The position of agriculture in the Russian Federation – the last two decades development overview

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Abstract: The paper provides an analysis of the last two decades Russian agricultural sector development. The main objective of the paper is to highlight the main changes which occurred. The paper is also identifying the role of agriculture in the Russian economy and society development. On the basis of the results coming from the paper, it is possible to characterize the Russian agriculture as follows. After a significant decline in the early 90s and the long process of transformation, the Russian economy including agricultural sector is starting to recover and it is stabilizing. The slowdown of the Russian agricultural performance was stopped (the millstone is the year 2000). At present, the Russian agrarian sector is under the process of recovery especially because of the massive state support (market protection and subsidies coming into agriculture). Agriculture is an important part of the Russian economy. Russia is characterized by large areas of agricultural land, one third of its population lives in the rural areas. The Russian Federation produces many of agricultural products and foodstuffs. However, the country is not self-sufficient in many products. The highest level of the import dependence is observed for meat, vegetables and fruits. Primary products dominate in the structure of Russian exports. Food and agricultural products amount for about only 2% of the Russian total export. The share of agricultural products in the Russian import is more significant and it amounts to 14%. However, in 2000s, there is a significant growth of the foreign trade turnover due to the expansion of both imports and exports. Currently, Russia is seeking not only to achieve a high level of self-sufficiency in basic agricultural products, but also it is trying to be a significant driver in the area of the international trade in agricultural products and foodstuffs.

Key words: factors, development, production, Russia, self-sufficiency, structure, trade

Throughout its history, Russia was a major agrarian country. The essential role of agriculture in the Russian economy is determined by the vast territory, the natural environment, the land suitable for agricultural production, national traditions and other factors. Despite the fact that only about 7 percent of the Russia's enormous territory is arable land, this is more than enough to create an effective system of food supply in the country (Zhuchenko 2007).

Agriculture plays an important role in the Russian economy. It produces food for the population, raw materials for the processing industry, and provides for many other needs of the society (the agricultural sector provides over 15% of the national income, and accumulates 15.7% of capital assets).

About 27% (37 million people) of the total population (more than 140 million inhabitants) of Russia live in the rural areas. The share of people employed in agriculture is about 8% (in 1995, it was about 15%). Many rural areas are facing the economic and social decline and depopulation. A sharp decline in the share of young, able-bodied population in the rural areas is observed. In the recent years, there was a greater population mobility than in the Soviet era and more people have been moving from the rural to urban areas (FAO 2009).

Agricultural sector of the Russian economy counts about 300 large and medium-size agricultural enterprises and more than 250 thousand farm households (OECD/FAO 2011).

Over one .Alf of all agricultural production comes from the population-owned kitchen gardens and farmer households, though they occupy only 6.1% of all agricultural land. The share of households in the gross agricultural output equals 52%, while that of the agricultural enterprises is 42% Households are mainly aimed at self-sufficiency and the market-oriented production of agricultural products. About

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9.3 millions of them (58%) are engaged in the unstable small-scale commodity production.

Such a structure evidences that the Russian agriculture is sliding towards the small-scale commodity production and thus becomes less competitive. The share of products with the extremely low marketability produced using the manual labour, primitive technologies, with the minimum mechanization of labour-consuming processes, keeps growing.

The dissolution of the Soviet Union in 1991 marked the beginning of a transition from the centrally-planned to the market-oriented economy. Due to the transformation processes, the Russian agriculture has experienced a recession in all sectors (Ahrend 2004). For example, despite the government support and the steady growth in the last decade, the Russian livestock production still has not reached the level of 1990.

Economic reforms that have started in Russia in the early 1990s have stimulated major changes in the structure and the volume of the country's agricultural production and trade (Gusev 2007; Grygorieva 2012).

The process of the Russian agri-food sector integration in the world economy is accelerating and Russia is becoming an active player in a number of food markets.

During the 2000s, the Russian agricultural import was growing considerably. This import growth has made Russia the second largest agricultural importer among the emerging markets, after China (Liefert 2009).

The Russian agri-food export was growing alongside the increase in imports. Currently, Russia has a significant share in the world markets of certain products, such as wheat and sunflower oil.

Over the last few years, the Russian Federation has employed an import-substitution policy in relation to agriculture. In 2010, the Russian president approved the Food Security Doctrine of the Russian Federation. The Doctrine sets the following goals regarding the minimum share of the domestic production in the total supply of basic food products: grain – 95%, sugar – 80%, vegetable oil – 80%, meat and meat products– 85%, milk and dairy products – 90%, fish products – 80%, potatoes – 95%, edible salt – 85%. These goals should be achieved by 2020 (Doctrine of Food Security of RF 2009).

Furthermore, Russia is seeking not only to achieve a high level of self-sufficiency in basic agricultural products, but also claims to be a major exporter of agricultural products and foodstuffs.

However, in Russia, as in any other country, different branches of agriculture have a different efficiency, due to the historical or natural geographical factors. Therefore, for the effective development of Russian exports, it is necessary to focus on the areas of agriculture that are competitive and have comparative advantages in the world market.

That is why the issue of the competitiveness of the Russian agricultural products is becoming so important in the current situation.

Another factor that determines the need to improve the competitiveness of the Russian agricultural products is the Russia's accession to the World Trade Organization (Savin and Winker 2009). In terms of the WTO accession, agriculture is the most adversely affected industry in the country's economy. The reduction of the budgetary support and custom tariffs restrictions will affect the competitiveness of the Russian agricultural and food products in both the domestic and international markets.

MATERIALS AND METHODS

The idea of this paper is to specify the current position of the Russian agrarian sector. The main objective of the paper is to highlight the main changes which happened in the case of the Russian agricultural sector development. The paper is also identifying the role of agriculture in the Russian economy and society development.

In order to meet these aims, the thesis is structured as follows. The first part of the paper is describing the position of agriculture in the Russian society. The second part of the paper provides an overview of the past and current agricultural sector and the production development. The third part of the paper provides a brief overview related to the Russian agrarian trade development and the level of the Russian market self-sufficiency development.

