

Convergence 2.0

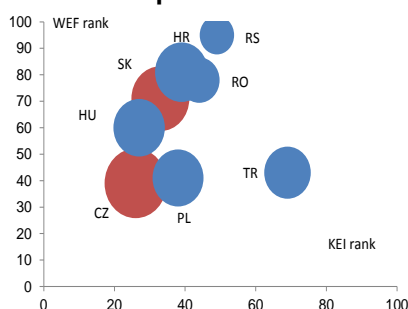
Since the fall of Communism, Central and Eastern Europe has become a textbook example of economic convergence. However, the financial crisis has put this process partially on hold. We thus investigate the growth model and ask whether the drivers of growth are intact. CEE will have to move from a classical catching up by imitation to a knowledge-based system in the next decade. The potential benefits to be reaped from education and innovation are large.

Birgit Niessner

Chief Analyst of CEE Macro/FI Research
birgit.niessner@erstegroup.com

For Central and Eastern Europe, the crisis has not only meant austerity and slowing growth, but also some doubts about the sustainability of its growth model. Was it all simply an economic boom driven by capital inflows and over-consumption, where, behind the high headline growth figures, economies did not invest and become more productive? Looking at actual growth figures, it looks like economic convergence is taking a break.

Who is competitive and rich?



The graph shows country ranks by competitiveness (WEF rank) and by knowledge economy (KEI rank). The lower the rank, the better.

Source: WEF, World Bank, Erste Group Research (Size of bubble by GNI p.c., Atlas Method; innovative economies according to WEF in red color)

First, we dig deep into the characteristics of the CEE growth model, which is essentially an industrial one. CEE countries have used the re-integration of Europe to their own economic benefit and foreign investors have discovered the region as a place in which to invest. And they did so in more and more sophisticated branches of the economy, which brought enormous productivity gains. Productivity levels are still lower than in Western European countries, but this is compensated for by low labor costs. The countries of the region have thus used their relative cost advantage to modernize their industry with foreign technologies. High stocks of FDI and a high share of exports to GDP are testimony to this success and have survived the financial crisis well.

So the recipe for success is intact, but pure cost competitiveness is not enough when countries are approaching the technological frontier. The key to further catching up will be to replace the importing of knowledge by innovative and new products generated in the countries. And this is only possible with highly educated people and a significant increase in expenditure on R&D. The aim is to become a knowledge economy which relies on knowledge as the key engine of economic growth. Investing in education and innovation can help CEE countries to restart the convergence machine in difficult times and at the same time prepare the way for joining the high-tech league of countries.

Among our sample of CEE countries, the Czech Republic, Slovakia and Poland are the frontrunners in terms of competitiveness and knowledge, with Hungary falling behind this group of countries. Romania and Serbia are on their way, but can still exploit more efficiency reserves before becoming innovating economies. Croatia must become more competitive to preserve its relatively high income level, whereas Turkey still has to move towards a knowledge economy.

Finally, we ask how CEE will fare in terms of growth of potential output, i.e. whether the catching-up story will continue. Major forecasts say that CEE will maintain its growth advantage over Western peers in the short- and long-run.

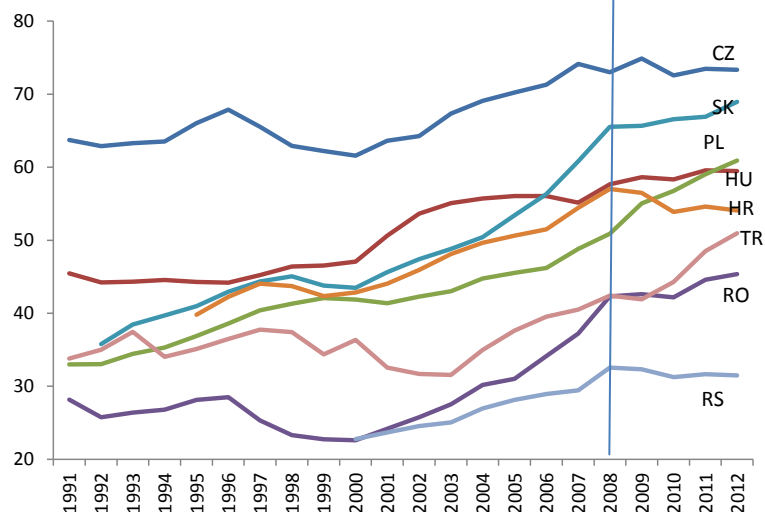
My thanks for comments go to Juraj Kotian, Philipp Mayer and David Navratil.

Economic Convergence Takes a Break

Financial crisis slows down catching up process

Over the last twenty years, the countries of Central and Eastern Europe have come a long way in economic terms. Slovakia, for instance, started at 36% of the EU-15 average GDP per capita in purchasing power terms in 1992 and was estimated to have reached 69% of the EU-15 GDP per capita in 2012. Of course, the higher the initial level, the more moderate the catching up – the Czech Republic is a point in case. But what is true for the countries shown in the graph below is that the year 2008 put a brake on the convergence process. Only Poland and Turkey – able to distance themselves more from the Eurozone recession – buck the trend.

GDP in PPS per head of population (as % of EU-15)



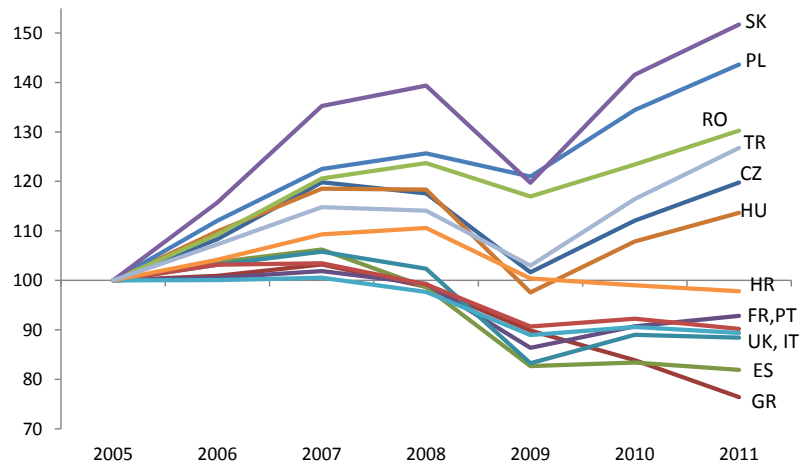
Source: AMECO, Erste Group Research

Europe: convergence machine¹

The history behind economic convergence is the re-integration of Europe after the fall of the Iron Curtain. The early prospect of entry into the European Union propelled CEE countries to undertake structural reforms which not only led to political progress, but also invited foreign investors into the countries. FDI inflows brought new technology, which raised productivity and promoted exports. CEE countries were thus able to excel in the industrial sector. After the 2008 downturn, the industrial sector quickly gained momentum again in CEE, whereas the peripheral countries of the Eurozone were faced with prolonged de-industrialization.

¹ The World Bank coined this expression in its 2012 report “[Golden Growth](#)” which inspired parts of this Special Report.

Industrial production (Construction excluded, 2005=100)



Source: AMECO, Erste Group Research

How sustainable is convergence?

