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Monthly Report

What Has Triggered the Current Political Turbulence in Bulgaria and Will That Have Economic Consequences?

Policy Dilemmas for the Russian Economy

The Role of Price Sensitivity in Evaluating the Effects of Trade Policy Instruments

Inflation and Unit Labour Costs in Central and East European EU Member States

wiiw Spring Seminar
30 March 2017

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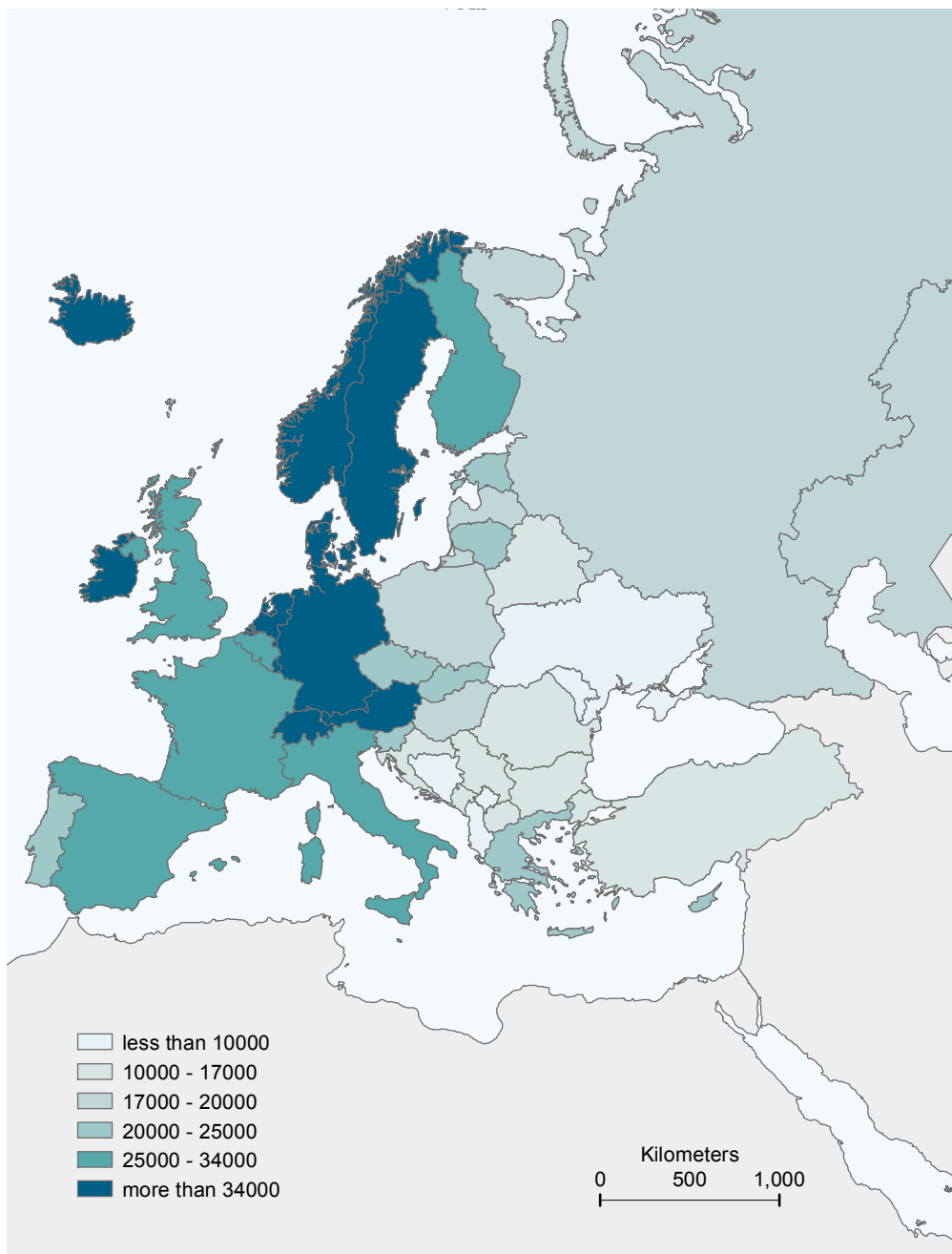# Inflation and Unit Labour Costs in Central and East European EU Member States

VASILY ASTROV
RUMEN DOBRINSKY
JULIA GRÜBLER
LEON PODKAMINER

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Save the date!
Next year's **wiiw Spring Seminar**
will take place on
Thursday, 30 March 2017

Gross domestic product per capita at purchasing power parities, 2015

less than 10000
10000 - 17000
17000 - 20000
20000 - 25000
25000 - 34000
more than 34000

Kilometers
0   500   1,000

Source: wiiw Annual Database incorporating national and Eurostat statistics.

This map is an excerpt from the newly published *wiiw Handbook of Statistics 2016*. The Handbook contains macroeconomic statistics and key structural indicators for 22 CESEE economies, allowing comparisons across themes, countries and time for the period 1990-2015. It is available in hardcopy for the most recent years and as Excel tables covering the whole period. For details see http://wiiw.ac.at/just-released-wiiw-handbook-of-statistics-2016-n-184.html.

Opinion Corner: What has triggered the current political turbulence in Bulgaria and will that have economic consequences?

ANSWERED BY RUMEN DOBRINSKY

The presidential elections in Bulgaria were held at the same time as those in the United States and also brought about unexpected outcomes: the candidate of the ruling GERB party lost to the independent candidate Rumen Radev supported by the opposition Socialist party. This was the first electoral defeat of GERB and its leader Boyko Borisov in any elections.

All opinion polls prior to the presidential elections were consistently suggesting another easy win for GERB, and Mr. Borisov appeared so confident in this victory that he offered to resign in the case of a defeat. There were no apparent political or economic reasons for such a declaration: the GERB-led coalition enjoyed a comfortable majority in parliament while the economy was showing signs of sustained recovery for the first time since the 2008 global financial crisis. In these circumstances Mr. Borisov's move looked more like a macho gamble of low perceived risk by a macho type politician. However, the elections delivered exactly the opposite result: a comfortable win by Mr. Radev and Mr. Borisov found himself trapped in his pre-election pledge. Eventually he did resign, pushing the country into an unprecedented political crisis.

The reasons for the surprising change in spirit by the Bulgarian public that surfaced in the elections are still unclear and difficult to explain or interpret. In any case, the simplified caricature (a confrontation between a Western-minded and a pro-Russian politician won by the latter) which is often presented by media outside Bulgaria seems to be very distant from the reality on the ground; in fact, foreign policy issues likely played only a marginal role in the presidential elections. Traditional factors substantiated by economic success or failure attributed to the government in office also do not offer convincing arguments as the economic situation in Bulgaria was consistently improving during the last two years. Nor can this be explained by a shift from right to left in the overall political attitudes: the electoral support for the Socialist party as such is much below that of GERB, and had the socialists come up with a party candidate, the result would have been very different.

Most likely what happened in Bulgaria is another piece of evidence of the growing gap between political elites and societies in many parts of the world, resulting in a tide wave of an openly manifest disillusionment by the public with traditional politics and business as usual which surfaced in the Brexit debacle and later in the US presidential elections. Moreover, the personality of the political newcomer Radev (a former aviation general) and his moderate stance on most political issues seemed appealing to the general public and the interpretation of a break from the past.

The current political turmoil in Bulgaria is exceptional – not because of the gravity of the political crisis (which is not the case) but due to the unique circumstances in which it takes place, namely a period of

changeover at the highest political level. While the president has relatively limited constitutional powers, he is authorised to nominate a caretaker government in case the parliament proves incapable of electing one by a majority vote. It is also the president who calls early parliamentary elections in these circumstances. However, according to the constitution, the outgoing president (in this case Rosen Plevneliev) cannot call early elections within the last three months of his term in office, which is the case at the present moment.

As of the moment of writing this note, the outgoing president was still holding consultations with the parties represented in the current parliament in the hope of modelling a new coalition that would back another government without going to early elections. However, chances for this to happen are slim and in all likelihood Mr. Plevneliev will have to appoint a caretaker government. The formal changeover at the top is due to take place in the second half of January 2017 when Mr. Radev will take over. It is then him who would have to call early elections which, according to the constitutional rules, cannot take place before the end of March or beginning of April 2017. Mr. Radev will also have the power to sack the government appointed by Mr. Plevneliev and pick his own caretaker government. But such a decision will be left at his discretion and he may also refrain from this additional changeover.

The current political turbulence however is mostly confined within the political elites and does not reflect a major societal turmoil. In turn, its economic consequences, if any, will mostly be associated with the uncertainties due to the way the current political stalemate will be resolved. The economy seems to be in relatively good shape and there are no apparent reasons to expect that the political crisis will generate perceptible economic shocks. Of course, the early parliamentary elections in the spring of 2017 may also deliver some surprises but given the unsettled current political situation it is still premature to speculate on that. In a benign scenario for the short run (which is the most likely one), the constitutional steps outlined above will be performed in an orderly manner paving the way for a next political cycle.

Policy dilemmas for the Russian economy

BY VASILY ASTROV[*]

STAGNATION ALREADY BEFORE THE CRISIS

Since Vladimir Putin came to power in Russia in 2000, the country has made important progress in a number of areas. Its per capita GDP in PPP terms increased three times between 2000 and 2015, and the share of population living in poverty fell markedly. Also, following the chaos and the 'state capture' by oligarchs during the 1990s which culminated in the financial crisis of 1998, the 'Putin era' witnessed a remarkable political stabilisation. Macroeconomic policies pursued have been generally cautious, as the windfall government revenues from energy exports were to a large extent accumulated in sovereign funds rather than spent on a current basis. At the same time, income inequality and corruption have been generally on the rise, and political stabilisation arguably went too far, as democratic institutions were gradually eroded to a mere façade of an increasingly authoritarian regime.

Since 1999, Russia has been invariably recording sizeable current account surpluses. However, these surpluses have been entirely thanks to energy exports: without those, prior to the current crisis Russia would have recorded external trade deficits to the tune of 7% of GDP and budget deficits as high as 10% of GDP, according to wiiw estimates (these shares dropped however during the crisis). These figures illustrate the heavy reliance of the Russian economy on the energy sector, which is in fact nowadays greater than it used to be during the Soviet period.

On top of that, in 2013 Russian exports embarked on a downward trend while GDP growth slowed down markedly, to a mere 1.3%. Largely on account of stagnating investments (despite the oil price still hovering at high levels at that time) and stalled reforms, Russia was the prime example of a country 'stuck in transition'.[1] Thus, it became more and more obvious that Russia's growth prospects were increasingly constrained by 'structural bottlenecks', such as poor infrastructure, a weak legal system, widespread corruption and, as a result, an unfavourable investment climate – even before the outbreak of the Ukraine conflict and the oil price decline in 2014. The famous four 'I's' announced by former Russian President Dmitri Medvedev in 2010 – institutions, innovations, investments and infrastructure – effectively summarised the major weaknesses of the Russian economy and simultaneously served as a list of declared government priorities.

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[*] This text is a revised version of a policy note written for the conference 'State of the Russian economy and its development path', sponsored by Friedrich-Ebert-Stiftung and held at the Central European University, Budapest, on 21 November 2016. The author is grateful to Peter Havlik, wiiw, for valuable ideas which have been used in drafting this text.

[1] See EBRD (2013).

FACTORS BEHIND THE ECONOMIC CRISIS

The geopolitical conflict with the West over Ukraine – irrespective of who is to blame – has only aggravated those problems. In addition, it coincided with a sharp drop in oil prices starting from mid-2014 onwards, fuelling speculations within Russia that these two developments might be linked with each other.[2] The combined effect of sanctions and the oil price decline pushed the Russian economy into recession in late 2014, which has continued up until mid-2016. Although the recent months have witnessed signs of 'bottoming out' and the economy probably rebounded slightly in the second half of 2016, for the year as a whole wiiw estimates a 0.8% GDP decline, followed by an unimpressive recovery of less than 1% projected for 2017.[3]

The main reason for the crisis has been the sharp depreciation of the Russian rouble, largely because of the oil price decline (the correlation between these two variables over time has been remarkably strong). The rouble depreciation pushed up the prices of imported goods and thus the overall inflation, which has eroded the purchasing power of households and depressed domestic demand. Moreover, the impact of the adverse exchange rate shock on the Russian economy has been arguably aggravated by the policy response of the Russian authorities. Monetary policy has been tightened in response to higher inflation, since a reasonably low inflation rate (4% p.a.) is the official target of the Russian Central Bank. At the same time, fiscal policy remained generally restrictive and was aimed at keeping budget deficits in check. The observed deterioration of the budget performance in 2014-2015 was entirely 'cyclical' (i.e. essentially reflecting the reduced tax collection) rather than a manifestation of fiscal policy relaxation. Even pensions and salaries in the public sector were not fully indexed in line with inflation (unlike e.g. during the crisis of 2008-2009), resulting in falling real incomes of large segments of the population.

All in all, largely due to the rouble devaluation, Russian GDP is estimated to have contracted by some EUR 500 billion in nominal terms between 2013 and 2016 – by more than one-third.

THE ROLE OF SANCTIONS

Western sanctions played their role, too. There were three types of 'sectoral' sanctions imposed by the West against Russia in mid-2014: financial sanctions (restrictions on long-term borrowing), restrictions on exports of oil-drilling equipment for Arctic and offshore deposits, and restrictions on trade in military and dual-use goods. Among them, it was the financial sanctions which had the greatest immediate impact. Although formally only a handful of Russian state-owned energy companies and banks were sanctioned, financial market conditions effectively deteriorated for other Russian borrowers as well, on account of both increased risk perceptions and pressures from Western governments. According to estimates of the Moscow Institute of Economic Forecasting,[4] financial sanctions alone could cost the Russian economy up to EUR 150 billion in the long term. In turn, restrictions on exports of oil-drilling technologies – though not biting immediately – may potentially reduce Russian oil production by up to 70 million tonnes by 2030, translating into an estimated EUR 25 billion in cumulated losses (assuming an average oil price of USD 70 per barrel in that period). All in all, the *combined cumulated* losses due to Western sanctions and their indirect effects – including less FDI inflows from the EU, higher inflation,

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[2]   One popular explanation was a possible conspiracy between the US and Saudi Arabia, which was reluctant to curb oil production in the face of the price decline – unlike during the past similar episodes.