The paper is analysing the time period covering the last twenty years development – since 1990 till 2012. Because of the limited data availability, the detailed analysis of the Russian agricultural production development is focused especially on the period 1990–2012 and the agricultural trade performance analysis is covering the time period 1998–2012. The whole analysis is conducted in the USD current prices.

In order to achieve the objectives, a number of methods and analytical tools have been used in this paper. To identify the changes in studied data, there were used the fixed-base index, the chain base index and the geometric mean of chain indices.

During the review of Russian economy, the following indicators were calculated:

Self-sufficiency ratio (SSR). The level of self-reliance for certain types of agricultural products is determined as the percentage of agricultural production to the consumption of the country.

Self-sufficiency in agricultural products reflects the extent to which the domestic production in the country is able to meet the domestic consumption of the country or its regions. The self-sufficiency ratio expresses the magnitude of production in relation to the domestic utilization.

In general, the algorithm for calculating the food-self-sufficiency ratio can be represented by the following formula:

$$SSR = \frac{Production}{Amounts\ of\ domestic\ supply} \times 100 \qquad (1)$$

Amounts of domestic supply = Amounts of domestic production + Amounts of imports – Amounts of exports + Changes in stock.

The amount of domestic supply is equal to the domestic consumption. The domestic consumption includes the industrial consumption, the private consumption, and the loss of production. The industrial consumption reflects the use of products for the farmer's needs: seeds, feed to livestock and poultry, eggs for hatching. The personal consumption of the population includes the production volumes going to the nutrition of the population.

Import dependency ratio (IDR). In the course of the analysis of the food situation of a country, an important aspect is to know how much of the available domestic food supply has been imported and how much comes from the country's own production. The IDR answers this question. It is defined as:

$$IDR = \frac{Imports}{Amounts\ of\ domestic\ supply} \times 100 \qquad (2)$$

The complement of this ratio to 100 would represent that part of the domestic food supply that has been produced in the country itself.

In the analysis of the Russian foreign trade, the following indicators were calculated.

The foreign trade coverage ratio is the ratio between the value of exports and that of imports between two countries. It may concern a product or a set of exchanges of products (goods and services).

The normalized *trade balance* of goods and services is defined as the *trade balance* (*total exports* minus *total* imports) *divided by the total trade value*.

Apart from the general analysis of the Russian foreign trade in agricultural products and foodstuffs, the trade flows have been divided to explore the territorial structure, the product structure and its change over time.

As sources of the numerical data, the Rosstat, the Federal Customs Service of Russia, the FAOSTAT and the Comtrade databases were used.

RESULTS AND DISCUSSION

The Russian agricultural sector and the agrarian production development

The Russian agricultural sector recorded a significant slowdown especially after the Soviet Union collapse. The most critical period for the agricultural and food sector (also for the whole economy development) was 1991–1998. During that time, the Russian agricultural and food productions reduced their performance, the value and volume of the agrarian export were also significantly reduced. On the other hand, the dependency of Russia on the agrarian products and food imports increased.

The period of the nineties was really critical for the Russian agricultural sector and also for the rural areas development. The number of working places and the quality of life of the rural population were reduced. The depopulation of villages was alarming (out of 155 000 villages, 13 000 were liquidated, 35 000 have a population below 10 persons and 37 000 less than 50 people) (FAO 2009). The number of people working in agriculture was reduced more than twice.

The impact of the transformation on the Russian agriculture was really significant. At the beginning of the transition period, agriculture accounted for 16.4% of the Russian Federations Gross Domestic Product (GDP), and it was a large and very important sector of the national economy. In 1998, the share of agriculture in the GDP had fallen below 6% and in 2012 the share of agriculture was below 4%.

According to the official figures, there was a 61.2% decline of the Gross Agricultural Output in constant prices in 2000 compared to 1990. The decline of the sector share in the GDP was accelerated by a notable change in the relative prices in favour of the input sector, i.e. a negative development of the sectorial terms of trade (Csaki 2002) (Table 1).

The agrarian sector recorded a significant recovery in the period 1999–2002. After the period of rapid growth and recovery immediately after the 1998 crisis, agriculture in the last years has demonstrated a fairly low rate of growth. The growth occurs mostly due

Table 1. Development of the Russian agrarian sector added value

Constant 2005 US$	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012
Agriculture, value added	40,21	35,24	29,77	25,94	21,59	28,49	32,66	32,80	33,40	36,00	32,10	35,48

Source: World Bank (2013)

to the increase in the crop production, however in recent years livestock has also demonstrated some animation. Agriculture has recovered by about 80% compared to the pre-reform level. Imports recovered speedily after a short period of fall after 1998, although the trade balance remained negative. This means that the major factor behind the rapid growth in 1999–2001 has been exhausted (FAO 2009).

During the period from 1999 to 2012, the favourable economic environment affected the Russian agriculture. The average growth rate of the gross agricultural production for 1999–2012 amounted to 2.4 percent per year. During this period, a decline in agricultural production was observed only in 2010 due to the abnormal drought (Table 2).

Structure of agricultural production

Since the reform began in the early 1990s, agriculture has experienced the major commodity restructuring – that is, major changes in the commodity mix and volume of agricultural production, consumption, and trade. The main feature of the restructuring has been a substantial drop in agricultural production, especially in the livestock sector.

When the reforms of the agricultural sector in Russia began in 1992, many analysts predicted that the farmers would become profit maximizers and, consequently, improve the productivity and efficiency of their operations (Osbornea and Trueblood 2006).

The reform of the agricultural sector has resulted in a widely spread privatization. The government intervention via subsidies or other instruments were greatly reduced. The restructuring process in the country created uncertainties for farmers and resulted in the fragmentation of farms or farm ownership. Compounding the problem was the shortage of the technical and business management skills for the successful private farming that had been absent under the previous system. The previous linkages between farms and the up- and downstream industries broke down. The whole set of problems was worsened by the lack of the agricultural finance and credit (Ishchukova 2014).

