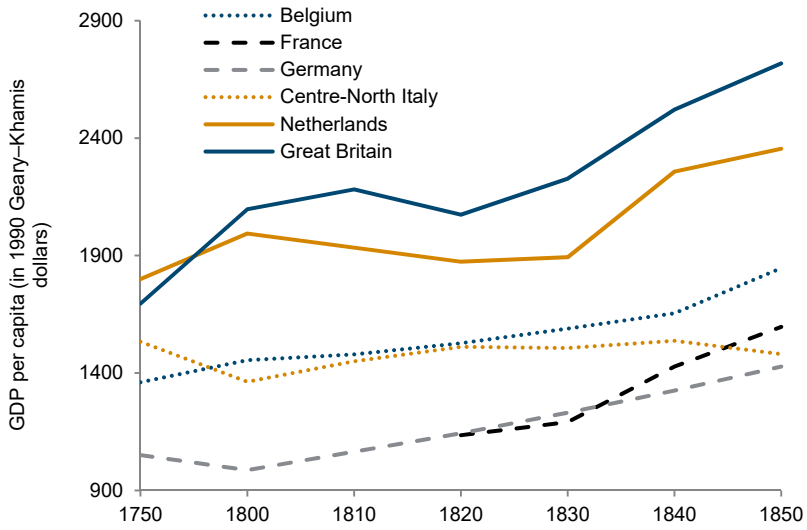
In the early 19th century textile workers in the English midlands, known as 'Luddites', turned violent in response to the introduction of new, labour-saving machines. As the world is entering the Digital Era, neo-Luddite movements emerge which should also be seen as a consequence of the uncertainties caused by fast and potentially disruptive technologies. What might be different this time is that the new technologies create competition for humans in their core competencies, with the possibility of technological unemployment as predicted by Keynes.

LUDDISM DURING THE INDUSTRIAL REVOLUTION

By the early 19th century, the Industrial Revolution had turned England into the leading economy in Europe. Rapid technological progress, first in agriculture and then in the fast growing textile industries, fuelled productivity growth and by 1800 Great Britain had become the country with the highest per capita income in Europe (Figure 1). The development was the result of mutually reinforcing factors, including a series of innovations, diminishing demand for labour in agriculture and the expansion of international trade which was facilitated by the growing global dominance of the British Empire (Figure 2).

But not everybody benefited from the fundamental changes in British society brought about by the Industrial Revolution. Among those who felt negatively affected by these transformations were the English textile workers.

Figure 1 / Per capita income in Western Europe, 1750-1850



Source: Maddison database.

On 11 March 1811, amidst the difficult economic conditions during the Napoleonic Wars, a group of Luddites, textile workers in the Midlands, who took their name from an imaginary General Ludd who had allegedly smashed a stocking frame with a sledgehammer, started a rebellion that was directed against newly introduced machinery and technological progress. The Luddites were textile workers belonging to different crafts, including weavers, stockingers, croppers, knitters and hosiers. The uprising was initiated by weavers in Nottinghamshire, aimed mainly at (labour-saving) stocking frames, and reached its peak in November 1811. Taken together more than 1,000 frames were destroyed (out of an estimated 25,000). In early 1812 the centre of Luddite action shifted to the West Riding of Yorkshire, and by March of the same year the movement had reached Lancashire (Figure 3).

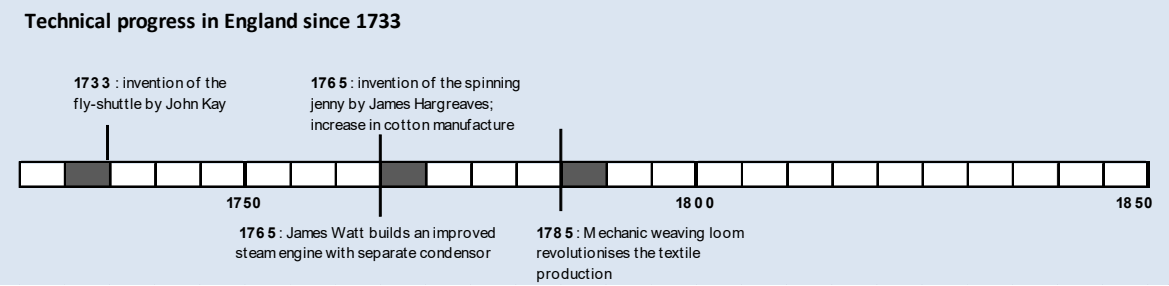
In April 1812 the Yorkshire Luddite movement reached a violent peak when, following a failed machine breaking attempt at Cartwright's Rawfolds Mill, two of the Luddites involved were killed. As a reaction, the Luddites, who until then had exclusively targeted stocking and spinning frames, power looms and other textile machinery, turned to outright assassinations. They failed to kill William Cartwright, the owner of the mill where the tragedy had happened, but William Horsfall, another large mill owner, fell victim to the attack. The three murderers were caught and together with 14 other Luddites they were sentenced to death by a trial and hanged in York in January 1813.

This severe punishment was made possible by the Frame Breaking Act of 1812. The destruction of machinery had already been considered a severe crime since the Protection of Stocking Frames Act of 1788 foreboding overseas deportation of the delinquent as punishment. However, the new legislation declared machine breaking a capital offence. The new anti-machine breaking legislation is likely to have contributed to the fading of Luddite activism in Nottinghamshire and the movement in general. Organised large-scale operations ended in 1813 though sporadic acts of machine breaking in the Midlands continued until 1817.

While in retrospect there can be no doubt that the Luddites lost their fight against technological progress, this outcome was by no means so clear at the height of the revolts. For one, the Luddites were a secretive organisation and new members had to take an 'oath of silence'. This turned out to be very effective to prevent capture by army troops. Moreover, the machine breaking happened mainly in nocturnal raids though in most cases masters and owners were warned and machine breaking only took place when the Luddites' demands to remove new machinery from the manufactures or mills were not met. Importantly, the Luddites also received strong support from the local communities which involved not only fellow craftsmen but also smaller masters who were less inclined to technological progress. Even noblemen such as the famous Lord Byron sided with the Luddites on several occasions and opposed for example the passing of the Frame Breaking Act. The fact that the Luddites were taken seriously by local authorities as well as by the Crown and Parliament in London is evidenced by the fact that at the height of the rebellion 12,000 troops were deployed to the Midlands to stop the uprisings, more than Wellington had in Spain to fight against Napoleon.

In the end the tough stance of the authorities, who sided fully with the factory owners, meant that the struggle of the Luddites was doomed to fail. The use of state power to defeat the Luddite movement was in line with the laissez-faire ideology that was adopted by Great Britain once it had achieved industrial and economic leadership, which it was determined to maintain.

Figure 2 / Technical progress in England since 1733



Source: Dumont Atlas der Weltgeschichte.

Figure 3 / The 'Luddite Triangle': Leicester-Manchester-York

Source: http://www.eco-action.org/dod/no6/luddites.htm.

The Luddites were not the first machine breakers in history. England has a long history of machine wrecking which the historian Eric Hobsbawm called 'collective bargaining by riot' (Hobsbawn, 1952). This indicates that the Luddites were not struggling against modern machinery as such but against the fundamental changes in labour relations. Hence the destruction of modern machinery must be seen as an attempt to prevent unemployment, declining living standards and status by craftsmen in occupations that were threatened by inventions. In addition there was also the issue of declining quality of the industrially produced clothes and the replacement of skilled workers with cheaper untrained labour.

LUDDISM IN THE DIGITAL AGE

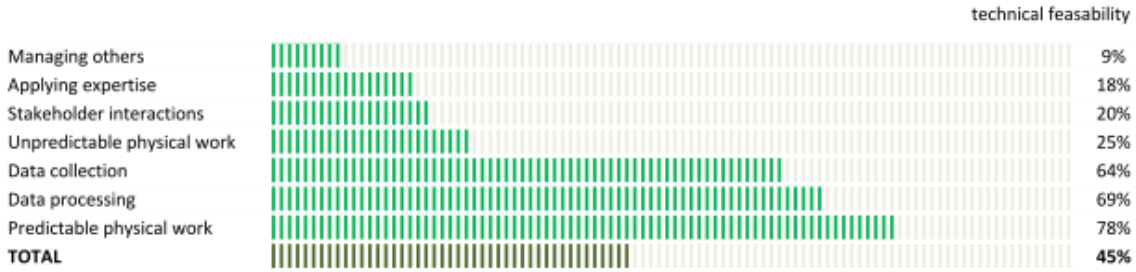
The destruction of machinery was therefore more a protest against the growing identification of the government position with that of manufacturers than a rejection of machinery and technological progress per se. (Nevertheless, until today Luddism has been associated with resistance to modern technologies and the expected societal changes they bring along.) Similarly, the latest 'neo-Luddism' tendencies (see Kirkpatrick, 1997; Jones, 2006) which have been triggered by the 'Digital Revolution' (also dubbed

Industry 4.0) currently under way are de facto also grounded in the fear of 'technological unemployment' (Keynes, 1930) of the masses. In their book 'Race Against the Machines', Erik Brynjolfsson and Andrew McAfee (2011) argue that the increasing use of advanced robots and self-learning algorithms may cause mass unemployment.

There is no doubt that during the past 200 years the destruction of a substantial number of jobs due to the introduction of new technologies has been offset by an even larger number of newly-created jobs. However, it cannot be taken for granted that this development will continue in the future. This is because the direction of technological progress may have changed. Up to now, technological progress has been skill-biased meaning that it destroyed mainly less skill-intensive routine jobs and that these were more than compensated for by more skill-intensive jobs that require a high degree of creativity and problem solving ability (Autor et al., 2003). Put differently, boring and often physically exhausting jobs were replaced by more varied, intellectually challenging jobs.

But the age of digitalisation may change the picture as computers and robots are increasingly also capable of performing tasks that require a high degree of cognitive skills. To put this in perspective, Frey and Osborne (2017) estimate (based on a very detailed analysis of the task-content of more than 700 occupations) that about 47% of all jobs in the US economy are at risk of being automated. Chui et al. (2016) come to a similar conclusion, suggesting that 45% of US jobs can, from a purely technical perspective, potentially be automated (Figure 4). The figure shows the estimated share of time within each of the activities that are automatable with current technologies.[1]

Figure 4 / The technical potential for automation in the US economy in the 2010s



Note: Technical feasibility is the per cent of time spent on activities that can be automated by adapting currently demonstrated technology. Total work time in the US economy is distributed across the activities in the following way: managing others: 7%; applying expertise: 14%; stakeholder interaction: 16%; unpredictable physical work: 12%; data collection: 17%; data processing: 16%; predictable physical work: 18%.
Source: Chui et al. (2016).

Irrespective of the precise figures, it is quite likely that in the coming decades a major part of the currently existing jobs will disappear. A key point is also that the arrival of cyber-physical systems incorporating self-learning artificial intelligences in the course of the Digital Revolution may change the previous historical pattern that new technologies will create more new jobs than they destroy – a pattern typically referred to as creative destruction. This is because the new disruptive technologies create competition for humans in their core competence: pattern recognition which is vital for performing non-routine cognitive tasks as well as manual tasks requiring adaptability. As machines are capable of

[1] These vary across different sectors of the economy. The figures shown here relate to the total US economy.

performing more and more tasks which were previously the unique domain of human workers at lower cost, the range of activities to be performed by humans gets smaller and smaller. A smaller range of tasks reduces the space for complementarities between new technologies and humans so that machines and workers will become substitutes. In sum, the scenario of technological unemployment is likely to materialise if in the course of the Digital Revolution computers and machines surpass the homo sapiens in the domain where he has his main comparative advantage: performing non-routine cognitive tasks and adaptability.

In essence, if machines are increasingly capable of replacing humans in their core competency, i.e. cognitive capabilities, only a few brilliant brains would be needed (those coming up with new ideas for new machines), while the rest of the population would not really be needed for a regular job. However, this does not necessarily imply that almost everybody will be unemployed. Rather, most people could be performing individual tasks – mainly in person-to-person services such as renting out one's own apartment, bar tender, a job as an imaginary girlfriend or boyfriend, surrogate mother etc. This hypothesis, put forward by the Serbian economist Branko Milanovic (2015), imagines a future of work which consists of most people working more than ever but without having a real job. Instead of undergoing long trainings and specialising in a particular profession, most people would just perform a large number of simple tasks. Or, as Milanovic (2015) puts it, 'Everybody would be the jack of all trades and master of none'.

Since technological progress will presumably not be halted, it is all the more important that technological developments are properly managed and at least partially directed by societal consensus, if a scenario like that drawn by Milanovic is to be avoided. This social 'guidance' may consist of slowing down the process of technological change which is often essential for humans to cope with change (see Polanyi, 1944, p. 39).

Moreover, society can respond by adjusting the definition of what constitutes work. Currently, work is mainly understood to mean formal work supplied in the labour market. A broadened definition of work could include activities such as raising children, various activities by volunteers as well as research, artistic and cultural activities that are motivated by an interest in self-advancement or simply human curiosity. In this case, humans would not be idle though formally unemployed. Obviously, such a scenario would require a sort of Post-Scarcity Economy, understood as an economy in which the basic needs of all citizens are satisfied unconditionally. The productivity increases brought about by the Digital Revolution could make such a scenario possible but it requires accompanying social arrangements. One first step in this direction would be a serious discussion about a universal basic income so that a concrete concept can be implemented once technological progress has made a basic income affordable.

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Internet *avant la lettre*: the Telegraph Revolution and its impact on economic growth in 1870-1913

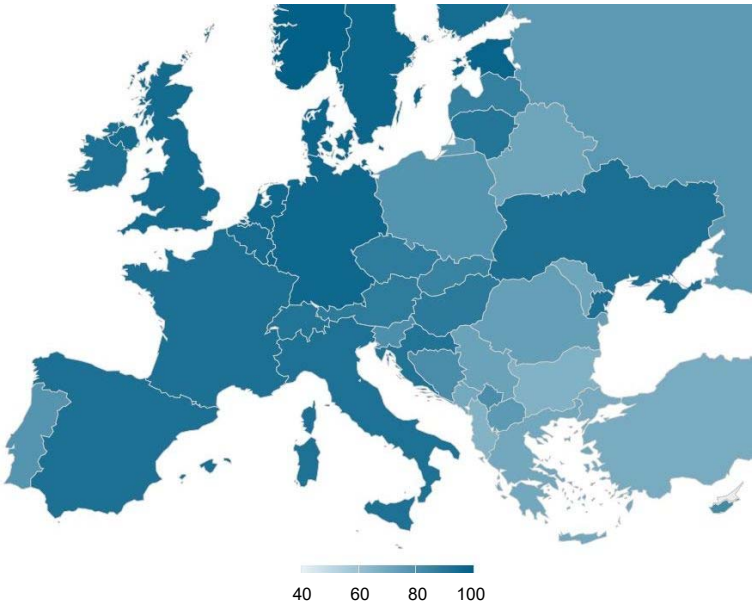
BY MARIO HOLZNER AND STEFAN JESTL

E-mail was not the first means of instant electronic communication over a long distance: the first digital technology was telegraphy. We find that higher early use of telegraphy was related to substantially higher economic growth in Europe at the turn of the twentieth century. These findings may be interesting in the context of the currently ongoing Digital Revolution.

INTRODUCTION

The world is in the midst of the Third Industrial Revolution – the Digital Revolution, which also marks the beginning of the Information Age. A central element of it is the internet, which carries *inter alia* the World Wide Web and electronic mail. The internet became operational for a broader public by the mid of the 1990s. About a quarter of a century later, it has become an indispensable tool of everyday life for the vast majority of people in the developed parts of the world. Also in developing countries its importance has been increasing rapidly.

Figure 1 / Internet users in % of total population, December 2017



Source: internetworldstats.com.

