

## Mid-term growth perspectives in PL

Ladies and Gentlemen,

The objective of my talk is to discuss medium-run growth perspectives in Central, Eastern, and Southeastern European countries, as of today. The discussion will be partly centered around the example of my home country – Poland – but many of the insights I would like to offer have a much broader scope of applicability.

As a convenient starting point, let me observe that since our countries' political and economic transition in the early 1990s, the region has been a huge beneficiary of real convergence processes. Real GDP per capita in Poland in PPP<sup>1</sup> has more than doubled between 1995 and 2012 (102% increase) while the respective increase in the EU-15 was just 22%. This translates into a large part of the development gap which has been covered in this period: while in 1995, Poland's GDP per capita stood at about 36.1% of EU-15 average, it reached 59.7% in 2012. It is natural to attribute this outstanding performance primarily to real convergence because at the same time, we have observed a significant buildup of capital stocks across our region, driven to a large extent by foreign investments. Unlike other continents, Europe has not observed the so-called "Lucas paradox": capital has indeed been systematically flowing from richer to poorer countries here. This has been exemplified by substantial inflows of FDIs to countries like Poland, including greenfield investments, as well as – after we joined the EU in May 2004 – substantial amounts of resources from EU structural funds which help co-finance important investments in infrastructure, private enterprise, and human capital. It is clear that real convergence processes have been a powerful driver of regional growth over the last decades.

However, as we well know from economic theory, real convergence cannot last forever, and the closer we get to our wealthier neighbors in terms of real GDP, the smaller its impact is. The need to seek alternative sources of growth for the future will therefore continue to be more and more pressing.

Let us then look at the alternatives. Taking the macroeconomic production function perspective, there are two alternatives to physical capital accumulation, the main force behind real convergence. First, real convergence processes can also be supported by the improvements in quality of capital and labor inputs. Second, increases in total factor productivity (TFP) can offer growth perspectives which are not constrained by the limits of real convergence. The latter category, related both to the technology used for production, economy's innovativeness and firms' willingness to adopt new ideas, as well as to the evolving sectoral structure of the economy, will be discussed in the second part of my talk. Let me now proceed to the composition of capital and labor.

It is often acknowledged that the quality of physical capital inherited by post-communist economies from their previous regime is generally dubious. However, as shown in a study conducted recently at NBP<sup>2</sup>, only about 3% of the observed GDP increase in Poland between 1996 and 2013 can be attributed to the improvement in the composition of the capital stock, mainly due to an increase in

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<sup>1</sup> OECD data, GDP per capita in constant prices of 2005, corrected for purchasing power parity (PPP).

<sup>2</sup> Gradzewicz et al. (2014), 'Poland's exceptional performance during the world economic crisis: New growth accounting evidence', NBP Working Paper No. 186.

the share of machinery, equipment, and intangible fixed assets in the entire capital stock, at the cost of non-residential buildings and structures. Moreover, this effect has essentially disappeared already back in 2001 and it is unlikely that it will speed up convergence process in the future. In contrast, physical capital accumulation as such has contributed as much as 42% of total GDP growth.

Remaining with physical capital, let me also note that – outside of the simplifying logic of growth accounting – its accumulation does not always translate into increased capabilities to generate value added in the economy. The recent world economic crisis has uncovered the fact that some European countries, notably the Mediterranean members of the Eurozone, have fallen victim to *exuberant* growth, with their overinvestment in transport infrastructure, residential and non-residential buildings, etc. While this generally has not been the case in our region so far, one has to remain careful to avoid such a pitfall in the future, and monitor the ways in which capital gains are allocated and consumed. As an aside, let me also observe that during the recent crisis, the exchange rate regime seems to have played an important role, insofar as the ‘floaters’ had a visibly better record than ‘fixers’ in curtailing the boom-bust cycle and avoiding exuberant growth before the outbreak of the crisis. Still, EU cohesion policy aside, it is rather internal than external sources of financing which we should count on in the coming years.

