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# **SOCIAL EFFECTS OF ACCESSION OF BELARUS TO THE WTO**

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## SOCIAL EFFECTS OF ACCESSION OF BELARUS TO THE WTO

by Gleb Shymanovich\*

### Summary

Existence of the customs union between Belarus, Kazakhstan and Russia implies that Russia's accession to the WTO has inevitable implications for Belarus, including obligations of reduction of import duties. Associated changes in the structure of prices have impact on the population welfare through adjustments in consumption and income. This paper aimed at provision of quantitative assessment of consumption effect for separate groups of Belarus population, stemming from reduction of import duties. Analysis revealed that positive effect of reduction of import duties related to changes in prices and consumption of imported goods was marginal and evenly distributed among population. It was due to low scale of duties reduction especially at the moment of Russia's entrance to the WTO, moderate share of import in consumption of goods subjected to significant reduction of import duties, and similar structure of consumption by different groups of population. One of the lowest positive consumption effects was observed for rural area inhabitants due to low share of consumption of imported food products by this group, especially compared to Minsk citizens.

*Key words:* Belarus, WTO, social impact, consumption effect

*JEL classification code:* F15, I32

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## **1. INTRODUCTION**

Belarus has been negotiating to join the WTO since 1993. However, the progress of these negotiations remains very limited, and in the period from 2005 to 2012, they all were largely suspended. A slow process of accession of Belarus to the WTO is associated with some features of the economic policies in the country, particularly with heavy regulation of many sectors of the economy, which is contrary to the requirements of the WTO. Liberalization of the economy, as required by the WTO, with the effects that are difficult to control is an important deterrent to Belarus on its way to accession to this organization (see Kolesnikov (2013)). The relevance of the WTO accession increased significantly in 2012 in connection with the establishment of the Customs Union between Belarus, Kazakhstan and Russia, and the subsequent Russia's accession to the WTO. In such circumstances Belarus is actually forced to follow Russia and undertake its commitment to facilitate access of imports to its market.

It does not entail significant consequences for the economy of Belarus in the short term, as the basic obligations to reduce tariffs and non-tariff restrictions, which are undertaken by Russia, belong to the medium and long term (see Tochitskaya (2012)). The transition period for certain goods for which it is required to reduce tariffs to the final level of binding lasts until 2020. Therefore, Belarus will feel the main effect of Russia's WTO accession in a few years. Mainly, it will lead to stiffening competition for Belarusian products on the Russian market, as well as to a possible increase in imports. In the case of closer integration within the framework of the EurAsEc and the unification of the economic policy, Belarus will also have to perform other obligations of Russia that are not directly related to the elimination of trade barriers, for example, to reduce state support for agriculture and industry. These prospects are forcing Belarus to intensify the process of negotiations with the WTO to agree on its terms of accession to this organization and to acquire not only obligations, but also benefits of the WTO membership.

In general, it is the challenges faced by the Belarusian industrial production and agriculture that pose the main issue discussed in the context of accession to the WTO (See Tochitskaya (2005)). However, another important aspect of participation in such integration arrangements is the probability of significant changes in the social sphere. Revision of tariff rates, easier access to the services market, and liberalization of investment activities can significantly change both the price structure in the country, and the structure of employment and wages. The purpose of this paper is to analyze the social effects of accession of Belarus to the WTO. The analysis will be focused on the effects of price changes on the welfare of the population. On the one hand, this focus is chosen due to the fact that the changes in import duties, as opposed to possible changes in the economic policy, are actually known about and will be made in conformity with the ones adopted in Russia. On the other hand, the analysis of how the change in the terms of trade will affect the labor market and, as a result, the income of the population, is extremely difficult because of the lack of data for the labor market of Belarus at the micro level.

This discussion paper has the following structure. The second section presents an overview of the possible social effects of participation in integration agreements, including the WTO, and approaches to their models. The third section describes the selected research methodology and source data. The fourth section provides the main outcomes of the models of accession of Belarus to the WTO, while the fifth section analyzes the causes that led to them. The sixth section contains the main conclusions of the study.

## **2. SOCIAL EFFECTS OF PARTICIPATION IN INTERNATIONAL TRADE AGREEMENTS**

Any international trade integration agreement impacts not only the performance of exports and imports, but also the entire economy, including the social sphere. A country's accession to the WTO is regularly analyzed in the context of possible social effects (see Chen, Ravallion (2003); Rutherford, Tarr (2006)). They are connected with changes in prices after the review of import duties, as well as changes in the structure of the economy associated with new terms of foreign trade in goods and services and capital flows.

A country's accession to the WTO, or joining any other integration agreement, is often accompanied by changes in customs tariffs and, consequently, changes in prices of consumer goods. In particular, much attention is paid to changes in food prices, as their dynamics influence, in the first place, the well-being of vulnerable groups of the population. For example, a reduction of import duties on food, on the one hand, leads to a certain reduction in the costs of socially vulnerable population, but on the other hand, it can worsen the financial standing of the rural population whose income is generated from the sale of agricultural products (see Chen, Ravallion (2003), Nguyen, et al. (2009)).

The liberalization of trade and investment can lead to significant changes in the structure of the economy where some sectors previously protected by tariff and non-tariff barriers are shrinking, while other sectors are developing owing to increased sales opportunities. These changes can significantly affect the labor market. Its adaptation to the new conditions depends largely on the degree of administrative regulation. The labor market which is not overregulated can make a much faster transition to the new conditions and avoid long-term unemployment, which is possible in the case of low labor mobility. In any case, the liberalization of trade and investment leads to the redistribution of labor between sectors of the economy and the corresponding change in the wage structure, thereby affecting the welfare of the population. This issue has been covered in a number of studies, such as Ben-David, Nordstoem, Winters (2000); Fewsmith (2001); and Rutherford, Tarr (2006).

The emerging positive and negative social effects are not always distributed evenly among the population. This may lead to an increase in inequality, poor financial situation of vulnerable groups, or, on the contrary, to the reduction in poverty. The final outcome depends both on the macroeconomic effects of WTO accession and individual characteristics of households, i.e. it is determined by factors at both macro- and micro-level.

Therefore, the main practical objective of studies of the social impact of the WTO accession, or the impact of joining any other regional integration agreement, is a combination of macroeconomic effects with microeconomic data. Under the widely adopted approach proposed by Chen and Ravallion (Chen, Ravallion (2003)), macro-economic effects, in particular, changes in the structure of prices and wages, are estimated by the models of general equilibrium, and then they are used as exogenous data in micro-economic simulations based on the data from household budget surveys. This approach has a number of shortcomings, as it ignores most of the interrelations and changes in the economy occurring due to changes in prices and wages structure. These shortcomings can be partly eliminated by integrating micro-data directly in the model of general equilibrium. However, this procedure is extremely complex and requires a large amount of source data, which may not be always available. The main advantage of a separate micro-economic model of social effects of the WTO accession is the possibility of further detailed analysis of their impact on the welfare of different social groups.

Social impact that occurs after joining the WTO is usually associated with two effects: the effect on consumption and the effect on income. The first one is the result of the change in prices caused by new tariffs and changes in the volume and structure of household expenditures for consumer goods. This effect may vary significantly depending on the type of household and its original consumption pattern. For example, a decrease or an increase in duties on food would affect primarily low-income groups of the population, while duties on vehicles – the middle-income group. The effect on income is connected, on the one hand, with wage changes in sectors of the economy, and on the other, with new prices, especially food prices, if the household is engaged in food production for domestic consumption or sale.

Formally, these effects are given as (de Janvry, Sadoulet (2008)):

$$\Delta W = \sum_{i=1}^n p_i \cdot (q_i - c_i) \cdot \Delta \ln p_i + \sum_{j=1}^k l_j \cdot w_j \cdot \Delta \ln w_j, \quad (1)$$

where  $p_i$  is the price of the product  $i$ ,  $q_i$  is the production of the product  $i$  in the household,  $c_i$  is the consumption of the product  $i$  by the household,  $l_j$  is labor resources of level  $j$  in the household,  $w_j$  is the pay for labor resources of level  $j$ .

Therefore, the effect on consumption is

$$\Delta W^C = \sum_{i=1}^n p_i \cdot c_i \cdot \Delta \ln p_i, \quad (2)$$

and on income

$$\Delta W^R = \sum_{i=1}^n p_i \cdot q_i \cdot \Delta \ln p_i + \sum_{j=1}^k l_j \cdot w_j \cdot \Delta \ln w_j. \quad (3)$$

These formulas are applied based on the envelope theorem that justifies equating changes in prices or wages with changes in the welfare (Essama-Nssah (2005)). However, this theorem holds only around the optimum, hence change in prices or wages should be of moderate scale. In practice most of the regional integration agreements results in marginal tariffs and domestic prices changes, which provides rationale for the methodology discussed above. In case of significant price changes the model can be made more complex by adding elasticities that reflect the changes in demand and supply resulting from changes in prices by using the second order Taylor expansion (see de Janvry, Sadoule (2008)).

$$\Delta W = \sum_{i=1}^n p_i \cdot (q_i - c_i) \cdot \Delta \ln p_i + \sum_{j=1}^k l_j \cdot w_j \cdot \Delta \ln w_j + \frac{1}{2} \sum_{i=1}^n \sum_{j=1}^n p_i \cdot (q_i \varepsilon_{ij}^p - c_i \varepsilon_{ij}^c) \cdot \Delta \ln p_i, \quad (4)$$

where  $\varepsilon_{ij}^p$  is elasticity of the supply of the product  $i$  at the price  $j$ , and  $\varepsilon_{ij}^c$  is elasticity of the supply of the product  $i$  at the price  $j$ .