[3]   See Havlik (2016).

[4]   See Shirov (2014).

and the reduction of production cooperation – may reach some EUR 700 billion, or around 60% of this year's GDP, in the long term (until 2030), according to these estimates.

The combined effect of economic crisis and sanctions was a sharp decline in Russian foreign trade, particularly with the EU and particularly on the import side: in 2015 alone, imports from the EU plummeted by some 30% (in euro terms), largely because of the rouble depreciation. Although there has been much talk at the official level about re-orientation towards China, the statistics prove that trade with China declined as well, albeit not as strongly. Thus, there has been only a relative (but not absolute) reorientation of Russian trade away from the EU and towards China, at least so far. A breakthrough deal on long-term gas supplies, signed between Russia and China in 2014, may signal that such reorientation will likely gain momentum in the future, although it will require massive infrastructure investments (currently, the major Russian oil and gas pipelines go in the direction of Europe). However, it is questionable whether China will be able to substitute Europe as the main source of new technologies for Russia; the latter would be crucial to maintain the current levels of energy production – let alone for the badly needed modernisation and diversification of the Russian economy (more on that see below).

The above suggests that Western sanctions are having substantial effects on the Russian economy. However, in political terms they proved ultimately counterproductive. It is clear that harming the Russian economy was not the purpose of Western sanctions *per se.* Instead, they were conceived as a tool of bringing about a change in Russia's foreign policy concerning Ukraine – either through popular discontent or that of the country's elites. In reality, the opposite has happened: Russian public opinion largely consolidated around President Putin, resulting in his sky-rocketing approval ratings – even according to independent polls. With increased domestic support, the Russian leadership feels now generally more confident and assertive – not least in its foreign policy.

RUSSIA STUCK IN A 'MIDDLE-INCOME' TRAP

With excessive reliance on the energy sector and increased political isolation, Russia appears to be stuck in a 'middle-income trap' for the foreseeable future. While the energy sector will continue to remain the backbone of the economy for the years to come, it may suffer on account of ongoing energy supply diversification efforts in Europe (increased role of LNG and shale gas, more gas imports from Azerbaijan, etc.); increased energy exports to China and Asia in general will likely provide only some relief. Also, as suggested above, the Western sanctions restricting the exports of oil-drilling technologies may undermine Russia's longer term energy export potential as well. Finally, even in the absence of the above two factors, low energy prices will enable only sluggish GDP growth, most probably not exceeding 2% per year – which is clearly inadequate given Russia's relatively low development level (around 60% of the average EU level) and its sizeable convergence potential.

Therefore, economic modernisation and diversification – long recognised as essential for long-term development prospects – appear to be all the more crucial in the current circumstances. However, while the environment of low oil prices may provide enough incentives for modernisation, it simultaneously constrains the financial capacity (of both the private sector and the state) to carry out such modernisation and hampers the climate for both domestic and foreign investments.

POLICY DILEMMAS

As exemplified by the successful restructuring and modernisation experiences of many Central and East European countries (most notably the Czech Republic, Poland, Slovakia, Hungary and Estonia) or, for instance, Ireland, one way to escape this trade-off could be to attract more foreign direct investment (FDI). In principle, FDI inflows from 'advanced countries' such as the EU, the USA and Japan could bring not only capital, but – more importantly – also the badly needed advanced technologies, management practices and know-how. Needless to say, pursuing such a strategy would require the creation of a conducive investment environment, particularly that for FDI. In all likelihood, this would imply the need for liberalisation, deregulation, tax simplification and an overall low tax level, and – above all – institutional improvements, including reforming the legal system, securing property rights and reducing corruption. Deregulation and low taxation would mean reducing the role of the state and would also imply prudent fiscal and monetary policies – akin to the ones pursued so far.[5]

Even if all of the above measures were to be successfully implemented, it is highly questionable whether there would be increased inflows of FDI from the West in the current geopolitical climate. Whether this will change for the better with Donald Trump as US president is an open question.[6] In the 'baseline scenario', the strategy of FDI-driven modernisation would almost certainly require a fundamental shift in Russian foreign policy – essentially yielding to Western pressure, possibly even including a return of Crimea to Ukraine. The latter seems politically hardly feasible for Russia.

An alternative to FDI-driven modernisation could be, for instance, a more active industrial policy targeting selected sectors of the economy. That such policy can also bring fruits was demonstrated by the experience of a number of East Asian countries, including for instance South Korea and Japan. In Russia, industrial policy was already pursued to some extent in a number of sectors over the past two decades, such as in nuclear power, aircraft and ship-building, biotechnologies and pharmaceuticals, and IT.[7] However, apart from the obvious challenge for the government to set the right priorities, the main problem with such a policy is that it ultimately requires substantial allocations from the state budget: either in the form of subsidies, tax preferences or otherwise. A large-scale industrial policy would also require a substantial easing not only of fiscal, but also of monetary policy – and therefore most probably also capital controls. All this would necessitate a radical change in economic policy-making (advocated by presidential advisor Sergei Glazyev and the conservative think tank Izborsky Club). On top of that, there is a high risk that a large part of the funds allocated within the framework of such policy will be misappropriated or simply stolen (recent examples such as the 2014 Sochi Olympic Games, the 2012 APEC Russia Summit or the science-technology hub Skolkovo abound).

All in all, while liberalisation and deregulation are unlikely to bring the expected benefits in the present circumstances, the opposite strategy of increased state intervention – while politically arguably more feasible – runs a number of risks of its own, and may become outright dangerous if driven to extremes (the earlier experience of the Soviet Union may be a good reference point for that). These constraints speak in favour of a compromise solution; the latter could enable some relaxation of macroeconomic policies and a somewhat increased role of the state without giving up the economic freedoms achieved

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5   This strategy is broadly in line with the programme advocated by the former finance minister Alexei Kudrin.

6   When Barack Obama was elected US president back in 2008, hopes were similarly high on the Russian side, only to give way to subsequent disillusionment.

7   See e.g. wiiw (2014).

during the two and a half decades of Russia's transition to the market economy.[8] Whether such a compromise is politically feasible remains to be seen. Needless to say, an improvement of relations with the West would be instrumental as well.

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[8]   One such compromise solution could be the programme of the Russian business ombudsman Boris Titov.

The role of price sensitivity in evaluating the effects of trade policy instruments

BY JULIA GRÜBLER

INTRODUCTION

Trade policy instruments are becoming increasingly diverse. Mapping how importing countries respond to price changes helps in calculating measures that make these instruments comparable across countries and products. This article presents a selection of results of a wiiw study on 167 countries and more than 5,000 products for the period 1996-2014,[1] highlighting some findings for countries in Central, East and Southeast Europe (CESEE).

UNDERSTANDING THE DIVERSE EFFECT OF TRADE POLICIES

With the public discussion on the increasing scope of mega-regional trade deals, economic research is undertaking a lot of effort in collecting and evaluating trade policies other than tariffs. All policy instruments that are not tariffs but nonetheless might have a significant impact on trade flows are called non-tariff measures. These range from quotas, to packaging and labelling requirements, or duties to combat unfair trade practices. Countries apply these measures on different products, against different trading partners and to a different extent.

However, even when the same policy instrument is applied, the impact on trade might differ across countries. The EU is a particularly interesting case in this respect as its trade policy is uniform across EU Member States. Consider the following example: The EU decides on a non-tariff measure which requires that the energy consumption level of refrigerators is labelled. This regulation is the same for all EU Member States. However, Austrian imports for example might be affected differently compared to Romanian imports of refrigerators, even if refrigerators were imported from the same source country. One possible explanation could lie in the different response of demand to price changes of imported refrigerators, i.e. the import demand elasticity, in Austria compared to Romania.

$$\underbrace{\frac{\partial \ln(m_{ih})}{\partial NTM_{ih}^n}}_{(a)} = \underbrace{\frac{\partial \ln(m_{ih})}{\partial \ln(p_{ih})}}_{(b)} \underbrace{\frac{\partial \ln(p_{ih})}{\partial NTM_{ih}^n}}_{(c)} \qquad (1)$$

Consequently, if we observe a change in imported quantities of product h to country i due to the imposition of a non-tariff measure n (term (a) in equation 1) and know the price elasticity of import demand of the country imposing a non-tariff measure (term (b) in equation 1), we can derive ad valorem equivalents of non-tariff measures (term (c) in equation 1). These answer the question which change of import prices would have the same effect on imports as the imposed non-tariff measure. The

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[1]   Ghodsi et al. (2016).

assessment of import demand elasticities therefore allows to compute a figure that makes different types of trade policy measures comparable to tariffs.

CROSS-COUNTRY DIFFERENCES IN IMPORT DEMAND ELASTICITIES

We estimated import demand elasticities for 167 countries and 5,124 products at the six-digit level of the Harmonised System (HS) for the period 1996-2014 using a GDP function approach proposed by Kee et al. (2008). Empirically, their approach allows us to estimate importer- and product-specific import demand elasticities with data on importer-specific product shares in GDP, the GDP deflator, unit values, and information on factor endowments.

Looking at the geographical distribution of import demand elasticities, simple averages indicate that South Asia and North America are associated with the most elastic import demand. Countries exhibiting the highest average elasticities belong to the biggest economies in their respective regions, while countries with the lowest import demand elasticities are small island states. The most intuitive interpretation would be that larger and more developed countries can more easily substitute imported products by domestically produced goods, whereas small island states and poor countries lack the capacities of developing and maintaining a diverse set of domestic industries and are more dependent on imports.

To test this hypothesis, we regress our import demand elasticity estimates on measures of a country's size and development level. Our analysis suggests that, while economically and physically bigger countries, captured by their Gross Domestic Product (GDP) and surface area, show significantly higher import demand elasticities, higher levels of economic development are associated with lower price elasticities for imports.

Figure 1 / Economic development indicators for CESEE countries
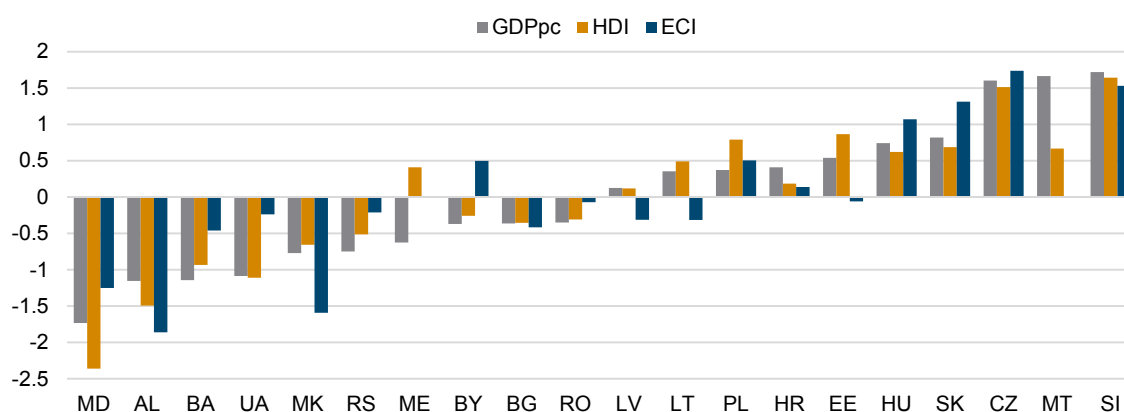
Notes: Average values for the period 1995-2014. Values have been normalised to a sample mean of 0 and standard deviation of 1. Author's visualisation.
Source: Penn World Tables [Feenstra et al. (2015)]: real GDP p.c. in PPP (2011 USD); The Atlas of Economic Complexity [Hausmann et al. (2011)]: ECI; United Nations Development Programme (2015): HDI.

We approximate a country's status of development by three different measures. These are GDP per capita (in PPP), the Human Development Index (HDI) and the Economic Complexity Index (ECI).

Figure 1 depicts these indicators for a set of Central, East and Southeast European (CESEE) countries. In addition to GDP per capita, the HDI published by the United Nations considers the dimensions health and education to describe a country's level of development. The ECI provided by the Centre for International Development at Harvard University captures how diversified an economy is with respect to the level of complexity of products and the number of products it exports (Hausmann et al., 2011). These three measures grasp different dimensions of development but are closely related. We find that import demand becomes on average less price-elastic with a higher level of development, for all three measures under consideration.

DIFFERENCES IN IMPORT DEMAND ELASTICITIES BY IMPORTED PRODUCT

Our estimation procedure yields import demand elasticities at the product level for each importing country. We therefore also investigate differences in elasticity estimates across products. Overall, we find that agri-food products on average face a more price-elastic import demand than manufactured products. Furthermore, goods contributing to gross fixed capital formation face the most inelastic demand, followed by final consumption goods and intermediate goods. These findings persist even when fuels are excluded from the analysis.