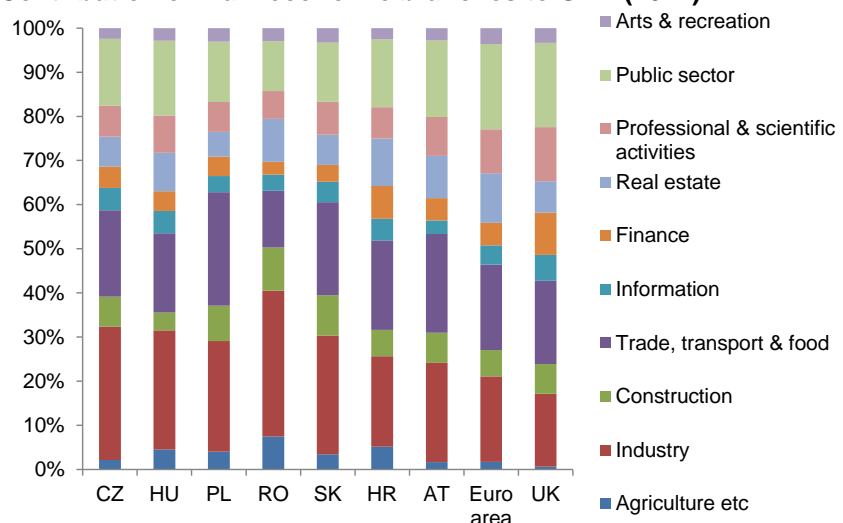
However, it would be premature for CEE to rest on its laurels, as the success of CEE economies is still dependent on imported productivity gains. But, as the region approaches the technological standards of advanced economies, they need institutions that promote innovation. Home-grown technologies will have to replace an economic model based on external inputs which are widely available. Competition, high-quality tertiary education and the availability of venture capital finance will gain in importance. In the remainder of the report we outline the classical and future drivers of growth in Central and Eastern Europe.

Sound Industrial Growth Model

CEE: industrial region

CEE economies are dominated by the secondary sector. The share of industry in the overall economic activity oscillates around 30%, whereas the industrial sector in the Eurozone lies at only 19% of GDP.

Contribution of main economic branches to GDP (2011)



Source: Eurostat, Erste Group Research

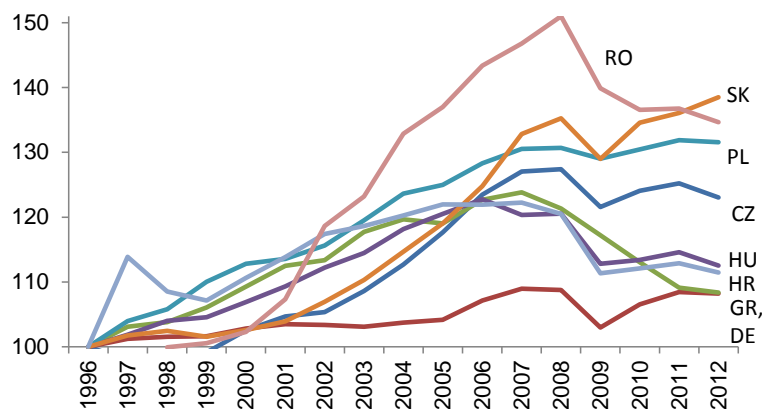
Middle-income trap avoided

The strong industrial basis of CEE countries helped them to move from the status of middle-income to high-income economies. Romania, Serbia and Turkey are still classified as upper-middle-income countries by the World Bank, but their peers have already managed to surpass the so-called middle-income trap. This trap characterizes a situation where a country gets stuck at a certain level of income due to weak rule of law, a lack of open competition and a lack of individual freedom to create and innovate.² In such a stalemate, productivity stagnates and the road to convergence gets blocked. Of course, the investment case for such a country is impaired, as investment opportunities ultimately depend on growth prospects.

Productivity gains drove catching up

So, the good news is that CEE escaped the middle-income trap, but further growth will depend on increasing productivity of capital and labor by their own means. The concept which shows this kind of improvement is called total factor productivity (TFP), which measures increases in output not explained by traditional inputs such as additional labor and capital. This proxy for technological dynamism has shown remarkable development in CEE in the last fifteen years. However, since the financial crisis the paths diverge, with Romania reversing some of its high-flying productivity growth. The comparison of CEE countries with the rather moderate increase of TFP in Germany demonstrates that increases in productivity are more difficult to achieve if already operating at the highest technological levels and thus relying on innovation from internal sources.

Total Factor Productivity (1996=100)

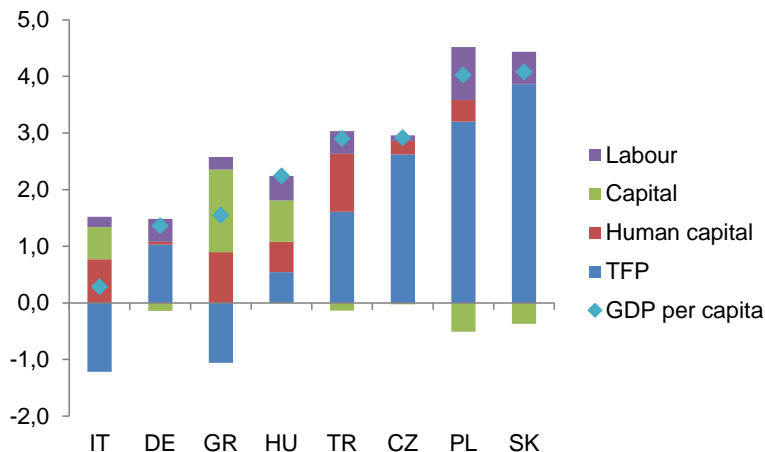


Source: Ameco, Erste Group Research (for RO 1998=100)

When TFP is put in relation to the importance of other drivers of growth, it shows again that productivity gains are the dominant force in CEE.

² Source: “Freewheeling up hills? – misconceptions about developing economies and the middle-income trap”, Independent Strategy, 2012.

Contribution of drivers of growth to annual average GDP per capita growth 2000-2011 (av. % change 2000-2011)

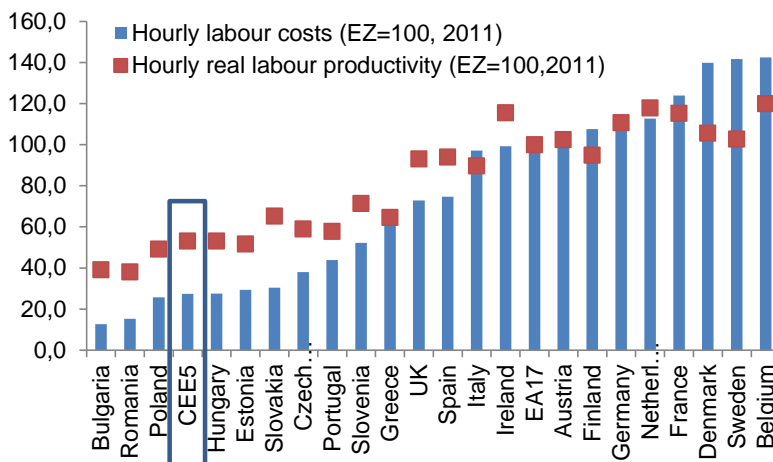


Source: OECD, Erste Group Research

Productivity gains not eaten up by high labour costs

These productivity gains are part of the convergence pattern, as the level of productivity in CEE still lags behind the productivity standards of Western European countries. But the relative competitiveness is intact, as labor costs are even further from Western European standards.

