

# The Potential of Kuznets Cycle Model in the Analysis of Economy of Sub-Saharan Africa

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**ABSTRACT.** The article covers the peculiarities of economic development of the two countries of Sub-Saharan Africa – Ghana and Senegal from 1970 to 2013. The trends of their GDP and GDP per capita were analysed. The question of how these indices are affected by changes in population, structure of production, flows of foreign direct investment (FDI) and official development assistance (ODA), as well as the number of employees by economic sectors and indicators distribution of income was investigated. Comparing with other investigations much attention was paid to the trends of remittances from citizens abroad to Ghana and Senegal in addition to these factors.

It is revealed that ODA was more important for two countries during a period of slow growth, and during the period of rapid growth of FDI and the growth of GDP, the flows of FDI and ODA were more significant in Ghana, and remittances and SDT – in Senegal.

Services are significantly superior in the structure of production of two countries. Among the different types, financial and insurance services are predominant in Ghana and Senegal. The share of agriculture in the structure of production of two countries decreased somewhat during the specified period, while the share of industry increased, which occurred at the expense of the mining sector and construction.

It has been determined that there are cycles of ups and downs associated with restructuring of production in the economic processes of Ghana and Senegal. It has been established that not only the human factor, as determined in the conclusions of Kuznets S., but also capital, are important for the growth of their production. The action of “the Kuznets law” was confirmed in Ghana: At the initial stage of growth, the distribution of income deteriorated, then its equalization took place. “The Kuznets law” has not been confirmed in Senegal: At the initial stage of growth, the distribution of revenues improved, and later, during the period of rapid growth, it remained virtually unchanged.

**KEYWORDS.** The countries of sub-Saharan Africa, development cycles, production structure, agriculture, industry, services, foreign direct investment, official development assistance, remittances, human capital, productivity, income distribution.

## Introduction

One of the achievements of S. Kuznets (Nobel Prize-winner in economics in 1971) was the discovery of “Kuznets cycle” (the alternation of periods of rapid and slow economic growth) and the formulation of “the Kuznets law” (during the first 10 years of development, inequality in the distribution of income increases, then there are tendencies for its equalization)<sup>2</sup>. S. Kuznets believed that the

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<sup>2</sup> Kuznets, S. "Notes on Income Distribution in Taiwan" Edited by Klein L.R., Nerlove M., Tsiang S.C. *Quantitative Economic and Development. Essays in Memory of Ta-Chung Liu*. New York: Academic Press, 1980: 255-80.

new technology with the application of science are the source of economic growth; in addition to this he drew attention to the fact that the effective use of technology requires appropriate institutional structures<sup>3</sup>.

The investigation of S. Kuznets was conducted before the impact on the global ICT economy in the late XX – early XXI century, as well as other important factors: collapse of the Communist block, transformation of the former outsiders into the new industrial countries, regional integration, globalization. All this has led to the change of streams and a significant intensification of circulation of goods, capital, technology and labour. Features of economic growth in the present conditions are studied by contemporary scientists. Among them: Acemoglu D. and Robinson J.<sup>4</sup>, Atkinson A.<sup>5</sup>, Barro R.<sup>6</sup>, Wozhnyak M. G., D. Lukyanenko, V. Chuzhykov<sup>7</sup>, Gelbrich G. K.<sup>8</sup>, Easterlin R.<sup>9</sup>, Kerekes M.<sup>10</sup>, Medgezi M. and Tot I. J.<sup>11</sup>, Sala-I-Martin X.<sup>12</sup>, Sarigyanid M. and Palivos T.<sup>13</sup>, Srinivasan T. N.<sup>14</sup>, Stiglitz G.<sup>15</sup>, Ferreira, F.<sup>16</sup>.

<sup>3</sup> Kuznets, S. "Modern Economic Growth: Findings and Reflections". Nobel Memorial Lecture, December 11, 1971. [http://www.nobelprize.org/nobel\\_prizes/economic-sciences/laureates/1971/kuznets-lecture.html](http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1971/kuznets-lecture.html).

<sup>4</sup> Acemoglu, D., and Robinson James A. "The Political Economy of the Kuznets Curve". *Review of Development Economics* 6 no 2 (2002): 183-203. [http://scholar.harvard.edu/files/jrobinson/files/jr\\_kuznets.pdf](http://scholar.harvard.edu/files/jrobinson/files/jr_kuznets.pdf).

<sup>5</sup> Atkinson, A. B. *Inequality. What can be done?* Harvard University Press. Cambridge, Massachusetts. London England, 2015. <http://www.acarindex.com/dosyalar/kitap/acarindex-1436513133.pdf>.

<sup>6</sup> Barro, R. J., and S.M. *Xavier Economic Growth. 2<sup>nd</sup> Ed. – the MIT Press.* Cambridge, Massachusetts, London, England. – Massachusetts Institute of Technology. 2004.

<sup>7</sup> Lukianenko, D. V. Chuzhykov, M.G. *Wozniak, and etc. Convergence and Divergence in Europe: Polish and Ukrainian Cases. Monograph.* KNEU, 2013. [In English].

<sup>8</sup> Galbraith, J. K. "Inequality and Economic and Political Change" *The University of Texas Inequality Project (UTIP) WP 51.* September 21, 2008: 63. [http://utip.lbj.utexas.edu/papers/Utip\\_51.pdf](http://utip.lbj.utexas.edu/papers/Utip_51.pdf).

<sup>9</sup> Easterlin, R. A., and A. Laura. "Modern Economic Growth and Quality of Life: Cross Sectoral and Time Series Evidence". *University of Southern California and Institute for the Study of Labor (IZA) in Bonn. Discussion paper* 2755. – IZA, Germany – April 2007: 59. <https://pdfs.semanticscholar.org/d497/a3c6117ef6acf40b0ec444788ffd128b1da3.pdf>.

<sup>10</sup> Kerekes, M. "Essays on Economic Growth – A Medium-Term Perspective" *Inaugural-Dissertation zur Erlangung des akademischen Grades eines Doktors der Wirtschaftswissenschaft des Fachbereichs Wirtschaftswissenschaft der Freie Universität Berlin* 2015: 170. [http://www.diss.fu-berlin.de/diss/receive/FUDISS\\_thesis\\_000000101553](http://www.diss.fu-berlin.de/diss/receive/FUDISS_thesis_000000101553).

<sup>11</sup> Medgyesi Márton, and Tóth István György "Economic Growth and Income Inequalities. Chapter 6." Edited by Wart Terry, Lelkes Orsolya, Sutherland Holly, Tóth István György. *European inequalities: social inclusion and income distribution in the European Union.* Tarki Social Research Institute Inc. Budapest, 2009: 131-152. <http://www.tarki.hu/adatbank-h/kutjel/pdf/b251.pdf>.

<sup>12</sup> Pinkovskiy, M., and S.M. "Xavier Africa is on time". *Federal Reserve Bank of New York (FRBNY). Staff Report* No. 686 (2014): [https://www.newyorkfed.org/medialibrary/media/research/staff\\_reports/sr686.pdf](https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr686.pdf).

<sup>13</sup> Sarigiannidou, M., T. Palivos, and A Modern "Theory of Kuznets' Hypothesis" *Texas Christian University. Dep. of Economics. Working Paper No. 12-02. Texas Christian University,* 2012. <http://www.econ.tcu.edu/papers/wp12-02.pdf>.

<sup>14</sup> Srinivasan, T.N. "Long-Run Growth Theories and Empirics: Anything New?" Editors: Takatoshi Ito and Anne O. Krueger. *Growth Theories in Light of the East Asian Experience. – The National Bureau of Economic Research – East Asia Seminar on Economics (NBER-EASE).* 4. – University of Chicago Press, 1995: 37 – 70. <http://www.nber.org/chapters/c8544>.

<sup>15</sup> Stiglitz, J. E. *The price of the inequality. How today's divided society endangers our future.* W.W. Norton & Company Ltd., London, 2012. [http://resistir.info/livros/stiglitz\\_the\\_price\\_of\\_inequality.pdf](http://resistir.info/livros/stiglitz_the_price_of_inequality.pdf).

<sup>16</sup> Ferreira, F. "Distribution in motion: Economic growth, inequality, and poverty dynamics" *Society for the Study of Economic Inequality ECINEQ WP* 2010. <http://www.ecineq.org/milano/WP/ECINEQ2010-183.pdf>.

Mainly developed countries that are using new technologies were the object of investigation of S. Kuznets. Through changing the quality and structure of international economic relations, which took place in the process of globalization of the world economy, the trend of recent decades is the increasing role of sub-Saharan Africa (SSA). In the early 2000s, their main characteristic was poverty, but at the end of the 2010s it has significantly decreased, there has been a tendency to overcome this problem<sup>17</sup>.

Despite this, the countries of SSA are still less provided with new technologies and are significantly behind the developed countries. The role of institutions<sup>18</sup> that will identify and promote the main elements of the changes are critically important for them: public and private sectors and civil society<sup>19</sup>. Foreign capital has significant impact on their economic growth: development assistance and investment<sup>20, 21</sup>. Under the influence of modern ICT and globalization of the world economy the main question is what factors, in addition to capital, provide the SSA countries with the economic growth.

The aim of this work is to study the peculiarities of the economic development of the countries of SSA by the example of some of them; to find out whether they have periods of rapid and slow growth similar to "Kuznets cycles", and whether the "Kuznets law" work in the latter.