By the end of 2017, the majority of the population in European countries used the internet. However, the penetration differs quite a bit (Figure 1), showing a Northwest-Southeast division of the continent. In the

peripheral economies such as Albania, Bulgaria, Turkey and Montenegro only about two thirds of the population are internet users. In the Nordic countries, the Low Lands, Germany and the UK only a few percentage points of the total population do not use the internet. Also among the EU Member States in Central and Eastern Europe, there is quite a big variation with respect to internet penetration rates. It is very likely that this will have long lasting economic effects, but these are currently difficult to evaluate.

In this context, it may be of interest to look at comparable episodes of technological change in the pre-internet era and assess their impact on economic growth.

TELEGRAPH REVOLUTION: STYLISED FACTS

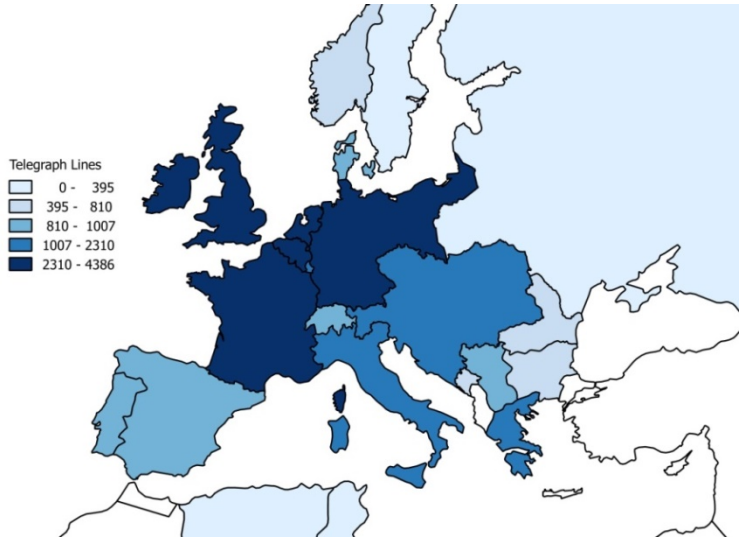
E-mail was not the first means of instant electronic communication over a long distance. The first digital technology was telegraphy. In the 1840s the first public telegraph company to establish the telegraph business was the Electric Telegraph Company in the UK. In 1851, a year after the first undersea cable had been laid in the English Channel to connect London and Paris, Paul Julius Reuter opened the Telegraphic Despatch Office in London and thereby established the Reuters news agency. Soon, information started to flow quickly on a global scale.

Initially the news stories of the agency largely covered financial markets' developments as well as political and overseas information. A decade later, new types of information were beginning to be integrated, soon covering a broad range of issues all the way to sports and culture. Moreover, along with democratisation, the political ideology of liberalism and state intervention became more dominant and Reuters put increased emphasis on providing information which would educate and inform people, allowing them to be 'responsible and moral citizens' (Weller and Bawden, 2006). Thus, the spread of telegraphy had a crucial impact on the development of innovation, business and politics in the broad period around the turn of the twentieth century.

The development of this ground-breaking communication technology has ever since stimulated imagination and is sometimes referred to as the 'Victorian Internet' (Standage, 1998). However, the analogy to the present-day internet is not undisputed (O'Hara, 2010). Moreover, telegraphy was a technology that was surprisingly well documented early on. On 17 May 1865, the first International Telegraph Convention was signed in Paris by its twenty founding members, and the International Telegraph Union (ITU) was established to supervise subsequent amendments to the agreement. ITU published statistical reports between 1871 and 1968, covering inter alia telegraph (and telex) statistics for the period 1849-1967.

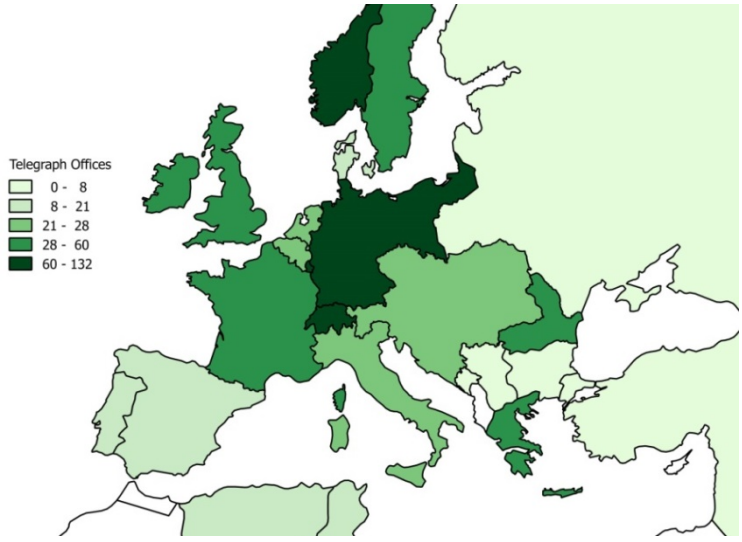
The wide choice of ITU variables at hand allows for deriving many interesting indicators. Here, we want to present a few for the year 1913 (or earlier available years) for Europe, for which data are available for longer time periods and almost all countries (except for Albania, which only declared independence from the Ottoman Empire in November 1912). One interesting indicator is the density of telegraph lines in kilometres per 10,000 square kilometres of land area. The respective map (in Figure 2) shows the expected high densities of telegraph lines in the Northwest of the continent, where the industrial revolution started, average levels in Central and Southern parts, and low levels in the Northern and Eastern periphery countries with their vast territories.

Figure 2 / Telegraph lines, in km per 10,000 km^2 of land area, Europe in 1913 or last year available



Source: International Telegraph Union (ITU).

Figure 3 / Number of telegraph offices per 100,000 inhabitants, Europe in 1913 or last year available

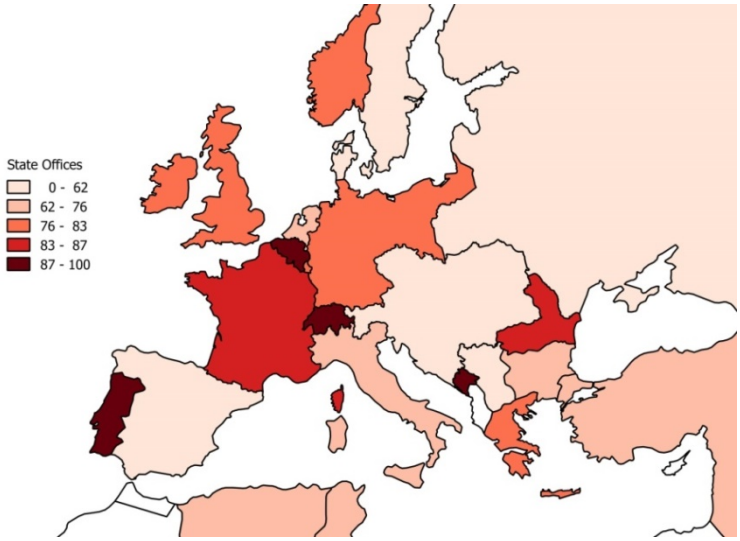


Source: ITU.

Another indicator of interest is the number of telegraph offices per 100,000 inhabitants (Figure 3). The highest office density can be found in Northern-Central Europe, followed by the United Kingdom and France, which, surprisingly, had similar ratios as Romania and Greece at the time. Other parts of Central Europe are followed by the Southwestern and the Eastern periphery of the continent. A related indicator is the percentage share of state-run telegraph offices in total offices (Figure 4). A number of smaller countries scattered all across Europe had the highest shares of state-run telegraph offices. Generally, with respect to this indicator the geographic pattern is weak, although even here the Northwest seems to have higher shares. Thus, it appears that the state was a driving force of the spread of telegraphy, apart

from (private) railway companies that were using their telegraphy network also for internal communication.

Figure 4 / Percentage share of state-run telegraph offices in total offices, Europe in 1913 or last year available



Source: ITU.

TELEGRAPH REVOLUTION AND ECONOMIC GROWTH

In view of today's Digital Revolution and its potential long-run economic impact, it is interesting to investigate what impact the 'internet *avant la lettre*' – i.e. telegraphy – had on economic growth. We therefore want to look at the period before the outbreak of the big catastrophes of the twentieth century and analyse the effects that telegraph office density had on GDP per capita growth around the turn of the century.

Broadberry and Klein (2012) provide data on GDP and population estimates for the period 1870-1913 for 19 European economies. These data deliberately include GDP figures for the respective countries in their pre-1913 borders (hence, there is also a GDP estimate for Austria-Hungary). Based on these data, we estimate a simple growth regression specification in a cross-sectional framework for the average annual growth rate of real GDP per capita between 1870 and 1913 as in the following equation:

$$growth_c = income_c\beta + telegraph_c\gamma + \varepsilon_c \quad (1)$$

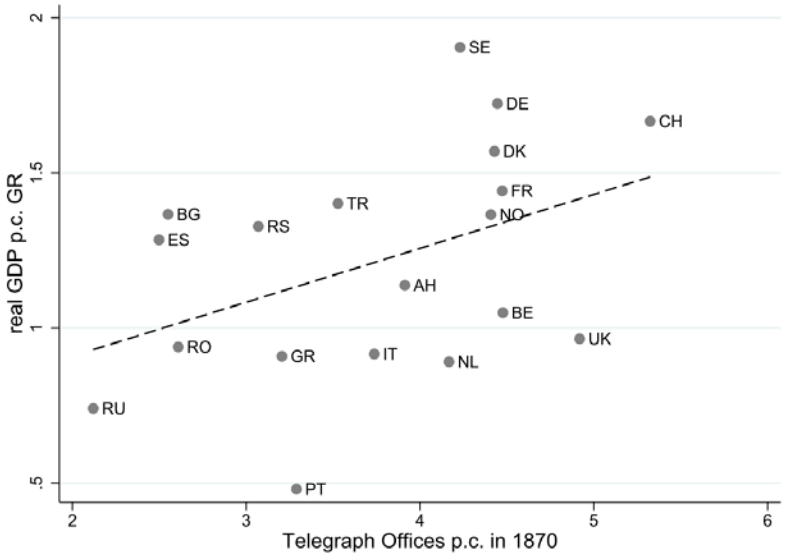
where the left-hand side variable is the respective growth rate in country c, $income_c$ is the log of the initial real GDP per capita level in 1870, $telegraph_c$ represents the log of the initial number of telegraph offices per capita in 1870 and ε_c is the error term. β and γ are the respective coefficients to be estimated. We include the initial GDP per capita level for two reasons. First, it is typically used in the literature as a major explanatory variable in growth models owing to the assumption that rich countries grow at a slower pace than poor countries as the latter can apply existing technology and copy best practices while at the technological frontier it is very difficult to make further advances. It thus captures

the catching-up potential of less developed countries. Second, we want to see whether after the inclusion of the initial GDP per capita variable the telegraphy indicator still remains significant as to a certain extent both indicators can be interpreted to stand for the level of technological development.

Before turning to the results of the conditional growth model described above, it is useful to look first at the simple correlation between growth and initial telegraph office density (Figure 5). The point cloud is wide, but one can nevertheless identify an upward sloping relationship. The result is very much driven by a group of Central-Northern countries that had relatively high GDP per capita growth rates of around 1.5% to almost 2% per annum and at the same time a relatively high number of telegraph offices per capita. At the other extreme we find some of the peripheral economies that had dismal growth and a very low level of initial telegraph office density such as Russia and Romania.

Turning to the results using equation (1) from above, the estimated coefficients of the log of initial GDP per capita (-0.54) and of the log of initial telegraph office density (0.37) have the expected signs and are both statistically significant. For a one per cent higher initial per capita GDP, the respective country grew, on average, by about half a percentage point less, and for one per cent higher telegraph office density the GDP per capita grew, on average, by more than a third of a percentage point. The constant term is at a value of 3.77 and the goodness of fit of the regression is at an R^2 of 0.37. Figure 6 shows this relationship of growth and telegraphy conditional on the initial GDP in graphical terms. There is now obviously a better fit around the regression line than in the unconditional relationship of Figure 5.

Figure 5 / GDP growth (1870-1913) and telegraph offices, unconditional relationship

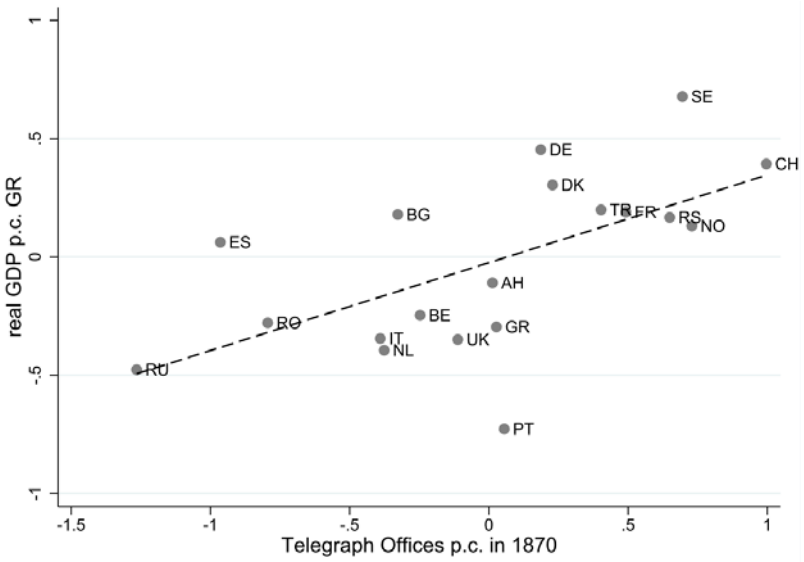


Note: Telegraph offices per capita are in logs.
Source: ITU, Broadberry and Klein (2012), own calculations.

Only few of the laggards from Southeastern Europe were able to generate above-average economic growth with an above-average early telegraph office density – these were Serbia and Turkey, which experienced similar (conditional) growth rates (and telegraph office densities) as France and Norway at the time. Others such as Romania fared badly in terms of per capita economic growth and had also very low levels of initial telegraph office density. However, as can be seen from Figure 3, Romania had

significantly increased its telegraph office density by the eve of the First World War and indeed experienced quite substantial catch-up growth in the century after the end of WWI.

Figure 6 / GDP growth (1870-1913) and telegraph offices, conditional relationship (accounting for the differences in the initial development level)



Note: Growth and log telegraph data as demeaned and corrected for the log initial GDP per capita level.
Source: ITU, Broadberry and Klein (2012), own calculations.

CONCLUSIONS

To sum up, controlling for the economic starting point, higher early use of the first digital technology was related to substantially higher average growth rates in Europe at the turn of the twentieth century. Telegraphy helped spread information at a speed and scope unseen before, which *inter alia* had a substantial impact on innovation and businesses. The similarities with today's Digital Revolution are apparent, which might also indicate a sort of path-dependency. Differences in early adoption of the internet might well have similar long-run effects on economic growth as in the age of the 'internet *avant la lettre*'.

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Can economic factors explain why Central Europe became so good at football in the 1930s?

BY RICHARD GRIEVESON

Austria and Hungary started playing football in the early 1900s, and by the 1920s and 1930s were among the best teams in the world. This progress relied on many factors, but industrialisation, income convergence with wealthier parts of Western Europe, integration into European knowledge networks, a willingness to accept new ideas, and urbanisation all seem to have played a role.

Over recent decades the links between football and economic and cultural factors have been studied increasingly intensively. A major finding has been that the performance of international football teams is heavily dependent on a country's wealth and population size. Scholars have also noticed links with innovation networks, the exchange of ideas and urbanisation trends (Kuper and Szymanski, 2009). This article aims to analyse the rise of football in Central Europe, and specifically Austria and Hungary, in the first four decades of the 20th century, and to examine to what extent findings on the links to economic development, knowledge networks and industrialisation can be applied in this region.

HOW FOOTBALL SPREAD

Football was first codified in the UK in the second half of the 19th century, and the first games involved teams from the British Isles. However, by the end of the 19th century, football had already started to spread quite rapidly, especially in Europe and South America.

