

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics



Bachelor Thesis

Agricultural self-sufficiency in Russian federation

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Andrey Khirnyy

Business Administration

Thesis title

Agricultural self-sufficiency in Russian federation

Objectives of thesis

The purpose of this work is to analyse the prerequisites of the current situation, the policy and support of the agriculture of the Russian Federation in selected agricultural commodities. The theses look on the problem of self-sufficiency in the selected products from the long-term perspective (1990 – 2016).

Methodology

The theoretical part focuses on the history of Russia's agriculture since the 19th century, WTO accession, the support of the government, and problems of Russian agriculture.

The practical part will analyse the degree of self-sufficiency of selected commodities and based on the results, the thesis will conclude, whether low self-sufficiency products get any additional national support or not.

Among self-sufficiency calculations, the theses use time series analyses, observation, synthesis, induction, deduction and analogy.

The proposed extent of the thesis

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Keywords

Agriculture, support, Russia, problem

Recommended information sources

Adukov R. X Agrarian reforms and development of the rural economy of Russia 2011

Federal service of state statistics:Russia in figures 2017

Information guide on measures and directions of state support of the agro-industrial complex of the Russian Federation

OECD (2015), "Russian Federation", in Agricultural Policy Monitoring and Evaluation 2015

WTO (2011) Report of the working party on the accession of the Russian Federation to the World Trade Organization, November 2011

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Declaration

I declare that I have worked on my bachelor thesis titled "Agricultural self-sufficiency in Russian federation" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 15.3.2018 _____

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Zemědělská soběstačnost v Ruské federaci

Souhrn

Cílem práce je analyzovat situaci v zemědělství v Ruské federaci. Teoretická část popisuje historii vývoje ruského zemědělství od 19. století. Poté se zabývá vstupem do Světové obchodní organizace a podporou zemědělců v počátečních fázích podnikání. Praktická část se zaměřuje na zemědělské komodity vepřové a drůbeží maso, brambory. Sleduje stupeň soběstačnosti, intenzitu výroby, spotřebu na obyvatele, produkci a pokrytí dovozu vývozem. Získané údaje jsou analyzovány a porovnávány s údaji ze zemí střední Evropy. Práce konstatuje, že Ruská federace dosahuje soběstačnosti u všech tří komodit. U masa se dokonce soběstačnost postupně zvyšuje, zatímco u brambor je trend opačný.

Klíčová slova: Zemědělství, podpora, Rusko, problém, soběstačnost, intenzita výroby, výroba na hlavu, spotřeba na obyvatele, pokrytí obchodu.

Agricultural self-sufficiency in Russian federation

Summary

The aim of the thesis is to analyse the situation in agriculture in Russia federation. The theoretical part describes the history of development of Russia's agriculture since the 19th century. Then it deals with the accession to the World Trade Organization and agricultural support and support of beginner farmers in Russia. The practical part focuses on the degree of self-sufficiency, the intensity of production, the consumption per capita, production per capita of potatoes, pork meat and poultry meat and trade coverage of potatoes. The obtained data are analysed and compared with the data of central Europe countries. The document says that the Russian Federation achieves self-sufficiency in all three products. Self-sufficiency of meat increases gradually, whereas the trend is opposite for potatoes.

Keywords: Agriculture, support, Russia, problem, self-sufficiency, intensity of production, production per capita, consumption per capita, trade coverage.

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1 Introduction

Agriculture occupies an important place in modern economic theory. The need to study the trends in the development of the agrarian system is due to a number of points. A significant part of the world's population lives in countries whose economies are dominated by the agrarian sector today. In addition, the problem of food security of the country continues to be relevant for many countries, including Russia. Agriculture provides the population with food, and the processing industry with raw materials. Approximately 70% of consumer goods are produced from agricultural products, so the living standard of the population directly depends on the effectiveness of this industry.

The contribution of the agricultural sector to the economic growth of participation in the market is due to its twofold role. Firstly, as a supplier of products to the domestic and foreign markets, and secondly, as a consumer of resources produced in other sectors of the economy. Intensification causes a rapid increase in consumption of agricultural products in the agricultural sector, which affects the growth rate of the domestic industry. The analysis of the condition and development of the agricultural sector is of paramount importance for revealing the basic laws of social development. The purpose of this work is to review and analyse the functioning of the agricultural complex, as well as possible ways to improve its activities.

The choice fell on this topic, because the problem of food is very urgent nowadays. The population of the planet is growing. The only hope lies in agriculture. Countries invest a lot of money in its development. Russia is no exception. Moreover, Russian federation has great potential and starts to use it. There were a lot of tipping events in the history of modern Russia during the period 1990-2017. These events had a direct impact on the country's agriculture. The collapse of agriculture of the Russian Federation and its revival is clearly traced since 1990 till 2017.

2 Objectives and Methodology

2.1 Objectives

The purpose of this work is to analyse the prerequisites of the current situation, the policy and support of the agriculture of the Russian Federation in selected agricultural commodities. The thesis looks on the problem of self-sufficiency in the selected products from the long-term perspective (1990 – 2017). This work will answer the questions: „Do the selected commodities have high self-sufficiency ($\geq 100\%$)? Is the state able to feed itself?” and if no – „Is the commodity with low self-sufficiency supported by the state? “

2.2 Methodology

The theoretical part focuses on the history of Russia's agriculture since the 19th century, the WTO accession, the support of the government, and problems of Russian agriculture.

The practical part will analyse the degree of self-sufficiency of selected commodities (potatoes, pork meat and poultry meat), which are chosen due to the wide prevalence among the Russian population from the period since 1990 till 2017 and based on the results, the thesis will conclude, whether low self-sufficiency products get any additional national support or not.

Among self-sufficiency calculations, the thesis uses time series analyses, observation, synthesis, induction, deduction and analogy. The following formulas are used for calculations:

1. Rate of self-sufficiency = (domestic production / consumption) \times 100 (%) (Lohar, 1981)
2. The intensity of production = number of animals (pieces) / population of the country.
3. Per capita meat production = carcasses production (kg) / population of the country.
4. Trade coverage = (export / import) \times 100 (%) (OECD, 2005).

3. Literature Review

Theoretical part firstly describes the history of Russian agriculture since 19th century. Then is describe the accession to the World Trade Organization. At the end, there is presented data about agriculture support.

3.1. Development of Russian agriculture since 19th century.

In the first half of the 19th century, agriculture remained at the same position as in the previous century. The production of technical crops increased in the industrial provinces (flax, hemp). The potatoes acquired increasing importance. In general, yields were extremely low, cereals occupied the bulk of crops (95%). Intensive farming with the use of machines developed in the Baltic States, in the south of Ukraine and in Zavolzhie¹. Use of civilian labour expanded in southern Russia. The commodity circulation of agriculture grew up, the excess grain and sugar beets processed in the landowner estates. The volume of alcohol production had increased during the first half of the century in three times, the number of sugar factories - in eight.

The second half of the 19th century was marked by an event of 1861- the abolition of serfdom. Agricultural development of Russia during the period of reforms (1860-1880) was not so successful. However, in the 20 years grain exports from Russia increased in 3 times and made 202 million poods² in 1881. Russia took first place in world exports of bread. Bread Prices stayed high in the world market. (Zuev,1999)

However, the yield growth of bread was low in Russia. The increase in the gross grain yield was mainly achieved due to the cultivation of new lands. Economy of the nobility remained the main supplier of export of bread. Landlords had a huge land area. 56 tithes of landlord land accounted for every 100 tithes of peasant land in the central black earth region, and in the Central Industrial area - 30 tithes. The specific weight of the latifundia (possessions larger than 500 tithes) was large in the total mass of landed estates. The largest landowners (Stroganovs, Sheremetevs, Shuvalovs, etc.) have hundreds of thousands of tithes in different provinces. (Zuev, 1999)

The landowners had to rebuild their economy on market principles after the abolition of serfdom. They were able to organize a system of agriculture, which passes from corvee

¹ Zavolzhie is a territory located between the Volga, the Urals, the Northern Uvaly and the Caspian Sea.

² 1 pood = 40 pounds

system to capitalist system. "Pieces", which were obtained during the reforms, forced the peasants to rent this land from the landowner. They often could offer him only their labour as a payment. Developmental system of agriculture arose in such a way. These forms of exploitation were called half-serfdom. (Zuev,1999)

In general, the attitude of the landlords to the peasants totally changed after 1861. The landowner often pitied his peasants before, came to help them (they were his property). Now he was ready to "squeeze out all the juices from them" and throw them to the mercy of fate. Only the most humane and far-sighted landlords, who worked in local government, tried to compensate for the broken relations and to get closer to the peasantry on the basis of the common interests of the local economy.

Advanced landlords tried to build their economy in a new way. They bought own working cattle and equipment, agricultural machines and hired workers. These forms of management developed with difficulty. It was not easy to compete with bonded forms, for which the reform of 1861 created favourable conditions. (Zuev,1999)

Business and farming were approved only in the steppe Zavolzhie and in the Northern Caucasus, where the landlord's landownership was small or was absent at all. These areas became the breadbasket of Russia and the main suppliers of bread for export.

There were two ways of the agrarian system of Russia during the time of the reforms:

1) Prussian - the preservation of large landed property. The Central Agricultural Area entered a slow, long way of restructuring the economy with the preservation of large landed estates;

2) American - farm. Free peasants created their own farms, did business in the steppe areas of the Zavolzhie and the North Caucasus, in the Baltic and the Western Ukraine. (Zuev,1999)

Groups of rich, medium and poor peasants did not have a permanent composition in the pre-reform village. The family of a peasant could be in all three groups throughout their life. After 1861, the hereditary consolidation of peasant families began in extreme social groups. Well-off families, who no longer had to share their wealth with the landowner, began to transfer it by inheritance. But on the other hand, completely ruined peasants appeared in the village. It usually was due to the bad qualities of the householders (laziness, drunkenness, etc.). Their children had little chance to remedy the situation. (Zuev,1999)

Stratification of the peasantry began to take an irreversible character. There was no clear line between the middle peasants and the poor one. These two social groups, closely interrelated, formed the bulk of the peasant population. The economic and social life of the

Russian peasant proceeded within the community which existed in Russia for centuries. It received the status of a rural society after the reform of 1861. The peasant community was an economic union and a lowest administrative unit at the same time. The community distributed the land among its members, established rules for the use of pastures and forests. The law assigned responsibilities for the distribution of taxes and the maintenance of order in the territory of the community at the same time.

The community was built on a combination of collective land use and separate management of each household. The peasants owned striped land in the community. Each yard received strips of good and bad lands, which were near and far away, and on the hillock and in the lowland. The peasant annually received an average crop, having stripes in different places: the strip in the lowlands rescued in a dry year, in a rainy one - on hills. (Zuev,1999)

The labour of the plowman was very hard. A special order existed in peasant families for a long time: women looked after the house and children, and men worked in the field. Therefore, the land was distributed more often according to the number of men. When a man died, the community took away his family's land. When a boy was born, he received a land. These actions were called private redistribution. Nevertheless, the number of births exceeded the number of deaths. The communal lands had to be broken up into a new number of people from time to time. The territory of each peasant became smaller. General or radical redistribution took place. It was repeated every 12 years. But some communities did not make redistribution - neither general, nor private. The distribution of land become increasingly uneven in these communities. (Zuev,1999)

Redistribution was a rare phenomenon in the first time after the reform in the provinces of the black earth centre. The allotment of a fertile land fed the peasant's family, and they treasured them very much, even at high repayments. But the long-term absence of redistribution led to the fact that the peasants began to consider the allotment their property. They began to inherit and also sold it. The concept of private ownership of land began to take root in the peasant's mind. We can conclude that the first time of reforms was a comparatively favourable period in the life of the peasants of the black earth.