Figure 2 / Import demand elasticities in Europe by HS section
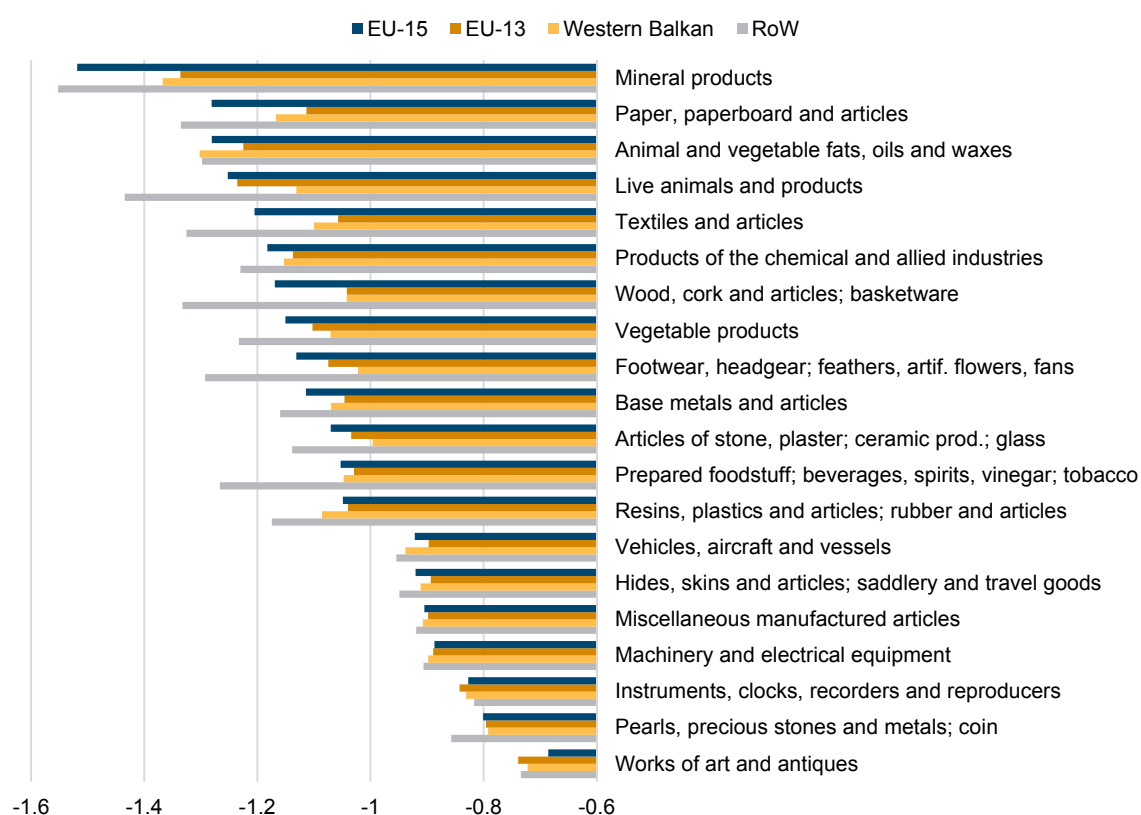
Notes: Author's calculation and visualisation. Bars show simple averages of elasticities across HS 6-digit products per HS section and region. EU-15: Member States acceding to the EU prior to 2004. EU-13: Member States acceding to the EU since 2004. Western Balkan states: Albania, Bosnia and Herzegovina, Macedonia, Montenegro, Serbia. Sorted by EU-15 elasticity estimates. Estimates for arms and ammunition excluded.
Source: Ghodsi et al (2016).

Figure 2 presents our estimates aggregated by sections of the Harmonised System (HS)[2] for three regions in Europe (EU-15 referring to countries acceding to the EU prior to 2004, EU-13 including countries acceding to the EU since 2004, and Western Balkan states) and the rest of the world (RoW). The top 3 HS sections for the EU-15 and Western Balkan countries concern mineral products, paper products, and animal and vegetable fats. Also the EU-13 seem to be most price-responsive regarding imported mineral products, although average elasticity estimates are lower than for the EU-15.

Further regression results suggest additional factors which on average decrease the price elasticity of import demand: the technological intensity of a product and the number of importers of a specific product. One argument would be that technology-intensive products cannot easily be substituted by domestic production. The greater the number of importers of one specific product per exporter, the smaller an importer's bargaining power and its import demand elasticity. Differences in import demand elasticities across all these variables are statistically significant. However, the predictive power of these product characteristics is limited.

CLOSING THE CIRCLE

Coming back to our introductory example on EU labelling requirements for refrigerators, this refers to a notification of the EU to the Committee on Technical Barriers to Trade of the World Trade Organisation (WTO). The description of this notification reads as follows:

'This draft Commission Delegated Regulation sets requirements for the energy labelling and the provision of product information for professional storage cabinets [including those sold for the refrigeration of items other than foodstuffs]. [...] The aim is to allow end-users to make an informed choice when buying professional storage cabinets – thereby pulling the market towards more environmentally friendly products. It will contribute to the fight against climate change and the increase of energy efficiency in the European Union.' [3]

Restricting our results to the product 'furniture incorporating refrigerating or freezing equipment for storage and display', i.e. HS 841850, Figure 3 maps our elasticity estimates for European countries. What do these results imply?

Let us first assume that the increase in production costs due to the EU regulation is the same for all exporters of storage cabinets (e.g. 0.1%). Then we would ex ante expect that the effect on import quantities is lower for Austria (with an elasticity estimate of -0.874) than for Romania (-0.939). However, within the EU the effect is lowest for Italy (-0.396) and highest for Lithuania (-0.967). It means that if import prices of this product increased by 0.1%, import quantities to Italy would drop by 0.039%, while import demand in Lithuania is close to unitary elastic implying a reduction in import quantities by 0.096%.

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[2]   For further information on the HS product classification:
       http://unstats.un.org/unsd/tradekb/Knowledgebase/50043/HS-Classification-by-Section

[3]   WTO Document: G/TBT/N/EU/178, 28 January 2014. Provisions apply from 1 January 2016.

Figure 3 / Import demand elasticities for refrigerators in European countries
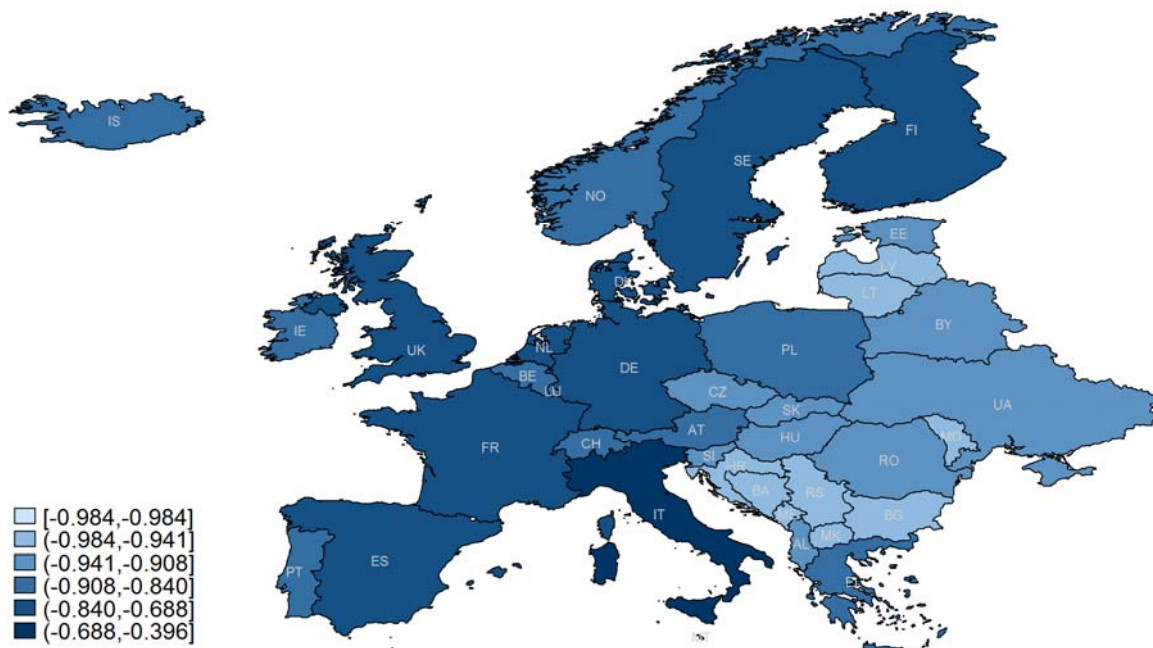
Note: Author's calculation and visualisation. Estimate for Italy not significantly different from zero. HS code 841850, Furniture incorporating refrigerating or freezing equipment, for storage and display (chests, cabinets, display counters, show-cases and the like).
Source: Ghodsi et al (2016).

Yet, countries source imported products from different exporting countries. Exporters might be affected very differently by the same regulation. Some might have already complied with the requirements, while others have not. For the majority of non-tariff measures it is also not clear how they affect the costs of a product along the production and supply chain.

Consider therefore the case in which some time has already passed since the EU regulation entered into force and we have already observed a change in import quantities but cannot evaluate the direct impact of the regulation on prices. If we observed that import quantities of storage cabins declined by 0.087% for Austria and by 0.094% for Romania, we could conclude that the EU regulation had the same effect as if the import price of this product had been increased by 0.1%.

If we, however, observed that import quantities for both countries dropped by 0.1%, our elasticity estimates would suggest that the EU regulation had the same effect on import quantities as if the product had been subject to an additional tariff of 0.106% for Romania and 0.114% for Austria, respectively. We refer to these figures as ad valorem equivalents of trade policy measures, which can be used to compare the effects of a growing number of trade policy tools across countries and products.

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Inflation and unit labour costs in Central and East European EU Member States

BY LEON PODKAMINER

INTRODUCTION

High inflation used to be a very important concern for the Central and East European EU Member States (EU CEE). As a part of the transitional recession many of them experienced hyperinflations which then gradually stabilised to moderate (but still significant) levels in the second half of the 1990s. In subsequent years, however, inflation has been quite low, especially since 2008, with some deflationary tendencies observed in many countries more recently (Figure 1).

Figure 1 / Price level in EU-CEE countries since 1996

harmonised index of consumer prices (HICP), 2015=100
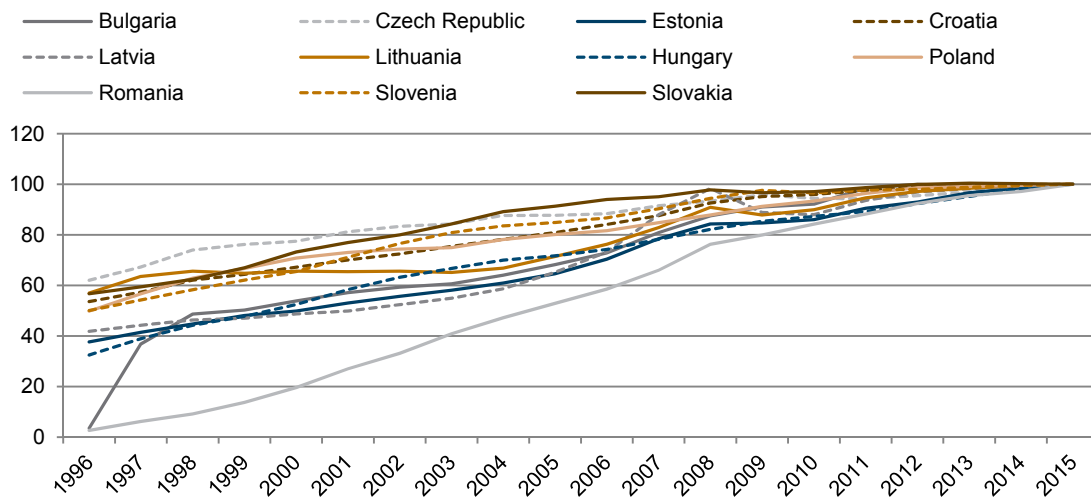
Source: Eurostat (series COICOP).

At present very low inflation characterises also other countries (including most euro-area and OECD countries). Deflation (and very low inflation) tends to be cumbersome not only because it makes the traditional monetary policy based on administering interest rates ineffective (with a zero lower bound on the policy interest rates). The larger, real, problem with deflation is that of 'debt deflation' – the rising real burden of debts incurred by economic agents in the past.

Not long ago inflation was commonly interpreted as simply being 'always and everywhere a monetary phenomenon'. That simplistic view is no longer shared generally and certainly not at central banks. Nowadays inflation is subject to never-ending theoretical controversies whose conclusion is not in sight.

For the practical purpose of forecasting inflation it may be worth trying to link inflation to cost developments (on the principle that '*price equals cost plus a mark-up*'). The cost category to be considered here is that of unit *labour* costs.

Of course, prices at any disaggregate level only partially depend on the *direct* labour costs borne at that level. Non-labour costs do matter, at any disaggregate level. For that reason it seems less satisfactory to try to relate, for instance, inflation in industrial producer prices to unit labour costs in industry. Industrial production results from the application not only of labour directly employed in industry, but also of inputs of various services, agricultural products etc. (whose production also requires the employment of hired labour). It follows that one needs to relate the most general unit labour cost category, namely the gross wage (cum non-wage labour costs borne by employers) per unit of real GDP, to the most general inflation category, namely the GDP deflator. It must be observed that even at this most general level, the commodity coverage of the GDP deflator may differ from that of the GDP-based unit labour cost. The first item allows for the prices (and costs) of export and import activities included in the GDP aggregate – while the second does not. It is therefore clear that the correspondence between GDP-based unit labour costs and GDP deflators cannot be expected to be perfect – even if the 'cost theory of the price level'[1] were true. (Clearly, the correspondence in question cannot realistically be expected to be perfectly stable over time also for very many other reasons, such as the changing levels/composition of indirect taxation, variations in the sellers/buyers market power, variations in the levels of aggregate demand etc.)

THE DATA

The examination of links between GDP-based unit labour costs (ULC henceforth) and the GDP deflator reported below is based on AMECO data on the *indices* of both items for 11 EU-CEE countries covering the years 2000-2015. (For most countries the series in question actually start sometime after 1995 – with the data for Poland, Romania and Latvia starting in 1995. However, inflation was still rather high from 1995 through 2000. Around 2000 there was a 'structural break' of sorts in the inflationary tendencies.)