Since 1999, the agricultural output has been growing, mostly due to the crop production. Russia has two internal drivers of increase in agricultural production. They are the substitution of the imported agricultural products (sugar, livestock products and milk), and the emerging opportunities to increase the export of cereals, particularly wheat. Domestic agricultural producers are also able to take advantage of the currency devaluation in Russia due to the recent global financial crisis and any related increases in prices of the imported agricultural commodities. The Russian Federal Government stimulates the crop production through the minimum purchase prices of grain (wheat, barley, rye, and maize), the fixed domestic prices on mineral fertilizers, the development of animal husbandry, subsidized credits, and decreased taxes. During the last years, the Russian grain market has gained the spotlight as the officials are increasingly aware of the apparent competitive advantages (Nosov and Ivanova 2009).

Table 2. Basic indicators of the role of agriculture in the Russian economy

	1995	2000	2004	2008	2009	2010	2012
Share of agriculture in GDP (%)	6.3	5.8	4.5	3.6	3.9	3.3	3.4
Population in rural areas (%)	27	27	27	27	27	27	27
Share of agriculture in employment (%)	15.7	13.0	10.2	8.6	8.4	7.9	7.9
Average share of food in households' consumer expenditures (%)	49.0	47.6	36.0	29.1	30.6	29.6	29.5
Agricultural area (million ha)	210.0	197.0	193.0	191.0	191.0	191.3	190.7
Arable land (million ha)	128.0	119.7	116.8	115.0	116.0	115.5	115.3
Land sown to crops (1000 ha)	55.0	46.0	44.0	47.0	47.6	43.2	43.6

Source: World Bank (2013)

Table 3. Product structure of Russian agricultural production, %

	1995	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009	2010
Total	100	100	100	100	100	100	100	100	100	100	100	100
Crop production	53.1	55.5	54	52.9	51.8	51.9	48.5	48.7	51.9	53.1	49.2	45.1
grain crops	12.5	17.1	12.1	16.6	14	17.5	13.8	14.9	18.9	20.3	14.7	10.5
industrial crops	3.3	1.8	3.1	2.5	3.9	4.3	4.3	4.7	5	4.5	4.7	5.6
potatoes	17.9	15.4	18.9	14.4	14.5	11.7	11.9	11.5	10.4	11.4	12	10.7
vegetables and melons	9.9	10.4	11.7	10.7	10.8	9.5	9.9	9.7	9.2	9.1	9.7	10.5
fruit and berries	2.8	3.6	3.7	4.1	4	4	4	3.7	4	3.6	2.9	2.8
forage crops	5.4	6.6	3.6	3.6	3.6	3.5	3.4	3.2	2.7	2.7	4.2	4.2
Livestock products	46.9	44.5	46	47.1	48.2	48.1	51.5	51.3	48.1	46.9	50.8	54.9
meat and poultry	20.2	19.9	20.7	23.3	22.7	23.3	26.6	27.6	25.2	24.5	28.6	30.2
milk	18.8	16.9	18.2	17	18.4	17.6	17.8	17.3	16.9	16.7	16.2	18.4
eggs	4.8	4.8	4.8	4.7	4.8	5	4.9	4.4	4.2	4.1	4.1	4.2
wool	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Source: Rosstat (2013)

The farm structure is dual, with large-scale commercial operations co-existing with small household units. The latter dominate in the potato and vegetable production and account for over one half of the total milk output, but they are mostly oriented at the self-consumption. These two sectors contribute roughly equal shares to the total agricultural output. Households spend around one-third of their final consumption expenditures on food (OECD 2011).

Product structure of agricultural production

Let us first consider the structure of agricultural production in general, and then every important product separately (Table 3).

As a result, for the period from 1995 to 2010, there was a slight increase in the share of livestock products (an average of 1% per year). There is also an increase in the share of industrial crops against the decrease of the share of grain cereals and potatoes. The most important industrial crops cultivated in Russia are sunflower seeds, sugar beet and flax, etc.

Prices of agricultural products

After the collapse of the Soviet Union, in the period from 1992 input prices grew much more rapidly than the prices of agricultural products. As a result, there are price distortions on the cross-sectoral level.

Agriculture, more than any other industry, is suffering from the dictates of the prices of natural monopolies, communications, transportation, energy, etc.

As a result of the increase of the price disparity and the formation of prices of agricultural products at a lower level with respect to the non-agricultural products, the profitability in agriculture is much lower compared to the non-agricultural industries.

Changing petroleum *prices*, *crop yields*, *food* stock levels and exchange rates trade policies are driving the agricultural price volatility. Some of the factors

Figure 1. World food price indices and the Russian price indices for agricultural products (2002–2004 = 100)

Sources: Federal Customs Service of Russia, FAOSTAT (2013)

Table 4. Per capita consumption of major food items in Russia, kg

	Recommended intake	Average consumption (for 1995–2011)	2011 as % of 1995
Meat and meat products	70–75	55.5	129.1
Milk and milk products	320–340	233.2	96.9
Eggs and egg products	260	240.2	125.5
Fish and fish products	18–22	12.0	171.1
Sugar	24–28	36.2	125.0
Vegetable oil	10–12	10.9	180.0
Potatoes	95–100	111.5	88.7
Vegetables and melons	120–140	86.2	139.5
Fruits and berries	90–100	41.7	206.9
Grain products	95–105	119.4	97.5

Source: Russian Federal Service for Supervision of Consumer Rights Protection and Human Welfare (2012)

that influenced the prices of agricultural and food products, were generated by imperfections rather chaotic market environment in Russia.

As we can see in the Figure 1, the Russian trend in prices of agricultural production follows the world trends.

Food consumption

According to the FAO experts, there are no deficits in calorie and macro-nutrient consumption in Russia (Table 4).

The average diet of Russians has changed since 1990 due to the decreases in the milk, meat and fat consumption and a rising share of starchy staples like bread and potatoes (Sedik et al. 2003).