The peasant allotment was imposed in excess of its profitability in non-black earth provinces. The peasant coped with redemption payments only with the help of extraneous earnings. Those who could not go on earnings (small children, invalids, old people), did not have an allotment. The peasant, perhaps, would have completely refused the allotment, but he could not permanently leave the village to which he was assigned. The redistribution of the land was a frequent occurrence in the non-black earth provinces. The peasant did not always

have time to process his allotment, because he was busy at work in the city. The number of abandoned lands increased, and redemption payments and other taxes were collected for them. 60-70-ies were a difficult period in the life of the village of the non-black earth centre. Although close communication with the city quickly developed entrepreneurial skills for local peasants.

The peasant population increased from 48.9 to 80 million people in 40 years in European Russia. Population growth had uneven consequences. The peasants were heavily taxed with redemption payments in the Non-Black Earth Zone. When the number of workers increased, it became easier to manage payments. The peasant went to the city with his grown-up sons and earned much more. Some of them stayed in the city. Cities grew, and overpopulation did not arise in the village. The situation of the peasantry slowly improved in the Non-Black-Earth zone. (Zuev, 1999)

Catastrophic processes were brewing in the black earth zone. It was much more difficult to go for earnings here (the nearest cities were trade rather than industrial ones). The government restrained the resettlement to Siberia. They feared that the landlords would lose the required number of workers. The big "stretches" of peasant land were created during the reform of 1861. The yield of peasant fields increased much slower than population growth occurred. The average size of the allotment was halved in 40 years for European Russia. Peasant allotments inadmissibly crushed in some provinces (for example, in Tula, Kursk). Peasants had to rent land from the landlords.

In the late seventies of the nineteenth century, cheap American and Canadian bread went to Europe due to the cheapening of long-distance shipping. Prices for grains fell. The global agricultural crisis began. The Russian landlords hastened to shift the losses to the peasants. An increasingly significant part of the landed estates was leased to the peasants. Rental prices growing non-stop. By the beginning of the twentieth century, they had reached such heights that some governors were worried. They reported to the head of the government about "disproportionately high rental prices." The situation of the peasantry has sharply deteriorated. If the rich peasants (only about 5% of the rural population) still stayed afloat somehow, the middle peasants began to become poor. Peasant poverty grew in the black earth provinces of Russia. The notion of private ownership of land collapsed under its pressure. Since the beginning of the 1890s, the peasants of the black earth centre had been recalling the land redistribution. Redistributions were made as a chain reaction. They covered a vast space (Kursk, Orel, Voronezh, Ryazan, Saratov and other provinces). (Zuev,1999)

The crop failure spread to the vast territory of Russia in 1891. Hunger came next. Peasants of the Non-Black Earth Region began to rebuild their economy after a crop failure. The crops of flax expanded. The 90s of the nineteenth century became a period of intensive economic growth in Russia. The average grain collection rate for 1881-1887 was 263 million quarters, then in 1894 it exceeded 332 million quarters in 1894. (Wikipedia)

But with all the obvious successes of economic development, Russia was still predominantly an agrarian country, where the overwhelming majority of the population was engaged in agriculture, and the main export items were products of agriculture and livestock.

Russia took a leading position on the world market of agricultural products since the end of the 19th century. About a third part of the products were produced in large agricultural holdings. Routine agrotechnical methods and archaic agricultural tools prevailed in peasant-communal land use. The productivity of this production was extremely low, nevertheless peasant farms supplied most of the market grain. 26.6 million horses and 31.6 million cattle were in Russia in 1895. (Wikipedia)

In general, this reform greatly accelerated the transition of peasants from stagnant natural-consumer economy to commodity-market economy, despite the severity of redemption payments and semi-feudal exploitation on the part of the landlords. Peasants who wanted to work bought land for money. Others left the village. The number of rural population has steadily decreased (from 95.5% to 80%). Industry received cheap labour. Well-to-do peasants begin to use new ways of cultivating the land. Community continued to exist. It helped the lagging peasants (they often "parasitized" the prosperous peasants) and did not allow well-to-do peasants to expand their estates. It hampered the development of agriculture. The peasant could not buy agricultural machines and that is why the development of heavy industry slowed down. (Zuev,1999)

Stolypin's reform was directed against it. First, Stolypin abolished the law on the inviolability of the peasant community from 1893. The peasants were given the right to leave the community with their land. The peasant had the right to demand the allocation of land in the form of a farm. Consent of the rural assembly was required; if the gathering did not give consent within 30 days, the allocation of land was made by the chief of the local agricultural council. May 29, 1911 - the law on land management. Now the land was attached to the peasant, regardless of whether he owns it or not. The decree of October 5, 1906 equalized the rights in the "public service attitude" and granted freedom of choice of residence, thereby opening the way for agriculture from the overpopulated European part of Russia to the North Caucasus, Central Asia, Siberia. (Zuev,1999)

Stolypin's reform contributed to the further specialization of agriculture and increased efficiency. Demand for agricultural machinery and implements increased in 3-4 times for the period 1906-1912. Steady growth of agricultural production has been observed since 1909. However, the tension remained in the village. Many peasants were ruined. "Return migrants" did not receive anything upon arrival home because of unsatisfactory organization of the resettlement case. A number of external circumstances (the death of Stolypin, the beginning of the war) interrupted the Stolypin's reform. (Zuev,1999)

The reform has achieved neither political nor economic goals. Peasants did not have enough material to raise their farm, to buy new machinery that would increase productivity. Stolypin's agrarian policy also failed politically. The fact is that the peasants could not forget about the landlord's land. Even prosperous peasants, who plundered communal land, remembered landlord's land. The creation of private ownership of land was possible only in a quarter of the population. The planned resettlement of people to the outskirts also failed and that is why the land squeeze remained in the central part of the country. All these things foreshadowed the collapse of the reform even before the war, although it was supported by a huge bureaucratic apparatus which was led by Stolypin's energetic successor - Krivoshein.

There were several reasons for the collapse of reforms: the opposition of the peasantry, the lack of allocated funds for land management and resettlement, poor organization of land management, the rise of the labour movement in 1910-1914. Stolypin's agrarian reform was carried out under conditions of the preservation of landed estates. But the main reason was the resistance of the peasantry to the implementation of a new agrarian policy.

3.1.1 Development of the USSR's agriculture.

The tension of the people increased after the First World War, and the revolutionaries of 1917 took advantage of this. The subsequent NEP, the new economic policy (1921-1927), slightly softened the situation in the country, but it turned out to be calm before the storm. Stalin came to power with his forced construction of "state socialism" and it can be perceived ambiguously. On the one hand, large farms of well-to-do peasants were destroyed, and mostly incompetent and lazy people settled in the villages. On the other hand, intensive introduction of agricultural machinery and improved financing of the village began. (Radomyslsky, 2017)

Collectivization of agriculture is one of the most important events of the Bolshevik leadership of the totalitarian period. The centralization of agricultural management, control of

products and budgets, overcoming the consequences of the crisis of the NEP economy were the goals of collectivization. Unification of the forms of cooperative farms (collective farms, intercollective enterprises, intercollective associations), to which the state gave a certain amount of land and in which the bulk of the produced product was seized, became the most important feature of collectivization. Strict subordination of all collective farms to the centre has become another feature of the collective farms. (Alekseev, 1967)

As a result of the policy of collectivization by 1932, 221 thousand collective farms were created, which amounted to approximately 61% of peasant farms. Collectivization was completed by 1937-1938 years. More than 5,000 machine and tractor stations (MTS) were built, which provided the village with necessary for planting, harvesting and processing bread, during this period. The area under cultivation has increased in the direction of increasing technical crops (potatoes, sugar beet, sunflower, cotton, buckwheat, etc.). (Bogush, 1977)

The results of collectivization did not match the planned results for many indicators. For example, the growth of the gross product in 1928-1934 was 8%, instead of the planned 50%. The increase in state procurement of grain, which increased from 10.8 (1928) to 29.6% (1935), showed the level of efficiency of collective farms. However, from 60 to 40% of the total potato, vegetable, fruit, meat, butter, milk and eggs accounted for the share of subsidiary farms. Collective farms played a leading role only in the procurement of grain and some technical crops, while the bulk of the food consumed by the country was produced by private household plots. (Alekseev, 1967)

The impact of collectivization on the agrarian sector was tough. The livestock of cattle, horses, pigs, goats and sheep in 1929-1932 decreased by almost a third. The effectiveness of agricultural labour remained rather low due to the use of command-administrative methods of management and the lack of material interest of peasants in collective farm labour. Pumping of financial, material, labour resources from agriculture to the industry was established as a result of complete collectivization. The agrarian development was conditioned by the needs of industry and providing it with technical raw materials, that is why the industrial leap was the main result of collectivization. (Bogush, 1977)

The Second World War threw agriculture back 20 years back, and the situation stabilized only by the 1960s, when the country took the 2nd place (after the USA) in the world for grain exports. The collapse of the State plan system, the restructuring and disintegration of the Soviet Union had a negative impact on agriculture. Trade relations, lines of equipment supply to the village were disrupted. The crisis outlined in agriculture.

At the end of 1974, there were 17,700 state farms and 30,000 cooperative farms, which were the main producers of agricultural products and provided government purchases of grain, raw cotton, sugar beet, sunflower 100%, potatoes 82%, vegetables 94 %, livestock and poultry - 87%, milk - 95%, eggs - 93%. There were 551.5 million hectares of agricultural land, including 225.3 million hectares of arable land, 38.3 million hectares of hayfields, 281.8 million hectares of pastures in the use of agricultural enterprises and farms on November 1, 1974. Some agricultural products (potatoes, vegetables, livestock products) were also produced in subsidiary farms, mainly for personal consumption. (Radomyslsky, 2017)

Table 1- Gross agricultural production.

Gross agricultural production (in comparable prices in 1965), bln. Rub.				
Gross agricultural production (bln. Rub)	1940	1961-65	1966-70	1971-75
		39,6	66,3	80,5
Grain	95,6	130,3	167,6	181,6
Cotton	2,24	4,99	6,1	7,67
Sugar beet	18	59,2	81,1	76
Sunflower	2, 64	5,07	6,39	5,97
Flax	0,35	0,41	0,46	0,46
Potato	76,1	81,6	94,8	89,8
Vegetables	13,7	16,9	19,5	23

Source: L.Ya. Florentiev., Agriculture of Russia

In the early 1980s, the USSR occupied the first place in the world for the production of wheat, rye, barley, sugar beet, potato, sunflower, cotton, milk, second place in the sheep population, third place in the total volume of agricultural production, the number of cattle, the collection of grain. The number of people employed in agriculture (1985) was about 28 million people (about 20% of those employed in the national economy of the USSR).

Agricultural lands occupy (as of 1986) 559 million hectares, including: arable land - 227.4 million hectares, hayfields - 33.7, pastures - 292.8. The sown area of all agricultural crops is 210.3 million hectares, including: cereals - 116.5 million hectares, fodder - 71.4, technical - 13,7, potatoes and vegetable-chestnut crops - 8.7. (Alekseev, 1967)

Table 2- Area under different crops.