In the first two decades of the 20th century, national teams played mostly others from the same region, and generally those that shared a border. From the 1920s this changed, and countries started to play those from much further away. This process intensified from the 1930s, notably with the establishment of the World Cup (first held in Uruguay in 1930), which saw teams start to play against those from other continents.

How and why football spread as it did has been widely debated, and there are numerous reasons (Goldblatt, 2006). Clearly one of these, and perhaps among the most important, can be linked to economic factors. Football in the UK started out as a middle-class sport, but from around 1900 spread rapidly, and primarily as a working-class game played in urban areas. As industrialisation and urbanisation intensified in the rest of Europe in the late 19th century, football tended to follow quite quickly (often with the help of British expatriates involved in industry). Many of the first teams across Europe were linked to factories or particular industries (and can be seen today in the names of many club teams). Football also soon established itself as a mass spectator sport, further solidifying its links with urbanisation.

AUSTRIA AND HUNGARY: INAUSPICIOUS BEGINNINGS, BUT AMONG THE WORLD'S BEST BY THE 1930s

Austria and Hungary started to play football right at the start of the 20th century. Their first official game was against each other on 12 October 1902, and was won 5-0 by Austria. As was typical at the time, both started out by playing exclusively against nearby countries. Austria's first eight games were all against Hungary (four victories, one draw, three defeats), while Hungary's first 14 matches came against either Austria or teams from what would become Czechoslovakia.

When the two teams first came into contact with the leading teams of the era (within Europe at least this meant Scotland and England), they generally lost quite heavily. Austria's first game against a team other than Hungary was a 6-1 home defeat to England in 1908, following by an 11-1 drubbing by the same opponent two years later. Also in 1908, Hungary lost 7-0 at home to England, and followed it up with an 8-2 thrashing against the same opponent a year later. However, by the 1930s, both were among the best teams in the world, especially Austria (Hungary's period of greatest glory would come in the 1950s).

To measure progress over time, we calculated winning percentages for eight of the most important football teams of the early decades of the 20th century: Austria, Hungary, Belgium, France, Argentina, Uruguay, England and Scotland (Figure 1). We used the methodology of two points for a win and one point for a draw, and divided this by the number of games played to arrive at a win percentage rate. In addition, we looked at how many games each country played in each decade (Figure 2).

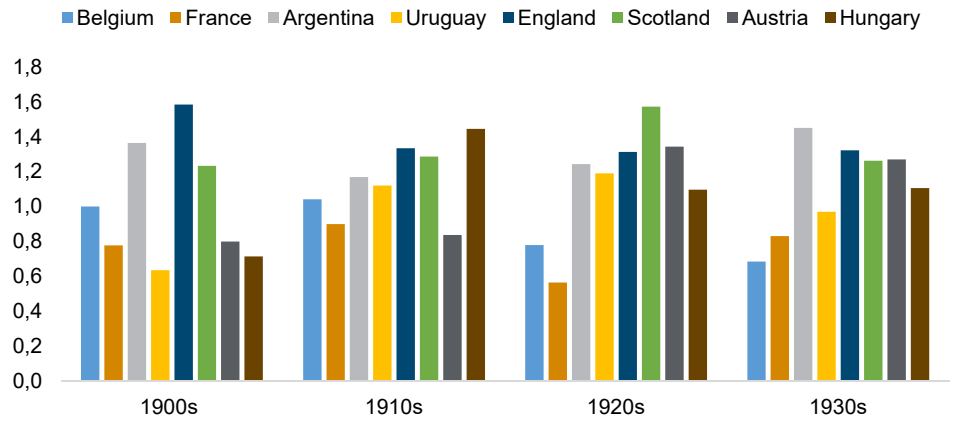
The data indicate that in the 1900s the best teams in the world were England, Scotland and Argentina. However, the usefulness of data for this decade is partly reduced by the fact that the sample size is small (France only played nine games in this decade for example) and that most teams played almost all of their games against neighbouring countries. Argentina's high win percentage is mostly because they repeatedly played against, and beat, Uruguay.

In the 1910s, the variance between teams' performances was much reduced, and the performance of Hungary notably improved to number 1 in the world. However, these data are affected by the First World War, which had an impact on international football (both in terms of how many games were played, and the range of possible opponents). The South American teams played far more games than anyone else in this decade, but Austria and Hungary also (largely by playing against each other) played a lot more often than the other European teams.

In the 1920s, Hungary fell back (partly because they had to play more difficult opposition) but Austria improved significantly. On this measure, Austria were already among the best teams in the world in the 1920s (second only to Scotland among the selected countries). Moreover, as in the 1910s, both countries played significantly more games than the other European countries shown here.

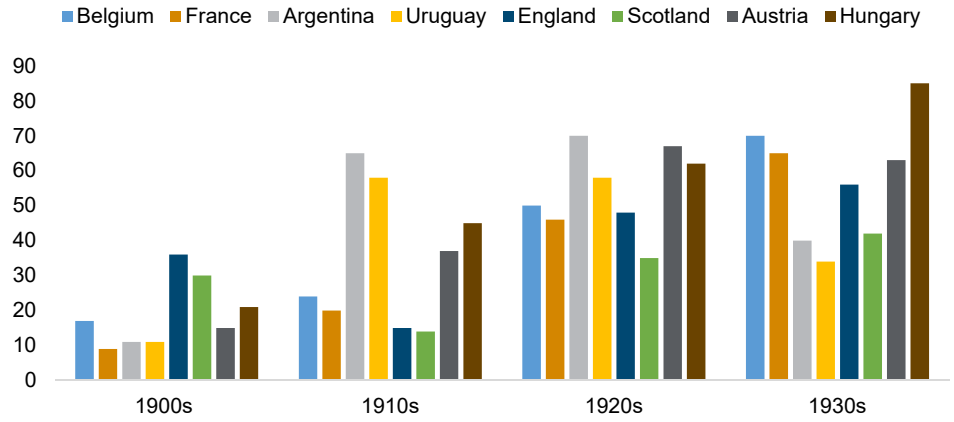
In the 1930s, the decade of the *Wunderteam*, Austria's win ratio actually fell back slightly. However, it remained among the highest in the world, level with Scotland and only slightly below England. This was the decade when international football really took off (including the first World Cup in 1930), meaning that an average match for Austria and Hungary would be against more difficult opposition than in previous decades. Taking this into account, a high win percentage in the 1930s would have been more difficult to achieve than in the 1920s.

Figure 1 / Win ratio per decade, %



Note: Win ratio calculated as 2 points for a win and 1 for a draw, divided by total number of games played.
Source: www.kaggle.com/martj42.

Figure 2 / Games played per decade



Source: www.kaggle.com/martj42.

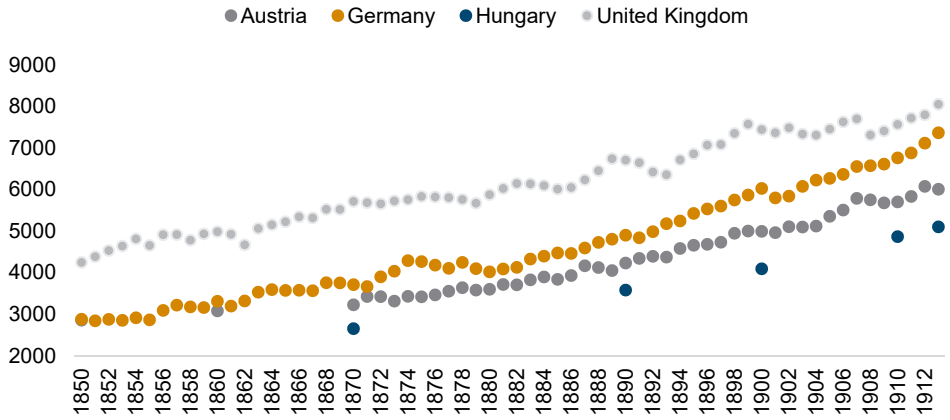
ECONOMIC FACTORS BEHIND THE INCREASED SUCCESS OF AUSTRIA AND HUNGARY

We examined a range of data related to economics for the period 1900-1939, and compared this with performance and experience data for the Austrian and Hungarian football teams. Based on this, we found that the rise of Hungary and Austria as footballing powers appears to have gone hand in hand with economic development and convergence, industrialisation, urbanisation and integration into European knowledge networks.

Economic development and convergence: The importance of wealth in sporting success is quite well established in Sports Economics (Kuper and Szymanski, 2009). All else being equal, richer countries tend to be better at sport. In 1900, the Habsburg Empire was not particularly wealthy, certainly not compared with the industrial leaders of the era. Austria's and Hungary's catching up with the UK in terms

of per capita GDP, for example, came much later than Germany's (Figure 3). Whereas by the start of the First World War, Germany had basically caught up with the UK, Austria and Hungary were still some way back. The economies of the defeated powers in the First World War, including Austria and Hungary, also performed particularly badly after the war ended. By 1920, both Austria and Hungary recorded per capita GDP levels of only around 60% of the UK level.

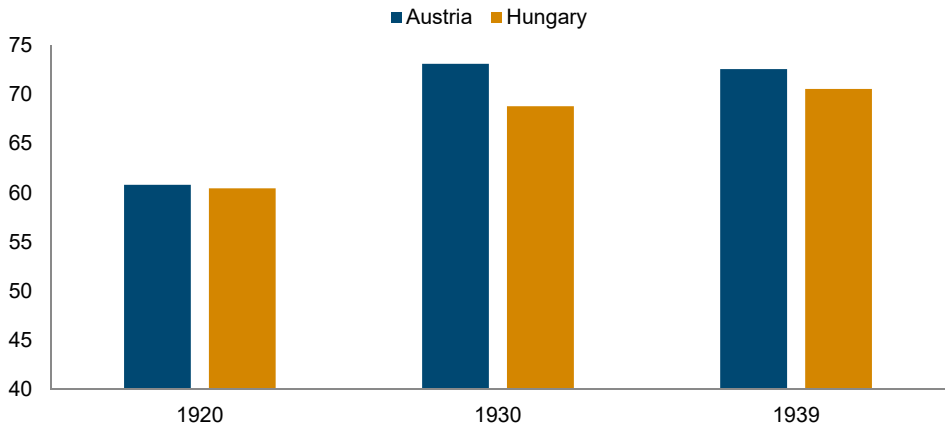
Figure 3 / Real GDP per capita in 2011 USD, PPP



Source: Maddison Project Database.

From 1920 onwards, however, this changed, and the region started to converge much more strongly. Between 1920 and 1930, both Austria and Hungary recorded quite strong convergence with the UK, and this level was largely maintained until the start of the Second World War (albeit with some volatility, Figure 4). Therefore, it can be said that Austria and Hungary became relatively better at football at the same time as their economies became relatively more developed.

Figure 4 / Real GDP per capita at PPP, UK = 100



Source: Maddison Project Database.

Urbanisation: Austria in particular industrialised quite significantly over this period, and urbanisation sped up rapidly. Between 1850 and 1910, Vienna's population increased almost four-fold, to nearly 2.1 million. This had several implications for football, but one was the growth of the suburbs of the city, which created the basis for the establishment of many football clubs with large support bases (Horak, 2006). A good example of this is Rapid Vienna, which then (as now) clearly identified itself as a workers' club[1]. As Wilson (2008) notes, 'football in Central Europe was an almost entirely urban phenomenon, centred around Vienna, Prague and Budapest'.

The size of crowds, and their willingness to pay for tickets, helped Austria to become in 1924 the first place outside the UK to have a professional football league, significantly supporting the improvement in the standard of football. Horak (1992) quotes a report from the *Neues Wiener Journal* in the 1920s: 'Vienna is the football capital of the European continent … where else can you see at least 40,000-50,000 spectators gathering Sunday after Sunday?' Mass industrialisation and urbanisation in Vienna also created a whole generation of the much-celebrated 'street footballers', known for their high level of technical skills. Goldblatt (2006) has argued that the enshrinement of the eight-hour day into law in Austria in 1918 freed up workers and gave them the energy and time to engage in and watch leisure pursuits, of which the most important was football.

Integration into and increasing leadership of Western European knowledge networks: Although the UK initially played a central role in both the industrial revolution and football, by the early 20th century, the core of innovation in both was moving further east, and in both areas the UK was slipping behind the innovation frontier. In terms of industrialisation, the German-speaking world started to play a greater role (Watson, 2011). In the late 19th and early 20th centuries, Vienna in particular established itself as a place of progress and new ideas in many areas (Janik and Toulmin, 1973; Schorske, 1980).

This also spilled over into football, particularly in the guise of Hugo Meisl and Jimmy Hogan, two of the key figures of inter-war Austrian and Hungarian football. Hugo Meisl was born in Bohemia in the 1880s to a fairly wealthy Jewish family. In the 1920s, he founded the Mitropa Cup in Central Europe, the world's first regular international football tournament (the greater exposure to foreign styles of football and competition which this stimulated no doubt contributed to improved quality of football in Central Europe). Meisl introduced many innovations both commercially and in terms of coaching, and was the coach of the *Wunderteam* of the 1930s. Meanwhile Jimmy Hogan was an Englishman of Irish ancestry, who believed in a far more 'scientific' approach to football coaching and tactics than the majority in the UK were willing to accept. He struggled to find employment in his home country, but discovered a much more willing audience for his ideas in Austria and Hungary (as well as Germany, Switzerland and France where he also coached). Hogan coached in both Austria and Hungary in the 1910s, 20s and 30s, and along with Meisl (the two were friends) made a significant contribution to the *Wunderteam*.

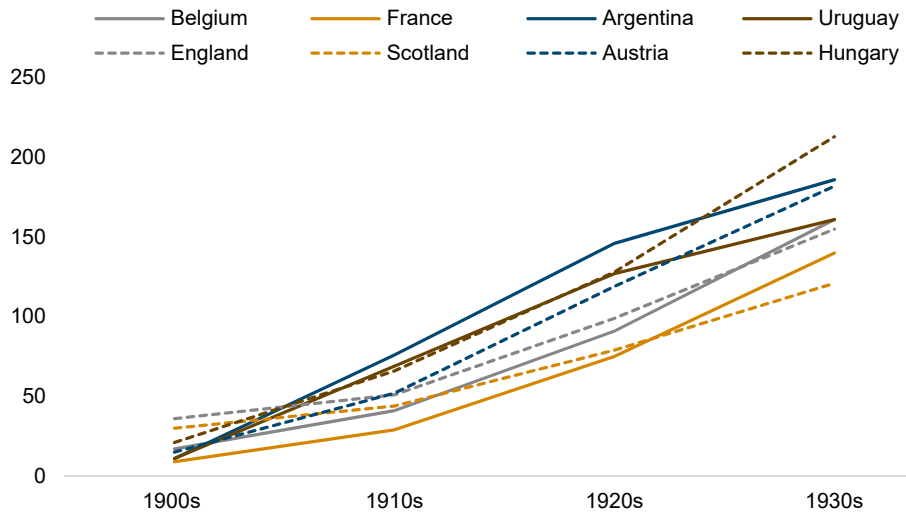
Meisl and Hogan contributed to a growing sophistication in terms of how football was thought about and played in Austria and Hungary during the inter-war period, implementing ideas well ahead of what was being deployed in England and Scotland at the same time. Football in Vienna had two identities in this period, what Horak has called the 'doppelte Kodierung' of the *Kaffeehaus* and the suburbs (Horak, 2002). The two identities of course were not mutually exclusive, and both played their role. But the

[1] https://derstandard.at/900805/Zwischen-Kaffeehaus-und-Vorstadt

transition to a more sophisticated way of playing can be seen in the contrast between the most prominent Austrian players of the 1920s and 1930s. In the 1920s, the key player was Rapid's Uridil, a player so strong and physical that he was named 'the tank'. At this point, it seems, football in Central Europe had not moved too far away from the way it was played in the UK. By the 1930s, however, the key player was FK Austria's Sindelar, a player more for the *Kaffeehaus* than the suburbs, who was nicknamed 'the wafer'. According to Goldblatt (2006), 'Sindelar and the teams that he shaped played football with markedly less physical contact and force than either British or Italian football; it relied on guile, balance and brains. Viennese café society at last had a game in their own image: cultured, intellectual, even cerebral'. In a similar sense, Wilson (2008) states that 'the modern way of understanding and discussing the game was invented in the coffee houses of Vienna'.

