

## Agflation and other modifications of inflation (the cases of Georgia and its neighboring countries)

Vakhtang Charaia<sup>a</sup>, Vladimer Papava<sup>b,\*</sup>

<sup>a</sup> Business and Technology University, 82, Ivane Chavchavadze Ave., Tbilisi, 0162, Georgia

<sup>b</sup> Ivane Javakishvili Tbilisi State University, 1, Ivane Chavchavadze Ave., Tbilisi, 0179, Georgia

### ARTICLE INFO

#### Keywords:

Agflation  
Inflation  
Food inflation  
Imflation  
Munflation  
Poverty

### ABSTRACT

The article explores the agflation index and other modifications of the inflation index using examples from Georgia and its neighboring countries. The findings showed that a traditional inflation index fails to fully reflect the problems caused by price changes, especially for poorer populations in developing countries. Therefore, new instruments need to be identified. The article suggests using the munflation index for observing changes in prices. The munflation index consists of agflation, utilities expenses and health care expenses incurred. The article shows that applying the munflation instrument along with the inflation index allows us to have a clearer picture. These indices do not exclude but complement each other.

### Introduction

According to the World Bank 10.7% (approximately 800 million people) of the world's population spend less than USD 1.9 a day [1]. Notwithstanding the quite meager index, it is to be noted that the same index amounted to 12.7% in 2011 and it was 44% in 1981 [2]. According to a study carried out by the Food and Agricultural Organization of the United Nations, 791 million people were chronically hungry [3]. Poverty is one of the most acute issues for 30% of the Georgian population [4].

The study's findings clearly show that it is necessary to raise the living standards of the world's population, especially in developing countries. In this regard, it is vital to evaluate how inflation; particularly, agrarian inflation or agflation, impacts the population of these countries.

The goal of the study is to evaluate the impact of inflation and its components on common citizens in Georgia and in some developing countries.

### Inflation and developing countries

National statistical services in various countries have been carrying out observations on inflation for decades. Specifically, the National Statistics Office of Georgia carries out similar observations of 1700 entities across the country and analyzes the information obtained and publishes it on a monthly basis [5]. From the point of view of statistics,

the methodology is quite correct although we should keep in mind that, unfortunately, the consumer basket, according to which the above inflation is calculated, does not reflect key issues for the citizenry, especially for poorer citizens in developing countries. This is due to the fact that the main interests of the population are oriented only on the changes in prices of several groups of commodities and services and not on all of the components of the consumer basket.

Regretfully, an official inflation index and developing a relevant policy based on it oftentimes, due to the above reasons, cause dissatisfaction among the populations of many countries worldwide, especially in developing countries.

### New instruments

In order to obtain more or less adequate information about price levels and make objective and realistic conclusions based on them, the government of a country and its central bank cannot be circumscribed only by the inflation index.

For those countries where imported products make up a significant part of the consumer basket, our proposal is to introduce an *inflation index* (the term is derived from combining two terms: import and inflation) [6]. Introducing an imflation index (i.e., the average price level only for imported goods) will make the government and the central bank pay attention not only to a generalized index of increased prices but also analyze the price increases due to import which is of vital importance for both common citizens as well as businesses [7].

Peer review under responsibility of Journal Annals of Agrarian Science.

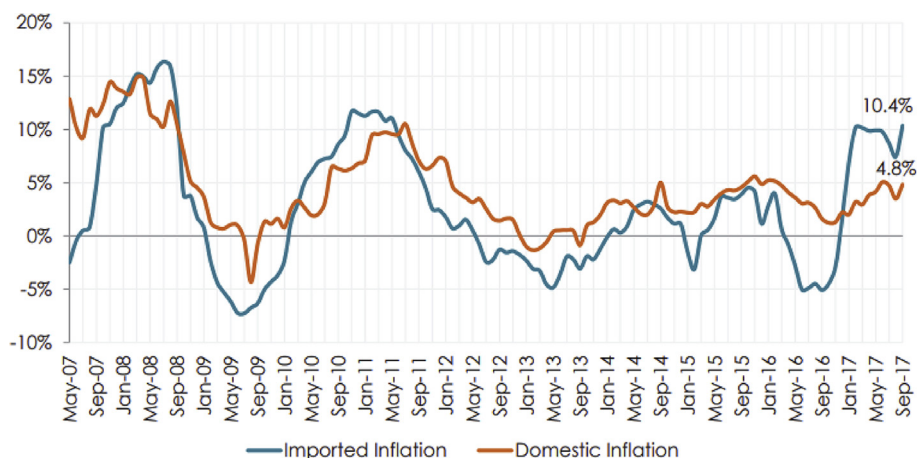
\* Corresponding author.