Crop production in Russian Federation

Crop production in the Russian Federation is considered to be in a better condition than the animal production. However, according to the Rosstat, in the period from 1990 to 2007, the areas under crops declined steadily. Only in 2008–2012, there was a slight increase in the agricultural performance

The agrarian sector performance depends strongly on the natural and climate conditions which determine the grain crops productivity. Fluctuations in the crop production are especially due to the yields oscillation.

Wheat

Wheat is the most important grain crop in Russia, which makes a great contribution to the grain stocks of the country (Table 5).

Wheat accounts for over one half of Russia's grain production with the average annual output of about

Table 5. Russian wheat supply, distribution (in 1000 MT CWE), area harvested (1000 ha) and yields (MT/HA)

Attribute	1990/91	1995/96	1998/99	99/2000	2000/01	2002/03	2004/05	2006/07	2008/09	2009/10	2010/11	2011/12	GM
Area Harvested	23 540	21 570	19 950	19 820	21 300	24 300	22 920	22 960	26 100	26 690	21 750	24 814	100.5
Beginning Stocks	14 395	7 500	8 050	1 062	1 257	7 623	4 818	5 998	4 269	10 944	14 722	13 736	99.6
Production	49 596	30 100	27 012	30 995	34 455	50 609	45 434	44 927	63 765	61 770	41 508	56 240	101.1
MY Imports	10 849	5 316	2 490	5 083	1 604	1 045	1 225	928	203	164	89	550	76.3
Total Supply	74 840	42 916	37 552	37 140	37 316	59 277	51 477	51 853	68 237	72 878	56 319	70 526	99.5
MY Exports	1 200	206	1 652	518	696	12 621	7 951	10 790	18 393	18 556	3 983	21 627	130.1
Feed and Residual	32 960	17 969	11 150	11 800	11 500	15 000	13 600	14 100	16 200	16 800	16 000	15 500	93.4
Total Consumption	57 260	39 810	34 838	35 365	35 158	38 320	37 400	36 400	38 900	39 600	38 600	38 000	96.3
Ending Stocks	16 380	2 900	1 062	1 257	1 462	8 336	6 126	4 663	10 944	14 722	13 736	10 899	96.4
Total Distribution	74 840	42 916	37 552	37 140	37 316	59 277	51 477	51 853	68 237	72 878	56 319	70 526	99.5
Yield	2.11	1.40	1.35	1.56	1.62	2.07	1.98	1.96	2.44	2.31	1.91	2.27	101.0

Source: Foreign Agricultural Service, Official USDA Estimates (2013)

Table 6. Russian barley supply, distribution (in 1000 MT CWE), area harvested (1000 ha) and yields (MT/HA)

Attribute	1990/91	1995/96	1998/99	99/2000	2000/01	2002/03	2004/05	2006/07	2008/09	2009/10	2010/11	2011/12	GM
Area Harvested	13 210	12 530	7 110	7 450	8 460	9 490	9 570	9 600	9 440	7 720	4 970	7 695	95.2
Beginning Stocks	1 175	2 400	3 259	376	326	4 435	2 316	933	1 153	3 813	2 395	1 386	101.5
Production	27 235	15 800	9 797	10 602	14 078	18 738	17 180	18 155	23 148	17 881	8 350	16 938	95.8
MY Imports	3 055	666	335	839	413	251	272	246	56	8	408	368	82.5
Total Supply	31 465	18 866	13 391	11 817	14 817	23 424	19 768	19 334	24 357	21702	11 153	18 692	95.4
MY Exports	70	800	115	91	573	3 132	1 089	1 547	3 444	2 657	267	3 544	142.9
Feed and Residual	25 180	12 774	8 500	8 950	8 800	10 700	11 700	11 800	12 300	12 150	5 500	9 800	91.8
Total Consumption	30 530	17 566	12 900	11 400	12 700	15 500	16 500	16 400	17 100	16 650	9 500	14 300	93.3
Ending Stocks	865	500	376	326	1 544	4 792	2 179	1 387	3 813	2 395	1 386	848	99.8
Total Distribution	31 465	18 866	13 391	11 817	14 817	23 424	19 768	19 334	24 357	21 702	11 153	18 692	95.4
Yield	2.06	1.26	1.38	1.42	1.66	1.97	1.80	1.89	2.45	2.32	1.68	2.20	100.6

Source: Foreign Agricultural Service, Official USDA Estimates (2013)

40 million tons. The areas under wheat exceed those under all other cereals and grain legumes put together. The planted area typically ranges from 23 to 26 million hectares. Winter wheat comprises about one-third of the total wheat area, but half of the total production because of the higher yield. Roughly 70 percent of the Russian wheat is classified as the food-grade, or the milling quality, and 30 percent as the feed-grade.

Barley

Barley is the second most important crop of the Russian Federation. Barley grain is now widely used for various purposes. Part of the barley is processed to produce the pearl barley or ground barley. However, in Russia, 70% of barley is used for feeding purposes (Table 6).

In Russia, the average production of barley is about 16 million tons from 10 million hectares or 1/4 of the country's total grain yield. Spring barley accounts for 95 percent of the barley area and 90 percent of production. Under the conditions of Russia, this is primarily a fodder crop used as a basis for producing mixed fodders. As a food crop, it is used for beer brewing, the peeled barley and the concentrated foods production, etc. An expanding brewing industry has boosted the demand for malting barley. Russia produces roughly 500,000 tons of malting barley against the brewers' demand of about 1.2 million tons per year.