Experience: A final key factor in the rise of both Austria and Hungary as footballing powers appears to have been experience, both in terms of number of games played, and in terms of the variety of opposition, at least in the 1920s and 1930s. Austria seems to have played a lot more teams from outside its immediate region than the other countries looked at here as early as the 1920s. In addition, Austria and Hungary continued to play international games during the First World War (often against each other), in contrast to other European countries. As Figure 5 shows, between 1900 and the end of the 1930s, Hungary played the most games in international football, and Austria the third most, of the eight countries studied here.

Figure 5 / Total matches played since 1900, by decade



Source: www.kaggle.com/martj42.

HUNGARY'S GOLDEN YEARS WERE YET TO COME

The Austrian *Wunderteam* of the 1930s continues to mark the highpoint of the country's footballing history. It was acknowledged by many, including outside Austria, as the best team in the world at that time. According to Goldblatt (2006), Austria was 'the team that everyone would have paid to see at the 1934 World Cup … the toast of European football'.

Like much else in Austria in the late 1930s, the *Wunderteam* fell victim to political developments. Following the *Anschluss* of 1938, Jewish clubs or teams with a significant Jewish presence (including Sindelar's FK Austria) were closed down or taken over. Sindelar refused to play for the greater German team, and played his last match for Austria in the so-called Anschluss game of 1938, when Austria beat Germany 2-0[2]. He died soon after.

For Hungary, the greatest period was yet to come. As the data above shows, their performance in the 1920s and 1930s was already good, and they had some impressive results in this period (including reaching the World Cup Final in 1938, where they lost to Italy). Hungary would have to wait until the 1950s, however, for its equivalent of the *Wunderteam*.

Perhaps Hungary's most famous match was against England in London in 1953. Until that time, England had never lost at home to a team not from the rest of the UK or Ireland. Memoirs written by some of the Hungarian players suggest that they did not believe they had much of a chance of victory (Wilson, 2006). However, once the game began, the superiority of the Hungarians was obvious. The final score was 6-3 to Hungary, but even that may have understated the extent of how much better Hungary were. A rematch the following year in Budapest saw Hungary win 7-1. The Hungarian manager, Gusztáv Sebes, had a crucial role to play in the victory.

Yet even then, the Hungarian team was quick to acknowledge the debt they owed to Hungary's integration into European football innovation networks of the 1920s and 1930s and, ironically, the Englishman Jimmy Hogan. After the game, Sebes said 'we played football as Jimmy Hogan taught us. When our football history is told, his name should be written in gold letters.'[3] Meanwhile Sándor Barcs, president of the Hungarian Football Association, stated simply that 'Jimmy Hogan taught us everything we know about football'.

CONCLUSIONS

Football is a game of generally few goals, and often small sample sizes, making proper statistical analysis sometimes difficult. However, the data presented above shows that the football teams of Austria and Hungary went from fairly underwhelming beginnings in the early 1900s, to being among the best teams in the world by the 1920s and especially the 1930s. These developments coincided with relative income convergence with wealthier countries, rapid urbanisation and industrialisation, a greater integration into (and to a certain degree leadership of) European knowledge and innovation networks, and greater relative experience, both in terms of number of games played and variety of opposition. These findings are consistent with other studies in Football Economics.

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2 https://cafefutebol.wordpress.com/tag/sindelar/

3 https://www.fifa.com/news/y=2012/m=5/news=nomadic-hogan-led-european-revolution-1633781.html

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Monthly and quarterly statistics for Central, East and Southeast Europe

The monthly and quarterly statistics cover **20 countries** of the CESEE region. The graphical form of presenting statistical data is intended to facilitate the **analysis of short-term macroeconomic developments**. The set of indicators captures trends in the real and monetary sectors of the economy, in the labour market, as well as in the financial and external sectors.

Baseline data and a variety of other monthly and quarterly statistics, **country-specific** definitions of indicators and **methodological information** on particular time series are **available in the wiiw Monthly Database** under: **https://data.wiiw.ac.at/monthly-database.html**. Users regularly interested in a certain set of indicators may create a personalised query which can then be quickly downloaded for updates each month.

Conventional signs and abbreviations used

%	per cent
ER	exchange rate
GDP	Gross Domestic Product
HICP	Harmonised Index of Consumer Prices (for new EU Member States)
LFS	Labour Force Survey
NPISHs	Non-profit institutions serving households
p.a.	per annum
PPI	Producer Price Index
reg.	registered

The following national currencies are used:

ALL	Albanian lek	HUF	Hungarian forint	RSD	Serbian dinar
BAM	Bosnian convertible mark	KZT	Kazakh tenge	RUB	Russian rouble
BGN	Bulgarian lev	MKD	Macedonian denar	TRY	Turkish lira
CZK	Czech koruna	PLN	Polish zloty	UAH	Ukrainian hryvnia
HRK	Croatian kuna	RON	Romanian leu		

EUR euro – national currency for Montenegro and for the euro-area countries Estonia (from January 2011, euro-fixed before), Latvia (from January 2014, euro-fixed before), Lithuania (from January 2015, euro-fixed before), Slovakia (from January 2009, euro-fixed before) and Slovenia (from January 2007, euro-fixed before).

Sources of statistical data: Eurostat, National Statistical Offices, Central Banks and Public Employment Services; wiiw estimates.

Online database access

wiiw Annual Database

wiiw Monthly Database

wiiw FDI Database

The wiiw databases are accessible via a simple web interface, with only one password needed to access all databases (and all wiiw publications).

You may access the databases here: https://data.wiiw.ac.at.

If you have not yet registered, you can do so here: https://wiiw.ac.at/register.html.

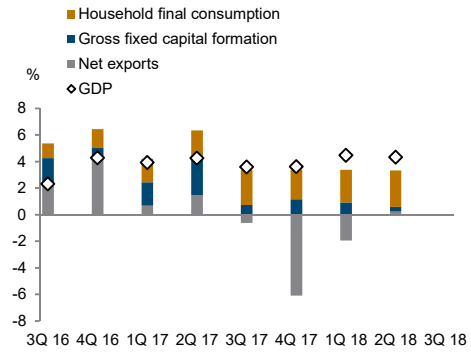
Service package available

We offer an additional service package that allows you to access all databases – a Premium Membership, at a price of € 2,300 (instead of € 2,000 as for the Basic Membership). Your usual package will, of course, remain available as well.

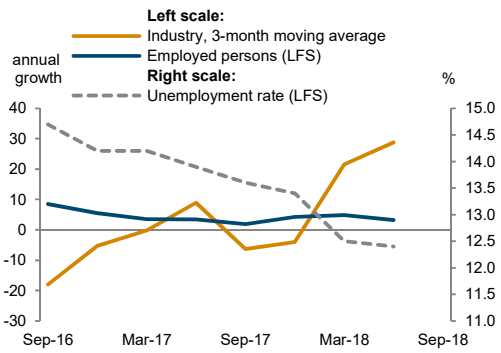
For more information on database access for Members and on Membership conditions, please contact Ms Gabriele Stanek (stanek@wiiw.ac.at), phone: (+43-1) 533 66 10-10.

Albania

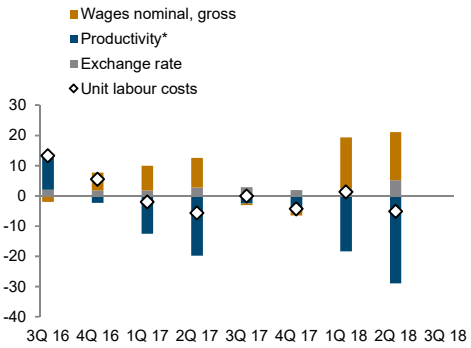
Real GDP growth and contributions
year-on-year



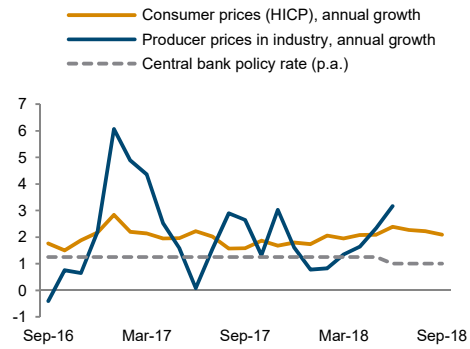
Real sector development
in %



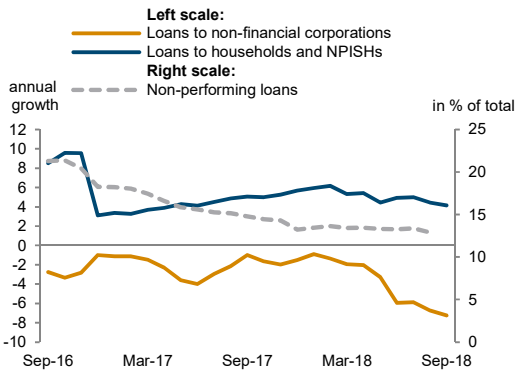
Unit labour costs in industry
annual growth rate in %



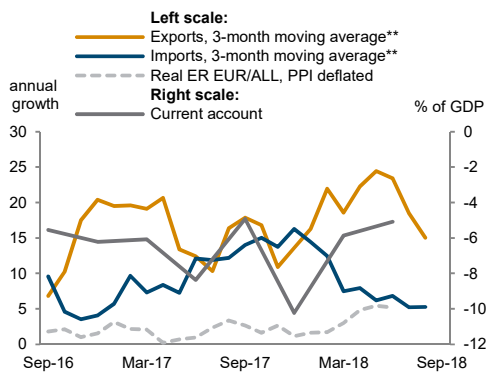
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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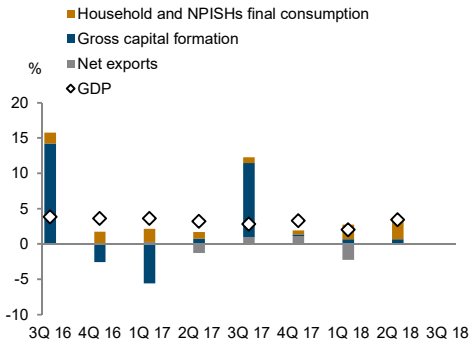
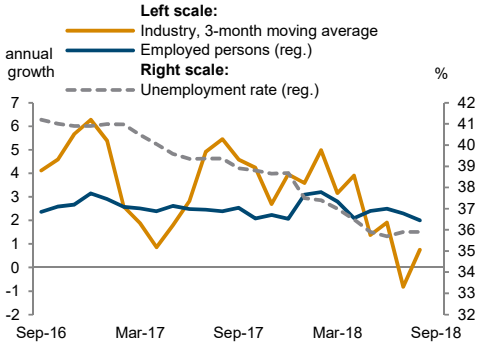
Bosnia and Herzegovina

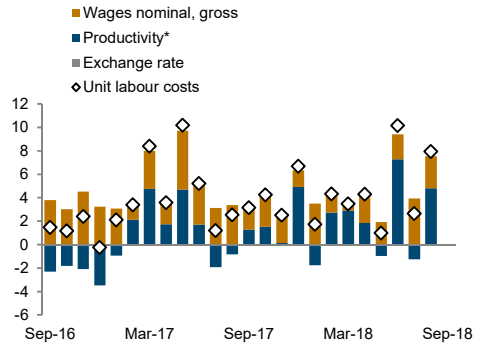
Real GDP growth and contributions
year-on-year



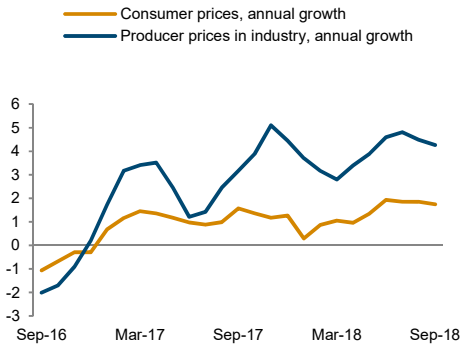
Real sector development
in %



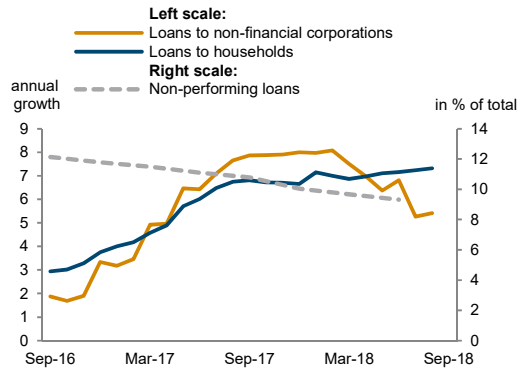
Unit labour costs in industry
annual growth rate in %



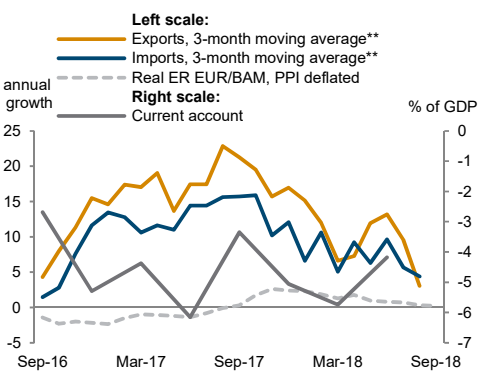
Inflation
in %



Financial indicators
in %



External sector development
in %



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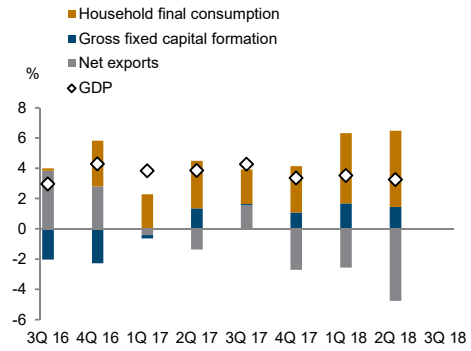
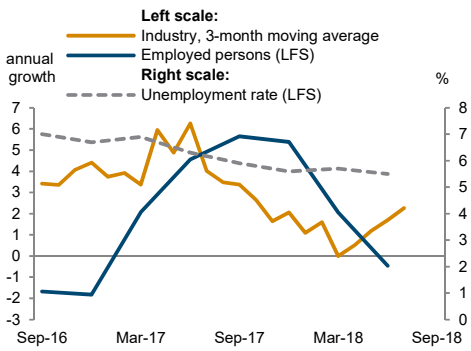
Bulgaria

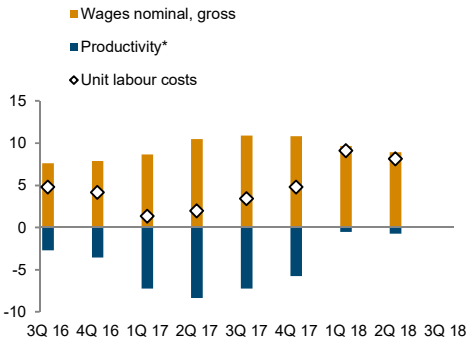
Real GDP growth and contributions
year-on-year