However, the effects produced by changes in the structure of supply and demand are usually negligible compared to the first order effects of price changes and can be neglected.

### 3. RESEARCH METHODOLOGY

#### 3.1. Source data

Assessment of the impact of international integration agreements, including WTO accession, involves the analysis of the two channels of impact on the welfare of the population: changes in consumer prices, and the changes in the labor market. This study focuses only on the effect of price changes due to the limited data available. Belarus holds an annual household budget survey (HBS) with a focus on standards of living<sup>1</sup>, which gives a picture about the welfare of the population and the expenditure structure. Until 2012, it also contained basic employment information; however, it was not representative. For example, according to the HBS, the unemployment in Belarus in 2009 was 2.9% compared to 6.1% according to the census of the population. In addition, it did not include the information on employment by sectors, which is necessary for modeling the effects of accession to WTO. After 2012 the data on employment in the HBS data disappeared almost completely, as the National Statistical Committee launched a specialized labor force survey<sup>2</sup> providing accurate information about the state of the labor market. However, as the results and the micro data of the survey remain restricted, it is impossible to carry out research on the labor market in Belarus.

The analysis of the effect on the welfare by changes in customs tariffs and prices requires matching the Harmonized Commodity Description and Coding System (HS System), under which import tariffs are established in Belarus, and the classification of individual consumption by purpose (COICOP) that groups household expenditures. As part of the annual micro data of the HBS available for purchase in the National Statistics Committee, it publishes data on the expenditures for 26 items of food and 30 items of other expenditures on goods and services (see Appendix 1). They were matched with the HS classification under the scheme shown in Table 1. Of the total expenditures on food, only the item “Other Expenses” was not described with the HS codes. In the case of non-food

<sup>1</sup> <http://belstat.gov.by/homep/ru/households/main1.php>.

<sup>2</sup> <http://belstat.gov.by/homep/ru/households/main3.php>.

expenditures, much more items were excluded from the analysis. First, all the services were excluded as it is difficult to make realistic assumptions about the degree of liberalization of the services market after the WTO accession and how it will affect the value of these services. The exception was made for health care. Public health care in Belarus is free, and the bulk of the corresponding expenditures includes purchasing medicines and pharmaceuticals (see Kruk, Shymanovich (2011)), including imports. Second, expenditures on motor vehicles and their contents were excluded due to the presence of additional barriers, apart from tariffs, to imports of motor vehicles and their parts, as well as the lack of import duties on oil products in Belarus. Third, the analysis does not take into account expenditures associated with savings and real estate acquisition. On average, the share of household expenditures that were not included into the model of the effects of the WTO accession, was 42.6%.

**Table 1. Match between the expenditures as given in COICOP and the HS System**

<b>Expenditure items as given in the Household Budget Survey</b>	<b>Corresponding codes of the HS System</b>
<i>Household expenditures: foodstuffs</i>	
Expenditures for bread	190510-190520
Expenditures for pastry	190530-190590
Expenditures for flour	1101-1103
Expenditures for cereals and beans	10
Expenditures for macaroni food	1902
Expenditures for milk	0401-0402
Expenditures for sour cream and cream	0403
Expenditures for butter	0405
Expenditures for cheese	0406
Expenditures for other dairy products	0404
Expenditures for beef and veal	0201-0202
Expenditures for pork	0203
Expenditures for sausages and smoked meat	1601
Expenditures for poultry	0207
Expenditures for fat	1501
Expenditures for other meats	1602
Expenditures for fish and seafood	03
Expenditures for vegetable oil, margarine and other grease	1512
Expenditures for eggs	0407
Expenditures for potatoes	0701
Expenditures for vegetables and melons	0702-0714
Expenditures for fruit and berries	0803-0810
Expenditures for sugar and confectionery	17
Expenditures for tea, coffee, cocoa	0901-0902
Expenditures for non-alcoholic drinks	2201-2202
<i>Household expenditures: non-food goods</i>	
Expenditures for food purchased for animals	2309
Expenditures for alcohol	2204
Expenditures for tobacco	24
Expenditures for clothing	61-62
Expenditures for footwear	64
Expenditures for fabrics	60
Expenditures for household appliances	8508, 8509, 8516, 8519, 8521, 8527, 8528, 8471, 8418
Expenditures for furniture	9401, 940340-940399, 9404, 9405
Expenditures for health care	3004-3005
Expenditures for purchase of cars and other vehicles	8703
Expenditures for jewelry	7113
Expenditures for personal care	3401, 3402, 3405, 3406, 3303-3306
Expenditures for rent, excluding fuel for heating dwellings and utilities	68

Using the transition keys, we can calculate the price changes of goods consumed by the population on the basis of changes in tariffs that occur when joining the WTO. The main task at this stage

is the calculation of customs tariffs for the given 38 product groups (shown in Table 1). Import duties applied in Belarus as of 2012 are used as initial tariffs. They are available in more detail at the 10-digit HS level. Import duties that Russia agreed on for the date of accession and for the date of completion of the transition period were used as new tariffs. These tariff rates were selected as the operation of the Customs Union between Belarus and Russia implies common import and export duties. These rates are available at the 6-digit HS level. Both current and new rates were aggregated in accordance with their weights, i.e. the share of commodity items in the structure of imports of Belarus. In some cases, when a substantial part of imports in the commodity group was not distributed in subgroups, simple arithmetic average tariff rates were used. The data on the structure of imports were taken for 2011 from the Trade Map database of the International Trade Center (ITC) for trade at the 10-digit level and the UN Comtrade database for trade at the 6-digit level.

The resulting tariffs on consumer goods are presented in Appendix 2. In some cases, the calculation of tariffs was accompanied with a number of assumptions. In particular, item 1701 (sugar cane or beet sugar and chemically pure sucrose in solid form) was excluded from the calculation of tariffs on sugar and confectionery, as the current tariffs for them are tied to the world price, while the tariffs agreed by Russia with the WTO are specific and tied to a ton of product. The problem with specific duties also emerged in relation to alcohol. Given the fact that the share of imported alcohol is not so big in the consumption pattern, we used the duties for natural wine, which is not produced in Belarus. Another difficulty arose in relation to the calculation of import duties for jewelry. The detailed data of jewelry import by product in Belarus are not available, so we used mirror statistics of partner countries for the estimation of weights.

In addition to data on duties, the study also used the data on the price elasticity of imports. They were estimated for many countries, including Belarus, in the study of Kee, Nicita and Olarreaga (2009) and published on the website of the World Bank.<sup>3</sup> The elasticities are available in 6-digit HS codes, and for the purposes of the study they were aggregated with the same weights as import duties. In the absence of source data on elasticities of some products we used average elasticity typical of Belarusian imports (see Appendix 2).

The next group of data needed for the study is the pattern of consumption of the population broken down by imports and domestic goods. It is necessary to assess the impact that changes in tariffs can have on the market of this or that product. The consumption pattern was derived from two sources of the National Statistics Committee: the share of imports in commodity resources from the statistical data book *Wholesale and Retail Trade for 2013*<sup>4</sup> and the share of imports in the retail trade – from the monthly newsletter *Socio-Economic Situation of the Republic of Belarus* for January-December 2012.<sup>5</sup> The results obtained on their basis are presented in Appendix 2. Moreover, we made some assumptions about the share of imports for some items due to the lack of data in the available publications. The assumptions were based on the ratio of the volume of imports and the volume of retail trade turnover of goods. In particular, they included expenditures for bread, pastry, milk, sour cream and cream, and other dairy products, i.e. goods that have mostly domestic content due to which the data on the share of imports in the turnover of goods are not published.

### **3.2. Description of the model and scenarios under analysis**

Modeling of the effects of the WTO accession was based on the benefit incidence analysis, which is one of the instruments applied by the World Bank within poverty and social impact analysis (PSIA<sup>6</sup>, (Всемирный банк (2003))). The key element of this approach is modeling of the welfare effects for separate groups of population. In this research it was carried out according to the methodology applied in Chen, Ravallion (2003) summarized in equations (1–4).

<sup>3</sup> <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,content-MDK:22574446~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html>.

<sup>4</sup> <http://belstat.gov.by/homep/ru/publications/trade/2013/about.php>.

<sup>5</sup> [http://belstat.gov.by/homep/ru/indicators/doclad/2012\\_12/10.pdf](http://belstat.gov.by/homep/ru/indicators/doclad/2012_12/10.pdf).

<sup>6</sup> <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPSIA/0,,content-MDK:20415258~pagePK:210058~piPK:210062~theSitePK:490130,00.html>.

The effect of the change in import duties on household wealth consists of two elements: the change in consumer prices and the change in the consumption pattern caused by the new prices. The second element is often omitted, as its extent is much smaller than that of the direct effect of price changes. However, this study will take it into account to simulate possible changes in the consumer market.

