Ways to Ensure the Economic Security of Russian Organizations of Agricultural Machinery Industry

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Abstract. The article discusses the possibilities of ensuring the economic security of Russian organizations of agricultural machinery industry for the period up to 2024. The problem of the formation of effective demand for their products is proposed as a central task. The analysis of the current availability of agricultural equipment of Russian farmers is performed. The conclusion about the achievement of a critical level of availability of tractors and combines from agricultural producers is made. An explanation of the current low demand for agricultural machinery is given. The reason for this is the low profitability of agricultural producers, which is caused by the constant disparity of prices between industrial goods, energy resources and the prices of products sold by farmers, which leads to their excessive debt load. The actions of the Russian government in support of agricultural machinery in 2014-2018 are described. In order to forecast the demand for agricultural tractors, an economic-mathematical model has been developed. Three scenarios for the development of the Russian tractor market were prepared: pessimistic, median and optimistic. The measures to increase the production of tractors domestic industrial organizations are proposed. Based on the forecast of the development of the world and Russian grain markets, taking into account the achieved results in the framework of the program for the development of the agro-industrial complex of the Russian Federation, the provision of equipment for Russian agricultural producers and the state of the machine park, the conclusion of possibility to increase the production of tractors in Russia is made.

1. Introduction
The industrial power of the country is determined by the level of development of national mechanical engineering. The real economy is still the basis of modern society. Russian manufacturers of machinery and equipment went through various shocks, including the investment pause of the 90s and the powerful expansion of foreign industrialists into the domestic market, which forced Russian producers to fight for their existence. The economic security of domestic organizations of agricultural machinery industry was influenced by a variety of threats, the most significant of which was the danger of a radical decline in the volume of effective demand for their products. Some sectors of the Russian economy, such as, for example, aircraft manufacturing, shipbuilding, and machine-tool industry, have actually moved from industrial production to handicraft one, since by the mid-2000s production volumes were extremely small. For the lives of industrial giants, their owners and the Russian state fought intensively, which helped them to overcome difficulties and survive. The fate of relatively small and medium-sized enterprises was tragic - they faced bankruptcy in their overwhelming majority.
The key problem of the Russian agricultural machinery was the level of its reliability; fuel efficiency was also a weak point. In addition, domestic designers were faced with large-scale tasks: the improvement of automatic control systems for the operation of components and assemblies; ensuring the possibility of aggregation with complex modern agricultural machinery and tools; the establishment of a service and maintenance system; creation of comfortable conditions in the cabin for the tractor operator’s work; ensuring compliance with environmental requirements [8]. Agricultural machines are purchased for working in the field and not for standing idle for repairs, therefore, from the standpoint of the life-cycle cost, the equipment of foreign manufacturers seemed more profitable to Russian farmers. According to [20], the situation has now changed dramatically and the life cycle of foreign technology is more expensive than domestic one. This was due to the devaluation of the ruble in 2014. Over the past five years, domestic agricultural machinery manufacturers have done tremendous work, including developing new models of agricultural machinery, improving their technical and economic indicators, optimizing production processes, training and retraining, developing financial tools to interact with consumers, building relationships with federal and regional state authorities and management. All these achievements became possible because of government policies aimed at import substitution, as well as by providing subsidies to manufacturers, setting recycling fees, supporting selected research and design development activities, granting loans by the Industry Development Fund on preferential terms, setting criteria for classifying products to Russian products and export support. But still, direct and indirect state support of the Belarusian agricultural machinery industry (based on the conventional unit of finished products of this industry) is greater than in Russia. Thus, back in 2014 in North America, the EU, the PRC and Australia, such a support was at least 6 times greater than in the Russian Federation [2].

Agricultural machinery manufacturers prepared for a multiple increase in production but it did not take place. Plans for machine manufacturers and agricultural producers did not coincide. The current profit, which agricultural producers have to spend on servicing loans and reducing the level of liabilities, is not yet foreseen. The limited solvent demand contributes to the generation and other threats to agricultural machinery manufacturers, such as: the increase in the cost of credit resources, the decline in investment attractiveness; the stagnation of technical and technological development; the increase in the cost of final products. It is necessary to search for instruments that can stimulate demand for domestic agricultural machinery.

