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## Financial and industrial clustering in Russia: the China experience

### Abstract

In terms of the Russia's WTO assertion development of agricultural sector became particularly important. The main aim of this paper is to prove that it is necessary to create agro-financial cluster, which will help to maintain competitiveness and sustainable development of the Russian agricultural sector. The impact of the financial-industrial regional cluster on the economic potential of agriculture sector is analyzed in this paper. Conclusions and theoretical contributions of the study are: 1) in order to maintain the competitiveness of the agricultural sector it is necessary to attract private investors to this sector; 2) the cluster form of management creates favorable conditions for the interaction of financial institutions and the agricultural producers; 3) it is necessary to create in Russia the regional agro-financial clusters.

**Keywords:** regional cluster, financial services, banking sector, innovative development, agricultural sector, financial policy.

**JEL Classification:** G21.

### Introduction

Currently, the main goal of economic policy in both developed and developing countries is competitive growth and expansion of the share of national companies in the domestic and international markets, as well as improving the efficiency of their operations. Also, in Russia the acute problem is separation of the banking sector from the needs of the real sector. This problem can be solved by forming of clusters, which, according to the latest global trends, are becoming one of the most effective forms of regional development. Today market competition can be withstood only by those companies who combine their power in order to reduce costs. Therefore the favorable conditions for the clustering development and for capital attraction on the basis of the study of positive foreign experience of using cluster policy should be created.

The foreign experience of agro-industrial complex's development suggests that the creation of agricultural clusters is an important element in the economic development of the agricultural production. Growth in lending to agriculture in developed and developing countries is the basis for the accumulation of productive capital of agro-industrial complex and the process of industrialization of agricultural production. This development trend is especially true for the Russian Federation in the light of its participation in the World Trade Organization (hereinafter WTO), which posed the problem of food security through the development of such areas of agricultural policy, which can provide effective assistance to agricultural enterprises. Necessity for further development of the Russian agriculture by clustering arose in connection with the rules of agricultural products trade in the WTO, which include reduction in state support of agricultural producers.

In this regard a problem of attraction to this sphere of the additional resources from non-state investors is especially actual. For this purpose, it seems appropriate to create the agro-financial cluster, which in addition to agricultural producers will include banks and other financial institutions, whose main task will be to maintain the sustainable development of the agricultural sector of the economy.

In modern conditions, clusters are becoming one of the most promising forms of cooperation between the banking and real sectors of the economy. China is a prime example of rapid and efficient growth of based on clusters economy.

Study of the mutual dependence of the country's GDP on the volume of lending to the real sector of the economy and on the number of functioning clusters on the example of China can prove the need for the creation of industrial cluster, which will help to create favorable conditions for the interaction of the financial and agricultural sectors of the Russian economy. This dependence can be considered using the correlative regression analysis.

The purpose of research is to study the possibility of using the Chinese experience in agricultural development through the formation of financial-industrial clusters in Russian conditions. Realization of this goal requires the following tasks: analysis of the current state of agriculture of the Russian Federation, the study of the features of interaction of agricultural and financial sectors of the Chinese economy during the reform and WTO accession, elaboration of recommendations for the Russian agriculture development.

Object of research – development of agricultural clusters of Russia and China in terms of WTO accession.

Subject of research – the interaction of agricultural enterprises and the financial sector.

## 1. Literature review

M. Porter, who is the founder of the theory of cluster economic development, gave the following definition of the cluster: “geographically concentrated firms, suppliers, related industries and specialized institutions that play a special role in separate nations, countries and cities” (Porter, 2005).

Clustering is an effective way of division of labor. According to A. Marshall, there are three reasons for which clustering enhances the competitiveness of enterprises: the integration of labor, availability of suppliers and the rapid spread of knowledge (Marshall, 1920). But clustering also has negative features. Thus, due to the fact that the number of parties involved in the production process in the form of cluster management increases, this may require additional coordination costs (Becker, Murphy, 1992).

Inverse image of the cluster model of economic development existed in Western Europe before the Industrial Revolution. It was the so-called domestic system. (Hounshell, 1984). This system has also been observed in the textile industry in the nineteenth century in Japan and in early twentieth century in China (Nakabayashi, 2006).

Issues related to the benefits of the cluster type of economic development, are currently being actively studied by foreign economists. D. Dickinson, J. Sigurdson and T. Xiaoyang note that the development of relations between the banking and real sectors of the economy contribute to the growth of industry and the country's economic potential. Furthermore, according to C. Young and C. Guochianu, due to the formation of clusters by interaction between agricultural enterprises and financial institutions, the growth of not only agriculture, but also of the entire economy becomes possible.

Considerable amount of works of these local authors are devoted to the questions of clustering in the economy and economic processes: E.S. Burih, E.A. Kalodina, V.I. Samaruha, Z.B. Khmel'nitskaya, S.Y. Zolotukhin.

According to researches by E.A. Kalodina, V.I. Samaruha, Z.B. Khmel'nitskaya, we need to develop economic clustering as a promising form of interaction between related industries.

Many developing countries prefer a cluster form of economic development despite the high costs (Sonobe, Keijiro, 2006).