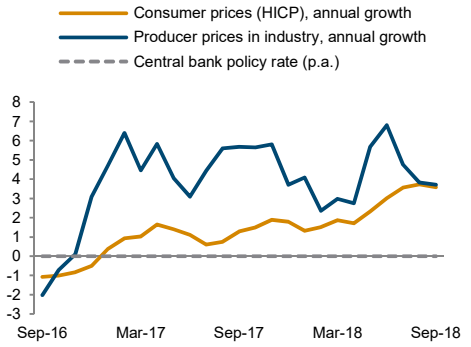
Real sector development
in %



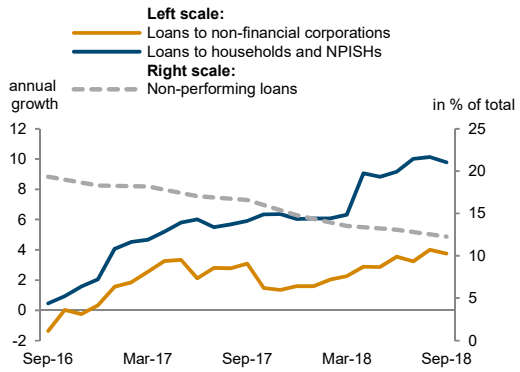
Unit labour costs in industry
annual growth rate in %



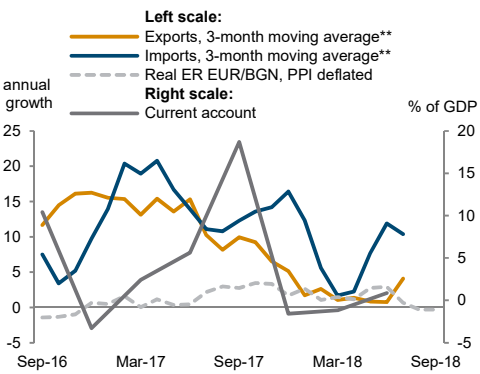
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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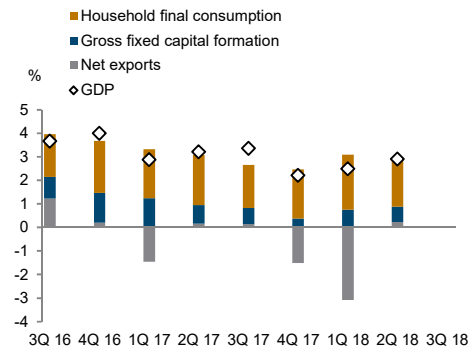
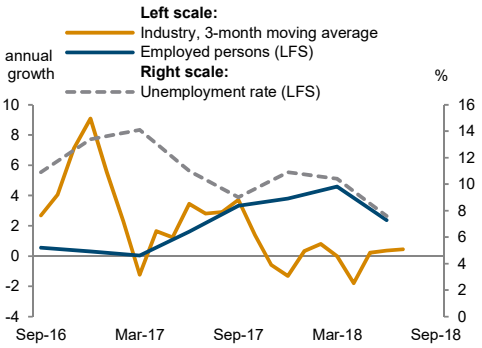
Croatia

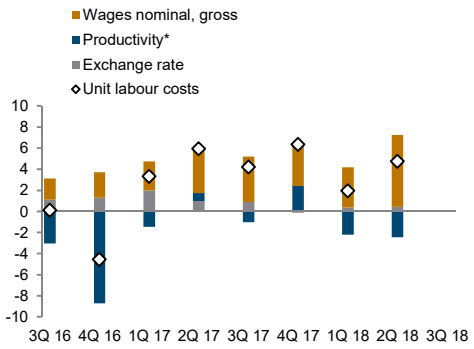
Real GDP growth and contributions
year-on-year



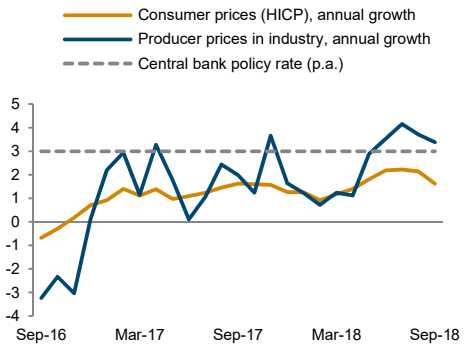
Real sector development
in %



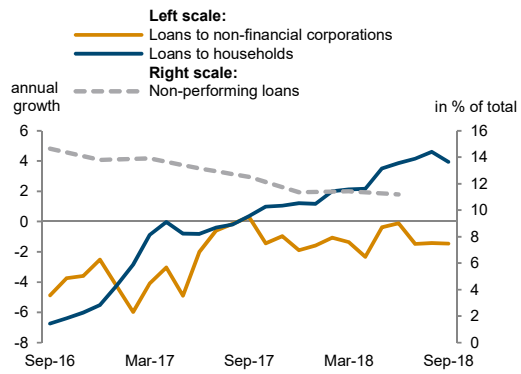
Unit labour costs in industry
annual growth rate in %



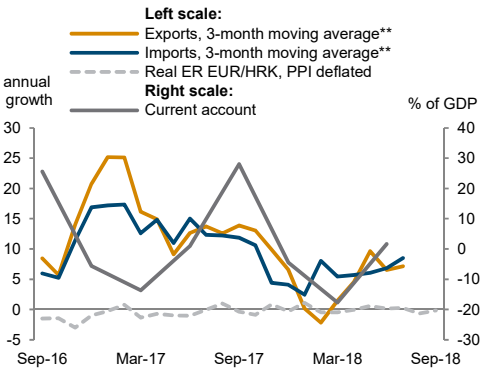
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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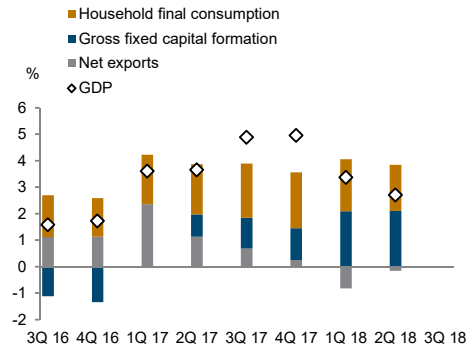
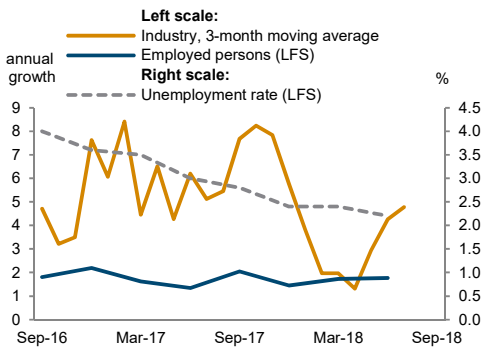
Czech Republic

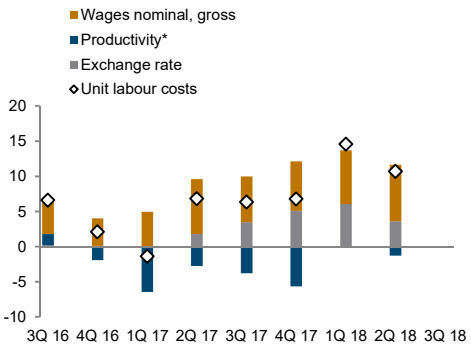
Real GDP growth and contributions
year-on-year



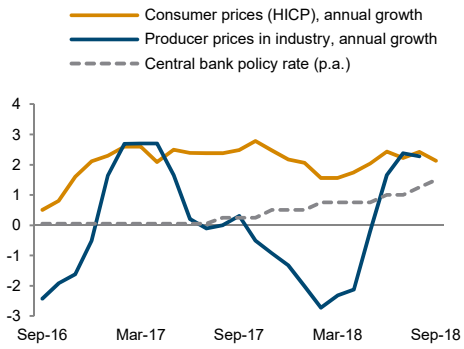
Real sector development
in %



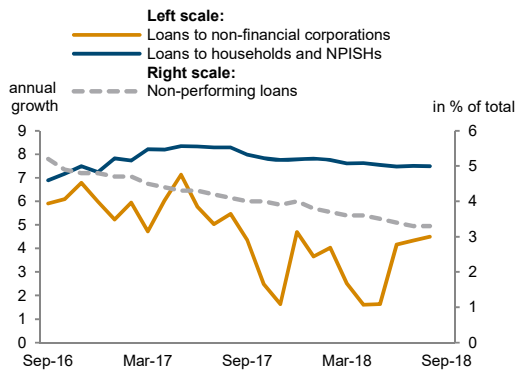
Unit labour costs in industry
annual growth rate in %



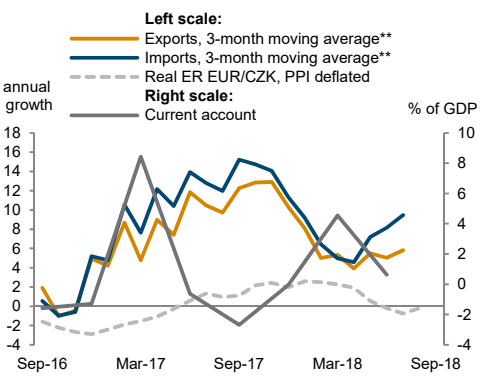
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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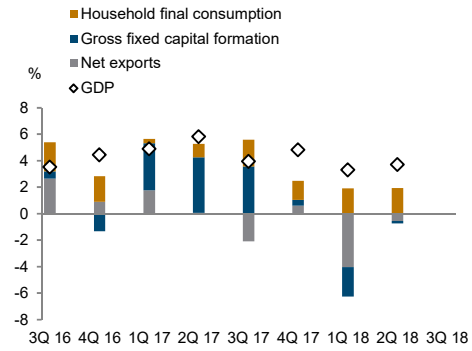
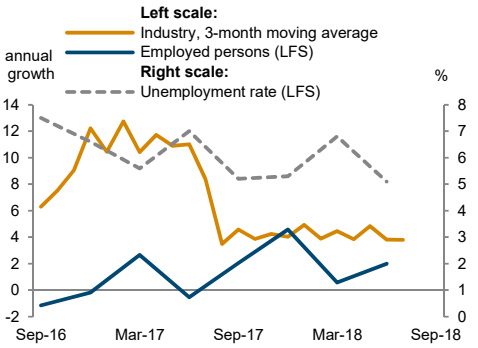
Estonia

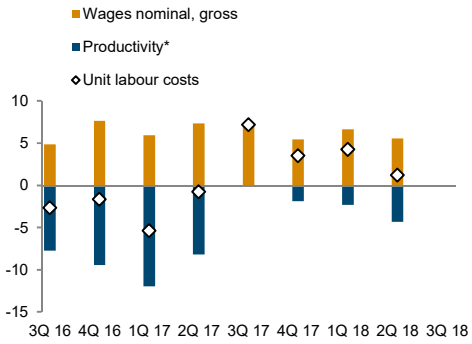
Real GDP growth and contributions
year-on-year



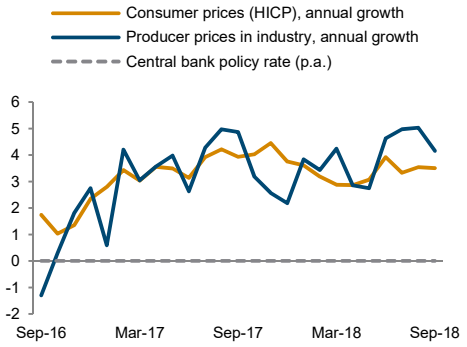
Real sector development
in %



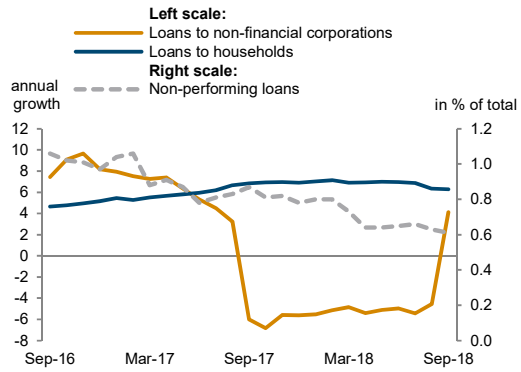
Unit labour costs in industry
annual growth rate in %



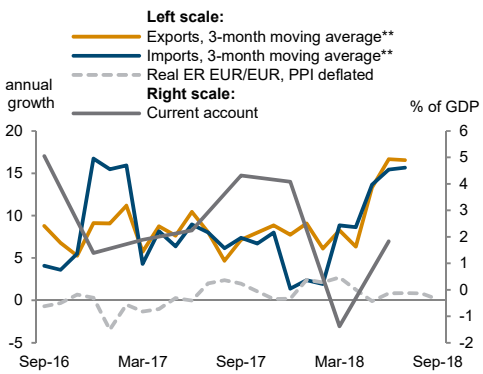
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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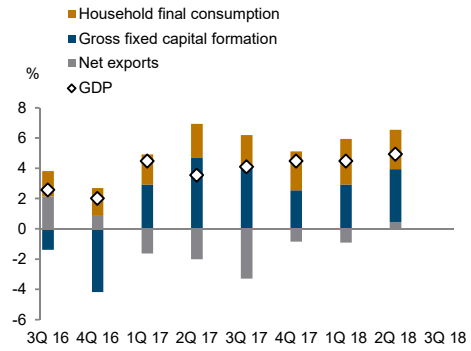
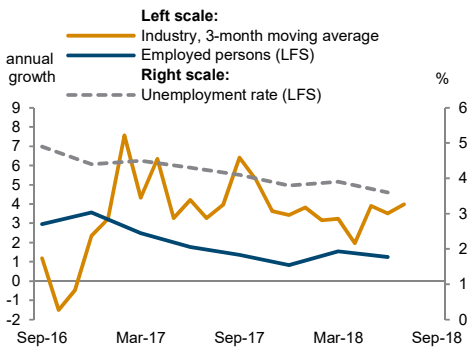
Hungary

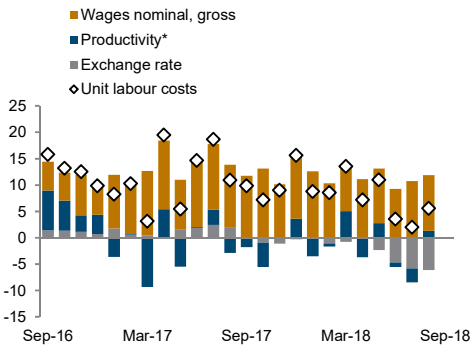
Real GDP growth and contributions
year-on-year



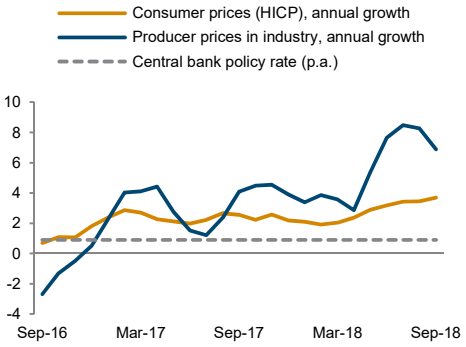
Real sector development
in %



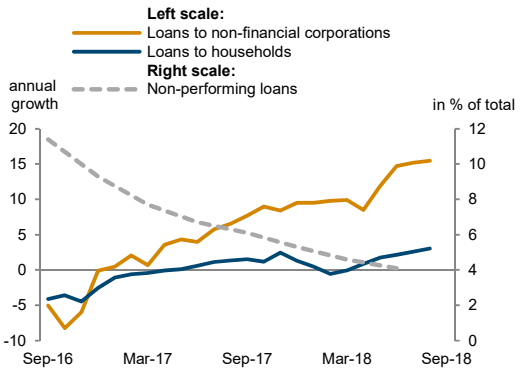
Unit labour costs in industry
annual growth rate in %



