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Causes and Consequences of Deindustrialization in the Euro Area

Abstract. The post-industrial stage of development reached in developed countries is characterized by an increase in services' share and the progressive decline of the manufacturing share in their economies. The intensification of deindustrialization process heated up the discussion pertaining to its impact on the weakening of investment, technological progress, innovation, and a decline in labour productivity and GDP growth. The aim of the paper is to present the scale and consequences of deindustrialization in the euro area based on analysis of manufacturing and other sectors shares in the gross value added and employment in the euro area. The indicators used for the assessment of deindustrialization consequences are: labour productivity and total factor productivity (TFP) growth rates. As the outcome of conducted analysis, the author has drawn two main conclusions: 1) the decreasing importance of manufacturing limits the possibility of carrying out research projects and creating technological progress, 2) the negative TFP growth rate, declining of labour productivity growth rate in 2008-2015 and the decrease of GDP testifies to the threat of secular stagnation in the euro area.

Key words: euro area, deindustrialization, labour productivity, total factor productivity

Introduction

The process of structural changes is a consequence of technological progress and economic development. Since the 1980s the growing importance of services has been a typical feature of this process in the developed economies, which testifies to the dominance of post-industrial changes. Their intensification has been occurring since the mid-1990s as the result of stimulating influence of several factors: the development of ICT (information and communication technologies), higher intensity of globalization processes, rapid industrialization of the emerging economies and growth of their competitive advantage in the labour-intensive and resource-intensive manufacturing as well as outsourcing production to those countries by companies from developed economies and multinational corporations. We must not overlook the matter of deindustrialization effects of the crisis (2008-2009), when falling demand and exports of industrial products led to production cuts and the fall of sectors which were the core of export specialization in the southern countries (Greece, Italy, Portugal, Spain).

Deindustrialization and its effects justified conducting analysis allowing to assess the scale of reduction in the importance of manufacturing in the euro area as well as evaluate macroeconomic effects of deindustrialization. The indicators used for the assessment of structural changes and their consequences are: the main sectors' shares in GDP and in total employment as well as changes in labour productivity and total factor productivity, which illustrate impact of declining share of manufacturing in economies on labour productivity and on total factor productivity (TFP).

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Introduction to empirical analysis consists of an overview of theoretical concepts relating to determinants of structural changes and the importance of industrial policy in achieving optimum results in socioeconomic development. Structural changes that allow to divide socioeconomic development of countries into distinct stages have been properly reflected in economic theory, appropriately to the gravity of the problem. However, the traditional approach to the structural changes from the 1980s was dominated by the belief in the effectiveness of the market regulatory mechanism, which leads to the optimal allocation of production factors between sectors of the economy. Financial and economic crisis of 2008-2009 has caused large losses in GDP and what's worse, there is still no sign of a sustainable recovery. Therefore, the proponents of economic liberalism can no longer stick to the schematic thinking, because the contemporary economic situation requires a new interpretation of processes. Thus, the literature review focuses on theories developed in recent years.

Depending on the subject of the empirical analysis the two different timeframes have been adopted: 1995-2015 and 1990-2015. First part of the analysis (in 1995-2015) is aimed at interpreting indicators that reveal the declining share of manufacturing in euro area economy. Shares of manufacturing in value added and total employment in 2000 and 2015 are compared to the base year of 1995, which is considered a starting point intensifying significant structural changes in domestic economies as well as world economy.

Second part of the analysis of deindustrialization includes all countries currently functioning in the common currency area, but it was limited to the years 2000-2015 as this was the period of particularly intensified growth in the share of service sector in most of the analyzed economies which as a consequence contributed to the decline of manufacturing. Data on the share of manufacturing in those economies in 2010 and 2015 was presented in order to observe the impact of 2009 recession on the speeding up of the deindustrialization process.

Empirical analysis on the impact of IC technologies and deindustrialisation on labour productivity and total factor productivity (TFP) encompasses 1990 - 2015, divided into five sub-periods: 1990-1995, 1996-1999, 2000-2007 and 2008-2015. The reasoning behind this division was based on the following goals of the analysis: 1) assessment of effects of reduction of the euro area development gap to the United States; 2) assessment of impact of intensive investment in IC technologies, growth of labour productivity and TFP in the US on the widening of euro area development gap; 3) presentation of results of structural changes due to the new wave of technological progress, including deindustrialization as well as consequences of 2008-2009 crisis, based on fluctuations in labour productivity and TFP in the euro area and in the United States.