2. Relevance of the Topic Research
Since the start of economic transformations in modern Russia, we pay a lot of attention to the issues of ensuring the economic security of businesses (ESB). In this work [15], a hierarchy of various levels of economic security is presented, where the ESB entities is the basis. Generally, the key to the economic security of Russia, amongst other things, is the protection from the threats of industrial enterprises. In the works [16, 18], as a part of the study of the problems of ensuring the enterprises economic security, the approaches to the threats systematization were reflected. The publications [6, 11, 13] provide theoretical studies and practical recommendations for preventing and neutralizing threats to economic security by monitoring crisis situations of an economic entity, including the identification and assessment of threatening factors.

In the works [1, 10, 12, 14], the leading role is played by the financial security of an organization presented in [14] as a quantitatively and qualitatively determined level of its financial condition that guarantees the stable uninterrupted protection of its priority balanced financial interests from identified real and potential threats to internal and external origin, which values are set on the basis of its financial philosophy and generate the necessary prerequisites for financial support for its sustainable growth in the current and perspective period. The key to financial security of an industrial enterprise is the stability of its profitability.

The authors of the works [3, 7] propose a resource approach to the application of methodological tools for managing the economic security of an economic entity, which includes a variety of methods for describing and studying economic security based on the sufficiency and ability to finance the costs
required to conduct current operating activities, as well as to benefit from resources invested by generating revenue. Thus, in order to ensure the economic security of Russian agricultural machinery manufacturers, an ever-increasing flow of income from their main activity ensuring the satisfied effective demand of agricultural producers is needed.

Russia is an agrarian country. Potentially, the Russian Federation could become a food factory for the whole world, since our country has 9% of the arable land of the entire planet, 58% of black soil reserves. At the same time, Russian farmers produce only about 2% of the global agricultural output [22]. To meet the needs of Russian agriculture, a powerful national agricultural machinery industry is needed. [19]. In December 2012, Russia joined the WTO, which made it easier for foreign producers to penetrate the Russian market. Influential agricultural machine manufacturing concerns of Europe and North America carried out expansion into the domestic market putting Russian enterprises, such as Rostselmash, on the verge of bankruptcy. The Russian state has come to the rescue of this flagship of mechanical engineering. A tool to subsidize the purchase of agricultural equipment by Russian farmers was used, and it had a positive effect. Another direction for the development of national agricultural machinery has become the practice of localizing the assembly of machinery from foreign manufacturers. The Belarusian MTW reached the greatest success in this on the capacities of the Cherepovets plant. Rostselmash also went down this path - first, it bought a Canadian tractor manufacturer, and then moved production to Russia. The production of foreign engineering brands in the Russian territory is an element of the state industrial policy. The Russian automotive industry developed along the same path, which led to the verge of bankruptcy of the national car manufacturers. By tremendous efforts, including financial, the state rescues AvtoVAZ PJSC now [9]. In order not to repeat the mistake, it is necessary to find ways to support national manufacturers of agricultural machinery, which allows a multiple increase in production output.

3. Research Objective
The program document defining the vector of development of the agricultural machinery industry is the Strategy for the development of agricultural machinery industry for the period up to 2030, approved by Decree of the Government of Russia No. 1455-r dated July 7, 2017. Parameters incorporated in it do not allow to radically change the situation in the agricultural sector. Even achieving the target indicators of the Strategy will not change the situation drastically.

Russian farmers are experiencing an acute shortage of equipment. In Russia, for the all arable land cultivation, which is about 130 million hectares, 900 thousand tractors are required by technological standards, and 450 thousand of them are in stock, 75% of which are already fully depreciated and their service life is exceeded. About 40 thousand tractors are annually out of service. To bring the level of agricultural mechanization to an acceptable level, it is necessary to increase the fleet by 90 thousand tractors for the period of 2019-2024. Production figures innate the state program for the development of Russian industry are much more modest. There is a similar situation for combines - 380 thousand units are needed, there are 180 thousand units. It is necessary to produce 40 thousand per year but in reality – there were 4.6 thousand purely Russian ones produced in 2017 [4].

As a result, there are three tractors and a half of the combine for 1 thousand hectares of arable land in Russia. For comparison: in Canada, close to us in the climatic conditions of farming, a thousand hectares are processed by 7-9 tractors and the same amount of combines [4].

Lack of technology turns into crop losses. The quality of agricultural work is deteriorating due to the aging of the fleet in use, bringing damage to the soil. To get the most out of the land, it is necessary to sow the crop in time, apply fertilizer, process it from pests and collect in time. The temporary slack at the same time is very limited. Loss of germination results in a sowing time shift of more than a week. Weak growth of crop will be in violation of the timing of fertilizer pesticides. Not harvested in time - fruits overripe, showered, rot and worse preserved.