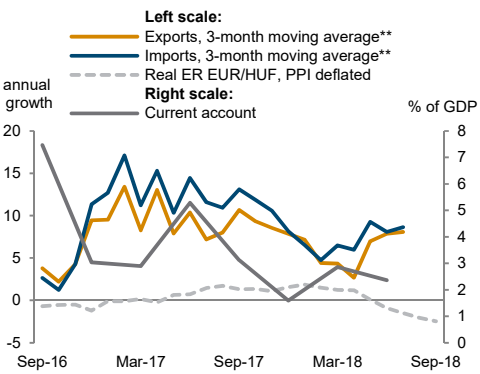
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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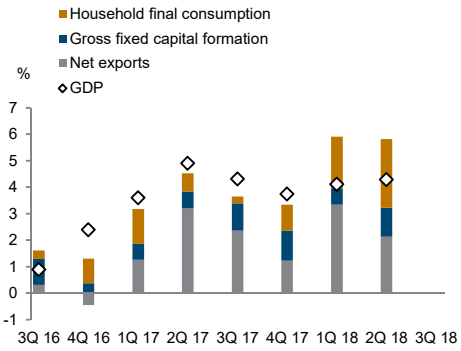
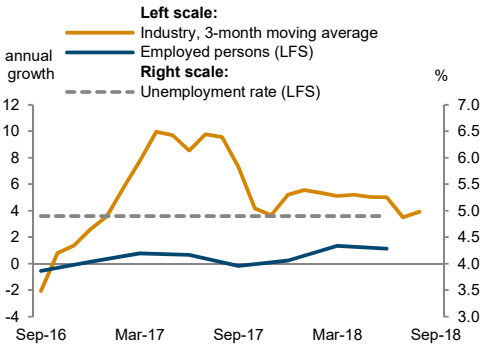
Kazakhstan

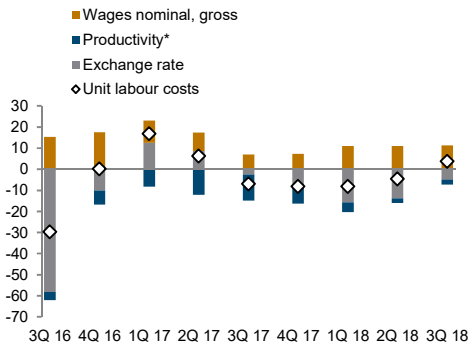
Real GDP growth and contributions
year-on-year



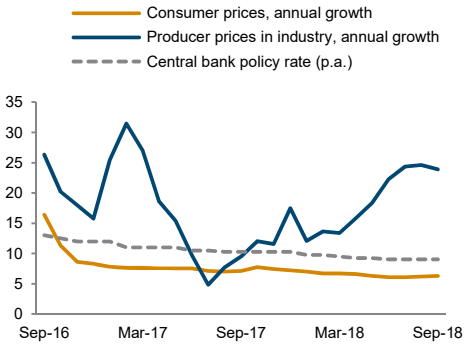
Real sector development
in %



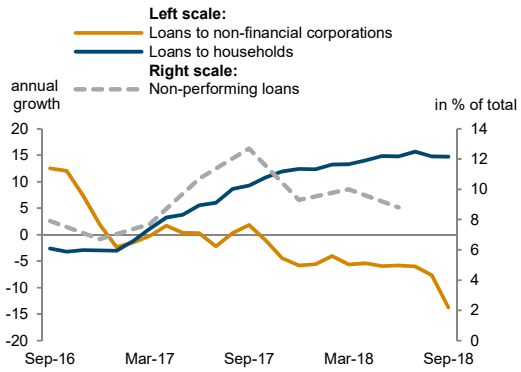
Unit labour costs in industry
annual growth rate in %



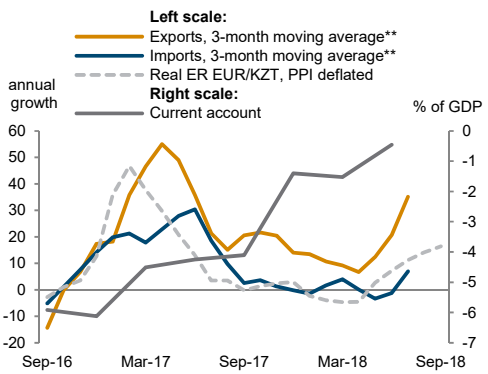
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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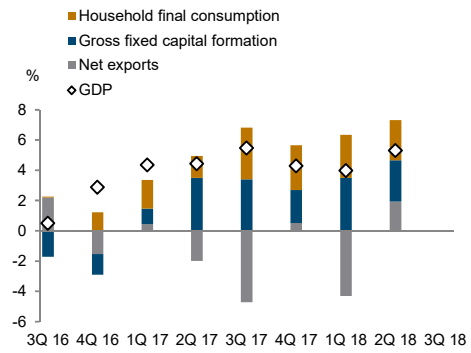
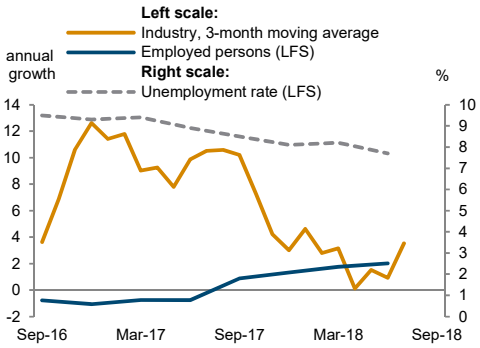
Latvia

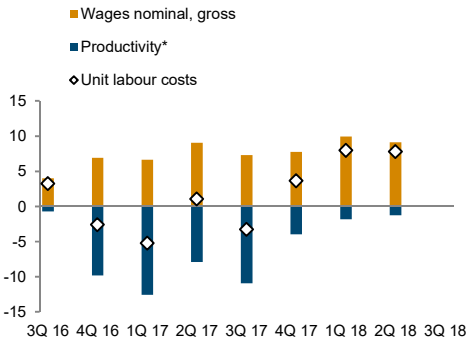
Real GDP growth and contributions
year-on-year



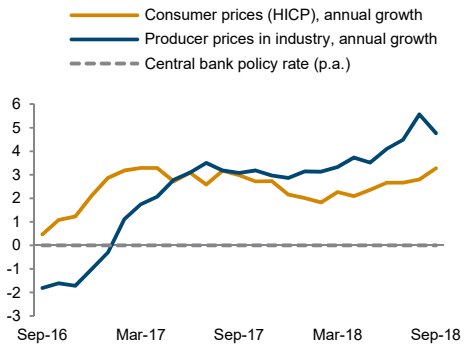
Real sector development
in %



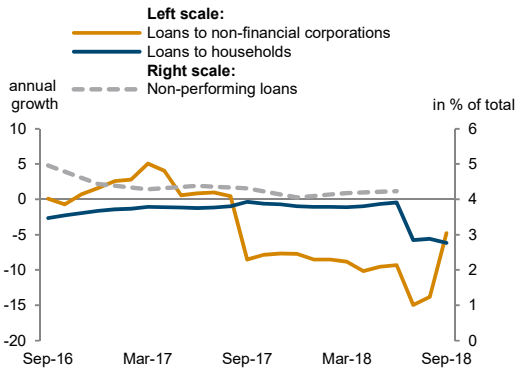
Unit labour costs in industry
annual growth rate in %



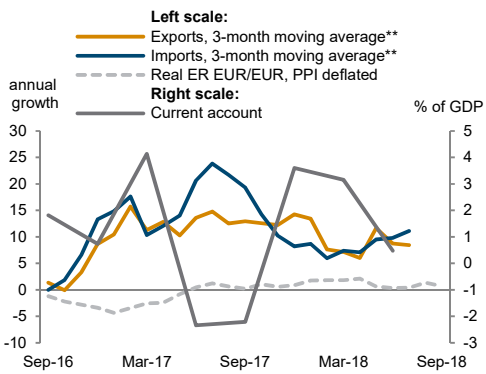
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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**EUR based.

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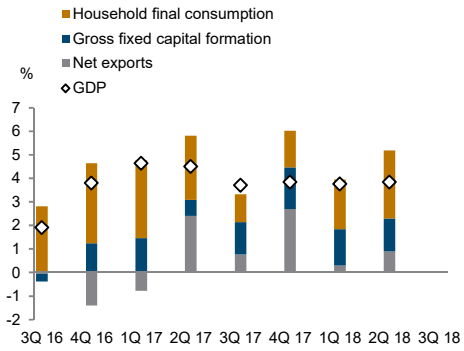
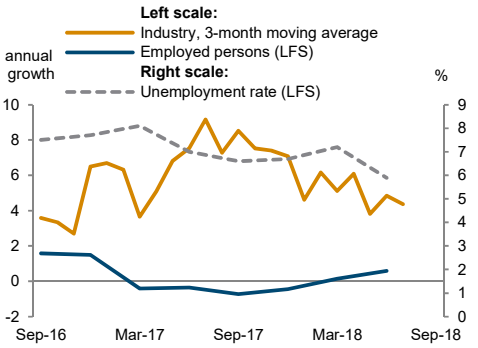
Lithuania

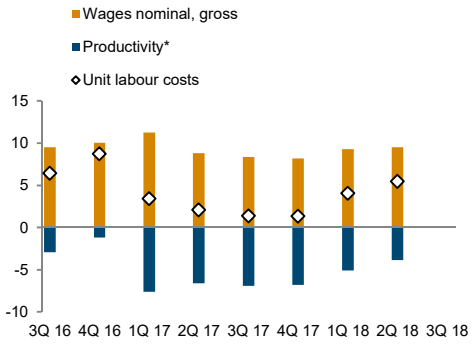
Real GDP growth and contributions
year-on-year



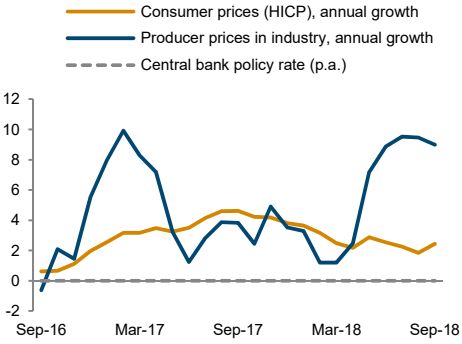
Real sector development
in %



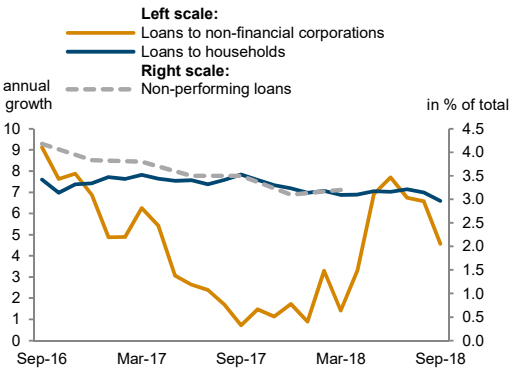
Unit labour costs in industry
annual growth rate in %



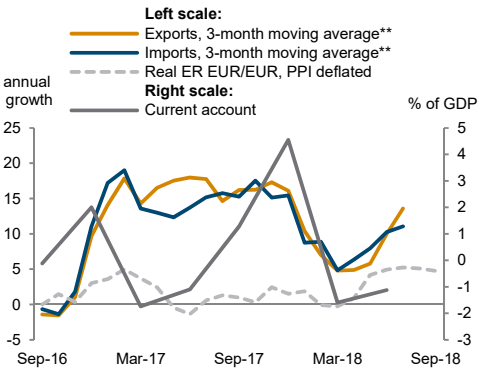
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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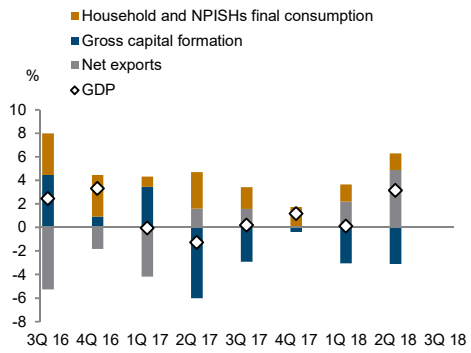
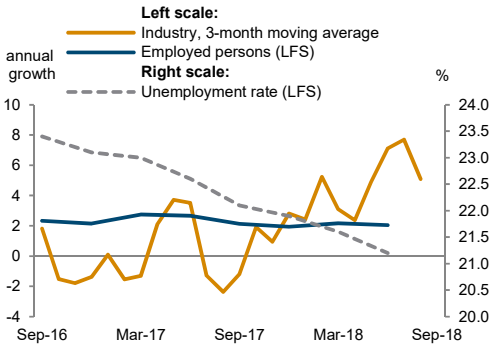
Macedonia

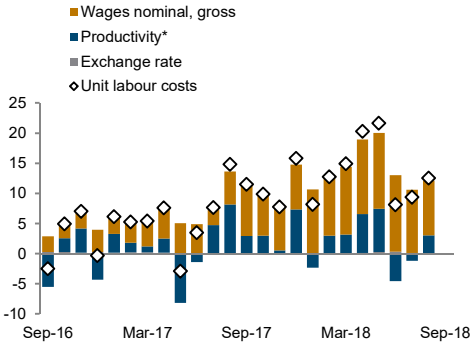
Real GDP growth and contributions
year-on-year



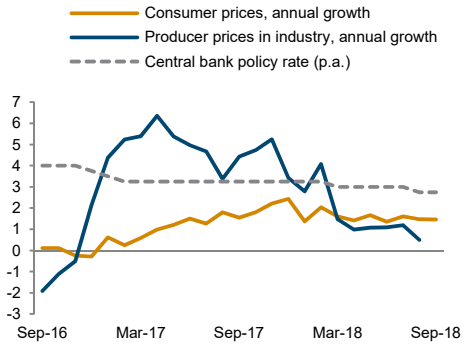
Real sector development
in %



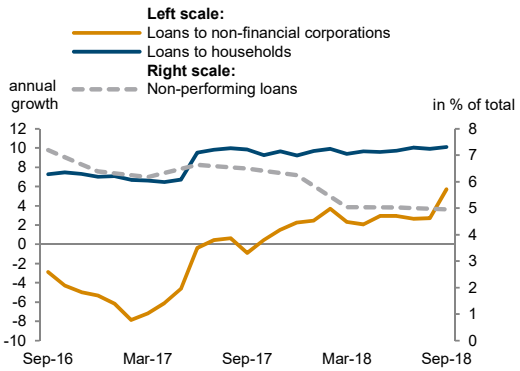
Unit labour costs in industry
annual growth rate in %



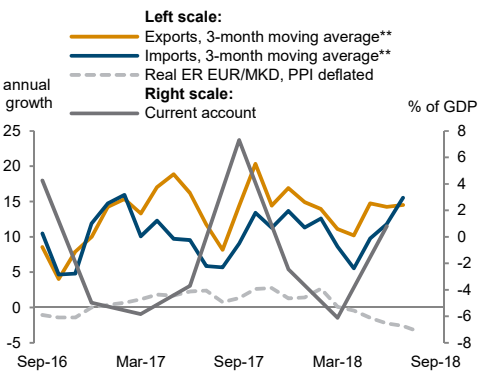
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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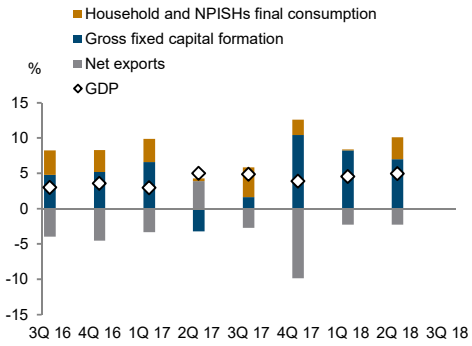
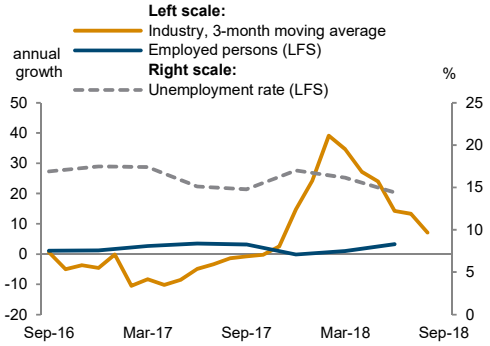
Montenegro

