

## GENETIC ARCHITECTONICS OF AGRODYNAMICS IN RUSSIA

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**Abstract.** The genetic character of three factor groups effect (natural, institutional and infrastructural) on the state and future progress of agriculture in Russia was developed. Influence of each group the formation and dynamics of agrarian production was analysed. The pragmatism of the idea that economy should be considered as an organism was shown. Features of natural, material and social operating conditions of Russian agrosphere which in many respects define architecture of modern and future agriculture are revealed.

**Key words:** economy, genetic regularity, agriculture, Russia, natural factors, institutes, infrastructure, dependence of development on the antecedents.

Economic development, even during the time of social, scientific and technical revolutions, is based on the past history. At the evolutionary scenario dependence on the antecedents is stronger than at revolutionary one, but anyhow, even at the most abrupt turns of social and economic development of a society and demolition of a political system, as, for example, after October revolution 1917 in Russia, the economy always relies on fundamentals which to some extent define its dynamics. Even the most rigid, up to despotic, regimes forming a firm vertical power structure and undividedly disposing all resources, cannot cancel dependence of economy on the antecedents in many respects defining a course of the further development. This dependence is similar to the genetic code of the manufacture construction scheme.

At the beginning of the XX century the given aspect of economy was marked by some scientists, among them, first of all, it is necessary to name N.D. Kondratyev [1]. There appeared the term «dependence on the past» (path dependency) — a version that a diversity of economic development forms is initially explained by their dependence on the nature and tendency of the previous system development [2].

Surely, the code is not absolute, once and for all foreordained the design of economic development since various accidents both deforming and correcting rates and forms of dynamics obstruct this process. But, nevertheless, even at the level of forming a fundamentally new technological process or organisation of revolutionary production relations innovations should necessarily consider presented conditions, many of which have objective character. This objectivity possesses genetic properties which, as it is known, can be hereditary and changeable. And though economy is characterized as a mechanism (the term «economic mechanism» — one of the most widespread in scientific community and in everyday life), it is more similar to an organism. Certainly, this comparison is not categorical as an

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organism and economy have weight of differences, but nevertheless, both social production (management) and living beings are accepted to have much, in my opinion, much more in common, than economy and lifeless mechanism. Uncountable bonds confirm it, and like nerves they penetrate a huge body of economy, establishing interdependence among seemingly unrelated events. The examples are dependence of grain prices from a political conjuncture in the country (how much governors do wish to support domestic landowners or, moreover, to make advances to rural electorate before the election campaign); association of the economic state with army and fleet fighting capacity, with the international country leaders' prestige; correlation between development of new alternative energy sources in the West, ambitious introduction of which can undermine the importo-focused raw economy of Russia, reducing oil and gas deliveries abroad, the size of state support, and, hence, the level of material welfare of our peasants.

The given interdependence and interactions in a huge economic organism are generally nonlinear and, moreover, they are transformed as a result of powerful synergetic effect weakening or strengthening the consequences. But as well as in a live body, in economy «everything is tied together» as well, and it is necessary to learn how to decode these interactions calculating, how much one event can affect the result expected. This principle is acceptable to stockbrokers who try to foresee the dependence of stock, bond and currency rates from different political incidents, scientific sensations, military conflicts, secular passages, geological discoveries, natural phenomena, technogenic accidents or any other factors and expectations which at first sight have nothing in common with financial system and economy as a whole. By the way some of them especially the most perspicacious ones are sure to have enormous profits thanks to the foresight or to the instinct of foreseeing a process of economic events together with a deep scientific analysis. Warren Bafeta one of the richest people in the world made a handsome fortune owed to forward-looking solution of his capital investments into those industries and enterprises which later could bring in him a gigantic amount.

Evidently, till now we have not realized all interdependence and interactions of events and facts directly or indirectly connected with economy. One of them are more sophisticated, the others are more detectible, but the largest and the most significant ones should certainly be considered in the scientific analysis as they identify architectonics of the economic scheme in many respects, playing a role of original genes programming development dynamics. In farm production it is possible to detach three basic groups of the factors motivating further industry development regardless of conjunctural events (see the table).