E-mail address: [vladimer.papava@tsu.ge](mailto:vladimer.papava@tsu.ge) (V. Papava).

<https://doi.org/10.1016/j.aasci.2018.04.007>

Available online 22 April 2018

1512-1887/ © 2018 Agricultural University of Georgia. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



**Graph 1.** Imported and domestic inflation in Georgia.

Source: National Bank of Georgia, Monetary Policy in Georgia 2017, [https://www.nbg.gov.ge/uploads/publications/inflationreport/2017/041217mpr\\_2017q4\\_publish\\_eng.pdf](https://www.nbg.gov.ge/uploads/publications/inflationreport/2017/041217mpr_2017q4_publish_eng.pdf)

The inflation index is an effective instrument to find out what factors have caused price increases in the country and if the role of external factors is important in these price increases. Consequently, this will allow for laying out an adequate way to overcome the problem. For instance, Graph 1 shows that inflation in Georgia from 2011 to 2016 was mainly due to an increase in prices of domestic products which requires developing another type of policy as compared to the policy necessary to fight inflation related to imported goods from the beginning of 2017.

Considering that the consumer basket includes many goods and services (both local as well as imported ones), the inflation and inflation indices will not allow us to provide a comprehensive solution to the problems since attention needs to be paid to the specific components of the consumer basket.

Price increases for agricultural products, that is, agrarian inflation or agflation (also known as ‘food inflation’) have become increasingly popular not only in developing but also in developed countries. Agflation was introduced as a result of price increases for fruit, eggs, grains and other similar products in 2006–2007 [8]. The agflation index is especially important for developing countries where food prices are constantly increasing [9], especially in countries such as India (and Georgia as well). The role of agflation is especially important in those countries where half or more of the consumer basket comprises food. Among such countries are, for instance, Russia, Azerbaijan, Turkmenistan, Tajikistan, etc. [10].

It is to be noted that the issue of agflation is acute not only in developing countries but also in the developed countries and new members of the European Union [11]. At the same time prices for certain agricultural products are quite high (e.g., pork) in EU countries as well as in the rest of the world [12] which poses an increased risk of relatively high agflation for a common citizen in the EU.

If we take into consideration that price increases are not only relatively higher but also unstable and usually last longer than non-food inflation [13], it is clear that this issue requires additional attention.

Certainly, using only agflation will not be enough to satisfy the wider needs of a population since it does not reflect price changes in utilities, nutrition and health care. In view of the complexity of the issue, we suggest that a new index, munflation, be introduced [14]. Munflation is an English abbreviation consisting of the first letters of medicare, utilities and nutrition.

It needs to be noted that the inflation index in Georgia in 2016 twice exceeded the munflation index that we suggested although the situation

in 2015 was quite the opposite (see Table 1). Further, as Table 1 shows the components of munflation were different in certain years; that is, sometimes higher and sometimes lower than the general inflation index. Therefore, we propose a comprehensive use of these indices.

Diagram 1 shows that the average inflation and average munflation indices in 2006–2017 (unfortunately, earlier data are not available) differ with munflation and other components clearly having exceeded inflation. For instance, average annual inflation amounted to 5% and munflation was higher at 6.5% in the above period. In addition to this, the cost of health care expenses increased annually by 7.2% on average.

### Agflation in neighboring countries of Georgia

Economic accessibility is one of the fundamental conditions for food security of a country and its population. Economic accessibility consists of two factors: the income level of the population and the price level for food products [15].

As usual, developed countries provide subsidies to the agricultural sector while developing countries impose taxes on it [16]. A similar practice still continues because developed countries have all of the necessary resources for this and are pragmatic while developing countries lack both pragmatism and relevant resources. Fortunately, Georgia does not tax agricultural products but instead tries to facilitate its development even though it has not been successful so far. Food production is not only a business but also an instrument of political influence and, therefore, agflation is significant both in developed and developing countries.

