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Evidence for Middle-Income Trap Non-Occurrence in the Light of KLEMS Growth Accounting for Poland

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EVIDENCE FOR MIDDLE-INCOME TRAP NON-OCCURRENCE IN THE LIGHT OF KLEMS GROWTH ACCOUNTING FOR POLAND*

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Abstract:

There is an ongoing discussion and some researchers contend that many middle-income countries are on the brink of the so called middle-income trap, if not already deeply stuck in it. To solve the problem whether this is actually happening the case of the Polish economy is being analysed, as it is representative to some degree for other Central and Eastern Europe countries' economies. Thanks to KLEMS growth accounting datasets, that recently have been published by Statistics Poland, an analysis on this issue became feasible. This analysis shows that for Poland the assertion on the middle-income trap existence or threat has to be rejected, after observing the growth distribution between different industries, and particularly the individual industries' growth decompositions into factor contributions and multifactor productivity (MFP) contribution. Extending this research to other Central-Eastern Europe countries, particularly those with quickly growing economies, may possibly confirm that just as for Poland the so-called middle-income trap is not actually occurring and there is little chance that it will. Although, not solving the theoretical nexus on the middle-income trap notion, many of these findings can be interesting for Central-Eastern economies' researchers and the possible ongoing discussion.

*Disclaimer: the views presented in this article are those of the authors and do not represent the official standpoint of Statistics Poland.

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1. Introduction

Much of the ongoing discussion concerning the middle income countries is focused on the economic problem coined the Middle-Income Trap. This concerns in particular the Central-Eastern Europe countries, of which Poland can stand for as an exemplifying case. It is often asserted that economic growth in the long run can be resource (mainly labour) driven, investment (capital) driven or innovation driven, and that when it is investment driven it can become exhausted, as observed at the macroeconomic level, leaving the given country economy in the above-mentioned middle-income trap and preventing it from achieving prosperity. Many researchers contend that this is something which is actually happening and therefore it is worth to be tested somehow in order to make economic policy better informed.

In order to iterate as close as possible to an appropriate answer to the problem drafted above we undertake to carry out an observation of the growth distribution between different industries, and particularly of the individual industries' growth decompositions into factor contributions and multifactor productivity (MFP) contribution. The assumption of the study is (which is further explained why) that if industries that can be considered as growth supporting engines in the economy are mainly multifactor productivity (MFP) contribution driven, not capital contribution driven, and further if that multifactor productivity contribution is decisive for their ranking in the relative speed of growth, then the process called the middle-income trap is very unlikely to materialise itself. If the economic growth is innovation or at least imitation driven, not investment driven, in the fast growing industries of the market economy, the outcome in the form of the middle-income trap will not coalesce. The possibility of capital outflow will not undermine the growth supporting industries because of its little contribution for them, and because in such conditions over-investment together with profitability decreases is unlikely to develop.

In the second section we will undertake to define the notion of the middle-income trap, present the ongoing discussion on the soundness of this term, and on proposals on how to escape it. In the third section, after some introductory information on KLEMS productivity accounts, the adopted methodology of calculation of cumulative gross value added growths, cumulative factor contributions and particularly of cumulative multifactor productivity contributions is presented. In the fourth section Poland KLEMS cumulative growth accounting based data are presented. In the fifth section the main discussion on

whether the middle-income trap is likely or rather unlikely to occur in Poland is carried out. Finally, the paper ends with a conclusion section.

2. Definition, evidence and soundness of the term, and preventive measures

The term "middle-income trap" has been introduced by the World Bank in 2006 (Gill & Kharas 2007 and 2015) and since then there has been a profusion of discussions and commentaries about it, both in the scientific and journalistic milieus. But first, what is it really? One possible definition is based on observing the growth rate. If the economy of a given middle-income country grows at an insufficient rate to catch up with more developed countries in a decent scope of time, then it can be considered to be stuck in the so called middle-income trap (Felipe, Abdon, Kumar 2012). This is an empirical/quantitative definition, but a theoretical definition is also possible (Glawe & Wagner 2016, 6). A workable definition of this kind characterizes a middle-income trap country as being "squeezed between the low-wage poor country competitors that dominate in mature industries and the rich-country innovators that dominate in industries undergoing rapid technological change" (Gill & Kharas 2007, 5).