The accumulation of human capital, augmenting labor – the second input in the production process – is a much more powerful driver of economic growth over the medium run. The aforementioned NBP study has estimated that improvements in the composition of labor are responsible for about 21% of total GDP growth. These effects accrue, in turn, mostly to the huge increases in educational attainment of Poles over the recent decades. Unlike capital composition, labor composition effects have been strengthening real convergence processes in Poland throughout the period 1996-2013 and are expected to be active in the future as well. Their future importance is constrained, however, by decreasing returns to human capital accumulation and the already very high share of population with a university degree. Moreover, worrying demographic trends and projections across CESEE economies imply that while some potential can still be tapped by increasing the labor force participation rate (particularly among women and individuals above 55 years of age), these gains will soon be outweighed by the declining number of working-age population as the societies continue to age. Viewed in this light, it is particularly problematic for our economies given that after EU accession, we have observed a substantial wave of emigration which was led primarily by relatively young and well-educated individuals, leading to the so called “brain-drain” effect.

Summing up – the prospects for the future growth stemming from its traditional sources related to factor accumulation are rather gloomy, both for Poland and many other CESEE countries. The only exception are improvements in human capital, but these gains cannot last forever.

Turning to the question of other available sources of medium-run growth in CESEE countries, let me begin by observing that the aggregate productivity of an economy can be driven by the change of its sectoral structure. This can indeed be a powerful source of income disparities across the globe: as shown repeatedly in the literature, cross-country differences in aggregate labor productivity tend to be much larger than differences observed within the manufacturing sector. What drives these gaps are differences within the agricultural and (to a lesser extent) services sector, and their respective shares in total employment.

Political and economic transition of the 1990s has unleashed the market forces which led to a partial withdrawal from communist-era emphasis on industry, and heavy industry in particular, and a rapid buildup of service activities. At the same time, increased market opportunities have attracted workers to leave unproductive agriculture in favor of either of the other two large sectors. In Poland, the share of agricultural workers plummeted from 26.1% in 1995 to 12.6% in 2012 while the employment share in services increased from 27.4% to 37.1%. The shares of respective sectors in value added creation were much more stable because agricultural productivity remained very low and labor productivity growth was – just like virtually everywhere else in the world – strongest in manufacturing, due to ongoing technological progress, which we largely absorb from abroad.

To assess the potential of this reallocation to affect growth perspectives over the medium run, it is useful to compare the trends in labor productivity and TFP within manufacturing and services. As shown in a recent publication by the NBP staff<sup>3</sup>, despite the dynamic growth in industrial labor productivity in Poland, its level remained below the one of services throughout the entire period 1995-2012. It follows that labor reallocation towards services has been contributing to overall productivity growth during these years. However, extrapolating the observed trends forward makes us expect that both levels are about to cross very soon, indicating that this ‘bonus’ growth effect of sectoral shifts will no longer help the Polish economy. Additionally, cross-country evidence indicates that the (somewhat unexpected) result that labor productivity is higher in services than in manufacturing in Poland is not repeated for other countries. In advanced economies such as, e.g., Germany, the UK or the USA, manufacturing has been relatively more productive<sup>4</sup> throughout; in other countries of the region (Czech Republic, Slovakia, Hungary), this has been the case since about 2005. This suggests that productivity growth in the future will be lower due to the ongoing sectoral shifts. A similar argument has been recently put forward by Alwyn Young in the latest *American Economic Review*<sup>5</sup>: as the demand for many services is income elastic and price inelastic, so with economic growth services take up a rising percentage of GDP over time. And since services are more sluggish in productivity growth, and are being weighted more heavily in output, we can expect economy-wide productivity rates to decline.

We may also think of the consequences of the structural change for the cyclical volatility of sectoral employment and value added. In line with the economic intuition, it is found that business cycles in the services sector are of a substantially smaller magnitude and frequency. It therefore seems fair to conclude with the expectation that in the future, the ongoing process of labor reallocation from manufacturing and towards services in CESEE countries will provide a systematic drag on average economic growth rates, while simultaneously reducing the volatility of growth and employment over the business cycle.

At this point I would like to mention another structural issue, potentially important from the perspective of future productivity growth, namely the energy sector. Poland is very homogenous in this respect so far – about 90% of energy is generated from domestically available coal and lignite.