Structural changes, the importance of manufacturing and industrial policy - theoretical framework

The literature devoted to the patterns of socioeconomic development is rich and the research in this field has been growing as the economies went through the subsequent stages of industrialization, which was from the nineteenth century. Economic theorists interest in structural changes, supported by new concepts, increased in the 50s and 60s of the twentieth century, when industrial development entered the peak phase in Europe and Japan, and service sector become increasingly important in the United States. The most

famous theorists of structural changes are: D. Bell, C. Clark, A. Fisher, J. Galbraith, W. Rostow and A. Toffler. They assumed the flow of production factors from declining into rising sectors of the economy as the determinant of socioeconomic development. While as the main triggers of changes in the movement of production factors they recognized technological progress and changes in the structure of demand (more: Gawlikowska-Hueckel, 2014, p. 55-57). Aforementioned authors predicted an increase in share and importance of services in the economy as the higher post-industrial stage of development.

The development of industry contributed to structural changes, labour productivity growth, income growth, changes in the structure of demand and the prosperity growth in the various stages of its advancement. In fact, no country, except for a few oil exporters, has reached a high level of development without industrialization (Lin and Monga, 2013, p. 21). The deindustrialization process results in lowering the economic dynamics and reduces technological progress. The strength of the market as an economic mechanism in the knowledge-based economy is not sufficient to encourage the development of research undertaken by private entities in order to introduce new, more efficient technologies.

The economists attitude to the role of the market depends on their belonging to two main schools - neoclassical and neokeynesian. The first accept state intervention, such as taking corrective action on the market only in case of market failures, when the market is not capable of efficient allocation of resources, but others justify the need to increase the activity of the state. The high costs of the recent crisis resulted in the economists no longer disputing the need for industrial policy. The controversy is over defining it, pointing out its objectives, scope, instruments and the role of the state. Definitions of industrial policy differ depending on the objectives that the national authorities want to achieve, how they perform, and what instruments they use. Semantic aspects of definitional disputes often obscure the substantive meaning of the definition, which should be clearly expressed. Assuming established in industrial policy objectives as a criterion for arranging the definitions, the following approaches can be specified: sectoral, called vertical and horizontal, in which obtaining the effects throughout the economy is assumed.

Policy of promoting the development of selected industries or favoring a particular group of investors is considered as a selective policy pursued in order to protect the national independence, technological autonomy, to support declining sectors, and in cases of other economic problems (Harrison and Rodriguez-Clare, 2009; Cohen, 2006, p. 85-106). Due to the fact that industrial policy has a wider range of influence than only on the selected areas of the economy or specific targets, and its effects are not limited to the industrial sector, some authors emphasize its structural effects, which may involve agriculture and services (Rodrik, 2004, p. 2; Lin and Monga, 2013, p. 21). Horizontal policy is defined as functional and in accordance with that approach, which has recently been preferred in the European Union, it has to create favourable conditions for economic development, productivity and competitiveness growth, which means resulting in greater pro-development effects in business environment. The European Commission (2002; Warwick, 2013, p. 14) defined the horizontal policy in 2002, stressing that its aim was to create general conditions for enterprises that contribute to the growth of business activity, which requires taking into account the specific needs of particular sectors and the features of the products and their utility. In conclusion, the European Commission's attitude was characterized by a combination of horizontal orientation of industrial policy with selective, sectoral adjustment in its implementation.

The crisis heated up the discussion on the role of industrial policy and on its redefinition in terms of objectives, instruments and performance. Theorists do not question the important role of the state in infrastructure development, financial contribution to research and development activities, coordinating functions, in particular enhancing the institutional basis of the market mechanism to ensure greater security of doing business in the terms of growing economic openness, as well as stimulating the activity of businesses through the development of joint projects with state. Theorists devote most attention to cooperation between the state and private companies, which aims at accumulating research and development funds as a result of pooling financial resources and competences for upgrading innovation processes (Katz, 1986, p. 527-543; Lin and Monga, 2013, p. 23; Spence, 1984, p. 101-122). The development of R&D sector in the knowledge-based economy is a condition for the growing importance of sectors and branches that create technical progress, increase productivity and reduce unit production costs. The risk of high cost of basic and applied research is reduced by spreading the cost on many partners and the financial contribution from the state.