Following Glawe & Wagner (2016, 7) and Kharas & Kohli (2011, 282), countries are caught in the middle-income trap if they *cannot make a timely transition from resource-driven growth, with low-cost labor and capital, to productivity-driven growth*. This definition gives the opportunity to analyse this problem in the light of KLEMS growth accounting or similar growth decomposition methods. Productivity-driven growth can be related to *total factor productivity (TFP)* or *multifactor productivity (MFP)* contributions, present in these growth decompositions, in a consistent and quite comprehensive manner. Despite the existence of theoretical definitions, these must be related to the empirical/quantitative ones and the notion of middle income itself. Since absolute thresholds such as given by the World Bank are getting outdated, because of a continuous progress (technological and other) that leads to a continuous increase in the highest potential level of income, relative definitions of the middle income are advanced also as the ratio of a given country income to the US income (e.g. Woo 2012, 314).

The implied causes of a given country's falling in the middle-income trap are often being associated with the adverse effect of increased wages related with the first transition of the given country from a low-income to the middle-income level of economic development, which process causes a cost increase in production and therefore

a decline in competitiveness, that prevents the given country from successfully achieving the second transition from the middle-income to a high-income level of development (very similar in: Griffith 2011, 39). This phenomenon concerns therefore rapid growing economies stagnating at the middle-income levels and failing to graduate into the ranks of high-income countries (Aiyar et al. 2013, 3). In some other formulation this is caused by the inability of the given country to structurally upgrade from low value-added to high value added products (Lin & Treichel 2012, 40-41) – the later are much more immune to labour cost increase leading to competitiveness decline.

A wide consensus is that the differences in income levels are the result of differences in capital accumulation and productivity growth. These will be high at the aggregate level, if high value added products are displacing low value ones in particular. Because the categories of capital accumulation and productivity growth can be studied through growth accounting of KLEMS type or similar, these methodologies are relevant in the present analysis. Since capital accumulation growth resource can be exhausted together (or just after) with cheap labour growth resource, because of falling rates of capital returns, at last only the productivity growth remains as the sustainable growth resource in general, with the exception of infrastructure capital growth delivering growth in the very long run. This productivity growth resource can consist between others of human capital upgrading (as mentioned e.g. by Zhang et. al. 2012), but directly mostly reflects productivity growth due to innovation. Once again we can see that this problem can be approached through an analysis based on decompositions used in growth accounting of KLEMS type, since most of the preventive measure activity can be associated with TFP or MFP high contributions.

The evidence on the existence of the middle-income trap is varied between different countries. According to Agenor (2016, 3-10) this evidence is strong and its cause can be attributed to a combination of factors: *diminishing returns to physical capital, exhaustion of cheap labor and imitation gains, insufficient quality of human capital, inadequate contract enforcement and intellectual property protection, distorted incentives and misallocation of talent, lack of access to advanced infrastructure and lack of access to finance* (Agenor 2016, 10). Should all of this not happen the productivity would rise and therefore economic growth as well. A more detailed analysis of Eichengreen, Park, Shin (2013) shows that the incidence of a deceleration of economic growth can occur in steps so more country are at risk, not only from a narrow income category. Han & Wei (2017) find that the evidence about the middle-income trap is varied and that it depends of the

given country fundamentals and policy dependent regimes. According to this study, the trap concerns also the low-income countries. This varied situations lead sometimes to a conclusion that the notion of a trap is not really the right one, *and instead what distinguishes economies in their transition from middle to high income is fast versus slow transitions* (Felipe, Kumar, Galope 2014). This sceptic attitude towards the term, basing on the same or similar grounds, was expressed before also by Im & Rosenblatt (2013) and Bulman, Eden, Nguyen (2017). However, a statistical definition of the term is still possible according to Robertson & Ye (2013).