The first one is made up of environmental conditions setting mainly scales and characters of manufacture and affecting the formation process of labour, to a lesser degree, production relations themselves. In Russia huge territories have predetermined expediency of large-scale enterprises and farm management; the latter in a case to be divided into smaller branches only reduce the results when other conditions are equal. Great spaces are sure to have left a mark on Russian employee type development, not always playing a positive role. It is enough to summon up cultural practices of swidden farming at early development stages of our state when having used land intensively for some years and reducing greatly natural soil fertility peasants laid it aside and passed on a new plot, preliminary having destroyed woods there. It is understandable that having been generated throughout many centuries in our genotype the attitude to the nature as to almost inexhaustible source in accordance with the view that «we have everything in big amount», keeps us from environmental friendliness and careful treatment of natural resources. The statistic data show that

the territory under woods in Russia decreased by 160 000 hectares from 1990 to 2005, and explored oil and gas reserves are less than experts' estimation. Optimism is not buoyed by the fact that there is sufficient amount of mineral resources which cannot be used up for a long time. But treasures of the earth, woods and shelves are still big enough [3], creating an illusion of their inexhaustibility.

I would like to emphasise that the given fact makes us as employees neither better nor worse. In comparison with Western or Asian types of workers Russians have their own advantages and disadvantages (see details 4).

But it is a reality which should be taken into consideration at organisation of manufacture and, especially, at realization of scale economic reforms. Each nation has its own unique features, which taken into account may become rather effective. Thus high technologies introduced from the West and imposed on "can-do" spirit and industrious of an Asian type worker have allowed Japan, South Korea, and China to make powerful jerk in the economic development. Surely, to be a success any economic reform should concern much about a choice of a correct development trajectory, prestige and political durability strength of governors, available recourses and even good timing of choosing a new way of economic dynamics when appropriate introduction forms and methods of new technologies and innovations into national economy are found. On the contrary, any delay in implementing time-honored measures can lead to undesirable results as it occurred, for example, in Brazil [5].

But the latter circumstances, despite of their importance and even sometimes a main role in the end results of accomplished reforms, nevertheless are minor in relation to natural basis and its derivatives.

### Influence of main factor groups the formation and dynamics of agrarian production

Targets	Factor groups				
	natural	institutes		infrucstrctere	
		informal	formal	industrial	social
Production capacities	Character and types of technologies; production scope			Scope and character of production; level of technological development; soil fertility level	
Productive forces	Formation of employee's type	Relationship formation at work and in ordinary life	Farmers, personal plot land-users, landlords, owners of large enterprises, latifundists		
Organizati-on of social rural life	Communals, inalesdegree isolated farmstead	Communals united by territorial, national, class, professional, social and material character			Type of social rural population organization

Nature, despite of all achievements of the scientific and technical progress reducing dependence of farm production from environmental factors, continues to play an exclusive role in technological construction, management practices and methods adaptability, worker type formation and, hence, organisation of production relations dominating in a society. Due to this fact it is needed to recollect a rural community in pre-revolutionary Russia generated under the influence of nature which it was difficult to leave even with an own plot. P.A. Stolypin's willpower was able to break down community counterstand and peasants could leave the community establishing their own farms [6].

Nature does still define contours of Russian farm production: growing grain on huge areas, raising and fattening farm animals on natural meadows and pastures in a steppe part of the country etc. Farm management type is affected by climatic conditions as well, especially in an area of risk farming. These natural factors are essential both technologically and social-politically in the development of farm production architectonics. They play a long-term role, performing initial provisional functions.

The second group of factors presented by established Russian institutes is not so substantially long-term but it is also important for its impact on the development and operation of agriculture. Modern classicists of the economic theory R. Coase, D. Cecil North; O. Williamson, E. Ostrum and others [7, 8, 9, 10] consider the significance of this type of institutes essential to the rates and forms of social production dynamics. At the beginning of XX century their role in agrarian Russia was estimated by V.I. Lenin as well, in view of Prussian and American ways of capitalism development in farming [11]. In his opinion, the main brake of capitalism development in our country was, first of all, the feudal heritage exposing not only in landowner's property, but also in communal type of management. The same consideration is supported by D. Cecil North who has marked the formidable distinctions between the Latin America which adopted institutes of backward Spain, and the North America inherited more advanced English institutes. Russian scientists (A. Radygin, R. Entov, etc.) emphasize inactivity of socialist institutes in modern Russian economy [12]. Institutional environment in many respects defines the behaviour character of separate enterprises and firms [13] and of individual workers as well.