We will build three scenario of how the changes in duties will affect the level of consumer prices. According to the first scenario, the effect of the duty only covers existing consumption of imported food and non-food items<sup>7</sup>. Then the effect on the welfare of the population is estimated by the following formula:

$$\Delta W = \sum_{i=1}^n C_i \cdot S_i^m \cdot \Delta P_i^m, \quad (5)$$

where  $C_i$  is the consumption of the product  $i$  from HBS data,  $n$  is equal to 38 product groups,  $S_i^m$  is the share of imports in the consumption of the product  $i$ , and  $P_i^m$  is the price for the imported product  $i$ , the change of which is estimated as

$$\Delta P_i^m = \frac{1 + t_i^{wto}}{1 + t_i}, \quad (6)$$

where  $t_i$  is a current level of duties for the product  $i$ , and  $t_i^{wto}$  indicates the duties after accession to the WTO. It is assumed that reduction (increase) of duties results in proportional reduction (increase) of prices which is not totally realistic due to market imperfections widely observed in Belarus. However, this assumption allows estimating maximum possible effects caused by changes in duties.

The second simulated scenario assumes that the decrease in prices for imported goods will increase the demand for them and lead to the corresponding displacement of the domestic substitutes. The effect on the welfare in this case consists of the direct effect of the decrease in prices and the possibility of substitution of domestic products with imports at lower prices. Accordingly, the effect is estimated by the formula:

$$\Delta W = \sum_{i=1}^n C_i \cdot \bar{S}_i^m \cdot \Delta P_i^m, \quad (7)$$

where  $\bar{S}_i^m$  is the new share of imports in the consumption pattern of the product  $i$ . It is estimated by the formula:

$$\bar{S}_i^m = \frac{M_i + \Delta M_i}{C_i} = S_i^m + \frac{\Delta M_i}{C_i}, \quad (8)$$

where  $M_i$  is the share of the import content in the consumption pattern of the product  $i$ . Its growth is estimated by the formula:

$$\Delta M_i = \Delta P_i^m \cdot \varepsilon_i \cdot M_i, \quad (9)$$

where  $\varepsilon_i$  is the price elasticity of imports of the product  $i$ .

As the volume of imports is:

$$M_i = S_i^m \cdot C_i, \quad (10)$$

then, putting the change in imports into the equation (8), we get

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<sup>7</sup> Total import of consumer goods including import from the Customs union partners is considered, as the volume of consumer goods import from Russia or Kazakhstan is rather low (i.e. import from Russia constituted only 19.8% of Belarus import of consumer goods in 2011).



$$\bar{S}_i^m = S_i^m + \frac{\Delta P_i^m \cdot \varepsilon_i \cdot C_i \cdot S_i^m}{C_i} = S_i^m (1 + \Delta P_i^m \cdot \varepsilon_i). \quad (11)$$

Accordingly, the final equation for estimating the effect of the second scenario is given as:

$$\Delta W = \sum_{i=1}^n C_i \cdot \Delta P_i^m \cdot S_i^m (1 + \Delta P_i^m \cdot \varepsilon_i). \quad (12)$$

The third scenario assesses the maximum possible effect of the reduction of duties arising under the condition that prices for domestic goods reduce following the reduction in the price of imported products to maintain a competitive position. Accordingly, the effect is estimated by the formula:

$$\Delta W = \sum_{i=1}^n C_i \cdot \Delta P_i^m. \quad (13)$$

Under these scenarios, we can estimate short-term and long-term effects, i.e. effects arising directly upon accession to the WTO and after the completion of the transitional period, when the final level of bound tariffs comes into effect. In addition, in some cases the conditions specified in the agreement with the WTO suggest the possibility of increasing duties, especially in the short run. However, the increase of duties may not occur, as it is done so to protect the market in exceptional circumstances. Therefore, in the framework of short-term variants the scenarios we simulated six variants with and without an increase in duties. Thus, we built nine variants of the possible effects of WTO accession on the welfare of the population, see Table 2.

**Table 2. The simulated scenarios and their symbols**

Scenarios	Short-term		Long-term
	With possibility of increased duties	Without possibility of increased duties	
A change in prices for imports	A_sr	A_sr_net	A_lr
A change in prices for imports and shares of imports in consumption	B_sr	B_sr_net	B_lr
A change in prices for all the goods	C_sr	C_sr_net	C_lr

## 4. SIMULATION OUTCOMES

### 4.1. Main indicators

Among the nine calculated variants of scenarios, the long-term scenario with the change in the share of imports in consumption (B\_lr) and the corresponding short-term scenario without increased duties (B\_sr\_net) are of most interest. They seem to be most realistic and will be treated as baseline scenarios. The other scenarios are designed to set the limits of possible effects on the welfare of the population that may occur in connection with changes in import duties on consumer goods.

The simulation outcomes show that under the baseline scenarios the change in prices of accession to the WTO will have a positive impact on the welfare of the population. However, the extent of this effect is not significant, especially in the short run (0.2% of the increase in the disposable income<sup>8</sup> on average for the population). Moreover, if in the short term Belarus takes the opportunity to raise some existing duties, the effect will almost disappear (see Table 3). The increase in the resources in the long-term baseline scenario is 0.8%.<sup>9</sup>

The largest positive effect is achieved with the scenario where the long-term behavior of the prices of domestic goods follows the trend in import prices. The welfare of the population in such a case could grow by an average of 1.9%. However, in the short term, in case Belarus takes the opportunity to raise some duties, this scenario will lead to some negative consequences for the welfare of

<sup>8</sup> As in the analysis of poverty, the welfare of the population is described by means of the disposable income that is equal to the amount of household expenditures and net income in kind from cultivation of own land plot and benefits.

<sup>9</sup> Rutherford and Tarr (Rutherford, Tarr (2006)) received similar estimates of the effect resulting from the change in the price structure for the welfare of the population in Russia.

the population. The outcomes of the scenario, where price change does not alter the consumption pattern of the population, are close to those of the baseline scenarios. This confirms a relatively low value of the effect of changes in the consumption pattern in comparison to a direct effect of changes in prices for imported products.

**Table 3. The change in the disposable income for the population depending on the simulated scenario, %**

	On average	Absolute poverty*	Relative poverty**
A_sr	0.02	0.02	0.02
A_sr_net	0.21	0.21	0.20
A_lr	0.76	0.75	0.74
B_sr	0.08	0.07	0.07
B_sr_net	0.22	0.22	0.21
B_lr	0.80	0.80	0.78
C_sr	-0.49	-0.53	-0.51
C_sr_net	0.67	0.72	0.70
C_lr	1.93	1.81	1.81

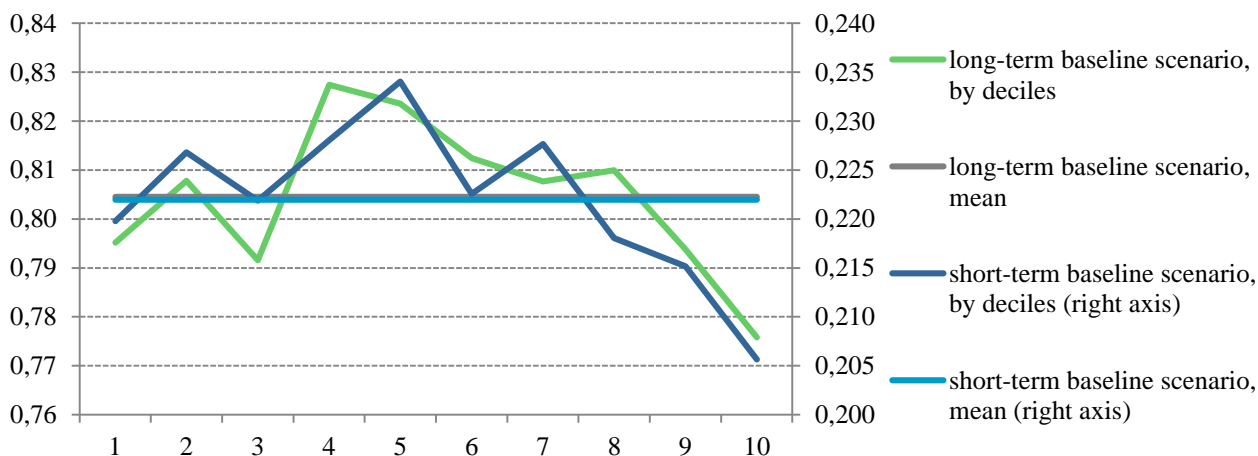
*Note.* The baseline scenarios are highlighted in grey: B\_sr\_net denotes changes in prices of imported products and the share of imports in consumption if the tariffs are set at the level corresponding to the time of Russia's accession to the WTO, if it does not lead to their increase (a short-term scenario); B\_lr is the point when the final level of tariff binding is set (a long-term scenario).

\* Absolutely poor population includes people with disposable income below the minimum of substance, calculated according to the methodology presented in the annual publication *Poverty and Social Inclusion in Belarus* (IPM Research Center (2013)).

\*\* Relatively poor population includes people with disposable income of less than 60% of the median adjusted for the equivalence scale (see the methodology of the IMP Research Center (2013)).