The number of entrepreneurs with large amounts of capital in developing countries is very little. And often small and medium-sized businesses have to overcome credit constraints (Bigsten et al., 2003).

For these reasons, for SMBs it's often difficult to build a large enterprise and integrate various manufacturing processes.

The paper (Zhang, Moorman, Ayele, 2011) is devoted to this problem. It describes the most common cluster activities in rural Ethiopia. It deals with the problems of rural clustering in the context of African developing countries. The author tries to show that harsh environments with weak formal institutions and limited infrastructure can't predict the development of cluster activities. Further, cluster activities can boost the development of entrepreneurship. In Africa entrepreneurs face many constraints, and a new production structure, such as cluster, can help them to circumvent them. The clustering mode of production will provide such low cost of entry that many potential entrepreneurs that have not enough financial resources can engage in productive non-farm activities. For the author's opinion clusters can help African countries to develop their capital markets.

In the paper (Rogerson, 1998) the South African experience of clustering of high-technology activities is examined. The main point of the article is the importance of developed transport infrastructure for the successful performance of high-technology production which, in turn, is important not only for international trade but for Pretoria-Witwatersrand. The author determines the central reason of the Gauteng's cluster introduction it's infrastructural advantages. For the author's opinion the main reason of its strengthening is that the economy is concentrated on both high technology and non-producer enterprises and the Gauteng's cluster consists of two subclusters: in Midrand and in the East Rand.

The Chinese economy is one of the examples of successful functioning on the basis of clusters. There are some articles, devoted to the questions of cluster's development in China.

In the paper (Guo, Shou, Lei, 2012) the interrelation of industrial clusters and regional development is considered. The data obtained during field researches of the Chinese industrial clusters are used. Authors investigate mechanisms by means of which industrial clusters accelerate rural development of China. Recommendations about management of agricultural industrial clusters are formulated.

The paper (Yu, Jong, Storm, Mi, 2012) examines the problem of clusters on the example of China's transport infrastructure. The authors analyze the link between the investment into the transport infrastructure and the China's economic development. In their study they use time series data throughout the 1978-2008 period. Using this data authors found

out that in the long term the national economic growth depends directly on the development of transport infrastructure while at the regional level, in the low-income central and western regions economic growth doesn't depend only on this factor. So the authors come to the conclusion that the Chinese government should pay serious attention to the evolution of the additional factors in the central and western provinces.

Authors of the article (Zhang, Hu, 2014) consider that the problem of formation of industrial policies at national level is actual now. On the example of a Chinese potato cluster they show, that the industrial policies plays huge role in economic development of the country. In their opinion, many aspects of industrial policies which are positively influencing a cluster, such as: improved grade's development, creation of potato trade association, lobbying of a trucks quota increase, involvement of the processing enterprises, were realized at local level, emphasizing the need of studying of a local industrial policies as a defining factor of a cluster's development. As the case study demonstrates, often, after the local industrial policies helps to remove one limiting factor, there is another that, in turn, conducts to emergence of demand for the new measures of regulation. Therefore the cluster's successful development depends on local industrial policies which reacts on new arising limiting factors at various stages of cluster's development.

Many researchers studied various aspects of cluster development. But, despite it, there are few researches concerning cluster interaction.

In this article (Lu, Zhang, Reve, 2013) long-term data on three low-tech and two hi-tech industrial clusters in six cities in the delta of the Chinese river Pearl are collected. Arguments in favor of Marshall-Arrow-Romer model, which proves importance of uniform (specialized) clusters are adduced. But authors also support the Jacobs model which proves the development of diversified clusters. According to the authors, existence of uniform and diversified clusters in one region influences the size and output of both of them.

Many articles are devoted to creation and functioning of clusters in various branches of the economy.

In article (O'Connor, Gu, 2014) the development of clusters in creative branch of Shanghai is considered. Possibility of careful and most adequate copying of policy of the Chinese government in the field is considered. In article the origin of the concept of innovative clusters also is considered. Authors describe how the program of the innovative industry allowed innovative clusters to become a

part of the developed real sector of economy. Despite it, authors note that it undermined the most part of functioning of innovative clusters and separated them from their initial appointment, keeping generally only esthetic communication with "a creative class". At the end of the article authors analyze how these clusters can be restored as part of acceptance of more complete city cultural economy approach.

Authors of the article (Arimoto, Nakajima, Okazaki, 2014) study two sources of productivity improvement of the localized industrial clusters. As an example they use the silk industry in pre-war Japan. According to authors the agglomeration increases productivity of each factory through positive outer effects which shift distribution of the factory productivity to the right. The competition eliminates the least productive factories. Authors prove usefulness of the agglomeration effect which influences positively on less productive factories and can organize natural selection in a cluster. Authors define a cluster as a congestion of own industry in a certain territory. This research supplements previous studies which described effect of agglomeration, but didn't take into account the selection effect in the cities. Authors consider that ways of productivity increase in the localized industrial clusters can differ from those in cities.

Also there are some papers devoted to various aspects of cluster development of the economy.