	1940	1965	1970	1975
Total area under crops (mln. ha)	150,6	209,1	206,7	217,7
Cereals	110,7	128	119,3	127,9
Including:				
winter wheat	14,3	19,8	18,5	19,6
spring wheat	26	50,4	46,7	42,4
winter rye	23,1	16	10	8
corn for grain	3,7	3,2	3,4	2,6
barley	11,3	19,7	21,3	32,5
oats	20,2	6,6	9,2	12,1
millet	6	3,3	2,7	2,8
buckwheat	2	1,8	1,9	1,5
rice	0,2	0,2	0,4	0,5
leguminous plants	3,2	6,8	5,1	5,7
Industrial crops	11,8	15,3	14,5	14,1
Including:				
cotton	2,1	2,4	2,8	2,9
sugar beet	1,2	3,9	3,4	3,7
sunflower	3,5	4,9	4,8	4
Potatoes and vegetables	10	10,6	10,1	10,1
Including:				
Potatoes	7,7	8,6	8,1	7,9
Vegetables	1,5	1,4	1,5	1,7
Fodder	18,1	55,2	62,8	65,6
Area of pure vapors	28,9	14,7	18,4	11,2

Source: L.Ya. Florentiev., *Agriculture of Russia*

Agricultural lands occupy (as of 1986) 559 million hectares, including: arable land - 227.4 million hectares, hayfields - 33.7, pastures - 292.8. The sown area of all agricultural crops is 210.3 million hectares, including: cereals - 116.5 million hectares, fodder - 71.4, technical - 13.7, potatoes and vegetable-chestnut crops - 8.7. (Alekseev, 1967)

Wheat - 55.3% prevailed in the structure of sown areas of grain crops in the USSR (1970), barley - 17.0%, rye - 8.5%, oats - 7.8%, legumes - 4.3%, millet, buckwheat - 3.9%, maize - 2.9%, rice - 0.3%. In the structure of sown areas of industrial crops: sunflower - 33.0%, sugar beet - 23.2%, cotton - 19.0%, flax-fiber - 8.8%, hemp - 1.4%, others - 14.6 %. (Alekseev, 1967)

The main products: grain (RSFSR - almost 3/5 of the gross harvest, the Ukrainian SSR - more than 1/5, Kazakhstan - more than 1/8). Central Asian republics are allocated for

the production of raw cotton - almost 9/10 gross harvest (especially Uzbekistan - about 2/3), sugar beets - Ukraine (over 1/2) and the RSFSR (over 1/3), flax fiber (in 1986, 366 thousand tons were produced) - the RSFSR (over 1/3), the Ukrainian SSR (about 1/3) and Belarus (over 1/4), sunflower seeds (produced 5.3 million tonnes) - the RSFSR (about 1/2), Ukraine (about 1/2), potatoes (produced 87.2 million tons), vegetables (produced in 1970 - 21.2 million tons). (Bogush, 1977)

Table 3 – The growth rates of gross agricultural output in the Union republics. (in all categories of farms)

The growth rates of gross agricultural output in the Union republics (%)				
Year	1940	1965	1970	1975
RSFSR	126	235	293	288
USSR	157	261	295	306
BSSR	172	255	300	337
Uzbek SSR	180	433	546	642
Kazakh SSR	104	409	635	567
The Georgian SSR	252	551	709	829
Azerbaijan SSR	156	317	402	540
Lithuanian SSR	136	204	257	282
The Moldovan SSR	158	384	441	526
The Latvian SSR	179	207	241	245
The Kirghiz SSR	196	461	566	655
The Tajik SSR	248	593	735	918
Armenian SSR	156	428	541	636
The Turkmen SSR	148	354	490	611
The Estonian SSR	152	201	227	257

Source: L.Ya. Florentiev., Agriculture of Russia

3.1.2 Agriculture after the collapse of the USSR.

Private ownership of land emerged and spread as a result of the agrarian reform of the 1990s. The creation of a sector of peasant farms, the expansion of the land use of citizens (owners of personal subsidiary plots, garden and vegetable plots, etc.) should be noted among the positive results of the transformation in the first place.

During the period 1991-1997, the social structure of agricultural land users has changed as a result of the denationalization of land. The share of the state sector in the use of agricultural land decreased from 56.0% in 1991 to 13.4% in 1997, while the share of private (collective and individual) households increased from 40.3% to 70, 9%. (Amosov, 1998)

In 1997, 26.9 thousand agricultural organizations of various organizational and production forms (state farms, production cooperatives (collective farms), limited liability companies, joint-stock companies, goods on faith, etc.) were engaged in agricultural production in Russia, 278.6 thousand peasant (farmer) farms; about 16.4 million families had their own subsidiary farms (of which 14 million families in rural areas), 22.1 million families have garden and garden plots. These agricultural organizations are different in terms of land use, production volumes and production relations. (Kovalenko, 1990)

The revival and development of peasant (farmer) economies became a new phenomenon in the life of the village in the 1990s, but their number is declining since the second half of 1995, with the exception of the North-Western, Volga-Vyatka and North-Caucasian regions. (Seleznev, 1998)

Changes in the structure of land use caused by the abolition of state monopoly on land, liberalization of pricing and other measures of market reform did not cause to an increase in agricultural production. Moreover, the decline in livestock was more significant than in crop production. The intersectoral structure of agricultural production was transformed: the share of livestock production decreased to 51.4% in 1996, compared to 64.1% in 1990. This is explained by the fact that livestock production is more labour-intensive and less cost-effective in comparison with crop production. (Gladky, 2000)

It should also be noted that production volumes have increased in the individual family sector, in contrast to collective farms. It led to an increase in the share of households in the structure of agricultural products. This share increased by 20% and amounted to 46% for the years 1990-1996.

The share of household plots (private household plots) in the production of potatoes (90.2%) and vegetables (76.8%) is particularly high; slightly lower - in the production of meat (51.6%), wool (45.6%), milk (45.9%), eggs (31.2%). The growth in the production of these products in household plots partly compensated the reduction in their output by agricultural enterprises. A certain branch division of labour is formed between these categories of farms - the production of labour-intensive products is concentrated in the private household plots. (Amosov, 1998)

In 1996, Farms of all categories per 100 agricultural lands produced fewer products than in 1990: 37% in the industry as a whole, crop production by 15%, and animal husbandry by 50%. The yield of crops and the productivity of livestock and poultry is declining. (Kovalenko, 1990)

The decrease in the volume of agricultural production and income of the majority of Russian families led to a reduction and deterioration in the structure of food consumption. Only the consumption of potatoes increased, the consumption of other products decreased during the period 1990-1996. Moreover, if the families of workers and employees (mainly urban families) consumed milk and especially meat more than the families of collective farmers (rural families) before the reform (in 1990), the situation changed to the opposite one by 1996, which is explained by the large role played by the private farms in the food supply of rural families, the potential of which has increased. (Seleznev, 1998)

The volume of capital investments in agricultural production decreased more than 18 times from 1990 to 1996. 1991 was estimated at 2.1 billion rubles. in estimated prices, which is 3.3% of capital investments in the economy of the country. Priority was given to the development of peasant farms at the very beginning of the reform (1990-1992). Collective farms and state farms, as well as private subsidiary farms, which lead 14 million families in the village, remained without modernization. As a result, rural society split into two opposite camps - migrants and people from collective farms, on the one hand, and those who stayed on collective and state farms, on the other. The state had to find considerable resources to support farmers cut off from the collective farm and state farm infrastructure. Such a policy could not bring long-term success. The weakening of the farmer movement has been observed since the second half of 1994. (Kovalenko, 1990)

3.2 Accession to the WTO

Russian Federation first ask for accession in 1993, and as part of the dialogue Russian Federation gave a declaration of the main characteristics of state trade regime. In its turn, existing World Trade Organization participants are going into a large diversity of trade policy measures gave by the Russian federation, including trade policy measures, the function of the government in the economic system, and the design and actual operation of local policies. Substantially, in addition, World Trade Organization participants are attentively controlling the current legal framework and the current processes for enforcing the different obligations that Russian Federation would put its hands to World Trade Organization accession. (Kisekev, 2016)

Eventual fellowship of the WTO implies that Russian Federation will follow principles which have especially important value for the style of domestic agricultural

development. In essence, accession implies that Russian Federation should reach essential agreement with WTO participants on the nature and direction of its farm and trade policies. There are three fields: Trade measures on imports (market access), domestic support, and export subsidies. (WTO, 2016)

Additionally, the dialogues also include sanitary and phytosanitary rules, an agreement on subsidies and countervailing measures, customs procedures, and others.

The Uruguay Round Agreement on Agriculture (1994) made an important step towards the establishing of a modernized group of regulations for agricultural trade, which means an important change in the attitude of governances toward the management of national agricultural development.

A modification in the rules concerning trade barriers on imports (market access) is one of the most far-reaching part of the URAA. Under the rule of tariffication, all members started to turn all existing non-tariff barriers into mandatory duties and not to bring in new non-tariff measures, a position that superimposed changes in importation on a number of countries, including the European Union, Canada, the United States, Japanese Islands, and others. (Tarr, 2009)

Measures of domestic support for the agricultural sector within the WTO are divided into several so-called "boxes " depending on the degree of distorting influence on trade.

The Green Box includes state support measures that do not, or have a minimal, distortionary effect on trade. These measures are financed from the state budget. State expenditures within the green box can be carried out in the following areas:

- Scientific research, training and professional development of personnel, information and consulting services;
- Veterinary and phytosanitary measures, food safety control;
- The promotion of the marketing of agricultural products, including the collection, processing and dissemination of market information;
- Improvement of infrastructure (construction of roads, telecommunication networks, land reclamation facilities), with the exception of operating expenses for maintaining its functioning;
- Maintenance of strategic food stocks, internal food aid;
- Ensuring guaranteed income to agricultural producers, improving land use, etc.
- Support of producers' incomes, not related to the type and volume of production;
- Insurance of income, crop and compensation for damage from natural disasters;

- Assistance in the restructuring of agricultural production;
- Environmental protection;
- Regional development programs. (WTO, 2016)

The state has the right to finance the above-mentioned programs in any required amount, based on the budget possibilities, taking into account the minimal negative impact on trade,

Measures of the „blue box“ are conditionally considered not to have a distorting effect on trade and include programs aimed at self-limiting production. Such programs are also exempted from the obligation to reduce and limit the volume.

Measures of the „yellow box“ include types of internal support that have a distorting effect on trade and affect production:

- Subsidies for livestock and crop production;
- Subsidies for breeding livestock; -subsidies for elite seed production (for seeds sold);
- Subsidies for mixed fodder;
- Compensation of a part of costs for the purchase of mineral fertilizers and chemical protection products of plants;
- Compensation of a part of energy costs;
- Compensation of part of the costs of increasing soil fertility;
- Compensation of the cost of equipment purchased in the order of counter sale of agricultural products;
- Expenses for repairs and current maintenance of land reclamation systems;
- Expenses of the leasing fund;
- Expenses for the creation of seasonal spare parts stocks and material and technical resources;
- investment of production purpose, except for capital expenditures for land reclamation and water management;
- price support: compensation for the difference between the purchase price and the market price of agricultural products;
- providing the producer with goods (services) at prices below market prices;
- purchase from the producer of goods (services) at prices higher than market prices;
- preferential crediting of agricultural producers at the expense of federal and regional budgets, including cancellation and prolongation of debts;
- benefits for the transportation of agricultural products.

- with regard to the aforementioned measures of internal support, the state should take obligations to reduce budgetary financing with regard to the above-mentioned measures of internal support. (Tarr, 2009)

Additionally, the 1994 Agreement also set new rules and obligations for the decrease of exportation subsidies and for domestic support policies. Under the latter, a set of policies which are considered to be less deforming than others are determined and based to sanitaria “green box” which enjoys immunity from World Trade Organization challenges. Other policies are not secure this way and are subject to decreases through a limit on the total support given by domestic subsidies and cost interventions. Members also concluded an agreement on Sanitary and Phytosanitary Measures (the SPS Agreement). (WTO, 2016)

Despite this effective output, the agrarian trade dialogues were outdone in some areas and stay incomplete in others. Possibly its main lack is the modest accession outcome for sensitive produce and the disability to illegal export subsidies. Accordingly, especially in rich developed countries, agricultural products still receive substantial subsidies.

Of special topicality for Russian Federation nowadays is that the fast decentralizing of economic and trade duties has given the regions abundant amount for implementing a regional approach concerning agrarian support measures. Regions are attempting to create their own policies on inter-regional commerce, costs and agricultural support. Under the ‘second level obligations’ under the General Agreement on Tariffs and Trade, each contracting party is expected to ensure observance of the provisions of the Agreement by the regional and local governments within its territories. Russian regions have measures in place which are forbidden under World Trade Organization rules, and the working group believing Russia’s accession has taken significant evidence of the unneeded limitations faced by companies operating at the sub- federal level in Russian Federation such as cost controls, monopoly buying, other certification norms, etcetera. (Tarr, 2006)

In addition, there is fact that some regions have agrarian subsidies in place which will need to be considered part of Russia’s agrarian maintenance measures and subject to decrease obligations. World Trade Organization accession is a big challenge and a chance for Russian agribusiness.