Labor productivity exceeds labor costs in CEE

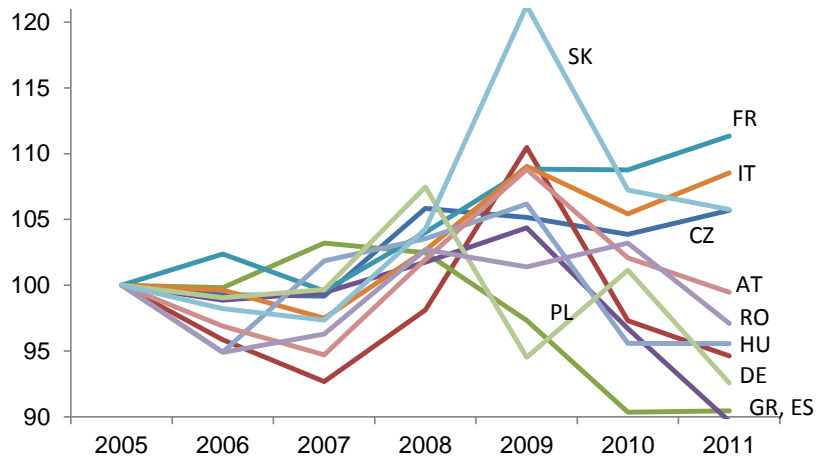


Source: Eurostat, Erste Group Research

Unit Labour Costs diverge during crisis in the manufacturing sector

Looking at how unit labor costs (ULC) have developed in the manufacturing sector, which is representative of the tradable sector, since 2005, we see that some European countries could follow a cost-saving/productivity raising strategy and others not. The manufacturing industry of Germany, Greece, Spain, Hungary, Poland and Romania has become more efficient in the last six years, whereas the Czech Republic, Slovakia, France and Italy have been faced with rising ULC. The room for maneuver for the Czech Republic and Slovakia is still there, but here again the point could be made that the more advanced a country is, the harder the productivity gains are to achieve.

Real unit labour costs in manufacturing industry (2005=100, local curr.)

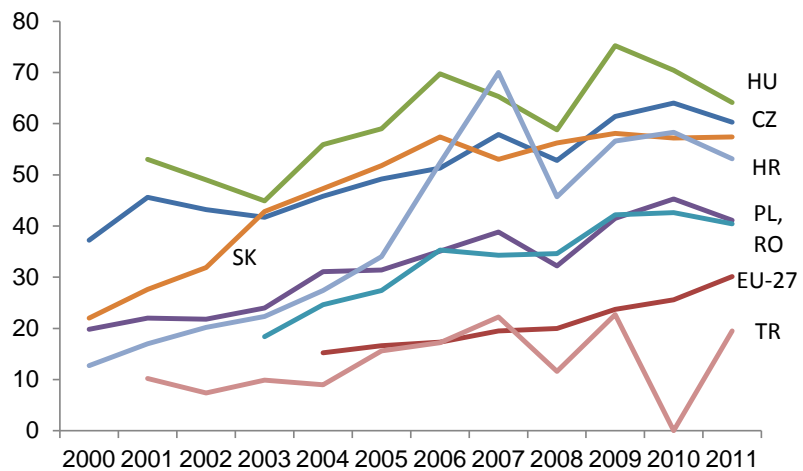


Source: Ameco, Erste Group Research, (RO shows real ULC for total economy)

FDI stabilized at high level

Another specificity of the CEE growth model held up quite well during the financial crisis. There is a high stock of total FDI in CEE economies, having attributed strongly to the above-mentioned productivity gains. The crisis year 2008 constituted a break in the accumulation of the FDI stock, but until 2011, the FDI stock stabilized in all countries. Hungary's FDI stock has seen the most negative development: From a peak of 75% of GDP in 2009, it came down by more than 10 percentage points in only two years.

Inward direct investment stocks (% of GDP)



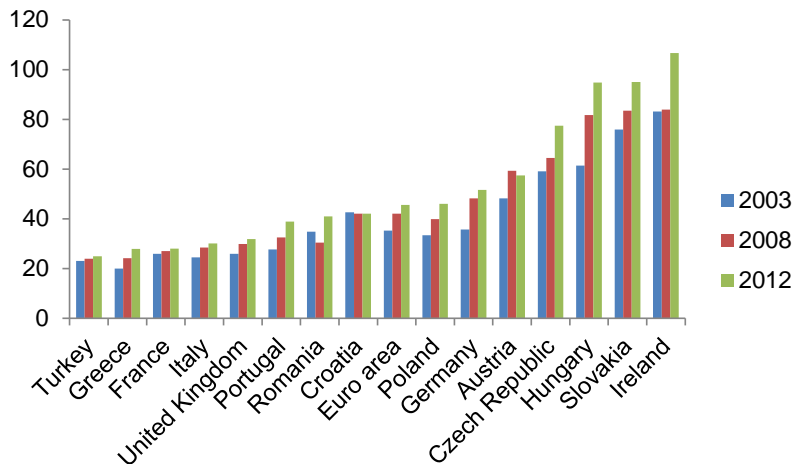
Source: Eurostat, Erste Group Research

Export performance still strengthening

Last but not least, another specialty of growth in CEE is excellence in exports. Exports are important on a macro level, as they contribute to growth, but also on a firm level, as there are reciprocal linkages between productivity and export performance. Looking at export's share of GDP, differences within the CEE region become obvious: starting at already high levels, the CEE-3 were able to raise their share of exports in the crisis years. Poland, Croatia and Romania can be found in the middle range, which is partly due to the size of the markets (larger countries tend to export less), but also to non-competitive

structures. However, their performance is still superior to the Southern European countries.³

Exports of Goods and Services (in % of GDP)



Source: Eurostat, Erste Group Research

Shift of labour from agriculture to industry supports economic catching-up

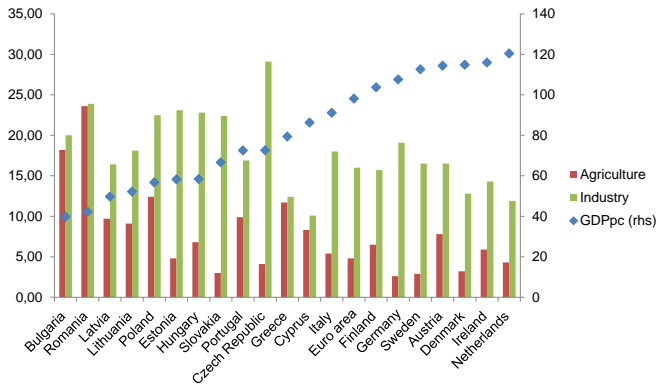
To conclude the characterization of the growth model in CEE countries, it is worth looking at the sectoral composition of employment. Corresponding to the stage of economic development (as shown by GDP per capita in the below graph), CEE countries have more people working in industry and agriculture than their Western peers who run an economic model with a stronger service sector. A study of the Austrian Research Institute⁴ has shown that, for those regions/countries catching up, a success factor is to reduce the share of employment in agriculture and raise the share in industry. In this sense, Poland and especially Romania seem to have too high a share of people working in agriculture, whereas Slovakia and the Czech Republic have been highly successful in shifting labor from agriculture to industry. Additionally, the process of catching up is helped by a high share of employment in high-tech sectors⁵, where the Czech Republic, Slovakia and Hungary are frontrunners. The former two countries can especially be regarded as success stories in terms of economic development. The [World Bank](#) has explained in a case study how Slovakia grew value added: Slovak manufacturing expanded its base as well into a variety of products. A rise in labour force participation helped to mobilize the production factor labour. The Slovak Republic has enjoyed a growing inflow of FDI and become an integral part of global value chains, while, finally, policy improvements allowed for higher productivity growth in the country.