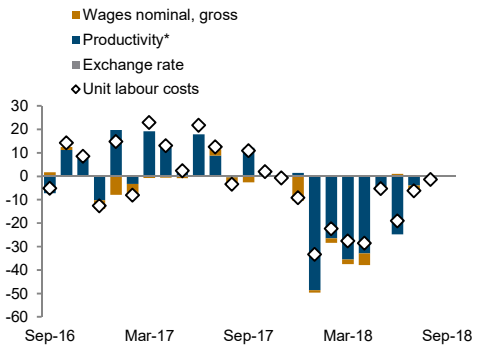
Real GDP growth and contributions
year-on-year



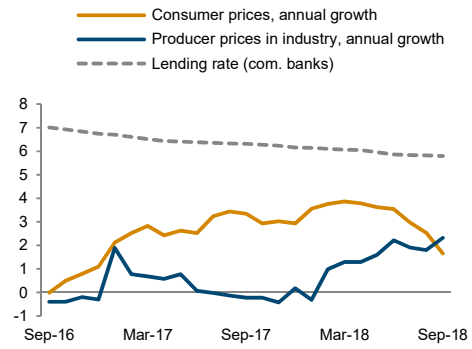
Real sector development
in %



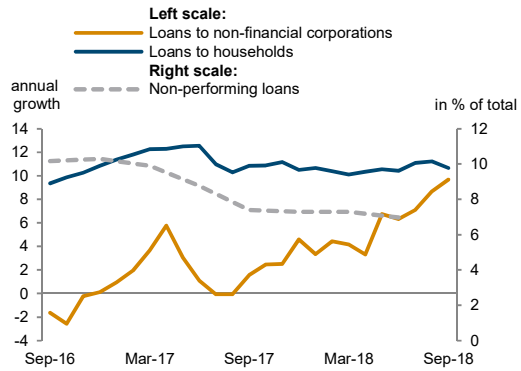
Unit labour costs in industry
annual growth rate in %



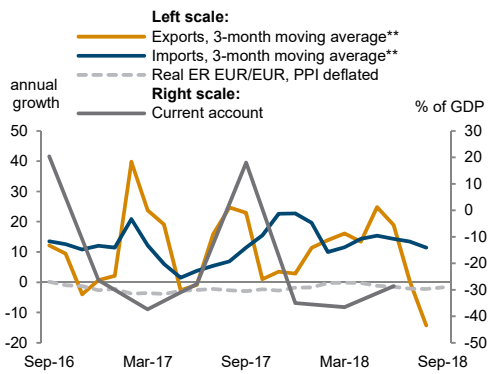
Inflation and lending rate
in %



Financial indicators
in %



External sector development
in %



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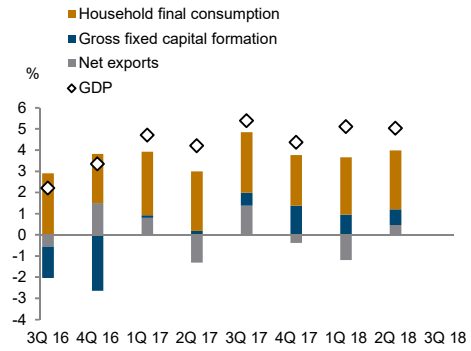
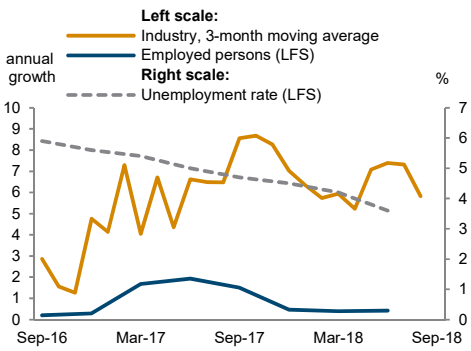
Poland

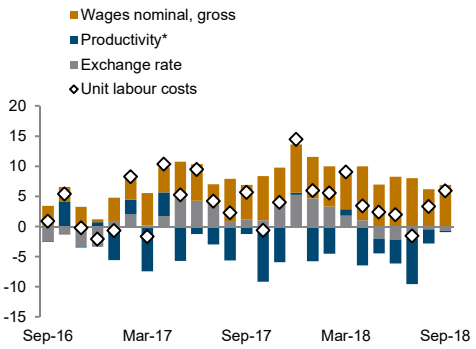
Real GDP growth and contributions
year-on-year



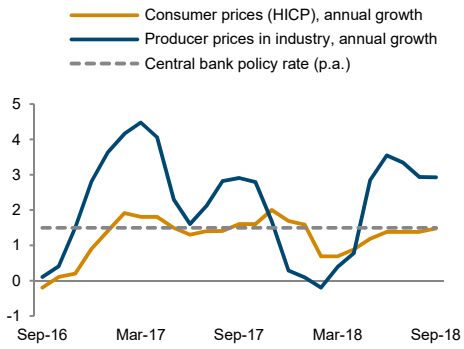
Real sector development
in %



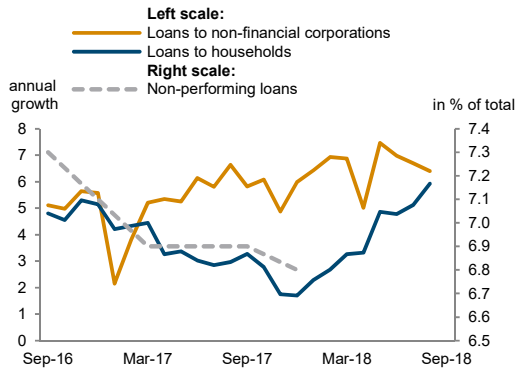
Unit labour costs in industry
annual growth rate in %



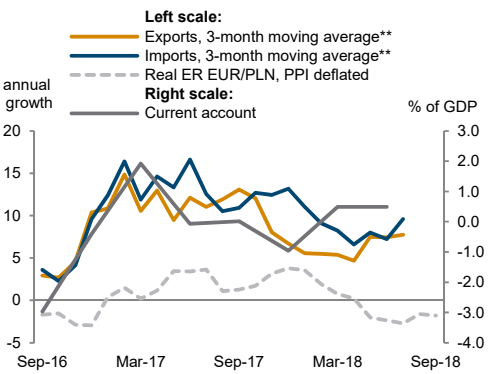
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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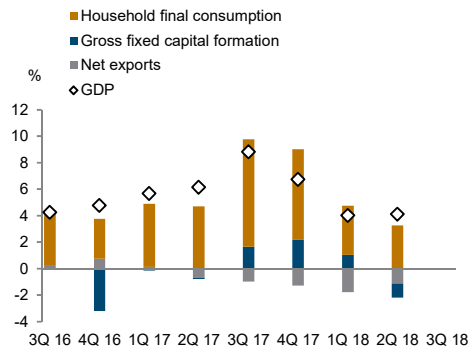
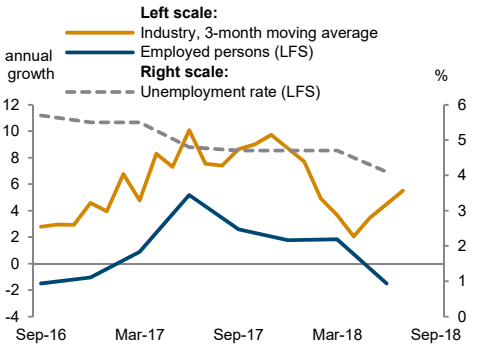
Romania

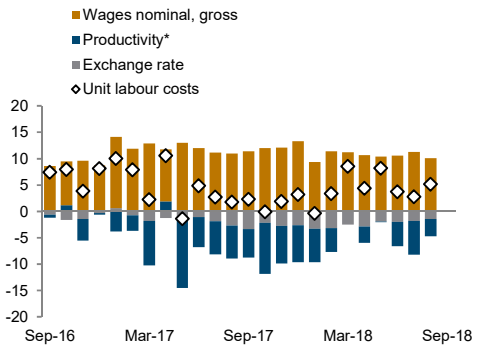
Real GDP growth and contributions
year-on-year



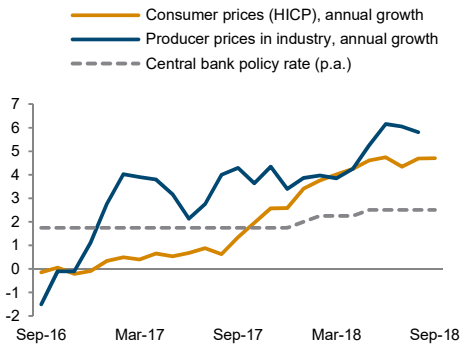
Real sector development
in %



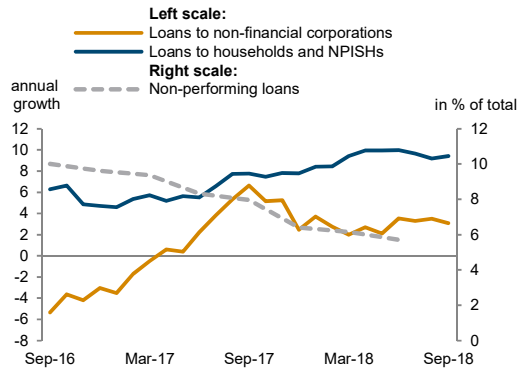
Unit labour costs in industry
annual growth rate in %



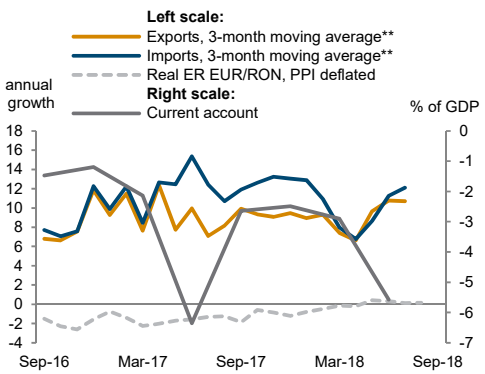
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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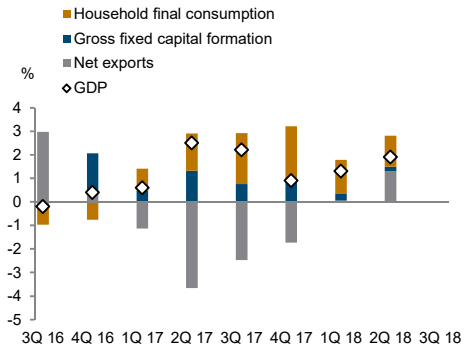
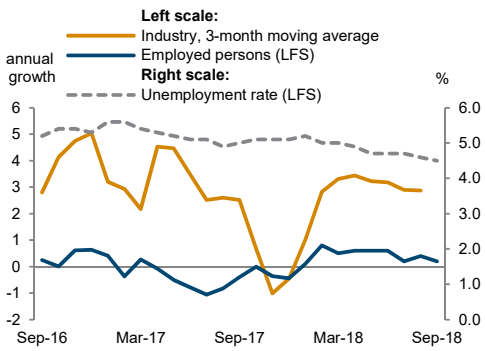
Russia

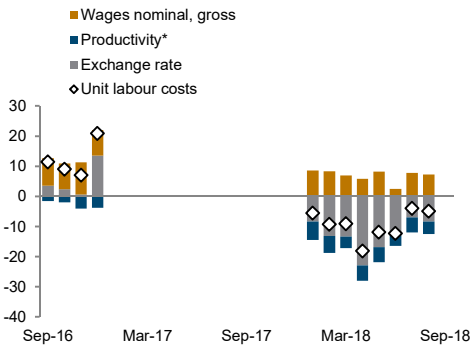
Real GDP growth and contributions
year-on-year



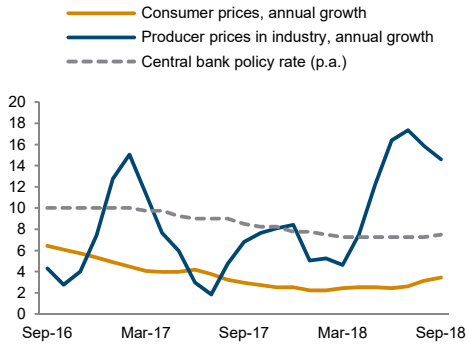
Real sector development
in %



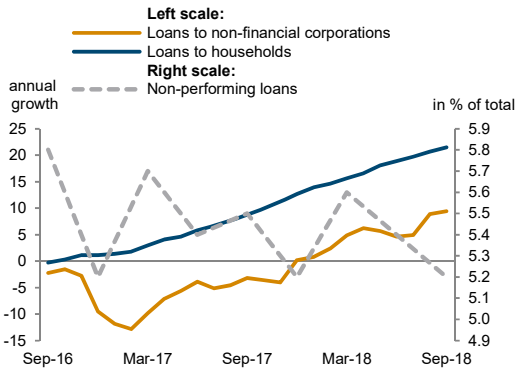
Unit labour costs in industry
annual growth rate in %



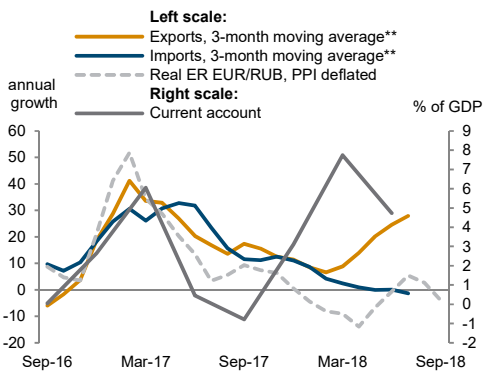
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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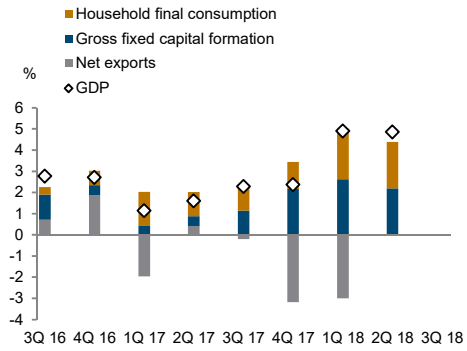
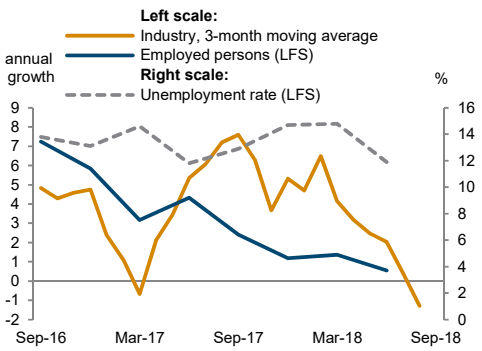
Serbia

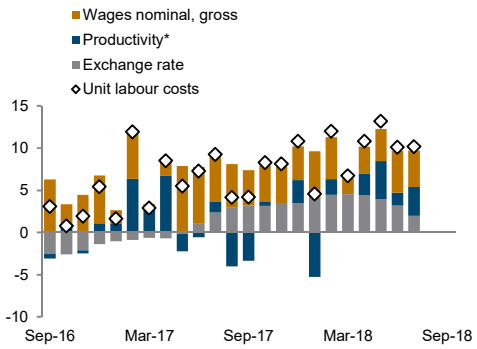
Real GDP growth and contributions
year-on-year



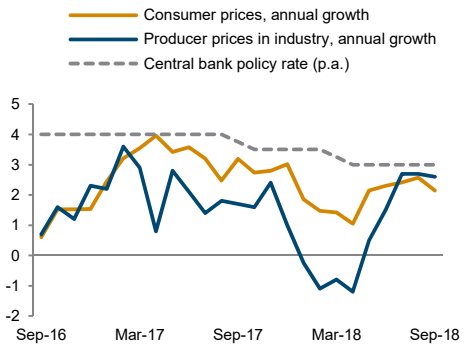
Real sector development
in %



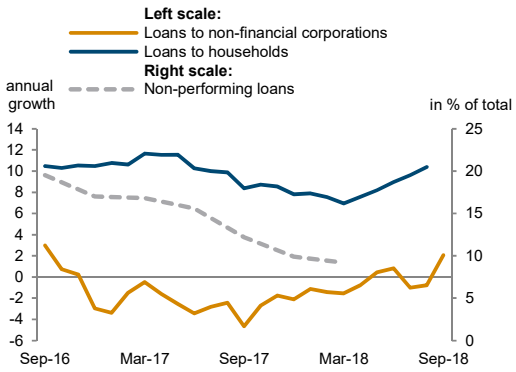
Unit labour costs in industry
annual growth rate in %