Perhaps the slowdown is more general and originates in developed economies. This process concerns in particular the US economy, and has been mirrored in other parts of the world, in a way explained by by Byrne, Fernald, Reinsdorf (2016, 149). This would mean that the rich and wealthy economies are not any more the "milky cows" for the developing ones in such an extent as before. This approach would explain some of the slowdown, but has nothing to do with the idea of the middle-income trap.

Perhaps only a comparative approach is the right one. For instance, it has been well observed that Asian countries have been in general more successful than Latin American countries in their transitions from middle to high income levels of economic development (Jankowska, Nagengast, Perea 2012) and therefore not caught in the so called middle-income trap thanks to structural change. *Successful structural change is driven by proximity considerations- with expansion into related industries, making use of existing productive skills- while concomitantly accumulating more advanced capabilities. … Policy co-ordination, particularly in the area of education, infrastructure, innovation and financing, plays a strong role in promoting the simultaneous evolution in economic structure and framework conditions.* All of this is not about labour or capital intensity but rather about productivity, therefore potentially trackable through growth accounting of e.g. KLEMS type and through decompositions oriented to the identification of TFP or MFP contributions to economic growth. Therefore, TFP or MFP seam to consist of components[1] that are necessary to avoid the middle-income trap, regardless of whether this concept is sound theoretically or only statistically. One of the reason for this is that

[1] These are labour and capital usage and labour and capital efficiency, according to Havik et al. (2014, 9-10). The underlying intuitive assumption on the components of TFP is not contradictory to some undertakings aimed at formally decomposing it, such as Diewert &Fox (2014).

both TFP and MFP are calculated residually, and therefore any kind of the above-mentioned advantages can be contained in them.

Therefore, also the "cure" to the ailment called the middle-income trap is related with entities mostly contained in the TFP or MFP contributions to growth, with some exceptions such as labour quality in KLEMS growth accounting (which is not contained in MFP) or ICT-capital from EU KLEMS growth accounting version. The one important exception is also the infrastructure of which the contribution is rather contained in the capital contribution to economic growth, although it is considered as a preventive measure from falling into the middle-income trap also. We can confirm this general stand by reviewing other researchers advancing such "cures" (e.g.: Agénor & Canuto 2012; Paus 2014; Eichengreen 2011; Zhuang, Vandenberg, Huang 2012; Vivarelli 2014; Liu et al. 2017; Atalay 2014; and similarly many others). For a given country, to escape from the middle-income trap incidence, or more generally from a slowdown in the transition towards a high income economy, the contribution of TFP or MFP, representing the productivity, has to be high, but we assume that it concerns high growth and growth supporting industries rather than the entire economy. At the aggregate level the contribution of productivity may be shadowed by a high contribution of capital investment in the infrastructure, which process is also conducive to escaping the so called middle-income trap. Also necessary capital outlays in restructured sovereign supported and sovereign led activities may also shadow the contribution of productivity at the aggregate level. These capital shadowing shall be explained later on.

The concept of production factor services contributions used in growth accounting methods such as KLEMS productivity accounts instead of production factor stocks contributions allows to identify at least one component that was contained previously in TFP – the labour quality, otherwise called labour composition. It is related with human capital, therefore also impacting positively as potential "cure" for the so called middle-income trap, regardless of whether this term use is justified or not, basing on theoretical or statistical grounds.

3. KLEMS productivity accounts and the methodology of cumulative values

The basic KLEMS methodology follows in general the growth accounting methodology developed by Dale W. Jorgenson and associates, as outlined in Jorgenson (1963), Jorgenson & Griliches (1967), Jorgenson, Gollop and Fraumeni (1987),

Jorgenson (1989) and Jorgenson, Ho and Stiroh (2005)[2]. This methodology has been summarized by Timmer et al. (2007), and O'Mahony and Timmer (2009) for the EU KLEMS. For Poland this methodology has been developed and presented in Kotlewski & Błażej (2016) and Kotlewski & Błażej (2018)[3]. Data for further computations are available on the Statistics Poland web site. Since the Statistics Poland methodology is very similar in details to the one used for the EU KLEMS consortium, datasets from both data sources can be easily used in comparisons.