³ To find out the sectors where CEE countries are competitive in terms of exporting, please see the Appendix.

⁴ “[Policy options for the development of peripheral regions and countries of Europe](#)”, WIFO, 2012.

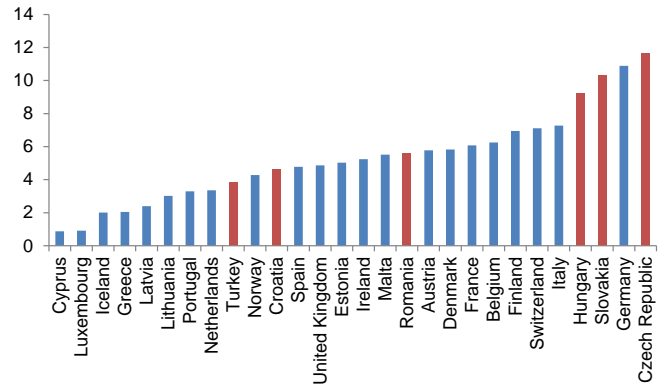
⁵ High- and medium-high technology manufacturing sectors are defined by the OECD according to the importance of expenditures on R&D. Examples of high-technology industries are aircraft, computers, and pharmaceuticals; medium-high-technology includes motor vehicles, electrical equipment and most chemicals.

Employment in Industry and Agriculture (in % of total hours worked, 2010)



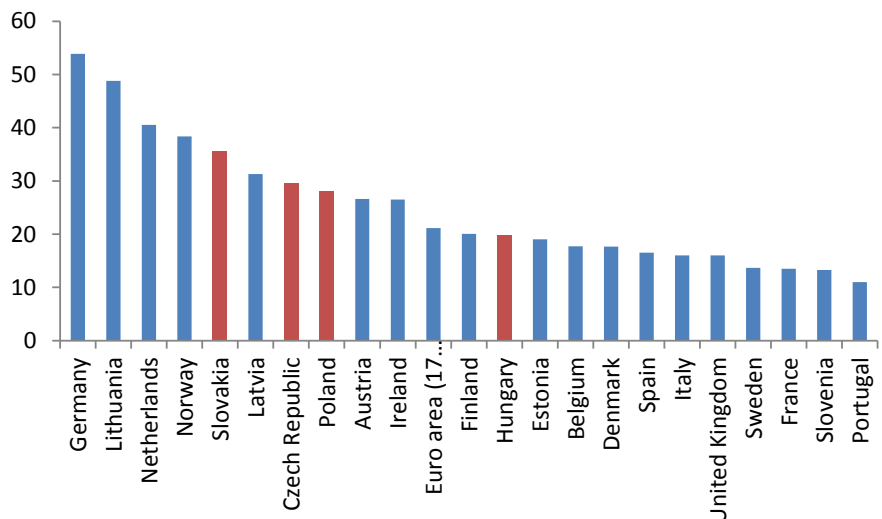
Source: Eurostat, Erste Group Research

Employment in high- and medium-high technology manufacturing sectors (in % of total employment, 2008)



For the investor, it is important, whether the labour costs, the productivity levels and the structure of the economy actually translate into higher return on capital. Looking at the below graph, we can see that Slovakia, Czech Republic and Poland offer higher ROC than the Eurozone average.

Gross return on capital employed, before taxes, of non-financial corporations (2011)



Source: Eurostat, Erste Group Research

How competitive are CEE economies?

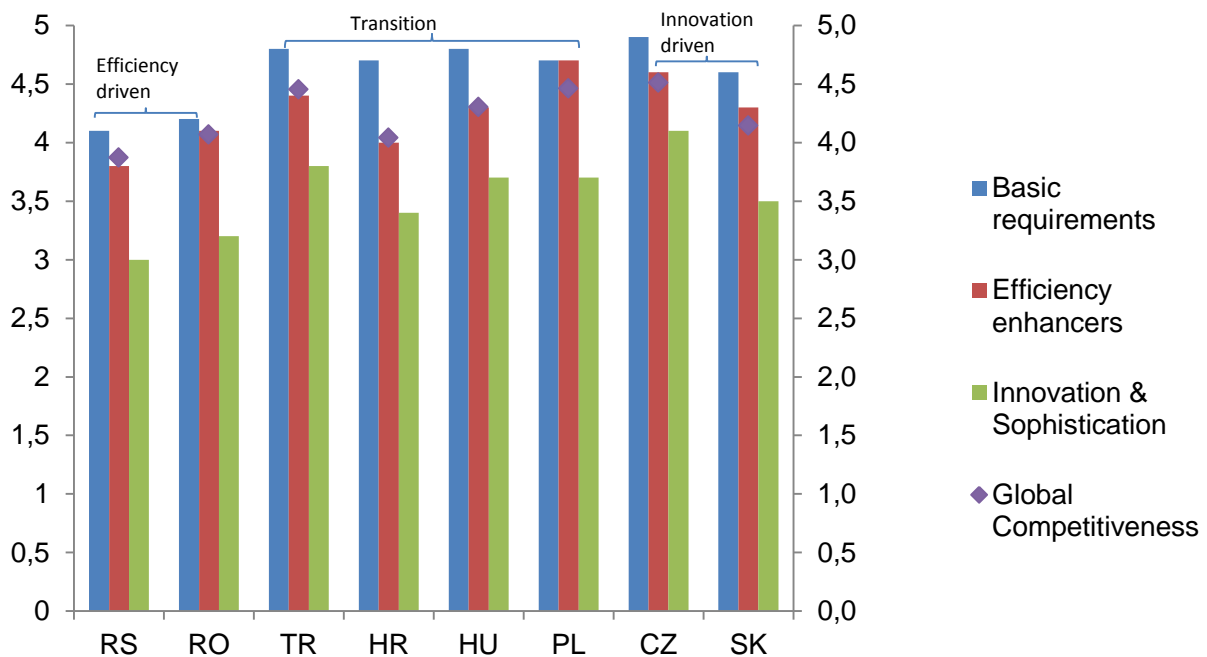
Moving from efficiency to innovation as drivers of competitiveness

Having argued that the growth drivers are intact, the question for the future is how sustainable the growth model is. In our view, the key question is how Central and Eastern Europe can move beyond pure cost competitiveness as reflected in the unit labor costs shown above. We would thus like to look at a more comprehensive measure of competitiveness. We use the concept of competitiveness as developed by the World Economic Forum, as it links

pillars of competitiveness to the stage of development⁶ of a country:

- Serbia and Romania are in the efficiency-driven stage of development, when they must begin to develop more efficient production processes and increase product quality, because wages have risen and they cannot increase prices. At this stage, competitiveness is increasingly driven by efficiency enhancers such as higher education & training, efficiency of goods and labor markets, financial market development, technological readiness and a large domestic or foreign market.
- Turkey, Croatia, Hungary and Poland are in transition from the efficiency to the innovation-driven stage.
- Slovakia and the Czech Republic have already made it to the highest innovation-driven stage. At this point, wages have risen by so much that those higher wages can only be sustained if their business can compete with new and unique products. Thus innovation and sophistications factors such as using the most sophisticated production processes and innovating new ones are the drivers of competitiveness.