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<sup>3</sup> Growiec et al. (2014), ‘Rola usług rynkowych w procesach rozwojowych gospodarki Polski’, Materiały i Studia NBP nr 308.

<sup>4</sup> The exceptions are France and Italy where the levels of labor productivity have been similar in both sectors since 2000.

<sup>5</sup> Young, A. (2014), "Structural Transformation, the Mismeasurement of Productivity Growth, and the Cost Disease of Services", *American Economic Review*, 104(11).

We are now to make crucial decisions on our investment strategy that will shape our future energy mix, though. I see many advantages of maintaining the *status quo* in this area, just to mention energy security. But on the other hand, a significant diversification of energy sources as well as finding a smart way to attract new technologies, needed to develop gas processing facilities, facilities based on renewable sources (mainly solar and wind), or even nuclear energy, could lead to positive productivity spillovers and increased innovation in the economy. By saying “a smart way”, I mean importing the technologies needed to develop local industries supplying equipment, parts, and components to the renewable energy sector – and not just importing the final product. The car industry in Poland, which nowadays consists of not only car assembly factories, but also huge net of local suppliers of parts, can be used as a good example in this respect.

As I have already mentioned technology and innovation, let me now turn to the last point of my talk, namely the impact of innovation and TFP growth *within* sectors, on medium-term growth perspectives in our part of Europe. At this point, I would like to emphasize that it is not enough to be more innovative – one ought to successfully reap the economic benefits of these innovations as well. As the road from R&D expenditures to measurable increases in aggregate TFP can be long and rugged, it is important to carefully discuss all the essential milestones.

The starting point has to be R&D expenditures. Indeed, one of the obvious reasons for the arguably small impact of domestic innovation on economic growth observed so far, are relatively small and inefficiently addressed R&D outlays. It must be noted that significant progress has been recently attained in this respect in Poland. The share of GDP spent on R&D has increased to 0.90% in 2012, advancing our country from the very bottom of the EU list, and now it only has 9th lowest R&D share in the EU. Despite the dynamic upward trend, the *level* of R&D expenditures in Poland still falls short of the EU-wide average of 2.07% as well as the Lisbon objective of 3% of GDP. Similarly, substantial progress has also been obtained with respect to the cooperation between universities and the private sector. In 2012, about 37% of R&D expenditures in Poland came from the business enterprise sector, a major increase from 30% in 2011. Yet again, given that the EU average stands about 63%, we still have a long way to go. And it is important to reach a better structure of R&D funding, because – although basic research is necessary and will always be funded mostly by state funds – privately funded R&D has the advantage over public R&D that it is more likely to find immediate commercial applications and thus directly increase the country’s TFP. Another challenge for our region is to improve the allocative efficiency of R&D funds by attributing a larger fraction to grants, financed on a competitive basis, and to begin exploiting agglomeration externalities in R&D.

One could argue that perhaps R&D can sometimes become a wasteful expenditure in a converging economy, lagging behind the world technology frontier. Why innovate while research is inherently risky, research effort cannot be directly monitored by authorities, and there is still a substantial pool of untapped technological potential abroad? Well, there are at least two replies to this criticism. First, technologies which are being constantly introduced elsewhere, do not diffuse instantaneously and are often protected by costly patents. This implies a barrier to the follower (adopter) economy, precluding its full convergence in terms of GDP per capita, and instead leading it to what is sometimes referred to as the “middle income trap” – a parallel but permanently lower growth path.

Second, economic literature<sup>6</sup> suggests that for technological follower countries such as Poland, an important role can be played by domestic R&D (so called “second face of R&D”) which is aimed at facilitating technology adoption. Specifically, there is a documented impact of domestic R&D on productivity growth across Polish manufacturing industries<sup>7</sup>. It has been shown that local firms in Poland benefit from foreign presence in the same industry and in downstream industries. The absorptive capacity of domestic firms is highly relevant to the size of spillovers: vertical spillovers are larger for R&D-intensive firms, while firms investing in other (external) types of intangibles benefit more from horizontal spillovers.