The study has shown quite a strong correlation between inflation and agflation. Namely, in the case of Georgia, the EU, Azerbaijan, Russia and Armenia the correlation was strong ranging from  $r = 0.83$  to  $r = 0.97$  (see Diagram 2). However, there are countries where the relation between inflation and agflation ( $r$ ) is close to 0. We should keep in mind that agflation is a component of inflation and, therefore, the relation between them exists although situations in certain countries impact it differently. A clear example is Turkey which actively subsidizes its agricultural sector.

The fact that inflation alone cannot reflect the difficulties in economies is clearly shown in Diagram 3 where the agflation index in certain countries mostly exceeds the inflation index. The experience of recent years indicates that agflation has a significant impact on each of these countries.

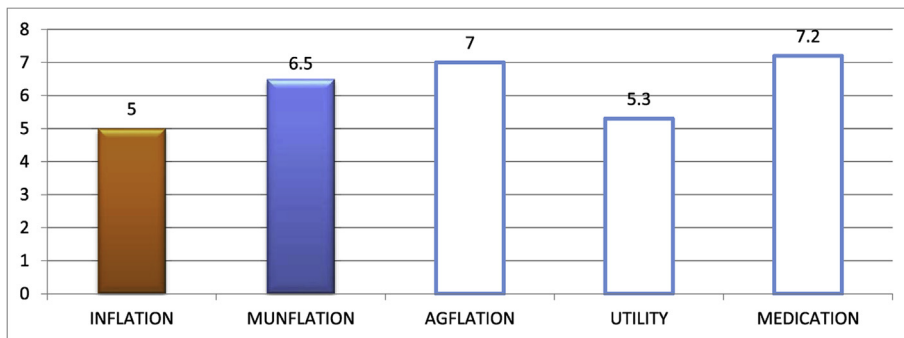
Given all the other conditions as equal, a relatively high inflation

**Table 1**  
Annual Inflation Rate in Georgia in 2006–2017.

(The respective month of the previous year = 100).

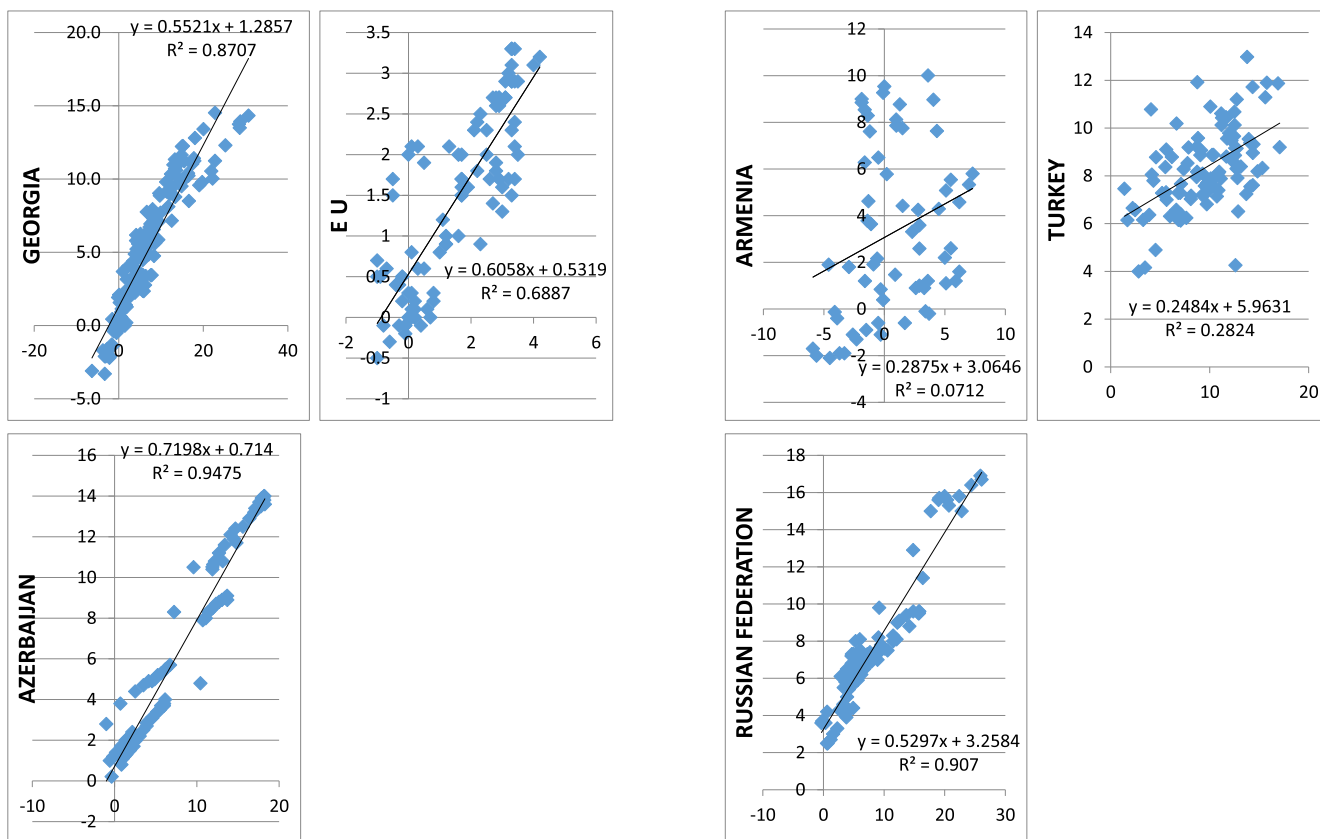
Source: Personal Inflation Calculator, National Statistics Office of Georgia, <http://geostat.ge/personalinflation/?lang=en>.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Inflation	9.2	9.2	10.1	1.7	7.1	8.7	-0.9	-0.5	3.1	4.0	2.2	6.0
Agflation	13.2	12.4	12.3	1.6	11.7	16.8	-0.9	-0.7	5.1	4.2	1.6	6.8
Utility	22.2	23.9	3.9	-4.8	2.4	3.3	-2.5	3.9	1	8.3	0.1	2
Medication	16	8.9	21.5	2.3	4.3	1.1	2.8	1.5	6.7	10.5	2.1	8.1