In widely regarded Warwick's (2013) work we can find a comprehensive, multidimensional literature analysis of the traditional approach to the role of industry and industrial policy as well as presentation of the new trends that appeared earlier as a reaction to the industrialization of developing countries. In recent years they have re-appeared in developed countries because of the growing problems caused by the crisis of 2008-2009 and the extended sluggish economic situation. The author (Warwick, 2013, p. 47) presents arguments justifying the need for re-industrialization, because the decline of manufacturing share in GDP and employment results in a decline in the GDP growth rate and the deterioration in the labour market conditions. The increasing competition from fast-growing emerging economies also poses a threat for developed countries.

It is crucial to give a sharper focus on the role of combining horizontal with selective policy, so the implementation of horizontal objectives as a result of adequately established priorities in the sectors, technologies or tasks development (stages in the value chain), and to indicate the advantage of strategic policy over defensive/reactive policy.

Of the already rich recent literature, in which authors support the need for smart industrial policy development, it is worth to distinguish an extensive joint publication edited by J.E. Stiglitz and J.Y. Lin (2013) 'The Industrial Revolution and Policy I', that consists of two main parts, theoretical and empirical, based on the experiences of Latin American and Asian countries. Lin and Monga (2013, p. 19-38) defined the conditions that have a significant impact on the efficiency of industrial policy and stressed that its strategic goals should be adjusted to the level of economic development, the structure of resources and achieved comparative advantage. Greenwald and Stiglitz (2013, p. 43-71) focused their attention on those elements of the market environment, which have the greatest impact on the results of industrial policies, and their proactive impact depends on the involvement of the state, in particular through the institutions and law development. The role of the state is also enabling the creation and diffusion of knowledge, because the markets on their own are not effective enough in that area. If knowledge is a public good, then the access to it is open, except for the cost of transmission. The aforementioned authors believe that the main determinant of countries' development strategies in order to achieve long-term competitive advantage under conditions of high mobility of production factors is the ability to learn and create a learning society. Lerner (2013, p. 118-133) assesses the long-term effects of public policy of stimulating innovative entrepreneurship and creating a favourable climate for the

further development of effective entrepreneurship and claims that state involvement can contribute to the revitalization of the venture-capital sector. Alfaro and Charlton (2013, p. 162-208), on the basis of empirical research involving 29 countries, assessed the impact of FDI on economic growth in the years 1985-2000 and found that the relationship between investment and growth is stronger in the case of sectors with higher requirements of labour quality and those more dependent on foreign capital. Industrial policy allows to attract foreign capital maximizing the use of FDI for accelerating economic growth. Monga (2013, p. 209-224) analysed the benefits of production concentration in specific geographic areas, which are the result of knowledge spillover, pooling labour and nearness of specialized suppliers. However, he believes that the production concentration is the effect of government promotion policy, but the traditional theories of agglomeration can lead to incorrect conclusions. Nowadays, an instrument of industrial policy which creates the possibility of achieving economies of scale are clusters. They result in better specialization, and development of economic activity of small enterprises. Moreover closer internal linkages between enterprises associated in a cluster reduce the transaction risk. Local authorities can play a major role by providing necessary public goods and coordinating collective projects.

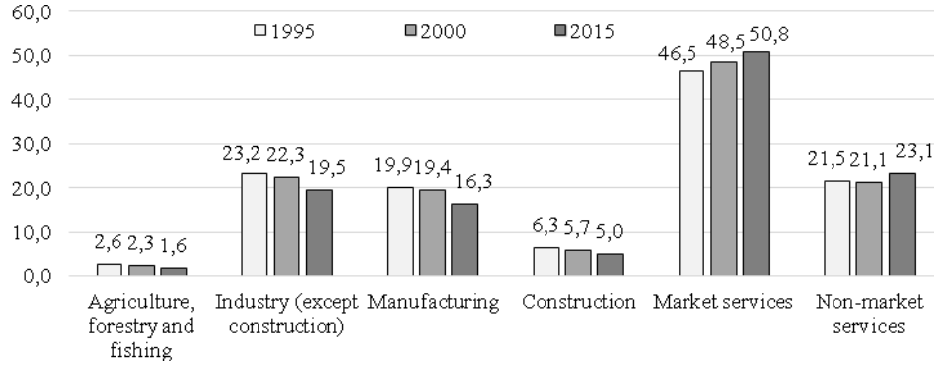
The literature shows that the declining share of manufacturing in GDP of developed countries is considered a determinant limiting technological progress, innovation, labour productivity growth and economic growth. Among theorists there is a broad consensus on the role of the state in organizing and coordinating cooperation and collective research and development activities of private sector and public-private partnership as a condition for knowledge spillover and the creation of a learning society.