The basic KLEMS formulation applicable in our analysis is the gross value added growth decomposition formulae:

$$\Delta \ln V_{jt} = \bar{w}_{jt}^{K} \Delta \ln K_{jt} + \bar{w}_{jt}^{L} \Delta \ln L_{jt} + \Delta \ln A_{jt}^{V} \quad (1)$$

where V is the gross value added, K – capital services, L – labour services and where A^V stands for multifactor productivity. These values are subscripted by j for industries and t for years. $\bar{w}$ with appropriate subscripts are average value shares of the individual factors in the gross output (defined in the superscripts by X, K and L) for two discrete time periods $t\text{-}1$ and t, which are calculated through linear interpolation as $\bar{v} = (v_{t-1} + v_t)/2$ (for simplicity the subscripts of (1) have been omitted here). Since the growth of A^V is residually calculated, the equation (1) is always met in practice

The capital factor contribution (understood as capital services inputs) has been decomposed into two sub-factors' contributions as follows:

$$\bar{w}_{jt}^{K} \Delta \ln K_{jt} = \bar{w}_{jt}^{KIT} \Delta \ln KIT_{jt} + \bar{w}_{jt}^{KNIT} \Delta \ln KNIT_{jt} \quad (2)$$

where *KIT* stands for ICT capital and *KNIT* for non-ICT capital services[4], treated as separate factors indeed, which fact is expressed also by their different shares

[2] The OECD growth accounting methodology is also quite relevant; see: OECD (2001, 2009 and 2013), Wölf (2007).

[3] The first of these works is addressed to the Polish audience not fully acquainted with KLEMS accounting, therefore methodological details were more amply presented. Whereas, the second of these works is more focused on Polish specificities, more essential for the foreign audience. More works are under peer reviews.

[4] Capital services are stocks of different kinds of capital assets aggregated at industry level with the use of the Törnqvist quantity index. Because the different kinds of assets can have different relative income shares, accompanied by their different growth rates, capital services' growths do not have to be exactly the same as the growth of the

(appropriately superscripted). In practice one of the three contributions, usually the non-ICT capital one, is residually calculated as the subtraction between the other values in the equation (2), in order to avoid mathematical tool problems, so the equation (2) is always met.

The labour factor contribution (understood in the standard KLEMS methodology as labour services' contribution) has been decomposed somehow differently as follows:

$$\overline{w}_{jt}^{L}\Delta \ln L_{jt} = \overline{w}_{jt}^{L}\Delta \ln H_{jt} + \overline{w}_{jt}^{L}\Delta \ln Q_{jt} \quad (3)$$

where L labour services[5], H stands for the (straightforward) sum of hours worked, and Q for labour quality, otherwise called labour composition. Similarly to equation (2) one of the terms in equation (3), that is labour composition, is calculated residually as the subtraction between the other values in equation (3), so this equation is always met. The difference in comparison with equation (2) is that the sub-factors in equation (3) are all treated as a single factor, which is expressed by their same share $\overline{w}_{jt}^{L}$ as for L. This difference in comparison with the capital factor decomposition (2) is however of no importance as far as the linear additivity of the sub-factor contributions to the gross value added growth is considered[6].

If we join equations (2) and (3) with equation (1) we will have a gross value added growth decomposition into five contributions all together[7].

In the present analysis cumulative values will be used. With the exception of one, they were all calculated according to the following general formulae:

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straightforward sums of asset stocks at industry level. Symbols taken from Timmer et al. (2007).

[5] Aggregated with the use of the Törnqvist quantity index over standard KLEMS 18 kinds of labour according to sex, three age groups and three education attainment levels (2 X 3 X 3 = 18). Because the different kinds of labour can have different relative income shares, accompanied by their different growth rates, labour services' growths do not have to be exactly the same as the growths of the straightforward sums of hours worked at industry level.

