

Trade liberalization and state support of agriculture: effects for developing countries

VASILY EROKHIN¹, ANNA IVOLGA², WIM HEIJMAN³

¹*Department of Management and Marketing, Moscow University of Finance and Law, Moscow, Russia*

²*Department of Tourism and Service, Stavropol State Agrarian University, Stavropol, Russia*

³*Department of Social Sciences, Wageningen University, Wageningen, the Netherlands*

Abstract: The paper aims at the overview of the main approaches of state support implemented by developed and developing countries and the assessment of their distorting influences on the trade with agricultural commodities. The current state of state support is analyzed on the examples of EU-27, the USA and Japan. The experiences of developing countries are summarized on the examples of China, Russia and the CIS countries. State support tools are grouped according to the WTO classification. The alternative classification is implemented in order to compare the distorting effects caused by the state support. The EPACIS model is implemented to analyze the effects of trade liberalization for the distribution of agricultural commodities and trade policies in developing countries. The model is adjusted in order to assess the effects of state support for the production and trade with agricultural commodities in developing countries, recently accessed the WTO (the case of Russia). Imitation calculations allow formulating policies for the developing agricultural markets depending on the degrees of their sensitivity to foreign trade regulations and domestic support.

Key words: international trade, agricultural products, state support, World Trade Organization, developing countries

The importance of state support of agriculture cannot be overstated. Such measures undertaken as much as possible by almost every country distort the character of international trade with agricultural products. Developed countries, primarily the USA and the EU, lay emphasis on the implementation of a wide range of tools that affect competitiveness of domestic farmers and the character of international trade directly and indirectly. Such policies support the effective elimination of price disparity and the growth of farmers' incomes. Obviously, developing countries fail to support domestic agriculture proportionally with the USA, the EU and other developed states. Volumes of domestic support gained by farmers in developing countries are tenfold lower than in the developed states. Moreover, the affiliation with the World Trade Organization (WTO) limits the capabilities of developing countries to regulate their foreign trade activities; particularly the binding of import custom tariffs restricts the flexibility of the state administration of custom tariff measures.

The main issues of state support of agriculture and its influence on the production and trade were researched by many authors. Particularly, Josling (Josling et al. 2010) focused on agricultural and food

policies in developed countries, the international trade with agricultural and food commodities. He also investigated the development of the multilateral trade regime and the reforms of agricultural trade system in the WTO. Anderson (Anderson et al. 2013) impacted into the research of political issues of agricultural protectionism and disarrays in the international food market. For the purposes of the current research, we have also addressed Prof. A. Schmitz's (Schmitz 2010) investigations of current agricultural policies in the USA and other developed countries, as well as his prognosis of agricultural policies for the next decade.

The WTO commences trade reforms in accessing countries, the results of which have to be measured and analyzed. There are many models which forecast how the state regulation influences the national economy and foreign trade. Imitation models of the general and partial equilibrium are implemented widely in the field of agricultural policy. It is worthwhile to highlight the following models of partial equilibrium: the AGLINK, the World Food Model, the Agricultural Trade Policy Simulation Model (Tarr and Volchkova 2010), the WATSIM (Lampe 1998). Among the models of general equilibrium, the most commonly used are:

the WTO Model (Anderson et al. 2001), the Rural-Urban North-South (RUNS) Model (Burniaux and Mensbrugge 1991), and the Multi-Regional Trade (MRT) Model (Boehringer and Rutherford 1999).

There are works performed by Russian economists, which have to be taken into consideration when studying the issues of state support of agriculture and its influence on the agricultural production and trade. Particularly, Ushachev (2012) is one of the leading Russian researchers in the sphere of the sustainability and competitiveness of agriculture in the conditions of the international trade liberalization, including the WTO accession and its framework of state support of agriculture. Alongside with Ushachev, for the purposes of this research we have also addressed the works by Tarasov (2012) related to the risks and treats of competitiveness of agriculture and food security of Russia.

Meanwhile, the volume of works related to the analysis and quantitative assessment of state policies' influences on domestic agriculture in Russia, the CIS and other developing countries remains low. Werheim developed a model of the computable general equilibrium (CGEModel) (Wehrheim and Wobst 2005) in 2001, which became the first one of its kind for Russia and was designed as a tool for the quantitative analysis of economic policies in the country upon its way to trade liberalization. The model has a high level of sectoral desegregation and therefore may serve for a wide range of macro-economic and sectoral questions, especially related to the state support of agriculture and its effects for the trade with agricultural commodities.

It is worthwhile to mention the RATSIM model as well, which is a model of partial equilibrium, developed in 1999–2000 by a group of Russian and foreign economists (Fock et al. 2000). The model is applicable especially for the analysis of trade with agricultural commodities and trade policies of Russia in terms of the integration processes in the CIS and Russia's accession to the WTO. Although the RATSIM model provided some quantitative assessments of how the domestic support influenced Russian agriculture in general, it was not applicable to research how the separate agricultural markets had been influenced by the custom tariffs.

MATERIALS AND METHODS:

For the purposes of the current research and assessment of the main effects of state support for

the development of the international trade with agricultural commodities, we utilized the EPACIS Model (Economic Policy for Agriculture of the CIS), developed by the Leibniz Institute of Agricultural Development in Central & Eastern Europe (IAMO) (Weingarten and Romashkin 2001). The EPACIS is the model of partial equilibrium, elaborated by the IAMO for the analysis of trade with agricultural commodities and trade policies of such developing countries as the CIS.

It is suggested that a part of commodities produced by each of the CIS country, including Russia, is distributed internationally, while another part stays in the domestic market. Herein the imported commodities are considered as competitors to the domestic ones in the national market. In such a way, the domestic demand covers both imported and domestic products. As the EPACIS model stipulates, foreign trade is divided into two constituents: the trade within the CIS and the trade with other countries. The model allows to analyze the bilateral trade flows and to assess the fluctuation of the foreign trade balance of each country, the product group or commodity, included in the database.