The scale of deindustrialization and its consequences in the euro area

Theorists, engaged in research of socio-economic development rules, agree that the decline of manufacturing share in GDP in developed countries confirms the previously observed patterns of stage changes and the transition to a post-industrial stage. It is a consequence of rapid development of the market and non-market services – intensified by a number of factors, which include (Mucha-Leszko, 2016, p. 184): GDP per capita and population income growth, 2) commercialization of services for households, 3) growing services outsourcing by manufacturing companies, 4) increasing importance of educational services, 5) growing demand for services directly related to aging, 6) increasing importance of commercial services as well as accommodation and food and beverage serving services.

Figures 1 and 2 and the data in table 1 show that the pace of deindustrialization in the euro area increased in 2000-2015, but varied between countries. The share of manufacturing in gross value added in the euro area (19 countries) in 1995 was 19.9%, in 2000 decreased to 19.4% and in 2015 fell to 16.3%. A similar downturn occurred in the share of manufacturing in total employment (Fig. 2). The data on changes in the share of manufacturing in gross value added and total employment in euro area countries in 2000, 2010 and 2015 are presented in table 1. The deindustrialization process occurred mainly in the period of 2000-2010, which was influenced by the crisis, but in the next five years deindustrialization slowed down in most countries. Moreover, it is possible to notice an increase in the share of manufacturing in GDP. During the first of these periods, deindustrialization process measured by decrease in the share of manufacturing in the gross

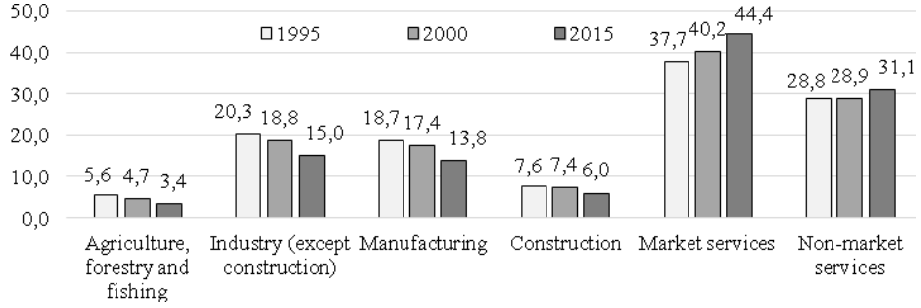
value added has not occurred only in two of the nineteen euro area members: Germany and Lithuania. However, after the economic collapse in 2009, manufacturing share increased in 2015 compared to 2010 (so after the recession) in Slovenia, Greece, Lithuania, Germany, Portugal and Austria, and remained at the same level or decreased slightly in Slovakia, Italy, Spain, the Netherlands and France. Nevertheless, only seven out of those eleven countries had the manufacturing share in the gross value added higher than the average for euro area-19 (16.3%).



Note: The data include share of manufacturing twice: as a component of the category "Industry (except construction)" and as the separate category "Manufacturing".

Fig. 1. Shares of major sectors in gross value added (GVA) in the euro area (19 countries) in 1995, 2000 and 2015 (% of total GVA)

Source: own calculations based on: (EUROSTAT Database, 2016).



Note: The data include share of manufacturing twice: as a component of the category "Industry (except construction)" and as the separate category "Manufacturing".

Fig. 2. Shares of major sectors in employment in the euro area (19 countries) in 1995, 2000 and 2015 (% of total)

Source: own calculations based on: (EUROSTAT Database, 2016).