[6] The equation (15) in O'Mahony and Timmer (2009, F378) expresses also this difference, but instead of "labour quality" (Q) term as here, we have there "labour composition" (LC) term, which is more often used in EU KLEMS version of KLEMS growth accounting.

[7] We are not dwelling on methodological details here, as those are available in the above-mentioned references.

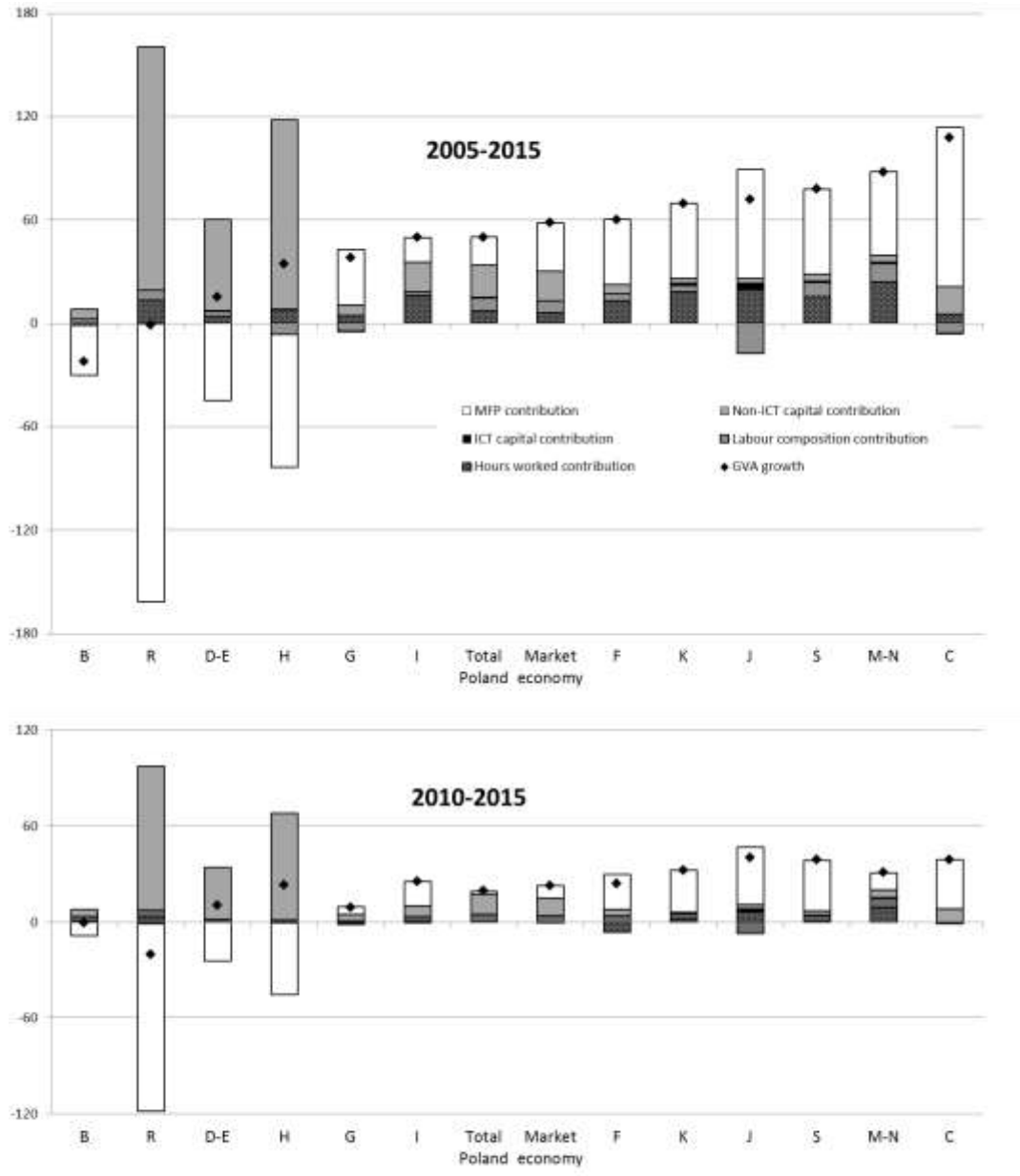
$$\Delta X_{cum} = (1 - \Delta X_{t=1})(1 - \Delta X_{t=2}) \dots (1 - \Delta X_{t=n}) - 1 \quad (4)$$