Most significant ultimately, the net effect of implementing reforms in Russia’s domestic agrarian policies to match with the World Trade Organization guidelines would be good to most domestic manufacturers and consumers in Russian Federation. The country’s future trade and cost regime is a basic element of Russia’s long-term strategy for agribusiness, and thus the World Trade Organization accession process offers a unique chance to establish

the main parameters for a coherent system of rules and institutions compatible with Russia's full integration into the world economy. (Kiselev, 2016)

It is realistic to expect that World Trade Organization fellowship should bring important benefits to Russian agrarian manufacturers. As producers of exportable, they will gain from more secure and transparent access to foreign markets under a multilateral rule-oriented system. For instance, at present, some World Trade Organization members treat Russian Federation as a state -trading economy and therefore are free to apply non-tariff barriers against Russia's exports, and Russian Federation does not have access to the World Trade Organization dispute -settlement mechanisms. In more general terms, World Trade Organization membership will further Russia's transition to a market-oriented agricultural economy under a more reliable trade regime.

Generally, in the medium-long term, Russian agriculture should obtain substantial net profit from World Trade Organization accession. Nevertheless, policy reforms worldwide usually have a differentiated impact within agriculture, between producers of export and import commodities, between geographical districts, farm size, and sub-periods. Thus, trade liberalization and limits on the quality of government support is a susceptible issue for producers of import-competing products in some districts, and consequently one can expect significant resistance to further trade liberalization and lower levels of support from some producer associations. The non-competitive sub-sectors will argue that Russian agriculture is still too weak to deal with difficulties of competition with foreign suppliers. Looking ahead, the main difficulties to Russia's farm policy with World Trade Organization accession are probably to centre around market accession for importations, measures of internal support, restrictions on Exportation subsidies, and the role of regional policies that affect prices and subsidies to local agriculture. (WTO, 2016)

After a long process of dialogues, Russian Federation formally got in the World Trade Organization on 22 August 2012, assuming obligations on market access, domestic support and export subsidies. On market access, the tariff schedule establishes gradual reduction or exclusion of tariffs on a number of agricultural products, although the tariff rate quotas and high out-of-quota tariffs are maintained for meats. The simple average bound rate for agricultural goods is set at 10.8%, implying a decrease by 3.5 percent points from the applied average rate of 14.3%. Within the first three years of the accession tariffs will be reduced for most fruits (from 10% to 5%), tea (from 20% to 12.5%) as well as rice, milk, butter, most vegetables and fruit juices (from 15% to 10%). (Tarr, 2009)

One of the hardest arrangements to achieve has been on tariff decreases for delicate produce (for example: as live pigs and processed products. As the outcome of the dialogues, Russia agreed to decrease the tariff on live pigs from 40% to 5% upon accession, generative problems among Russian swine farmers who look for to function at deprivations once the tariff is reduced. The within-quota tariff was agreed to be established to zero (down from 15%) for pork meat, and the out-of-quota tariff to be decreased from 75% applied in 2011 to 65% during the accession and remains without changes until 2020 when it will be decreased to 25%. (WTO, 2016)

No changes in tariff-rate quotas are envisioned for cattle and chicken meat: The amounts and tariffs are to be supported at the level of 2011. The ad.val.³ tariffs will be 27.5% for cattle meat, 25% for pig meat and 37.5% for chicken meat, if Russia decides to refuse the quota system. (WTO, 2016)

The upper variable tariff only for sugar will be decrease from 270 US\$/ ton to 250 US\$/ ton, but a significant change is the important regulation of the price band downward from the antecedently applied range of 286.6 – 396.8 US\$/ ton. The new reference price for calculation of the import duty has the lower limit at US\$100/ton and the upper limit at US\$198/ton for raw sugar. Given the currently high level of prices well above US\$400/ton, it is safe to assume that Russian import duties will remain at their lower level of 140 US\$/ton, which is still rather high, equivalent to over 30% in ad-valorem tariff. (WTO, 2016)

Russian Federation does not currently apply export subsidies and made the commitment to bind them at zero. Some export duties were reduced as the result of World Trade Organization accession, for example for soybeans the export taxes were reduced from 20% to zero and for sunflower seeds from 20% to 6.5%.

On domestic support, the commitments regarding trade-distorting subsidies in the “amber box“ as measured by the Aggregate Measurements of Support are set at US\$9 billion in 2012 with a gradual decline to US\$4.4 billion by 2018, which corresponds to Russia’s annual average total Aggregate Measurements of Support for the period 2006-2008. In 2008 the Total AMS stood at US\$5.65 billion out of which US\$5.60 billion was reported to be non-product specific (World Trade Organization, 2012). The largest component of the Aggregate Measurements of Support was soft loans to agriculture with US\$1.6 billion. (Kiselev, 2016)

The Delegation of the Russia circulated the 2008 numbers to the World Trade Organization. The Aggregate Measurements of Support obligations for 2012 and 2013 are

³ ad valorem - corresponding to cost.

likely to be much higher the current level of domestic support, leaving room for possible increments under the new State Programme for 2013-2020 although it is evident that the level of state help to agriculture grew in the next years in response to the unfavourable shocks as described above, and in particular for provision of subsidized credit. As such, the established level of commitments would not require Russian Federation to reduce its trade-distorting subsidies until 5 or 6 years after the accession. Nevertheless, it means that Russia collide a limit on future expansion of distorting support.

In 2014, the development of the agrarian sector of the country took place in a difficult socio-economic situation due to a number of emerging new internal and external factors. The main ones are:

1) Russia's membership in the WTO and its simultaneous participation in regional integration associations in the economic space of the CIS, significantly increasing the openness of the functioning of the domestic agri-food market and, as a result, enhancing the external influence on it;

2) increasing competition between agricultural producers in the domestic and world agri-food markets in selected product segments in the context of globalization of the economy and integration processes in the economic space of the CIS, deepening and expanding the international division of labour in agro-industrial production;

3) strengthening the monopolization of some of the most important food segments of the agri-food market in connection with the expansion and strengthening of the presence of large trade networks on it;

4) sanctions against the Russian Federation and Russia's response embargo against goods from the United States, EU countries, Canada, Australia and Norway;

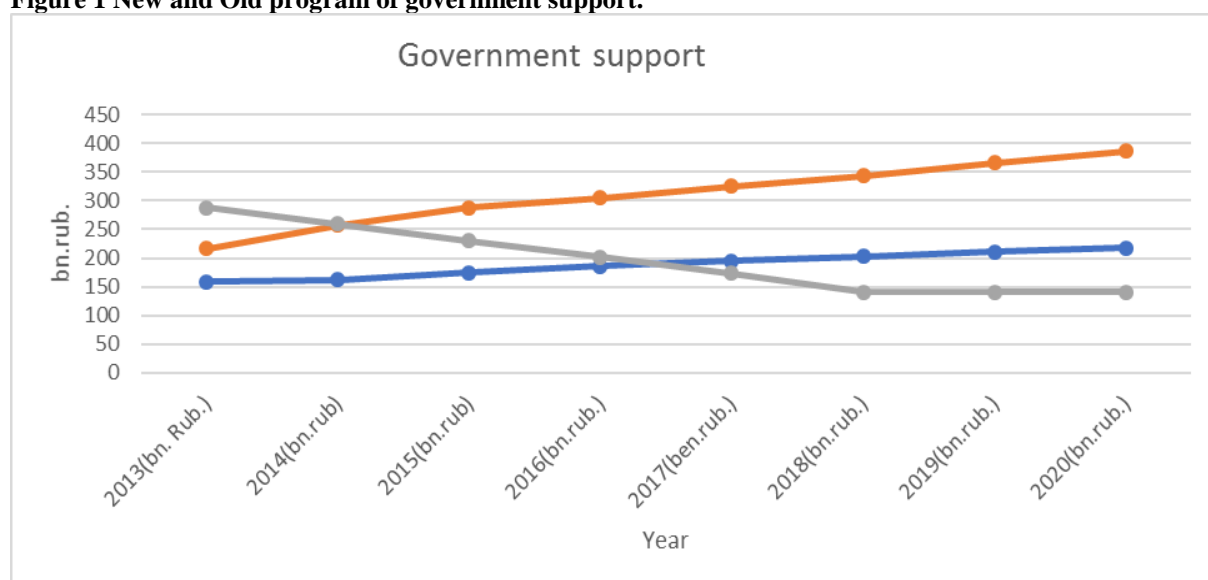
5) a sharp drop in the ruble's exchange rate against foreign currency. (Kiselev, 2016)

Together, these conditions created a fundamentally new social and economic situation in the countryside and in the country's agrarian sphere, export-import operations with food and agricultural raw materials, which caused additional attention from the state and agribusiness to the development of agriculture in connection with the task of accelerated import substitution. This gives an additional impetus to the development of the industry.

3.3 Agricultural support.

The initial version of the program implied allocating almost 2.5 trillion rubles for agriculture during the period 2013-2020. The estimated amount of financing has decreased by 40% and is only 1.5 trillion rubles. The amount of financing of the agricultural sector does not correspond to the commitments on the maximum amount of support for agriculture in the WTO. The following graph illustrates this situation.

Figure 1 New and Old program of government support.



Source: http://www.tychinin.ru/?ELEMENT_ID=228

1. The new program for the development of agricultural sector for 2013-2020.
2. The old development program for the agricultural sector for 2013-2020.
3. Russia's commitments on the maximum amount of support for agriculture in the WTO

Course: RUB / \$ - 32

Table 4 – New and Old program of government support.

	2013(bn. Rub.)	2014(bn.rub)	2015(bn.rub)	2016(bn.rub.)	2017(ben.rub.)	2018(bn.rub.)	2019(bn.rub.)	2020(bn.rub.)	Total
	159	162	175	186	195	203	211	218	1,51 trillion
	216	257	288	305	325	344	366	386	2,49 trillion
	288	259	230	202	173	141	141	141	1,58 trillion

Source: http://www.tychinin.ru/?ELEMENT_ID=228

The figures specified in the State Program are minimal, while the Russian Federation is allowed, according to the WTO rules, the maximum level of support for the agricultural sector. At the same time, the State program increases funding, when the WTO rules prescribe to reduce it. These inconsistencies show the complete inconsistency of the actions of various departments.

Some experts do not see the threat in the figures quoted, noting that there is no reason to worry, because most of the measures to help agriculture will be referred to the "green box". But if we carefully study the experience of the WTO accession to Eastern Europe and Ukraine, it becomes clear that the state will have to prove the need for assistance to farmers and the fact that support for farmers lies outside the "yellow box" (does not belong to measures that have a distorting effect on trade agricultural products) by itself. This rarely ends successfully, as practice shows.

3.3.1 Support for beginner farmers.

The Ministry of Agriculture of the Russian Federation has developed a set of measures aimed at supporting start-up farmers:

- Grants for the creation of a peasant (farm) economy;

Grants can be used for land acquisition, connection to engineering networks, development of projects - estimate documentation, as well as for the construction of agricultural facilities. A grant competition is held every year. A specially created commission chooses the winner. A start up farmer can win a grant for the creation, expansion and modernization of the production base only once

- Subsidizing investment loans;

The purpose of the event is to provide access for beginner farmers to investment credit resources. Investment loans can be used to purchase animals, agricultural machinery and equipment, working capital, that is, to develop an agricultural enterprise. The amount of loans for beginning farmers is up to 5 million rubles. The loan period is 15 years, the grace period (from the beginning of the loan repayment period) is 5 years.