THE ECONOMETRIC APPROACHES AND THEIR RESULTS

A simple econometric exercise has been applied to the data for separate countries. First, the original *indices* of ULC and GDP deflator were expressed in natural logarithms.

The plain correlation coefficients between the (logs of) indices of ULC and GDP deflator are very high, short of unity in most cases. Clearly, there seems to be a link between ULC and inflation. But, as is well known, '*correlation is not causation*'. High correlation between two time series, each reflecting some long-term tendency, may well be 'spurious', or accidental.

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[1]   A form of this theory was formulated – and further developed – by Michal Kalecki in his *Theory of Economic Dynamics*, George Allen and Unwin, London, 1954.

To lessen the risk of drawing conclusions from spurious regressions, the series (of the logs in question) were first tested for the presence of so-called 'unit roots'. Given the short lengths of the series, the unit roots tests may not be very reliable. Nonetheless these tests do not suggest that any of the series in question is 'integrated of order 2' (while most are likely 'integrated of order 1' – that is non-stationary).

Given the stationarity (absence of unit roots) in the *growth rates* of ULC and GDP deflator, it is legitimate to regress the growth rate in the deflator on the growth rate in ULC. Specifically, the regressions in question have the following form:

$$D(P) = aD(U)+b \qquad (1)$$

where D(P) is the growth rate of the GDP deflator and D(U) is the growth rate of ULC (both approximated by the first differences of the logs of GDP and ULC respectively); a and b are regression parameters to estimate. In four cases (the Czech Republic, Estonia, Slovakia and Slovenia) the additional trend variable was added in order to improve the 'fit'. (In the remaining cases the addition of the trend variable was either unnecessary, or did not much improve the 'fit'.) Table 1 documents the effects of this exercise.

Table 1 / Ordinary Least Squares estimates of the parameters (a and b) for equation (1)

	a	b	c[1]	Adjusted R^2	Durbin-Watson statistics
Bulgaria	1.0445	-0.0119			
	(0.0000)	(0.4698)		0.99	1.787
Czech R.	0.704	0.02613	-0.0017		
	(0.0001)	(0.0046)	(0.0038)	0.7162	2.153
Estonia	0.3882	0.06171	-0.002		
	(0.0001)	(0.0001)	(0.0288)	0.6158	1.639
Croatia	0.3432)	(0.02517			
	(0.0023	(0.0006)		0.5511	1.703
Latvia	0.6188	0.02634			
	(0.0000)	(0.0017)		0.8443	2.01
Lithuania	0.4794	0.021			
	(0.006)	(0.0074)		0.4702	2.21
Hungary	0.9187	0.01182			
	(0.0000)	(0.0044)		0.9008	2.097
Poland	0.5617	0.0259			
	(0.0032)	(0.0000)		0.64	1.93
Romania	0.8038	0.0573			
	(0.0001)	(0.0505)		0.7807	2.259
Slovenia	0.4126	0.0736	-0.0039		
	(0.0007)	(0.0000)	(0.0000)	0.8294	1.842
Slovakia	0.001	0.09	-0.0043		
	(0.9973)	(0.0000)	(0.0036)	0.5752	1.685

1) Regression coefficient for the linear trend. – HAC Newey-West p-values are in brackets.
Source: Own calculations.

As can be seen, the fit is generally satisfactory (as reflected by fairly high values of the adjusted R-squared indicator and satisfactory values of the Durbin-Watson statistics). In all cases the estimated parameter is positive (as it 'theoretically' should be) and, except for Slovakia, is highly significant in statistical terms. In all cases (except Bulgaria) 'a' is less than unity. The positive (but less than unity)

values for 'a' can be interpreted as evidence that the 'pass-through' from changing ULC to the inflation rate is not complete. Only a fraction of the current increase (decrease) in ULC is passed on to the increase (decrease) in the GDP deflator momentarily (that is in the same year). Inflation is then additionally augmented by the 'c' parameter (and, eventually, by a trend component). Remarkably, 'a' for Slovakia is practically zero. Thus in that country the 'pass-through' from the rate of change in ULC to the rate of inflation is dominated by the constant 'b' and the trend component.

The estimates from Table 1 could be viewed as first, and perhaps rather crude, approximations to the genuine relationship possibly linking the changes in ULC to the inflation rate. The basic trouble with these estimates (and with Equation 1) is that it does not allow for possible dynamic effects of changes in ULC and inflation. Equation (1) does not allow for the current inflation being possibly affected by delayed adjustment to *past* changes in ULC, which in reality may take time to be effective. Nor does it allow for possible 'sluggishness' in inflation itself.

Addressing the possibility of such dynamic adjustments is possible with, for example, the Autoregressive Distributed Lag (ARDL) Bounds procedure[2]. The ARDL-B procedure allows (1) the identification of longer-run 'equilibrium' relationships between the dynamic variables (in our case between the logs of the indices of ULC and the GDP deflator); (2) the quantitative characterisation of the dynamic short-term properties of the (eventual) dependence of one variable on the other (in our case of the dependence of the inflation rate on the rate of change of ULC). The conditions required for the application of the procedure are rather liberal. Basically, it is required that none of the time series is integrated of order 2. This requirement is satisfied in our case.

To avoid misunderstanding, it must be stressed that the procedure allows an identification of the longer-run relationship (and then of the shorter-term dynamics) only when the data support the hypothesis that such a relationship actually exists. If the data do not support that hypothesis, one is unable to say anything about the dynamic linkages between ULC and inflation. In that case one may, at best, refer to the results of the estimation of Equation (1).

The ARDL procedure proceeds in several steps. Simplifying, one starts with the estimation of an equation of the following type:

$$P = a_1 P(-1) + a_2 P(-2) + ... a_n P(-n) + b_0 U + b_1 U(-1) + b_2 U(-2) + ... b_m U(-m) + c + d \text{Trend} \qquad (2)$$

where $P(-k)$ and $U(-k)$ represent values of the logs of the indices of the GDP deflator and ULC respectively, both lagged by k years; a, b, c, d are parameters to be estimated while the numbers of lags (n and m) are determined so as to optimise the values of the so-called information criteria. Once such numbers are determined and the parameters estimated, model (2) is subject to testing. In effect, either (2) is accepted as reflecting a process involving a sort of a long-term relationship between P and U, or it is not. In the latter case nothing can be really said about the *dynamics* of the system. In the former case it is possible to identify the long-term '*equilibrium*' relationship. That relationship may take on a simple form (akin to that in Equation 1):

$$P = \alpha U + \beta + \mu \text{Trend} \qquad (3)$$

2   M.H. Pesaran, Y. Shin and R.J. Smith (2001), 'Bounds testing approaches to the analysis of level relationships',
      Journal of Applied Econometrics, Vol. 16, pp. 289-326.

The parameter α represents the *long-run elasticity* of the price level with respect to the level of ULC.

In any year the difference between P and the right-hand side of (3), that is (P – αU - β - μTrend), represents a 'temporary disequilibrium' which is expected to correct itself over time through some adjustments in the next year's inflation rate, D(P). More precisely, the dynamics of the inflation *rate* would then be described by the following equation:

$$D(P) = x[P- \alpha U + \beta + \mu Trend] + y1D(P(-1))+ y2D(P(-2)+...+z0D(U)+z1D(U(-1))+ z2D(U(-2)) ...+ w \qquad (4)$$

where the (negative) parameter x measures the '*speed of response to disequilibrium*' and z_0 is the *short-term elasticity* of inflation with respect to the rate of change of ULC.

As can be seen, equation (4) is indeed 'dynamic'. It allows the current inflation rate D(P) to be the function of the past inflation rates (D(P(-1)), D(P(-2))...), the current and past changes in the ULC (D(U), D(U(-1)), D(U(-2))...) as well as the recent distance from the long-run equilibrium position in the levels of GDP deflator and ULC.

It turns out that the ARDL-B procedure provides some evidence on the existence of a long-run relationship between the variables in question for only six countries (Czech Republic, Estonia, Latvia, Poland, Romania and Slovakia). Only for these countries it is possible to describe the dependence between the ULC and the GDP deflator in dynamic terms (see Table 2).

Table 2 / Selected regression coefficients for the ARDL-B dynamic form (4)

	Long-run elasticity	Trend (μ)	Short-run elasticity	Speed of response	Adjusted R^2 [1]	Durbin-Watson statistics[1]
Czech R.	1.1152	-0.005	1.1693	-1.655		
	(0.0008)	(0.0789)	(0.0011)	(0.0028)	0.993	2.92
Estonia	0.4472	0.0277	0.8166	-0.984		
	(0.0001)	(0.0001)	(0.0000)	(0.0005)	0.999	2.372
Latvia	0.5454	0.0294	0.7356	-2.006		
	(0.0000)	(0.0000)	(0.0000)	(0.0003)	0.999	2.57
Poland	0.2553	0.0248	0.1992	-0.4951		
	(0.0398)	(0.0000)	(0.018)	(0.0000)	0.996	2.16
Romania	0.4895	0.0171	0.2237	-0.5332		
	(0.0001)	(0.0638)	(0.0013)	(0.0000)	0.999	1.687
Slovakia	1.241	-0.0221	0.0252	-0.9297		
	(0.0002)	(0.0016)	(0.8236)	(0.0026)	0.994	2.54

1) Calculated for the basic regression (2). – P-values are in brackets.
Source: Own calculations.

According to the estimates from Table 2, countries do differ as far as the dynamic relationship between ULC and inflation is concerned. The estimate for the long-run elasticity, linking the (log) index of the deflator to the (log) index of ULC, exceeds unity in the Czech Republic and Slovakia. But for these two countries the estimated regression coefficient for the term trend (μ) is negative. The opposite situation obtains for the remaining countries where the long-run elasticity is less than unity while the trend augments the price level relative to the ULC level over time.

The short-run elasticity estimates are relatively low in Poland and Romania and relatively high in Latvia and Estonia. For Slovakia the estimated short-term elasticity is close to zero (and otherwise statistically insignificant). The short-run elasticity for the Czech Republic exceeds unity, suggesting a very strong ('*exaggerated*') immediate pass-through from the growth rate of ULC to inflation. Finally, the response to the recent 'disequilibrium' between the levels of prices and ULC is rather moderate in Poland and Romania – but almost complete in Slovakia and Estonia. The estimates for the Czech Republic and Latvia exceed unity by a large margin. This can be interpreted as a tendency to 'overreact' to the recent 'disequilibrium'. Such overreactions may contribute to a cyclical inflationary dynamics.

CONCLUDING REMARKS

1. The time series used for the estimation of models linking inflation to unit labour costs are rather short. Because of this fact the econometric findings reported may, at best, be viewed as rather provisional, possibly inaccurate and crude approximations to the 'actual truth'. Such approximations may, nonetheless, be better than none – and better than the views based on 'conventional wisdom' which often follows from concepts not confronted with any data at all.

2. With longer time series it would be possible to allow for additional factors likely to have a bearing on inflation: in the first place developments in prices of exports and imports, as well as the (very likely) feedback from inflation to ULC (reflecting e.g. the possible effects of wage indexation).

3. With the above reservations in mind, it appears that the 'cost theory of inflation' finds some factual support. For more than half of EU-CEE (6 out of 11) evidence is there that the GDP deflator and ULC stand in some well-defined dynamic relationship. However, the parameters specifying that relationship differ very much across countries. This may reflect the differences in the countries' structural features, labour market institutions, the levels of openness to foreign trade etc. Also, it seems rather important that in each case the 'trend component' proves highly significant for the description of the inflationary dynamics. This suggests that the countries in question are undergoing a transformation whereby the transmission of ULC into inflation (or the price level) is *systematically* complemented by unspecified 'trend factors'.

4. For 5 out of 11 EU-CEE countries no stable *dynamic* relationships between ULC and inflation have been found. This may be due to deficiency of the data used or some inadequacy of the statistical method applied. Alternatively, for these countries factors other than ULC may matter more (for example developments in the exchange rate and foreign trade prices). Finally, these countries may have been experiencing some serious economic shocks disturbing the dynamic transmission of costs into prices. Otherwise, they are still in a process of establishing stable economy-wide institutions governing price and wage setting.

5. Simple regressions linking the inflation rate to the rate of contemporaneous change of ULC reported in Table 1 are of course less reliable than the ARDL regressions. Nonetheless, as first approximations, they may serve the purpose of practical, applied analysis of developments in EU-CEE.

The editors recommend for further reading[*]

Globalisation

The elephant curve: Who are the losers and winners of globalisation?
http://www.e-axes.com/content/global-income-distribution-fall-berlin-wall-great-recession

Deconstructing Branko Milanovic's 'elephant chart': Does it show what everyone thinks?
http://www.e-axes.com/content/deconstructing-branko-milanovic%E2%80%99s-%E2%80%9Celephant-chart%E2%80%9D-does-it-show-what-everyone-thinks

Adam Corlett: Examining an elephant: http://www.e-axes.com/content/examining-elephant

Defending globalisation:
http://voxeu.org/article/defending-globalisation-isolation-would-cost-us-dearly

Barry Eichengreen on globalisation withering away:
https://www.project-syndicate.org/commentary/growth-before-globalization-by-barry-eichengreen-2016-11

Trade

Robert Stehrer (wiiw), Marcel Timmer, Bart Los and Gaaitzen De Vries on slowdown of trade:
http://voxeu.org/article/production-fragmentation-and-global-trade-slowdown

Summers on trade: http://www.nytimes.com/2016/12/05/opinion/its-time-for-a-reset.html

Krugman on trade: http://krugman.blogs.nytimes.com/2016/12/05/trade-facts-and-politics/ and
https://www.gc.cuny.edu/CUNY_GC/media/LISCenter/pkrugman/Trade-and-Manufacturing-Employment.pdf

Mankiw on some trade basics: http://www.nytimes.com/2016/12/02/upshot/want-to-rev-up-the-economy-dont-worry-about-the-trade-deficit.html

Why we need trade agreements:
http://voxeu.org/article/truth-about-trade-agreements-and-why-we-need-them

What to do after the demise of TPP:
https://www.bloomberg.com/view/articles/2016-11-29/how-to-fill-the-void-left-by-tpp

Gavyn Davies on Trump's protectionism:
http://blogs.ft.com/gavyndavies/2016/11/27/is-trump-really-serious-about-protection/#

Europe's trade policy: Can a phoenix rise from the ashes?
http://www.e-axes.com/content/europe%E2%80%99s-trade-policy-can-phoenix-rise-ashes

Otaviano Canuto: Protectionist creeps:
https://www.project-syndicate.org/commentary/slowing-trade-growth-and-creeping-protectionism-by-otaviano-canuto-2016-10

Dani Rodrik: How to tell apart trade agreements that undermine democratic principles from those that don't:
http://www.e-axes.com/content/how-tell-apart-trade-agreements-undermine-democratic-principles-those-dont

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[*]   Recommendation is not necessarily endorsement. The editors are grateful to Vladimir Gligorov for his valuable contribution to this section.