In order to emphasize the attention on how the state support of agriculture affects the trade with agricultural commodities, the authors excluded agricultural markets of the CIS countries (except Russia) from the EPACIS model and conducted a different calculation. The purpose was to get concentrated on the agricultural market of one country, recently accessed to the WTO. The modification lets to assess the influences of both the foreign trade policy (particularly import tariffs) and the changes of the state support of agriculture on Russia's domestic production and trade with agricultural commodities. Besides the modification itself, the authors implemented a new approach (different to the EPACIS) to the database architecture, based on the balances of food resources and the utilization of all agricultural commodities, included in the model.

The current issues of the state support of agriculture are analyzed on the examples of such developed countries as the EU-27, the USA and Japan, which have the biggest share in the global support of agriculture. The EU-27 and the USA are considered as the key players of the global agricultural market, their trade policies and practices of the state support are investigated in order to assess their applicability for developing countries. The experiences of developing countries are summarized on the examples of China (as the world's most rapidly growing agricultural producer

and supplier), Russia (one of the most perspective emerging market, recently integrated into the WTO) and the CIS countries (the regional trade alliance that affects the EU, China and the Middle East countries, especially after the Russia's accession to the WTO).

The measures of the state support are grouped according to the WTO classification (4 boxes depending on the level of distortion to trade). The alternative classification of support measures is implemented, which allowed comparing the distorting effects caused by the state support in the EU and the USA (developed countries), China and Russia (developing countries). The classification involved the support of producers, consumers and general services.

Methods of quantitative and comparative analysis are implemented. The data on the internal and foreign trade support of agriculture are summarized for the developed and developing countries, the OECD countries, and separately for the EU, the USA and Japan.

Trade data for this research are obtained from the "International Trade and International Cargo Flows in 2011" Report by the VLANT. The alternative sources are the "Commodity Trade between EU-27 and the CIS Countries, 2000–2010" by the Eurostat and the FAO reviews of trade and agricultural policies of the EU, the USA, China and Russia (Nilson 2011).

RESULTS AND DISCUSSION

In the early XX century, developed countries came to an understanding of the necessity of the foreign trade liberalization for the effective development of international trade and an easier access of their commodities to foreign markets. Contrariwise, developed states when practicing the efficient protectionist policy were reluctant to abandon completely their protectionist practices and kept securing their

domestic markets from the foreign competitors. The establishment of the General Agreements on Tariffs and Trade (GATT) and later the WTO resulted from the necessity to combine the support of the national economy and the liberalization of international trade. The establishment of the GATT became an acknowledgement of the fact that the overdue support of separate branches did not correspond with the optimal conditions of the resources utilization, caused an unreasonable appreciation of commodities and a decline in the overall efficiency of the global economy. Principles of trade liberalism were accepted as the state of things most advantageous for everyone. Volumes of the state support of agriculture is one of the topical and most discussed issues for all players of the global agricultural market, either participating in the WTO or, even more, accessing the global trade system.

Currently, almost the all-global volume of agricultural support is distributed between the EU producers (39%), the USA (36%) and Japan (15%). These countries provide more than 90% of the total volume of subsidies worldwide. The share of the state support in the GDP of agriculture is 36% in the EU, 37% in Japan and 39% in the USA (Table 1).

When having implemented the alternative of the "boxes" classification of supportive measures, which considered their market orientation, we were able to discover that developing countries in a greater degree supported their farmers in a "passive" way (using the limitations of import and lacking resources for the internal support), while the developed countries implemented a whole range of "passive" and "active" measures of support (Figure 1).

Many experts foresee the structural changes in international trade with agricultural products in the near future. This concern is related to the directions and firstlings of the agrarian policy, implemented

Table 1. Cumulative support of agriculture by the WTO member countries in 2011

WTO member countries	Amber Box (AMS)		De minimis		Blue Box		Green Box		Cumulative Support	
	\$ bln	%	\$ bln	%	\$ bln	%	\$ bln	%	\$ bln	%
EU	39.8	58.2	0.7	6.6	20.4	92.1	20.0	19.1	80.6	39.4
USA	16.8	24.6	7.3	71.4	0.0	0.0	50.1	48.1	74.2	36.3
Japan	6.5	9.5	0.0	0.0	0.8	3.8	23.4	22.5	30.7	15.0
Other WTO member countries	5.3	7.7	2.3	22.0	0.9	4.1	10.7	10.3	19.1	9.3
TOTAL	68.3	100.0	10.3	100.0	22.0	100.0	104.0	100.0	204.6	100.0

Source: Erokhin and Ivolga (2012)

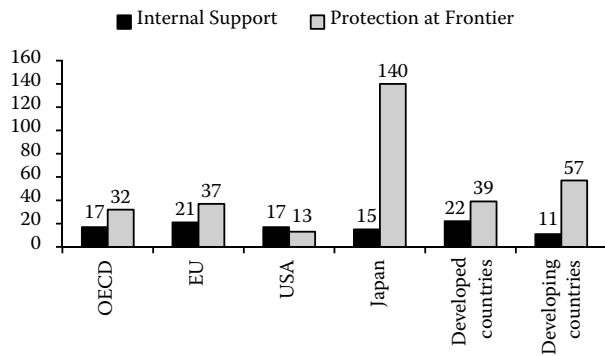


Figure 1. Relation of the internal and foreign trade support of agriculture in the selected countries in 2011, %

Source: authors' development according to the FAO (2012a, d)] and Erokhin and Ivolga (2011)

in Europe in the recent years; to strengthening of the support in the frames of the “Green Box” and the active externally-oriented protectionism of the USA; to the rapid market reinforcement of such big players as China; as well as to the Russia’s accession to the WTO and the potential corrections of the international trade with agricultural commodities amongst the CIS countries.