- Grants for household improvement of start-up farmers;

The purpose of the event is to provide start-up farmers with one-time assistance for the construction of housing and home improvement. Funds of the grant can be directed to housing construction, purchase of furniture and other items of housing for the farmer. However, this

event does not provide for the purchase of housing on the secondary market. It is assumed that a beginner farmer is building or acquiring a new building.

- Subsidizing part of the first instalment of leasing of agricultural machinery, equipment and livestock;

The purpose of the event is to ensure the availability of leasing for beginners. when a novice farmer will receive leasing agricultural equipment, equipment and livestock, compensation of a part of the initial installment will be provided from the federal budget. But the amount of the contribution should not be more than 1/15 of the value of the leased asset.

- Holding the contest "The Best Farmer".

The purpose of the event is to highlight the positive experience of creating new farms and the successes they have achieved.

- Development of family livestock farms based on peasant (farm) economy;

The purpose of the event is to stimulate the development of livestock farming on the basis of farms. Sixty percent of the costs are compensated by peasant farms that build or reconstruct dairy and other livestock farms. The farmer must cover the remaining forty percent of the costs. A farmer can cover up thirty percent of the costs from loans, but he must pay ten percent from his own funds. (Subsidy handbook, 2017)

Support rates for the development of seed potato and seed production, the source of financial support for which is a subsidy. The table below shows the data on financing the acreage of different crops. The data is taken from the order of the Ministry of agriculture of the Russian Federation No. 326 of July 6, 2017. The most expensive seed is the seed of the carrot – 4694 euros per hectare. The cheapest one is the elite seed of the sunflower – 128 euros per hectare.

Table 5 – Development support rates.

Kind of expenses	One unit of measurement	Support rate, in euro
1	2	3
Reimbursement of part of production costs:		
Seed potatoes, including:		
original F1	hectare	1024
Elite	hectare	409
seeds of vegetable crops for open ground, including:		
Cabbage	hectare	1865
Carrot	hectare	4694
Beet	hectare	599
Garlic	hectare	3641
Onion	hectare	2343
Tomato	hectare	1203
Cucumber	hectare	1567
vegetable peas	hectare	1333
corn seeds, including:		
parent forms of hybrids	hectare	466
hybrids of the first generation F1	hectare	144
sunflower seeds, including:		
parent forms of hybrids	hectare	470
hybrids of the first generation F1	hectare	124
original seeds	hectare	465
elite seeds	hectare	128
seeds of sugar beet, including:		
parent forms of hybrids	hectare	2852
hybrids of the first generation F1	hectare	570

Source: The order of the Ministry of Agriculture №326 (06.07.2017)

4 Practical Part

The purpose of the practical part is to work with statistical data, count and analyze the results. Series analyses, observation, synthesis, induction, deduction and analogy were used to make a conclusion and forecast for the future.

The subject of this work is to analyze data and find self-sufficiency, intensity of production and per capita meat production and conclude, whether low self-sufficiency products get any additional national support or not. According to available data, self-sufficiency, intensity of production and per capita meat production will be calculated with data from twenty-eight years – from 1990 to 2017.

Practical part of this thesis is based on tables below, which contains data about domestic production, consumption, number of animals, population of the country, carcasses production and population of the country from 1990 to 2017. This period was chosen because there was the disintegration of the USSR in 1990 and the newest history of Russia began. The formation of agriculture of the Russian Federation can be observed since 1990 and it continues to this day. Figures are based on the data from the tables. The trend line is present in several graphs for a more detailed assessment of the situation.

4.1 Self-sufficiency.

Food security is defined as “the access for all people at all times to enough food for a health, active life” (FAO, 1996). In contrast, self-sufficiency of food shows whether the country’s production is coping with population’s requests. Self-sufficiency is calculated as follows:

$$\text{Rate of self-sufficiency} = (\text{domestic production} / \text{consumption}) \times 100 (\%)$$

(Lohoar, 1981).

The table below shows the data from 1990 to 2017, namely: consumption and production of pork meat poultry meat and potatoes.

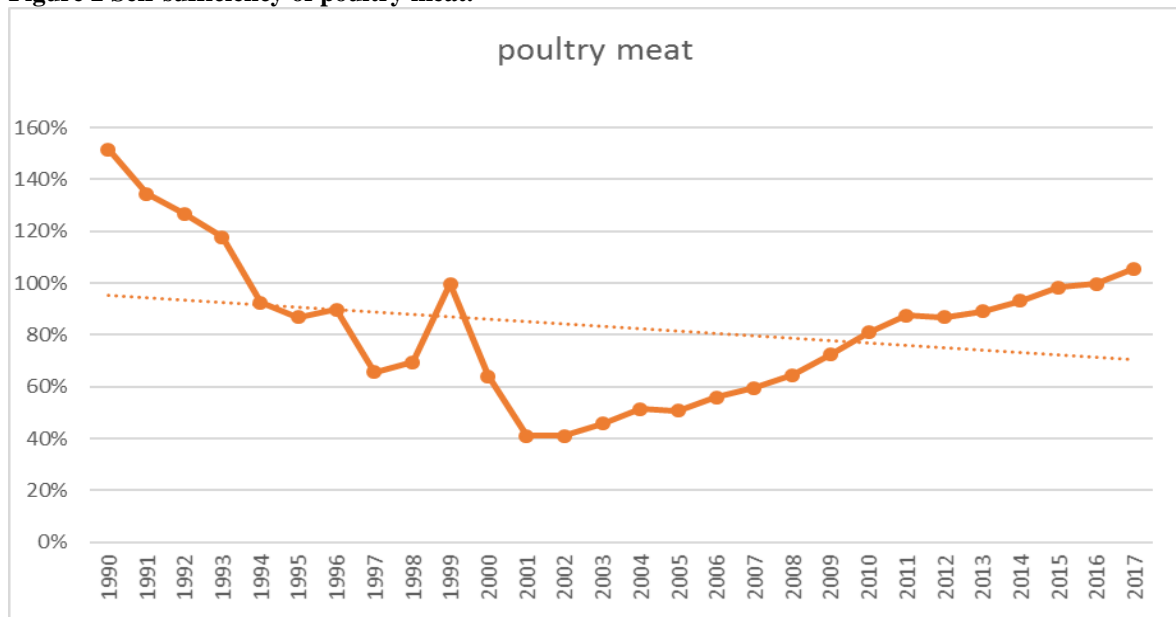
Table 6 – Production and consumption of pork meat, poultry meat and potatoes.

Year	Production			Consumption		
	pork meat	poultry meat	potatoes	pork meat	poultry meat	potatoes
1990	3480	2569	30 848	3538	1694	15 676
1991	3190	2130	34 329	3274	1585	16 697
1992	2784	1882	38 330	3038	1484	17 476
1993	2432	1713	37 650	2792	1456	18 791
1994	2104	1593	33 828	2514	1722	18 031
1995	1865	1458	39 909	2378	1680	18 298
1996	1705	1278	37 619	2216	1425	18 071
1997	1546	1164	35 138	2240	1774	17 957
1998	1505	1062	28 953	2217	1529	16 742
1999	1485	986	27 998	2018	989	15 763
2000	1578	932	29 465	1782	1457	15 805
2001	1515	886	29 499	1896	2159	15 857
2002	1608	956	26 923	2227	2327	15 231
2003	1743	1048	29 352	2109	2293	15 608
2004	1686	1192	27 856	2171	2316	15 436
2005	1569	1388	28 117	2382	2738	15 489
2006	1699	1632	28 242	2574	2920	15 542
2007	1930	1925	27 195	2823	3230	15 491
2008	2042	2217	28 846	3318	3439	15 823
2009	2169	2555	31 134	3197	3535	16 037
2010	2331	2847	21 141	3259	3515	14 832
2011	2428	3204	32 681	3549	3665	15 720
2012	2560	3625	29 533	3598	4173	15 956
2013	2816	3831	30 184	3743	4298	15 989
2014	2974	4161	31 502	3499	4464	16 287
2015	3099	4536	33 646	3503	4617	16 430
2016	3388	4621	31 108	3678	4638	16 601
2017	3845	4934	22 485	3814	4672	16 822

Source: Own elaboration, based on data from FAOSTAT, 2017

The figure 2 was based on the calculation of the rate of self-sufficiency.

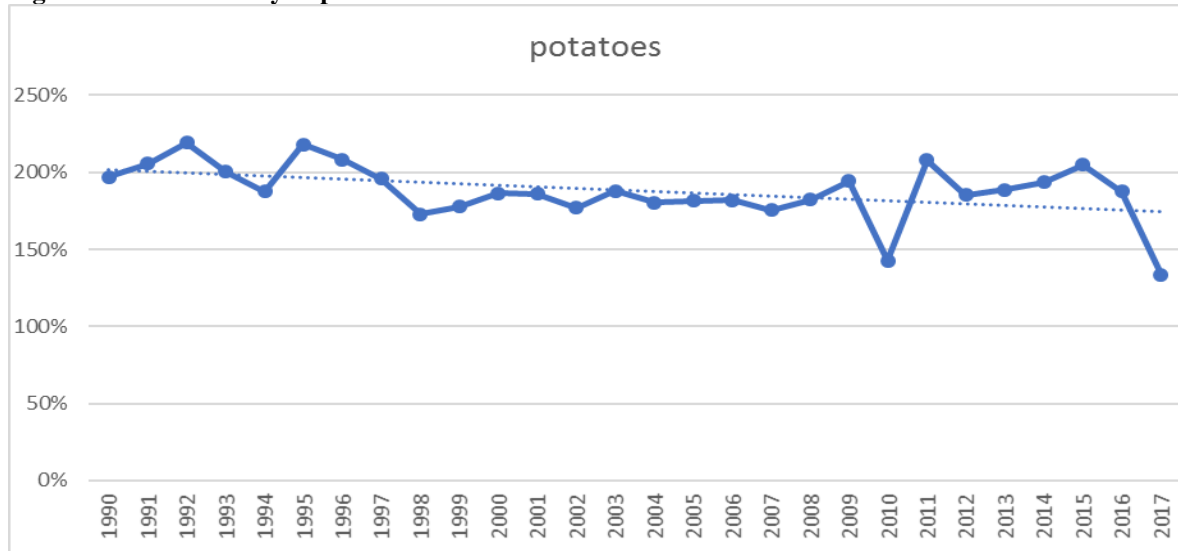
Figure 2 Self-sufficiency of poultry meat.



Source: Own elaboration, based on data from FAOSTAT, 2017

The Figure 2 shows self-sufficiency of poultry meat in Russian federation. The rate ranges from 41% to 152%. We can observe a strong fall from 1990 to 1998. The reason for this was the collapse of the Soviet Union and the subsequent crisis in the country. President Vladimir Vladimirovich Putin was elected to the presidency in 1999. A sharp jump in the self-sufficiency of poultry meat is due to the fact that the devaluation of the ruble occurred in 1998. In 1999, consumption of poultry meet was only 5.9 kg per capita (p. c.), when in 1998 it was 9.1 kg and in year 2000 it was 8.8 kg. The consumption and production of meat fell and practically became on the same level. Then people began to sharply consume more meat, but the production could not cope with the demands of the population. Russia began to get out of the crisis and develop programs for agriculture. The rate of self-sufficient of poultry meat began to grow gradually from 2001 to 2017 (41%-106%). In comparison with data of central Europe, self-sufficiency of poultry meat in Russia (46%) was much lower than in central Europe in 2003 (105%). Russia's self-sufficiency of poultry meat (89%) could not catch up the average Europe's one (125%).