The Global Competitiveness Index (range 1-7 with 7 highest rank)



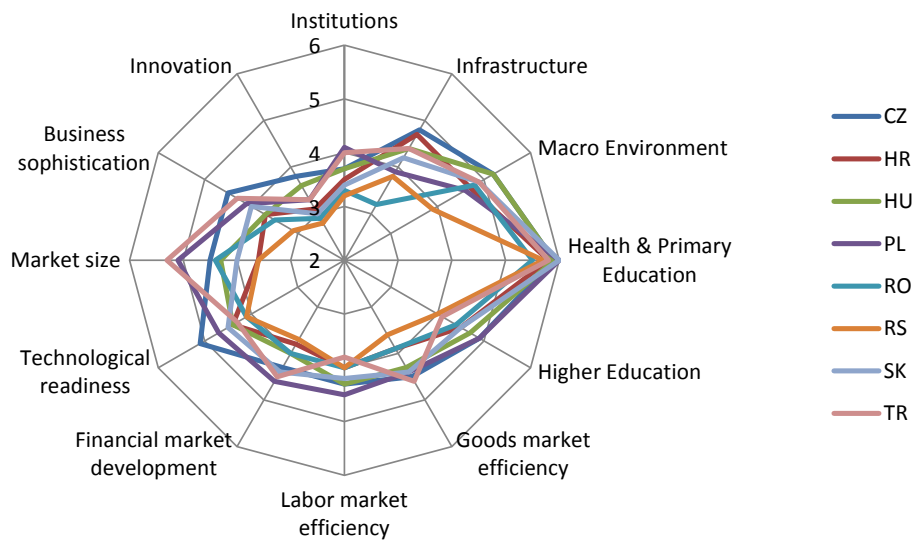
Source: WEF, Erste Group Research

Need for more sophistication

The main message is that countries at different stages of development need different drivers of competitiveness: For Romania and Serbia, the red efficiency enhancers are key. Out of the countries in transition, Poland stands out as very competitive, but still mainly due to efficiency and not yet innovation. And the innovative economies like Slovakia and the Czech Republic face the challenge of increasing the green-colored innovative and sophisticated parts of their economy, with the Czech Republic looking better off than Slovakia.

⁶ In the [Global Competitiveness Report 2012-2013](#) countries are allocated stages of development according to the level of GDP pc at market exchange rates and according to the extent to which countries are factor driven.

Strong on basic needs, weak on innovation



Source: WEF, Erste Group Research

Looking at the 12 pillars of competitiveness shown above confirms the bigger picture that CEE countries are good on basic requirements such as health and primary education. The weak point among the basic requirements is in institutions, where CEE countries show rather low scores on issues related to the judicial system and corruption.

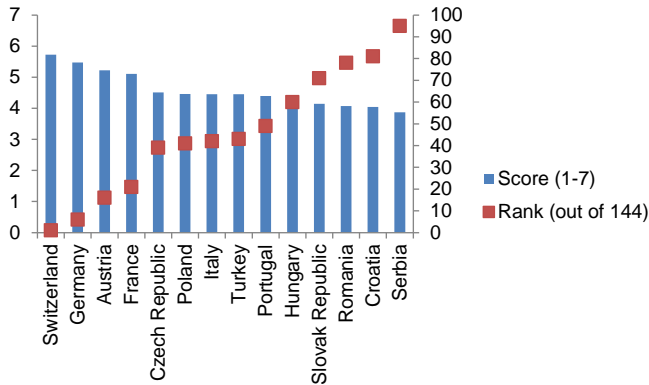
Schumpeter for CEE

On efficiency enhancers, such as higher education and market development, the performance of CEE countries is good (shown by scores above 4). Labor market flexibility and product market competition are the basis for innovation-based growth which goes along with a higher degree of firm and job turnover. This results directly from creative destruction which is the most important principle of the Schumpeterian growth paradigm⁷. New innovations must be allowed to make old innovations, old technologies, and old skills obsolete.

As for the key factors for innovation-driven economies, i.e. innovation and business sophistication, CEE countries still have to catch up. More investment like R&D and firms' investment in skills are paramount.

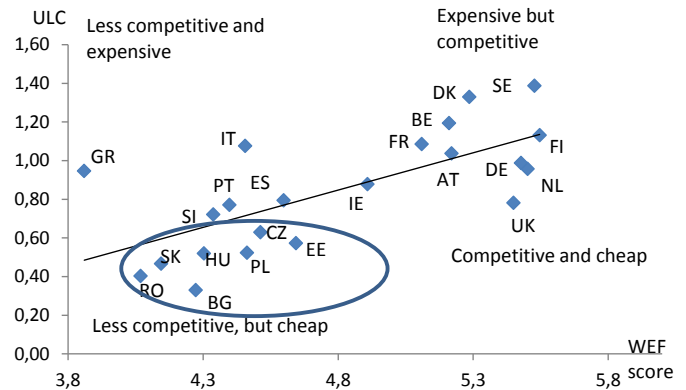
⁷ "From Growth Theory to Growth Policy Design", Philippe Aghion, 2012.

CEE countries in middle ranks in terms of competitiveness...



Source: WEF, Eurostat, Erste Group Research

... but relatively cheap in terms of total unit labour costs (2011)



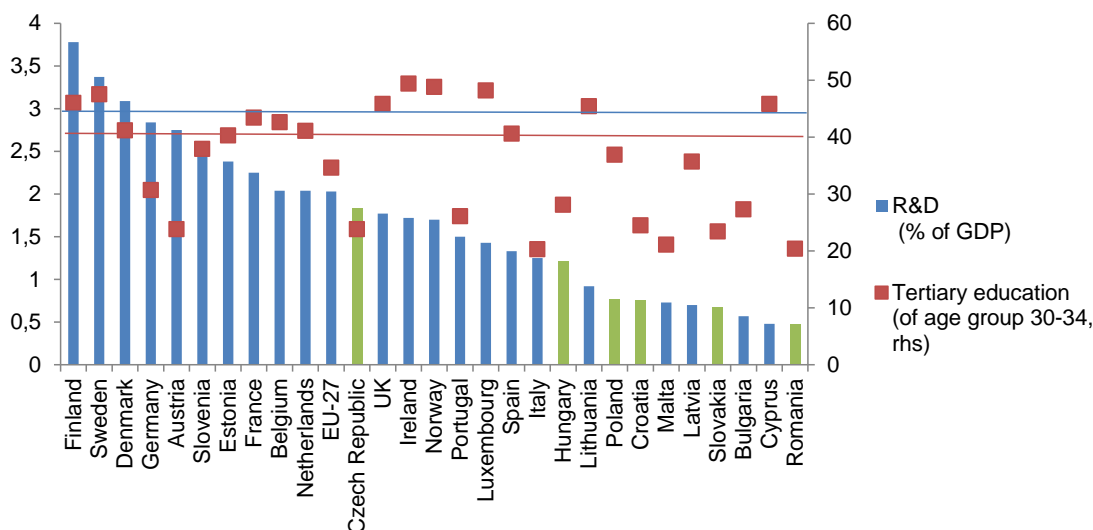
As for overall competitiveness, our sample of CEE countries hovers around a value of 4 on a scale from 1 to 7. This amounts to a rank of 39 for the Czech Republic and a rank of 95 for Serbia, out of 144 countries. Some Western European countries display clearly better ranks, which leaves us to conclude that, in terms of a wider concept of competitiveness, CEE still has some way to go. The cost advantage of CEE countries shown in the right-hand graph gives them time to do so.