### Conclusions of S. Kuznets and Modern Investigations

The weight of factors of economic growth and the period of their influence in different countries may differ. The assertion that new technologies are the source of growth is confirmed, but their significance is more evident in developed countries<sup>22</sup>. The aggregated effect of three

<sup>17</sup> Pinkovskiy, M., and S.M. "Xavier Africa is on time". *Federal Reserve Bank of New York (FRBNY). Staff Report* No. 686 (2014): [https://www.newyorkfed.org/medialibrary/media/research/staff\\_reports/sr686.pdf](https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr686.pdf).

<sup>18</sup> Handley, G., K. Higgins, B. Sharma, K. Bird and Cammack D. "Poverty and poverty reduction in sub-Saharan Africa: an overview of the issues". *Overseas Development Institute*. Working Paper 299. London, January 2009: 75. <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/860.pdf>.

<sup>19</sup> Olu Ajakaiye, and Afeikhen Jerome "Economic Development: The Experience of Sub-Saharan Africa. Chapter 43" Ed. by Bruce Currie-Alder, Ravi Kanbur, David M. Malone, Rohinton Medhora. *International Development. Ideas, Experience, and Prospects*. Oxford University Press, 2014: 943. [http://www.developmentideas.info/website/wp-content/uploads/Ch43\\_Sub-Saharan\\_Africa\\_AjakaiyeJerome\\_2013.pdf](http://www.developmentideas.info/website/wp-content/uploads/Ch43_Sub-Saharan_Africa_AjakaiyeJerome_2013.pdf).

<sup>20</sup> Mitchell Omoruyi Ehizuelen Michael, Meibo Huang "Fostering Economic Development: Is External Finance Responsible for the Poor Economic Growth in Sub-Saharan Africa?" *Global Economy Journal* 16, no 2 (2016): 313–47.

<sup>21</sup> Artadi, E. V., and S.M. Xavier. "The Economic Tragedy of the XXth Century : Growth in Africa". *National Bureau of Economic Research (NBER)*. – NBER Working Paper 9865. – Cambridge, July 2003: 31. <http://www.nber.org/papers/w9865.pdf>.

<sup>22</sup> Kerekes, M. "Essays on Economic Growth – A Medium-Term Perspective" *Inaugural-Dissertation zur Erlangung des akademischen Grades eines Doktors der Wirtschaftswissenschaft des Fachbereichs Wirtschaftswissenschaft der Freie Universität Berlin* 2015: 170. [http://www.diss.fu-berlin.de/diss/receive/FUDDISS\\_thesis\\_000000101553](http://www.diss.fu-berlin.de/diss/receive/FUDDISS_thesis_000000101553).

elements is necessary for the sustainable growth: not only new technology, but the capital and quality institutions, although these three elements can give the impact even separately<sup>23</sup>.

In today's analytical work the role of institutions is also emphasized, but they are not provided with decisive importance. The role of institutions is more indicative in poor countries<sup>24</sup>. Economic growth in the long term requires good effective institutions, however, the lack of the latter doesn't necessarily lead to the delayed growth<sup>25</sup>. There is no clear relation between the effectiveness of institutions and economic growth in all countries<sup>26</sup>. Successful countries with a stable growth differ not only by effective institutions, but with the firm policy of investing in infrastructure and human capital, and trade liberalization<sup>27</sup>, that is, not only the quality of institutions is important, but the direction of their action, kind of policies that they embody. For example, the economy is developing with the growth of gross national savings<sup>28</sup>; the central role in growth is played by the rate of capital accumulation together with technologies<sup>29</sup>; in the EU, countries the economic growth is linked with an increase in employment<sup>30</sup>; diversification of the economy, creation of new workplaces and development of infrastructure are necessary for the economic development of the countries of the SSA<sup>31</sup>. It is the institutions that play the key role for such tasks.

<sup>23</sup> Ibid, p. 139.

<sup>24</sup> Snowdon, B. "The Enduring Elixir of Economic Growth. Xavier Sala-i-Martin on the wealth and poverty of nations" *World Economics* 7. No. 1 (2006): 73 – 130. [http://www.columbia.edu/~xs23/papers/WEC\\_00220\\_00701\\_Snowdon.pdf](http://www.columbia.edu/~xs23/papers/WEC_00220_00701_Snowdon.pdf).

<sup>25</sup> Ibid, p. 138.

<sup>26</sup> Easterlin, R. A., and A. Laura. "Modern Economic Growth and Quality of Life: Cross Sectoral and Time Series Evidence". *University of Southern California and Institute for the Study of Labor (IZA) in Bonn. Discussion paper* 2755. – IZA, Germany – April 2007: 59. <https://pdfs.semanticscholar.org/d497/a3c6117ef6acf40b0ec444788ffd128b1da3.pdf>.

<sup>27</sup> Kerekes, M. "Essays on Economic Growth – A Medium-Term Perspective" *Inaugural-Dissertation zur Erlangung des akademischen Grades eines Doktors der Wirtschaftswissenschaft des Fachbereichs Wirtschaftswissenschaft der Freie Universität Berlin* 2015: 170. [http://www.diss.fu-berlin.de/diss/receive/FUDISS\\_thesis\\_000000101553](http://www.diss.fu-berlin.de/diss/receive/FUDISS_thesis_000000101553).

<sup>28</sup> Barro, R. J., and S.M. *Xavier Economic Growth. 2<sup>nd</sup> Ed. – the MIT Press.* Cambridge, Massachusetts, London, England. – Massachusetts Institute of Technology, 2004.

<sup>29</sup> Snowdon, B. "The Enduring Elixir of Economic Growth. Xavier Sala-i-Martin on the wealth and poverty of nations" *World Economics* 7. No. 1 (2006): 73 – 130. [http://www.columbia.edu/~xs23/papers/WEC\\_00220\\_00701\\_Snowdon.pdf](http://www.columbia.edu/~xs23/papers/WEC_00220_00701_Snowdon.pdf).

<sup>30</sup> Medgyesi Márton, and Tóth István György "Economic Growth and Income Inequalities. Chapter 6." Edited by Wart Terry, Lelkes Orsolya, Sutherland Holly, Tóth István György. *European inequalities: social inclusion and income distribution in the European Union*. Tarki Social Research Institute Inc. Budapest, 2009: 131-152. <http://www.tarki.hu/adatbank-h/kutjel/pdf/b251.pdf>.

<sup>31</sup> Pérez de la Fuente Beatriz "Economic Growth and Poverty Reduction in a Rapidly Changing World" *European Commission. Directorate-General for Economic and Financial Affairs. – European Economy. Economic Brief* 019. Luxembourg Publications Office of the European Union, 2016: 22. [http://ec.europa.eu/economy\\_finance/publications/eeeb/pdf/eb019\\_en.pdf](http://ec.europa.eu/economy_finance/publications/eeeb/pdf/eb019_en.pdf).

In addition to new technologies and institutions, productivity is a source of economic growth<sup>32</sup>. Its value is more important for economic growth in developing countries in the long run and in transition economies<sup>33</sup>.

Productivity growth in addition to physical capital are especially affected by the level of training, skills, knowledge, abilities, motivation<sup>34</sup> of the population, which generally constitute human capital. Kuznets S. also defined it, especially knowledge, because knowledge allows to learn new technologies<sup>35</sup>. Later in 1990 human capital was allocated in the model of the Lucas-Romer, which was confirmed in studies of developing countries: physical capital aimed at developing human capital plays a key role in economic growth to improve workforce development increase productivity, vary the specialities<sup>36</sup>. The key importance of human capital also showed the rapid rise of the Asian tigers<sup>37</sup>.

The hypothesis of S. Kuznets on the inequality of income distribution at the initial growth in modern conditions did not have a clear confirmation<sup>38</sup>. The relationship between growth and income distribution is evident more clearly in developing countries in the process of industrialization with the deepening of urbanization<sup>39</sup>. In developed countries, the deterioration of the uniformity of income had very slight impact (negative) on the changes of economy over 20 years from 1985 to 2005; the influence was more tangible in the medium term (from 1 to 7 years)<sup>40</sup>. In general, the phenomenon that the development does not lead

<sup>32</sup> Hulten, C.R. (University of Maryland and NBER), and A. Isaksson (Research and Statistics Branch of UNIDO), "Why development levels differ: the sources of differential economic growth in a panel of high and low income countries" *Staff Working Paper 04/2007*. UNIDO. Vienna, 2007: 42+iv. [http://www.unido.org/fileadmin/user\\_media/Publications/Research\\_and\\_statistics/Branch\\_publications/Research\\_and\\_Policy/Files/Working\\_Papers/2007/WP042007%20-%20Why%20development%20levels%20differ.pdf](http://www.unido.org/fileadmin/user_media/Publications/Research_and_statistics/Branch_publications/Research_and_Policy/Files/Working_Papers/2007/WP042007%20-%20Why%20development%20levels%20differ.pdf).

<sup>33</sup> Ibid, p. 11.

<sup>34</sup> Sokolova, Z. "The Motivation Factor in Recovery Strategy" *UNCTAD. Public Symposium 2010. "Responding to Global crises: New Development Paths"*. – May 10-11, 2010, [http://unctad.org/Sections/wemu/docs/ps2010\\_cont\\_6zoiasokolova\\_en.pdf](http://unctad.org/Sections/wemu/docs/ps2010_cont_6zoiasokolova_en.pdf). Geneva (Switzerland).

<sup>35</sup> Kuznets, S. "Driving forces of economic growth: what can we learn from history" *Economic development, the family and income distribution. Selected essays*. Cambridge University Press, 1989: 7 – 29 <http://catdir.loc.gov/catdir/samples/cam031/88020244.pdf>.

<sup>36</sup> Sarigiannidou, M., T. Palivos, and A Modern "Theory of Kuznets' Hypothesis" *Texas Christian University. Dep. of Economics. Working Paper No. 12-02. Texas Christian University*, 2012. <http://www.econ.tcu.edu/papers/wp12-02.pdf>.