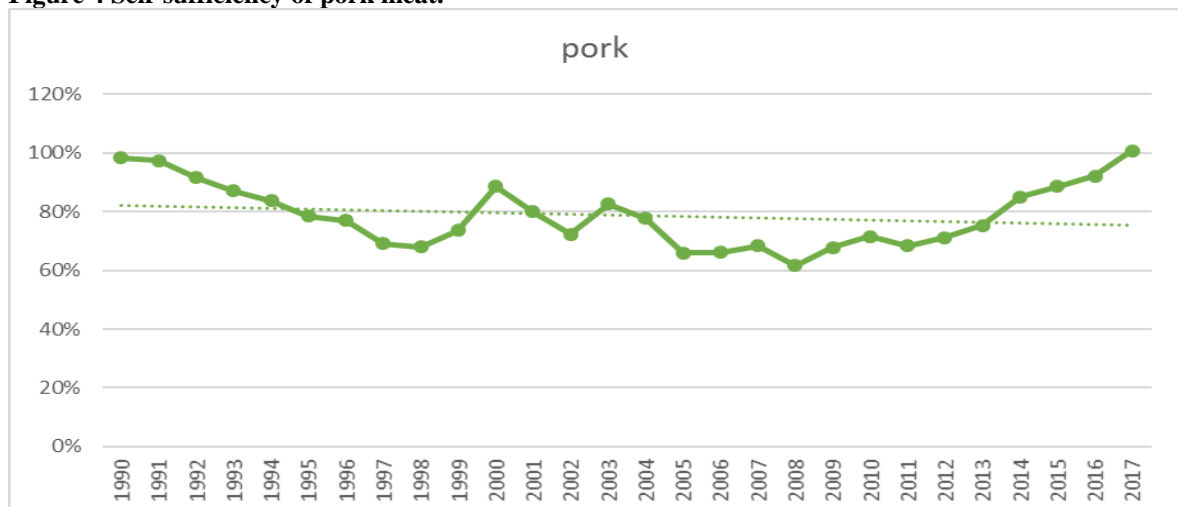
Figure 3 Self-sufficiency of potatoes.



Source: Own elaboration, based on data from FAOSTAT, 2017

The Figure 3 presents self-sufficiency of potatoes in Russian federation. The rate ranges from 134% to 219%. It shows that the state was able to cover domestic consumption (the rate of self-sufficiency was higher than 100%). Small fluctuations are caused by small changes in production and consumption. In 2010, the rate of self-sufficiency sharply decreased by 51% due to a crop failure (-9993 thousand tons of total production) and subsequent price increase. The same situation took place in 2017 (53%): total production decreased from 31108 thousand tons to 22485 thousand tons.

Figure 4 Self-sufficiency of pork meat.



Source: Own elaboration, based on data from FAOSTAT, 2017

The figure 4 shows the rate of self-sufficiency of pork meat. It ranges from 62% to 101%. Fluctuations are caused by crisis. In 2000, self-sufficiency decreased by 17% and the consumption was only 9,49 kg per capita (p. c.) (total consumption decreased by 236 thousand tons), when it was 10.72 kg in 1999 and 10.14 kg in 2001. Total production reached the historical minimum – 1485 thousand tons in 2008 (decreased by 20 thousand tons compared with previous year (1505 thousand tons), while total production of the 2017 is 3845 thousand tons. The rate began to improve in 2013 because of a sharp increase in the production of pigs (see table 8). It increased from 29 609 thousand heads in 2012 to 32 568 thousand heads of pig in 2013.

The table 7 presents basic trade characteristics of potatoes, pork meat and poultry meat.

Table 7 – Basic trade characteristics.

	Trend characteristics	R ²
Potatoes	$y = -0,0101x + 2,0245$	0,1969
Pork meat	$y = -0,0025x + 0,8244$	0,0344
Poultry meat	$y = -0,0093x + 0,9635$	0,0725

Source: Own elaboration, based on data from own calculations.

Table 7 shows, that trade characteristics of potatoes (0,1969 or 19%), pork meat (0,0344 or 3%) and poultry meat (0,0725 or 7%) of Russian federation are really week. Trade characteristics are successful when R² is about 1 or 100%.

4.1.1 The intensity of production.

The intensity of production in this case shows the level of slaughter industry in Russia. The population of the country and the number of heads are indicated in thousands. The following formula was used to find the number of heads per person:

The intensity of production = number of animals (pieces) / population of the country (pcs*head-1). (FAO, 2016)

Table 8 – Population, number of chickens and number of pigs.

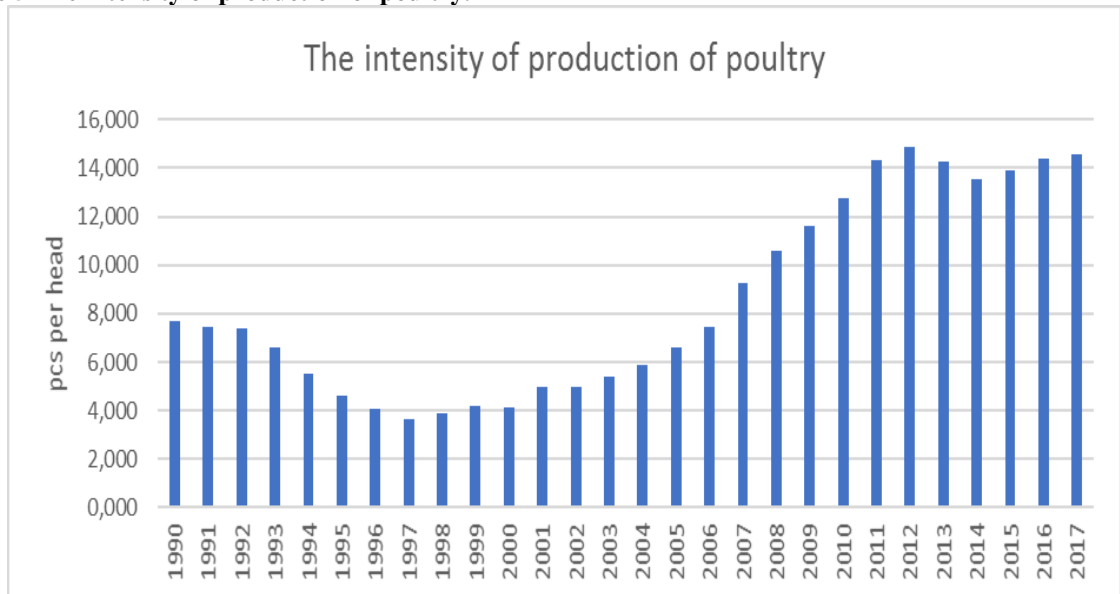
Year	Population	Number of chickens	Number of pigs
1990	147665	1139392	38832
1991	148273	1104289	38423
1992	148514	1098500	36333
1993	148561	982000	31553
1994	148355	821500	27671
1995	148459	687500	24703
1996	148291	605442	22577
1997	148028	536343	19913
1998	147802	570313	18846
1999	147539	614965	18782
2000	146890	609825	20498
2001	146303	723697	18576
2002	145166	724151	19025
2003	144963	780308	20601
2004	144168	845549	20259
2005	143474	949985	18222
2006	142753	1066396	19058
2007	142220	1313550	21898
2008	142008	1505336	23297
2009	141903	1647217	24826
2010	142856	1820270	27261
2011	142865	2050490	28395
2012	143056	2124395	29609
2013	143347	2048388	32568
2014	143666	1943292	35583
2015	146267	2034902	37582
2016	146544	2104304	40538
2017	146804	2142300	41338

Source: Own elaboration, based on data from FAOSTAT, 2017

The Figure 5 indicates how many heads of poultry is allotted to 1 inhabitant. The rate of the intensity of poultry production ranges from 3,6 to 14,8 heads of poultry per capita. Unfortunately, the implementation of market reforms in the 90s of the 20th century had a negative impact on the development of livestock in Russia. The number of poultry heads per capita decreased since 1990 to 1997. The least average quantity of heads per capita was 3,6. There was collapse of economy of the state. In 1997, 536 343 thousand heads were produced. The intensity of poultry meat production began to increase since 1998. The economy recovered, agriculture developed. We can see also small decrease since 2013 to 2014. The intensity of production (14,9 heads per capita) increased markedly compared with the average

intensity of production in central Europe (2,8 heads per capita). There was a new crisis due to sanctions. The production of poultry heads fell from 2 124 395 thousand heads to 1 943 292 thousand heads. The situation stabilized by 2017.

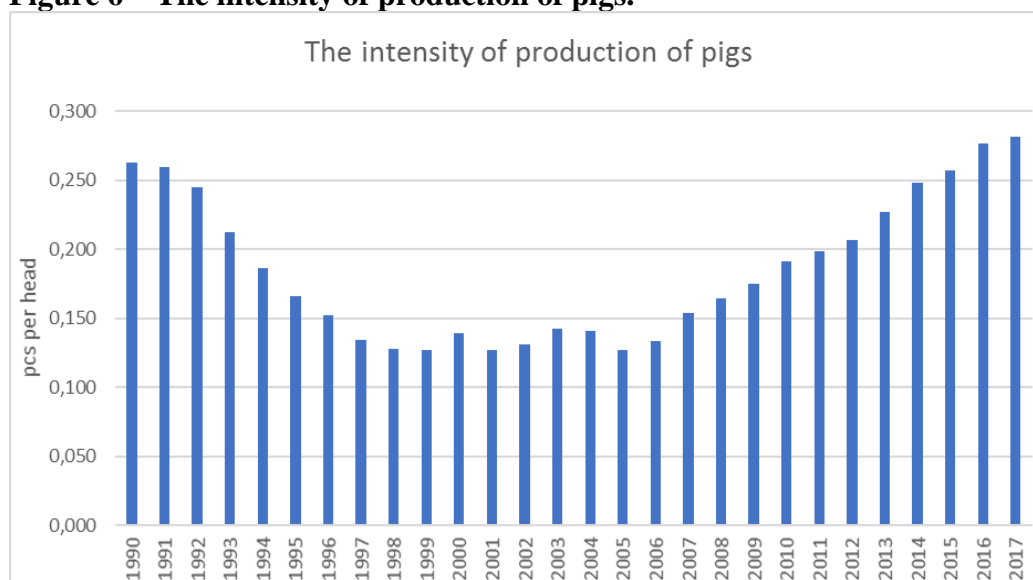
Figure 5 The intensity of production of poultry.



Source: Own elaboration, based on data from FAOSTAT, 2017

The figure 6 indicates how many heads of pigs is allotted to 1 inhabitant. The rate of the intensity of poultry production ranges from 0,12 to 0,28 heads of pigs per capita. The number of pigs' heads per capita decreased since 1990 to 1998 due to the crisis. In 1990, 38 832 thousand heads were produced (0,26 heads of pigs per capita). In 1999, only 18 782 thousand heads of pigs were produced (0,12 heads of pigs per capita). The situation did not change until 2007. Fluctuations are caused by changes in production in individual years. Rise in intensity of production level began after 2007. The rate changed by 0,128 heads. The rate of intensity of pig production (0,227) was on par with the level of intensity of pig production in central Europe (0,2) and then exceeded it.

Figure 6 – The intensity of production of pigs.



Source: Own elaboration, based on data from FAOSTAT, 2017

A reasonable way to determine the intensity of potato production is to analyze its yield. The table below shows a number of kilogram per hectare (kg/ha) since 1990 till 2017.