**Diagram 1.** Average inflation and munflation for 2006–2017 (percent).

Source: Authors' own calculations based on GEOSTAT (<http://geostat.ge/index.php?action=0&lang=eng>) and Trading Economics (<https://tradingeconomics.com/>).



**Diagram 2.** Linear relationship of inflation and agflation in different countries. Source: Authors' own calculations.

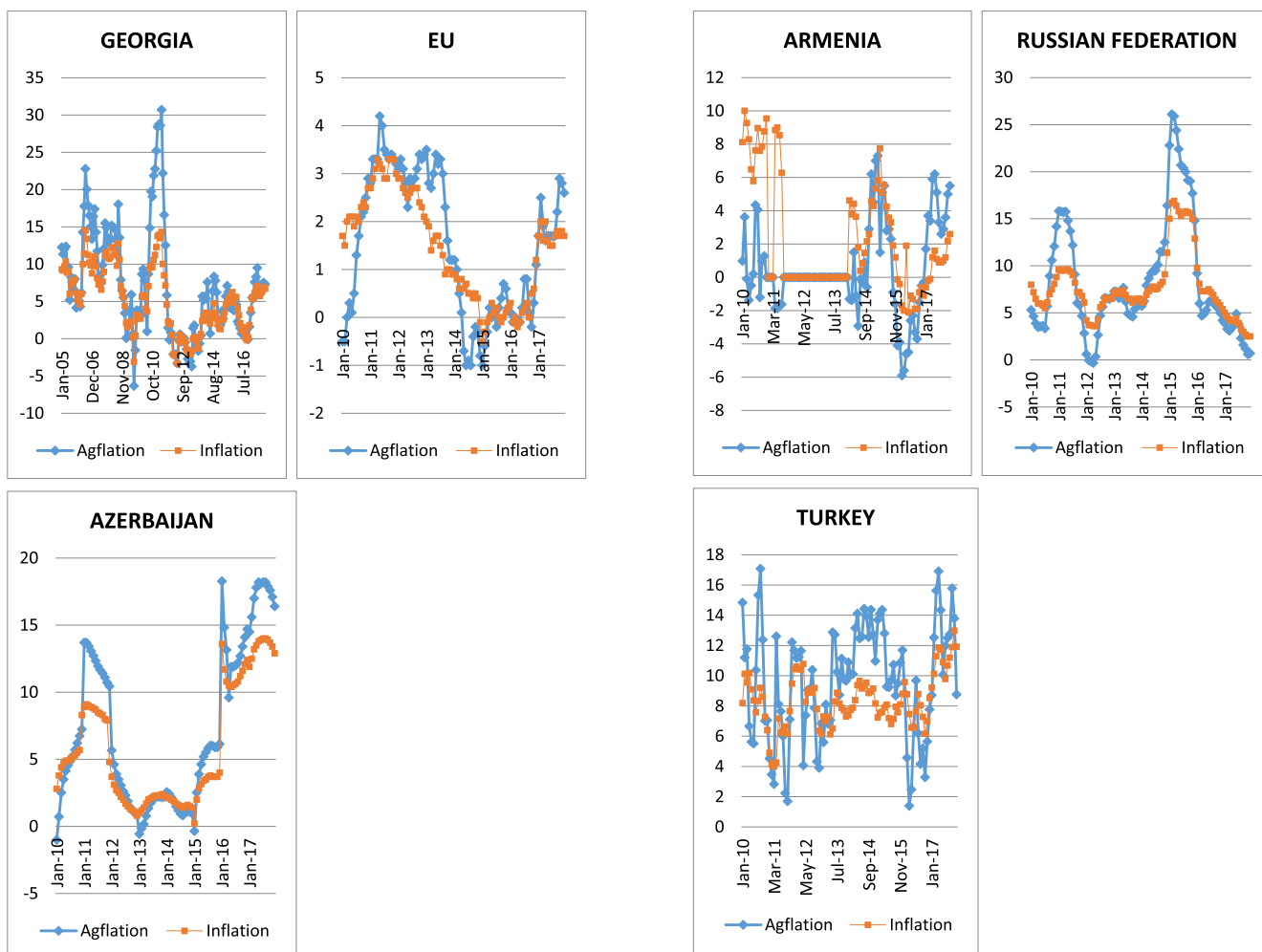
**Diagram 2.** (continued)

should lead to stimulate production which would eventually stabilize prices although, unfortunately, agriculture does not function so straightforwardly (especially in developing countries) which should be

the subject of a special study.

**Conclusions and recommendations**

Inflation underlines the need for a stable exchange rate of the



**Diagram 3.** Agflation and inflation in different countries and regions.  
Source: Food Inflation, Trading Economics, <https://tradingeconomics.com/country-list/food-inflation>.

**Diagram 3.** (continued)

national currency in order to reduce the impact of imported inflation.

Inflation, taken separately, cannot solve a number of important issues emanating from price changes of certain products in the consumer basket.

For the poorer populations in developed countries, it is not only the cost of the whole consumer basket that is important but also that of its separate components; specifically, price changes for food, health care and utilities.

Munflation often exceeds inflation and if we look at the case of Georgia during 2006–2017, the average index of munflation was higher than that of inflation. We recommend, however, that a concurrent observation be carried out on both of the indices in order to obtain the best result. This will allow for a better analysis and, therefore, provides opportunities for working out better measures.

A correlation analysis revealed a close correlation between inflation and agflation in most of the cases although there are examples when such a correlation is practically insignificant and such instances need to be further examined.

We recommend that statistics offices in Georgia and in other countries, particularly, in developing countries, take relevant measures and introduce the instruments suggested in order to better analyze those problems that are related to price changes and implement adequate policies which will promote the economies in these countries and the well-being of their populations.