<sup>37</sup> Srinivasan, T.N. "Long-Run Growth Theories and Empirics: Anything New?" Editors: Takatoshi Ito and Anne O. Krueger. *Growth Theories in Light of the East Asian Experience. – The National Bureau of Economic Research – East Asia Seminar on Economics (NBER-EASE)*. 4. – University of Chicago Press, 1995: 37 – 70. <http://www.nber.org/chapters/c8544>.

<sup>38</sup> Ferreira, F. "Distribution in motion: Economic growth, inequality, and poverty dynamics" *Society for the Study of Economic Inequality ECINEQ WP 2010*. <http://www.ecineq.org/milano/WP/ECINEQ2010-183.pdf>.

<sup>39</sup> Sarigiannidou, M., T. Palivos, and A Modern "Theory of Kuznets' Hypothesis" *Texas Christian University. Dep. of Economics. Working Paper No. 12-02. Texas Christian University*, 2012. <http://www.econ.tcu.edu/papers/wp12-02.pdf>.

<sup>40</sup> OECD. Directorate for Employment, Labour and Social Affairs. Focus on Inequality and Growth, December 2014: 2 <https://www.oecd.org/social/Focus-Inequality-and-Growth-2014.pdf>.

to the “Kuznets curve” was evident in two cases: 1) in case of minor irregularity of income and potential investment, then it does not lead to social tensions and the need for political reform, the situation of East Asian countries after the Second world war; 2) in case of considerable irregularity of income and poorly mobilized society, then it will not be able to defend political reforms to improve work conditions and unequal incomes will worsen – the situation of SSA countries<sup>41</sup>.

As it was determined the main factor of deterioration of the uniformity of income in European countries since the 1980s was the growth of unemployment (it is possible to trace a logical connection: as it is mentioned above, in the EU countries the economic growth is associated with employment growth). In developing countries uneven revenues are not just the serious deterrent to development, they have a negative relation with the fact that they cause limited access of the poor to education, than is how economic growth is stopped, because the higher is the level of education (primary, secondary, higher), the more value it provides. According to famous American researcher of the problem of non-uniformity of incomes Atkinson, A., the reduction of irregularity of income contributes to the reduction of non-uniformity in market income and more efficient reallocation of resources (tax changes are one of the ways to do this).<sup>42</sup>

Among other causes of uneven incomes in modern studies, structural changes are distinguished in the long run, as well as changes in the inter-sectoral terms of trade in the short-term perspective<sup>43</sup>. However, since the end of the twentieth century, scientists are paying more attention to social capital. These are certain informal values or norms that members of the group adhere to, due to which they cooperate; trust is the main connecting element in these relation<sup>44</sup>. Social capital affects the results of the implementation of economic reforms, and as a result of this – the uniformity (or unevenness) of income; by its very nature, it is a function of the degree of trust in society; it is impossible to develop cooperation<sup>45</sup> and stability without it. Social capital affects the uniformity of incomes in all countries: Some of the latest studies of developed countries show that they are mostly affected by political conditions (more precisely, the rule of law), which determines the

<sup>41</sup> Acemoglu, D., and Robinson James A. "The Political Economy of the Kuznets Curve". *Review of Development Economics* 6 no 2 (2002): 199-200. [http://scholar.harvard.edu/files/jrobinson/files/jr\\_kuznets.pdf](http://scholar.harvard.edu/files/jrobinson/files/jr_kuznets.pdf).

<sup>42</sup> Atkinson, A. B. *Inequality. What can be done?* Harvard University Press. Cambridge, Massachusetts. London England, 2015: 179-204 <http://www.acarindex.com/dosyalar/kitap/acarindex-1436513133.pdf>.

<sup>43</sup> Galbraith, J. K. "Inequality and Economic and Political Change" *The University of Texas Inequality Project (UTIP) WP 51*. September 21, 2008: 38. [http://utip.lbj.utexas.edu/papers/Utip\\_51.pdf](http://utip.lbj.utexas.edu/papers/Utip_51.pdf).

<sup>44</sup> Fukuyama, F. "Sotsialnii kapital [Social capital]" *Nezalezhnii kulturolohichnii chasopis "I" Independent culturological magazine "I"*, no 53 (2008). <http://www.ii.lviv.ua/n53texts/fukuyama.htm> [In Ukrainian].

<sup>45</sup> Lukianenko, D. V. Chuzhvkov, M.G. *Wozniak, and etc. Convergence and Divergence in Europe: Polish and Ukrainian Cases. Monograph*. KNEU, 2013: 141-2 [In English].

degree of public confidence in government<sup>46</sup>. This is also stated by Stiglitz G. (Nobel Prize-winner in Economics 2001) that the uneven distribution of income in the United States is due to state abuse of powers by the authorities to benefit by manipulating legislative and economic conditions<sup>47</sup>.

Consequently, the criterion of the functionality of the economic system lies not only in the economic sense, but also in the extent to which equality and justice are secured. The support of social capital, and therefore the support of trust, can not be guaranteed by a market mechanism; thus, it requires regulatory actions of the state and should be ensured through the development of the institution of just state; financial guarantees are only one of the indicators of this<sup>48</sup>. It is reasonable to rely on the World Bank (WB) data for the evaluation based on statistics considering the effectiveness of state administration (English The Worldwide Governance Indicators (WGI) , where the indicators comprise six aggregate indicators in three groups: a) the process of government selection: 1) Right to vote and accountability, 2) Political stability and the absence of violence / terrorism; b) ability of the government to develop and implement a stable policy effectively: 3) Efficiency of government, 4) Quality of regulation; c) respect of citizens and state to the regulatory institutions: 5) fight against corruption, 6) the Rule of law<sup>49</sup>.

### Main Macroeconomic Indicators

Two African countries are considered in this article: Ghana and Senegal. They are the most stable among the SSA countries, their indicators for public administration are among the best. In 2015, their percentile rating<sup>50</sup> varies from 39 to 65, while in most countries of the SSA — from 27 to 35<sup>51</sup>.

As it is stated above in respect of all SSA countries, Ghana and Senegal depend substantially on foreign aid, despite the long period of

<sup>46</sup> Brian Nolan, Wiemer Salverda, Daniele Checchi, Ive Marx, Abigail McKnight, István György Tóth, and Herman G. van de Werfhorst eds. *Changing Inequalities and Societal Impacts in Rich Countries: Thirty Countries' Experiences*. Oxford University Press, 2014.

<sup>47</sup> Stiglitz, J. E. *The price of the inequality. How today's divided society endangers our future*. W.W. Norton & Company Ltd., London, 2012. [http://resistir.info/livros/stiglitz\\_the\\_price\\_of\\_inequality.pdf](http://resistir.info/livros/stiglitz_the_price_of_inequality.pdf).

<sup>48</sup> Lukianenko, D. V. Chuzhykov, M.G. Wozniak, and etc. *Convergence and Divergence in Europe: Polish and Ukrainian Cases. Monograph*. KNEU, 2013: 147-8 [In English].

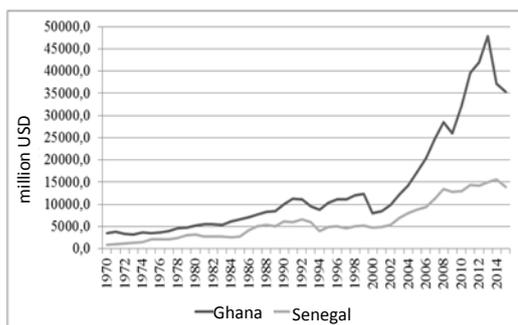
<sup>49</sup> Kaufmann, D., A. Kraay, and M. Mastruzzi "The Worldwide Governance Indicators: Methodology and Analytical Issues". *The World Bank. Development Research Group. Macroeconomics and Research Team. Policy Research Working Paper 5430*. – Sept. 2010: 1-28. <http://documents.worldbank.org/curated/en/630421468336563314/pdf/WPS5430.pdf>.

<sup>50</sup> Percentile is a characteristic of a set of data that represents the ranks of elements in the form of percentages from 0 to 100% in such a way that the smallest value corresponds to zero; the largest one is 100th percentile, that is, percentiles — indicators of the distribution of the set of quantitative and ordinal data to certain parts.

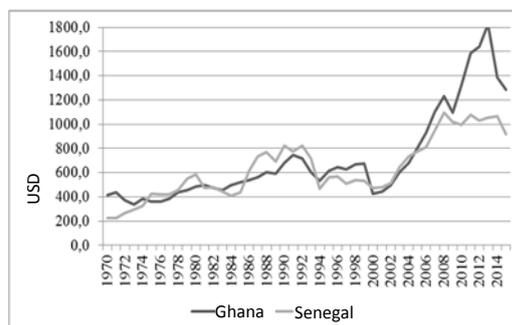
<sup>51</sup> World Bank. Worldwide Governance Indicators.

time after independence (Ghana – March 6, 1957, Senegal – August 20, 1960)<sup>52</sup>. On average, Ghana gets USD 1.6 billion (5% GDP) annually, Senegal – USD 1 billion (8% GDP). In the graphs of GDP and GDP per capita in Ghana and Senegal (fig. 1, 2) from 1970 to 2013 it is possible to distinguish periods with certain tendencies: 1970-1992 (23 years) – a period of slow growth; 1993-2000 (8 years) – a period of falling (delayed development) of the economy; 2001-2013 (13 years) – a period of rapid growth.

During 2014-2015, rapid growth in Ghana has been replaced by a fall, and it is not clear yet whether this will continue. Therefore, indicators before 2013 are taken into account in this investigation.