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 tendencies in the real sector, pictures the situation in the labour market and inflation, reflects fiscal and monetary policy changes, and depicts external sector development.

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: **http://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
GDP	Gross Domestic Product
LFS	Labour Force Survey
HICP	Harmonised Index of Consumer Prices (for new EU Member States)
PPI	Producer Price Index
M1	Currency outside banks + demand deposits / narrow money (ECB definition)
M2	M1 + quasi-money / intermediate money (ECB definition)
p.a.	per annum
mn	million (10^6)
bn	billion (10^9)

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.

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Albania

Real sector development
annual growth rate in %
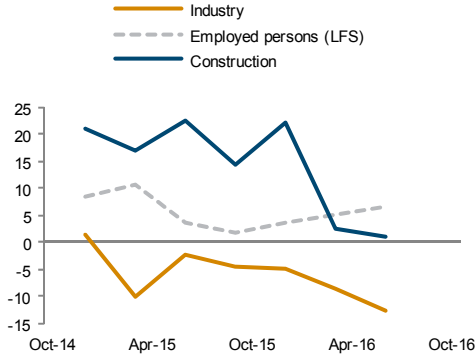
- Industry
- Employed persons (LFS)
- Construction

Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Exchange rate
- Productivity*
- Unit labour costs

Inflation and unemployment
in %

Left scale:
- Consumer prices
- Producer prices in industry

Right scale:
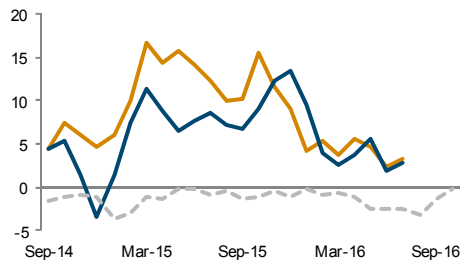- Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
- General gov. budget balance, cumulated, in % of GDP

Right scale:
- M2, annual growth rate
- Central bank policy rate (p.a.)
- Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

- Exports total, 3-month moving average (EUR based)
- Imports total, 3-month moving average (EUR based)
- Real exchange rate EUR/ALL, PPI deflated

External finance
EUR bn

Left scale:
- Gross reserves of NB excl. gold
- Gross external debt

Right scale:
- Current account
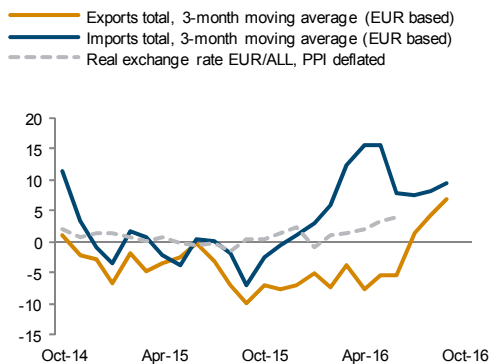
*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
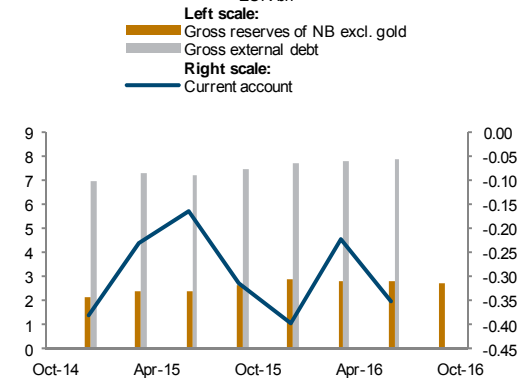
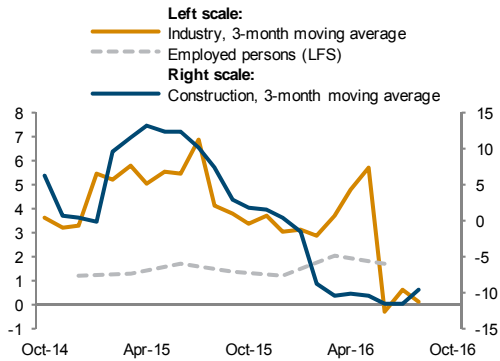Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
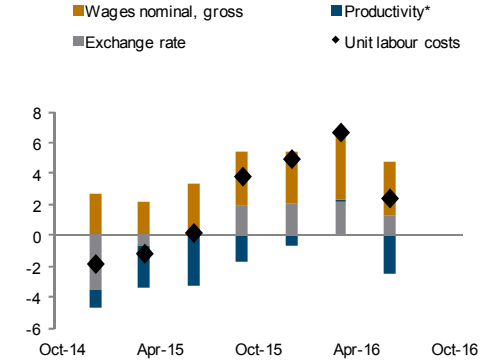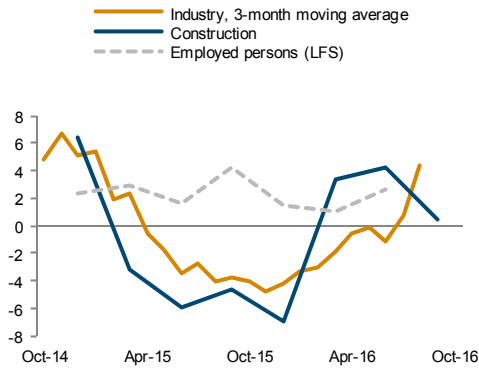http://data.wiiw.ac.at/monthly-database.html

Bosnia and Herzegovina

Real sector development
annual growth rate in %
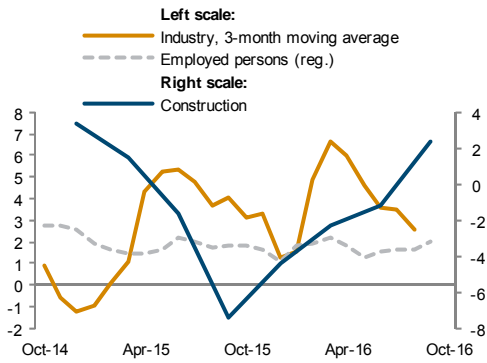
Left scale:
Industry, 3-month moving average
Employed persons (reg.)
Right scale:
Construction

Unit labour costs in industry
annual growth rate in %

Wages nominal, gross   Productivity*
Unit labour costs

Inflation and unemployment
in %

Left scale:
Consumer prices
Producer prices in industry
Right scale:
Unemployment rate (reg.)

Fiscal and monetary policy
in %

Left scale:
General gov. budget balance, cumulated, in % of GDP
Right scale:
M2, annual growth rate

External sector development
annual growth rate in %

Exports total, 3-month moving average (EUR based)
Imports total, 3-month moving average (EUR based)
Real exchange rate EUR/BAM, PPI deflated

External finance
EUR bn

Left scale:
Gross reserves of NB excl. gold
Gross external debt (public)
Right scale:
Current account
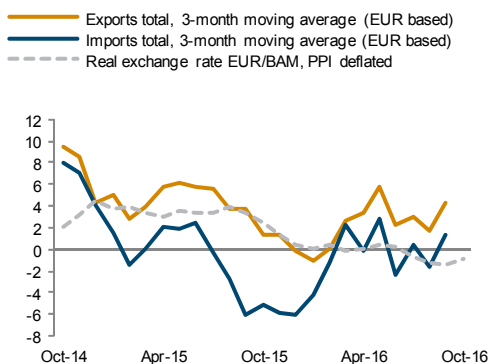
*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
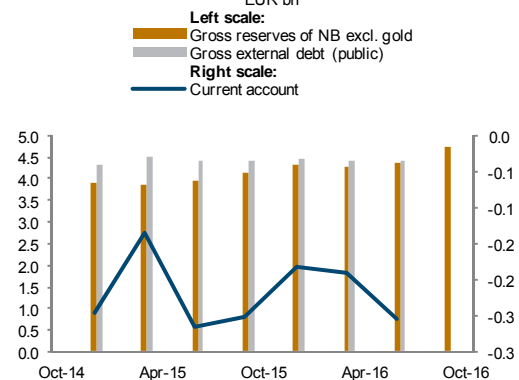
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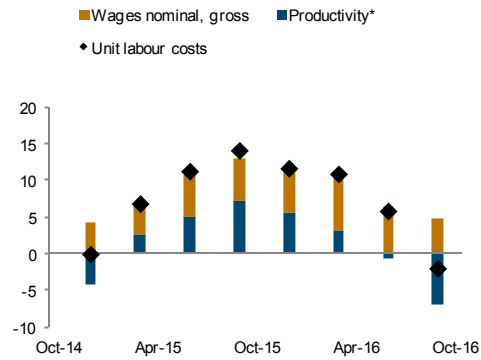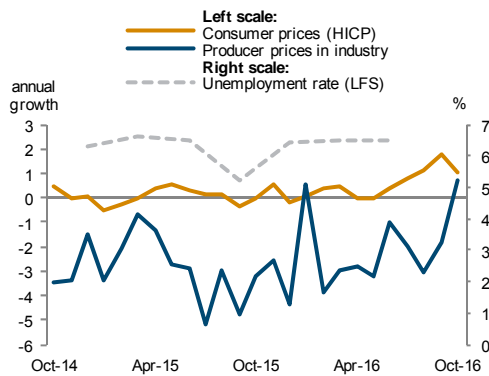http://data.wiiw.ac.at/monthly-database.html

Bulgaria

Real sector development
annual growth rate in %

— Industry, 3-month moving average
— Construction, 3-month moving average
- - - Employed persons (LFS)

Unit labour costs in industry
annual growth rate in %

▮ Wages nominal, gross ▮ Productivity* ◆ Unit labour costs

Inflation and unemployment
in %

Left scale:
— Consumer prices (HICP)
— Producer prices in industry
Right scale:
- - - Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
▮ General gov. budget balance, cumulated, in % of GDP
Right scale:
— Broad money, annual growth rate
- - - Central bank policy rate (p.a.)
— Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

— Exports total, 3-month moving average (EUR based)
— Imports total, 3-month moving average (EUR based)
- - - Real exchange rate EUR/BGN, PPI deflated

External finance
EUR bn

Left scale:
▮ Gross reserves of NB excl. gold
▮ Gross external debt
Right scale:
— Current account

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

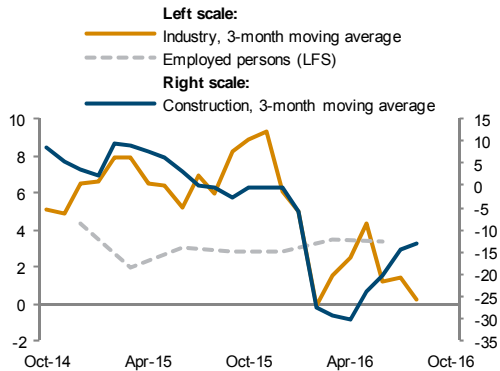Source: wiiw Monthly Database incorporating Eurostat and national statistics.
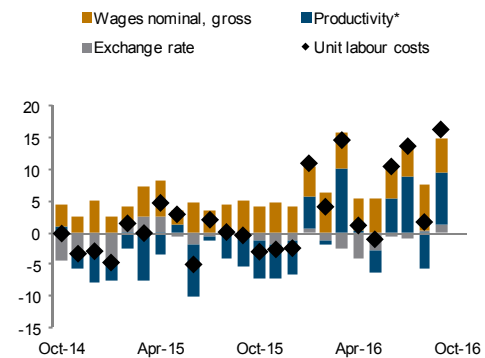Baseline data, country-specific definitions and methodological breaks in time series are available under:
http://data.wiiw.ac.at/monthly-database.html

Croatia

Real sector development
annual growth rate in %

- Industry, 3-month moving average
- Construction, 3-month moving average
- Employed persons (LFS)

Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Exchange rate
- Unit labour costs

Inflation and unemployment
in %

Left scale:
- Consumer prices (HICP)
- Producer prices in industry

Right scale:
- Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
- General gov. budget balance, cumulated, in % of GDP

Right scale:
- Broad money, annual growth rate
- Central bank policy rate (p.a.)
- Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

- Exports total, 3-month moving average (EUR based)
- Imports total, 3-month moving average (EUR based)
- Real exchange rate EUR/HRK, PPI deflated