where X can stand for gross value added or ICT capital or non-ICT capital or hours worked or labour quality (*V, KIT, KNIT, H* and *Q* respectively), *n* stands for the period in years, and X_{cum} is the cumulative value. The one exception is the multifactor productivity A^V contribution, which has been calculated residually as the subtraction between gross value added cumulative growth and cumulative factor contributions, in order to avoid mathematical tool problems.

4. Results presentation

A wide industry approach has been applied here, at sections from the NACE 2 classification system. Thereafter, the term section will be used for these wide industries. Section A (agriculture, forestry and fishing) has been omitted because the KLEMS methodology is considered to be controversial for this economic activity. Also NACE 2 sections not belonging to the so called 'market economy' according to a standard approach (which are sections: L, O, P and Q) have been omitted in the analysis. Sections T and U, because of their little importance, have been omitted too. However, sections representing commercialized activities, but under strong public control or with heavy sovereign supports have been included (which are sections: B, D, E, H and R). In general, industries represented by these sections have huge investment outlays, which are directly or indirectly sovereign supported. All sections have been displayed on figure 1 in order of their increasing cumulative gross value added growths in the period of 2005-2015.

In section B (mining and quarrying) can be observed a negative gross value added growth, related to mining industry restructuring carried out under sovereign control, so despite some investments the residual MFP contribution value is negative. In sections D (electricity, gas, steam and air conditioning supply) and E (water supply, sewerage, waste management and remediation activities), that concern network services, there are important and necessary upgrading outlays that are not accompanied by substantial gross value added growth, therefore here as well the contribution of residually computed MFP is negative. To some degree it is the same with section H (transportation and storage) in which also important public outlays are only partly accompanied by a direct increase in transport services – therefore here as well one can observe a negative MFP contribution. Also a capital-oriented public support for section R (arts, entertainment and recreation)



Note: on the first graph (2005-2015) the NACE 2 classification sections are in order of growing cumulative gross value added growth from the left side to the right hand side; on the second graph (2010-2015) this order has been maintained.
Source: own contribution based on Statistics Poland web site data for Poland.

Figure 1.
Decomposition of cumulative gross value added growth into factor and MFP contributions at chosen NACE 2 classification sections in the light of KLEMS growth accounting (in pp).

does not directly lead to production increase, which inevitably leads to negative MFP contribution show offs.

Those negative MFP contributions, as observed on figure 1, are compensated by positive ones in the other industries, therefore the results for the total Polish economy are situated in the middle of the graph from figure 1. Sections not included in the market economy contribute also negatively to the overall MFP contribution and this is the reason why the market economy bar is situated to the right hand side from total Poland bar.

One important observation on figure 1 is that section C, representing a wide group of manufacturing industries, has the highest MFP cumulative contribution in the 2005-2016 period. Because this section is the largest in the Polish economy (it accounts for about a quarter of it) it weighs very importantly on the total economy MFP contribution. Section C in relative terms has also the highest gross value added growth from all section in the period of 2005-2015, and remains high at the second position after section J in the period of 2010-2015.

The second NACE 2 section that distinguishes itself by its high MFP contribution is section J (information and communication). In the period 2005-2016 the cumulative gross value added growth and the cumulative MFP contribution to that growth in that section was only a little lower than in the section C. However, in the second half of that period (2010-2016) as shown on the lower graph of figure 1 this section becomes the leader in both of these categories.

Sections I (accommodation and food service activities) and S (other service activities) also have increased their importance. This can be considered as a continuation of an evolution towards a service driven economy.