**Fig. 1.** GDP of Ghana and Senegal, 1970-2015 \*, millions of dollars, at current prices<sup>53</sup>.



**Fig. 2.** GDP per capita in Ghana and Senegal, 1970-2015\*, USD, at current prices<sup>54</sup>

\* GDP on average per year, mln. USD:  
 -1970-1992; Ghana – 5,913.2;  
 Senegal – 3,170.3;  
 -1993-2000; Ghana – 10,394.3;  
 Senegal – 4,918.0;  
 -2001-2013; Ghana – 24,863.1;  
 Senegal – 10,545.9.

\* GDP per capita on average per year, USD:  
 -1970-1992: Ghana – 491.4;  
 Senegal – 506.7;  
 -1993-2000: Ghana – 599.2;  
 Senegal – 545.9;  
 -2001-2013: Ghana – 1,059.1;  
 Senegal – 859.1.

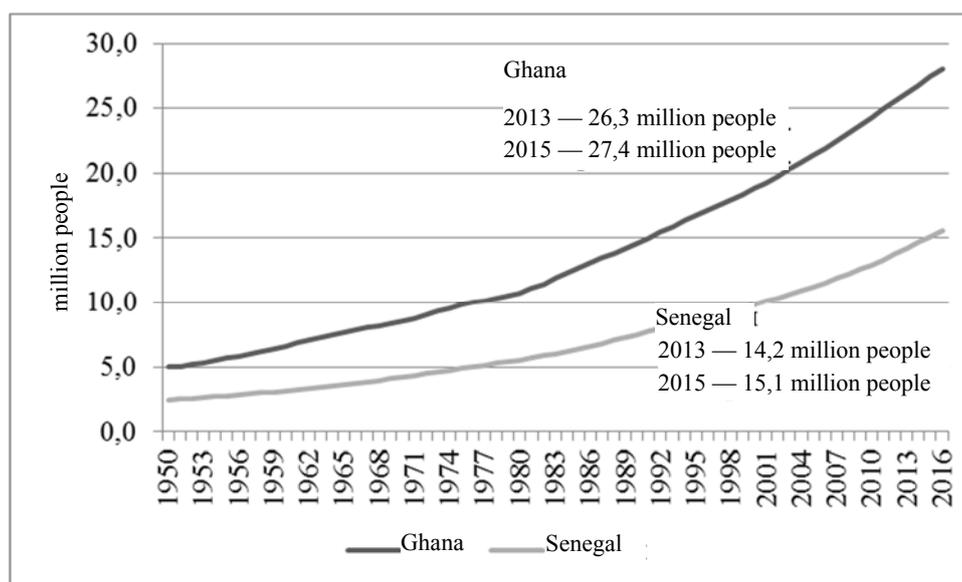
<sup>52</sup> Sokolova, Z. S. "Deistvie "zakona Kuzneta" v razvivaiushchikhsia stranakh na primere Gani i Senegala" [*Effect of the Kuznets law in developing countries on the example of Ghana and Senegal*]. – 2<sup>nd</sup> Virtual Session of the International Nobel Economic Forum "Mirovaia ekonomika XXI veka: tsikli i krizisi" [*The world economy of the XXI century: cycles and crises*], Dnipropetrovsk (Ukraine), May 18-21 2011. Dnipropetrovsk: Alfred Nobel University, 2011. old.duep.edu/res/files/2263/DeystvieZakonaKuzneca.ppt [In Russian].

<sup>53</sup> Compiled by author UNCTAD. Statistics <http://unctadstat.unctad.org/wds/TableView/tableView.aspx?ReportId=96>.

<sup>54</sup> Ibid.

The growth of GDP and GDP per capita in Ghana and Senegal from 1970 to 2005 has a similar trajectory. Since 2006 these figures are growing more active in Ghana (fig. 1, 2).

A significant feature of Ghana and Senegal, which distinguishes them from developed countries is too dynamic population growth, which absorbs GDP growth. Since the beginning of the 1990s, the population growth slowed down (fig. 3).



**Fig. 3.** The population quantity of Ghana and Senegal, 1950-2015\*, million people<sup>55</sup>

\* The population quantity on average per year, million people:

-1970-1992: Ghana – 11.6; Senegal – 5.9;

-1993-2000: Ghana – 17.4; Senegal – 9.0;

-2001-2013: Ghana – 22.6; Senegal – 12.0.

Features of the dynamics of GDP and GDP per capita and population quantity for three specific periods are shown in table 1.

**Table 1 Characteristics of Dynamics of Population Quantity, GDP and GDP per capita in Ghana and Senegal, 1970-2013.<sup>56</sup>**

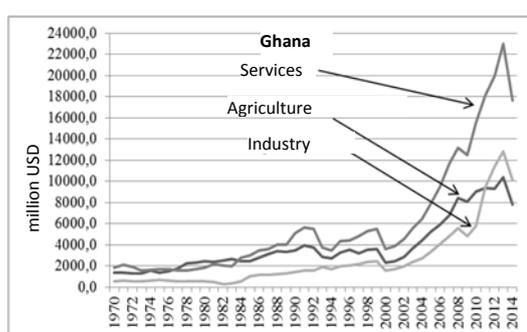
Indicators		Period			
		Slow growth 1970-1992 (23 years)	Fall 1993-2000 (8 years)	Rapid growth 2001-2013 (13 years)	
<b>* Population quantity on average per year, million people.</b>		Ghana	11.6	17.4	22.6
		Senegal	5.9	9.0	12.0
<b>The growth rate of population, %</b>	<b>An average per year</b>	Ghana	+2.7%	+2.5%	+2.6%
		Senegal	+3%	+2.7%	+2.8%
	<b>Total for the period</b>	Ghana	+80%	+18.3	+35.6%
		Senegal	+89.5%	+19.8%	+40.6%
<b>GDP on average per year, mln. USD</b>		Ghana	5,913.2	10394.3	24,863.1
		Senegal	3,170.3	4,918.0	10,545.9
<b>The growth rate of GDP, %</b>	<b>An average per year</b>	Ghana	+5.6%	-2.6%	+15.1%
		Senegal	+10.1%	-2.9%	+9.7%
	<b>Total for the period</b>	Ghana	+211.0%	-16.5%	+461.3%
		Senegal	+589.4%	-20.9%	+206.5%
	<b>Sharp fluctuations</b>	Ghana	1973-1974 – acceleration from -6.5% to +16.5%	1999-2000 – slowdown from 3.2% to -35.4%	2008-2009 – slowdown from +15.2% to -8.9%; 2009-2010 – acceleration from -8.9% to +23.9
		Senegal	1975-76 – slowdown from +34.7% to +1.4%; 1980-81 – slowdown from +8.5% to -17.1%; 1985-86 – acceleration from +10.3% to +45.9%; 1990-91 – slowdown from +23.2% to -3.5%	1994-1995 – acceleration from -32.9% to +22.9%	2008-2009 – slowdown from +18.6% to -4.5%.
<b>GDP per capita, on average per year, mln. USD</b>		Ghana	491.4	599.2	1,059.1
		Senegal	506.7	545.9	859.1
<b>The growth rate of GDP per capita, %</b>	<b>An average per year</b>	Ghana	+2.8%	-4.9%	+12.3%
		Senegal	+6.9%	-5.4%	+6.7%
	<b>Total for the period</b>	Ghana	+72.8%	-29.5%	+313.9%
		Senegal	+263.9%	-33.9%	+118.1%
	<b>Sharp fluctuations</b>	Ghana	1973-1974 – acceleration from -9% to +13%	1999-2000 – slowdown from +1% to -37%	2008-2009 – slowdown from +12% to -11%, 2009-2010 – acceleration from -11% to +21%
		Senegal	1975-76 – slowdown from +31% to -1%; 1980-81 – slowdown from +6% to -19%; 1985-86 – acceleration from +7% to +42%, 1990-91 – slowdown from +19% to -6%	1994-1995 – acceleration from -35% to +20	2008-2009 – slowdown from +15% to -7%

<sup>56</sup> Ibid.

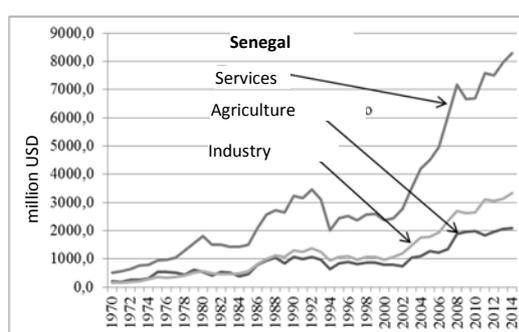
## Analysis of the Structure of Production

In Ghana and Senegal, the production volumes in each industry have a tendency to grow. It is happening more actively since the beginning of 2000-ies. (fig. 4,5). According to production volumes in Ghana and Senegal the services dominate, industry takes the second place (Ghana – since 2011), agriculture –the third place (fig. 4,5).

From 1970 to 2013, the GDP structure of Ghana is not proportional, the service sector dominates essentially: 45 – 49%. In other sectors there was a certain alignment of share in GDP. Agriculture takes the second place, its percentage decreased from 41% to 29%; industry takes the third place, its percentage increased from 16% to 22%. The increase in the share of the latter was due to extractive industries (increased from 1.3% to 5.6%) and construction (increased from 2.0% to 7.6%).



**Fig. 4.** The volume of production of main economic sectors of Ghana, 1970-2014, million USD at current prices<sup>57</sup>.



**Fig. 5.** The volume of production of main economic sectors of Senegal, 1970-2014, million USD at current prices<sup>58</sup>.