In paper (Hoffman, Lopes, Medeiros, 2014) authors investigate how knowledge is circulating between the small businesses that are the part of industrial clusters. As well as a competitive advantage can be obtained within the cluster. A survey was conducted among 198 firms. The results of this survey were analyzed using factor analysis. According to the authors, the process of leakage of knowledge is multidimensional. They also concluded that the leak knowledge only occurs if there is no inter-firm interaction. Dimensions of the process can be controlled in order to facilitate the knowledge transfer. Manufacturers are more likely than consumers perceive and use the knowledge available in the cluster.

Authors of the article (Hashino, Otsuka, 2013) try to understand, what similarities and distinctions are between templates of cluster development of modern developing countries and Japan. In work an attempt to estimate relevance of the Sonobe-model of Otsuk is made. This model was created for the description of long-term process of cluster development in developing countries, for understanding the extension of silk-weaving clusters of pre-war Japan. In article the crucial role of trade

associations and the local government in internationalization of agglomeration and development of the Japan silk-weaving industry is proved. Authors prove that for support of industrial clusters of developing countries it is necessary to raise a role of trade associations and the local government.

Thus, the theory and practice of clustering suggests that for further development of the economy it is necessary to establish the effective financial and industrial clusters.

Currently, there are relatively few studies of industrial clusters in the context of finance. The exceptions are the publications (Hayami, Masao, Esther, 1998; Schmitz, Khalid, 1999), that describe briefly the capital requirements for new entrants of the cluster form of management. But, unfortunately, they do not support their conclusions by sufficient empirical material. In our work the financial aspect of interaction between financial institutions and agro-industrial producers within a cluster is considered.

Besides, so far possibility of creation of agro-financial cluster on the basis of Russian agricultural sector almost wasn't studied. In our article we make an attempt to prove a need of such cluster by means of the regression analysis. The necessity of real and financial sectors relationship development is substantiated.

## **2. Cluster form of interaction between agribusiness and financial sectors of the Russian economy**

In the field of state regulation of agriculture there are two extreme points of view. The first comes from the need for a comprehensive support of agricultural production, which stimulates the development of rural industries. Another position is that support should be limited by using the state aid for the purpose of rural development.

In Russia, after the transition to a market economy has long adhered to the third approach – the state not only refused to support the agricultural production, but also on the development of rural areas, which is the major part of the country. This led to the abandonment, depopulation of the village and the deepest crisis of agriculture. At the same time, state support of agro-industrial complex must be provided in connection with the necessity of procuring of food security of the country; ensuring the viability of rural areas, especially in remote areas; elimination of market failures.

At the moment in Russian Federation's agriculture, there is an issue of the low level of technical equipment. Thus, the degree of industrialization of agricultural production in contrast with 1990 decreased at times due to a sharp reduction of

number of tractors, combines, and various types of other equipment. Moreover, two-thirds of equipment is outside of the set terms of operation. It should also be noted that the consumption of fertilizer per hectare of arable land is currently increased and amounted to 15.6 kg in 2009. At the same time, the active component, for example, in China is over 500 kg, and the global average – about 130 kg.

Coping with the level of development of agriculture in the country, it is especially important in connection with Russia's WTO accession. As part of this international organization there is the Agreement on Agriculture, which determines the overall features of the regulation of trade and mechanisms of state support of production and trade in this sector. However, there are individual indicators of development through participation in the WTO for each country. Thus, according to Table 1, the permissible level of state support for agriculture in Russia should be 4.4 billion dollars by 2018. It is worth noting that the real level of support for agriculture in recent years does not exceed 4.5 billion dollars.

Solving problems of further development of Russian agribusiness can be achieved by creating agricultural cluster.

Clusters are geographic concentrations of firms, suppliers, related industries and specialized institutions that play a special role in individual countries, regions, cities and municipalities. Clusters are a characteristic feature of any well-developed economy, and clustering is an essential component of economic development of agribusiness.

Agribusiness competitive advantage can be achieved in terms of the correct combination of activities related to agriculture, on a cluster basis, including through the use of information technologies. It should be noted that the information revolution has a significant impact on competition due to the fact that it alters the structure of the industry and sets new rules of interaction between economic actors; provides a competitive advantage to companies; promotes the formation of new businesses; sets the direction and order of the changes of business processes; creates a need for continuous training of employees (Samarukha, 2007).

Taking into account the specificity of agricultural activity, we can say that the most effective form of functioning of this industry is clustering.

The cluster approach to improving of the agricultural enterprise's competitiveness is based on the combination of the territorial and intersectoral management principles, which will also boost the integration processes in the economy. If successful functioning of agricultural cluster, synergies between participants as in an integrated association is formed.

In modern conditions agricultural clusters are a complex combination of features of competition and cooperation. In the regional market of the Russian Federation agricultural clusters act as single economic entities, allowing them to maintain relative stability in global competition that intensified after

Russia's WTO accession by reducing import barriers on agricultural products. At the same time it should be noted that the volume of exports of agricultural products is currently at a low level. Value of domestic consumption and export of grain is shown in Figure 1.