Though, employees as individuals represent themselves a part of social institutes, even, probably, without realizing it. I would underline that informal institutes have always played more important role in the village, than in a town. Thus, for centuries Russian peasants lived and worked under the influence of a community establishing rules and norms of behaviour both in everyday life and at work, which were as strictly as authorized laws. On the one hand, a community judged from correct ideas about nature and set-ups of rural life type, based on main Christ's commandment. But on the other hand — founded on the equality of duties it frequently forged the initiative of energetic people. In these well-defined boundaries many Communitarian, especially Passionists, felt forced and aspired to escape from a circle of obligatory rules imposed to everybody by the community.

After monarchist system demolition in Russia collective farms and state farms together with Village Soviets took community's responsibilities to dictate the behaviour rules not only at work, but also in ordinary life. In post Soviet period this phenomenon was lost in many Russian rural districts, mainly in villages with native population. Due to a number of circumstances current township councils are often unable to unite their fellow countrymen. Hereby one can explain the increased level of alcoholism and other asocial behaviour actions in many villages, resulting in socially useful work efficiency decrease, unwillingness to work, and loose of morals hindering people to concentrate and overcome difficulties arisen.

Against the backdrop of state influence decreasing and community relationship destruction, social system genetics based on a national group appeared to become more remarkable. It is needed to notice that in view of all pros and cons of a community the latter by all means played a positive role, supporting, protecting and directing its members, to some degree, carrying out functions of a big family. There everybody could always find a shelter and assistance, especially those who followed community rules. Nothing has changed. Nowadays the same lifestyle can be met in some rural areas of the Russian Federation, mainly, in villages where indigenous ethnic groups live, and even on primordially Russian territories. It does not mean that these groups are more saintlike and righteous in comparison with native population. Being established in the interests of these ethnic groups with due regard for first top priority of these interests local latent rules of indigenous groups sometimes run contrary to generally accepted norms of the country. The main role in communal basics safeguarding is likely to be played by a self-defense instinct of small ethnic groups, Russians having been divested of this right due to their multiplicity. But under difficult conditions, for example, somewhere abroad where it is hard to survive one by one, the given peculiarity can be manifested in Russians as well.

But at present an ethnic community as a social institute, which genesis started to develop in remote ages, does not properly fulfill the given function to unite people in the countryside and protection their interests.

With loss of community positions in the 90-s of the last century importance of social genetics based on class and occupation characteristics began to grow. The occurrence of flourishing farmers, managers of profitable enterprises, successful agrobusinessmen called into being a body of public and private rules which are to be followed by people within a particular social or professional group. Classification according to a trade group is considered to be a separate part of social genetics. In relation to the field he works a man (an official, a driver, a personal plot land-user, a farmer or a seller) has to devolve along with the norms and rules dominating there. This phenomenon considerably specificates man's intemality and overt behavior defining his interests and demand. Each social group to a large extent both forms a member of staff and has its own specific relationships.

In post perestroika period stratification of the Russian society including rural population resulted in financial and social status inequality. Undoubtedly, as a whole the latter was not so sky-scraping in agriculture as in profitable sectors of economy — banking, mining, and base material sectors, and even in officinary. But nevertheless isolated social groups, especially with higher income level are gradually gaining caste characteristics. The majority of rural population with low-level earnings have these characters to a lesser degree. It is likely to be due to their separation, formal absence of "meeting place" while farmers, managers of enterprises and agrobusinessmen are united either in trade unions (producers of milk, grain, meat etc.) or associations of different farming enterprises. It is possible to say that now consolidation of agrosphere workers occurs only at the top of a human pyramid where the most successful employees are.