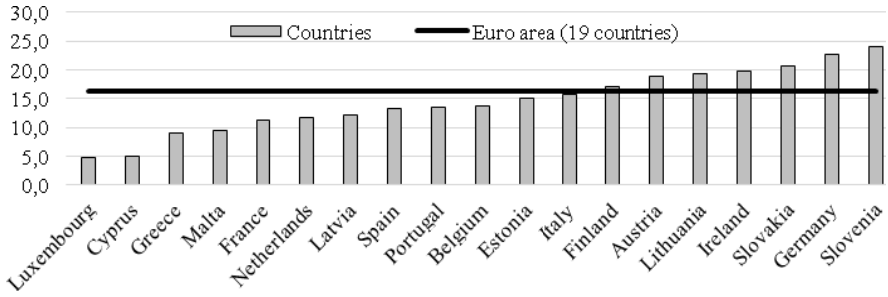


Fig. 3. Shares of manufacturing in gross value added (GVA) in the euro area countries in 2015 (% of total GVA)

Source: own calculations based on: (EUROSTAT Database, 2016).

Table 1. Shares of manufacturing in gross value added (GVA) and in employment in the euro area countries in 2000, 2010 and 2015 (% of total)

Countries	Shares of manufacturing in GVA (% of total)			Shares of manufacturing in employment (% of total)		
	2000	2010	2015	2000	2010	2015
Euro area (19 countries)	19,4	16,0	16,3	17,4	14,2	13,8
Belgium	19,6	14,7	13,7	15,9	12,1	11,0
Germany	23,0	22,2	22,6	19,6	17,4	17,4
Estonia	17,3	15,7	15,1	22,2	19,0	18,9
Ireland	26,0	21,6	19,7	17,4	11,5	10,2
Greece	10,6	8,2	9,1	10,4	9,2	8,7
Spain	17,8	13,3	13,3	17,3	11,8	11,1
France	15,7	11,3	11,2	13,6	10,4	9,7
Italy	19,5	15,8	15,8	19,9	16,8	15,8
Cyprus	8,9	5,7	5,1	11,4	9,1	7,8
Latvia	15,4	13,4	12,2	16,0	13,8	13,4
Lithuania	18,9	18,8	19,4	17,3	15,4	15,2
Luxembourg	10,8	5,9	4,7	12,9	9,2	8,0
Malta	21,4	12,9	9,5	21,6	13,4	11,6
Netherlands	15,3	11,8	11,7	11,6	9,1	8,7
Austria	20,5	18,7	18,9	17,4	14,9	14,7
Portugal	17,2	13,2	13,5	20,4	14,9	15,6
Slovenia	24,9	20,2	24,0	27,2	20,3	20,3
Slovakia	23,9	20,8	20,8	24,5	21,3	21,6
Finland	27,6	19,5	17,0	19,2	14,7	13,6

Source: own calculations based on: (EUROSTAT Database, 2016).

The impact of IC technologies and deindustrialization on labour productivity and total factor productivity in the euro area and the US

Labour productivity depends on many factors, but primarily on capital expenditures per employee and total factor productivity, that includes the structural changes and shares in the economy of sectors which create technical progress, the quality of labour, new methods of work organization, working time and pro-efficient incentives. The measure of multifactor productivity is TFP (Total Factor Productivity). The research of indirect factors contribution to real GDP growth using TFP is common in economic analysis, especially pertaining to labour productivity. Total factor productivity is defined as real output per unit of inputs (all production factors) (Mucha-Leszko, 2007, p. 252). Gomez-Salvador, Musso, Stocker and Turunen (2006, p. 9) believe, that in order to understand correctly what factors affect labour productivity growth, it is useful to divide them into two groups: 1) the direct factors (capital expenditures and labour quality growth), 2) the factors affecting the labour productivity indirectly, but essentially affecting the rate of change, such as research and development activities (R&D), innovation and new technologies dissemination.

The highest labour productivity growth rate in the current euro area countries occured in the 50s and 60s of the twentieth century, when European economies were at the stage of intensive post-war industrialization, and the average annual growth rate of labour productivity was about 6%. In the following three decades of the previous century, labour productivity in Europe was rising, but the growth rate went towards a strong downward trend (from 4.0% average in the 70s, 2.5% in the 80s to 2.0% in the 90s) (Gomez-Salvador et al., 2006, p. 10-11). At the same time, the growth rate of labour productivity in the United States averaged near the long-term trend of 2%, with periodic fluctuations. In that long-term analysis, the changes that occurred in the mid-90s cannot be ignored, when the decline of labour productivity growth rate deepened in the euro area, and in the United States the rate was increasing. The average level of labour productivity in the euro area was comparable with the US in the mid-90s, but in the second half of the decade the gap in relation to the United States has started to increase.