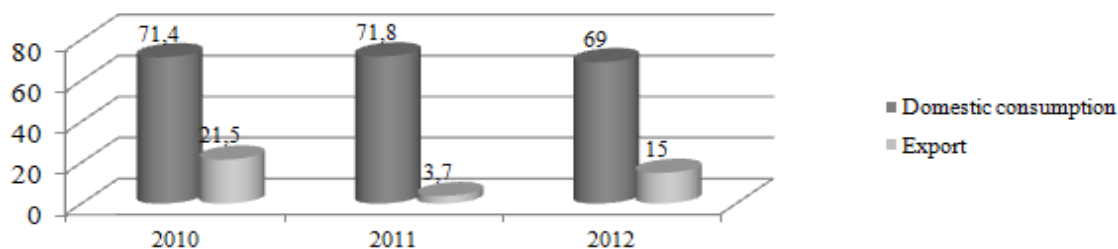


Fig. 1. Domestic consumption and export of grain (million tonnes) (Ernst & Yong, 2011)

Cluster form of management has undeniable advantages over farmers. These advantages are manifested primarily in the growth performance in the medium and long term perspective. Agricultural enterprises, included in a cluster, benefit from the merger of production capacity. Also farmers interacting with food processing and trade, easier sell their products, since this function they can pass on to partners who have established relationships with customers. Participants of agricultural clusters also benefit in access to new technologies, the working methods and the possibility of supply output.

One of the conditions for the success of the agricultural cluster is the ability to respond quickly to changes in economic conditions (Vagizova, Klaas, Batorshina, 2014).

The initiative of creation of agricultural cluster must come from the leadership of the regions with the corresponding specialization. Strategic Development Plan of the cluster must be distributed to all members of the enterprise and be reflected in their business plans.

Interaction of banking and agricultural sectors of the Russian economy is an important factor in improving the efficiency of agriculture. As agriculture is a sphere of high risk, banks are often wary of cooperation with farmers. The activities of agriculture are influenced by climatic conditions, the seasonal nature of receipt of proceeds from sales of products, and the availability of opportunities and conditions for its sale.

Any bank before crediting agriculture, must solve a series of challenges: to provide credit facilities to farmers on a timely and attractive terms, at the same time ensuring efficient use of resources by supporting profitable enterprises and profitable projects.

Agribusiness' need in credit resources is growing from year to year. This is confirmed by the dynamics of lending. The major bank, giving loans to this industry is Agricultural Bank. Being one of the key lenders of agribusiness, this bank finances major big projects in most segments of the agricultural production of the country (Zhuchenko, 2013).

In 2011, the total loan portfolio of Agricultural Bank, over 75% of which are agribusiness loans, reached 953.8 billion rubles. In comparison with 2010 growth was at 30%.

In 2011, Russian farmers attracted Agricultural Bank's loans worth more than 30 billion rubles. It is 63% more than in 2010. Overall, the portfolio of loans granted to farmers, individual entrepreneurs and agricultural consumer cooperatives, last year grew by 45% and reached 73 billion rubles. In 2011, 196 billion rubles were sent on lending to large projects in agricultural sector. Corporate loan portfolio of Agricultural Bank grew by 25% and amounted to 807 billion rubles (Zhuchenko, 2013).

In 2011, the government introduced the subsidized interest rates on loans granted to agriculture. This measure substantially increased the attractiveness of lending. Due to the national project "Development of agriculture the financial sustainability of farmers" has significantly increased, so that they were able to attract large amounts of credit. Table 1 shows the amounts of state support of agriculture under this program in the dynamics.

Today, agricultural enterprises borrow funds for financing current operations, as well as for long-term projects aimed at modernizing the existing and creation of new production facilities (Zhuchenko, 2013).

Table 1. Volume of state support of agribusiness under the national project “Development of agriculture” on programs/areas (million rubles) (Ernst &amp; Yong, 2011)

Direction	2008	2009	2010	2011	2012
Subsidies on interest payments on borrowings	31 206	43 085	54 224	58 215	60 041
Livestock development	10 584	10 291	8 680	8 814	9 154
Development of branches of the plant	2 847	3 820	4 128	4 280	4 699
Capital expenditures	5 006	5 835	5 810	5 701	6 036
Subsidies for the purchase of fertilizers	2 300	3 400	4 120	4 950	5 400
Sustainable development of rural areas	7 335	19 027	25 124	29 602	31 280
Other	17 018	14 542	17 914	13 438	13 390
Total program	76 296	100 000	120 000	125 000	130 000

Following the negotiations on Russia’s accession to the WTO was decided to maintain the current level of state support for the agricultural sector as during the transitional period, and after the completion of accession in 2020. In connection with the entry into the WTO significant changes in the manner of interaction between banks and agribusiness did not happen. However, with the emergence on the market of large volumes of cheap imported products, domestic farmers will have to make considerable efforts to remain competitive. According to leading Russian experts, WTO membership will enhance competition in such product markets as:

- ◆ pork – in connection with zeroing duties on fresh, chilled and frozen pork and a significant reduction in customs duty on live pigs for

slaughter (dynamics of production volumes and imports of animal products is shown in Figure 2). The degree of Russian dependence on supplies of meat products from abroad remains very high. For example, in 1990 imports amounted to 15% of domestic production, in 2002-2008 – already 50-60%. Only in 2009-2010, this figure fell to 40%, mainly due to increased domestic production of poultry;

- ◆ rice – customs duty reduces from 20 to 10% ;
- ◆ beer and spirits – in connection with zeroing of duties;
- ◆ vegetable fat – zero tariffs on soybeans and soybean oil;
- ◆ meat sausages – setting a low customs duty at the rate of 0,25 € for 1 kg (Zhuchenko, 2013).