This condition should be considered abnormal since any social system can be stable if it is penetrated from top to bottom, especially its basic part by public and private rules, the main ones being provision of socially useful work incentives and group pressure. Being supported by fids of agriculturists, informal institutes in Russian countryside have weakened their influence and lost features of a genetic skeleton of a rural society.

People's economic behaviour is strongly influenced by territorial genetics. Due to a person's location (a big city, a regional centre with proper facilities or an isolated village) his behavioural role, mindset, stereotypes are changed and as you might expect affecting the ability to work. Conditioning progress of industrial and social infrastructure and

people's economic behaviour territorial genetics itself is affected not only by climatic and other natural environment, but also by appropriate development of road and rail network and other attributes of comfort. Living in one climatic zone, but having different household utilities and facilities equipped, people can build absolutely poles apart economic relations and achieve entirely opposite results. But at the same time, the distinctions caused by territorial feature, can be smoothed by creation of artificial conditions eliminating or considerably reducing existing natural inconvenience. Through the process of Russian rural territory development discrimination of villages and isolated settlements due to their farness, infrastructure availability and a comfort level will disappear, as it has already occurred in many developed countries where peculiarities of urban and rural life have much in common. And in some places, for example in France, for the reason that the level of comfort in rural areas is rather high in concurrence with the charm of nature, more and more citizens are choosing their permanent residence in a countryside.

But in Russia different farming areas even in the same region can be more or less attractive for work and dwelling. By all means, it is connected not only with available social and household infrastructure, but also with the profitability level of farm enterprises, and, hence, with wage rate. Thus the territorial contrast in our country is worsened by economic inequality that in its turn strengthens the influence of this genetic impact type on farm production character.

As to official Russian agricultural institutes (economic-legal forms of ownership, general government, financial system, market infrastructure, etc.) they have already developed by present though they play a multiple-valued role in farmers' life. Considered to be the foundation in agrarian economy the institute of private ownership of land has still strong political colouring and causes hot discussions in Russian society, introduction of private property in land having produced antipole views among Russians. At the same time, the given institute erects an agro complex development plotline, generating a new class of proprietors which contingent is rather diverse. Among them owners of land shares who do not find themselves as proprietors of land but owners of collective-farm workdays according to which number they get earned income in forms of grain, forages etc. Rather big and consolidated group of Russian farmers who have already experienced all pros and coins of free managing is included into new proprietors of land as well. It is possible to point out that the institute of private property in land was mostly successful in development of farmery which plays a new role in Russian agriculture in a postperestroika period. On the one hand our farmers are different in contingent, production activity character, sizes of land plots, financial position etc., most their land areas owned being about 100 and sometimes more hectares that makes difficult the usage of high-efficient farm machinery and techniques. On the other hand they are quite susceptible to any innovation as understand that without introduction of new and advanced technologies they are not able to withstand in severe competition.

Another group of farmers possessing vast land areas (thousands of hectares), are actually owners of large farm enterprises, often lead-managing them. As a rule they are well-known leaders, people with highly expressed passionarity, capable to organize effective production even under unfavorable macroeconomic conditions. Many of them are former leaders of Soviet period state-farms and collective-farms and, obviously, despite of all dissimilarity of socialist and capitalist epochs they will always be on a roll.

The isolated group includes landowners whose plots are large and overlarge. It is subdivided into two different subgroups. The first subgroup consists of agroholdings and companies owners who run production processes themselves or employ qualified personnel for management. The second subgroup is presented by latifundists, that is rich people who

have bought arable areas just by chance “for a rainy day” and they often do not cultivate it for a variety of causes (anxious business; perhaps, after a while it will become more expensive and, anyway, will not be gone, as a bank deposit during financial crisis). In their opinion land is not means of production, but a means of keeping money which should be invested somewhere. In comparison with all other types of landowners in modern Russian agrarian society this one is the least effective. It is the main disadvantage of the official private property in land institute which at the same time has generated a new class of businessmen, having provided them with main basic means of production.

Private property in land institution influence is supposed to be the smallest on the most numerous group of Russian landowners that is personal plot land-users. On the one hand it has provided them the right to own personal plots, but on the other hand it does not connect private property in land with character of work performed on it. Unlike farmers personal plot land-users have not felt dramatic changes in their life in connection with acquisition of a proprietor status.