Corn

In the Russian Federation, corn is used for the food, industrial and feed purposes. It is cultivated for grain,

Table 7. Russian corn supply, distribution (in 1000 MT CWE), area harvested (1000 ha) and yields (MT/HA)

Attribute	1990/91	1995/96	1998/99	99/2000	2000/01	2002/03	2004/05	2006/07	2008/09	2009/10	2010/11	2011/12	GM
Area Harvested	780	590	490	520	700	530	840	970	1 730	1 120	1 020	1 604	105.6
Beginning Stocks	2 356	155	500	101	160	90	53	121	52	254	122	72	92.0
Production	2 451	1 700	800	1 034	1 489	1 499	3 373	3 510	6 682	3 963	3 075	6 962	108.4
MY Imports	6 050	112	524	870	150	99	226	108	51	32	112	50	80.4
Total Supply	10 857	1 967	1 824	2 005	1 799	1 688	3 652	3 739	6 785	4 249	3 309	7 084	100.8
MY Exports	400	0	13	0	1	12	44	77	1 331	427	37	2027	x
Feed and Residual	7 520	1 000	1 450	1 510	1 300	1 200	3 000	3 100	4 500	3 200	2 800	3 900	100.3
Total Consumption	8 600	1 800	1 710	1 845	1 700	1 600	3 500	3 600	5 200	3 700	3 200	4 600	100.1
Ending Stocks	1 857	167	101	160	98	76	108	62	254	122	72	457	98.7
Total Distribution	10 857	1 967	1 824	2 005	1 799	1 688	3 652	3 739	6 785	4 249	3 309	7 084	100.8
Yield	3.14	2.88	1.63	1.99	2.13	2.83	4.02	3.62	3.86	3.54	3.01	4.34	101.1

Source: Foreign Agricultural Service, Official USDA Estimates (2013)

Table 8. Russian sunflower seeds supply, distribution (in 1000 MT CWE), area harvested (1000 ha) and yields (MT/HA)

Attribute	1990/91	199596	1998/99	99/2000	2000/01	2002/03	2004/05	2006/07	2008/09	2009/10	2010/11	2011/12	GM
Area Harvested	2 750	3 960	3 570	5 000	4 350	3 798	4 650	5 900	6 000	5 600	5 550	7 200	109.1
Beginning Stocks	0	50	15	20	45	5	273	246	290	575	283	113	107.7
Production	3427	4 200	3 000	4 150	3 915	3 685	4 800	6 750	7 350	6 425	5 350	9 627	109.8
MY Imports	0	5	35	10	5	7	10	10	12	23	43	28	117.0
Total Supply	3 427	4 255	3 050	4 180	3 965	3 697	5 083	7 006	7 652	7 023	5 676	9 768	110.0
MY Exports	105	1 200	890	847	729	186	45	162	160	20	8	332	111.0
Crush	2 350	2 300	1 860	3 000	3 020	3 300	4 389	5 980	6 210	6 065	5 045	8 600	112.5
Food Use Dom. Cons.	0	268	190	165	100	101	184	200	215	220	220	250	99.4
Feed Waste Dom. Cons.	972	130	90	123	81	85	239	350	492	435	290	495	94.0
Total Dom. Cons.	3 322	2 698	2 140	3 288	3 201	3 486	4 812	6 530	6 917	6 720	5 555	9 345	109.9
Ending Stocks	0	357	20	45	35	25	226	314	575	283	113	91	88.3
Total Distribution	3 427	4 255	3 050	4 180	3 965	3 697	5 083	7 006	7 652	7 023	5 676	9 768	110.0

Source: Foreign Agricultural Service, Official USDA Estimates (2013)

silage, green fodder and haulage. Corn is also used for the production of flour, cornflakes, starch, glucose, alcohol and other products (Table 7).

Russia plants millions of hectares of corn, but less than 20 percent is harvested for grain. The remainder is chopped for silage, usually in August. The area of the silage corn was reduced by about 60 percent during the 1990's. In the period from 2004 to 2010, the corn area harvested increased. The corn-for-grain area can fluctuate from year to year depending on the weather (Spicka 2011, 2013), with a lower area during the dry years. The growth of the corn yield is associated with the development of intensive agriculture.

Sunflower seeds

Sunflower seed is the Russia's dominant oilseed crop, and Russia is one of the world's top producers (Table 8).

Following the breakup of the Soviet Union in 1991, sunflower seed yields dropped due to a sudden and sharp reduction of the heavy state subsidies for agriculture and a 90-percent reduction in fertilizer application rates (USDA 2004). The renaissance of sunflower production is apparent since 1999/2000. During the last 10 years, the Russian production of sunflower seeds was steadily growing. Farmers were improving the agronomy and were using better seeds, but most of the increase in production was attrib-

Table 9. Russian sunflower oil supply and distribution (in 1000 MT)

Attribute	1990/91	199596	1998/99	99/2000	2000/01	2002/03	2004/05	2006/07	2008/09	2009/10	2010/11	2011/12	GM
Beginning Stocks	48	30	80	30	80	40	45	95	177	59	99	84	105.2
Production	987	920	750	1 240	1 250	1 365	1 815	2 465	2 565	2 505	2 082	3 552	112.3
MY Imports	220	220	260	190	236	192	134	115	37	55	149	14	77.8
Total Supply	1 255	1 170	1 090	1 460	1 566	1 597	1 994	2 675	2 779	2 619	2 330	3 650	110.2
MY Exports	105	25	55	195	130	103	226	711	802	504	181	1 427	126.8
Industrial Dom. Cons.	50	50	65	195	270	293	315	350	330	320	330	330	118.7
Food Use Dom. Cons.	1 017	850	930	980	1 066	1 156	1 363	1 469	1 553	1 666	1 705	1 740	105.0
Feed Waste Dom. Cons.	0	9	10	10	30	20	35	35	35	30	30	30	111.6
Total Dom. Cons.	1 067	909	1 005	1 185	1 366	1 469	1 713	1 854	1 918	2 016	2 065	2 100	106.3
Ending Stocks	83	236	30	80	70	25	55	110	59	99	84	123	103.6
Total Distribution	1 255	1 170	1 090	1 460	1 566	1 597	1 994	2 675	2 779	2 619	2 330	3 650	110.2

Source: Foreign Agricultural Service, Official USDA Estimates (2013)

Table 10. Russian sugar supply and distribution (in 1000 MT CWE)