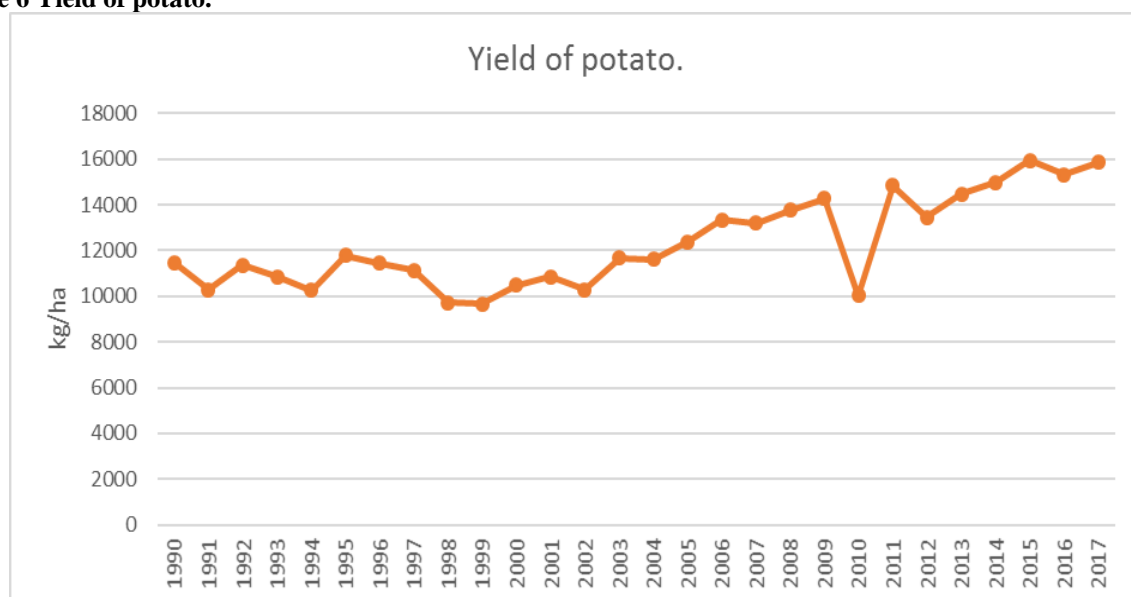
Table 9 – Yield of potato.

Year	Yield	Year	Yield
1990	11482	2004	11598,9
1991	10284	2005	12380,9
1992	11370	2006	13329,8
1993	10860	2007	13198,1
1994	10250	2008	13754,6
1995	11770	2009	14266,2
1996	11440	2010	10023,4
1997	11139,4	2011	14837,8
1998	9710,2	2012	13441,2
1999	9652,6	2013	14464,4
2000	10469,8	2014	14990,2
2001	10841,2	2015	15933,7
2002	10278,2	2016	15317,6
2003	11669,6	2017	15848,1

Source: Own elaboration, based on data from FAOSTAT, 2017

The graph below shows how changes the rate of potato production. During the period 1990- 2017. Yield is fairly stable, except for year 2010. There was a large crop failure and yield of potato decreased from 14266,2 kg/ha to 10023,4. The yield recovered to 14837,8 kg/ha and continued to increase in the year 2011. The total difference is observed if the productivity of Russia is compared with the productivity of central Europe countries (Poland and Czech Republic). The yield of Russia (10469,8 kg/ha) was twice smaller, than the average yield of Poland and Czech Republic (20365 kg/ha) and 14266,2 kg/ha against 22050 kg/ha in 2009. This can be explained by the fact that there is a significant difference in the acreage of these countries.

Figure 6 Yield of potato.



Source: Own elaboration, based on data from FAOSTAT, 2017

The advantage in production loses its value, if trade coverage (TC) is considered. The table below shows export (thousand tons), import (thousand tons) and trade coverage (%) of Russian potatoes.

$TC = (\text{export} / \text{import}) * 100 (\%)$ is formula, which was used for calculation of trade coverage. TC is below 100% for the entire period of time (1990-2016).

Table 10 – Trade coverage of potato.

Year	Imports	Exports	TC	Year	Import	Export	TC
1990	1 056	329	31%	2004	480	31	6%
1991	1 153	283	25%	2005	525	32	6%
1992	425	258	61%	2006	492	75	15%
1993	226	147	65%	2007	632	132	21%
1994	123	39	32%	2008	846	110	13%
1995	62	47	76%	2009	678	89	13%
1996	101	54	53%	2010	1122	85	8%
1997	205	43	21%	2011	1539	49	3%
1998	274	29	11%	2012	735	48	7%
1999	308	11	4%	2013	764	74	10%
2000	566	26	5%	2014	1045	69	7%
2001	279	29	10%	2015	928	207	22%
2002	384	13	3%	2016	737	293	40%
2003	613	27	4%				

Source: Own elaboration, based on data from FAOSTAT, 2017

Export is very low it is very strange with such a volume of yield. The table below shows the reason of low export. About 50% of potatoes production is used for human consumption. Another 50% of potatoes production is used for non-food use: glue, animal feed and fuel ethanol.

Table 11 – Use of potato.

Year	Non-food use	Human consumption	Production	Year	Non-food use	Human consumption	Production
1990	14 182	15 676	30 848	2004	11 625	15 436	27 856
1991	15 032	16 697	34 329	2005	11 390	15 489	28 117
1992	16 898	17 476	38 330	2006	11 217	15 542	28 242
1993	17 904	18 791	37 650	2007	11 177	15 491	27 195
1994	17 045	18 031	33 828	2008	11 789	15 823	28 846
1995	17 658	18 298	39 909	2009	13 001	16 037	31 134
1996	18 035	18 071	37 619	2010	11725	14832	21141
1997	17 872	17 957	35 138	2011	11743	15720	32681
1998	15 384	16 742	28 953	2012	12596	15956	29533
1999	13 536	15 763	27 998	2013	12394	15989	30184
2000	12 896	15 805	29 465	2014	12808	16287	31502
2001	12 832	15 857	29 499	2015	13250	16430	33646
2002	12 205	15 231	26 923	2016	13018	16601	31108
2003	11 674	15 608	29 352				

Source: Own elaboration, based on data from FAOSTAT, 2017

4.1.2 Per capita meat production.

The table below shows the number of kilograms of pork meat and poultry meat per capita in Russian federation. The following formula was used to calculate per capita meat production: Per capita meat production = carcasses production (kg) / population of the country (kg*head-1).

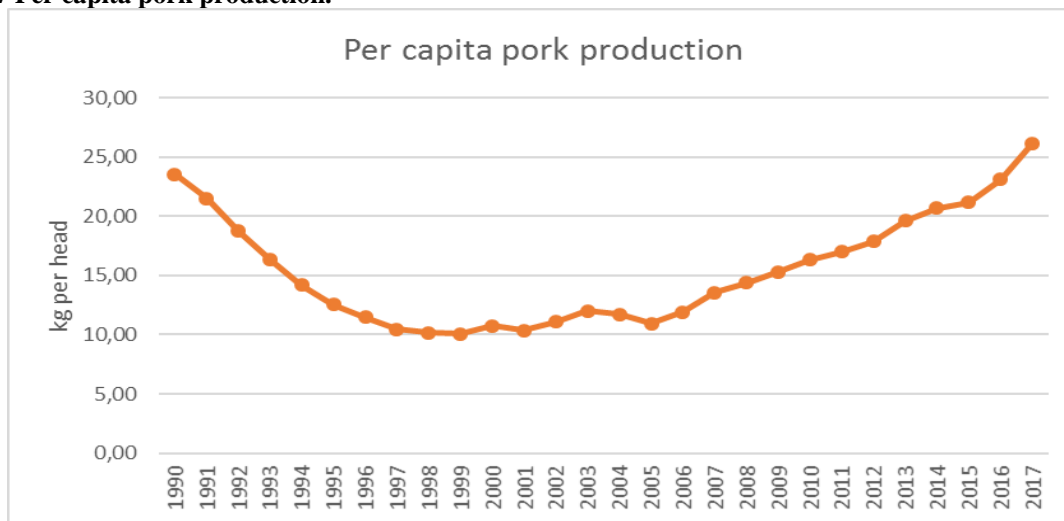
Table 12 – Meat production per capita.

Year	Pork production (p.c.)	Poultry production (p.c.)	Year	Pork production (p.c.)	Poultry production (p.c.)
1990	23,57	17,4	2004	11,69	8,27
1991	21,51	14,37	2005	10,94	9,67
1992	18,75	12,67	2006	11,9	11,43
1993	16,37	11,53	2007	13,57	13,54
1994	14,18	10,74	2008	14,38	15,61
1995	12,56	9,82	2009	15,29	18,01
1996	11,5	8,62	2010	16,32	19,93
1997	10,44	7,86	2011	17	22,43
1998	10,18	7,19	2012	17,9	25,34
1999	10,07	6,68	2013	19,64	26,73
2000	10,74	6,34	2014	20,7	28,96
2001	10,36	6,06	2015	21,19	31,01
2002	11,08	6,59	2016	23,12	31,53
2003	12,02	7,23	2017	26,19	33,61

Source: Own elaboration, based on data from FAOSTAT, 2017

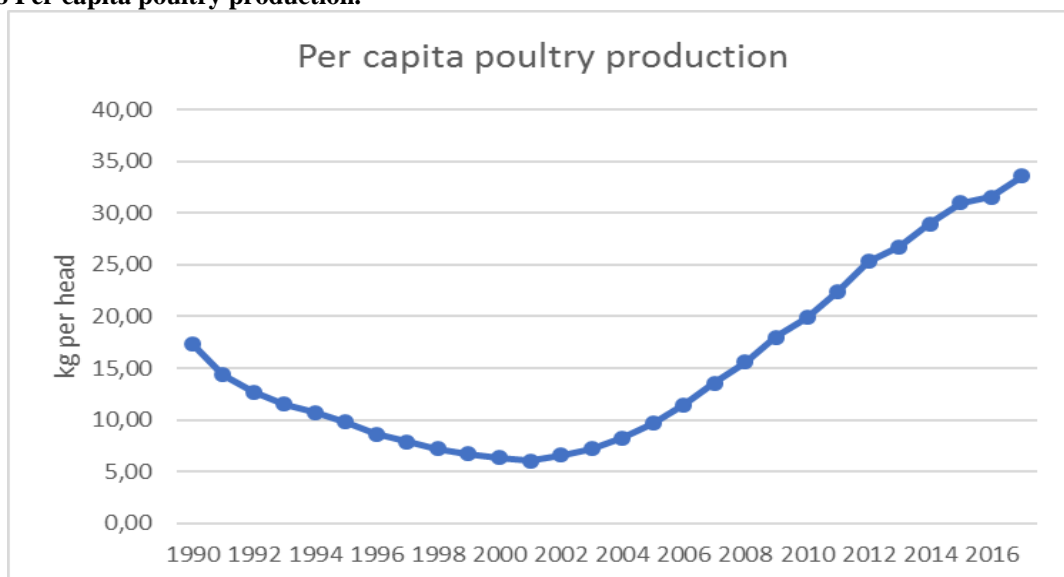
The graphs below show the results of calculations. The situation with the production of meat per capita started to deteriorate rapidly since the early 1990s. The crisis and the war in Chechnya were the reasons for this. The situation remained stable until 2005. A sharp increase in per capita pork meat production began in 2005 and now has reached its maximum at 26,19 kg per capita. In comparison with the data of central Europe for 2003, pork meat per capita (12,02 kg) was almost four times less than in Europe (45,75 kg). It shows that Russia has not recovered from the crisis of the 1990s. By 2013, the indicators have increased significantly 19,64 kg per capita, when the average number was 26.75 kg per capita in central Europe. (KOTYZA, SLABOCH, 2016)

Figure 7 Per capita pork production.



Source: Own elaboration, based on data from FAOSTAT, 2017

Figure 8 Per capita poultry production.