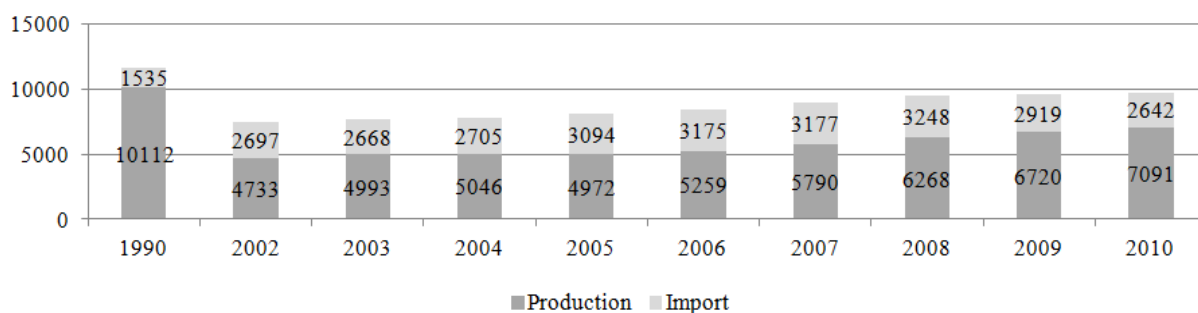


Fig. 2. Production and imports of livestock products (thousands tons) (Ernst &amp; Yong, 2011)

According to experts, Russia’s accession to the WTO will lead to increased investment in agro-processing and food industry in the future. In order to increase their competitiveness, agribusiness companies will seek to accrue added value of their products and improve production efficiency. Therefore, the role of credit products in the agricultural sector will increase.

In modern conditions investing money in agribusiness is becoming more attractive due to two main reasons. The first, growth in demand for agricultural products due to increasing consumption both in Russia and in the world, the rise in world food prices. The second-high level of government support of the industry, creating an attractive environment for investing in it.

In the nearest future the increase of the volume of investment in fixed assets of agricultural enterprises is expected. This growth is driven by the need to further modernize the industry, the implementation of the export potential of agricultural products, import substitution of food products (Zhuchenko, 2013).

### 3. Foreign experience in cluster development of the economy: the financial- industrial clusters in China

Solving of problems of Russian agriculture requires the creation of conditions for its effective interaction with the financial system of the country. Substantial interest in this case has the experience of the People’s Republic of China (hereinafter PRC) as a country which has provided rapid development of agriculture by harmonizing the interests of agriculture and the banking system during recent years.

In 1992-2003 commercialization of the banking sector in China was conducted. During this period three specialized state-owned banks, which successfully implement public policy of support and development of agriculture, were established: The China Development Bank, The Export-Import Bank of China, The Agricultural Development Bank of China. Furthermore, the purpose of all credit institutions of PRC is not profit, as for Russian banks, but contribution of the modernization of the economy. This strategy contains such provisions as (Shamin, Vozhdaeva, 2011):

- ◆ family contracting economy is the main form of productive activity in agriculture in the long term;
- ◆ development of various types and modes of economic activity while preserving the leading role of public ownership on the basic means of production;
- ◆ development of a diversified agriculture structure;
- ◆ development of commodity production and circulation, optimal combination of plan and market;

- ◆ recognition of the necessity and the inevitability of income inequality in the conditions of commodity production’s development;
- ◆ poor area’s aid policy and policy of openness to the external world;
- ◆ Today, China accounts for about 18% of global grain production, 29% of meat, 50% of vegetables. Moreover, China is the world leader in the production of pork, wheat, rice, tea, cotton and fish.

Until recently, China was poorly integrated into the world agricultural products trade. However, barriers to foreign producers were reduced after the country’s accession to the WTO in 2001. For example, since 2005, with the end of the transitional period, China has become one of the most liberalized countries in the world agricultural products market. This is due to the fact that, firstly, the level of import duties for agricultural products has been reduced from 23.2% in 2001 to 15.7% in 2012. This figure is much lower than the world average value, which, according to Figure 3, is equal to 57,1%.