Attribute	1990/91	1995/96	1998/99	99/2000	2000/01	2002/03	2004/05	2006/07	2008/09	2009/10	2010/11	2011/12	GM
Total Production	2 600	2 060	1 300	1 500	1 550	1 580	2 250	3 150	3 481	3 444	2 996	5 500	107.0
Raw Imports	0	1 450	5 200	5 000	5 350	3 700	3 600	2 650	1 850	1 949	2 260	500	90.8
Refined Imports	0	1 350	200	170	300	300	700	300	300	274	250	250	85.8
Total Imports	0	2 800	5 400	5 170	5 650	4 000	4 300	2 950	2 150	2 223	2 510	750	88.7
Total Supply	7 310	6 135	7 805	9 320	10 200	7 710	6 990	6 570	6 181	6 148	5 905	6 600	99.1
Raw Exports	0	10	10	10	10	10	10	0	0	0	0	0	x
Total Exports	120	100	160	190	260	260	110	180	200	34	17	300	108.7
Dom. Consumption	6 350	5 000	4 995	6 130	6 840	6 400	6 300	5 950	5 500	5 700	5 523	5 885	101.5
Ending Stocks	840	1 035	2 650	3 000	3 100	1 050	580	440	481	399	350	400	93.5
Total Distribution	7 310	6 135	7 805	9 320	10 200	7 710	6 990	6 570	6 181	6 148	5 905	6 600	99.1
Total Sugar Production	2 600	2 060	1 300	1 500	1 550	1 580	2 250	3 150	3 481	3 444	2 996	5 500	107.0
Raw Imports	0	1 450	5 200	5 000	5 350	3 700	3 600	2 650	1 850	1 949	2 260	500	90.8

Source: Foreign Agricultural Service, Official USDA Estimates (2013)

uted to the growth of sown area. Now the outputs of sunflower seeds are above the Soviet period level (USDA 2011).

Sunflower oil

Sunflower oil is a dominant type of vegetable oil produced in the Russian Federation (Table 9).

The country's production capacities continue to grow. The domestic production of sunflower oil continues to increase from 987 thousand tons in 1990 to 3552 thousand tons in 2012 due to the fast modernization and construction of new crushing facilities in 2005–2012 (USDA 2011).

The production exceeds domestic demand and the country has successfully increased the exports of sunflower oil. In 2011, a record harvest allows to export more than 1.4 million MT of sunflower oil.

Sugar

The Russian sugar production recorded a significant reduction in nineties. Since 2001, the Russian sugar production is constantly growing. In the period 2000–2012, the Russian sugar production increased from 1.5 million tonnes to about 5.5 million tonnes. The growth of Russian sugar production is realized especially through the growth of the sugar processing capacities and the growth of sugar beet production. The current level of sugar beet production is even higher than the capacities of sugar refineries. If we are talking about the sugar beet production and its growth, it is necessary to mention the following facts. The Russian sugar beet production recorded a significant growth especially during the last ten years from 10 million tonnes to more than 45 million tonnes (the growth of production is realized especially through the growth of yields per hectare (from 15 tonnes/ha to almost 45 tones/ha) (FAO 2012) (Table 10).

Livestock sector

In the livestock sector, the situation is noticeably worse than in the crop production. Around 1970, the Soviet government expanded the livestock sector to improve the consumer's standard of living by increasing the meat and dairy consumption. Using large budget subsidies to both livestock producers and

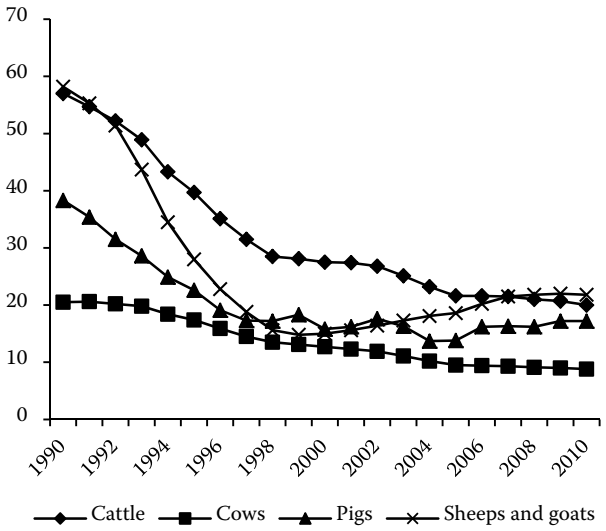

Figure 2. Livestock inventories in Russia, million heads

Source: Rosstat (2013)

Table 11. Russian meat (beef and veal) supply and distribution (1000 MT CWE)

Attribute	1990	1995	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	GM
Production	3 635	2 295	1 890	1 740	1 595	1 580	1 650	1 680	1 640	1 520	1 450	1 430	1 490	1 460	1 435	1 360	93.7
Imports	1 424	697	738	782	425	671	751	766	791	1 054	1 033	1 115	1 228	1 053	1 075	1 065	98.1
Total Supply	5 059	2 992	2 628	2 522	2 020	2 251	2 401	2 446	2 431	2 574	2 483	2 545	2 718	2 513	2 510	2 425	95.2
Exports	0	5	7	3	7	7	7	10	9	11	8	8	11	8	5	8	103.2
Dom. Consumption	5 059	2 987	2 621	2 519	2 013	2 244	2 394	2 436	2 422	2 563	2 475	2 537	2 707	2 505	2 505	2 417	95.2
Total Distribution	5 059	2 992	2 628	2 522	2 020	2 251	2 401	2 446	2 431	2 574	2 483	2 545	2 718	2 513	2 510	2 425	95.2

Source: Foreign Agricultural Service, Official USDA Estimates

consumers along with the controlled prices and trade, the regime succeeded in raising the meat production by over 60% between 1970 and 1990 (Liefert 2004).

The post-Soviet transformation period seriously affected the Russian livestock sector and its performance development (Liefert 2002). Since 1992 till present, the number of cattle decreased from 52.2 to 21.5 million heads, the pig livestock from 31.5 to 16.5 million heads, sheep and goat livestock – from 51.4 to 20.7 million heads (Liefert 2009).

After the long-time process of the production performance reduction, the Russian livestock production sector recorded a positive growth in 2004.Since that time, the Russian pork and poultry meat production are constantly growing. Only the beef meat production is constantly decreasing (Table 11).