The increase in the share of services in GDP structure of Ghana from 1970 to 2013 was due to the financial and insurance services (increased from 21.7% to 23.2%) and trade and hotel and restaurant business (increased from 8.8% to 11.4%). In the structure of services of Ghana these two groups occupy the first and the third place, the second place is occupied by transport, storage and communications have 14,3% (table 2).

The GDP structure of Senegal, like of Ghana, is disproportionate: the service sector also dominates substantially: 59 – 60% of GDP. Unlike Ghana, Senegal's GDP structure did not equalize the sector shares. The second place, as in Ghana is occupied by agriculture, the percentage

<sup>57</sup> Compiled by author UNCTAD. Statistics <http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=96..>

<sup>58</sup> Ibid.

decreased from 21% to 16%, the third place is occupied by industry, the percentage increased from 20% to 24%. The increase in the share of the latter, as for Ghana, was due to the growth in the share of extractive industries (increased from 2.7% to 4.4%) and construction (increased from 2.3% to 4.8%). The increase in the share of services in GDP of Senegal, unlike Ghana, was due to the transport, storage and communications (the share increased from 6.8% to 11.2%). In the structure of services of Senegal, this group occupies the third place, the first place is occupied by financial and insurance services (decreased from 31.5% to 28,0%) and the second – by trade and restaurant and hotel business: 20 – 21% (table 2).

**Table 2 Changes in the Structure of GDP in Ghana and Senegal, 1970 – 2013, % (average per year)<sup>59</sup>**

Sectors *, share in GDP, %	Slow growth 1970-1992 (23 years)	Fall 1993-2000 (8 years)	Rapid growth 2001-2013 (13 years)
<b>Ghana</b>			
<b>Agriculture</b>	<b>41.3</b>	<b>32.8</b>	<b>29.1</b>
<b>Industry</b>	<b>13.5</b>	<b>21.3</b>	<b>21.9</b>
Mining, utilities	1.3	4.8	5.6
The manufacturing industry	10.2	11.4	8.7
Construction	2.0	5.1	7.6
<b>Services</b>	<b>45.2</b>	<b>45.9</b>	<b>49.0</b>
Finance, insurance and other services **	21.7	20.5	23.2
Transport, storage, communications	14.6	15.0	14.3
Trade (retail, wholesale), restaurants, hotels	8.8	10.4	11.4
<b>Senegal</b>			
<b>Agriculture</b>	<b>21.3</b>	<b>19.1</b>	<b>16.1</b>
<b>Industry</b>	<b>20.2</b>	<b>24.1</b>	<b>24.1</b>
Mining, utilities	2.7	3.7	4.4
The manufacturing industry	15.1	16.7	14.9
Construction	2.3	3.7	4.8
<b>Services</b>	<b>58.6</b>	<b>56.8</b>	<b>59.8</b>
Finance, insurance and other services **	31.5	28.2	28.0
Transport, storage, communications	6.8	7.4	11.2
Trade (retail, wholesale), restaurants, hotels	20.3	21.3	20.6

\* In the International Standard Industrial Classification of All Types of Economic Activities of the United Nations (English International Standard Industrial Classification of Economic Activities (ISIC Rev.3), the sectors of the economy are defined as follows<sup>60</sup>:

<sup>59</sup> Compiled by author UNCTAD. Statistics <http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=96>.

- agriculture (ISIC Rev.3, sectors 01-05): agriculture, hunting, forestry, fishing;
- industrial sector (ISIC Rev.3, sectors 10-45): extraction of mineral resources, manufacturing, electricity, gas and water supply, construction;
- services (ISIC Rev.3, sectors 50-99): trade, transport services, storage and communications, etc.
- \*\* Other services — lease, education, health care, entertaining, cultural and sports activities, etc. (ISIC Rev.3, sectors 65-95).

The manufacturing industry is especially important for such countries. Its share in GDP structure of Ghana and Senegal does not have a tendency to increase (Table. 2). In the case of such GDP structure, their export will remain extractive. Indeed, from 1995 to 2014, the index of diversification of exports has improved, but not significantly: For Ghana it has decreased from 0.834 to 0.753, for Senegal — from 0.811 to 0.727 (fig. 6) (according to the methodology used by UNCTAD, the approach of the diversification index to “0” indicates a greater diversification of exports)<sup>61</sup>. This contributes to the dependence of profits of Ghana and Senegal on world commodity prices.

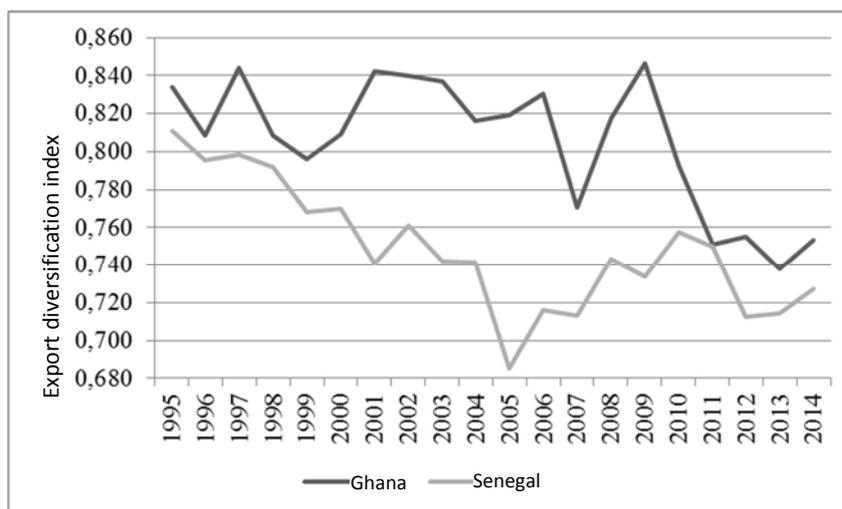


Fig. 6. Export diversification index for Ghana and Senegal, 1995-2014.<sup>62</sup>

<sup>60</sup> United Nations Statistics Division <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=2>

<sup>61</sup> UNCTAD. Handbook of Statistics. 2015. United Nations – N.Y. and Geneva. 2015, p. 187.

<sup>62</sup> For comparison: in 2013 this indicator was for the US \$ 0.252; EU — 0.224. Compiled by author UNCTAD. Statistics <http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=120>.

## Analysis of Capital Flows

Capital inflows are very important for the development of economies that depend on external resources, such as of Ghana and Senegal. It can be in the form of FDI and ODR. Also, financial flows in the form of remittances from abroad are important for these countries. The effectiveness of these flows for economic development is considered in three dimensions: by absolute in dollars; by relative, as a percentage of GDP; and the correlation relation with GDP based on the calculation of the determination coefficient. The results of the analysis are given in table 3.

The volumes of FDI flows to Ghana and Senegal before 2005 were approximately the same. Starting from 2006 in Ghana, they are significantly larger and the difference is increasing. In 2005, the volume of FDI flows to Ghana was 145, to Senegal – 45 million dollars, in 2013 – 3,226 and 311 million dollars (fig. 7).

In addition to absolute figures, the share of FDI in GDP has also increased more actively in Ghana, than in Senegal: In 1970-1992 it was 0,3% and 0,4% respectively, and in 2001-2013, 5.7% and 2.0% (tab. 3).

On the basis of available data, it was calculated that during the first two periods – 1970-1992 and 1993-2000 – in both countries the FDI and GDP figures are not correlated. The very close link between FDI and GDP in both Ghana and Senegal is observed only during the period of rapid growth – 2001-2013, as it is evidenced by the approximation to 1 of factor of determination. During this period, the GDP is determined by changes in the volumes of FDI inflows in Ghana by 84.59% (RI (Ghana) = 0.8459), in Senegal by 81.53% (RI (Senegal) = 0.8153) (tab. 3).

The greater correlation dependency between FDI and GDP and a larger share of GHG's in GDP of Ghana during the period of rapid development (2001-2013) indicates the greater importance of FDI for the economy of Ghana than for the economy of Senegal.

It is quite evident that Ghana's growth in FDI flows has had a significant effect on its economy. Whether it is positive or negative depends on the development of which industry it has contributed – mining or manufacturing. Significant growth in FDI flows to the economy of Ghana since 2007 is due to the development of oil production. In 2007, in its territorial waters at the Jubilee field, the British company Tullow oil found oil reserves up to 1.8 billion barrels. In December 2010, the same company started mining there<sup>63</sup>. As a result, from 2007 to 2013, the share of manufacturing in the structure of GNP of Ghana reduced by half (in 2006 its share was 10.2%, in 2013 – 5.3%), and part of the extractive industry and construction in GDP during the same period increased by about twice (in 2006 they amounted to 4.9 and 5.7%, and in 2013 -10.5 and 12.0%).

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<sup>63</sup> Tullow oil Company. Web-site <http://www.tulloil.com/about-us/our-story>.

Under such tendencies it is possible to assume that the economy of Ghana is threatened by the “Dutch disease”, the main feature of which is the unequal economic conditions for various sectors of the economy. Its negative effects lie in the transfer of resources from manufacturing to raw materials and services, which create a smaller part of the added value, as well as reduce incentives for the development of the manufacturing industry and the creation of new technologies. However, the share of services in the GDP structure of Ghana in the same period (from 2006 to 2013) has changed by only 1% from 48.8 to 49.8%. In addition to a sharp increase in the share of extractive and decrease in the share of manufacturing in the structure of GDP, the indicators of the “Dutch disease” are inflation and unemployment. Inflation in Ghana during this period fluctuated and did not have a clear growth trend, in 2006 it was 11%, 2007 – 13%, 2008 – 18%, 2009 – 10%, 2010 – 7%, 2011 – 8%, 2012 – 8%, 2013 – 14% (at the end of the period in consumer prices)<sup>64</sup>. Unemployment in Ghana during the same period did not increase, ranging from 2 to 5%<sup>65</sup>. Thus, in our opinion, there were prerequisites for the “Dutch disease” in Ghana, but it has not yet manifested itself clearly.