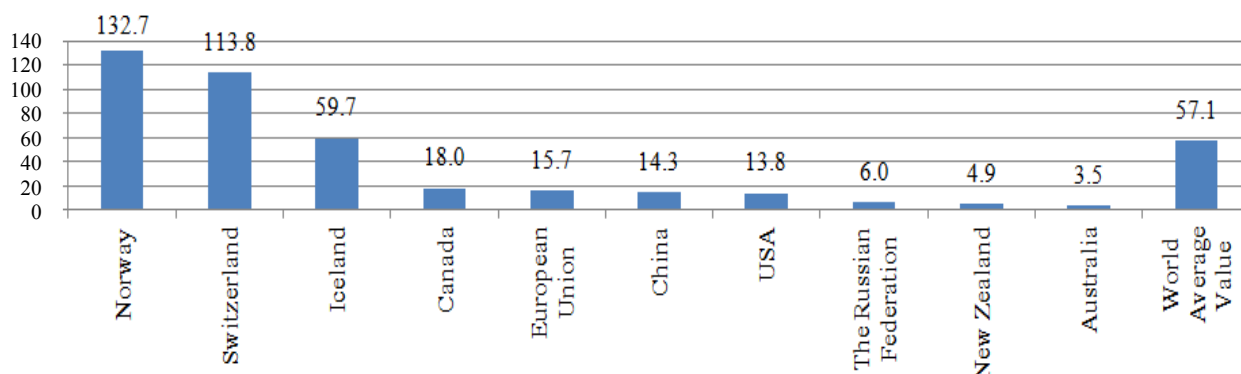


Fig. 3. Import duties of countries in 2012, % (The World Trade Organization, 2013)

Agriculture in China is a fundamental sector of the economy which makes a huge contribution to the growth of China’s national economy. In 1978, agriculture accounted for 28.1% of China’s GDP. Reforms, that begun this year and affected the agro-industrial complex of China, contributed to the economic growth of the country: China’s GDP grew by more than 20 times, and the average annual growth rate of this indicator is 15% (The World Bank electronic, 2013).

Financing system gradually diversified during the reformation of China’s economy: the share of state funds allocated for the development of agriculture has declined in favor of other sources of investment, which are presented in Figure 4.

Support of the Chinese government has always been of great importance to agriculture. In 2005 it began a policy of “Industrial development of agriculture and support of rural areas”. Public finance forms an important channel of financing agrarian and industrial complex of China. Herewith investment in this case is mainly used in areas which concern national security and can’t be effectively regulated in market conditions.

Investments in China’s agriculture are largely implemented through the Agricultural Development Bank by providing credits for the purchase of major agricultural products, its storage and processing, for wholesale trade, credits for ministration to the poor rural areas and credits for the comprehensive mastering of agricultural resources.

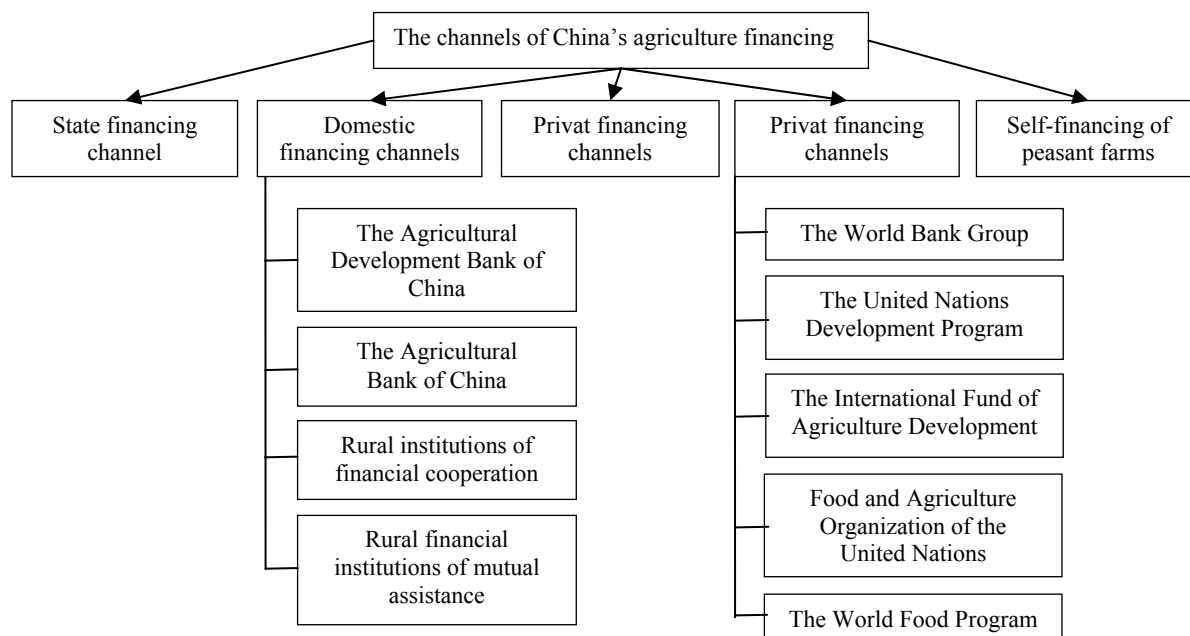


Fig. 4. The China's agriculture financing channels (Yang, 2010)

The second most important channel of lending to agriculture in China are rural credit cooperatives, which were converted into commercial banks in the early XXI century with a view to engage more effectively and meet the needs of farmers. The first rural insurance company was established in 2005. It currently implements crop insurance against damage in the event of adverse weather conditions. Herewith 65% of premiums are paid by farmer, and the other 35% – by the state.

Since 2006 in China the development of rural financial market is stimulated. So, in 2007 the rural financial institutions of new type – village-township banks, loan companies, rural cooperatives of mutual financial aid began to open. These financial organizations give farmers small loans to the needs of production. Moreover, these institutions interact with agribusiness companies of China, forming large financial-industrial clusters.