Thus, affecting everybody who directly or indirectly involved in farm production a private property in land institution has become rather important in life of Russian rural people. Having generated a new class of proprietors in Russian agrarian and industrial complexes this genetic structure will yet play a predominating role in development of agriculture connecting land availability with outputs results, disclosing its enormous potential possibilities.

Other formal institutes as a whole promote rooting of market relations in agro-economy carrying out only auxiliary, infrastructural functions. Now their operation is far from perfect.

Material resources is the third part of the factors forming genetic architecture of the present and further development of agriculture in Russia. Remaining unchangeable from Soviet period, it appreciably defines a technique-technological skeleton of modern and perspective agrarian production. It is known that all farm resource base founded during the planned economy period was estimated for collective forms of managing, on the large agrarian enterprises. Huge grain storages and powerful machinery dominating up to nowadays should provide commercial grain and crop production. Cattle-breeding farms were constructed for keeping and management of big farm animal herds. And their operation was calculated for many years for the future and reconstruction or construction of new farm buildings, capable to replace old ones, has not been foreseen even at probability of increasing state support of Russian rural districts. So inherited from a Soviet period still enough powerful but outdated material base will considerably direct development of agriculture and farm production.

Definitely, these farms buildings and other huge objects of production infrastructure are to be modernized, whenever possible, dismembering and adapting for small-scale enterprises, but it is rather difficult and costly.

Even more mobile part of the basic means of production calculated for much smaller terms of operation, — tractors, combiners, milk tankers, agricultural lorries, facilities and tools, presented, mainly, in production cycles of the Soviet period, will still define contours of farm production running under free market conditions. It will take a long period of time (many decades) to modernize all mobile part of the basic means of production in agro-industrial complex considering present rates of agricultural machinery modernization and updating (in 2009 of tractors updating rate was 2%, and combine harvesters — 4,3%, in other words, it would take about 50 years to replace all old tractor, and 23 years to modernize all combiners [14]). I should underline that the decaying material base which has not been replaced with adequately modern means of production holds back development

of current Russian agriculture. As a result, one tractor had to cultivate about 95 hectares of arable land in 1990 and 210 hectares in 2008 (operation burden increased 2,2 times); a combine harvester had to reap corn from 80 hectares in 1990 and from 846 hectares in 2008 (operation burden increased 10 times); operation burden on one grain combine harvester increased from 152 hectares to 317 hectares or more than 2 times. It resulted greatly from depreciation of farm machinery that occurred during for the last twenty year. If in 1990 there were about 1365, 6 thousand tractors in all farm enterprises, in 2009 their quantity reduced to only 330,0 thousand (4,1 times), ploughs accordingly from 538,3 thousand to 99,0 thousand (5,4 times), combine harvesters from 407,8 thousand to 89,0 thousand (4,6 times) etc. According to the program documents of further development of domestic agrarian and industrial complex, there are no extra capital to make a great progress equipment of agriculture with all necessary techniques and facilities, and, hence, there are no bases to assume that the situation with mobile means of production — tractors, combines, agricultural lorries and tools which are of primary importance in success of agrarian production, will be changed cardinally.

Besides, for previous decades the productive resource of the major factor of agriculture — soil fertility was considerably reduced. The level of humus in Russian soils at 10% became a history. If earlier the area of arable land with the humus level at 7-10% was about 7 mil. 836 thousand hectares today its area is about less than 3 million hectares, it has reduced 2,5 times, but the area with the low content of humus, on the contrary, has increased 4,5 times [16]. The square of salted and arable lands has sharply increased; acidity of soils has risen as well.

In spite of scientific and technical progress, land in agriculture will always play a main role in food production. And the condition of its fertility primarily determines quantity and quality of farm produce. Land efficiency can be regulated by means of various artificial practices, among which, first of all, application of fertilizers, plant-protecting agents, and other agrochemicals as well. However for two last decades their use was sharply reduced. For example, application of mineral fertilizers in Russia has fallen from 9, 9 million tons  $\tau$  in 1990 to 2,17 million tons in 2009 (4,5 times), of organic fertilizers from 389,5 million tons to 53,5 million tons (7,2 times), liming of acid soils was reduced accordingly from 4,7 million hectares to 0,3 million hectares (15,6 times) etc. [16]. As in foreseeable future the trend on essential increase in volumes of applied agrochemicals will hardly be feasible, losses of soil fertility are not be compensated in proper amount. Quite good grain yields at the beginning of the XXI century should not support the illusion of triumphant Russian agriculture development; farming appearing to have learnt how to operate effectively and profitably despite of senescent material and technical basis and soil fertility decreasing, deterioration of these and other major factors of production.