«With the late dates of spring sowing, wheat plants have less bushiness, length of straw and spike, number of spikes and grain weight, up to 30% of plants have damage to the main stems. At the same
time, the risks of crop death from diseases and pests increase significantly. If we talk about the sowing of winter crops, here the time factor is not less rigid. Unnecessarily early winter crops are susceptible to damage and death from pests and diseases. Late sowing of winter crops increases the risk of damage and death of plants during the wintering period» [22].

Agricultural machinery industry enterprises have the opportunity to increase the production of tractors and combines, since the average capacity load fluctuates around 20 percent, but producers need guaranteed effective demand from farmers. But today, the debts of agricultural producers on loans reached 1.6 trillion rubles, and their decrease in the short term is not expected [4]. Banks, both commercial and state, are beneficiaries of state support for peasants.

A critically low level of equipment availability has been achieved - this is indicated by the size of the crop loss and the decrease in its grade (see Fig. 1). In 2015, 103 million tons of grains were harvested in Russia, which amounted to a record. But, according to one of the experts, if you could avoid losses due to non-compliance with the terms of the work, you could reach the level of 150 million tons [4].

The reason for the low demand for equipment is the low profitability of agricultural producers, which is caused by the constant disparity of prices between industrial goods, energy resources and the prices of products sold by agricultural producers. «Price indices in 2015 and 2016 of agricultural producers amounted to 108.5 and 101.8, of industrial goods producers 110.7 and 107.4, and on agricultural general-purpose tractors purchased by agricultural organizations 113.8 and 107.2, respectively» [22].

In 2016, Russian-assembled tractors made up only 32% of the total market. Therefrom, 57% are foreign models. The situation is reversed with combines - the share of imports in 2016 is only 2%! It is noteworthy that domestic models amounted to 80% of the combines produced in Russia. But it would be wrong to assert that the Russian models of agricultural machinery are absolutely unique because components used in their production are still imported from overseas [22].

As a result, there was such a structure of agricultural machinery park in the Russian Federation that foreign models amount to 69% of tractors and 23% of combines [22].

In accordance with the state program “Development of industry and increase of its competitiveness” approved by the Decree of the Government of the Russian Federation dated April 15, 2014 No. 328, the subprogram «Development of transport and special mechanical engineering» is executed. In 2017, the federal budget expenditures on it amounted to 11.9 billion rubles, which is
almost twice as high as 2016. A significant assistance in 2017 was allocated to agricultural machinery manufacturers by the Ministry of Agriculture of Russia by subsidizing, at the expense of the federal budget, reimbursement of production costs of machinery sold to agricultural producers at a discount of a total amount of 15.7 billion rubles [22].

The scarce financial capacity of agricultural producers and the lack of financial reserves do not confer the possibility for the effective reproduction of the material and technical base and the intensification of the agricultural sector of the Russian economy.

At the same time, Russian agricultural equipment is in demand on the foreign market. There is a demand for it not only in the countries from CIS, but also in countries outside the former Soviet Union, including on other continents. In accordance with the program document [24], the value of Russian exports is expected to increase from $118 million in 2016 to $480 million in 2025, while the number of countries importing products from Russian agricultural machinery industry will increase from 31 to 65.

The demand for Russian equipment abroad will grow in countries where there is an increase in population, this is primarily South-East Asia. According to the forecast [23], world consumption of agricultural products and, in particular, grain, will increase in 2019-2020.

It is necessary to propose a mechanism that will allow agricultural producers to radically update their material and technical base by expanding the production of Russian agricultural machinery. This will ensure the protection of agricultural machinery enterprises from all sorts of threats to their economic security.

4. Economic and Mathematical Models

The rate of renewal of the agricultural tractor fleet is determined by the planning of the time to achieve the final result in the provision of the country with agricultural products, the current age structure of the tractor fleet, regulated depreciation period for tractors in the fleet, the established tractor market and the purchasing power of agricultural producers with consideration of state support [8].