Amid the global financial and economic crisis a priority of financial and credit regulation was to simplify the lending to farmers and provision of grant aid. It is also worth noting that a significant shift in China's industrial policy is a shift from the tax pressure on the agricultural sector to actively support the farmers and increase of the productivity of agricultural enterprises (Loginova, 2012).

Positive dynamics in the development of China's agricultural production is the basis of economic growth. It should be noted that the entry of China into the WTO exacerbated the problem of competitiveness of Chinese agricultural products due to the low quality of some products. Furthermore, in China there was a deficit of many specialized varieties of agricultural products, which are not produced in the country, for

example, durum wheat and maize varieties having high nutritional qualities. In this regard, two years after joining the WTO, the Chinese experts, in accordance with the dynamics of the global market, selected a number of agricultural products, which take precedence. There was also a task to expand exports of following agriculture industry products: apples, oranges, beef and mutton, fisheries products. Implementation of this program contributed to the accelerated development of agricultural industry of major Chinese agricultural regions and increase of farmers' incomes (Liu, 2011). We believe that the main reason for this lies in the fact that the Chinese government understands the great importance of the issues related to agriculture, rural areas and farmers. Before joining the WTO it has taken several measures, which contributed to the strategic restructuring of the rural economy, increase of competitiveness of the agricultural sector by clustering and helped to strengthen the growth of agriculture and the rural economy. Thus, a positive trend in the development of China's agricultural production in terms of accession to WTO due to (Shamin, 2011):

- ◆ development of an effective strategy to ensure food;
- ◆ implementing in production of the achievements of world and domestic science, technology;
- ◆ introduction credit and tax incentives to agricultural producers;
- ◆ introduction of guaranteed prices for agricultural products;
- ◆ attracting of peasants' savings for funding of rural economic, the issuance of government loans, the establishment of the Bank of Chinese Agriculture Development;



- ◆ developing activities aimed at the preservation of agricultural land;
- ◆ creation of rural socio-economic conditions, development of rural infrastructure, fight against poverty.

From the Chinese government’s perspective free market should not prevent national security. Despite the fact that China has for been involved in the WTO more than ten years, it is making significant efforts to protect its national interests. For example, in spring 2011 Beijing announced its intention to create a state agency responsible for foreign investment in industries that are related to national security, including in agriculture (Mikhailenko, 2011).

In general, the purpose of government regulation and support for agriculture, China is using such tools as direct payments and subsidies, tax incentives, improving market infrastructure, investment in infrastructure, rural producers lending, land protection, support of the research activities, the environmental safety of food provision. Thus, enhancing of the competitiveness of China’s agriculture in terms of WTO accession has been made possible through such measures as development of a multi-level system of agriculture financing; strengthening of supervision to ensure growth of credit for agricultural enterprises; implementation of the guidelines for banking institutions to meet the demand in rural areas; encouraging of innovation in products and services in the field of agriculture financing; promotion of financial inclusion of farms.

**4. Outlook and development effectiveness of financial and industrial clusters based on the agricultural sector in Russia**

In Russia, there are several problems associated with the level of development of agriculture in the country: limited coverage network of banking services in rural areas; insufficient to meet the growing demand supply of credit in rural areas; relatively inefficient financial services for agribusiness; absence of an effective synergy between measures of state support for agriculture and agribusiness lending (Vagizova, Lurie, Ivasiv, 2013).

Solution of the described problems is possible by:

- ◆ increasing of economic efficiency production and competitiveness of agricultural products;
- ◆ ensuring of the country food security;
- ◆ overcoming the disparities in economic growth of agriculture and industry;

- ◆ reducing the gap in income and quality of life of urban and rural population;
- ◆ technological modernization of agriculture ;
- ◆ building the human capacity of the industry, which will be able to develop innovation;
- ◆ creation of a modern social infrastructure in rural areas-housing, roads and so on.

One of the most important tools to support agriculture and revitalize the Russian economy as a whole should be the development of lending to the real sector. Built using the software package Gretl correlation (Equation 1) indicates that the growth of lending to enterprises increases GDP. Increasing loans to the real sector of the economy by 1 billion rubles led to GDP growth of \$80 million. The resulting equation explains the dynamics of GDP for 94.04% under the influence of an independent factor, and the calculated values of the model are close to watched, as evidenced by Figure 5, therefore, this model has a high explanatory power.

$$GDR = 314.05 + 0.08 \times C, \tag{1}$$

where *GDP* – gross domestic product of Russia, billions of dollars; *C* – loans to the real sector of the economy, billions of rubles.

The volume of loans to the real sector, in turn, depends on the prevailing economic situation in the country. Accordingly to this, was built an econometric relationship (2), subsequently converted into equation 3. According to this model, annual lending grows at an average 1.26% increase in last year GDP by 1% leads to an increase in total loans by an average of 0.59%, and the growth of public investment by 1% leads to an increase in lending of 0.3% on average.

$$\ln C = 5.98 + 1.26 \times \ln TIME + 0.59 \times \ln GDPQ + 0.30 \times \ln SCI, \tag{2}$$

$$C = 395.44 \times TIME^{1.26} \times GDPQ^{0.59} \times SCI^{0.30}, \tag{3}$$

where *TIME* – variable for the trend; *GDPQ* – the lag variable of the first order for GDP, billions of dollars; *SCI* – state capital investments, billions of dollars.