The positive trend existing in the livestock sector is the stable rise in the animal productivity. The productivity growth is the result of the rational downsizing, investment inflows, the technical improvements and the successful process of farms restructuring. This is accompanied by the re-location of production to areas with more favourable conditions (OECD 2007).

Russian agricultural trade

The Russian agricultural trade represents a specific part of the total Russian merchandise trade performance. The share of agrarian exports in the total exports is about 2.4% and the share of agrarian imports in the total imports is about 14%. Considering the dynamics of the Russian foreign trade in agricultural products and food, the following trends can be revealed. There is a significant growth of foreign trade turnover due to the expansion of both imports and

Table 12. Russian poultry and pork supply and distribution (1000 MT CWE)

Attribute	1990	1995	1998	1999	2000	2002	2004	2006	2008	2009	2010	2011	GM
Poultry													
Production	810	455	365	375	410	565	770	1 180	1 680	2 060	2 310	2 575	111.1
Imports	307	856	1 048	935	948	1 215	1 030	1 199	1 166	929	656	504	104.6
Total Supply	1 117	1 311	1 413	1 310	1 358	1 780	1 800	2 379	2 846	2 989	2 966	3 079	109.7
Exports	0	2	3	1	3	1	1	2	5	7	5	35	129.7
Dom. Consumption	1 117	1 309	1 410	1 309	1 355	1 779	1 799	2 377	2 841	2 982	2 961	3 044	109.5
Total Distribution	1 117	1 311	1 413	1 310	1 358	1 780	1 800	2 379	2 846	2 989	2 966	3 079	109.7
Pork													
Production	2 958	1 586	1 279	1 310	1 341	1 367	1 433	1 444	1 736	1 844	1 920	2 000	96.5
Total imports	440	550	592	600	307	822	638	889	1 107	876	916	971	107.5
Total supply	3 398	2 136	1 871	1 910	1 648	2 189	2 071	2 333	2 843	2 720	2 836	2 971	98.8
Total exports	0	0	0	0	0	0	0	0	0	1	1	0	x
Total dom. consumption	3 398	2 136	1 871	1 910	1 648	2 189	2 071	2 333	2 843	2 719	2 835	2 971	98.8
Total distribution	3 398	2 136	1 871	1 910	1 648	2 189	2 071	2 333	2 843	2 720	2 836	2 971	98.8

Source: Foreign Agricultural Service, Official USDA Estimates

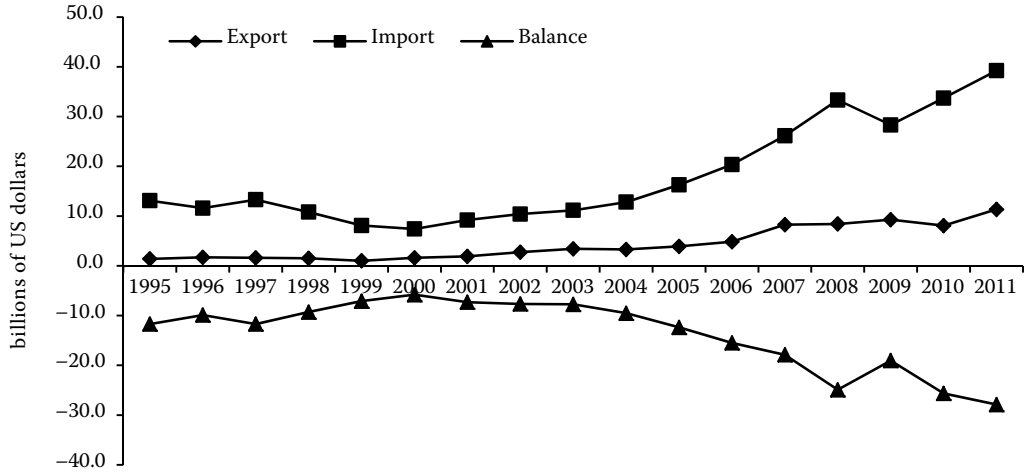

Figure 3. Russian foreign trade flows in agricultural products and food

Source: Federal State Statistics

exports. The negative trend in the dynamics of the agri-food foreign trade deficit value appeared in 2000.

Figure 3 illustrates that the nominal growth of the import value far exceeded the nominal growth of the export value. So, Russia is still keeping the role of the net importer of agricultural products and foodstuffs. The main reason for the growth of imports during the analysed period was the sustained growth of the consumer demand in the situation of a slow increase in the domestic production capacities (Gaidar 2011).

On the other hand, the inter-annual growth rate of exports (21% a year) exceeded the inter-annual growth rate of imports (10% a year) during the analysed time period. The result of the mentioned development trend is the growth of the export/import coverage ratio. While in 1999 the export value represented only 10% of the import value, in 2012 – the value of export was equal to cca 41% of the value. The Table13 provides a brief overview of the Russian agrarian trade performance development – including its export and import commodity structure development.

Import dependency ratio (IDR)

The country dependence on the imported grain is usually a basic needs indicator of food security. The food insecurity is widely used in the Russian Federation as an argument for the government intervention in agriculture in the form of price supports, import tariffs or quantitative import restrictions.

The import dependency ratios show that, during the analysed period, there were visible trends toward the increasing food import dependency in relation to milk products and meat and meat products. Russia imports about 30 percent of meat consumed. Low import-dependency ratios are observed in relation to eggs and potato (Table 14).