As was shown above, a key factor in the development of Russian tractor construction is the formation of effective demand from farmers for machinery. A powerful tool to support agricultural producers is the establishment of a minimum grain price guaranteed by the state. Such a tool was used in the EU [5] in the recent past. In such a situation, farmers can plan their incomes with high precision and build up their technical and technological policies in terms of modernizing their material and technical base. In Russia, there is no such practice and another mechanism is used to stabilize grain prices by intervening on commodity exchanges. High crops in Russia bring down grain prices, including due to a shortage of logistics capacity: roads, elevators, hoppers, grain carriers, cargo terminals in ports. There is a theoretical possibility of withdrawing surplus grain from the Russian market in favor of its export. Grain exports have already made Russia the world leader upon this indication. The key competitive advantage of grain from Russia is its low price. Most of Russian grain goes to Turkey and Egypt [23]. Increasing the exported grain grade will significantly increase foreign exchange earnings and reach the targets set by presidential decree.

To intensify the purchase of machinery, it is necessary to exceed the growth rates of grain prices over the growth rates of prices for industrial goods purchased by agricultural producers. Over the past years, the situation has been reversed. In conjunction with the burden of debt on loans, agricultural producers have too little money to purchase equipment.

Let’s make a model for determining the value of effective demand for agricultural tractors in Russia (1).

\[ D_n = M_g \cdot K_1^T + (M_w + M_r) \cdot Q + \xi_t, \]  
where \( D_n \) – annual effective demand for agricultural tractors;

\[ M_g = \frac{M_p}{N}, \]  
where \( M_p \) – available tractor fleet;
N – useful life of the tractor (10 years);

$K_I^t$ – correction factor with account of the presence in the fleet of tractors with an excess period of use;

t – year number, $t \in (1,T)$;

$M_w$ - the need for tractors in connection with the increase in the volume of agricultural work to expand the production of grain to the domestic market (3);

$$M_w = \frac{S_1}{E_z},$$

(3)

where $S_1$ – area of additional land involved in crop rotation;

$E_z$ – 1 tractor performance (production rate);

$M_r$ – the need for tractors in connection with the increase in the volume of agricultural works for the expansion of grain production to the foreign market (4);

$$M_r = \frac{S_k}{E_z},$$

(4)

where $S_k$ – area of additional land involved in crop rotation;

$E_z$ – 1 tractor performance (production rate);

Q – calculated multiplier (5);

$$Q = K_2 \cdot K_3 \cdot x_1 \cdot x_2 \cdot \left(\frac{1+x_3}{2}\right)$$

(5)

$K_2$ – price index for agricultural products in comparison with prices for manufactured goods;

$K_3$ – growth index of logistic capacities in Russia for agricultural products transshipment;

$x_1$ – Boolean variable,

$$x_1 = \begin{cases} 1, & \text{if } K_2 > 1 \\ 0, & \text{if } K_2 \leq 1 \end{cases}$$

$x_2$ - Boolean variable,

$$x_2 = \begin{cases} 1, & \text{if the state sets the minimum purchase price on grain} \\ 0, & \text{if not} \end{cases}$$

$x_3$ - Boolean variable,

$$x_3 = \begin{cases} 1, & \text{if the state has introduced a moratorium on the payment of debts to banks by agricultural producers} \\ 0, & \text{if not} \end{cases}$$

$\xi_t$– stochastic variable with consideration of changes in agricultural technologies.

To meet demand, there are four possibilities presented in the equation (6).

$$D_n = M_b + M_k + M_f + M_p,$$

(6)

where $M_b$ – tractors of Russian brands produced by Russian enterprises;

$M_k$ – tractors of foreign brands produced by Russian enterprises;

$M_f$ - tractors of foreign brands produced by foreign enterprises on the Russian territory;

$M_p$ – tractors of foreign brands imported to Russia.

Also, there is a demand for Russian equipment abroad. To determine the volume of export deliveries, you must use the formula (7).

$$D_h = (M_b + M_k + M_f) \cdot K_1 \cdot x_1 \cdot x_2,$$

(7)

where $D_h$ - demand for Russian-made tractors abroad;

$K_1$ - corrective factor with consideration of the ratio of tractors produced for export and produced for the Russian market;

$x_1$ - Boolean variable,

$$x_1 = \begin{cases} 1, & \text{if the rate of the national Russian currency is stable} \\ 0, & \text{if not} \end{cases}$$

$x_2$ - Boolean variable,
\[ x_2 = \begin{cases} 1, & \text{if there are no discriminatory measures against Russian products} \\ 0, & \text{if not} \end{cases} \]

The combination of formulas (1), (6) and (7) allows to determine the forecast values of the effective demand volumes and the production of agricultural tractors. Using a predictive mechanism allows you to plan the production of tractors, as well as develop state support measures that can change the current situation and evaluate their effectiveness.