External finance
EUR bn

Left scale:
- Gross reserves of NB excl. gold
- Gross external debt

Right scale:
- Current account

*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
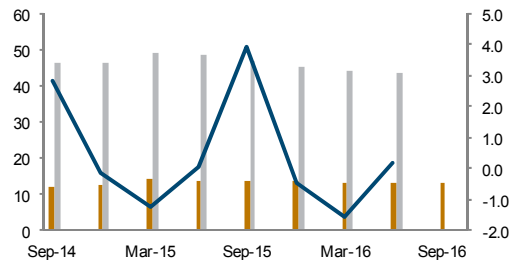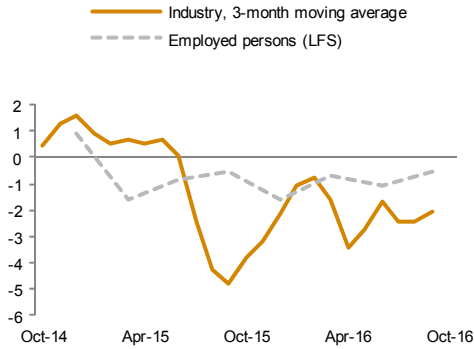
Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
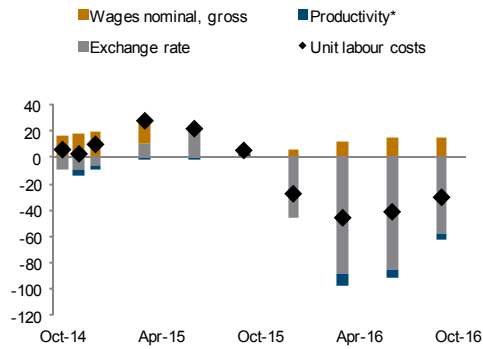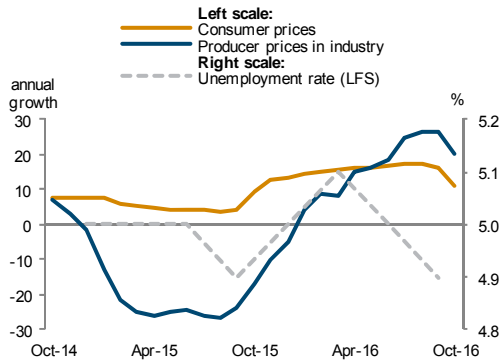http://data.wiiw.ac.at/monthly-database.html

Czech Republic

Real sector development
annual growth rate in %

Left scale:
Industry, 3-month moving average
Employed persons (LFS)
Right scale:
Construction, 3-month moving average

Unit labour costs in industry
annual growth rate in %

Wages nominal, gross   Productivity*
Exchange rate   Unit labour costs

Inflation and unemployment
in %
Left scale:
Consumer prices (HICP)
Producer prices in industry
Right scale:
Unemployment rate (LFS)

Fiscal and monetary policy
in %
Left scale:
General gov. budget balance, cumulated, in % of GDP
Right scale:
Broad money, annual growth rate
Central bank policy rate (p.a.)
Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

Exports total, 3-month moving average (EUR based)
Imports total, 3-month moving average (EUR based)
Real exchange rate EUR/CZK, PPI deflated

External finance
EUR bn
Left scale:
Gross reserves of NB excl. gold
Gross external debt
Right scale:
Current account

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

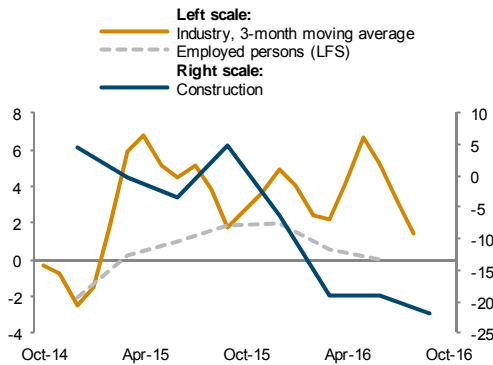Source: wiiw Monthly Database incorporating Eurostat and national statistics.
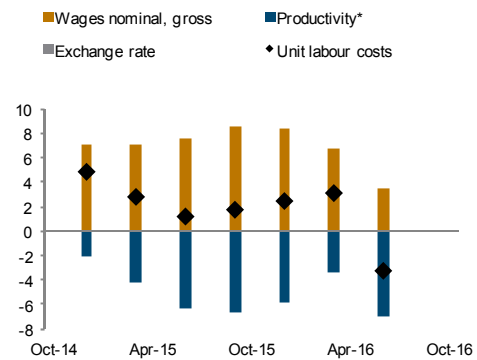Baseline data, country-specific definitions and methodological breaks in time series are available under:
http://data.wiiw.ac.at/monthly-database.html

Estonia

Real sector development
annual growth rate in %

- Industry, 3-month moving average
- Construction
- Employed persons (LFS)

Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Unit labour costs

Inflation and unemployment
in %

Left scale:
- Consumer prices (HICP)
- Producer prices in industry

Right scale:
- Unemployment rate (LFS)

annual growth

Fiscal and monetary policy
in %

Left scale:
- General gov. budget balance, cumulated, in % of GDP

Right scale:
- Broad money, annual growth rate
- Central bank policy rate (p.a.)
- Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

- Exports total, 3-month moving average (EUR based)
- Imports total, 3-month moving average (EUR based)
- Real exchange rate EUR/EUR, PPI deflated

External finance
EUR bn

Left scale:
- Gross external debt

Right scale:
- Current account

*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
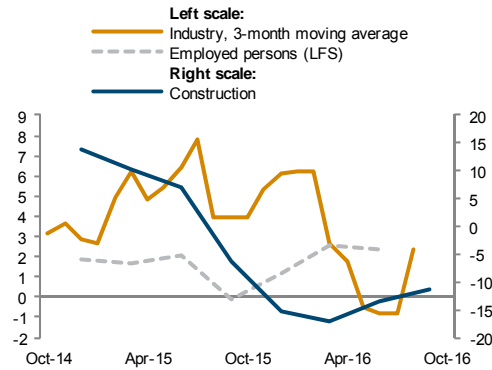
Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
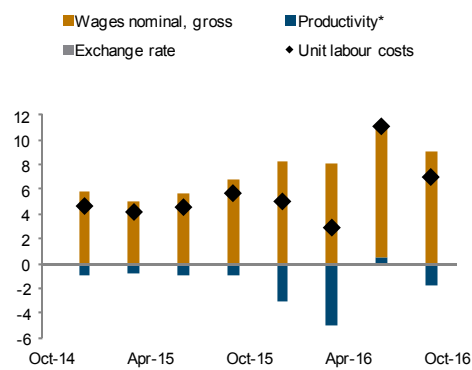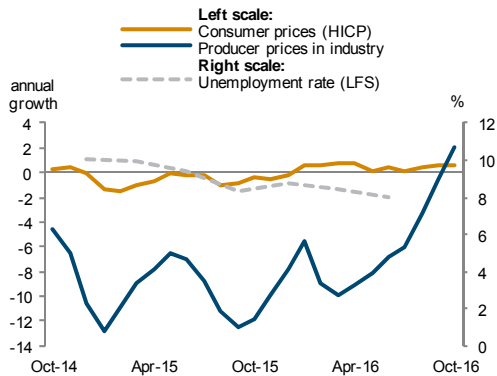http://data.wiiw.ac.at/monthly-database.html

Hungary

Real sector development
annual growth rate in %

Left scale:
— Industry, 3-month moving average
--- Employed persons (LFS)
Right scale:
— Construction, 3-month moving average

Unit labour costs in industry
annual growth rate in %

■ Wages nominal, gross ■ Productivity*
■ Exchange rate ◆ Unit labour costs

Inflation and unemployment
in %

Left scale:
— Consumer prices (HICP)
— Producer prices in industry
Right scale:
--- Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
■ General gov. budget balance, cumulated, in % of GDP
Right scale:
— Broad money, annual growth rate
--- Central bank policy rate (p.a.)
— Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

— Exports total, 3-month moving average (EUR based)
— Imports total, 3-month moving average (EUR based)
--- Real exchange rate EUR/HUF, PPI deflated

External finance
EUR bn

Left scale:
■ Gross reserves of NB excl. gold
■ Gross external debt
Right scale:
— Current account
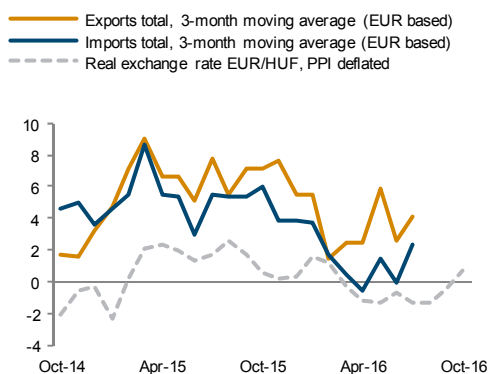
*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
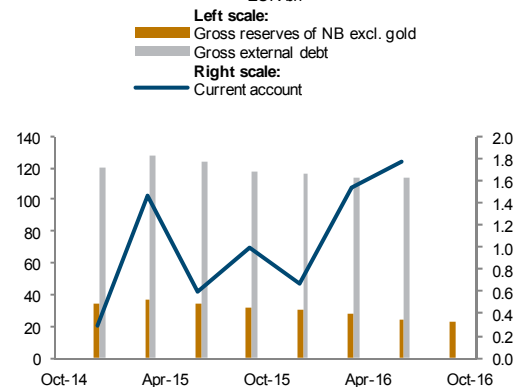
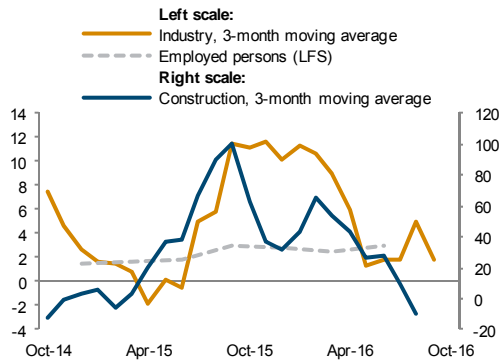Source: wiiw Monthly Database incorporating Eurostat and national statistics.
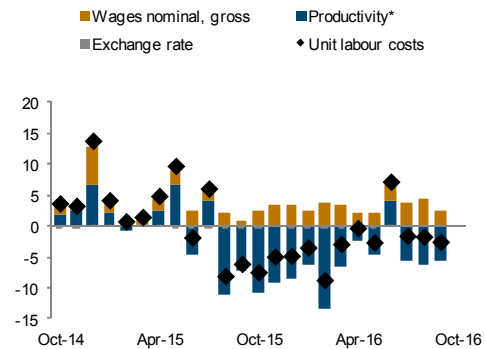Baseline data, country-specific definitions and methodological breaks in time series are available under:
http://data.wiiw.ac.at/monthly-database.html

Kazakhstan

Real sector development
annual growth rate in %

— Industry, 3-month moving average
- - - Employed persons (LFS)

Unit labour costs in industry
annual growth rate in %

■ Wages nominal, gross   ■ Productivity*
■ Exchange rate   ◆ Unit labour costs

Inflation and unemployment
in %

Left scale:
Consumer prices
Producer prices in industry
Right scale:
Unemployment rate (LFS)

annual growth

%

Fiscal and monetary policy
in %

Left scale:
General gov. budget balance, cumulated, in % of GDP
Right scale:
Broad money, annual growth rate
Central bank policy rate (p.a.)
Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

— Exports total, 3-month moving average (EUR based)
— Imports total, 3-month moving average (EUR based)
- - - Real exchange rate EUR/KZT, PPI deflated

External finance
EUR bn

Left scale:
■ Gross reserves of NB excl. gold
■ Gross external debt
Right scale:
— Current account

*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
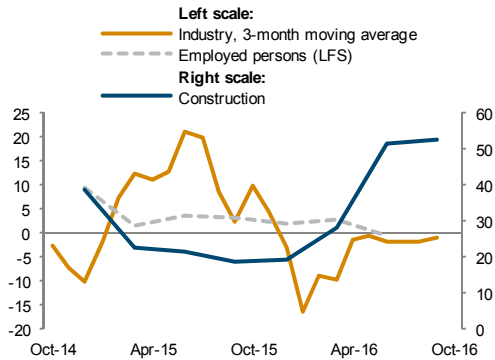
Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
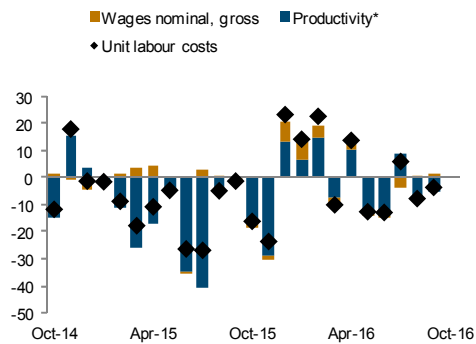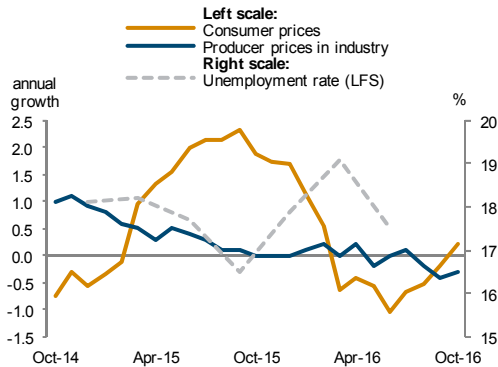http://data.wiiw.ac.at/monthly-database.html

Latvia

Real sector development
annual growth rate in %

Left scale:
— Industry, 3-month moving average
- - - Employed persons (LFS)
Right scale:
— Construction

Unit labour costs in industry
annual growth rate in %

■ Wages nominal, gross   ■ Productivity*
■ Exchange rate   ◆ Unit labour costs

Inflation and unemployment
in %

Left scale:
— Consumer prices (HICP)
— Producer prices in industry
Right scale:
- - - Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
■ General gov. budget balance, cumulated, in % of GDP
Right scale:
— Broad money, annual growth rate
- - - Central bank policy rate (p.a.)
— Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

— Exports total, 3-month moving average (EUR based)
— Imports total, 3-month moving average (EUR based)
- - - Real exchange rate EUR/EUR-LVL, PPI deflated