*Source:* Author's calculations.

The effect of the WTO accession is distributed evenly among the population. Absolutely and relatively poor groups of the population<sup>10</sup> benefit from the reduction in duties in the same degree as the population on average. The only scenario, where minimal differences are observed (1.8% growth of the welfare of the poor population and 1.9% on average for the population), is a long-term scenario with decreasing prices both for imported and domestic goods.



*Source:* Author's calculations.

**Figure 1. Change in the welfare by deciles in baseline scenarios, %**

The fact that the possible positive effect of the reduction of duties does not lead to the stratification of the society is confirmed by its distribution by deciles of the population (see Figure 1). The greatest positive effect in the baseline scenarios is on the 4-5 deciles of the population, i.e. on the

<sup>10</sup> Absolute and relative poverty figures are estimated according to the methodology used in the annual publication *Poverty and Social Inclusion in Belarus* published by the IPM Research Center. Relative poverty is defined by the line of 60% of the median income adjusted for equivalence scale (see Bornukova, Chubrik, Shymanovich (2012)), and absolute poverty by the minimum living wage taking into account the structure of individual households.

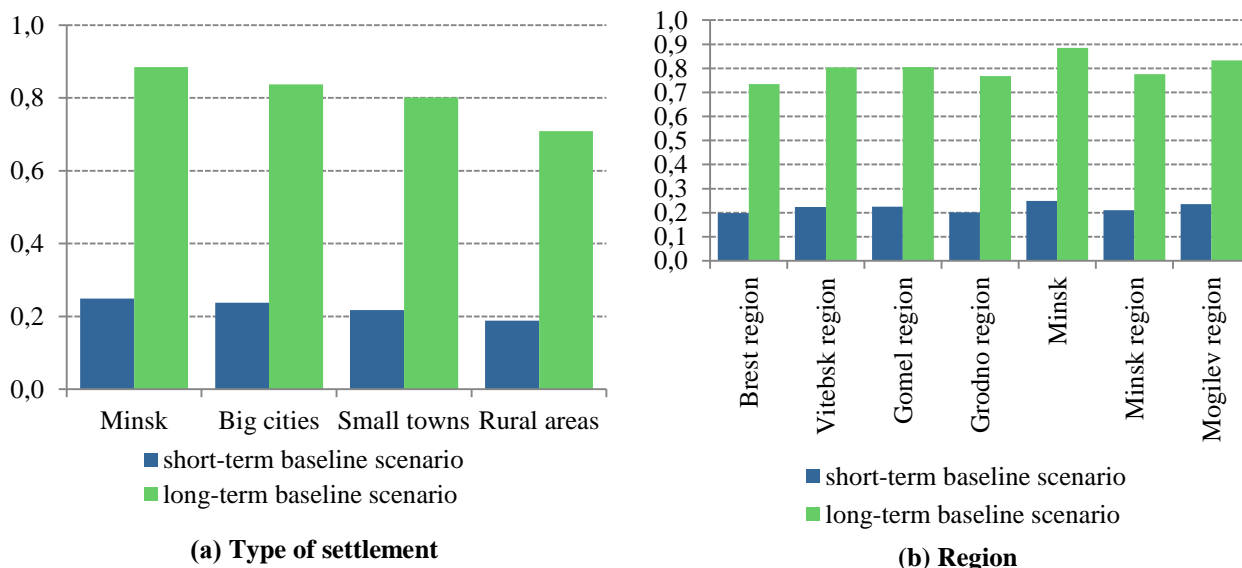
middle-income population. The wealthiest deciles of the population (9-10) benefit to a lesser degree, but this difference is negligible (0.05 percentage points in the long-term baseline scenario).

#### 4.2. Socially vulnerable groups

In Belarus, there are groups of population that traditionally face a greater risk of poverty, absolute or relative, and social exclusion than the population on average. These groups include children, older people, economically inactive and unemployed population, residents of rural areas, single parent families (see the annual publication *Poverty and Social Inclusion in Belarus* of the IPM Research Center). The change in consumer prices may have a different impact on the welfare of these groups and may either reduce their vulnerability, or further lower their position relative to the other groups.

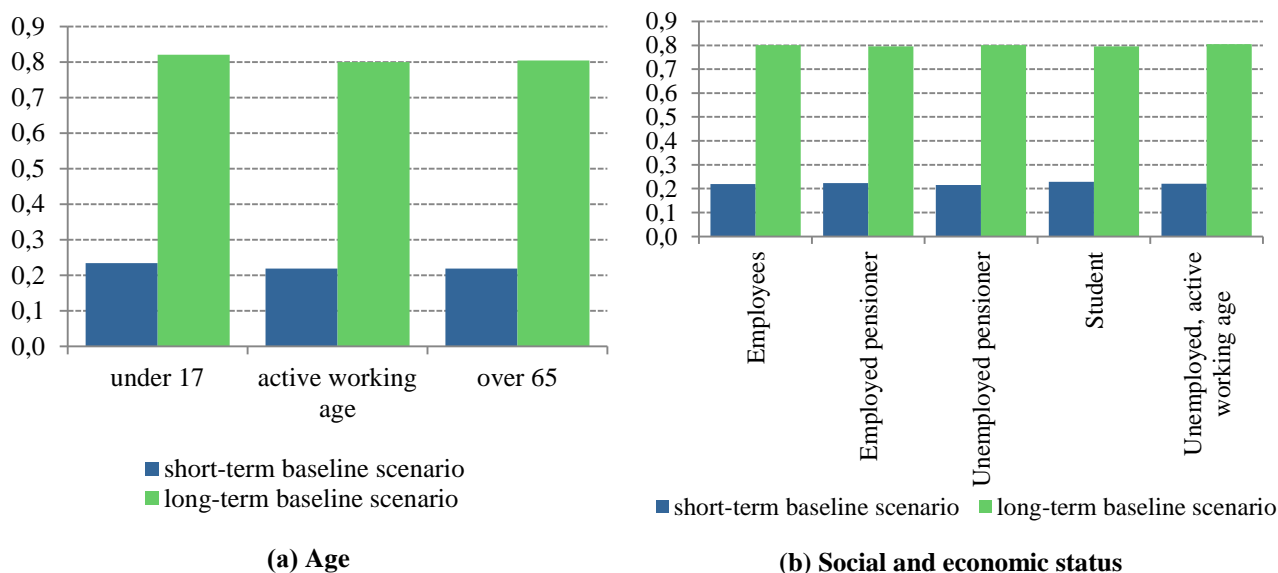
The greatest differences in the emerging effects are typical of the households with different places of residence. Initially, the highest risk of absolute and relative poverty in Belarus is observed in rural areas. In addition, vulnerability of people living in small towns is also rather high. These population groups, as shown by the simulation results, have the least benefit from the changes in import duties (see Appendix 3). Despite the fact that the disposable income for rural residents in the baseline scenario increases in the long term by 0.7%, their standing relative to the citizens of large cities and Minsk worsens (where disposable income grows by 0.8-0.9%). This also applies to residents of small towns, but to a lesser degree, see Figure 2a.

The highest risk of social vulnerability by region of residence in 2012 was observed among residents of the Gomel and Vitebsk regions. The above-average risk of poverty was also in the Brest and Mogilev regions (for more details see the IPM Research Center (2013)). In the long run, among these regions only residents of the Brest region will benefit from a change of duties less compared to the average population (see Appendix 3). This is due to a high proportion of rural residents in the population of the region. The population of the other problem areas will improve their relative position, especially in comparison with the population of the Minsk and Grodno regions. A moderately positive impact of the WTO accession on the residents of these relatively wealthy regions is also associated with a high proportion of the rural population with a lower consumer demand due to the possibility of cultivating their own land plots. On the contrary, a high consumer demand for food products determines the most significant positive effect of the WTO accession for Minsk city residents (see Figure 2b).



Source: Author's calculations.

**Figure 2. The change in disposable income for the population depending on their place of residence under baseline scenarios, %**



Source: Author's calculations.

**Figure 3. The change in disposable income for the population depending on their age and socio-economic status under baseline scenarios, %**

In addition to the rural population, losing in comparison with urban population, other vulnerable groups have just the same effect resulting from the reduction of duties as the population on average (see Appendix 3). Regardless of age or socio-economic status, a positive effect in the baseline scenario is 0.2% in the short term and 0.8% in the long term (see Figure 3). Single-parent families are a small exception. The effect of tariff reductions in the baseline scenario on them is above the average reaching 0.9% and 0.3% in the long-term and short-term periods, respectively. This positive effect is maintained regardless of the scenario under consideration (see Appendix 3).