5. Results of Experimental Studies

The system of mobile energy resources, which include tractors, should provide a cumulative solution of a number of complex political (food independence), economic (efficiency) and social (employment of economically active population) tasks [17]. In addition to the efforts of the «invisible hand of the market», state participation is necessary to form an optimal tractor fleet. Forms of state support may be different, the main thing is to solve the fundamental problem - to ensure sustainable high demand for agricultural machinery.

As a result of using the scenario planning method, three options for the development of Russian tractor construction for the period 2019-2024 have been obtained. The probabilities of implementing each of the scenarios are approximately equal.

Scenario #1 (pessimistic). Under this scenario, economic growth in Russia will not exceed 1.5% of GDP (Gross Domestic Product). Expanded grain production will be absent. The fixed guaranteed price of grain will not be established and the financial burden of loans issued to agricultural producers will remain at the same level. Farmers will focus on the intensification of production. The development of smart agricultural technologies, the growth of fertilization, the use of protection modern means against pests, the use of seed material with the best qualities. In addition, there will be good climatic conditions. Grain exports do not increase significantly. The growth rates of prices for agricultural products will lag behind the growth rates of prices for industrial goods used by farmers. The increase in demand for equipment – 50%. Annual demand for tractors – 13-15 thousand pieces. The volume of tractors production in Russia for the needs of the Russian market – 9-10 thousand pieces, therefrom Russian brands –40%.

Scenario #2 (median). Under this scenario, economic growth in Russia will be 4% -5% of GDP. Grain production will increase by 15%. The state will establish a fixed guaranteed price of grain, and the financial burden of loans will remain unchanged. Grain exports will increase by 30%. There will be priority growth rates of prices for agricultural products compared to growth rates for industrial goods used by farmers. The magnitude of the increase in demand for equipment – 200%. Annual demand for tractors – 28-30 thousand pieces. The volume of tractors production in Russia for the needs of the Russian market – 18-20 thousand pieces, therefrom Russian brands – 70%.

Scenario #3 (optimistic). Under this scenario, economic growth in Russia will be 4%-5% of GDP. Grain production will increase by 35%. The state will establish a fixed guaranteed price of grain, as well as a moratorium on the servicing of previously issued loans by farmers and the debt will be restructured. Grain exports will double. There will be priority growth rates of prices for agricultural products compared to growth rates for industrial goods used by farmers, their ratio will exceed the level of 1.1. The increase in demand for equipment – 500%. Annual demand for tractors – 55-60 thousand pieces. The volume of tractors production in Russia for the needs of the Russian market – 45-50 thousand pieces, therefrom Russian brands – 70%.

The values of the forecast parameters are closely related to the state agrarian policy. A significant expansion in the production of tractors, as shown by the optimistic scenario, is possible only under conditions of a tough pricing policy with respect to grain and the restructuring of farmers’ debts to state banks. The Order of the Ministry of Agriculture of Russia No. 129 dated March 28, 2018 «On the determination of the marginal levels of minimum prices for grain of the 2018 harvest for the purpose of public procurement interventions in 2018–2019» [24] established the level of grain prices but since no interventions themselves were carried out, this mechanism did not work. The prices, according to
the order, were lower than the market ones, and if interventions would occur, prices would fall, which is not a boon to farmers.

The degree of use of the Russian agricultural machinery export potential is highly dependent on the volatility of the national Russian currency rate and the efforts of state authorities and management in the countries importing Russian machinery. In all industrial countries, the same approach is used: while the share of a foreign company in the market is small, no special measures are taken because this situation is useful for creating competitive conditions for national producers. As soon as the share starts to increase rapidly, the special mechanisms are activated to normalize the situation. Discriminatory measures can be diverse - this includes the introduction of quotas and protective duties and the complication of product certification procedures. Despite the presence of Russia in the WTO, it will be difficult to defend the interests of Russian agricultural machinery manufacturers because mechanisms of protection of national markets have been debugged for decades and currently operate without failures. The expulsion of Russian producers from the foreign countries market will be actively lobbied by foreign national producers who will blackmail their governments by reducing the number of jobs, which, ultimately, can lead to the loss of power by the political movements.