We may now turn to the question how the R&D outcomes could be effectively commercialized. My view on this issue is that the regulatory framework in Poland is a mixture of unnecessary bureaucratic barriers which may discourage new entrepreneurial action in risky sectors and – on the other hand – substantial, probably excessive generosity which can, in the negative scenario, lead to indolence on the side of established manufacturing and service companies. The former condition of the economic environment of the business enterprise sector, especially with regard to legal and tax regulations, is captured by Poland’s position in the World Bank’s “Doing Business” classification. In its latest release for 2015, after a favorable change in methodology, Poland ranks 32 out of 189 countries, and 14 out of the 28 EU members. According to the World Bank, Poland’s institutions are found to be particularly harmful to business in categories “Getting electricity”, “Starting a business”, and “Paying taxes”, and “Dealing with construction permits”. Hence, the ability of the Polish economy to exploit innovative ideas can be seriously hindered when innovators find it difficult to establish start-up companies and plants. By the same token, risky entrepreneurial actions are also discouraged by the complicated, time- and effort-consuming bankruptcy laws.

On the other hand, owners of Polish companies enjoy low tax rates and low labor costs. The flat CIT rate of 19% is visibly lower than the EU average of 22.8%, itself biased downwards by the New Member States (e.g., 10% in Bulgaria, 15% in Lithuania and Latvia). The capital share of GDP at factor prices, corrected for mixed income of the self-employed, has increased from about 30% in 1995 to 40% in 2013. Furthermore, despite substantial increases in educational attainment, wage cost growth has been moderate throughout the period, keeping unit labor costs in check and maintaining the country’s cost competitiveness. This, coupled with the geographic proximity of the big, open, integrated EU market, and a flexible labor market with a large percentage of temporary employment contracts, creates very favorable business conditions for established enterprises even without adopting new technologies. Hence, one could speculate, in line with the Schumpeterian “creative destruction” theory, that making money more difficult to earn could potentially speed up technology adoption in countries like Poland. While net growth effects of such policy changes are unclear, it must also be remembered that even without taking any policy measures, cost competitiveness as a source of dynamic growth will likely dry up soon. Once labor costs become too large to guarantee profitability when just doing “business as usual”, firms will be forced either to make risky decisions regarding their technological profile, or shut down. At this, appropriate policy measures and

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<sup>6</sup> Griffith, R., S. Redding, J. Van Reenen (2004), ‘Mapping the Two Faces of R&D: Productivity Growth in a Panel of OECD Industries’, *Review of Economics and Statistics* 86(4), 883-895.

<sup>7</sup> Kolasa, M. (2008), ‘Productivity, Innovation and Convergence in Poland’, *Economics of Transition* 16(3), 467-501.

technological developments can help increase TFP and labor productivity so that more and more firms can “jump ahead” before this dilemma really kicks in.

Another economic issue which translates into the level of country-wide TFP, and – temporarily – to its growth dynamics, is the country’s position in the global value chain (GVC). It is generally argued that value added creation is typically concentrated in more downstream economies, i.e., in economies that are closer to the final good or service. As a consequence, if real convergence, structural change, or technology adoption could cause an economy to move down along the GVC, this can also bring about measurable increases in TFP over the medium run.

During the period of economic transition, manufacturing in most of the New EU Member States have experienced faster productivity growth than the services sector, despite the relatively low level of R&D expenditures. One of the important factor driving productivity and output growth was the ongoing internationalization of the manufacturing sector – opening up to exports, intermediate goods imports and the inflow of foreign capital<sup>8</sup>. There is evidence that in Poland there have been sizeable productivity spillovers from foreign firms to domestic firms. Recent meta-analyses show that this phenomenon was present in the 25 years of transition in many CESEE countries but it was weakening over time<sup>9</sup>. In Poland the spillovers were mostly vertical – where foreign firms operating in a given sector induce productivity growth in their domestic counterparts. However, significant backward spillovers have been found: foreign buyers of intermediate goods made the upstream domestic manufacturing firms more productive. Moreover, backward spillovers from exporting firms to their suppliers were found<sup>10</sup>.