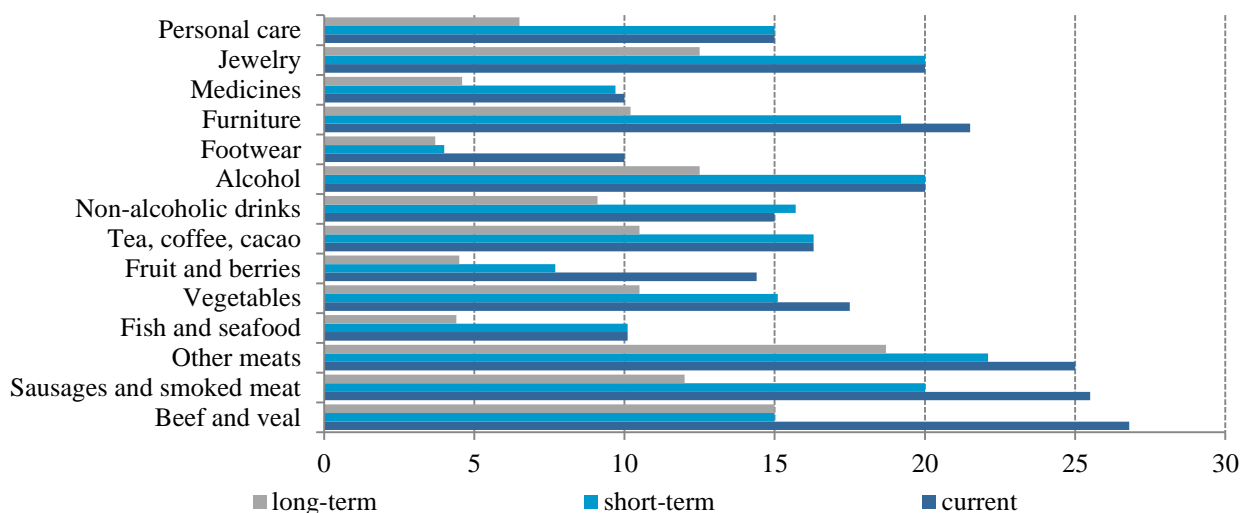
## 5. FACTORS DETERMINING THE EXTENT OF SOCIAL EFFECTS

### 5.1. Conditions of accession and specifics of consumer imports

The main factors that determine the impact of tariff changes on the welfare of the population are the extent of reduction / increase in duties, the price elasticity of imports, the share of imports in the consumption pattern of the population and the consumption pattern itself. Most of them are not conducive to the emergence of large effects of changes in customs tariffs on the welfare of the population in Belarus.

First, the extent of change in import duties on consumer goods is not very high (see Appendix 2). Among the foods, the highest reduction in duties is expected for some meat products, fish, fruit and vegetables, alcoholic and non-alcoholic drinks, tea and coffee (see Figure 4). Thus, the basic reduction of duties occurs only in the long run when the final level of binding tariffs becomes effective. In the short term – immediately after accession to the WTO – the tariff rates are close to the initial rates effective in Belarus in 2012. Moreover, for some food products, in the short term, there may be an increase in duties, particularly for poultry, pork, milk, butter, and cereals (see Appendix 2). This implies a low positive, and in some scenarios negative, effect of changes in duties on the welfare of the population in the short term.

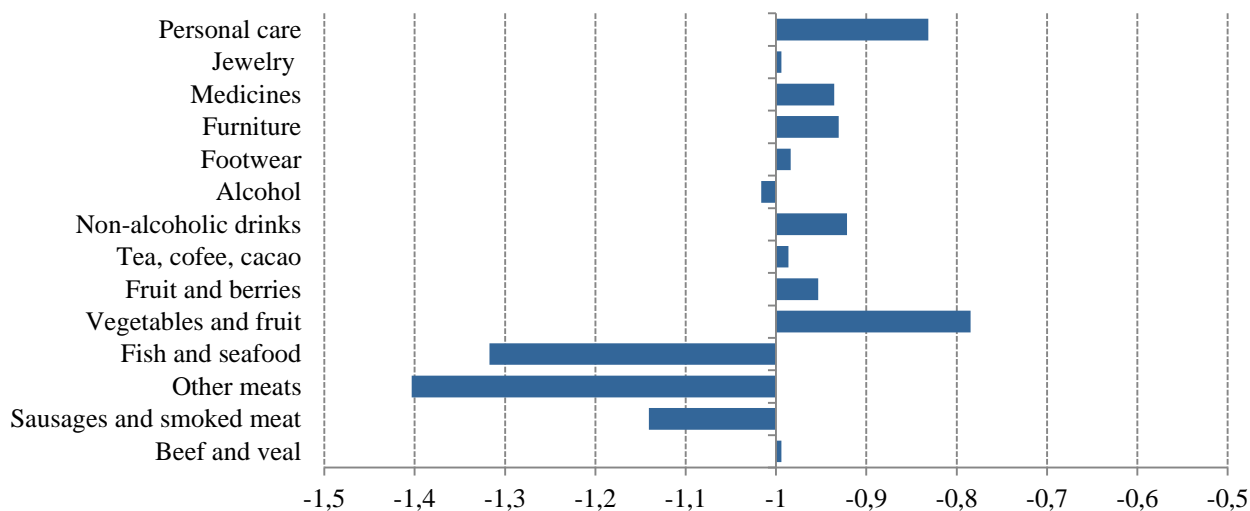
Reduction of duties on non-food goods is more substantial. Import duties may increase in the short term only for household appliances. For other groups of non-food consumer goods, duty rates either remain unchanged or reduced. The most significant reduction will include footwear, furniture, personal care and jewelry (see Figure 4). In addition, there is a significant reduction in customs duties for cars, but the corresponding effect is not taken into account in the study because of the replacement of this duty with other tax charges.



Source: Author’s calculations.

**Figure 4. The dynamics of ad valorem tariffs on imports of certain product groups, %**

Secondly, apart from not always significant reduction of import duties, a positive effect of the WTO accession is limited by a relatively low price elasticity of imports. It shows the percentage of the increase in the volume of imports when their price is reduced by 1%. For most of the goods for which a sizeable reduction of import duties is expected, the elasticity is less than 1 in absolute value,<sup>11</sup> with the exception of certain foods – fish and seafood, sausages and smoked meats, and other meat products and alcohol (see Figure 5). In general, the highest elasticity in Belarus is typical of such products as pork, bacon, tobacco, i.e. goods for which duties are not expected to significantly reduce, and duties for pork may increase in the short term (see Appendix 2).



Source: Author’s calculations based on Kee, Nicita, Olarreaga (2009).

**Figure 5. Price elasticity of imports**

Low price elasticity limits the additional effect that occurs due to changes in consumption patterns towards increasing the share of cheapened imported goods. Accordingly, even a substantial reduction of duties, for example, for vegetables or personal care, will not create a significant additional benefit for the welfare of the population, as the consumption of imported products will grow slightly. This explains slight differences that were obtained between the two scenarios evaluating only the effect of changes in price and taking into account the additional effect of changing consumption patterns.

<sup>11</sup> The price elasticity of imports is negative as the dynamics of import prices and volumes are multidirectional.

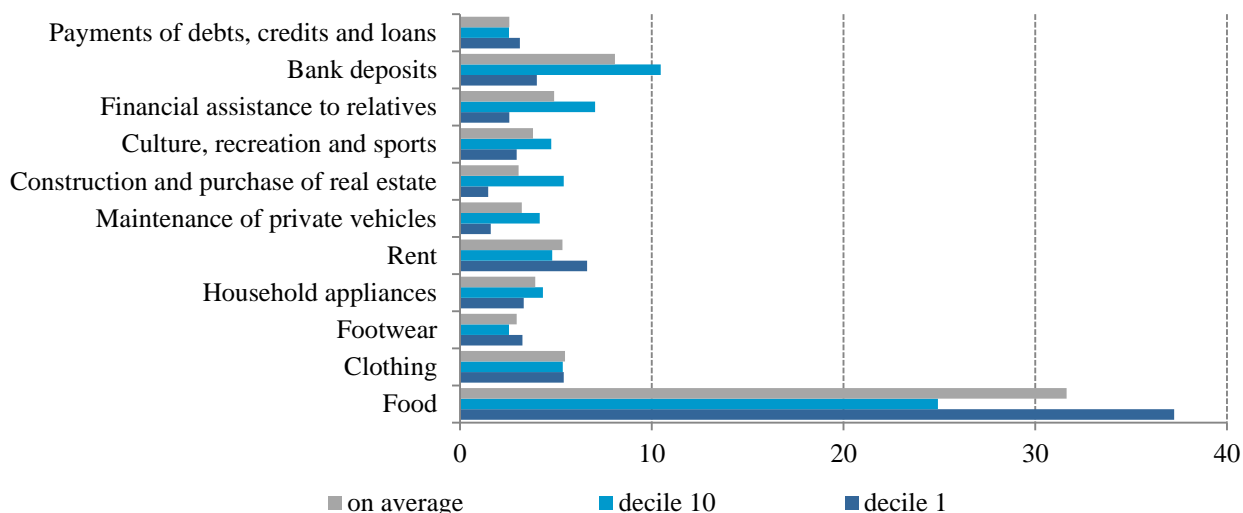
Third, a positive effect of reduced duties is also limited by a low share of imported goods in household consumption, especially of food. A high share of imports in the pattern of food consumption is held only by cereals, pasta, fish, vegetable oil, fruit, and tea and coffee (see Appendix 2). The rest of the food products are produced in Belarus and sought after more than imported counterparts. Their competitiveness is largely due to large subsidies that are allocated to agriculture, as well as various non-tariff barriers that restrict imports of food products.