Until the mid-90s it was believed that human resources and capital reallocation from manufacturing to service sector leads to a decline in labour productivity growth, because the industry was regarded as a sector, which creates technological progress. The latest technological revolution (ICT- information and communication technologies), the center of which was the United States, led to fundamental structural changes which stemmed from the impact of ICT on labour productivity growth and total factor productivity. Investments providing growth in production of ICT's devices and their application in other sectors were made extensively in the United States, but in the euro area investing in ICT sector was modest, which resulted in the growing technological gap. ICT contributed to labour productivity and total factor productivity growth by removing technical barriers to doing business on a global scale and achieving economies of scale and due the dynamic development of financial services. The deterioration of the euro area economic position compared to the United States during the stage of intensive development of ICT investment is reflected in the changes in labour productivity and TFP presented in table 2 and figures 4 and 5.

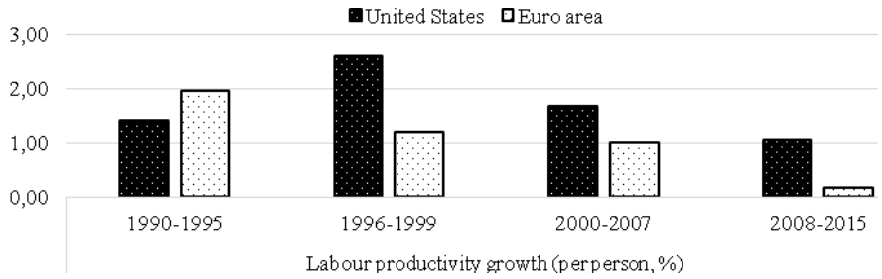


Fig. 4. Growth of labour productivity per person employed in the euro area and the United States in 1990-2015 (percent change)

Source: own calculations based on: (The Conference Board, 2016).

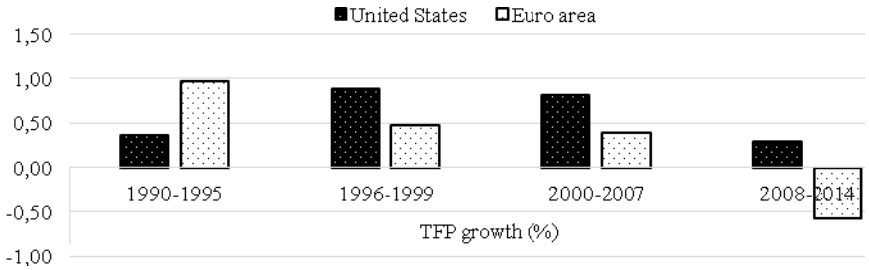


Fig. 5. Growth of total factor productivity in the euro area and the United States in 1990-2015 (percent change)

Source: own calculations based on: (The Conference Board, 2015).

The data for years 1990-2015 indicates that the euro area in two of the four defined periods reduced its development gap to the United States and the gap increased in the remaining two periods. The labour productivity growth rate (yearly average) in 1990-1995 in the euro area was higher than in the US by 0.53 percentage points and the TFP growth rate was higher by 0.61 percentage points. In the following period (1996-1999), during the peak of ICT development, there has been a fundamental change and the difference in labour productivity growth was 1.41 pp in favor of the United States and in TFP growth the US' advantage was 0.42 pp. During third period (2000-2007), there was a large decline in labour productivity growth in US by 0.93 pp. and smaller in the euro zone - by 0.19 pp. In the case of total factor productivity the decline was comparable in US and euro area.

In 2000-2007 the euro area began to make up the gap towards the US, which arose in the late 90s, however the reduction was not only the effect of labour productivity improvement in the euro area, but also because of the decline in labour productivity growth in the United States. The deterioration of the economic situation in the United States began with the bursting of speculative bubble in ICT market (Mucha-Leszko and Kąkol, 2009, p. 52-54). Another factor destabilizing the economy was the terrorist attack on the World Trade Center on September 11th, 2001. The increasing risk limited investment activity and weakened economic situation, which led to the global economic slowdown. The recovery started in the US in 2002, but in the euro area it was delayed until 2004. Economic performance, including labour productivity improvement occurred in the euro area in 2006-2007.