## References

- [1] WB, Poverty and Shared Prosperity, Taking on inequality, World Bank (2016) 36 <https://openknowledge.worldbank.org/bitstream/handle/10986/25078/9781464809583.pdf>, Accessed date: 3 March 2018.
- [2] WHES, World Hunger and Poverty Facts and Statistics. World Hunger Education Service, (September 2016) <https://www.worldhunger.org/2015-world-hunger-and-poverty-facts-and-statistics/>, Accessed date: 3 March 2018.
- [3] FAO, IFAD, WFP, The State of Food Insecurity in the World 2014. Food and Agriculture Organization of the United Nations, (2014) <http://www.fao.org/3/a-i4030e.pdf>, Accessed date: 3 March 2018.
- [4] NDI, NDI Poll: Economy Still Top Concern for Georgians; Support for NATO and EU Stable, National Democratic Institute, January 17, 2017, <https://www.ndi.org/publications/ndi-poll-economy-still-top-concern-georgians-support-nato-and-eu-stable>, Accessed date: 3 March 2018.
- [5] NSO, Inflation Calculation Methodology Note. National Statistics Office of Georgia, (2017) [http://geostat.ge/cms/site\\_images/\\_files/english/methodology/Inflation%20Calculation%20Methodology%20Note%202017.pdf](http://geostat.ge/cms/site_images/_files/english/methodology/Inflation%20Calculation%20Methodology%20Note%202017.pdf), Accessed date: 3 March 2018.
- [6] V. Charaia, V. Papava, The role of inflation and its targeting for low-income countries (lessons from post-communist Georgia), J. Eur. J. Econ. Stud. 6 (2) (2017) 99–103 <http://www.papava.info/publications/Role-of-Inflation-and-its-Targeting-for-Low-Income-Countries.pdf>, Accessed date: 3 March 2018.
- [7] O. Anguridze, V. Charaia, I. Doghonadze, Security Problems & Modern Challenges of the Georgian National Currency, Ivane Javakhsvili Tbilisi State University, Tbilisi, 2015 <http://analytica.tsu.ge/www/files/2015/07/Security-Problems-Modern-Challenges-of-the-Georgian-National-Currency2.pdf>, Accessed date: 3 March 2018.
- [8] D.N. Chorafas, Energy, Environment, Natural Resources and Business Competitiveness: the Fragility of Interdependence, Routledge, New York, 2016, p. 139.
- [9] M.H. Suryanarayana, Agflation and the PDS: Some Issues. Indira Gandhi Institute of Development Research, WP-2008-009, (April 2008) <http://www.igidr.ac.in/pdf/publication/WP-2008-009.pdf>, Accessed date: 3 March 2018.
- [10] V. Charaia, V. Papava, Inflation Index Modifications and Expediency of Their Application for Georgia, Georgian Foundation for Strategic and International

- Studies Expert Opinion 77, (2017), p. 8 <https://www.gfsis.org/files/library/opinion-papers/77-expert-opinion-eng.pdf> , Accessed date: 3 March 2018.
- [11] IMF, Agflation in the New Member States—Some Stylized Facts, International Monetary Fund, (2008) <https://www.imf.org/external/CEE/2008/120107.pdf> , Accessed date: 3 March 2018.
- [12] EC, Commodity Price Dashboard, No 54., European Commission, November, (2016) [https://ec.europa.eu/agriculture/sites/agriculture/files/markets-and-prices/price-monitoring/dashboard/food11-2016\\_en.pdf](https://ec.europa.eu/agriculture/sites/agriculture/files/markets-and-prices/price-monitoring/dashboard/food11-2016_en.pdf) , Accessed date: 3 March 2018.
- [13] EPRC, Inflation in Georgia – Causes and Cures, Economic Policy Research Center Issue in Focus, 5th Report, (June, 2012), p. 31 [https://www.eprc.ge/admin/editor/uploads/files/Report\\_Eng-%20Inflation.pdf](https://www.eprc.ge/admin/editor/uploads/files/Report_Eng-%20Inflation.pdf) , Accessed date: 3 March 2018.
- [14] V. Charaia, V. Papava, Challenges of the inflation targeting in low-income countries, The 2nd International Scientific Conference, Challenges of Globalization in Economics and Business, Tbilisi, Georgia, November 3–4, 2017 [http://eprints.tsu.ge/370/1/Charaia\\_Papava\\_Challenges-of-the-Inflation-Targeting-in-Low-Income.pdf](http://eprints.tsu.ge/370/1/Charaia_Papava_Challenges-of-the-Inflation-Targeting-in-Low-Income.pdf) , Accessed date: 3 March 2018.
- [15] R. Murdak, V. Lagodienko, Agroinflation and consumer price index for foodstuff: Ukraine-EU comparative analysis, J. Economy of Ukraine 1 (666) (2018) 29 (in Russian).
- [16] WB, World Development Report 2008, The World Bank, 2007, p. 96 [https://siteresources.worldbank.org/INTWDR2008/Resources/WDR\\_00\\_book.pdf](https://siteresources.worldbank.org/INTWDR2008/Resources/WDR_00_book.pdf).