In the case of non-food products, a share of imports is significantly higher, which ensures the availability of a certain effect of reduced tariffs on the welfare of the population.

## 5.2. Consumption pattern

The key importance for predetermining the extent of the impact of accession of Belarus to the WTO is not only a change of duties for certain goods, but also the weight of goods in the consumption basket of the population. Accordingly, an analysis of the consumption pattern can largely explain both a small scale of the effect of reduced duties and its even distribution by deciles of the population.

In general, expenditures for food that constitute on average about one-third of the disposable income of the population play the main role in the household consumption pattern. Their share is especially large in the expenditures of the poorest deciles. Their share in the tenth decile is lower than in the first by 10 percentage points. Relatively wealthy groups of the population are more actively using free funds to provide financial assistance to their relatives, for savings, housing, and to a lesser extent for consumption. As a consequence, the share of expenditures on clothing, footwear, household appliances of the general population is about the same and not very high (on average about 12% of the disposable income). In addition, expenditures for rent also have a rather small share (see Figure 6). The share of other items, the prices of which can change after the accession of Belarus to the WTO, in the expenditures of the population is insignificant.



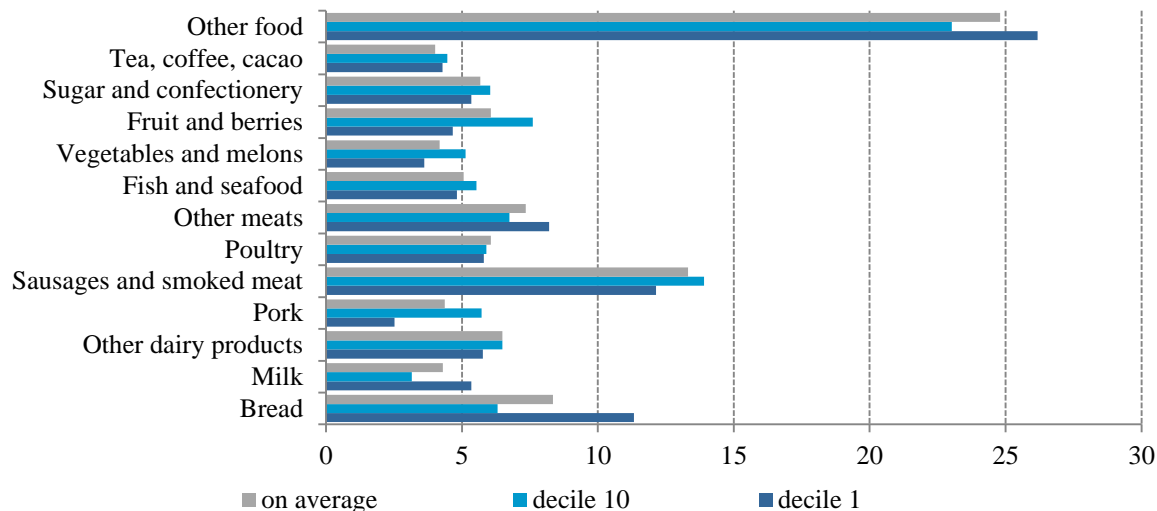
Source: Household Budget Survey.

**Figure 6. Main items of expenditures of the population, % of the disposable income**

Sausages and smoked meat, bread and other meat products have the highest share among food products. They are followed by fruit, other dairy products (other than milk, sour cream, and cream), sugar and confectionery products. At the same time, there are nearly no significant differences in the structure of food consumption of relatively secured and unsecured groups of the population (see Figure 7). The tenth decile has a smaller share of expenditures for bread, and a larger share – for fruit and berries. The structure of the remaining expenditures is nearly the same, regardless of the decile. Consequently, the overall smaller share of food in the expenditures of the upper deciles is not accompanied by significant changes in the structure of these expenditures.

Thus, the main difference in household expenditures in Belarus is that relatively wealthy groups of the population have a greater share of expenditures for savings, the cost of which will not be af-

affected by the accession of Belarus to the WTO, and a smaller share of expenditures for food. However, the structure of expenditures for food of the whole population is relatively the same. A low share of imported food products in the consumption pattern of the population determines some small differences in the positive effect of reduced duties for wealthy and socially vulnerable groups.



Source: Household Budget Survey.

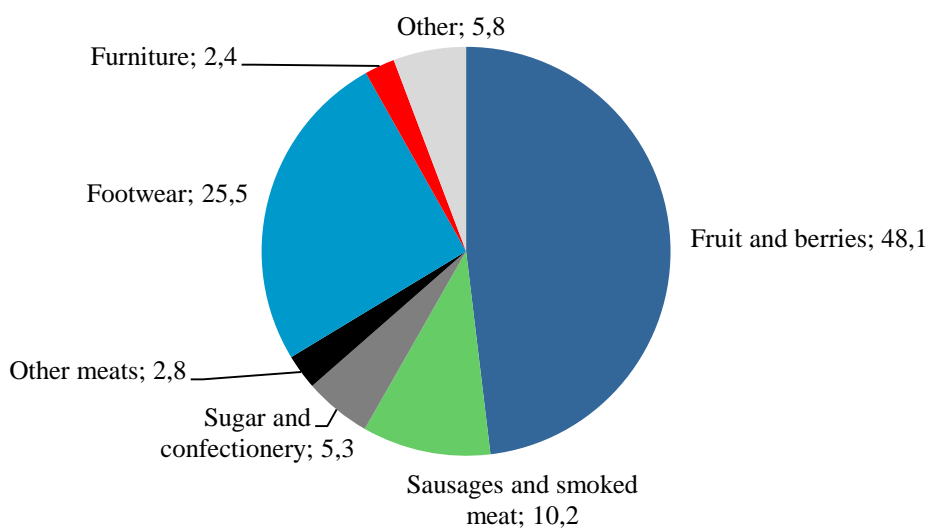
Figure 7. Expenditures of the population for food, %

Small differences in consumption patterns can also be noted among residents of rural areas and major cities, especially in Minsk (see Appendix 4). There are a bit more expenditures for food in Minsk as there are limited possibilities to cultivate own land plots in it. The structure of these expenditures has higher shares of vegetables, berries and fruits, pork and dairy products than in the countryside. In contrast, expenditures for bread have a larger share in the expenditures of rural residents. Obviously, with such consumption patterns the rural population will benefit less from the accession to the WTO as they cover a part of their need in food through running their own farms. Moreover, in the case they sell food from their farm, they may lose income in the event of price reductions, not only for imports, but also for domestic products.

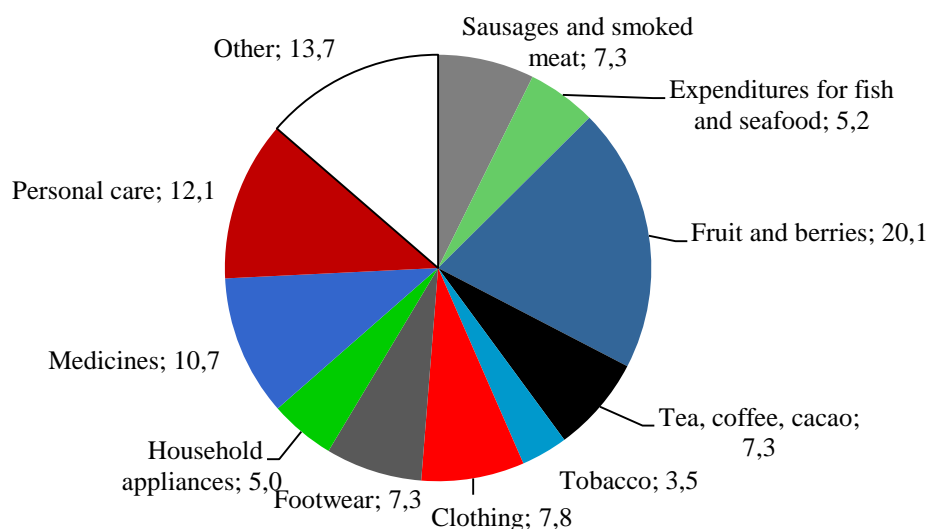
### 5.3. Main channels of effects of changes in customs tariffs on income of the population

The above factors have substantially limited the channels through which changes in tariffs resulting from the WTO accession, could have a positive impact on the welfare of the population. In the case of a short-term baseline scenario, the main impact on income occurs through only three commodity items: footwear, fruit and berries and smoked sausage (see Figure 8a). The influence of other items is non-existent or very little because of the immutability of tariffs, a small share of imports in the consumption pattern, and a small share of some items in the consumption pattern.

In the long run, after the completion of the transition period and reaching the final level of binding tariffs, the number of items that provide a positive effect on people’s income increases significantly. As a consequence, the effect is fairly evenly distributed among these products. Of the goods that have dominated in the short term, only the expenditures for fruit and berries keep a high share. Reduced duties for pharmaceuticals and personal care products will have a significant impact on the population. Among other non-food products, a positive effect is also observed in the case of reduction of expenditures for clothing, footwear and household appliances. Among food items such effect is observed for such items as tea and coffee, fish and seafood, sausages and smoked products. Most of the noted items have the same weight in the structure of household expenditures, regardless of the level of wealth or place of residence, with the exception of berries and fruits, the reduction of duties for which will have a more positive impact on the welfare of the well-off population and residents of large cities.