As in foreseeable future the trend on essential increase in volumes of applied agrochemicals will hardly be feasible, losses of soil fertility are not be compensated in proper amount. Quite good grain yields at the beginning of the XXI century should not support the illusion of triumphant Russian agriculture development; farming appearing to have learnt how to operate effectively and profitably despite of senescent material and technical basis and soil fertility decreasing, deterioration of these and other major factors of production.

Actually, high yields became possible first of all due to favorable weather conditions. The first serious tests that is a drought in 2009 and, especially, an unlimited drought 2010 became confirmations for total illusiveness of all views on farm production as a field of economy where from year to year it is possible to obtain high yields and earnings without any considerable investments.

Similar adversity conditions examine system stability, its factual state. It is always easier to sail when the wind is following, but ship viability depends on how it is capable to withstand a storm. By the way, droughts are not something supernatural and abnormal for Russia. On the contrary, climate dryness is a common feature in some districts of our country. Drought risks and affects have already been effectively controlled in many countries with adverse environmental conditions, reducing their negative influence to a minimum. Thus, in Israel thanks to powerful irrigation system and, in particular, to the developed system of drop watering stable crop yields are obtained from year to year, despite of freak weather. There are no special secrets in drought resistance; it is only necessary to strengthen material base of agriculture and, first of all, melioration system ameliorative structures and constructions, and to introduce high technologies as well. It is certainly costly and requires big operating expense, major part of which is produced by the state, as a rule. In the developed countries reliable material carcass in agriculture has been founded which like a strong skeleton provides health under unfavorable conditions. This carcass includes agricultural machinery, ameliorative systems, grain storages, buildings for keeping farm animals and other basic means of production, which determine objective laws of agriculture development, performing as a genetic code.

The given factors group of farm production efficiency hardly works properly in Russia today and, moreover, it slows further development, modernization and cost-effective functioning of agro- industrial complex.

Agriculture substantially depends on a state of social infrastructure — availability and quality of roads, dwelling places, hospitals, kindergartens and so on. Even having strong production base, it is impossible to make people work effectively, without providing them with all necessary things required in ordinary life. Social material base in Russian rural districts has also considerably worsened for last two decades that resulted in the problem of human resources lack there. In addition, it was founded during the Soviet period for large settlements with the collective forms of managing. In some cases it contradicts to small-sized forms of agrarian enterprises. It is beyond farmers' power both to build and to sponsor large objects of social sphere originally created for collective farms.

The considerable part of these objects in rural regions has already been transferred on the balance of municipal authorities, rather often the latter being unable to run them properly, that's why are village hospitals, kindergartens, schools have to be closed or integrated with others. Small share of social sphere objects is supported by separate large-sized agricultural enterprises which managers realize that without social sphere any village cannot exist adequately and in time disappear without a trace; and normal work of their employees is impossible.

Thus despite of numeral measures undertaken by the Russian Federations Government (for example, the Federal Aimed Programme «Social development of rural areas»), social infrastructure remains a problem of modern agriculture focusing landowners on collective organisation or cooperation forms of production.

Groups of factors under discussion directly influence a state and dynamics of agrosphere development. They serve as a genetic skeleton defining efficiency of functioning and prospects of agriculture of the country. Surely, the facts presented in the table and, especially, results of their influence are not conditional since specified groups of factors co-operate, intertwine with each other, themselves, being subject to strong synergetic. The same effects, as a rule, are products of all factors groups influence.