According to the volume of revenues of ODR in the period of slow growth – 1970-1992 – Senegal was dominant; then, for several years, during the period of the fall of the economy, there was practically no difference between the revenues of the ODR to Ghana and Senegal, and from 1996 to 2013, the volume of ODA to Ghana was greater than that to Senegal (fig. 8, tab. 3).

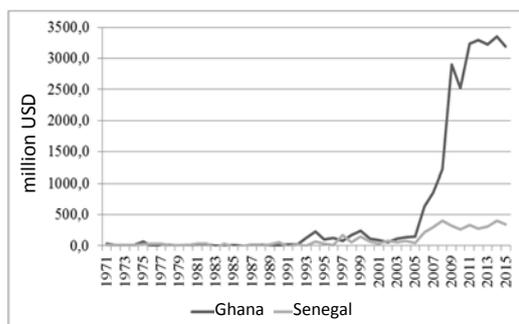
For the three-year period from 1970 to 2013, Senegal dominated by the indicator of ODA revenues, as a percentage of GDP (table 3). For comparison, it should be recalled that, as opposed to Senegal, the percentage of FDI in Ghana's GDP grew significantly during the period of rapid growth – from 2001 to 2013. (tab. 3).

Calculations on the impact of ODA on GDP indicate that the two countries had a correlation between these indicators during the growth periods (1970-1992, 2001-2013), while during the period of slow growth in the two countries this link was stronger, than in the period of rapid growth. For Senegal, this link is stronger than for Ghana. Thus, changes in GDP were determined by changes in ODA during 1970-1992 for Ghana at 88.67% (RI (Ghana) = 0.8887), for Senegal 90.86% (RI (Senegal) = 0.9086); during 2001-2013 – for Ghana, 58,20% (RI

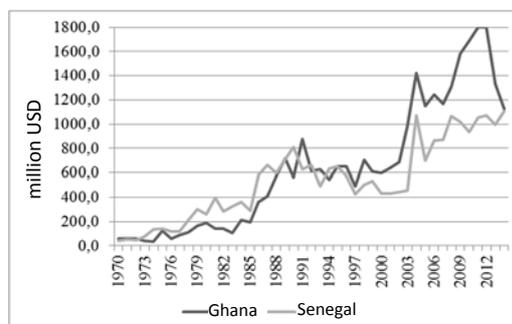
<sup>64</sup> IMF. World Economic Outlook Database [http://www.imf.org/external/pubs/ft/weo/2016/02/weodata/weorept.aspx?sy=1981&ey=2016&scsm=1&ssd=1&sort=subject&ds=.&br=0&pr1.x=48&pr1.y=9&c=722%2C652&s=PCPIEPCN&grp=0&a= (дата доступу: листопад 2016 р.).

<sup>65</sup> World Bank. Data Bank. World Development Indicators [http://databank.worldbank.org/data/reports.aspx?Code=SL.UEM.TOTL.ZS&id=af3ce82b&report\_name=Popular\_indicators&populartype=series&ispopular=y (дата доступу: листопад 2016 р.).

(Ghana) = 0,5820), for Senegal 72,01% (RI (Senegal) = 0,7201). During period of the fall of economy from 1993 to 2000, there was practically no link between the GDP of the ODR of the two countries: RI (Ghana) = 0.0943, RI (Senegal) = 0.0725.



**Fig. 7.** FDI inflows to Ghana and Senegal, 1970-2015 \*, USD million, in current prices<sup>66</sup>



**Fig. 8.** GDR inflows to Ghana and Senegal, 1970-2014 \*, million USD, in current prices<sup>67</sup>

\* FDI inflow on average per year, million USD:

-1970-1992: Ghana – 15.7; Senegal – 11.8;

-1993-2000: Ghana – 149.0; Senegal – 70.0;

-2001-2013: Ghana – 1,418.1; Senegal – 208.6.

\*ODA inflow on average per year, million USD:

-1970-1992: Ghana – 256.9; Senegal – 340.4;

-1993-2000: Ghana – 608.9; Senegal – 530.6;

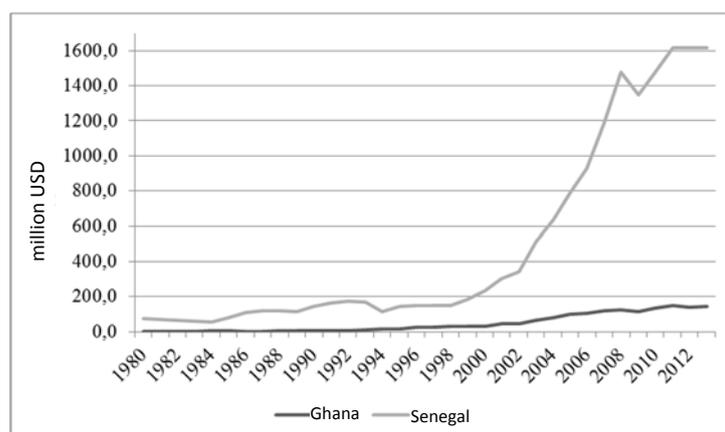
-2001-2013: Ghana – 1,292.0; Senegal – 844.4.

Thus, ODR was more important for GDP growth in Senegal than for Ghana. According to the indicators of remittances from abroad absolutely (in dollars) and relative (% of GDP) Senegal significantly prevails (fig. 9, tab. 3).

By 1999, the dominance of Senegal over Ghana was in the range of 50-150 million dollars, since 2000, this difference has increased and in 2013 amounted to 1.5 billion dollars: then to Ghana 0,15 were transferred, and 1.64 billion dollars of remittances were transferred to Senegal (fig. 9).

<sup>66</sup> Compiled by author UNCTAD. Statistics <http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=96740>.

<sup>67</sup> Compiled by author World Bank. Data Bank. World Development Indicators [Electronic Resource]. – Access mode: <http://databank.worldbank.org/data/reports.aspx?source=2&series=DT.ODA.ODAT.CD&country=>.



**Fig.9.** Receipts of money transfers from abroad to Ghana and Senegal, 1980-2013 \*, mln. USD, in current prices<sup>68</sup>

\* Receipts of money transfers on average per year, millions of dollars:

- 1980-1992: Ghana – 3.5; Senegal – 103.2;
- 1993-2000: Ghana – 23.6; Senegal – 162.2;
- 2001-2013: Ghana – 105.4; Senegal – 1,065.0.

According to the percentage of money transfers in GDP, as in the case of ODR, Senegal dominated during all three periods (data from 1980). In Ghana, the percentage of remittances in GDP never exceeded 1%, while in Senegal, from 1980 to 1999, it was on average 3.3% of GDP, and from 2000 to 2013, – 10.1% (table 3).

The link between the volume of money transfers from GDP in the two countries was strong during the growth periods (1980-1992, 2001-2013), but in Senegal was stronger. In contrast to the link with the ODR, the link between GNP and money transfers in both Ghana and Senegal is stronger during the period of rapid growth (2001-2013). Changes in GDP were determined by changes in remittances from 1980 to 1992 for Ghana by 62.03% (RI (Ghana) = 0.6203), for Senegal by 93.48% (RI (Senegal) = 0.9348); from 2001 to 2013 – for Ghana by 88.27% (RI (Ghana) = 0.8827), for Senegal by 99.17% (RI (Senegal) = 0.9917). During the period of the fall of economy (1993-2000), the connection of GDP with money transfers was virtually non-existent: RI (Ghana) = 0.1243, RI (Senegal) = 0.0973 (tab. 3).

Consequently, both ODR and money transfers from abroad were more important for GDP growth in Senegal than for GDP of Ghana.

**Table 3 Characteristics of Financial Flows of Ghana and Senegal, 1970-2013**

Financial flows	Slow growth 1970-1992 (23 years)	Fall 1993-2000 (8 years)	Rapid growth 2001-2013 (13 years)
<b>Ghana</b>			
<b>Direct foreign investment</b>			
Proceeds on average per year, million USD	15.7	149	1,418.1
Percentage of GDP on average per year, %	0.3	1.4	5.7
Connection with GDP *, RI	-- 0.0269	-- 0.0317	++ 0.8459
<b>Official Development Assistance</b>			
Proceeds on average per year, million USD	256.9	608.9	1,292.0
Percentage of GDP on average per year, %	4.3	5.9	5.2
Connection with GDP *, RI	++ 0.8867	-- 0.0943	+ 0.5820
<b>Remittances (calculations from 1980)</b>			
Proceeds on average per year, million USD	3.5	23.6	105.4
Percentage of GDP on average per year, %	0.06	0.2	0.4
Connection with GDP *, RI	+ 0.6203	-- 0.1243	++ 0.8827
<b>Senegal</b>			
<b>Direct foreign investment</b>			
Proceeds on average per year, million USD	11.8	70.0	208.6
Percentage of GDP on average per year, %	0.4	1.4	1.98
Connection with GDP *, RI	-- 0.0057	-- 0.1111	++ 0.8153
<b>Official Development Assistance</b>			
Proceeds on average per year, million USD	340.4	530.6	844.4
Percentage of GDP on average per year, %	10.7	10.8	8.0
Connection with GDP *, RI	++ 0.9086	-- 0.0725	+ 0.7201
<b>Remittances (calculations from 1980)</b>			
Proceeds on average per year, million USD	103.2	162.2	1,067.3
Percentage of GDP on average per year, %	3.26	3.30	10.1
Connection with GDP *, RI	++ 0.9348	-- 0.0973	++ 0.9917

Calculated by the author based on UNCTAD and SAT statistics of November 2016. The sources are provided in reference to figures 10, 11, 12.