5. Discussion on the observed facts

Although the Polish economy as a whole seems to be capital driven in the period of 2005-2015, and even more so in the period of 2010-2015, this is not true if it is analyzed at the industry level. Investment outlays go mostly to sovereign supported activities, and they are often of a necessary restructuring or modernization alike character. These investments often based on European Union funds are expected to deliver positive growth in the very long run (such as investment in transport – NACE 2 section H). In many cases they are associated with restructuring of outdated activities that will not be expanding, and therefore these presently unproductive investment outlays will dwindle in the future

when restructuring of the inherited old economy entities will mostly terminate. In some industries such as sections D (electricity, gas, steam and air conditioning supply) and E (water supply, sewerage, waste management and remediation activities) sovereign supported investment outlays are meant to modernize these activities so as they become profitable in economic terms. The burden for the economy associated with capital outlays, therefore will be dwindling. The process of capital investment evasion abroad caused by its profitability decrease associated with labour costs increase should not be substantial in those sovereign steered activities. Rather a converse situation is expected. The burden for the economy of costly unproductive activities is poised to become lower.

In section B (mining and quarrying) the negative MFP value should become reduced, as investment here are meant to stabilize coal extraction at a sustainable level (they were already heavily reduced as coal mining has been already well restructured). In that concerns network services (sections D-E) economic sustainability is also a motive. Investment outlays in section H (transportation and storage) can be considered as long-term return investments that are counteracting one of the discussed causes of the so called middle income trap. Capital public support for section R (arts, entertainment and recreation) does not directly lead to production increase, but also increases economic sustainability of these activities.

The negative MFP contributions associated with the above-mentioned activities are poised to be reduced in the future and even presently they are compensated by positive ones in the other industries included in the analysis. The same can be assumed for mostly sovereign owned activities not included in the analysis as market economy bar is situated to the right hand side from total Poland bar on figure 1.

The above observations already indicate that a middle-income trap driven by capital disinvestment caused by its reduced profitability is not the mechanism that is likely to operate in Poland. But the other observation discussed further is by far more important. The NACE 2 section C is the largest in the Polish economy and it weighs very importantly on the total economy. It accounts for something close to 25% of the total Polish economy gross value added and its share is still growing, because this section grows fastest in the period 2005-2015 and this leadership has only been trespassed by section J (information and communication) in the period 2010-2015. It can be asserted that industries from this section, because they are very technical (as manufacturing generally is), have in general the greatest technical progress (with some possible but not numerous exceptions). It should translates to an important contribution of MFP into gross

value added growth for this section, but the fact that this MFP contribution in section C dominates entirely over other contributions is an important novelty observation. This MFP contribution domination remains in the 2010-2015 period (the bars are shorter here because the covered period is shorter too). Only for the section J (information and communication) in the 2010-2015 period this domination becomes greater, which is accompanied by its gross value added growth rate leadership in that period, but section J is even more technology progressive than section C, so this change can be considered as a positive one for sustainable growth.

This suggests that manufacturing is being intensively upgraded (modernized) in Poland, and this happens regardless of whether this upgrading is replicative (through imitation and acquiring of foreign technologies) or innovative. This upgrading seems to be the basic growth engine for the industries in this section, rather than new capital outlays. Therefore, capital investment evasion is not poised to undermine decisively the economic growth in that section, because of its secondary contribution in comparison with MFP contribution. Because of that, this section C is also not overinvested, so it is unlikely that a capital evasion can happen in the scope necessary for the economy to stop growing. Once again, it seems that this mechanism (i.e. capital loss of productivity and its evasion) of the so called middle-income trap is not going to operate in Poland.

Since the second NACE 2 classification section that distinguishes itself by its high MFP contribution is section J (information and communication) and its position happens to strengthen as a gross value added growth and MFP relative contribution leader in the period 2010-2015, the views expressed above on the unlikeness of a middle-income trap occurrence in Poland are reinforced, because it means that a substantial modernisation of the economy, associated with information and telecommunication technologies, is on track.