(a) Short-term period, a baseline scenario



(b) Long-term period, a baseline scenario

Source: Author's calculations.

**Figure 8. Structure of the effect of the change in import duties on the welfare of the population by product items, %**

## 6. CONCLUSION

The social effects associated with changes in prices and consumption after the accession to the WTO directly or through the Customs Union with Kazakhstan and Russia are quite limited. Most of the scenarios considered involve improving the welfare of the population but only within the range of 1-2% in the long run and 0.7% in the short term. The baseline scenario, taking into account not only the change in prices, but also the consumption patterns of domestic and imported goods, in the short term, i.e. at the moment of accession to the WTO, implies an increase in the resources of the population by 0.2%, provided the authorities refrain from possible increases in duties for some product items. In the long term, i.e. after the transition period is over, the impact increases to 0.8%. The only scenario that allows the deterioration of the situation of the population suggests that the authorities will fully use the opportunity to raise duties in the short term, and the dynamics of prices for domestic products will be fully consistent with the dynamics of prices of imports. Reduction of the welfare in this case will be 0.5% in the short term. However, this scenario will ensure revenue growth by 1.9% in the long run.

The main limitations of the effect of price changes on the welfare of the population are small reduction of duties, particularly in the short term, a low share of imports in food consumption of the



population in Belarus, as well as the overall consumption pattern, which is dominated by the expenditures for food. As a result, a significant contribution to the welfare in the short run is provided by a decrease in prices of only three product items – fruit and berries, footwear, and sausages and smoked products. In the long run, the number of items that provide a positive effect on the welfare of the population increases, and mostly these are non-food products.

Improvement of the welfare occurs regardless of the initial financial standing of groups of the population due to similarity in consumption patterns of the overall population of Belarus. Absolutely and relatively poor households benefit to the same extent as the population on average. The smallest effect was observed in the wealthiest group of the population as the largest share in their expenditure structure is held by expenditures for savings and purchase of goods and services that are not subject to customs tariffs. However, the extent of differences in effects for wealthy and poor population groups is extremely small.

Due to the even distribution of the effect, most vulnerable groups may benefit from price changes after the accession of Belarus to the WTO to the same extent as the general population. Rural population is the only exception. The effect on them is slightly below average due to a smaller share of the expenditures for food, especially fruit, vegetables, and certain types of meat products, for which a significant reduction of duties is expected. In addition, some rural residents may lose from the reduction of customs tariffs for food if they produce food to sell. However, the average share of income from the sale of agricultural products in the disposable income of the rural population is only 2.6% due to the underdevelopment of private farming. Therefore, the extent of the adverse effects, if the prices for domestic food decrease after the decreased import prices, on the income of rural residents will be negligible.

## **LITERATURE**

- Борнукова К., Чубрик А., Шиманович Г. (2012). Оценка шкалы эквивалентности для белорусских домохозяйств и ее влияния на определение социально-уязвимых групп населения, *Рабочий материал* WP/12/01, Исследовательский центр ИПМ.
- Всемирный банк (2003). *Методические указания по анализу бедности и социальных последствий*, Группа стратегии сокращения бедности (PRMPR) и Департамент социального развития (SDV), Вашингтон, округ Колумбия, США.
- Исследовательский центр ИПМ (2013). *Бедность и социальная интеграция в Беларуси 2013*, Исследовательский центр ИПМ, Минск.
- Колесникова И. (2013). Вступление в ВТО и экономическое развитие: опыт вновь принятых стран и уроки для Беларуси, *Дискуссионный материал* PDP/13/04, Исследовательский центр ИПМ.
- Точицкая И. (2012). Последствия вступления России в ВТО для торговли Беларуси и ее отраслей, *Аналитическая записка* PP/01/12, Исследовательский центр ИПМ.
- Точицкая, И. (ред.) (2005). *Вступление Беларуси в ВТО: проблемы и перспективы*, Исследовательский центр ИПМ, Минск.
- Ben-David, G. Nordstoom, H., Winters, A. (2000). Trade, Income Disparity and Poverty, *WTO Special Study* No. 5, World Trade Organization.
- Chen, Sh., Ravallion, M. (2003). Household Welfare Impacts of China's Accession to the World Trade Organization, *Policy Research Working Paper* 3040, World Bank.
- Essama-Nssah, B. (2005). The Poverty And Distributional Impact Of Macroeconomic Shocks And Policies: A Review Of Modeling Approaches, *World Bank Policy research Working Paper* 3682.
- Fewsmith, J. (2001). The Political and Social Implications of China's Accession to the WTO, *China Quarterly*, 573-591.
- de Janvry, A., Sadoulet, E. (2008). Methodological Note: Estimating the Effects of the Food Price Surge on the Welfare of the Poor, *mimeo*, UC Berkeley.
- Kee, H., Nicita, A., Olarreaga, M. (2009). Estimating Trade Restrictiveness Indices, *Economic Journal*, 119, 172--199.

- Kruk, Dz., Shymanovich G. (2011). Public Expenditures on Education and Health in Belarus before and during the Global Crisis, *CASE Network Report 102*.
- Nguyen, T., Dao N., Moser, A., Pham, A. (2009). *Socio-Economic Impacts of WTO Accession on Rural Women*, ILSSA, UNIFEM and AusAID.
- Rutherford, Th., Tarr, D. (2006). Regional Impacts of Russia's Accession to the WTO, *Policy and Research Working Paper 4015*, World Bank.

**APPENDIX 1. EXPENDITURE ITEMS IN THE HOUSEHOLD BUDGET SURVEY**

<b>Expenditure items</b>	<b>Expenditures for foodstuffs</b>
Aggregate expenditures for food	Expenditures for bread
Expenditures for eating out	Expenditures for pastry
Expenditures food purchased for animals	Expenditures for flour
Expenditures for alcohol	Expenditures for cereals and beans
Expenditures for tobacco	Expenditures for macaroni food
Expenditures for clothing	Expenditures for milk
Expenditures for footwear	Expenditures for sour cream and cream
Expenditures for fabrics	Expenditures for butter
Expenditures for household appliances	Expenditures for cheese
Expenditures for furniture	Expenditures for other dairy products
Expenditures for fuel for heating dwelling	Expenditures for beef and veal
Expenditures for rent	Expenditures for pork
Expenditures for health care	Expenditures for sausages and smoked meat
Expenditures for public transportation	Expenditures for poultry
Expenditures for maintenance of private vehicles	Expenditures for fat
Expenditures for construction and purchase of real estate	Expenditures for other meats
Expenditures for purchase of cars and other vehicles	Expenditures for fish and seafood
Expenditures for jewelry	Expenditures for vegetable oil, margarine and other grease
Expenditures for secondary and higher education	Expenditures for eggs
Expenditures for preschool education	Expenditures for potatoes
Expenditures for culture, recreation and sports	Expenditures for vegetables and melons
Expenditures for taxes and insurance	Expenditures for fruit and berries
Expenditures for cultivation of land plot	Expenditures for sugar and confectionery
Financial assistance to relatives	Expenditures for tea, coffee, cocoa
Expenditures for communication services	Expenditures for non-alcoholic drinks
Expenditures for personal care	Expenditures for other food
Expenditures for bank deposits	
Payments of debts, credits and loans	
Expenditures for rent and utilities	
Expenditures for other goods and services	
Money on debt	