Table 2. Growth of labour productivity (GDP per person employed) and growth of total factor productivity in the euro area, chosen countries and the United States 1990-2014/2015

Countries	Labour productivity growth (per person, %)			
	1990-1995	1996-1999	2000-2007	2008-2015
United States	1,42	2,60	1,67	1,04
Euro area*	1,95	1,19	1,00	0,18
Austria	2,14	2,01	1,40	-0,26
Belgium	1,53	1,68	1,28	0,12
Finland	2,93	2,58	2,08	-0,47
France	1,34	1,26	1,13	0,28
Germany	3,07	0,95	1,18	0,07
Greece	0,50	2,73	2,63	-1,62
Ireland	2,98	3,81	2,43	2,28
Italy	1,77	0,81	0,06	-0,66
Netherlands	0,96	1,71	1,20	0,23
Portugal	1,60	1,95	1,19	0,56
Spain	2,01	0,26	0,06	1,35
Slovak Republic	2,36	4,30	4,96	1,61
Countries	TFP growth (%)			
	1990-1995	1996-1999	2000-2007	2008-2014
United States	0,37	0,90	0,82	0,29
Euro area*	0,98	0,48	0,39	-0,57
Austria	0,83	0,57	0,95	-0,23
Belgium	0,24	0,37	0,07	-1,09
Finland	1,16	2,52	1,38	-2,10
France	0,18	0,35	0,43	-0,57
Germany	1,98	0,93	0,96	-0,19
Greece	-0,93	0,49	0,02	-4,03
Ireland	2,70	3,29	-0,02	-0,93
Italy	0,80	-0,19	-0,42	-0,84
Netherlands	0,40	0,93	0,81	-0,48
Portugal	-0,05	0,68	-1,14	-1,45
Spain	-0,03	-0,85	-0,82	-0,63
Slovak Republic	-0,86	1,69	3,15	-0,31

* Includes all current members of the common currency area.

Source: own calculations based on: (The Conference Board, 2015; The Conference Board, 2016).

Increase in the euro area development gap to the United States was caused once again by the crisis of 2008-2009. The average annual growth rate of labour productivity in euro area in 2008-2015 fell to 0.18%, and in the US remained at 1.04%. Technological gap deepened even faster, what was reflected in the TFP growth showing technical progress in the US and regression in the euro area.

The average annual growth rate of labour productivity and other macroeconomic indicators in the euro area are the results of the economic situation in member states and their potential, but do not reflect the real situation fully, because of the large diversity of indicators among countries. Therefore, table 2 contains data on labour productivity and TFP growth rates of chosen most significant euro area countries (twelve) in order to make direct comparison with the United States.

In the first period (1990-1995) the following countries had labour productivity growth rate significantly higher than the average of the euro area: Germany 3.07%, Ireland 2.98%, Finland 2.93%, Slovakia 2.36% and Austria 2.14%. These were the countries with the largest share of manufacturing in the economy. The growth rate of labour productivity was lowest in: Greece 0.50%, Netherlands 0.96%, France 1.34%, Belgium 1.53% and 1.60% in Portugal (countries with lower manufacturing share in the economy). TFP confirmed the technological advantage of developed economies with higher industry share in GDP: Germany, Ireland, Finland and Austria.

In the second half of the 90s (the second period) the economic dynamics depended primarily on the development of investment in the ICT sector and the labour productivity growth rate increased significantly in the US and in the euro area productivity growth weakened, so the development gap between the US and the euro area deepened. However, it does not mean, that this process took place in all analyzed euro area member states. In 1996-1999 the average labour productivity growth rate similar or higher than in the US (2.60%) was reached in: Slovakia 4.30%, Ireland 3.81%, Greece 2.73%, Finland 2.58% and Austria 2,01%. The same group of countries (except Greece) also had significantly higher TFP growth rates than the US (table 2). Moreover, Germany and the Netherlands had slightly higher TFP growth rate compared to the US, while in Greece TFP growth rate was at average euro area level. To sum up, it should be emphasized that there was a large diversity in labour productivity and TFP growth in the euro area and investment in ICT sector in Finland and Ireland had a major impact on TFP and labour productivity in both countries. High labour productivity growth rates in Slovakia and Greece were the irrefutable proof of striking development and economic convergence achieved due to inflow of foreign direct investment.