First of all results should be adjusted in production process, for example, by means of innovation introduction, particularly, precision engineering technologies, allowing to obtain predicted efficiency [17]. Many scientists, including the Nobel prizewinners [18],

have marked the dependence of economic and social systems on the most various factors. In some cases considerable changes are possible in development of worker's type; rural life public organisation. But it does not belittle dominating influence of the specified groups of factors on the character of agricultural production, its productivity and dynamics. As a whole they make architectonics of modern and future agriculture development; like genes defining the structure and efficiency of this multipurpose field of economy. Their influence is objective, and, hence, is constant and systematic and profound analyses are required to study phenomena and processes having long-term and steady character.

## Conclusions

Modern consideration that agriculture efficiency can be provided only by introduction of progressive technologies should include the study of farming productivity dependence from factor groups with long-term and steady character. Natural environment, institutional surroundings, existing production and social infrastructure substantially define the development trajectory and rates of agriculture and results of its work as well. Influence of these factors is of genetic nature since forming an original skeleton of development they in many respects explain the state of modern agriculture and its dynamics in future. The objects of nature influence, formal and informal institutes control and infrastructure pressure are production capacities, productive forces, organisation of community life in the countryside, and final output is work efficiency and an overall performance and living arrangements of agriculturists. It is possible to assert that the specified groups of factors to a large extent form architectonics of agrarian economy for many years forward identifying its prospects. Being corrected by various innovations this fundamental influence should be thoroughly investigated and studied in order to understand the essence of agrarian economy which is more like an organism, rather than a mechanism.

## References

1. *Kondratyev N.D.* Selected works. M: Economy, 1999.
2. *Lopatnicov L.I.* Economic-mathematical dictionary: Dictionary of modern Economics. 5 edition. M: Business, 2003.
3. Resources: in Russia there is a lot of oil, but nobody knows how much exactly — //http: www.rbc.ru/reviews/petroleum/310504/9/shtml
4. *Golubev A. V.* National peculiarities of Russian economy//the Rural economics of Russia, 2007. № 11. S. 21-22.
5. *Polterovich B., Popov V.* Evolutional theory of economic policy theory// Questions on Economics, 2006. № 7, 8.
6. *Stolypin P.A.* The program of reforms. Documents and materials. In 2 volumes. M.: Russian political encyclopedia, 2003.
7. *Coarse R.* Nobel lecture «Institutional structure of production»//Firm Nature. M.: Business, 2001.
8. *North D.* Institutes, Institutional changes and functioning of economy. — M: Fund of the economic book of "Beginning", 1997.
9. *Williamson O.* Economic institutes of capitalism. — St. Pb.: Lenizdat, 1996.
10. *Raskov D.* Oratory of a new institutional economic theory// Questions on Economics, 2010. №5. S. 81-95.
11. *Lenin V.I.* Collected works, edition. 4, v. 13, pp. 195-394.
12. *Radigin A., Entov R.* Institutional components of economic growth// Questions on Economics, 2005. № 11.

13. *Hart O.* Firms, Contracts and Financial Structure. — Oxford: Oxford University Press, 1995, —240 pp.

14. National report «About process of the realisation in 2009 and the results of a government program of agriculture development and regulation of agricultural produce markets, raw materials and foodstuffs for 2008-2012». M.: Ministry of agriculture of the Russian Federation, 2010.

15. Statistical materials and results of researches in development of agro industrial production in Russia. M.: Russian Academy of Agrarian Sciences, Branch of economy and land relations, 2010.

16. *Shevchenko B., Belousov V* Revival of chernozems in a context of food safety// *Economist*, 2010. № 5. Pp. 80-92.

17. *Bautin V.M, Glazko V.I.* Experience and problems of agrarian transformations of Russia// *News of Timiryazev agricultural academy*, 2009. № 4. Pp.7-30.

**Аннотация.** Раскрыт генетический характер воздействия трех групп факторов - природных, институциональных и инфраструктурных на состояние и перспективы развития сельского хозяйства России. Проанализировано влияние каждого из них на формирование и динамику аграрного производства. Показана целесообразность рассмотрения экономики как организма. Выявлены особенности естественных, материальных и социальных условий функционирования российской агросферы, которые во многом определяют архитектуру современного и будущего сельского хозяйства.

*Translation into english* — T.N. Fomina