## APPENDIX 2. SOURCE DATA USED FOR SIMULATION

	Initial customs tariff, %	Tariff at the time of Russia's accession to the WTO, %	Final level of tariff binding, %	Price elasticity of imports*	Share of imports in consumption, %
<i>Food</i>					
Expenditures for bread	15.0	15.5	15.0	--	0.0
Expenditures for pastry	15.2	15.0	11.6	-0.8	10.0
Expenditures for flour	10.0	10.0	10.0	-1.2	1.2
Expenditures for cereals and beans	6.6	11.9	5.0	-0.9	48.2
Expenditures for macaroni food	15.0	15.0	14.1	-0.7	39.2
Expenditures for milk	15.0	20.0	15.0	-1.4	0.0
Expenditures for sour cream and cream	15.3	15.0	15.0	-1.1	0.0
Expenditures for butter	15.0	20.0	15.0	-0.8	1.2
Expenditures for cheese	18.1	17.2	14.0	-0.6	1.1
Expenditures for other dairy products	15.0	15.0	11.0	--	15.0
Expenditures for beef and veal	26.8	15.0	15.0	-1.0	12.0
Expenditures for pork	31.9	65.0	25.0	-2.9	12.0
Expenditures for sausages and smoked meat	25.5	20.0	12.0	-1.1	12.0
Expenditures for poultry	49.2	80.0	80.0	--	12.0
Expenditures for fat	15.0	10.0	10.0	-1.8	12.0
Expenditures for other meats	25.0	22.1	18.7	-1.4	12.0
Expenditures for fish and seafood	10.1	10.1	4.4	-1.3	49.0
Expenditures for vegetable oil, margarine and other grease	14.5	15.0	14.3	-1.0	69.1
Expenditures for eggs	0.1	15.0	10.0	--	0.0
Expenditures for potatoes	15.0	15.0	10.0	-1.2	13.2
Expenditures for vegetables and melons	17.5	15.1	10.5	-0.8	13.2
Expenditures for fruit and berries	14.4	7.7	4.5	-1.0	89.7
Expenditures for sugar and confectionery	9.7	6.6	5.6	-1.0	23.9
Expenditures for tea, coffee, cocoa	16.3	16.3	10.5	-1.0	100.0
Expenditures for non-alcoholic drinks	15.0	15.7	9.1	-0.9	6.7
<i>Non-food goods</i>					
Expenditures food purchased for animals	7.2	7.2	5.7	-1.0	50.0
Expenditures for alcohol	20.0	20.0	12.5	-1.0	10.0
Expenditures for tobacco	13.3	13.6	9.9	-2.4	1.6**
Expenditures for clothing	19.5	19.5	15.4	-1.9	29.5
Expenditures for footwear	10.0	4.0	3.7	-1.0	32.5
Expenditures for fabrics	10.0	10.0	7.4	-1.0	30.0
Expenditures for household appliances	8.7	14.1	6.3	-1.2	44.0
Expenditures for furniture	21.5	19.2	10.2	-0.9	15.0
Expenditures for health care	10.0	9.7	4.6	-0.9	74.5
Expenditures for purchase of cars and other vehicles	35.0	5.0	5.0	-1.2	100.0
Expenditures for jewelry	20.0	20.0	12.5	-1.0	100.0
Expenditures for personal care	15.0	15.0	6.5	-0.8	60.0
Expenditures for rent, excluding utilities and heating	15.0	14.9	10.8	-1.4	37.4

\* In the absence of baseline data on the elasticity of imports of goods, the average elasticity was used - 1.1.

\*\* The share of 100% was used as raw materials for the domestic tobacco products are imported.

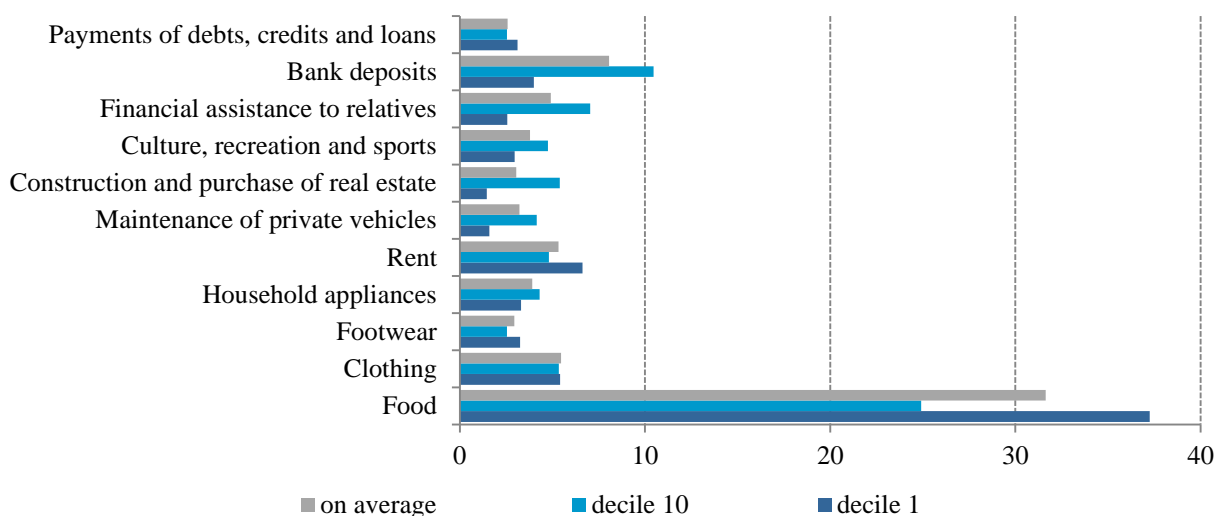
Source: Author's calculations based on the data from Belstat, UN Comtrade, Trade Map.

**APPENDIX 3. SIMULATION RESULTS: CHANGES IN THE AVAILABLE RESOURCES OF VULNERABLE GROUPS, %**

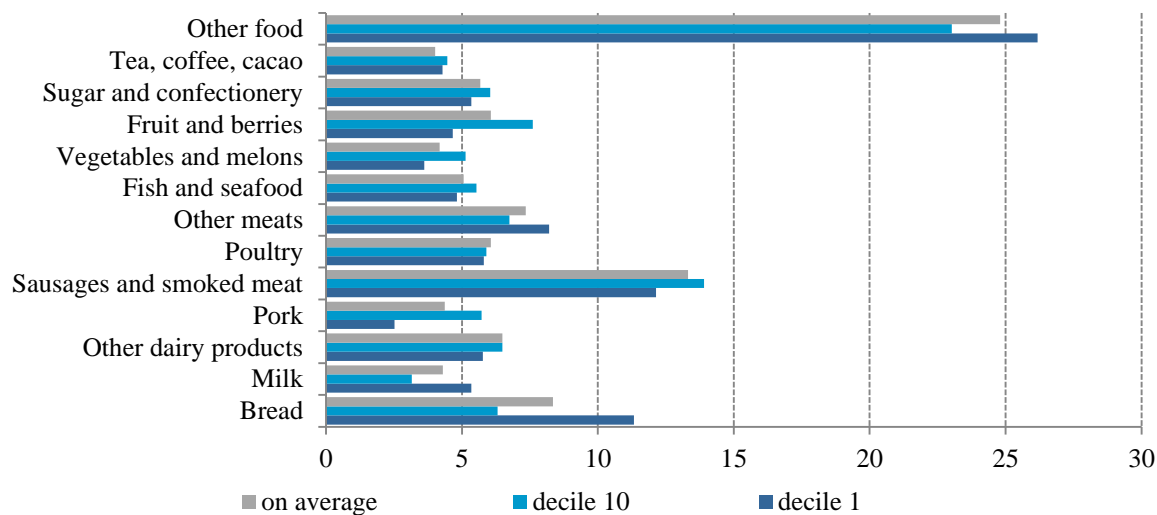
	A_sr	A_sr_net	A_lr	B_sr	B_sr_net	B_lr	C_sr	C_sr_net	C_lr
<i>Gender</i>									
Men	0.02	0.21	0.74	0.07	0.22	0.79	-0.49	0.66	1.91
Women	0.02	0.22	0.77	0.08	0.23	0.82	-0.49	0.68	1.94
<i>Age</i>									
Under 17	0.04	0.22	0.77	0.09	0.23	0.82	-0.38	0.69	1.97
Over 65	0.00	0.21	0.76	0.07	0.22	0.80	-0.68	0.68	1.87
Active working age	0.02	0.21	0.75	0.07	0.22	0.80	-0.48	0.67	1.92
<i>Social and economic status</i>									
Employee	0.02	0.21	0.75	0.08	0.22	0.80	-0.44	0.66	1.93
Employed pensioners	0.00	0.21	0.75	0.07	0.22	0.80	-0.63	0.67	1.93
Unemployed pensioners	0.00	0.21	0.75	0.06	0.22	0.80	-0.67	0.68	1.87
Students	0.03	0.22	0.75	0.09	0.23	0.80	-0.48	0.69	1.88
Unemployed of active working age	0.02	0.21	0.76	0.07	0.22	0.81	-0.50	0.69	1.91
<i>Household type</i>									
One-person household	0.02	0.22	0.80	0.08	0.23	0.85	-0.53	0.68	1.95
One-parent family	0.07	0.25	0.84	0.13	0.27	0.89	-0.34	0.76	2.07
<i>Place of residence</i>									
Minsk	0.04	0.24	0.83	0.11	0.25	0.88	-0.57	0.71	2.07
Big cities	0.02	0.23	0.79	0.09	0.24	0.84	-0.57	0.70	1.94
Small towns	0.01	0.21	0.75	0.07	0.22	0.80	-0.51	0.67	1.93
Rural areas	0.01	0.18	0.67	0.05	0.19	0.71	-0.32	0.61	1.79
<i>Region</i>									
Brest region	0.02	0.19	0.69	0.06	0.20	0.73	-0.40	0.61	1.77
Vitebsk region	0.03	0.21	0.76	0.08	0.22	0.80	-0.44	0.68	1.94
Gomel region	0.01	0.21	0.76	0.07	0.23	0.81	-0.56	0.69	1.84
Grodno region	0.00	0.19	0.72	0.06	0.20	0.77	-0.48	0.64	1.94
Minsk City	0.04	0.24	0.83	0.11	0.25	0.88	-0.57	0.71	2.07
Minsk region	0.01	0.20	0.73	0.07	0.21	0.78	-0.49	0.66	1.91
Mogilev region	0.03	0.22	0.78	0.08	0.24	0.83	-0.44	0.72	1.99

Source: Author's calculations.

### APPENDIX 4. STRUCTURE OF EXPENDITURES OF RURAL POPULATIONS AND CITIZENS OF MINSK



(a) Main items of expenditures of the population, % of the available resources



(b) Structure of expenditures of the population for food products, %

Source: Household Budget Survey.