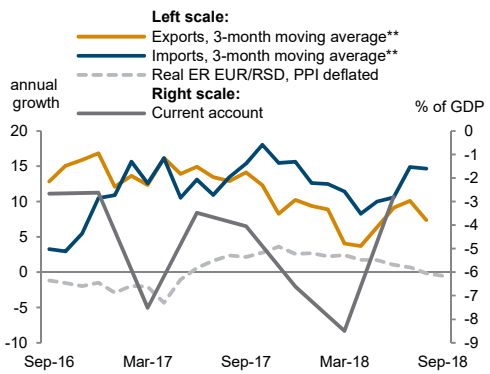
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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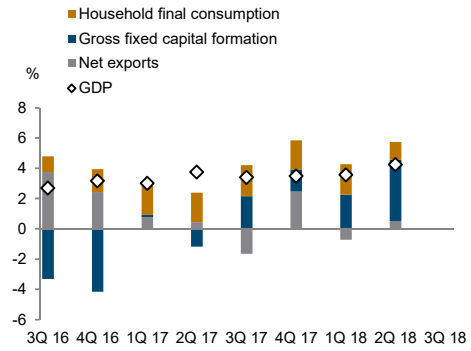
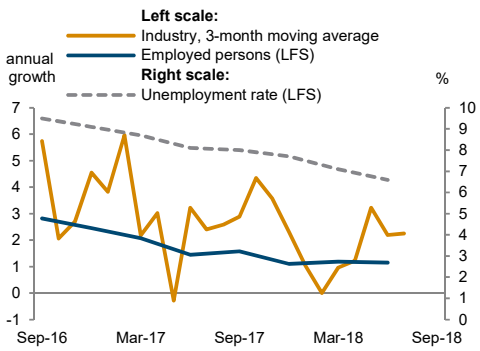
Slovakia

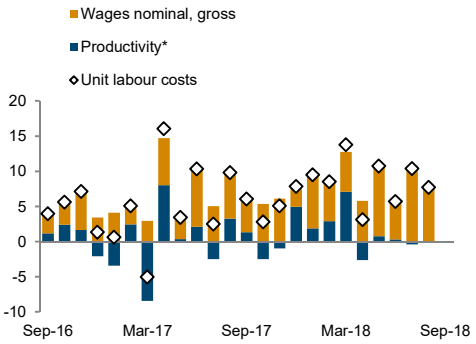
Real GDP growth and contributions
year-on-year



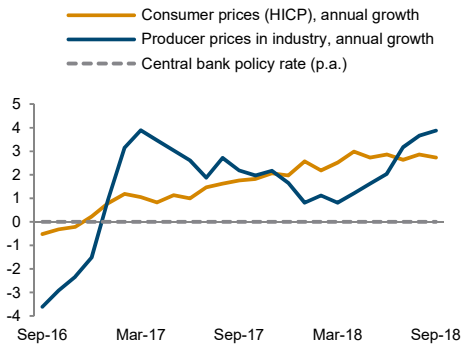
Real sector development
in %



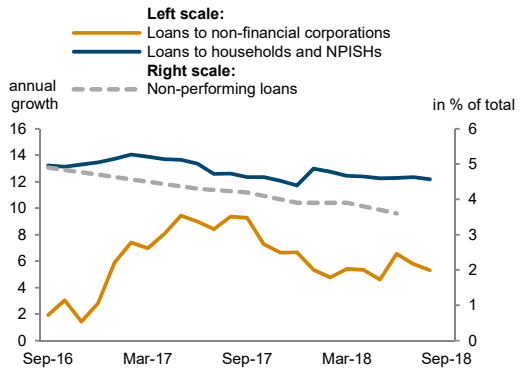
Unit labour costs in industry
annual growth rate in %



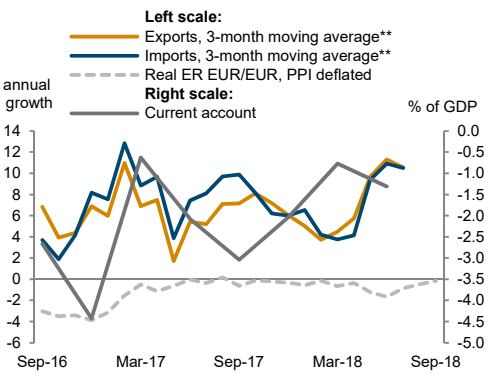
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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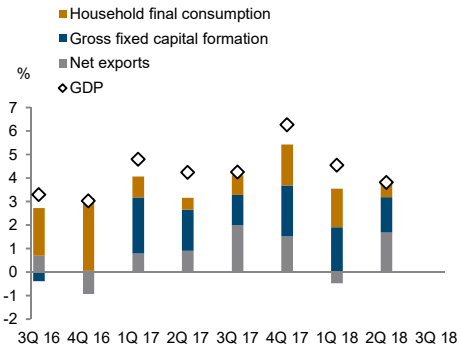
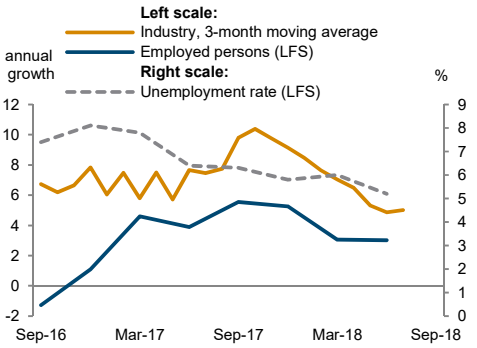
Slovenia

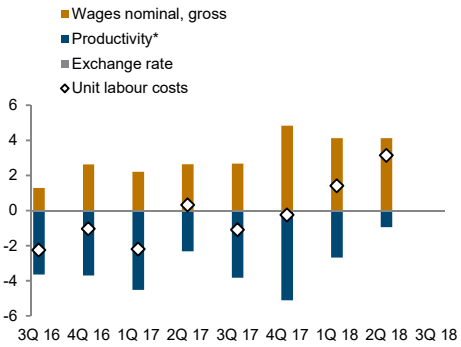
Real GDP growth and contributions
year-on-year



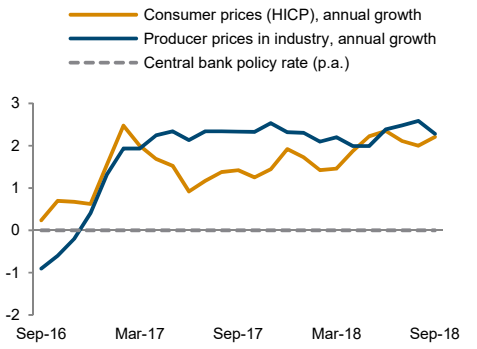
Real sector development
in %



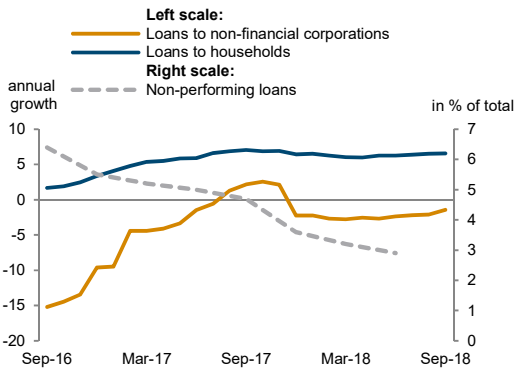
Unit labour costs in industry
annual growth rate in %



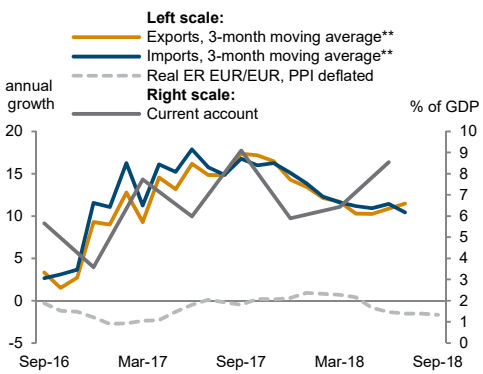
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
**EUR based.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
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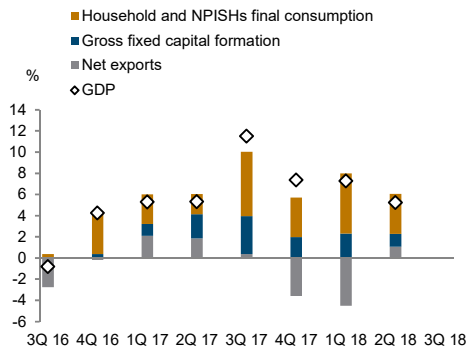
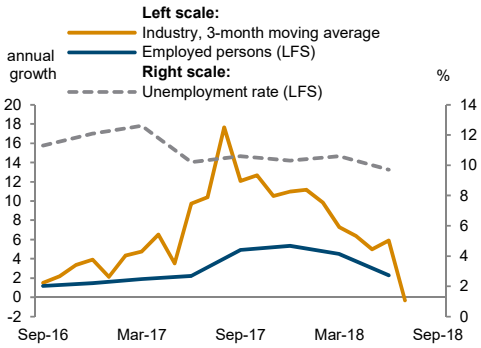
Turkey

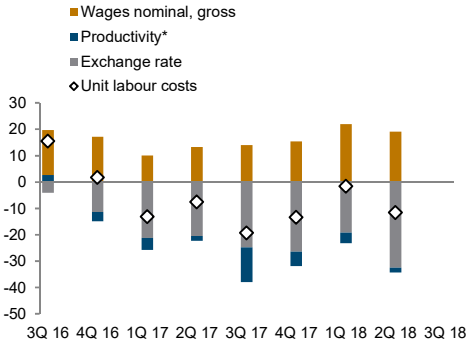
Real GDP growth and contributions
year-on-year



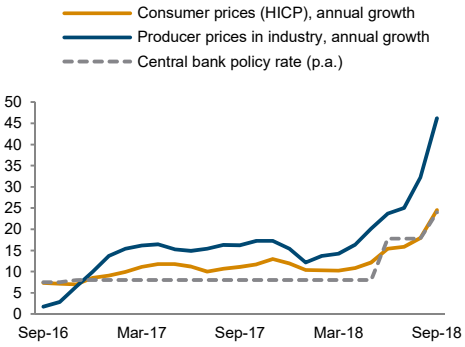
Real sector development
in %



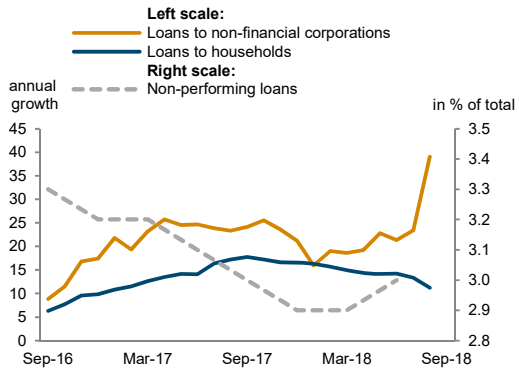
Unit labour costs in industry
annual growth rate in %



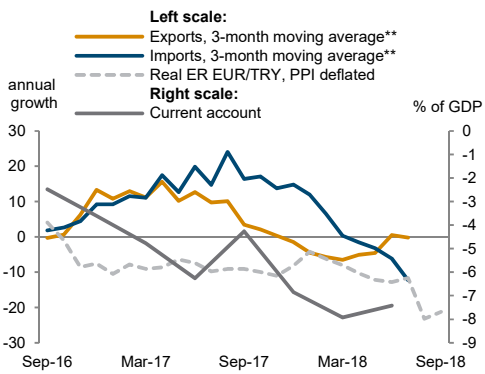
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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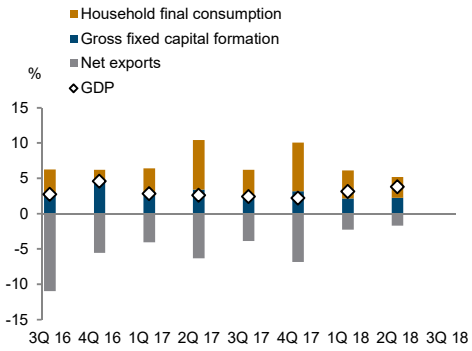
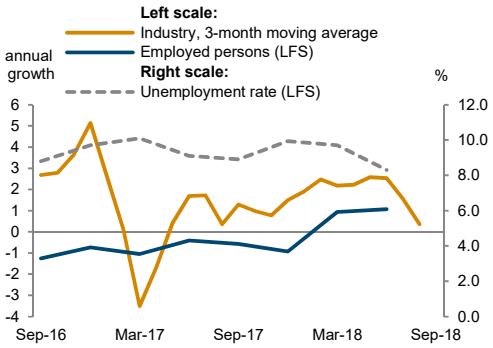
Ukraine

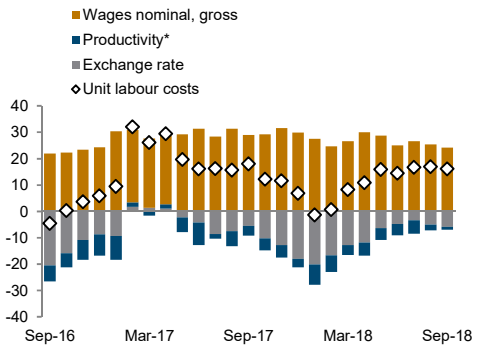
Real GDP growth and contributions
year-on-year



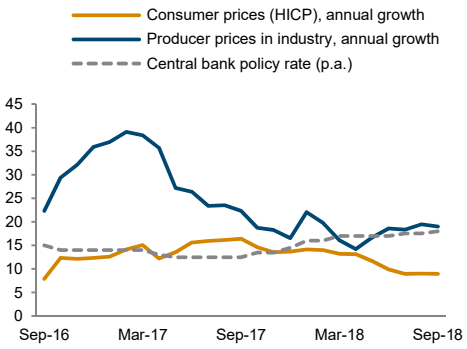
Real sector development
in %



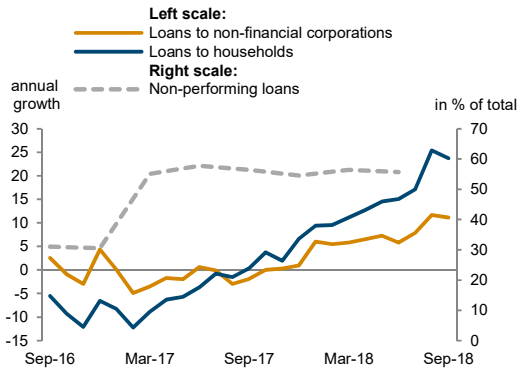
Unit labour costs in industry
annual growth rate in %



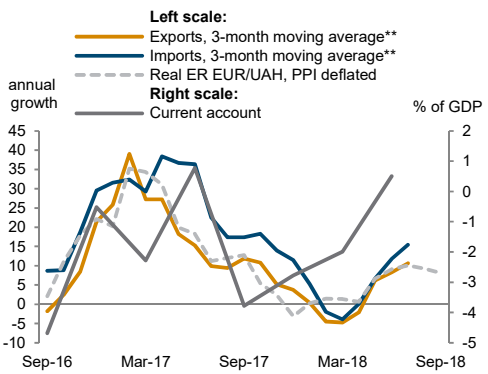
Inflation and policy rate
in %



Financial indicators
in %



External sector development
in %



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multi-country articles and statistical overviews

Economics editors: Vasily Astrov, Sándor Richter

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