To assess the possibility of expanding production by Russian agricultural machinery producers, it is necessary to assess the current production capacity utilization rate. Currently, there is a low utilization of production capacity of Russian agricultural machinery builders. To implement any of the scenarios, investments in expanding the material and technical base are not required. Also, there will be no problems with additional attraction of labor resources, since the Russian labor market is saturated with personnel with the necessary qualifications, and the level of remuneration offered by agricultural machinery manufacturers is acceptable. Financial resources are also quite accessible, since credit organizations prefer to deal with reliable borrowers, which are industrial organizations. Also, Russian manufacturers have already entered the market with new models of equipment and do not need to spend significant funds on R & D. The expenditures for upgrading products is relatively small compared to the cost of developing new designs.

6. Conclusions
When solving the task of ensuring the economic security of Russian enterprises of agricultural engineering, the following provisions should be taken into account:

1. Ensuring the economic security of agricultural machinery enterprises is inextricably linked with efforts to stimulate demand for their products. Thus, a state large participation in the processes taking place in the agricultural sector is necessary.

2. The current level of equipment provided by Russian farmers is extremely low, since there are certain obstacles to correct the situation. As shown in this article, tractor construction in Russia has three main development options, each of which is influenced by certain groups of factors.

3. The responsibility zone of the Russian state is to stimulate effective demand from domestic and foreign agricultural producers for Russian machinery. The parameters innate the Russian state program for the development of industry do not allow the farmers to form an optimal agricultural machinery park.

4. The main barrier to the expansion of equipment purchases by farmers is their over-standard debt load. At the same time, there is a measure that can reverse the situation - this is the minimum guaranteed price for grain set by the state. Currently, this approach is not used to manage the grain market in Russia, which leads to a collapse of prices at high crops. A similar situation is observed in Russia in 2017-2019.

5. The lag in the growth rates of grain prices from the growth rates of industrial goods consumed by agricultural producers preserves the situation with the demand for equipment. Curbing the growth of prices for agricultural products is explained by the desire of the state to prevent a decline in the population living standard. The disparity of prices does not allow farmers to steadily carry out profitable activities.
6. The formation of an optimal tractor fleet is the most important task for the state authorities and administration since the food security of the country, as well as the employment of the population in the rural areas, depend on its decisions results. There are opportunities for a multiple increase in tractor production in Russia.