External finance
EUR bn

Left scale:
■ Gross reserves of NB excl. gold
■ Gross external debt
Right scale:
— Current account

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

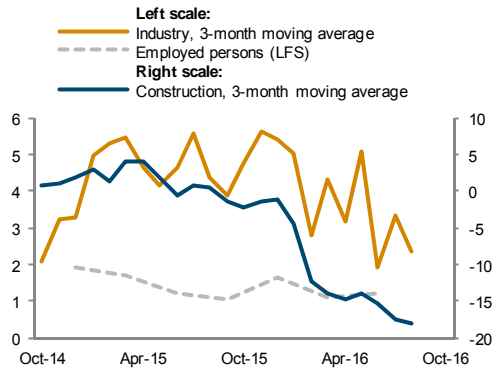Source: wiiw Monthly Database incorporating Eurostat and national statistics.
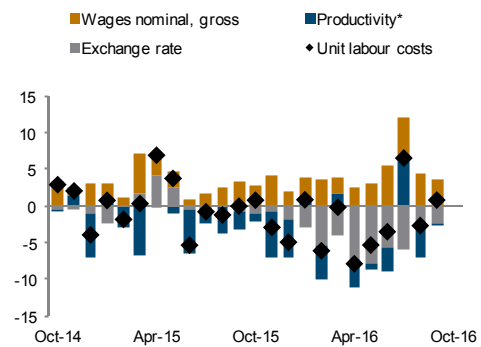Baseline data, country-specific definitions and methodological breaks in time series are available under:
http://data.wiiw.ac.at/monthly-database.html

Lithuania

Real sector development
annual growth rate in %

Left scale:
Industry, 3-month moving average
Employed persons (LFS)
Right scale:
Construction

Unit labour costs in industry
annual growth rate in %

Wages nominal, gross   Productivity*
Exchange rate   ◆ Unit labour costs

Inflation and unemployment
in %

Left scale:
Consumer prices (HICP)
Producer prices in industry
Right scale:
Unemployment rate (LFS)

annual growth

%

Fiscal and monetary policy
in %

Left scale:
General gov. budget balance, cumulated, in % of GDP
Right scale:
Broad money, annual growth rate
Central bank policy rate (p.a.)
Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

Exports total, 3-month moving average (EUR based)
Imports total, 3-month moving average (EUR based)
Real exchange rate EUR/EUR-LTL, PPI deflated

External finance
EUR bn

Left scale:
Gross reserves of NB excl. gold
Gross external debt
Right scale:
Current account

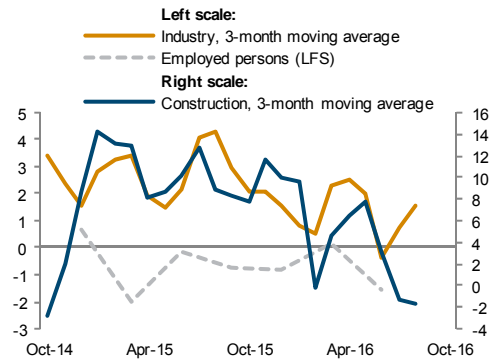*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
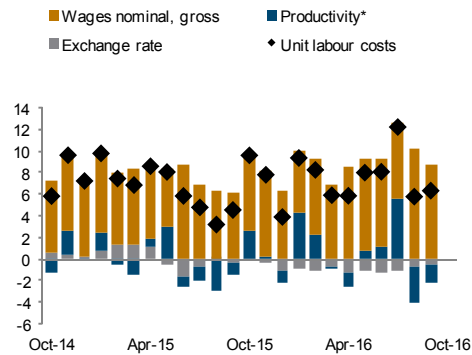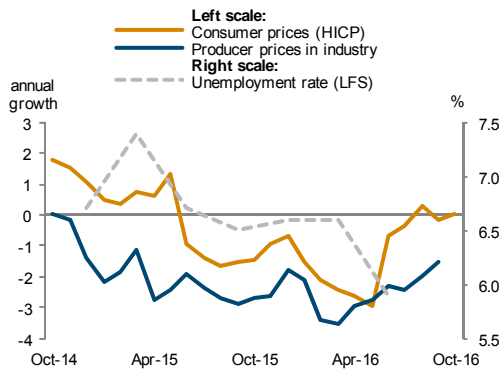http://data.wiiw.ac.at/monthly-database.html

Macedonia

Real sector development
annual growth rate in %

Left scale:
— Industry, 3-month moving average
----- Employed persons (LFS)
Right scale:
— Construction, 3-month moving average

Unit labour costs in industry
annual growth rate in %

■ Wages nominal, gross   ■ Productivity*
■ Exchange rate   ◆ Unit labour costs

Inflation and unemployment
in %

Left scale:
— Consumer prices
— Producer prices in industry
Right scale:
----- Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
▌ General gov. budget balance, cumulated, in % of GDP
Right scale:
— Broad money, annual growth rate
----- Central bank policy rate (p.a.)
— Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

— Exports total, 3-month moving average (EUR based)
— Imports total, 3-month moving average (EUR based)
----- Real exchange rate EUR/MKD, PPI deflated

External finance
EUR bn

Left scale:
■ Gross reserves of NB excl. gold
▌ Gross external debt
Right scale:
— Current account

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

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
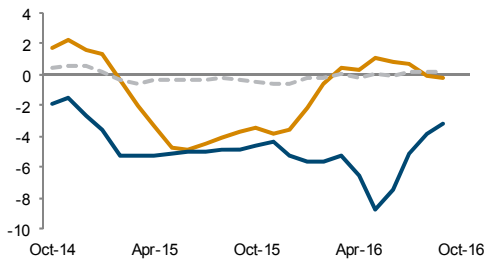http://data.wiiw.ac.at/monthly-database.html

Montenegro

Real sector development
annual growth rate in %

Left scale:
— Industry, 3-month moving average
--- Employed persons (LFS)
Right scale:
— Construction

Unit labour costs in industry
annual growth rate in %

■ Wages nominal, gross   ■ Productivity*
◆ Unit labour costs

Inflation and unemployment
in %

Left scale:
— Consumer prices
— Producer prices in industry
Right scale:
--- Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
▮ General gov. budget balance, cumulated, in % of GDP
Right scale:
— M2, annual growth rate
--- Lending rate (com. banks)
— Lending rate (com. banks), real, defl. with annual PPI
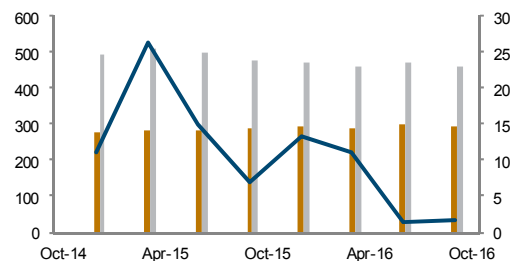
External sector development
annual growth rate in %

— Exports total, 3-month moving average (EUR based)
— Imports total, 3-month moving average (EUR based)
--- Real exchange rate EUR/EUR, PPI deflated

External finance
EUR bn

Left scale:
▮ Gross reserves of NB excl. gold
▮ Gross external debt (public)
Right scale:
— Current account
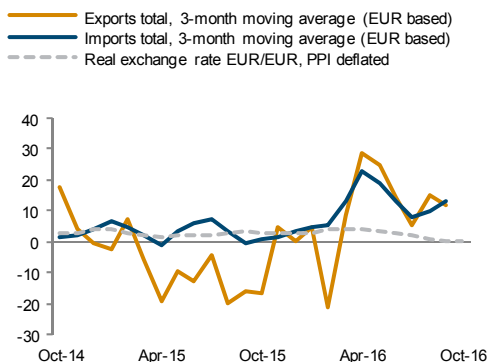
*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
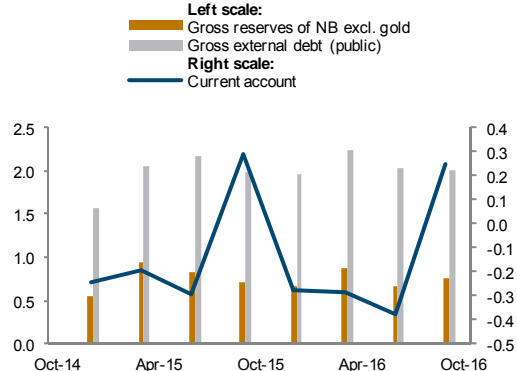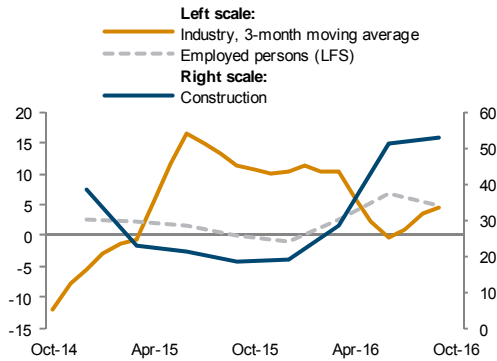
Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
http://data.wiiw.ac.at/monthly-database.html

Poland

Real sector development
annual growth rate in %

Left scale:
— Industry, 3-month moving average
--- Employed persons (LFS)
Right scale:
— Construction, 3-month moving average

Unit labour costs in industry
annual growth rate in %

■ Wages nominal, gross   ■ Productivity*
■ Exchange rate   ◆ Unit labour costs

Inflation and unemployment
in %

Left scale:
— Consumer prices (HICP)
— Producer prices in industry
Right scale:
--- Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
■ General gov. budget balance, cumulated, in % of GDP
Right scale:
— Broad money, annual growth rate
--- Central bank policy rate (p.a.)
— Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

— Exports total, 3-month moving average (EUR based)
— Imports total, 3-month moving average (EUR based)
--- Real exchange rate EUR/PLN, PPI deflated

External finance
EUR bn

Left scale:
■ Gross reserves of NB excl. gold
■ Gross external debt
Right scale:
— Current account

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

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
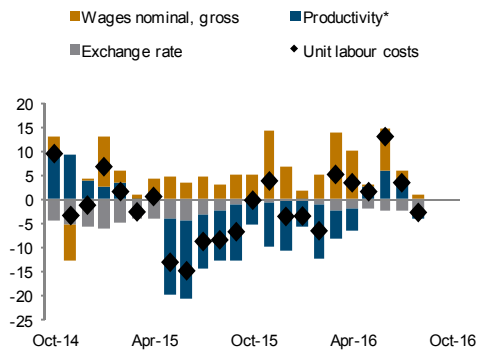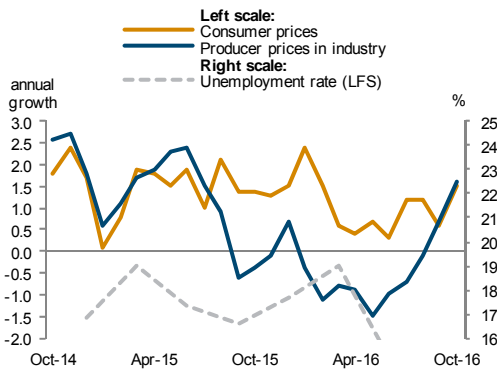Baseline data, country-specific definitions and methodological breaks in time series are available under:
http://data.wiiw.ac.at/monthly-database.html

Romania

Real sector development
annual growth rate in %

Left scale:
— Industry, 3-month moving average
-- Employed persons (LFS)
Right scale:
— Construction, 3-month moving average

Unit labour costs in industry
annual growth rate in %

■ Wages nominal, gross   ■ Productivity*
■ Exchange rate   ◆ Unit labour costs

Inflation and unemployment
in %

Left scale:
— Consumer prices (HICP)
— Producer prices in industry
Right scale:
-- Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
■ General gov. budget balance, cumulated, in % of GDP
Right scale:
— Broad money, annual growth rate
-- Central bank policy rate (p.a.)
— Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

— Exports total, 3-month moving average (EUR based)
— Imports total, 3-month moving average (EUR based)
-- Real exchange rate EUR/RON, PPI deflated

External finance
EUR bn

Left scale:
■ Gross reserves of NB excl. gold
■ Gross external debt
Right scale:
— Current account

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

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
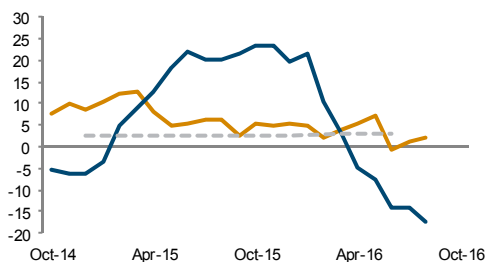http://data.wiiw.ac.at/monthly-database.html

Russia
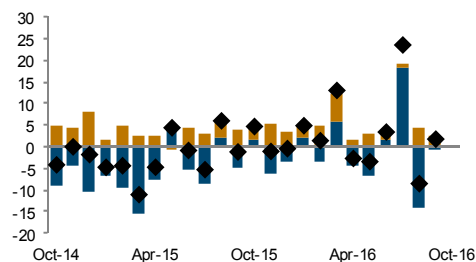
Real sector development
annual growth rate in %

- Industry, 3-month moving average
- Construction, 3-month moving average
- Employed persons (LFS)

Unit labour costs in industry
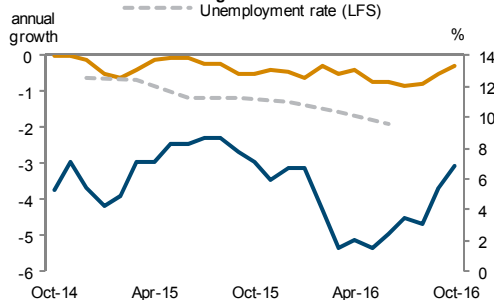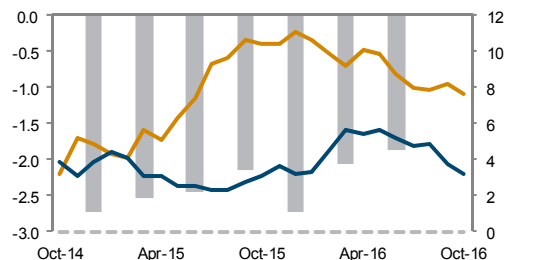annual growth rate in %