The USA are for many years a distinct net exporter of agricultural and food products (as well as some of the EU countries). The growth of agricultural production in the USA in the recent decades was largely provided by the means of state support (Figure 2). The total volume of subsidies paid to the US farmers and consumers was \$146.7 bln in 2011, including \$30.6 bln (20.9%) for the support of producers, \$35.7 bln (24.34%) for the support of consumers and \$75.4 bln (51.4%) for the support of general services (FAO 2012d). The US agrarian policy is targeted on the activation of the “natural” measures of support

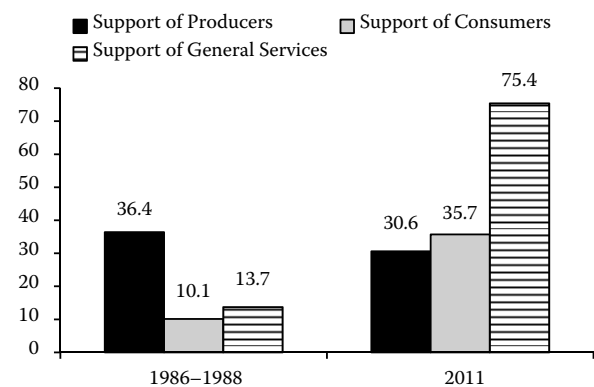


Figure 2. Structure of the state support of agriculture in the USA in 1986–1988 and 2011, \$ bln

Source: FAO (2012d)

that influences trade indirectly and does not distort the markets. Comparison of the structures of state support in the late 1980s and 2011 shows a radical change in the composition of the state support basket. Thus, the “direct” support of producers dominated in 1986–1988s (60.5%), but in 2011 its share sank to 20.9%. The first place was taken by the support of general services (50.1% in 2011 against 22.8% in 1986–1988s) (FAO 2012d).

The large amount of state support in the USA is granted as the “Green Box” measures. It is much more than in the EU (\$50 bln versus \$19.9 bln respectively). The main part of this volume goes to the food donations for poor people – 76.5% in 2011 (Figure 3). Thus, American farmers get the direct payments from the state annually. The size of payment depends on the land areas utilized for the grain production in the previous year. Such payments do not depend on the current yield and therefore are related to the Green Box. At that, the farmer cannot get more than \$40 thousand. Farmers with over \$750 thousand of the annual revenue are not allowed to participate in the program. The total volume of support is about \$5 bln annually. The volume of each payment is calculated as a product of the land square utilized for grain production, the coefficient 0.85, the crop yield and the fixed payment per product unit (Josling et al. 2010).

There is currently a discussion in the USA concerning the subsidies payout based on the crop acreage, a complete abolishment of direct payments to farmers and the introduction of the income insurance program for agricultural and food producers. However, the total volume of the US agricultural production will get changed insignificantly because of the low elasticity of the US agriculture and the inflexibility

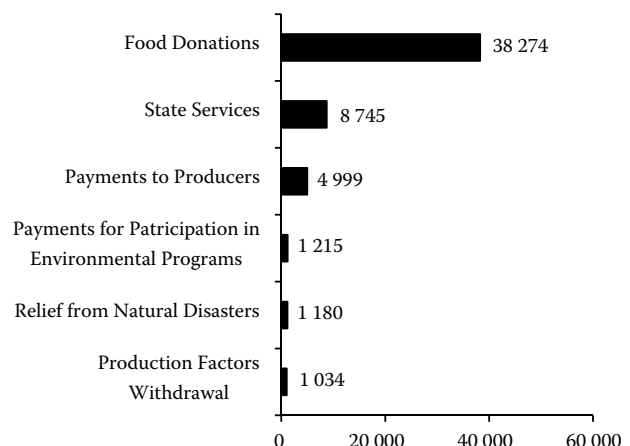


Figure 3. Structure of the USA Green Box in 2011

Source: Erokhin and Ivolga (2012)

of the “crop acreage structure – profitability” ratio. Effects for the international trade with agricultural products may arise when the global prices on certain crops go down. The new US program of state support amid the reduction of global prices may distort the acreage structure and lead to growing wheat and cotton acreages, and respectively to lower global prices. The given conditions will impact negatively Argentina and Brazil, the world leading wheat and cotton exporters. This is how the distorting influence works, when the corrections of the state support in one country affect the global market environment. The distorting effect is enhanced by the fact that the USA are one of the main global producers of agricultural products and food.

The EU is another key player in the global agricultural market. The structure of the state support of agriculture in the EU countries is in the stark contrast to the USA. First, the “Amber Box” dominates in the EU (as we have already noticed in the Table 1). Second, the EU, as opposed to the USA, actively provides support in the framework of the “Blue Box” for the programs of compensatory payments per hectare to farmers and producers of grain and oil crops, as well as for the livestock population. Third, the volume of the EU “Green Box”, big when compared to other countries, is relatively small comparing to the USA’s one. It is spent on the investment and environmental programs, as well as on general services. The total volume of subsidies spent on the support of producers and consumers in the EU in 2011 was \$112.4 bln. It decreased by 15% during the past 20 years, whereas the USA, on the contrary, increased its volume of the state support more than twofold. The structure of the EU and the USA support boxes is different. Almost 86.0% of the EU support in 2011 went to the

producers, 12.4% – to the general services and only 1.6% to the consumers (Figure 4).

The given structure remained almost permanent during the last 20 years. The share of support of the general services increased by four percentage points in 2011 in comparison with 1986-1988s, whereas the share of the support of consumers decreased by three percentage points. The support of producers remained the keynote of the EU agricultural policy during the past decades, although the EU gradually decreased the total volume of support, re-orienting it from distorting subsidies to payments related to acreages of agricultural lands and farmers’ incomes FAO (2012a).

The EU implements the Common External Tariff (CET) in the sphere of the custom and tariff regulation of the foreign trade with agricultural products. Its average level is higher compared to the trade with other products. The import tariffs on animal products and milk are even higher than the average CET on agricultural products. It is worth mentioning that the animal production together with the higher level of the tariff protection gains the bigger volumes of the state support, especially for poultry, beef, mutton and milk. For those branches, the support of the market price is implemented (referred to as “intervention prices”), although the importance of such tool decreases in favour of the direct payments to producers.