Forecast, built for model 2, presented in Table 2 and illustrated by figure 5, shows the growth of lending to the real sector of the economy in the next five years, which may lead to an increase in business activity, increase of production capacities and, as a consequence, the positive dynamics of GDP.

Table 2. Estimates of lending to the Russian real sector of economy

Year	The predicted value of lnC	95% confidence interval for the lnC	The predicted value of C, mln. rubles
2013	16,8183	(15,9652, 17,6714)	20 141 643
2014	16,9950	(16,1602, 17,8298)	24 034 479

Table 2 (cont.). Estimates of lending to the Russian real sector of economy

Year	The predicted value of lnC	95% confidence interval for the lnC	The predicted value of C, mln. rubles
2015	17,1682	(16,3459, 17,9905)	28 579 493
2016	17,3383	(16,5222, 18,1544)	33 878 799
2017	17,5049	(16,6886, 18,3212)	40 020 405

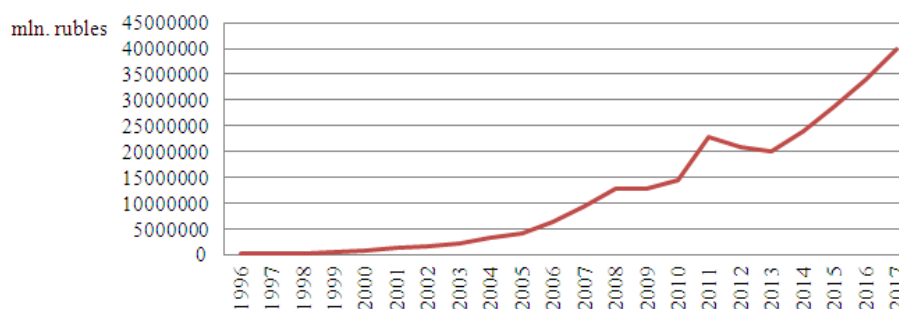


Fig. 5. The dynamics of volume of lending to the real sector of the Russian economy, mln. rubles

It is worth noting that, according to the Concept of Long – Economic Development of the Russian Federation for the period up to 2020, GDP growth is projected at no more than 7%, while in China the figure is on average 15%. This growth has been made possible due to the active cluster policy in China and the development of financial institutions specializing in supporting enterprises in the cluster.

The dynamics of China's GDP can be described by the following correlation equations:

$$\ln GDPCH = 5.90 + 0.28 \times \ln TIME + 1.75 \times \ln FR + 0.1964 \times CL + 0.3681B, \quad (4)$$

$$GDPCH = 365.04 \times TIME^{0.28} \times FR^{1.75} \times 1.22^{CL} \times 1.44^B, \quad (5)$$

where GDPCH – China's GDP, billions of dollars; FR – expenditure on basic research; CL – the presence of clusters; B – availability of specialized financial institutions.

To construct this equation there were introduced two dummy variables with the following values:

- ◆  $CL = 0$  if there are no clusters, and  $CL = 1$ , if any. In China, the first clusters appeared in 1980;
- ◆  $B = 0$ , in the absence of specialized financial institutions established to support the development of clusters, and  $B = 1$ , if they exist. In China, as these institutions since 1994 are the China Development Bank, Export-Import Bank of China and Agricultural Development Bank of China.

According to the Equation 4, the creation and development of clusters led to the growth of China's GDP at 19.64%, and specialized financial institutions – to GDP growth at 36.81%.

Thus, from the provided analysis it is possible to draw a conclusion that at preservation of existing conditions in Russia demanded growth rates of gross domestic

product won't be reached. On the example of China it is proved that creation of clusters and specialized financial institutions conducts to growth of volumes of lending to the real sector of the economy. It in turn promotes systematic steady GDP growth, and consequently, well-being of nation as a whole. Therefore, maintenance of competitiveness of an agro-industrial cluster requires creation of an agro-financial cluster.

### Conclusion

In this article the condition of the Russian agricultural branch was analyzed. At the present stage of the Russian economy development the separation of the interests of the banking sector from the interests of real sector of economy is observed. Further development of agricultural branch requires an attraction of additional financial resources from the private investors. Creation of agrofinancial clusters and involvement in them both agricultural producers and financial institutions can promote acceleration of this process.

People's Republic of China is a positive example of successful functioning of clusters. Experience of creation and development of clusters in China was analyzed. The analysis showed that they promote strengthening of interaction of financial and real sectors of economy, create favorable conditions for its development.

By means of the correlation regression analysis it was proved that GDP growth of the country directly depends on volumes of crediting of the real sector of economy. In turn, growth of this indicator is promoted substantially by creation and development of financial-industrial clusters.

So, clusters are a perspective form of interaction of financial and real sectors of economy. Ensuring competitiveness of Russian agricultural branch requires creation of agrofinancial clusters.

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