Table 13. Russian foreign trade in agricultural products and food (billions USD)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	GM
Export	1.2	0.8	1.3	1.5	2.2	2.7	2.5	3.9	4.8	8.3	8.4	9.3	7.6	11.3	16.7	X
Import	10.3	7.7	7.0	8.7	9.8	11.3	12.8	16.3	20.4	26.2	25.2	32.7	22.5	28.9	41.2	X
Balance	–9.1	–6.9	–5.7	–7.3	–7.7	–8.6	–10.3	–12.4	–15.5	–17.9	–25.0	–19.1	–26.1	–27.9	–23.8	X
Normalized trade balance	–79.3	–81.9	–68.6	–71.4	–63.7	–61.6	–67.6	–61.5	–61.6	–52.0	–59.8	–50.7	–63.3	–55.1	–41.6	X
Foreign trade coverage ratio	11.6	10.0	18.6	16.7	22.1	23.8	19.3	23.8	23.8	31.6	25.2	32.7	22.5	28.9	41.2	X
Chain index of export flows	X	64	170	112	149	124	92	157	125	170	102	111	81	150	147	121
Chain index of import flows	X	75	91	125	113	115	113	127	125	128	127	85	119	117	103	110

Sources: UN Commodity Trade Statistics Database. author's calculations (2013)

Table 14. Import dependency ratio in Russia, %

Year	Grain	Potato	Vegetables	Meat and meat products	Milk and milk products	Eggs and egg products
1991	16.7	3.4	23.8	14.0	11.6	1.7
1993	11.4	0.6	12.8	15.6	11.3	0.1
1995	4.8	0.2	10.6	27.2	14.2	0.3
1997	4.6	0.6	15.0	40.0	15.7	1.5
1999	10.5	1.0	18.3	32.0	12.9	3.2
2001	2.6	0.9	17.8	37.1	13.2	2.4
2003	2.4	2.2	20.5	35.2	14.7	2.0
2005	2.2	1.9	24.6	39.0	19.0	2.4
2007	1.6	2.3	23.8	36.0	18.4	2.2
2009	0.6	2.2	17.1	30.5	17.8	1.9
2011	1.0	5.3	18.1	26.4	20.3	2.8

Source: Rosstat, author's calculations (2013)

Table 15. Import to export ratio of Russian foreign trade in agricultural products

Year	Cereals	Potato	Vegetables	Meat and meat products	Milk and milk products	Eggs and egg products
1991	51.8	4.1	19.6	16.5	47.6	3.0
1993	46.0	1.5	16.4	46.8	64.0	0.1
1995	2.65	1.3	9.3	173.1	16.0	2.5
1997	3.05	4.8	96.7	68.5	27.1	10.3
1999	8.37	28.0	28.5	125.1	22.7	4.5
2001	0.81	9.6	7.8	67.2	8.0	3.3
2003	0.19	22.7	4.7	74.1	11.9	2.3
2005	0.18	16.4	3.9	46.2	14.7	4.5
2007	0.07	4.8	5.1	48.1	12.1	2.2
2009	0.14	7.6	3.4	44.8	13.5	2.6
2011	0.08	31.4	3.7	35.6	29.2	4.3

Source: Rosstat, author's calculations (2013)

For a better understanding of the current situation existing in the Russian agriculture, we calculate the import to export ration for the selected basic groups of products (Table 15). Table 16 provides a basic information about the level of self-sufficiency of the Russian agrarian market.

The Russian Federation is self-sufficient especially in cereals. For the remaining product groups, imports still exceed exports.

CONCLUSION

Agriculture is an important part of the Russian economy. Russia is characterized by large areas of agricultural land, a third of its population lives in the rural areas. The Russian Federation produces a lot of agricultural products and food. However, the country is not self-sufficient in many products.

On the basis of the results coming from the paper, it is possible to characterize the Russian agriculture as follows. After the significant decline of agricultural production and agrarian trade performance (export) in the early 90s and the long process of transformation, the Russian agricultural sector recorded a significant growth especially in period after 1999. The period since 1999 till 2010 can be characterized as a stabilization and recovery period. The slowdown of the Russian agricultural performance was stopped. In the present Russian agrarian sector is under the process of recovery especially because of the massive state support (market protection and subsidies coming into agriculture).

Table 17. Self-sufficiency ratio in basic food products in Russian Federation, %

	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2011	GM
Meat	87.0	88.3	78.7	70.0	65.0	66.6	64.2	64.4	62.1	65.9	71.5	73.4	98.5
Milk	86.2	95.2	86.9	87.5	87.3	88.3	88.0	84.6	82.4	83.2	80.5	80.8	99.4
Eggs	96.9	100.4	99.5	98.7	97.6	97.5	98.7	98.4	98.9	98.9	98.3	98.0	100.1
Potato	95.8	103.1	92.5	100.2	87.1	99.6	94.9	99.1	101.3	100.0	75.9	113.0	101.5
Vegetables	78.1	81.1	87.7	86.9	81.8	85.6	85.4	85.4	82.8	86.8	80.5	93.2	101.6
Grain	91.5	96.9	84.8	94.3	66.1	102.5	116.6	113.4	113.3	148.2	93.4	135.9	103.7

Source: Rosstat, author's calculations (2013)

Russia recorded a significant growth especially in the area of the cereals production, oil-crops production, sugar and sugar crops production, pork and poultry meat production. Despite of the fact that the Russian agricultural sector recorded the significant recovery; Russia is still not self-sufficient in the area of many kinds of agricultural products. The low level of domestic production must be compensated by massive imports.

The highest level of the import dependence is observed for meat, vegetables and fruits. Talking about the Russian agricultural trade, it must be highlighted that its role in the area of the total merchandise export is only minor (only 2%), on the other hand, its role in the area of the total imports is much more significant (14% of the total merchandise import value). While the Russian export commodity structure is represented especially by primary products, the commodity structure of the Russian agrarian imports is dominated by the processed food products. The absolute value growth of Russian imports is much higher that the absolute value growth of Russian exports. The result of this development is constantly increasing the Russian agrarian trade negative balance. The most positive figure of the Russian agrarian trade development is the inter-annual growth rate development of Russian exports. While inter annual growth rate of import is cc 10%, the inter-annual growth rate of export value is 21%. The result is the growing value of import/export covering ratio.

Talking about the Russian agricultural sector future development, it is necessary to highlight the effort of the Russian government to improve the level of self-sufficiency and to reduce the dependency of the Russia on imports from other countries. The Russian government is supporting the agricultural sector growth and restructuring through the massive system of subsidies, the market protection policy etc. Currently, Russia is seeking not only to achieve a high level of self-sufficiency in basic agricultural products, but also it is trying to be a significant driver in the area of international trade in agricultural products and food (especially in relation to the CIS).

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