The EU actively implements the non-tariff measures of the protection of domestic agricultural market, particularly “high” sanitary standards. For example, the EU completely prohibits ractopamine (a drug that is used as a feed additive to promote leanness in animals raised for their meat) to limit the import of pork. Ractopamine is banned by the mainland China and Russia as well. The EU also implements the so-called “WTO special warrants” set on poultry, sugar and eggs (price-based), and fruits and vegetables (volume-based) (Erokhin and Ivolga 2011). The EU fully exploits the export subsidies over the whole range of agricultural products of animal husbandry and plant production, as well as alcoholic beverages and agricultural raw materials. Although the overall volume of export subsidies for the EU farmers declines, this is not the case for the animal production.

According to the OECD (2011a, b), the EU reforms of the agrarian policy and the support of farmers influenced favourably the development of the market orientation among farmers, which let them to benefit from the growing global food prices and market environment. The reform’s critics distinguish the

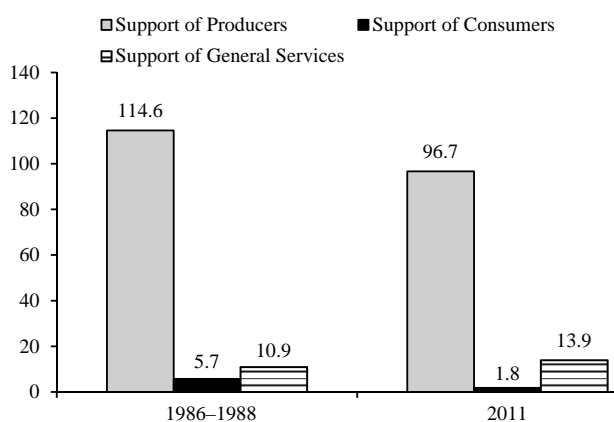


Figure 4. Structure of the state support of agriculture in the EU in 1986-1988 and 2011, \$ bln.

Source: FAOSTAT (2013)

growing volume of support forwarded to the large-scale landowners and producers, but not to the “real” land users, as well as the inadequate mechanisms of subsidies delivery to the real agricultural producers.

Another growing player in the international agricultural market is China. Even two decades ago China was considered by the developed countries as the largest market for the distribution of Western agricultural products and food. However, China today is among the world leading exporters of agricultural products and food (4th place in the world in 2011). During the past ten years, the import and export of agricultural commodities in China grew rapidly (import – eightfold, export – fourfold). It is worth mentioning the gradual changes of the food export structure in China – if the raw and unprocessed agricultural products dominated in 2001, then the semi-finished products, fruits and vegetables took the lead in 2011 (FAO 2012b).

Such an effect was achieved due to the drastic reforms of the Chinese trade and agrarian policies, started right after the country’s accession to the WTO in 2001. The Chinese government set a course for the liberalization of the domestic agrarian market by reducing the import duties, partially cancelling the import and export licensing claims, abolishing the quantitative quotas or inducing their transformation into the tariff ones, eliminating some of the controlling measures in relation to the domestic prices and food. The Chinese government moved from the taxation of domestic agriculture to its support based on subsidies and the support of market prices. According to the national Ministry of Agriculture, the volumes of state support of agriculture in China would keep growing in the mid-term (Ministry of Agriculture of the People’s Republic of China 2012).

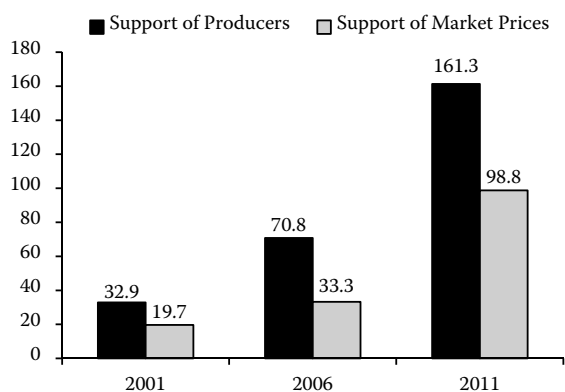


Figure 5. Dynamics of the state support of agriculture in China in 2001-2011, \$ bln

Source: OECD (2012)

The support of market prices will be based on duties, import quotas, state trade, minimal prices warranted by the state and special food interventions introduced in the domestic market whenever necessary. The budget support of farmers will be provided by direct subsidies on the fixed rate (per unit of acreage) and by subsidies per unit of resources. The total volume of the state support of agriculture in China increased almost five times during the past decade (Figure 5). The share of the support of producers in the gross revenue of agriculture increased from 8% (2001) up to 17% (2011).

The main part of the support of agriculture in China is provided through the support of market prices. The support of market prices increased five times – from \$19.7 bln in 2001 up to \$98.8 bln in 2011. The set of tools includes customs duties, quotas, state trade prices and minimal guaranteed prices (FAO 2012b). The “State trade” still remains the specific feature of the foreign trade with agricultural products in China, in spite of all its transfer to market economy. It influences the character, structure and dynamics of the Chinese export and import of agricultural commodities. The main goal of this system is to provide the sustainable supply of food in the domestic market along with the price stability, as well as to control the outflow volumes of agricultural commodities and food of strategic importance and the incomes earned. China puts to a good use the original combination of the state system of trade and the distinction to the trade liberalization in the framework of the WTO in order to protect its strategic interests in the global agricultural market. The given set of tools is implemented for the protection of the commodity markets which are of a high importance for the national food security. However, such measures evidently distort the conditions of trade and production.

Another feature of the Chinese foreign trade policy is the commitment to the measures of “active protectionism”, a state of nature for any economy of expansion (Ministry of Agriculture of the People’s Republic of China 2012). The Free Trade Agreement between China and the ASEAN came into effect in 2010 and established one of the world largest trade alliances. This was the solid step for China on its way to the further expansion to the global market, especially in a sign of the expectable accession of Vietnam, Cambodia, Laos and Myanmar to this trade alliance in 2015. Moreover, in 2010 China offered unilateral preferential duties on the separate commodities to 41 less developed countries. The country expects to expand such practice to 95% of its import (FAO 2012b).