7. References
[1] Bel'skaya E V 2013 Osobennosti upravleniya finansovoy bezopasnost'yu na predpriyatiy "Izvestiya Tul'skogo gosudarstvennogo universiteta" Ekonomicheskie i yuridicheskie nauki 2(1) 209-217
[2] Chichkin A 2014 Tochnyy vbor Rossiyaskaya biznes-gazeta: promyshlennoe obozrenie 969 11
[3] Fomchenkova L V 2013 Strategicheskii analiz kak instrument ekonomicheskoy bezopasnosti promyshlennogo predpriyatiya Problemy bezopasnosti rossiyskogo obschestva 2(3) 13-20
[4] Fursova I 2016 Staryy traktor gluboko ne vspashet Rossiyskaya gazeta – Spetsvypusk 53(6921) A5
[5] Garmann S 2014 Does globalization influence protectionism? Empirical evidence from agricultural support Food Policy 49 281-293
[6] Ivanchenko N A 2013 Postroenie sistemy ekonomicheskoy bezopasnost'yu s pomoshch'yyu ontologicheskikh modeley Nauka v tsentral'noy Rossi i 10 44-49
[7] Ivanchenko P Yu, Katsuro D A, Medvedev A V, Trusov A N 2013 Matematicheskoye modelirovanie informatsionnykh bezopasnostey na predpriyatiyakh malogo i srednego biznesa Fundamental'nye issledovaniya 10(13) 2860-2863
[8] Izmaylov A Yu, Antyshev N M, Gurylev G S, Shevtsov V G 2008 Problemy formirovaniya rossiyskogo parka i rynka sel'skokhozaystvennykh traktorov s uchетод sostoyaniyakh perspektiv razvitiya ikh proizvodstva v Rossii i za rubezhom Sel'skokhozaystvennye mashiny i tehnologii 5(6) 7-17
[9] Savin A V 2018 Dominanty ekonomicheskoy bezopasnost' rossiyskikh promyshlennykh organizatsiy s uchastiem srednego biznesa v kapitale: kroniki «Avtovaza» Vestnik universiteta 9 110-117
[10] Sorokina O N 2011 Sushchnostnye kharakteristiki finansovoy bezopasnosti predpriyatiya Al'manakh sovremennoy nauki i obrazovaniya 6 224-225
[11] Tolstykh T N 2011 Postroenie konseptual'nykh modeli ekonomicheskoy bezopasnosti predpriyatiya na osnove architekturnogo podkhoda Vestnik Tambovskogo universiteta Seriya: Gumanitarnye nauki 100 49-53
[12] Yandulova I G 2012 Upravlenie finansovoy bezopasnost'yu predpriyatiya Sovremennye tendentsii v ekonomike i upravlenii: novyy vzglyad 14(2) 161-166
[13] Avdiyskiy V I, Gerasimov P A, Lebedev I A 2007 Analiz i prognozirovanie riskov v sisteme ekonomicheskoy bezopasnosti sel'skokhozaystvennykh traktorov s uchетод sostoyaniya i perspektiv razvitiya ikh proizvodstva v Rossii i za rubezhom Sel'skokhozaystvennye mashiny i tehnologii 5(6) 7-17
[14] Blank I A 2009 Upravlenie finansovoy bezopasnost'yu predpriyatiya 2-e izd., ster. El'ga (Kiev)
[15] Senchagov V K i dr. Ekonomicheskaya bezopasnost' Rossi: obshchii kurs pod red. V K Senchagova Rossiyaskaya gazeta: promyshlennoe obozrenie 2 151-166
[16] Gaponenko V F, Bespal'ko A A, Vlaskov A S 2007 Ekonomicheskaya bezopasnost' predpriyatiy: podkhody i printsyd Os' 89 (Moskva)
[17] Ksenevich I P, Orsik L S, Shevtsov V G 2004 Kontseptsiya nepreryvnoy informatsionnoy podderzhki zhiznennogo tsiklа (CALS-teknologii) sel'skokhozaystvennykh mobil'nykh energeticheskikh sredstv Rosinformagrotekh (Moskva)
[18] Azoev G L i dr. 2014 Upravlenie organizatsiей Pod red. Porsheeva A G, Rumyantsevoy Z P, Salomatina N A 4-e izd. pererab. i dop. INFRA-M (Moskva)
[19] Zhalnin E V 2012 Metodologicheskie aspekty mekhanizatsii proizvodstva zerna v Rossii Poligraf servis (Moskva)
[20] Sergeeva N V 2017 Ob effektivnosti ispol'zovaniya otechestvennoy i importnoy sel'skokhozyaystvennoy tekhniki v Rossii V sbornike: Doklady TSKhA Materialy Mezhdunarodnoy nauchnoy konferentsii 347-349 Rossiyskiy gosudarstvennyy universitet MSKhA im. K A Timiryazeva (Moskva)

[21] Korchevoy E A Strategiya razvitiya eksporta produktsii sel'skokhozyaystvennogo mashinostroeniya na period do 2025 g Prezentatsionnye materialy k vystupleniyu na IV Rossiyskom Agrotekhnicheskom Forume http://atf.rosspetsmash.ru/upload/iblock/675/korchevoy-k.a..pdf

[22] Materialy parlamentskih slushaniy na temu «Zakonodatel'nuye aspekty razvitiya material'no-tekhnicheskoy bazy sel'skogo khozyaystva» http://komitet2-20.km.duma.gov.ru/Novosti-Komiteta/item/16276548

[23] 2018 Obzor rynka sel'skogo khozyaystva Issledovatel'skiy tsentr kompanii «Deloyt» v SNG (Moskva) https://www2.deloitte.com/ru/ru/pages/consumer-business/articles/snapshot-of-the-russian-agroindustry.html

[24] Prikaz Minsel'khoza Rossii ot 28.03.2018 N 129 "Ob opredelenii predel'nykh urovney minimal'nykh tsen na zerno urozhaya 2018 goda v tselyakh provedeniya gosudarstvennykh zakupochnykh interventsiy 2018-2019 godakh" https://rg.ru/2018/05/14/minselhoz-prikaz129-site-dok.html

[25] Ukaz prezidenta Rossiyskoy Federatsii «O natsional'nykh tselyakh i strategicheskikh zadanach razvitiya Rossiyskoy Federatsii na period do 2024 goda» http://publication.pravo.gov.ru/Document/View/0001201805070038