Moving Towards a Knowledge Economy

Time to invest in education and research

As it is all about encouraging innovation, countries on the brink of becoming knowledge-based societies need more education and research. The European Commission has identified respective indicators in its [Europe 2020 Strategy](#) which aim at enhancing jobs and smart, sustainable and inclusive growth. The overall EU target for R&D as a percentage of GDP is 3% and the EU target of people aged 30 to 34 having enjoyed tertiary education is 40%. (National targets for new member states have been set lower.) Looking at the graph below, it is evident that R&D expenditure in CEE should be scaled up. The level of tertiary education is quite diverse, but for most CEE countries it oscillates around 20% of people from 30 to 34 years and is thus far from the level needed for a labor force engaged in highly innovative sectors.

EU Strategy 2020 shows deficits in research and higher education



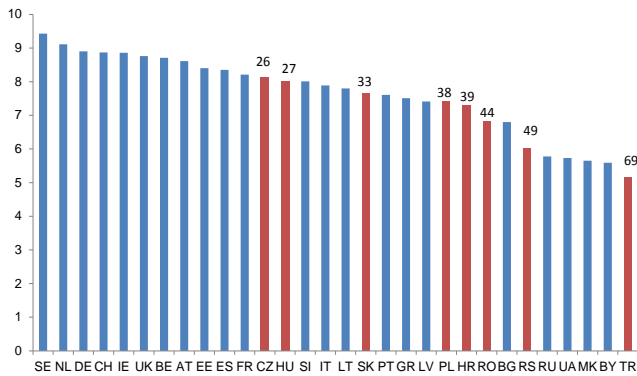
Source: Eurostat, Erste Group Research

The World Bank has taken the issues of the future further and has developed a Knowledge Economy framework which rests on four pillars:

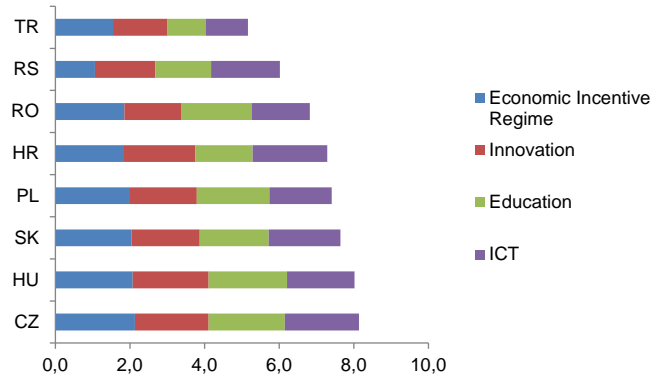
- An economic and institutional regime to provide incentives for the efficient use of existing and new knowledge and the flourishing of entrepreneurship;
- An educated and skilled population to create, share, and use knowledge well;
- An efficient innovation system of firms, research centers, universities, consultants and other organizations to tap into the growing stock of global knowledge, assimilate and adapt it to local needs, and create new technology;
- Information and communication technology to facilitate the effective creation, dissemination, and processing of information.

Based on those four pillars, the [Knowledge Economy Index](#) has been calculated which shows whether the environment in a country is conducive for knowledge to be used effectively for economic development. As in the competitiveness ranking of the WEF, our sample of CEE countries occupies middle ranks among 146 countries assessed. However, in this ranking Hungary scores significantly better, whereas Turkey lags the other CEE countries. Although CEE countries still can rely on wage competitiveness, it is important to work on an early paradigm shift towards a knowledge-based society. Otherwise, the mature economies would extend their lead by innovating and the catching-up process of transitional economies would be impaired.

Knowledge Economy Index 2012 (ranked by score, numbers indicate ranks of CEE countries)



Contribution of different Knowledge Economy pillars to the country's knowledge readiness



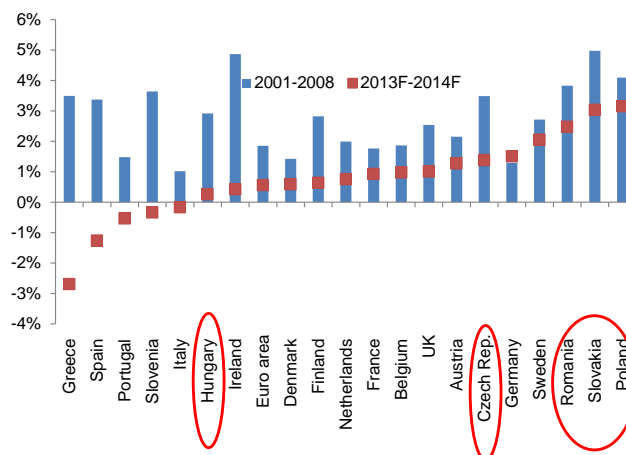
Source: World Bank, Erste Group Research

Restarting the Convergence Machine

Focus on innovative reforms in times of sluggish growth

The financial crisis has impacted Western and Eastern European economies alike and actual and potential output growth rates have diminished. A recovery from the crisis will not be possible for CEE in the absence of a resolution to the Eurozone debt crisis. However, making production more efficient and the economy more innovative are measures which can be taken independently of the economic cycle. Those measures build up the potential output of an economy which is defined as the highest level of GDP which can be sustained over the longer term. Thus through structural reforms, the convergence machine can be restarted and the European Commission actually sees this happening in CEE in 2013 and 2014: The graph below shows that the growth rates of potential output are forecast to recover to higher levels in CEE countries, with the exception of Hungary. This implies that in the short to medium term, CEE countries will again embark on their path of catching up with the technological frontier.

Average growth of potential output



Source: AMECO, Erste Group Research

CEE-4 maintains growth advantage over Western Europe until 2050

In the longer run gaps in technology and human capital will be closing and productivity growth may slow down if the above-mentioned deficits in home-grown innovation are not tackled. Endogenous sources of productivity will become more important, as the stimulus via FDI and exports may moderate in the coming years if the crisis drags on. The challenge for Central and Eastern Europe in general is to manage the transition from imported productivity gains to endogenous sources of innovation as drivers of growth. From the graphs below, it can be seen that, even in the very long run, potential output growth will mainly be driven by productivity gains, as very few European countries can rely on positive demographic dynamics like Turkey. According to the forecasts of the OECD, CEE countries will not be able to beat non-OECD countries (e.g. China and India) in terms of growth of potential output. This is due to their already higher level of economic development. However, the Czech Republic, Hungary, Slovakia, Poland and Turkey will continue to outgrow their Western peers in the very long run.