The rapid growth of agricultural production, export and import of agricultural products, the support of the national agriculture and the expansion to the existing and emerging external markets performed by China let us to consider this country as one of the leaders of the global agricultural market even in the midterm. The main limiting factor for the sustainable development of the Chinese agriculture is the scantiness of natural resources, which, coupled with the huge population and serious problems in the sphere of food security, will stipulate the aggressive trade policies in the global market and the domestic protectionism.

There is a tendency of recent years when the developed countries gradually cut their support programs for the domestic farmers. Support policies are the subjects of change as well along with the volumes of the relative support. Moreover, the support is becoming reoriented from the production of certain agricultural commodities to the production-limiting programs (for example, when the compensatory payments are aligned with the fixed acreages, yields or livestock population). However, exactly the most developed countries allocate large funds for the support of their farmers (2011: \$47 bln in the USA; \$121 bln in the EU; \$49 bln in Japan) (Erokhin and Ivolga 2011).

Developed countries apply the range of thresholds to protect the separate (most sensitive to foreign competition) segments of the domestic agricultural complexes. For example, the “tariff peaks” set by the developed countries for certain kinds of food and agricultural commodities exceed 100% (when the average level of tariff protection of agriculture by the WTO member states is about 62%).

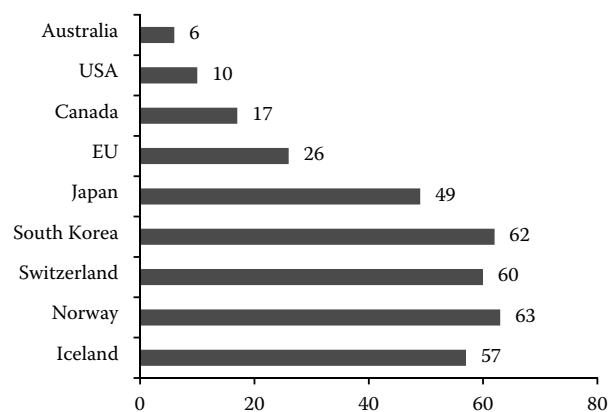


Figure 6. Support of agriculture in the selected countries in 2011 (share in overall farmers' income), %

Source: authors' development according to the FAO (2012a, b, c, d) and Erokhin and Ivolga (2011)

Developed countries widely implement the non-tariff barriers and measures of the phyto-sanitary control as well. One of the main “distorting” effects of the state support is that the WTO rules do not consider the existing distinctions between the natural and economic conditions of agricultural production in various countries. They are not related to the specifics of the past decades of the economies in transition (like Russia and other CIS states), when the agricultural production decreased and suffered a lot (Erokhin and Ivolga 2012). The world biggest agricultural producers (the USA, the EU, and Australia) enjoy more favourable natural and economic conditions for agricultural production unlike most of the developing countries, including the CIS states and Russia. On the other hand, the developed exporting countries, which established the GATT in the middle of the XX century, have the diversified agricultural complexes, benefited from the WTO preferences and the widely apply export subsidies (which is not a case with the accessing countries) (Ushachev 2012).

Developed countries not only support their farmers by the administrative price control and subsidies, but increase the competitiveness of their agricultural complexes with general services provided to the domestic producers of agricultural commodities (i.e. the “Green Box” measures). Such general services include: the utilization of the newest technologies and the results of advanced research; the support of marketing, information, financial and transport infrastructure; costs associated with the crop insurance; the development of consulting and extension services in rural territories; the development of rural infrastructure, etc. Such measures do not distort the trade and production at all or affect them in a minor way. Consequently, they are not the subjects of the reduction commitments and are eligible in any extent. The support conditioned by the “Green Box” is of a great importance for agriculture in developed countries, including the competition in the global agricultural market, since the production cost advantages of one country can be neutralized by lower costs of the transportation and marketing of another (Erokhin and Ivolga 2011).

Effectiveness of the “Green Box” measures in the long term can be even higher than of the direct subsidies. However, the most distorting effect is still caused by the direct payments to agricultural producers. The given payouts are implemented by the governments in order to protect small and medium farmers from the foreign competition, but in practice, the large-scale producers who are not in such a desperate need

gain the best of such support. The fact is that such support is calculated and distributed based on the certain quantitative indicators: production volumes, acreages, the livestock population, etc. Small farmers, without being large landowners and having high incomes from their main productive work, try to compensate their incomes working off-farm (which is not supported, evidently).

Even more, small volumes of the “real” support gained by small farmers can be cut even in the midterm. The EU has the world biggest budget allocated for the support of the domestic agriculture. However, it would be a hard task for the EU to maintain such a high level of support in the face of a range of macroeconomic problems and the internal situation. The volume of the state support of the EU farmers decreases gradually. Nowadays, the EU spends approximately 0.4% of its GDP on agriculture (0.6% in 1990–2000s), although it merged the less developed countries of Eastern Europe, where agriculture loomed large in the structure of their economics and which therefore needed to support it (FAO 2012a). The reform of the EU system of payments is aimed to overcome the existing regional disparities. In case of the decision to delegate the part of payments (10%) previously made from the EU budget to the national budgets (as it is suggested by some EU member states), France would lose \$200 mln annually, Spain – \$188 mln. At the same time Germany, Italy, the Great Britain, Belgium and ten new EU member states would increase their subsidies (FAO 2012a). According to their accession treaties, those countries were obliged to increase the subsidies from the national budgets gradually until 2013.

In general, the EU agrarian reform preconditions a further decrease of the state support to agriculture. Thus, if today the share of the state support in the farmer’s budget can reach 70%, it will be reduced to 40% by 2020. It is necessary to lessen the disproportions in subsidies in different countries and to encourage environmental activities. Such changes will force the EU farmers to increase their effectiveness, to enhance their export activities, to explore new markets and investments opportunities abroad.