Source: Own elaboration, based on data from FAOSTAT, 2017

The situation with the poultry meat is almost the same (see the figure 9). In 1990, the number of kilograms of poultry meat per capita was 17,4 kg. It decreased by 11,34 kg in 2001 due to the difficult situation in Russia. The rate began to gain in the following years and now it is 33,61 kg of poultry meat per capita. Per capita average poultry meat production in central Europe was 29.3 kg, that is 4 times more than in Russia (7,23 kg) in 2003. In 2012, the gap

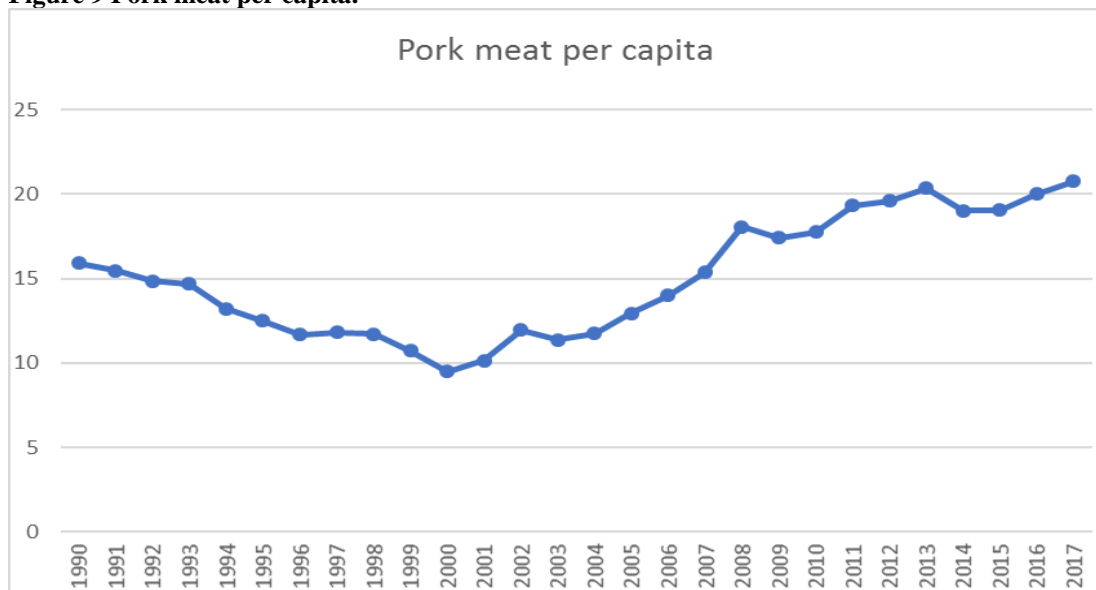
significantly reduced: 30.8 kg of poultry meat per capita in central Europe and 25, 34 kg of poultry meat per capita in Russian federation.

4.1.3 Per capita meat consumption.

The situation in the production of pork meat was not very good in the early nineties. (see Figure 10) By 2000, the number of kilograms of pork meat per capita (9,49 kg per capita) had reached its minimum for the period from 1990 to 2017. This was due to the revolution and the subsequent crisis in the country. The first and second Chechen wars have depleted the economy of the country and lower all indicators of its production. The situation began to improve after the change of governance. The number of kilograms of pork meat per capita continued to rise until 2008. The number reached a mark of 18,08 kg per capita in 2008.

The war between Abkhazia and Georgia came where Russia took a direct part on the side of Abkhazia. This event knocked down the economy of the country, as the war in the Chechen made it in due time. The rate of pork meat production decreased by 0,66 kg per capita. It began to grow, and the new crisis happened in 2013. Sanctions lowered the level of the economy. The rate of pork meat production decreased by 1,33 kg per capita. The situation stabilized, and production began to increase. Russia joined the WTO in 2012. Per capita pork meat production increases after that. (see Figure 9). Per capita meat consumption is stable (see Figure 10), that is why Russia started to export pork meat to China, Hong Kong Ukraine and Vietnam.

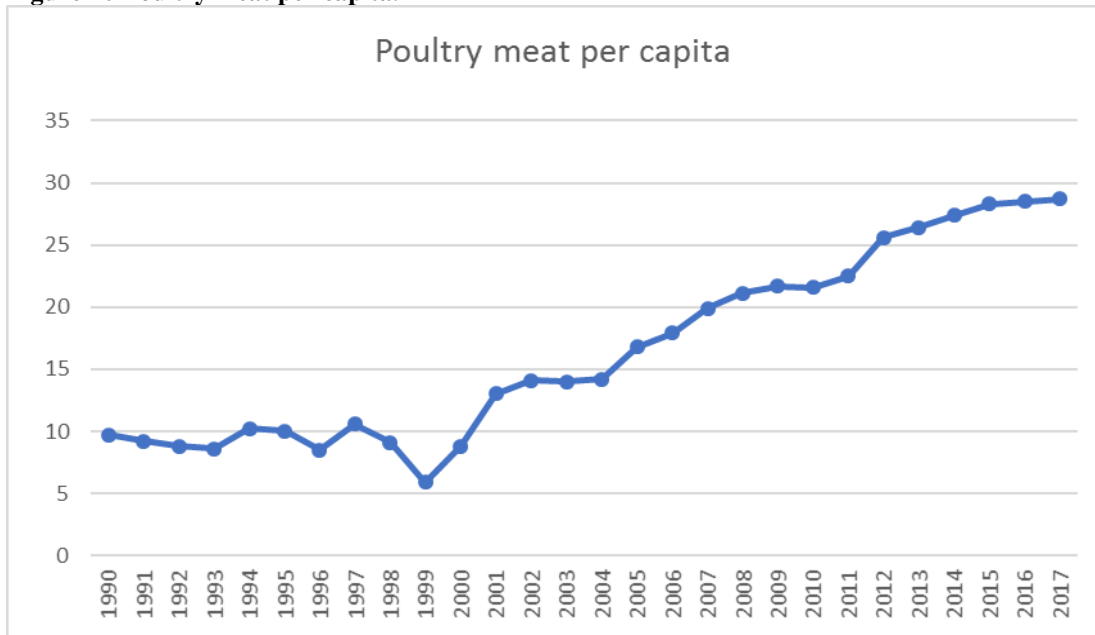
Figure 9 Pork meat per capita.



Source: Own elaboration, based on data from OECD

The situation with poultry meat is almost the same (see the table below): The devaluation of the ruble and the crisis did not allow people to buy a lot of meat in 1990s. The number of kilograms of poultry meat per capita is growing more smoothly and steadily after the year 1999.

Figure 10 Poultry meat per capita.



Source: Own elaboration, based on data from OECD.

5 Conclusion

The aim of the thesis was to analyse the situation of agriculture of Russian federation. The theoretical part described the history of Russian agriculture since 19th century. The situation of Russian agriculture before revolution was unstable because of unsuccessful reforms. Nevertheless, Russian Empire was one of the biggest exporter in the world. The government tried to stabilize and increase the productivity of agriculture with the help of New Economic Policies (NEPs) and it had positive consequences up to a certain time. The collapse of the Soviet Union, the subsequent crisis and wars destroyed the economy and agriculture. The state managed to get out of the crisis and join the WTO. The accession to the World Trade Organization brings both advantages and new commitments: for example, Russia's commitments on the maximum amount of support for agriculture in the WTO since 2013 till 2020 must be 1,58 trillion rubles. Russia has a developed system of support for agriculture and beginner farmers. Anyone who wants can take a loan or win in a competition for subsidies to start his own agricultural business.

The data about agriculture in Russia were taken from databases and publicly available resources. The research used secondary sources of information mainly from Federal State Statistics Service and FAOSTAT.

The practical part of the thesis examined the self-sufficiency, intensity of production, production per capita, consumption per capita of selected commodities and factors that influence their change. Mainly are used calculation methods, particularly calculation of self-sufficiency, intensity of production, production per capita, consumption per capita and trade coverage. Chosen commodities were pork meat, poultry meat, potatoes, because these commodities are the most popular among Russian population. Explanatory variables (the determinants) were production in thousand tons (thou. tons), number of pigs, poultry or population (heads), yield of a crop (in tonnes / ha), self-sufficiency in %, production per capita in pcs/head, consumption per capita in kg/head and trade coverage in %.

It was found that all three commodities have more than 100% rate of self-sufficiency by the year 2017. The rate of potato self-sufficiency is 134%, the rate of pork meat self-sufficiency is 101% and the rate of poultry meat self-sufficiency is 106%. It means that production of these commodities completely covers the consumption of the population. It was also proven that significant political event in the country directly affect intensity of production and consumption. Comparison of intensity of production of poultry meat and pork meat, production per capita of pork meat and poultry meat of Russia and countries of central Europe

showed that the value of production does not always depend on the quantity of resources. The success of production directly depends on the correct policy and stable situation in the country.

6 References

AMASOV, Anatoliy. *Forecast of the agro-industrial complex until 2003*. The Economist, 1998.

Grigory Mikhaylovich Bogush. *Agriculture of the USSR*. Kolos, 1977.

GLADKIY Yu. *Socio-economic geography of Russia*. S-Pb-M: Gardariki, 2000.

James S. Lohoar. *Analysis of food self-sufficiency in Barbados*. 1981. Yakov Isaakovich Radomytsky. *Management of the national economy of the USSR in 1922-1991*. 2017. ISBN 9785448375323.

KOTYZA a SLABOCH. *Journal of Central European Agriculture*. 2016.

KOVALENKO. *The Economics of Agriculture*. : EKSMO, 1999.

KISELEV. *System of state support for agriculture in the context of Russia's membership in the WTO: Collective monograph on the materials of the round table in the framework of the 7th International Scientific Conference "Innovative Development of the Russian Economy*. Interdisciplinary interaction, Faculty of Economics, Lomonosov Moscow State University, 1999. ISBN 978-5-906783-43-1. Alekseev. *Agriculture of the USSR*. Kolos, 1967.

Russia in Figures: Statistical Handbook. Rosstat, 1999. ISBN 978-5-89476-436-8.

SELEZNEV A. *The agrarian and industrial complex: results of 1997 and perspectives for 1998*. Economist, 1998.

SECRETARIAT of RUSSIAN FEDERATION. *Trade Policy Review*. WORLD TRADE ORGANIZATION, 2016.

TARR, David. *Political Economy of Russian Trade Policy: Early Transition, Customs Unions, WTO Accession and Protection for Industrial Diversification*. 2009.

TARR, David. *Trade policy and the importance of WTO accession for the development of Russia and CIS countries*. Ves Mir, 2006. ISBN 5-7777-0344-5.

James S. Lohoar. *Analysis of food self-sufficiency in Barbados*. 1981. Yakov Isaakovich Radomytsky. *Management of the national economy of the USSR in 1922-1991*. 2017. ISBN 9785448375323.

FAO investment center. *Russian federation meat sector review*. Dostupné z: <http://www.fao.org/3/a-i3533e.pdf>

WORLD TRADE ORGANIZATION [online]. [cit. 2018-03-15]. Dostupné z:
https://www.wto.org/english/news_e/news11_e/acc_rus_16dec11_e.htm

Andrey Tychinin [online]. Dostupné také z:
http://www.tychinin.ru/?ELEMENT_ID=228

, Ministry of agriculture of Russian federation. *Order №326* [online]. [cit. 2018-03-15]. Dostupné z:
[file:///E:/%D0%9D%D0%BE%D0%B2%D0%B0%D1%8F%20%D0%BF%D0%B0%D0%BF%D0%BA%D0%B0%20\(6\)/Prikaz_MCX_RF_06_07_2017_N_326.pdf](file:///E:/%D0%9D%D0%BE%D0%B2%D0%B0%D1%8F%20%D0%BF%D0%B0%D0%BF%D0%BA%D0%B0%20(6)/Prikaz_MCX_RF_06_07_2017_N_326.pdf)

Meat consumption. *OECD data* [online]. Dostupné z:
<https://data.oecd.org/agroutput/meat-consumption.htm#indicator-chart>

Agriculture of Russian federation. In: *Wikipedia: the free encyclopedia* [online]. San Francisco (CA): Wikimedia Foundation, 2001- [cit. 2018-03-15]. Dostupné z:
https://ru.wikipedia.org/wiki/%D0%A1%D0%B5%D0%BB%D1%8C%D1%81%D0%BA%D0%BE%D0%B5_%D1%85%D0%BE%D0%B7%D1%8F%D0%B9%D1%81%D1%82%D0%B2%D0%BE_%D0%A0%D0%BE%D1%81%D1%81%D0%B8%D0%B8