In 2000-2007 (the third period) the average labour productivity growth rates in the US and the euro area came close, and the group of countries, where labour productivity growth was higher than in the US included: Slovakia, Greece, Ireland and Finland. Austria had only slightly lower labour productivity growth rate. A group of countries with the highest TFP growth rate is quite interesting. Besides Slovakia, Finland and Austria the group was joined by Germany and the Netherlands, but did not include Ireland and Greece, where economic problems had already started, whereas adjustment processes in Germany and the Netherlands have contributed to growth in economic efficiency.

The crisis of 2008-2009 has caused the greatest economic effects and sustained economic recovery in the euro area and the EU has not occured until 2015. The average annual GDP growth rate in 2008- 2014 was 0.2% in the EU-27, 0% in the EU-15, in the euro area the rate was negative (-0.2%) and in the United States it was 1.1% (Van Ark, 2015, p. 9). One of the factors that reduced the ability to economic growth in the euro area countries was deindustrialization, which has deepened during the crisis. By the end of 2013 developed countries had not reached the level of production in manufacturing from the first quarter of 2008, only Germany and the United States managed to catch up the pre-crisis level (Sinn, 2014, p. 111). The biggest fall in manufacturing occurred in Spain, Italy, Cyprus and Greece as well as in France and Portugal (Sinn, 2014, p. 111).

The average annual TFP decline in 2008-2014 in the euro area was 0.57% and all analyzed countries also had negative TFP rates, including -4.03% in Greece, -2.10% in Finland, -1.45% in Portugal, -1.09% in Belgium, -0.93% in Ireland and -0.84% in Italy (table 2). The smallest TFP loss was sustained in Germany (-0.19%), Austria (-0.23%) and Slovakia (-0.31%).

Conclusion

1. The declining role of manufacturing in developed economies, called de-industrialization, is a consequence of reaching the advanced post-industrial stage of development. The services' share in the economies has been increasing steadily since the 1980s and that process has intensified in the second half of the 90s as a result of robust development of information and communication technologies (ICT). Simultaneously, liberalization and deregulation of economies have opened up new possibilities for production factors flows and ICT have created technical and organizational conditions facilitating internationalization of production. Cheap labour and raw materials abundant in least developed countries have attracted capital and investments have created demand for production and consumption goods. The developing countries' competitive advantage led to relocation of manufacturing and decrease in its importance in developed countries. The increasing specialization within the production process allowed to divide it into more and more narrow technological phases and led to further intensification of internationalization process.

2. The decreasing importance of real economy, including manufacturing, in developed countries is also a consequence of developing modern financial and business services, especially computer and information technologies. Specialization in services since the mid-90s had the significant impact on labour productivity growth and service sector's ability to achieve technological progress. The remarkable development of services in which ICTs are widely used occurred in the United States and that contributed to the growth of labor productivity in the whole economy. While in the euro area, investment and employment expansion were concentrated in traditional economic sectors. In the fastest growing commercial services, such as trade and financial and business services, the use of ICT was lower compared to the US. It created technological gap in the service sector in the euro area, that was leading to a decline in labour productivity growth.

3. Another factor that had intensified the deindustrialization process of less competitive European countries was the last crisis of 2008-2009. The decrease in internal and external demand caused production cuts and increased competition on foreign markets in segments of labour-intensive products from emerging economies. Export specialization in labour-intensive products in the southern euro area countries resulted in deep economic losses as a consequence of collapsing industry.

4. The total factor productivity decrease in the euro area, expressed in negative rates of TFP, and a strong slowdown in the labour productivity growth rate: 0.18% average in 2008-2014 in euro area and 1.04% in the United States, and a GDP decline of 0.2%, confirms that euro area suffers from secular stagnation, which is an economic stagnation resulting from low investment, decline in innovation and slow technological progress. The market mechanism in the knowledge-based economy, especially in terms of low demand, does not have sufficient strength to stimulate innovative investment and technological progress. The decline of manufacturing further limits this process, thus also hindering the growth of labour productivity. Nevertheless, technological progress can contribute to the development of new business services that create more technological progress and can in turn add to the growth of labour productivity throughout the economy. IC technologies and investment in that sector in the US since the mid-1990 can be a proof of that. However, the recent financial and economic crisis has led to such a deep deindustrialization that

reindustrialization of euro area economies becomes the necessary condition for recovering ability to economic growth and innovation as well as labour productivity.

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