Most of the developing countries in some or other way are in a “dependent position” in the global market in comparison with the developed countries. They supply raw materials, mineral resources and agricultural commodities and consume products of a higher conversion. Evidently, being dependent, developing countries are to a far greater degree concerned that the major part of benefits of the trade liberalization goes to the developed states.

The “justification” of the export of raw materials or low-processes products from developing countries and the return import of high-technology commodities is aligned with the Heckscher–Olin theorem, which states that the countries export goods that use their abundant factors (and, respectively, the most developed sectors of their economies) intensively. Consequently, the developing countries, where labour and land are cheaper, are naturally specialized in the production and export of primary goods and agricultural products. When exporting these goods, they earn the foreign currency revenues and later spend it on the purchases of foreign goods of a high conversion, produced by the developed countries, which implement the capital, technologies and high skilled labour, i.e. the factors which are scarce for the developing countries.

Following the Heckscher–Olin’s logic, the growth of international trade and its liberalization have to balance the production factors naturally and to reconcile the income inequality of trading countries. According the theorem, the export of raw materials from developing countries supports the industrial growth in developed ones, which in turn accelerates the extra demand for raw materials and provides the growing volume of revenues going to the developing countries.

However, a theory is just a theory, and things go other way in practice. There are many reasons of that, but for the research purposes, we have to concentrate on the consequences of the modern international division of labour for the developing countries. We are of the opinion that there are four consequences:

- (1) a slow growth of agricultural export volumes;
- (2) a substantial growth of food import from developed countries, outrunning the growth of export;
- (3) the modification of the trade conditions to the disfavour of developing countries;
- (4) the incapacity to support the domestic agriculture on the level with the developed states.

In order to assess those consequences and to calculate the influences of trade policies and the state support on the production and distribution of agricultural commodities, we applied the EPACIS model. The model was widely implemented by Russian economists in the early 2000s (Weingarten and Romashkin 2001). To make this research applicable to developing countries in the modern conditions of trade liberalization, we used the cases of the CIS countries and Russia, recently joined to the WTO, and included 2007–2011 data on the production of agricultural commodities,

domestic and foreign trade activities. As the EPACIS model stipulates, we aggregated 11 product groups (wheat; grain; vegetables and potatoes; vegetable oil; sugar; fruits; cotton; milk and dairy products; red meat; pork; poultry meat) and described 5 scenarios of the common CIS and Russia's trade policy in the conditions of the international trade liberalization and the WTO accession (Table 2).

The EPACIS analysis shows that only consumers benefit from the decreasing tariff shelter. Scenario 5 is the most favourable for the consumers. It describes the consequences of the WTO accession for the CIS countries and Russia upon two conditions: the maintenance of the Common Agrarian Market and the reduction of import duties in relation to agricultural commodities of non-CIS origin. The scenario may result in the increase of the consumers' prosperity by 0.6% (\$945 mln). The reduced income from lower import duties coupled with the existing level of the domestic state support of agricultural producers will raise the total volume of state expenses for agriculture by 7.2% (\$ 522 mln). The state will be forced to solve the problem of such budget deficit either at the expense of the agricultural sector by cutting the domestic state support, or by decreasing other expenditures. That may cause tensions between the state and market players. That is why the liberal policy does not bring any essential benefits for the state, particularly in the conditions of the budget deficit. The inefficiency of the liberalization of trade policies for agriculture is proved by the negligible changes of the total wealth of agricultural producers in developing countries. Scenario 5 shows the increase of 0.1% for the CIS and Russia, which is only \$214 mln.

Protectionism at the agricultural markets of the CIS countries (scenario 4) lets to increasing of the government revenues by the means of import duties by \$401 mln. It covers the growth of the state expenditures for the domestic support of agriculture. The burden of the total state expenditures on agriculture at a constant policy of the state support of agricultural producers will shrink by \$378 bln (5.4%). Herein, the net income of agricultural producers will grow by \$208 mln (2.9%), whereof \$4 mln producers will be gained from the increasing domestic support and the remaining \$204 mln from the growing net production income. The consumers' welfare will decline by \$520 mln (0.3%) because of the growing prices and the recessing demand. Consequently, the EPACIS analysis shows that the protectionism towards agricultural commodities of the CIS origin does not affect the Russia's agricultural market essentially.

Despite its popularity, the EPACIS model is limited for the purposes of the current research, since it allows getting concentrated on the effects of the foreign trade policies, not the domestic support itself. However, it is vitally important for the developing country to compare the effects of the trade liberalization and the domestic support of agriculture in order to find out which obligations potentially bring higher losses or benefits.

The modification of the EPACIS model by the expulsion of the CIS countries from the research database, the concentration on the assessment of the major consequences of the WTO accession for the Russia's agricultural market and the corrected methodology of database composition provided us the possibility to compare the effects of both the agrarian policy

Table 2. Scenarios of the common trade policy of the CIS countries and Russia in the conditions of trade liberalization and the WTO accession (EPACIS model)

Scenario	Description	Trade regime of the CIS countries in relation to:	
		CIS countries	Other countries
1	Common agrarian market	Zero import duties	Current import duties
2	Removal of strategic commodities from the free trade regime	Current import duties for strategic commodities, zero import duties for other commodities	Current import duties
3	Custom union	Zero import duties	Import duties of Russia
4	Each CIS country accesses the WTO individually	Import duties correspond to the duties, applied for the commodities of non-CIS origin	Reduction of current import duties
5	Common agrarian market plus reduction of import duties in relation to non-CIS countries	Zero import duties	Reduction of current import duties

Source: authors' development according to Weingarten and Romashkin (2001)

constituents (foreign trade regulation and domestic support) and to develop the prognosis of how state regulation may influence Russia's agriculture in the medium term. The findings are more relevant comparing to the classic EPACIS model and more applicable to other developing countries, which participate in the trade liberalization, since they enable to forecast the potential effects of various strategies of the state regulation and to implement those data when reforming the state agricultural policy.