\* “- -” — the connection is very weak, RI = from 0 to 0.250; “-” — the connection is weak, RI = from 0,251 to 0,500; “+” — the connection is strong, RI = from 0,501 to 0,750; “+ +” — the connection is very strong, RI = from 0,751 to 1.

Thus, capital flows have had a different impact on the economy of Ghana and Senegal during different periods:

- during the period of slow growth (1970-1992) ODR had the main importance for two countries. Remittances of citizens from abroad affected also, but to a lesser degree. This is confirmed by the connection of these flows with GDP and by the percentage of GDP (Table 3). For Senegal these flows were more important than for Ghana. For the latter, FDI also played a role, although they did not have a correlation with GDP both for Ghana and Senegal. The role of FDI was insignificant during this period;

- during period of the fall of economy (1993-2000) all three capital flows did not correlate with GDP for two countries (Table 3) and there was little value for GDP growth. To some extent, the ODR had an impact on the GDP of Ghana and Senegal: its share in GDP was the largest. The volumes of FDI and money transfers also increased, but their share in GDP was insignificant (table 3);

- during the period of rapid growth (2001-2013) all three flows had a positive effect for the growth of GDP of two countries. During this period, the role of FDI has increased significantly: they have a strong connection with GDP, their share of GDP has significantly increased, but in Ghana to higher degree, its share of FDI in GDP was more than 2,5 times higher than in Senegal. Taking into account the share of GDP, we can conclude that the GDP growth in Ghana was more influenced by flows of FDI and ODA, and in Senegal — by money transfers and ODR (table 3).

It is worth to mention that during the period of slow growth (1970-1992) in the structure of GDP, the share of industry and service sector in Senegal was greater than in Ghana (table 2). Capital flows (in dollars) to Senegal were higher than to Ghana, with a certain exception to FDI (table 3). On the whole, this conditioned the Senegal's domination over Ghana during this period in terms of GDP per capita (fig. 2). The latter was also influenced by a smaller number of population of Senegal than Ghana (fig. 3).

During the period of rapid growth (2001-2013), the share of industry in the structure of GDP of Ghana has increased and almost equalled with a similar indicator of Senegal (table 2). During this period the

inflow of FDI to its economy increased (table 3). All this contributed to strong growth in its GDP and GDP per capita. Also, the share of services sector in the GDP of Ghana increased slightly. Together with an increase in ODA flows to Ghana (table. 3) this all has led to a clear dominance of Ghana over Senegal (fig. 1, 2).

Analysing the capital flows to Ghana and Senegal, it is necessary to emphasize the role of remittances from citizens abroad. Their share in GDP roughly correlates with one of the other flows: for Ghana – with FDI (at least during the first and the second period), for Senegal with SDT, that is, monetary transfers have quite a significant importance for the economies of Ghana and Senegal. This significantly distinguishes them from developed countries.

### **Human Capital Analysis. Factors of Economic Growth. Revenue Distribution**

Among various factors of GDP growth S. Kuznets distinguished human capital<sup>69</sup> and distribution of income<sup>70</sup>. The Gini index, which reflects the distribution of revenues, is given among the SB data. Data on human capital in various sectors of the economy are provided in the statistics of the International Labour Organization (ILO). However, in the ILO statistics, these data are presented as an assumption, and only since 2003. Therefore, the conclusions regarding the human capital of Ghana and Senegal can be presented as a rough estimate in the 2000s. Labour productivity is calculated as the ratio of output in a separate sector (from UNCTAD data, fig. 4, 5) to the number of employees in this sector (from the data of ILO<sup>71</sup>).

Two countries have redistributed labour between sectors for 11 years from 2003 to 2013. In Ghana, the percentage of workers in the service sector has increased from 30 to 41%, in agriculture – decreased from 57 to 45%, in industry – remained 14-15%. In Senegal, on the contrary, the percentage of employed in the service sector decreased from 40% to 23% and increased in agriculture from 45% to 55% and in industry from 15% to 22% (table 4).

Labour productivity in agriculture in Ghana is higher. Since 2003, this indicator, although unstable, is increasing in both countries (table 4). Better equipment is the positive factor for Ghana than for Senegal:

<sup>69</sup> Kuznets, S. "Driving forces of economic growth: what can we learn from history" *Economic development, the family and income distribution. Selected essays*. Cambridge University Press, 1989: 7 – 29 <http://catdir.loc.gov/catdir/samples/cam031/88020244.pdf>.

<sup>70</sup> Kuznets, S. *Shares of Upper Income Groups in Income Savings*. New York: National Bureau of Economic Research, 1953. <http://www.nber.org/books/kuzn53-1>.

<sup>71</sup> International Labour Organization. Statistics and databases. <http://www.ilo.org/global/statistics-and-databases/lang--en/index.htm>

between 1990 and 2010, in Ghana, from 5 to 9 tractors were employed per 100 hectares of arable land and from 2 to 3 – in Senegal<sup>72</sup>.

Labour productivity in industry in 2013 in Ghana is higher than in Senegal, although in 2006 Senegal dominated here. In Ghana, this figure is increasing, albeit with some fluctuations, in Senegal it fluctuates without a growth trend. Labour productivity in Ghana has significantly improved after a significant increase in the inflow of FDI to it since 2006. (fig. 7). In 2009 and 2010, this indicator has deteriorated, and since 2011 it has improved again (table 4).

Labour productivity in the service sector in Senegal is better than in Ghana. In two countries this indicator is steadily increasing, except for 2009. (tab. 4).

Thus, from 2003 to 2013, labour productivity in Ghana is increasing in all three sectors of the economy, in Senegal – in two sectors (in agriculture and services sectors). Ghana's performance is predominant in agriculture and industry, Senegal – in the service sector. In 2013 in Ghana in agriculture sector one worker produced products for USD 1,989 per year, in industry – for USD 7,598, in the service sector – for USD 3,526; in Senegal, respectively for USD 917, 3471, 8570 (tab. 4).

*Table 4 Indicators of Human Capital in Economic Sectors of Ghana and Senegal, 2003-2014*<sup>73</sup>

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>Ghana</b>												
<b>Number of occupied population, thousands of people</b> <sup>74</sup>												
Total	7,903	8135	8,549	8,701	8,490	9,366	9,840	10,403	10,878	11,314	11,624	11,831
Agriculture	4,462	4,617	4,877	4,991	4,726	5,048	5,130	5,233	5,273	5,276	5,206	5,094
Industry	1,088	1,116	1,168	1,185	1,165	1,297	1,375	1,467	1,549	1,628	1,691	1,743
Services	2,353	2,402	2,503	2,526	2,598	3,021	3,335	3,704	4,057	4,410	4,727	4,994
<b>Employment by sectors of the economy, %</b>												
Agriculture	56.5	56.8	57.1	57.4	55.7	53.9	52.1	50.3	48.5	46.6	44.8	43.1
Industry	13.8	13.7	13.7	13.6	13.7	13.8	14.0	14.1	14.2	14.4	14.6	14.7
Services	29.8	29.5	29.3	29.0	30.6	32.3	33.9	35.6	37.3	39.0	40.7	42.2
<b>Labour productivity, the volume of production per worker in dollars per year</b>												
Agriculture	814	951	1,073	1,184	1,430	1,662	1,569	1,724	1,776	1,759	1,989	1,532
Industry	2,209	2,454	2,861	3,412	4,141	4,268	3,497	3,951	6,105	6,982	7,598	5,786
Services	2,374	2,684	3,150	3,755	4,494	4,360	3,735	4,186	4,471	4,525	4,868	3,526

<sup>72</sup> WB. The Little Data Book on Africa. 2007, pp. 23, 42, 44, 82.

<sup>73</sup> Compiled by author UNCTAD. Statistics  
<http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=95>.

<sup>74</sup> International Labour Organization. Statistics and databases. <http://www.ilo.org/global/statistics-and-databases/lang--en/index.htm>.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>Senegal</b>												
<b>Number of occupied population, thousands of people<sup>75</sup></b>												
Total	2,994	3,010	3,033	3,001	3,189	3,323	3,463	3,668	3,810	3,940	4,072	4,237
Agriculture	1,353	1,307	1,263	1,196	1,357	1,505	1,662	1,856	2,020	2,146	2,240	2,348
Industry	449	475	504	525	577	623	675	743	805	861	903	949
Services	1,192	1,228	1,267	1,280	1,255	1,195	1,126	1,069	985	934	930	941
<b>Employment by sectors of the economy, %</b>												
Agriculture	45.2	43.4	41.6	39.8	42.6	45.3	48.0	50.6	53.0	54.5	55.0	55.4
Industry	15.0	15.8	16.6	17.5	18.1	18.8	19.5	20.3	21.1	21.9	22.2	22.4
Services	39.8	40.8	41.8	42.7	39.4	36.0	32.5	29.1	25.9	23.7	22.8	22.2
<b>Labour productivity, the volume of production per worker in dollars per year</b>												
Agriculture	766	842	1,007	1,012	988	1,244	1,172	1,065	907	909	917	894
Industry	3,272	3,673	3,553	3,684	4,072	4,321	3,887	3,558	3,847	3,538	3,471	3,514
Services	2,951	3,410	3,559	3,865	4,817	6,011	5,921	6,263	7,702	8,029	8,570	8,809

The best productivity can be achieved if qualified labour resources are provided. According to the world Bank, in Ghana they are better prepared than in Senegal, namely:

the percentage of firms that determine the level of qualifications as a deterrent to the development of economic activity in Ghana is less than in Senegal by 2 times, and is respectively 5% and 10%<sup>76</sup>.

the percentage of literate population (aged 15 years and older) in two countries is gradually increasing, but in Ghana it is higher: in the early 2000s in Ghana there were 58% of literate population and in Senegal – 39%, and in the early 2010s – 71% and 52%, respectively<sup>77</sup>;

the percentage of literate young people (aged from 15 to 24) in two countries is also gradually growing, but in Ghana the index is also better: in the early 2000s in Ghana, it was 71% and in Senegal – 49%, and in the early 2010s – 86% and 66%, respectively<sup>78</sup>.