In general we can observe that in all supporting growth activities MFP contribution dominates, i.e. also in the other fast growing sections, not only in sections C and J. Therefore, MFP can be considered as the main *growth engine* in the economy and this domination remains in the second half of the analysed period (2010-2015). Moreover, MFP contribution is usually and relatively the largest in the most supporting growth activities, and therefore decisive for their ranking as far as growth rate is considered. This contribution dominates over all other contributions taken together and therefore capital contributions as well. Since the economic growth seen at industry level is not capital

driven, nor other resources driven, the cause of a slowdown associated with the so called middle-income trap is indeed very unlikely to materialize itself.

However, at the total economy level this important MFP contribution is levelled by industries from the above-mentioned sections that do not contribute importantly or positively to economic growth and this effect has remained in 2010-2016 period.

The more general implication is that the Polish economy is developing well and intensively modernizing in industries from well growing sections as shown on figure 1. on the one hand, and on the other hand the share of the other industries not greatly contributing to economic growth or contributing negatively is perhaps to large (which would be a *government failure* paradigm supporters view). However, some contenders might assert that there is no trouble at all since in general the MFP negative contributions of industries from some sections are well counterbalanced by MFP positive contributions of industries from other sections (which would be rather a *market failure* paradigm supporters view). Sovereign supported activities are however dwindling and investments are making them more sustainable in economic terms. Reduced General Government support is a growth resource for the future, whether because of increased economic sustainability of the above-mentioned State supported activities or because of the reduced burden in the future associated with these supports upcoming evolutionarily. The Polish economy is therefore poised to avoid stagnation in the long run or at least in the middle one. Only a very discouraging-growth economic policy and extremely tight foreign-related conditions may bias these settings.

6. Conclusion

Much of the ongoing discussion concerning the middle income countries is focused on the economic problem coined the Middle-Income Trap. This concerns in particular the Central-Eastern Europe countries, of which Poland can stand for as an exemplifying case. However, in the case of Poland this assertion has to be rejected, after observing the growth distribution between different industries, and particularly the individual industries' growth decompositions into factor contributions and multifactor productivity contribution. It has to be rejected because we have been able to observe that industries that can be considered as growth supporting engines are mainly multifactor productivity contribution driven in Poland, not capital contribution driven, and that multifactor productivity contribution is decisive for their growth rate ranking.

Capital contribution is particularly high in activities that cannot be considered as growth supporting (they are mostly State supported activities), therefore the possible problem solution for eventual slowing down of the economy, from the point of view of market oriented researchers, is to simply limit the share of these activities (lifting some of the State support delivered to them), whereas those who contend for the market failure case can argue that the balance between these activities and the growth supporting activities is well maintained so there should not be any great concern on the supply side of the economy. Investments go mostly to stagnant activities that are being modernized, to some degree from temporary necessities that may dwindle in the future and for infrastructure development that will eventually deliver growth in the very long run, such as NACE section B, D, E, H, R.

The economic growth is therefore innovation, or at least imitation driven, not investment driven at the industry level. The possibility of capital outflow will not undermine the growth supporting industries because of its little contribution to their growth and because there are not overinvested. This is particularly conspicuous for NACE section C (manufacturing), which is the largest section in the Polish economy and which is growing fastest, with the exception of section J (information and telecommunication) that took this leadership in the 2010-2015 period, but this change is also a kind of good news for the issue.

To some degree the spatial distribution of growth in Poland confirms these findings (paper under revision). Voivodships with higher economic growth are those with higher multifactor productivity contributions. Even the hierarchy between them, as far as the speed of growth is considered, is closely determined by the growing share of multifactor productivity contribution.

Extending this research to other Central-Eastern Europe countries, particularly those with quickly growing economies, may possibly confirm that just as for Poland the so-called middle-income trap is not actually occurring and there is little chance that it will. Perhaps a mixed approach to some countries of the region, also well developing in the long run, but not relying only on TFP or MFP would be appropriate, as in the case of Russia (see: Timmer & Voskoboynikov 2014), where we have two main drivers of economic growth – one is natural-resource based, whereas the other is TFP or MFP

based[8] and where some economic patterns are similar to resource abundant countries such as Canada and Australia (Voskoboynikov 2017). Many of these findings can therefore be interesting for the Central-Eastern Europe economies' research and the possible ongoing discussion.

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