The results, provided in the Table 3, confirm that in the case of the twofold cut of import duties in the markets with the protection level below 20%, the essential influence of the trade policy is not observed. The maximum effect in such a case is (+5.1%) for import, (+1.4%) for the consumption and (+1.3%) for the production. The share of such commodities in the total agricultural import of Russia in 2011 was over 85%. This means that the liberalization of foreign trade regulation is not essential for the domestic agricultural market.

The transition character of the Russian economy can explain the low elasticity of agriculture to the import tariff. It is more sensitive to the internal incentive, which is a state support of domestic agricultural producers. Such situation is common for developing countries, when the exchange of market signals between producers and consumers is distorted and not effective. Non-competitive conditions of the domestic agricultural market decrease the import influences. The research confirms that the agricultural production in Russia and many other developing countries is determined by the domestic demand and the domestic state support, rather than by the foreign trade policy. That is why it was important to modify the approaches to the EPACIS database composition and to include the balance of agricultural and food resources.

Food and agricultural products are essential commodities; that is why developed countries aim at

Table 3. Changes of production, consumption and foreign trade with agricultural commodities in Russia depending on the levels of import tariffs

	Level of basing rate (%)		
	0–10	11–20	21–30
Import	0.3–1.6	0.3–5.1	7.3–11.3
Consumption	0.1–0.3	0.2–1.4	0.8–5.4
Production	0.2–0.3	0.1–1.3	(–0.3)–(–1.3)

Source: authors' development according to Tarr and Volchkova (2010)

the assurance of their food security by the means of the domestic production and saturate the domestic markets with high-quality own-produced food commodities. The USA and some other developed countries are the net food exporters; they secure a high level of food sovereignty. The USA and France are fully independent and provide themselves with agricultural and food products by 100%, Germany – by 93%, Italy – by 78%, Japan (which almost has no land resources) – by 40% (VLANT 2012). To enter those markets, foreign producers have to have some substantial competitive advantage. Usually this is not the case of developing countries, which do not have sufficient resources to support their farmers and to deliver such competitive advantages to their products. Consumers in developed countries already have all necessary food commodities of the required quality; there is no reason to expect any essential growth of the market capacity. Moreover, there are high custom barriers (either tariffs or sanitary regulations) in the way of the foreign agricultural commodities. For example, the EU and the USA implement mechanisms of tariff rate quotas along with the prohibitive taxes for the non-quota deliveries of food commodities (Table 4).

In most of the cases, the non-quota protection of the EU and the US domestic food markets exceeds 100%, while, for example, Russia implements 20–30% rates, which is not an essential barrier for foreign farmers subsidized by their governments (Tarasov 2012). Consequently, it is questionable if developing countries would definitely benefit from the trade liberalization and get an easier access for their agricultural commodities to the domestic markets of developed countries. To succeed in such markets, one has to undertake essential efforts to secure an exclusive competitive advantage and get the state support.

The principles of competition and the fair self-regulation of the global agricultural market, which

Table 4. Tariffs for non-quota deliveries of agricultural commodities to the EU, the USA and Russia's domestic markets, %

Agricultural commodity	Russia	EU	USA
Milk and dairy products	19	163	126
Vegetable, fruits and live plants	36	161	132
Sugar and confectionaries	68	118	79
Vegetable oil	24	94	164

Source: Ushachev (2012), Tarasov (2012)

underlie the WTO activities, seem too hard for the developing countries, particularly in the conditions of the high state support of domestic agricultural complexes by the developed countries, distorting the fair competition. However, the situation is not so unpromising for the developing countries. Alongside with such serious apprehensions, there are quite realistic effects of the agricultural trade liberalization. De jure developing countries are granted a light regime of access to foreign markets when accessing the WTO and participating in the trade and economic integration. However, one can benefit here not so much by an expansion to the developed countries' markets as by getting a more predictable operation regime in the traditional markets, i.e. the expansion of trade between the developing countries themselves.

The development of domestic market might have been another significant effect of the agricultural trade liberalization owing to:

- (1) the growth of assortment, the improvement of quality and the accessibility of food commodities for consumers;
- (2) entering of domestic farmers into the competition for customers;
- (3) the development of the infrastructure of production, processing, storage and transportation of agricultural commodities, as well as rural territories by the means of refocusing of the state support on the "Green Box" measures;
- (4) broadening income opportunities for rural people.

The latter is particularly topical for developing countries with their high share of rural population

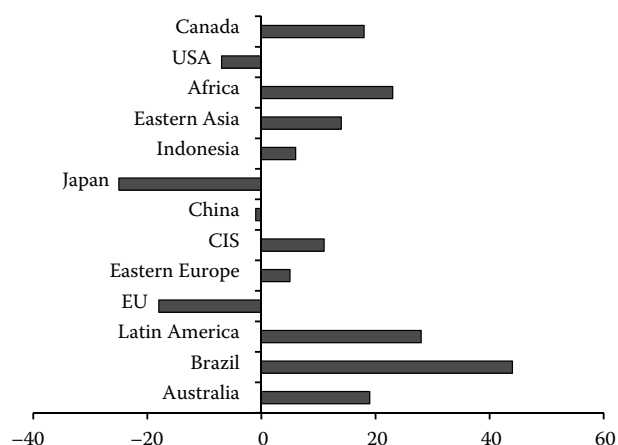


Figure 7. Forecast of income alterations of the rural population in the selected countries and regions by 2015, %

Source: authors' development according to the VLANT (2013) and Liapis (2011)

and high unemployment in rural territories. According to the World Bank report on the international trade 2011 (OECD 2011b), the trade liberalization would positively affect incomes of rural people in almost every developing country, while the developed countries would suffer. Figure 7 demonstrates the forecast of income alterations of the rural population by 2015 in comparison with the "non-liberalization" scenario.