The above findings are in line with the theoretical literature that claims that internationalized firms are more productive than their counterparts without links to foreign markets. Therefore the process of opening up of CESEE economies was closely associated with continuous productivity growth. However, this process has also overlapped with the global process of increasing fragmentation of manufacturing. Fragmentation manifests itself in the overall increase in the length of the production chain – an increase in the number of stages required to manufacture a product. The position of a producer in the production chain determines the ability to reap the benefits of the participation in the process. The so called “smile-curve” suggests that the largest gains come from the very first stage of product design (R&D) and the very last – marketing<sup>11</sup>. The manufacturing process is related to a relatively low share of overall value added. However, manufacturing value added goes up with the decreasing distance from final demand.

Where are the new EU member states in the global value chain? They started up relatively far from final demand – exporting mainly natural resources and products of relatively small degree of processing. Over time, imports of intermediate goods contributed to an increasing portion in the

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<sup>8</sup> Kolasa, M. and M. Bijsterbosch (2010), FDI and productivity convergence in Central and Eastern Europe: an industry-level investigation," *Review of World Economics (Weltwirtschaftliches Archiv)*, Springer, vol. 145(4), pages 689-712.

<sup>9</sup> Hanousek and Kocenda (2011), Direct and indirect effects of FDI in emerging European markets: A survey and meta-analysis, *Economic Systems*, Elsevier, vol. 35(3), pages 301-322.

<sup>10</sup> Hagemeyer and Kolasa (2011). *Internationalisation and Economic Performance of Enterprises: Evidence from Polish Firm-level Data*, *The World Economy*, Wiley Blackwell, vol. 34(1), pages 74-100.

<sup>11</sup> Veugelers [ed](2013), *Manufacturing Europe’s future*, Bruegel Blueprint Series, BP no 21

production costs and these economies have gradually moved towards the global final demand in relative terms. The ongoing relocation of manufacturing production to the NMS has led to convergence in the overall distance of the final demand of the NMS relative to the EU15 in the period of 1995 to 2011. As far as manufacturing exports are concerned, the position of NMS is not different from the one of the EU15<sup>12</sup>. Moreover, exports of NMS are visibly more downstream than its imports, also suggesting the relative movement towards final demand.

The devil is, however, in the details – the share of the manufacturing sector is much higher in the NMS than in the EU15 and therefore the overall economy distance from the final demand is much larger in the NMS. Moreover, the four important manufacturing sectors of the region are transport equipment, machinery, electrical and optical equipment, but also basic and fabricated metals . In motor vehicles and machinery, sectors that expanded the most in transition, the goods supplied by CESEE are far from final demand. The OECD studies show that in Poland the domestic share of value added in both sectors is very low and most of the value added is captured elsewhere in the production chain. NMS are as downstream as the EU15 in the optical and electrical equipment but here, the level of domestic value added in exports is also low<sup>13</sup>.

It may also be argued that the productivity gains due to internationalization have already materialized to a large extent when global value chains were established across Europe, through the reallocation of resources. Most importantly, Germany is an important center of European GVC economic activity. Therefore the growth prospects of a large part of the GVC depend on the developments in the German economy. German-centered GVCs specialize in medium-technology intensive goods unlike those of the USA or Japan. To what extent participation in Germany-centered GVCs will involve ongoing innovation and productivity growth is yet to be seen. Finally, let me also note that despite the above caveat, the distance from the final demand should clearly attract more attention in the discussion on the desired model of CESEE exports. The optimal placement within the global value added chain, which brings largest gains in terms of innovation and productivity as well as the largest share of domestic value added, should be an important element of an effective growth-promoting policy.

To wrap up, let me reiterate that we have now reached a point after which medium-term growth perspectives for countries in our region will no longer be shaped only by the classical forces of real convergence. Our remarkable past achievements in this respect have caused this source of development to gradually dry up. The only way to ensure rapid growth in GDP per capita in the future is to encourage ongoing increases in total factor productivity. This calls for a well-crafted policy related to the issues of R&D, technology adoption, and our countries' position in the global value chain.

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<sup>12</sup> Hagemeyer and Ghodsi (2014) Up or down the value chain? The comparative analysis of the GVC position of the economies of the new EU member states, unpublished manuscript.

<sup>13</sup> OECD, Global Value Chains: Poland, <http://www.oecd.org/sti/ind/GVCs - POLAND.pdf>