- Wages nominal, manuf., gross
- Productivity*
- Exchange rate
- Unit labour costs

Inflation and unemployment
in %

Left scale:
- Consumer prices
- Producer prices in industry

Right scale:
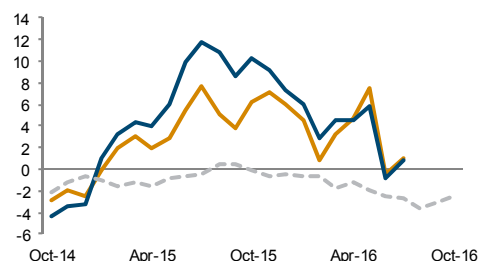- Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
- General gov. budget balance, cumulated, in % of GDP

Right scale:
- M2, annual growth rate
- Central bank policy rate (p.a.)
- Central bank policy rate (p.a.), real, defl. with annual PPI
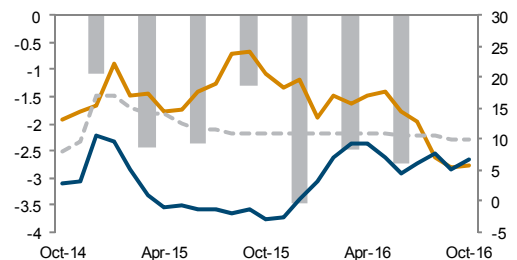
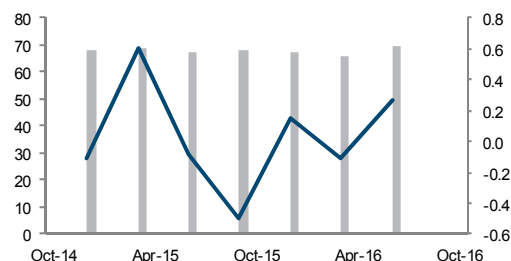### External sector development
annual growth rate in %

- Exports total, 3-month moving average (EUR based)
- Imports total, 3-month moving average (EUR based)
- Real exchange rate EUR/RUB, PPI deflated

External finance
EUR bn

Left scale:
- Gross reserves of NB excl. gold
- Gross external debt

Right scale:
- Current account

*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
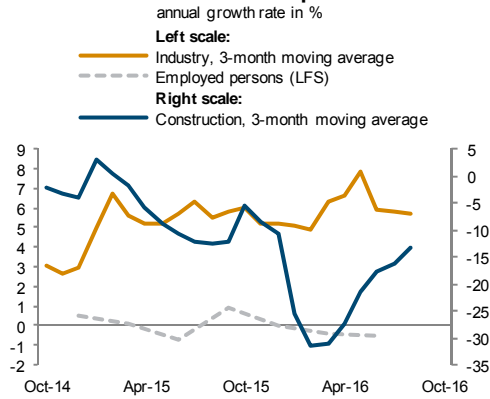
Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
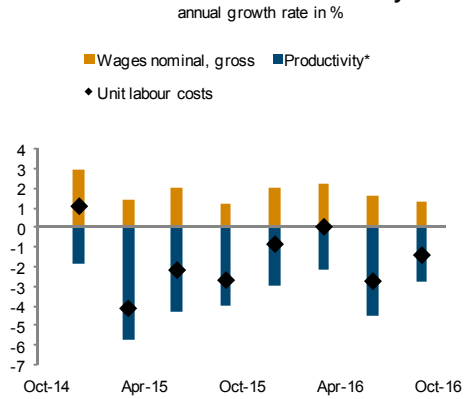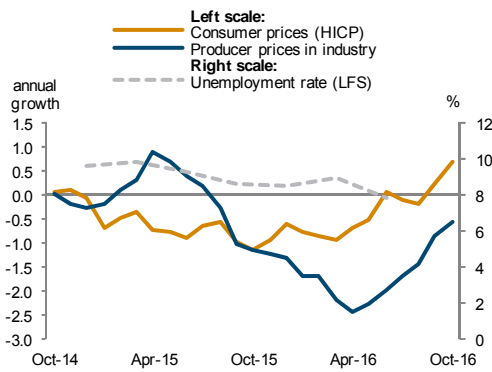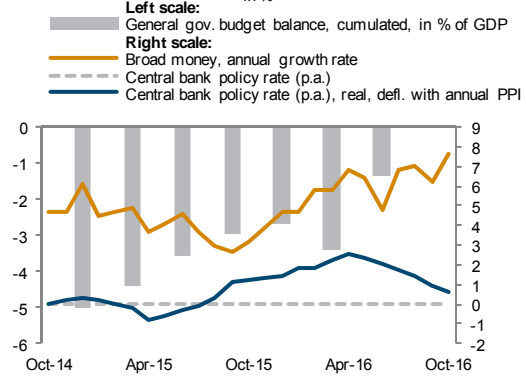http://data.wiiw.ac.at/monthly-database.html

Serbia

Real sector development
annual growth rate in %

Left scale:
- Industry, 3-month moving average
- Employed persons (LFS)

Right scale:
- Construction

Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Exchange rate
- Unit labour costs

Inflation and unemployment
in %

Left scale:
- Consumer prices
- Producer prices in industry

Right scale:
- Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
- General gov. budget balance, cumulated, in % of GDP

Right scale:
- M2, annual growth rate
- Central bank policy rate (p.a.)
- Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

- Exports total, 3-month moving average (EUR based)
- Imports total, 3-month moving average (EUR based)
- Real exchange rate EUR/RSD, PPI deflated

External finance
EUR bn

Left scale:
- Gross reserves of NB excl. gold
- Gross external debt

Right scale:
- Current account

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

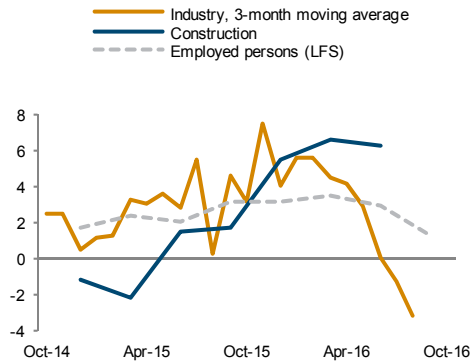Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
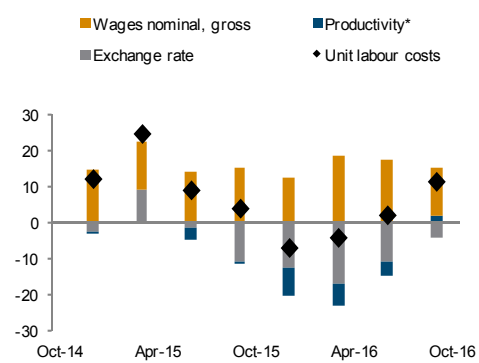http://data.wiiw.ac.at/monthly-database.html

Slovakia

Real sector development
annual growth rate in %

- Industry, 3-month moving average
- Construction, 3-month moving average
- Employed persons (LFS)

Unit labour costs in industry
annual growth rate in %

- Wages nominal, gross
- Productivity*
- Unit labour costs

Inflation and unemployment
in %

Left scale:
- Consumer prices (HICP)
- Producer prices in industry

Right scale:
- Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
- General gov. budget balance, cumulated, in % of GDP

Right scale:
- Broad money, annual growth rate
- Central bank policy rate (p.a.)
- Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

- Exports total, 3-month moving average (EUR based)
- Imports total, 3-month moving average (EUR based)
- Real exchange rate EUR/EUR, PPI deflated

External finance
EUR bn

Left scale:
- Gross external debt

Right scale:
- Current account

*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
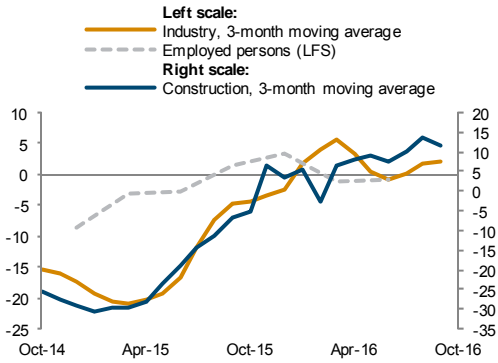
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Baseline data, country-specific definitions and methodological breaks in time series are available under:
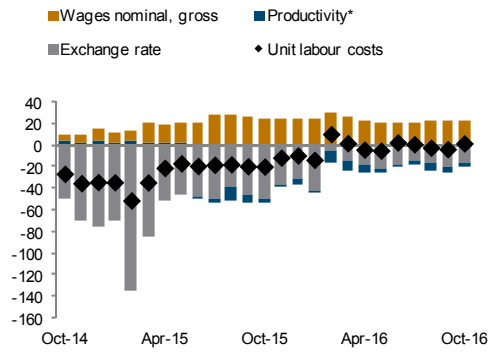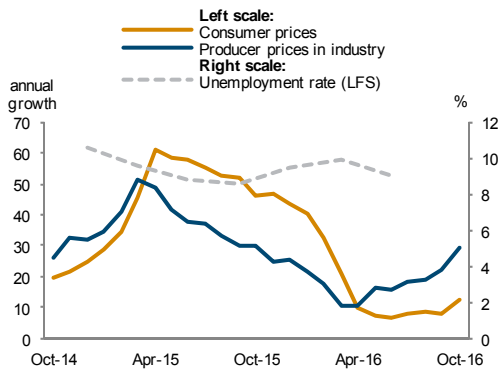http://data.wiiw.ac.at/monthly-database.html

Slovenia

Real sector development
annual growth rate in %

Left scale:
Industry, 3-month moving average
Employed persons (LFS)
Right scale:
Construction, 3-month moving average

Unit labour costs in industry
annual growth rate in %

Wages nominal, gross   Productivity*

Unit labour costs

Inflation and unemployment
in %

Left scale:
Consumer prices (HICP)
Producer prices in industry
Right scale:
Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
General gov. budget balance, cumulated, in % of GDP
Right scale:
Broad money, annual growth rate
Central bank policy rate (p.a.)
Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

Exports total, 3-month moving average (EUR based)
Imports total, 3-month moving average (EUR based)
Real exchange rate EUR/EUR, PPI deflated

External finance
EUR bn

Left scale:
Gross external debt
Right scale:
Current account

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

Source: wiiw Monthly Database incorporating Eurostat and national statistics.
Baseline data, country-specific definitions and methodological breaks in time series are available under:
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Turkey

Real sector development
annual growth rate in %

— Industry, 3-month moving average
— Construction
- - - Employed persons (LFS)

Unit labour costs in industry
annual growth rate in %

■ Wages nominal, gross   ■ Productivity*
■ Exchange rate   ◆ Unit labour costs

Inflation and unemployment
in %

Left scale:
— Consumer prices (HICP)
— Producer prices in industry
Right scale:
- - - Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
■ General gov. budget balance, cumulated, in % of GDP
Right scale:
— Broad money, annual growth rate
- - - Central bank policy rate (p.a.)
— Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

— Exports total, 3-month moving average (EUR based)
— Imports total, 3-month moving average (EUR based)
- - - Real exchange rate EUR/TRY, PPI deflated

External finance
EUR bn

Left scale:
■ Gross reserves of NB excl. gold
■ Gross external debt
Right scale:
— Current account

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

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Ukraine

Real sector development
annual growth rate in %

Left scale:
Industry, 3-month moving average
Employed persons (LFS)
Right scale:
Construction, 3-month moving average

Unit labour costs in industry
annual growth rate in %

■ Wages nominal, gross   ■ Productivity*
■ Exchange rate   ♦ Unit labour costs

Inflation and unemployment
in %

Left scale:
Consumer prices
Producer prices in industry
Right scale:
Unemployment rate (LFS)

Fiscal and monetary policy
in %

Left scale:
General gov. budget balance, cumulated, in % of GDP
Right scale:
Broad money, annual growth rate
Central bank policy rate (p.a.)
Central bank policy rate (p.a.), real, defl. with annual PPI

External sector development
annual growth rate in %

Exports total, 3-month moving average (EUR based)
Imports total, 3-month moving average (EUR based)
Real exchange rate EUR/UAH, PPI deflated

External finance
EUR bn

Left scale:
Gross reserves of NB excl. gold
Gross external debt
Right scale:
Current account
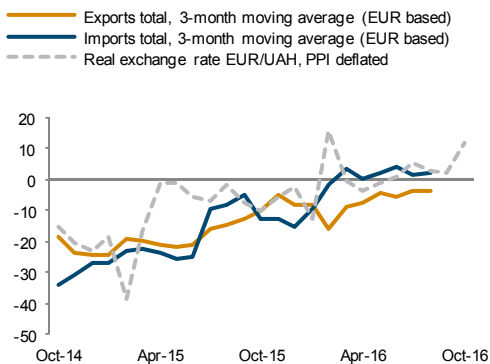
*Positive values of the productivity component on the graph reflect decline in productivity and vice versa.
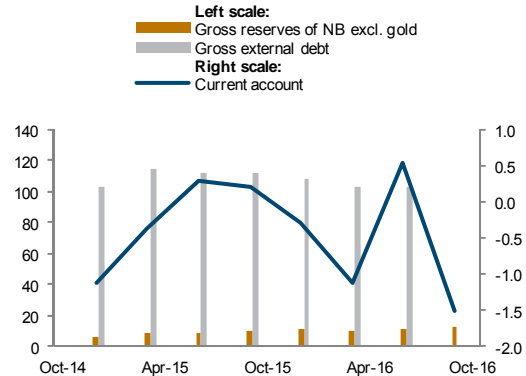
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Index of subjects – December 2015 to December 2016

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