The highest potential growth of income of the rural population as a result of the trade liberalization is expected in Latin America, particularly in Brazil – over 40% by 2015. A substantial growth is forecasted for Asia and Africa. Lower growth rates are expected by the World Bank in the CIS and the Eastern Europe. The rural population in developed countries (except Australia) does not benefit from the trade liberalization in general. The World Bank expects the revenue contractions in the EU and the USA.

In general, the benefit from the radical liberalization of international trade, according to the World Bank, might have been enormous in comparison with the official support provided at present for the development purposes. Figure 8 presents the forecast of the real income alterations in developed and developing countries by 2015, calculated using the models of static and dynamic outputs. The static output is a scenario of the global trade reform with the fixed production volume, while the dynamic output model includes the interrelation of production with the market openness (ratio of export volume to production volume).

Evidently, the participation of developing countries in the international trade integration does not bring any competitive advantages automatically. There is

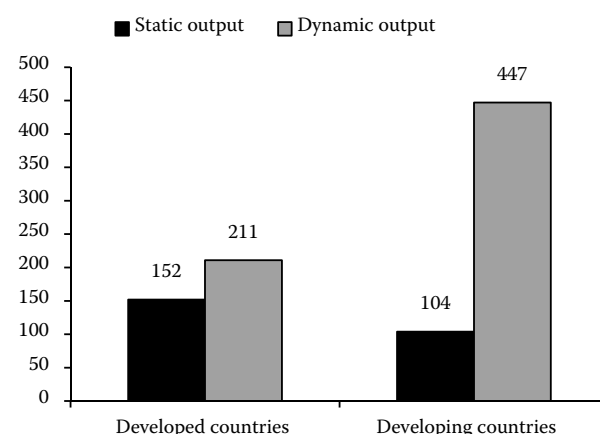


Figure 8. Forecast of the real income alterations in developed and developing countries by 2015, \$ bln

Source: authors' development according to the VLANT (2013) and Nilson (2011)

always a combination of certain treats and opportunities, which is unique for every country due to its economic particularities and the specialization in the global market. A selective protection from threats, the identification of competitive advantages and resources allocation to the most perspective spheres of the agricultural production – these are the very broad recommendations for developing countries involved into the international trade liberalization. Every country, accessing into the WTO or participating in the regional trade agreement, has to implement the transition period and to reform its foreign trade policy gradually in compliance with its strategic interests.

CONCLUSIONS

The research of the state support practices implemented by developed countries and the assessment of their applicability for the developing ones provided us with the following results:

(1) Being *de jure* regulated by a number of multilateral and bilateral agreements, the international trade liberalization in practice faces a range of problems that lay in details and separate mechanisms of social and economic systems. The existing trade barriers, whether of direct (tariff) or indirect (non-tariff) character, combined with huge volumes of the state support (especially in developed countries) do not let the developing countries to take full advantages of the international division of labour and the trade with agricultural products.

(2) International researches on the comparison of import tariffs and the state support of agriculture in the context of their effects for agricultural markets demonstrate that the domestic markets of developed countries in general are more sensitive to import tariffs than to subsidies. The scenario analysis, conducted by the authors of the given research on the case of Russia, discovers that in the developing countries, the consequences of a lower domestic support of agriculture are worse for the producers and consumers compared to the liberalization of import.

(3) The findings of the imitation calculations (the modified EPACIS model) demonstrate that high import tariffs do not provide an efficient protection of the domestic agricultural production. Moreover, in the situation of the “food dependence”, developing countries cannot raise import tariffs, although the domestic market would not be saturated. Since many of developing countries are in transition to market economy, there are still no effective links between

the producers and consumers, between the trade regulation and the domestic market. In case of higher import tariffs, the domestic production does not grow automatically; this is not an axiom for the developing countries, while the domestic demand undoubtedly falls. Consumption patterns are shifted to the cheaper agricultural and food products with a lower energy value. In such a manner, the higher import tariff only charges the domestic consumers, while it limits the opportunities for the export expansion and does not provide any essential advantages to the domestic producers. The state benefits in a fiscal way, but such an advantage does not correspond with the long-term strategy of the social and economic development. As our analysis shows, agricultural complexes in developing countries are more sensitive to the domestic measures, such as the support of producers or the promotion of demand for the domestic agricultural commodities and food.

(4) All the above considered confirms that the strategy of a strong agricultural protectionism is unreasonable for developing countries in the event of the WTO accession. The consideration of the given strategy in the light of the WTO Agreement on Agriculture (Doha Round) shows that the high bound tariff rates may turn into very low ones after their recession in the frameworks of the undertaken WTO obligations.

(5) Developing countries have limited capabilities to provide the sufficient support of their domestic farmers. The involvement into the international trade integration forces developing countries to open their domestic markets for foreign agricultural and food commodities. The effective protection of domestic farmers in developing countries is impeded by the low import tariffs, which facilitate an easier market access for the foreign agricultural and food commodities and lead to the reduction of the domestic production.

(6) The vital issue for developing countries is how to secure the sustainable development of the national agriculture and agribusiness in the conditions of the growing market openness and the liberalization of the agricultural trade, taking into consideration the incomparably lower financial capabilities. Our research shows that developing countries would be able to ensure the sustainable development of agricultural production and trade by the introduction of the following measures: state support of import substitution agricultural production; provision of environmental safety of the domestic food and agricultural commodities; agricultural and food export

increase once the domestic is saturated; optimization of all factors that affect the competitiveness of the domestic agricultural and food commodities in compliance with the rational geographic distribution and the specialization of agricultural production.

The results obtained on the case of the CIS countries (the EPACIS model) and Russia (the authors' modifications) are applicable to other developing countries in general. However, the degree of the state policies' influences on agriculture varies from country to country and from one regional market to another. The imitation calculations held in the given research let to formulating of certain policies for certain agricultural markets depending on their sensitivity to the foreign trade regulations and the domestic support.

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Contact address:

Vasily Erokhin, Department of Management and Marketing, Moscow University of Finance and Law, 8, build. 1, Presnenskaya Embankment, Moscow, 115114, Russia
e-mail: basilic@list.ru