Exploring the developed countries S. Kuznets came to the conclusion that human capital has the main role in the growth of national production. It is also very important for Ghana and Senegal. This is confirmed by the indicators of productivity and training level of labour resources, especially the coincidence of productivity growth in Ghana (table 4) with the growth of GDP and GDP per capita (fig. 1, 2). However, the capital is also of significant importance for them. This is confirmed by a sharp jump in GDP growth in Ghana after a substantial increase in FDI since 2007 (fig. 1,7). This is reinforced by the best

<sup>75</sup> Ibid.

<sup>76</sup> WB. The Little Data Book on Africa. 2007, pp. 23, 42, 44, 82.

<sup>77</sup> WB. Data. <http://data.worldbank.org/indicator/SE.ADT.LITR.ZS>

<sup>78</sup> World Bank. Data. <http://data.worldbank.org/indicator/SE.ADT.I524.LT.ZS>

technical equipment in Ghana, at least in agriculture. This has provided Ghana with much better performance in this sector than Senegal. As a result, since 2007 Ghana began to be dominate in the development over Senegal.

The Gini index, as an indicator of the uniformity of the distribution of income (in case of full equality it is equal to 0, in case of complete inequality – 1) among the data of the world Bank for Ghana and Senegal is not provided for all years, but relying on them one can see the trend of its changes. According to available data of the world Bank, UNDP and CIA from 1987 to 2005 the distribution of income in Ghana worsens, and in Senegal it is improving, and since 2005 it has not almost changed. While in Senegal it has not degraded since 1994. In 2013, the Gini index of Ghana was 42,8, of Senegal – 40,3 (table. 5).

**Table 5 The Gini Index in Ghana and Senegal<sup>79</sup>**

	1987	1988	1991	1994	1998	2001	2005	2000-2010 <sup>80</sup>	2011 <sup>81</sup>	2012-2013 <sup>82</sup>	2013 <sup>83</sup>
Ghana	35.4	36.0	38.4	-	40.1	-	42.8	42.8	-	42.3	42.8
Senegal	-	-	54.1	41.4	-	41.2	39.2	39.2	40.3	-	40.3

*Source:* Is compiled by the author according to the data of the Security Service, the CIA and the UN as of November, 2016

Thus, in Ghana the “Kuznets law” has been confirmed (during the first 10 years of development, inequality in income distribution is increasing, then there are tendencies for its equalization). In the period of slow growth (1970-1992) in Ghana, we can see the deterioration of the Gini index (there are data for 1987 and 1991). In the period of the downturn, the Gini index of Ghana also worsened, but not significantly – by 1.7 points (there are data for 1991 and 1998). It is worth to mention that during this period in Ghana the restructuring of the economy took place. In the period of rapid growth (2001-2013), the Gini index of Ghana remained practically unchanged.

In Senegal the “Kuznets law” has not been confirmed: With the slow growth of GDP, the Gini index did not deteriorate, but improved. In the period of rapid growth (2001-2013), it remained practically unchanged.

<sup>79</sup> World Bank. Data. <http://data.worldbank.org/indicator/SI.POV.GINI?page=6>.

<sup>80</sup> The World Bank. Africa Development Indicators 2012/13, p. 7.

<sup>81</sup> CIA World Factbook. USA <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2172rank.html>.

<sup>82</sup> Ibid.

<sup>83</sup> United Nations Development Programme (UNDP). Income Gini Coefficient <http://hdr.undp.org/en/content/income-gini-coefficient>.

## Conclusions

An analysis of the economic development of Ghana and Senegal showed that, after independence, rapid and slow growth has been identified in their economic development. Through sequential sequence, they can be defined as cycles. Thus, there this process is cyclically similar to the developed countries, as it was found by S. Kuznets. The cycles are uneven in duration from 8 to 23 years for Ghana and Senegal. One of the most important signs was the restructuring of production and the redistribution of labour between industries.

1970 – 1992, 23 years – a period of slow growth. In GDP indicators there were frequent sharp fluctuations, which caused the GDP absorption by population (growth of the extensive type<sup>84</sup>). In the structure of GDP the services dominated, industry occupied the last place (in Ghana – 13,5%, in Senegal – 20,2%). In Ghana, at the level of services, agriculture also played the significant role. Among the streams of capital, the main role was played by the ODR. Senegal dominated by the GDP per capita. The distribution of income in Ghana was more equitable than in Senegal. Gradually, the figure for Ghana began to deteriorate. The Gini index of Ghana in 1987 – 35,4, in 1991 – 38,4; data for the Gini Index of Senegal available only for 1991 – 54,1.

1993 – 2000, 8 years – a period of fall of economy. For two countries, this is a period of slowdown in population growth, GDP and GDP per capita. The restructuring of GDP was an important change for the two countries: as in the previous period, services dominated in the structure of GDP of two countries, but at the same time, due to a decrease in the share of agriculture the share of industry increased (in Ghana – 21,3%, in Senegal – 24,1%). Among capital flows the main role was played by the ODR as in the previous period. Ghana dominated by the GDP per capita. The fall of the growth of GDP and GDP per capita was more tangible for Senegal than for Ghana. The indicator of distribution of income in Ghana had deteriorated and in Senegal it has improved in comparison with the previous period. The Gini index of Ghana in 1998 – 40,1; Senegal in 1994 – 41,4.

2001 – 2013, 13 years – a period of rapid growth. For Ghana and Senegal this is the period of increasing of growth of GDP and GDP per capita without sharp fluctuations, except for the 2008-2009. (influenced by the exogenous factor of the global financial crisis). The rate of population growth also recovered, although it was somewhat less than during the period from 1970 to 1992. Unlike the first, this is a period of

<sup>84</sup> Snowdon, B. "The Enduring Elixir of Economic Growth. Xavier Sala-i-Martin on the wealth and poverty of nations" *World Economics* 7. No. 1 (2006): 77.  
[http://www.columbia.edu/~xs23/papers/WEC\\_00220\\_00701\\_Snowdon.pdf](http://www.columbia.edu/~xs23/papers/WEC_00220_00701_Snowdon.pdf).

intensive growth (when population growth does not absorb the growth of GDP), which was realized according to the Smithian type (Eng. Smithian growth). It is based on productivity growth, which is implemented through the division of labour, specialization and trade, unlike the Promethean type (Eng. Promethean growth), which is based on technological progress and innovation<sup>85</sup>.

In contrast to previous periods when economic developments in Ghana and Senegal matched, they have disagreements from 2001 to 2013, in particular, Ghana had a higher GDP growth rate and GDP per capita, respectively: 15.1% and 12.3% (an average per year), and in Senegal these amounted to 9.8% and 6.8%. We believe that economic growth in Ghana since 2000, and its predominance over Senegal since 2006 (fig. 1, 2) was provided due to: the restructuring of GDP increase in the share of industry at the expense of the decreasing share of agriculture; a significant increase in the volume of FDI inflows; the absence of inflation and unemployment; human capital (the best preparation and performance of labour force); reallocation of labour with the decrease in the proportion of working in agriculture and increased proportion in industry and services sector; better technical equipment, in particular in agriculture; stabilization of the distribution of income since 2005; decrease in the rate of population growth.

Human capital is not the only main factor of economic growth in Ghana and Senegal (as determined S. Kuznets relatively to developed countries), but also the physical capital.

“The law of Kuznets” has been confirmed in Ghana and refuted in Senegal. The common feature was that after the restructuring of production and a substantial increase in capital flows, in 2005, the distribution of income stabilized and remained practically unchanged. In 2013, the Gini index in Ghana was 42,8, in Senegal – 40,3.

Further, the trend of changes in GDP of Ghana and Senegal will depend on the changes in its structure, demographic and capital inflows. The most likely the population growth will slow, which will contribute to the growth of their GDP per capita. The manufacturing industry dominates in substructure industry of two countries, and the share of construction and mining industry is also increasing. The growth of the latter two is more dynamic in Ghana (Table. 2). This should contribute to the influx of investment to Ghana. Given this, we assume that Ghana will continue to dominate over Senegal in terms of GDP per capita. A significant percentage of the extractive industry in Ghana's GDP structure will determine its dependence on commodity prices, and hence the fluctuations of its GDP.

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<sup>85</sup> Ibid, p. 77.

In Senegal, the share of manufacturing in the structure of GDP almost 2 times exceeds the similar index in Ghana. Also, in comparison with Ghana, the share of financial and banking services and trade (along with restaurant and hotel services) is more important in Senegal (Table. 2). More developed financial and banking services should provide settlements with foreign partners, which should significantly contribute to the development of foreign economic relations in Senegal (for the countries of the SSA, the financial problems are the significant obstacle in this process). Given this, we assume that GDP growth in Senegal will be stable without sharp fluctuations.

Regarding foreign economic cooperation, we believe that from two countries Ukraine should give a priority to Senegal given its more advanced financial services. The range of industries for cooperation with the entrepreneurs of Ghana and Senegal can be quite wide. The success of such cooperation will depend on the capabilities of both Ukrainian and African entrepreneurs.

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