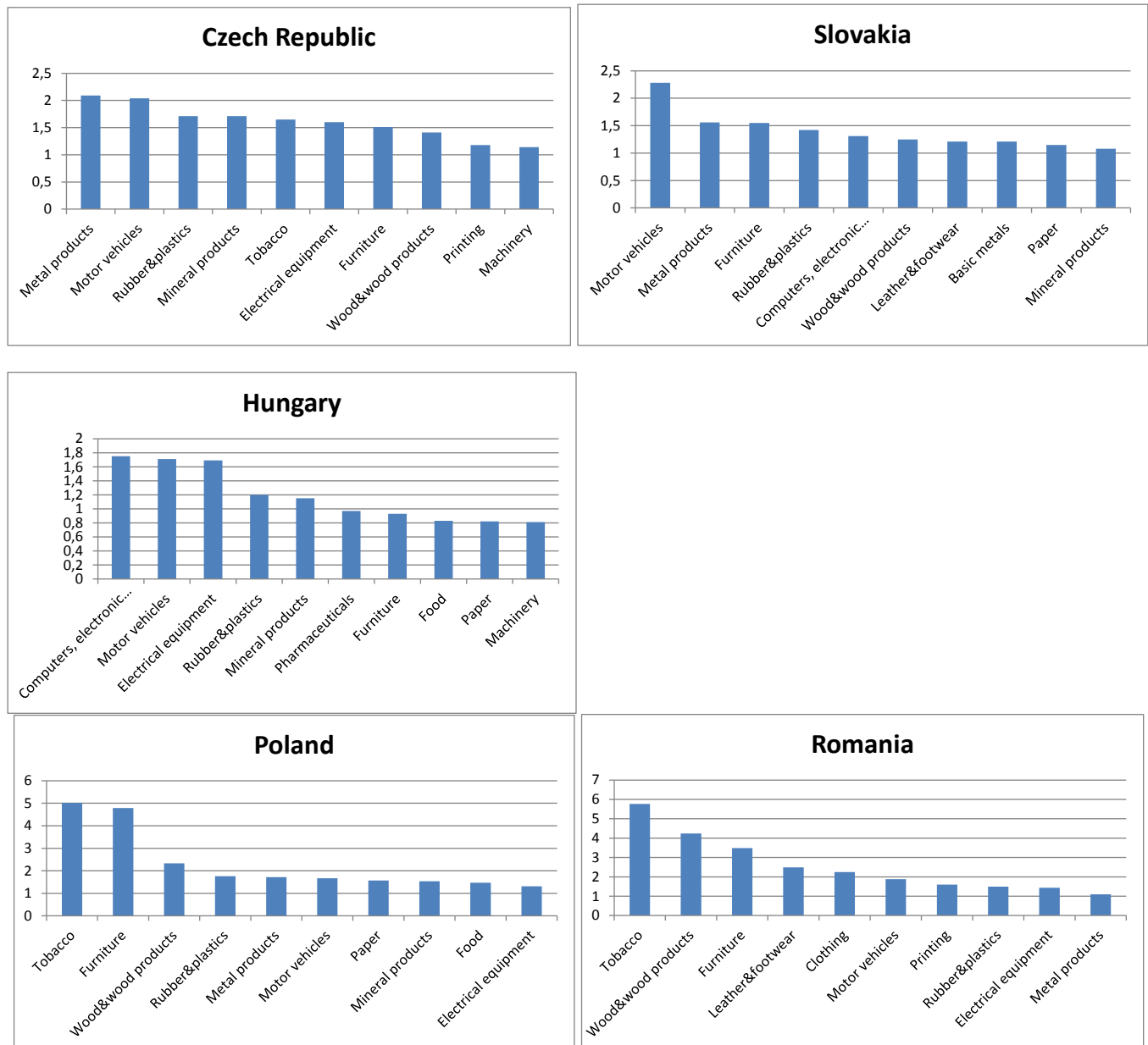
Growth of potential real GDP



Source: OECD, Erste Group Research

Appendix

In its Competitiveness Report 2012, the European Commission calculated a revealed comparative advantage (RCA) index in manufacturing industries in 2010. This index indicates those industries in which a given country exports relatively more than it imports in comparison to the export and import ratio in the total economy. Competitive sectors with an out-of-proportion export performance are thus highlighted as shown for the CEE-5.



The picture given by the RCAs shows that the Czech Republic, Slovakia and Hungary have achieved good export performance in more technology-intensive industries, whereas Poland's and Romania's performance is good in traditional sectors.

Contacts

Group Research

Head of Group Research	
Friedrich Mostböck, CEFA	+43 (0)5 0100 11902
Major Markets & Credit Research	
Head: Gudrun Egger, CEFA	+43 (0)5 0100 11909
Adrian Beck (Fixed income AT, CH)	+43 (0)5 0100 11957
Benedikt Blum (Quant, Euro)	+43 (0)5 0100 11961
Hans Engel (Equity US)	+43 (0)5 0100 19835
Christian Enger, CFA (Covered Bonds)	+43 (0)5 0100 84052
Mildred Hager-Germain (Fixed income Euro, US)	+43 (0)5 0100 17331
Alihan Karadagoglu (Corporates)	+43 (0)5 0100 19633
Peter Kaufmann (Corporates)	+43 (0)5 0100 11183
Stephan Lingnau (Equity Europe)	+43 (0)5 0100 16574
Elena Statelov, CIIA (Corporates)	+43 (0)5 0100 19641
Thomas Unger, CFA (Agencies)	+43 (0)5 0100 17344
Macro/Fixed Income Research CEE	
Head CEE: Juraj Kotian (Macro/FI)	+43 (0)5 0100 17357
Chief Analyst: Birgit Niessner (CEE Macro/FI)	+43 (0)5 0100 18781
CEE Equity Research	
Head: Henning Eßkuchen	+43 (0)5 0100 19634
Chief Analyst: Günther Artner, CFA (CEE Equities)	+43 (0)5 0100 11523
Günter Hohberger (Banks)	+43 (0)5 0100 17354
Franz Hörl, CFA (Steel, Construction)	+43 (0)5 0100 18506
Daniel Lion, CIIA (IT)	+43 (0)5 0100 17420
Christoph Schultes, CIIA (Insurance, Utility)	+43 (0)5 0100 16314
Vera Sutedja, CFA (Telecom)	+43 (0)5 0100 11905
Vladimira Urbankova, MBA (Pharma)	+43 (0)5 0100 17343
Martina Valenta, MBA (Real Estate)	+43 (0)5 0100 11913
Gerald Walek, CFA (Machinery)	+43 (0)5 0100 16360
Editor Research CEE	
Brett Aarons	+420 956 711 014
Research, Croatia/Serbia	
Head: Mladen Dodig (Equity)	+381 11 22 09 178
Head: Alen Kovac (Fixed income)	+385 62 37 1383
Anto Augustinovic (Equity)	+385 62 37 2833
Ivana Rogic (Fixed income)	+385 62 37 2419
Davor Spoljar, CFA (Equity)	+385 62 37 2825
Research, Czech Republic	
Head: David Navratil (Fixed income)	+420 224 995 439
Petr Bittner (Fixed income)	+420 224 995 172
Head: Petr Bartek (Equity)	+420 224 995 227
Vaclav Kminek (Media)	+420 224 995 289
Katarzyna Rzentarzewska (Fixed income)	+420 224 995 232
Martin Krajhanzl (Equity)	+420 224 995 434
Martin Lobotka (Fixed income)	+420 224 995 192
Lubos Mokras (Fixed income)	+420 224 995 456
Josef Novotný (Equity)	+420 224 995 213
Research, Hungary	
Head: József Miró (Equity)	+361 235 5131
András Nagy (Equity)	+361 235-5132
Orsolya Nyeste (Fixed income)	+361 373 2026
Tamás Pletser, CFA (Oil&Gas)	+361 235-5135
Zoltan Arokszállasi (Fixed income)	+361 373 2830
Research, Poland	
Marek Czachor (Equity)	+48 22 330 6254
Magdalena Komaracka, CFA (Equity)	+48 22 330 6256
Adam Rzepecki (Equity)	+48 22 330 6252
Michał Zasadzki (Equity)	+48 22 330 6251
Research, Romania	
Head: Mihai Caruntu (Equity)	+40 21 311 2754
Head: Dumitru Dulgheru (Fixed income)	+40 37226 1029
Chief Analyst: Eugen Sinca (Fixed income)	+40 37226 1026
Dorina Cobiscan (Fixed Income)	+40 37226 1028
Raluca Ungureanu (Equity)	+40 21311 2754
Marina Alexandra Spataru (Equity)	+40 21311 2754
Research Turkey	
Head: Can Yurtcan	+90 212 371 2540
Evrım Dairecioglu (Equity)	+90 212 371 2535
M. Görkem Göker (Equity)	+90 212 371 2534
Sezai Saklaroglu (Equity)	+90 212 371 2533
Sevda Sarp (Equity)	+90 212 371 2537
Nilufer Sezgin (Fixed income)	+90 212 371 2536

Research, Slovakia	
Head: Maria Valachyova, (Fixed income)	+421 2 4862 4185
Martin Balaz (Fixed income)	+421 2 4862 4762
Research, Ukraine	
Head: Igor Zholonkivskyi (Fixed income)	+38 044 593 1784
Lesya Khripta (Fixed Income)	+38 044 593 9214
Inna Zvyagintseva (Fixed Income)	+38 044 593 9188

Treasury - Erste Bank Vienna

Saving Banks & Sales Retail	
Head: Thomas Schaufler	+43 (0)5 0100 84225
Equity Retail Sales	
Head: Kurt Gerhold	+43 (0)5 0100 84232
Fixed Income & Certificate Sales	
Head: Uwe Kolar	+43 (0)5 0100 83214
Treasury Domestic Sales	
Head: Markus Kaller	+43 (0)5 0100 84239
Corporate Sales AT	
Head: Christian Skopek	+43 (0)5 0100 84146
Fixed Income & Credit Institutional Sales	
Institutional Sales	
Head: Manfred Neuwirth	+43 (0)5 0100 84250
Bank and Institutional Sales	
Head: Jürgen Niemeier	+49 (0)30 8105800 5503
Institutional Sales AT, GER, LUX, CH	
Head: Thomas Almen	+43 (0)5 0100 84323
Margit Hraschek	+43 (0)5 0100 84117
Rene Klasen	+49 (0)30 8105800 5521
Marc Pichler	+43 (0)5 0100 84118
Martin Seydel	+49 (0)30 8105800 5523
Sabine Vogler	+49 (0)30 8105800 5543
Bank and Savingsbanks Sales	
Head: Marc Friebertshäuser	+49 (0)711 810400 5540
Mathias Gindele	+49 (0)711 810400 5562
Andreas Goll	+49 (0)711 810400 5561
Ulrich Inhofner	+43 (0)50100 85544
Sven Kienzle	+49 (0)711 810400 5541
Manfred Meyer	+43 (0)5 0100 83213
Jörg Moritzen	+49 (0)30 8105800 5581
Michael Schmotz	+43 (0)5 0100 85542
Bernd Thaler	+43 (0)5 0100 85583
Klaus Vosseler	+49 (0)711 810400 5560
Institutional Sales CEE	
Head: Jaromir Malak	+43 (0)50100 84254
Central Bank and International Sales	
Abdalla Bachu	+44 207623 4159
Antony Brown	+44 207623 4159
Fiona Chan	+852-9138 6109
Institutional Sales SEE	
Tomasz Karsznia	+48 22 538 6281
Pawel Kielek	+48 22 538 6223
Piotr Zagan	+43 (0)50100 84256
Institutional Sales Slovakia	
Head: Peter Kniz	+421 2 4862 5624
Sarlota Sipulova	+421 2 4862 5629
Institutional Sales Czech Republic	
Head: Ondrej Cech	+420 2 2499 5577
Milan Bartos	+420 2 2499 5562
Radek Chupik	+420 2 2499 5565
Pavel Zdichynec	+420 2 2499 5590
Institutional Sales Croatia	
Antun Buric	+385 (0)6237 2439
Neven Kaic	+385 (0)6237 2345
Natalija Zujic	+385 (0)6237 1638
Institutional Sales Hungary	
Norbert Siklosi	+36 1 2355 584
Attila Hollo	+36 1 2355 846
Institutional Sales Romania	
Head: Ciprian Mitu	+40 213121199 6200
Ruxandra Carlan	+40 21 310-4449 612
Institutional Solutions and PM	
Head: Zachary Carvell	+43 (0)50100 83308
Brigitte Mayr	+43 (0)50100 84781
Mikhail Roshal	+43 (0)50100 84787
Christopher Lampe-Traupe	+49 (0)30 8105800 5507

Notes

Published by Erste Group Bank AG, Neutorgasse 17, 1010 Vienna, Austria.
Phone +43 (0)5 0100 - ext.

Erste Group Homepage: www.erstegroup.com On Bloomberg please type: EBS AV and then F8 GO

This publication has been prepared by EG Research. This report is for information purposes only.

Publications in the United Kingdom are available only to investment professionals, not private customers, as defined by the rules of the Financial Services Authority. Individuals who do not have professional experience in matters relating to investments should not rely on it. The information contained herein has been obtained from public sources believed by EGB to be reliable, but which may not have been independently justified. No guarantees, representations or warranties are made as to its accuracy, completeness or suitability for any purpose. This material is not intended as an offer or solicitation for the purchase or sale of any financial instrument or any other action and will not form the basis or a part of any contract.

Neither EGB nor any of its affiliates, its respective directors, officers or employers accepts any liability whatsoever (in negligence or otherwise) for any loss howsoever arising from any use of this document or its contents or otherwise arising in connection therewith. Any opinion, estimate or projection expressed in this publication reflects the current judgement of the author(s) on the date of this report. They do not necessarily reflect the opinions of EGB and are subject to change without notice. EGB has no obligation to update, modify or amend this report or to otherwise notify a reader thereof in the event that any matter stated herein, or any opinion, projection, forecast or estimate set forth herein, changes or subsequently becomes inaccurate.

The past performance of financial instruments is not indicative of future results. No assurance can be given that any financial instrument or issuer described herein would yield favourable investment results.

EGB, its affiliates, principals or employees may have a long or short position or may transact in the financial instrument(s) referred to herein or may trade in such financial instruments with other customers on a principal basis. EGB may act as a market maker in the financial instruments or companies discussed herein and may also perform or seek to perform investment banking services for those companies. EGB AG may act upon or use the information or conclusion contained in this report before it is distributed to other persons.

This report is subject to the copyright of EGB. No part of this publication may be copied or redistributed to persons or firms other than the authorised recipient without the prior written consent of EGB.

By accepting this report, a recipient hereof agrees to be bound by the foregoing limitations.
Copyright: 2013 EGB AG. All rights reserved.

Please refer to www.erstegroup.com for the current list of specific disclosures and the breakdown of Erste Group's investment recommendations.