Sustainability **2015**, *7*, 164-179; doi:10.3390/su7010164

OPEN ACCESS

sustainability

ISSN 2071-1050

www.mdpi.com/journal/sustainability

Article

Enhancement of Land Tenure Relations as a Factor of Sustainable Agricultural Development: Case of Stavropol Krai, Russia

Vladimir Trukhachev [1,†], Anna Ivolga [2,*] and Marina Lescheva [3,†]

[1] Department of Entrepreneurship and International Economics, Stavropol State Agrarian University, 12, Zootekhnichesky Ave, 355017 Stavropol, Russia; E-Mail: rector@stgau.ru

[2] Department of Tourism and Service, Stavropol State Agrarian University, 12, Zootekhnichesky Ave, 355017 Stavropol, Russia

[3] Department of Economic Analysis and Audit, Stavropol State Agrarian University, 12, Zootekhnichesky Ave, 355017 Stavropol, Russia; E-Mail: marina_lesheva60@mail.ru

† These authors contributed equally to this work.

* Author to whom correspondence should be addressed; E-Mail: annya_iv@mail.ru; Tel./Fax: +7-8652-355980.

Academic Editor: Gheorghe H. Popescu

Received: 5 November 2014 / Accepted: 15 December 2014 / Published: 26 December 2014

Abstract: The aim of this paper is to give an overview and analyze the contemporary land tenure relations in Russia in view of their influences on economic viability of agricultural production. The paper investigates progress made toward the development of agricultural land market in economies in transition. The research is made with emphasis on Stavropol Krai, agricultural region in the southern part of Russia. The authors retrospectively address land tenure relations in the region, analyze contemporary tendencies, and discover linkages between land tenure relations and sustainable agricultural development. The later concept is understood here as economic viability of agricultural production. The paper focuses on the potential approaches for resolving specific problem issues in the sphere of sustainable agricultural development through effective land tenure relations. The paper is concluded with the substantiation of methodology of land rent payment, the size of which is made conditional on land productivity and effectiveness of agricultural production.

Keywords: agricultural land; land tenure; land use; agricultural development; sustainability; land reform; land rent

1. Introduction

Increasing volatility of global economy, instability of international agricultural market, and recent negative trends in trade in agricultural commodities and food between Russia and the European Union, the USA, and some other developed countries give rise to such topical issues as ensuring the sustainability of agricultural producers and development of their competitiveness both on domestic and foreign markets. However, most of the economies in transition, apart from current external trade tensions, have deeper structural problems, which hamper sustainable growth. In the sector of agricultural production, one of the most serious restrictions to the effective development lays in the sphere of land relations.

This paper covers retrospective and some recent developments of land relations in the agricultural sector of Russia—one of the most picturesque examples of how transition to market goes on in an economy which used to be totally centralized.

The land reform in Russia started rapidly, but developed slowly. As of Brooks and Lerman, even during the very first years of transition period (1991–1993), up to a half of agricultural land in Russia "was transferred from state to collective ownership; 80% of collective and state farms reorganized and most registered as shareholding structures" [1]. However, despite all those changes, most big state farms reorganized as whole entities and members kept their land and asset shares in collective production.

The goal of land policy in Russia is to develop the incentives to provide sustainable development of agricultural production (hereinafter we accept the official Russian state understanding of sustainable agricultural development as economic viability of agricultural and food producers) and through it, to ensure national food security in the conditions of globalizing trade in agricultural commodities and food between Russia and the biggest world food suppliers, *i.e.*, the European Union, the USA, Canada, and Australia [2,3]. As of Sagaydak and Lukyanchikova [4], one of the tools of such a policy is the distribution of land from collective to private farming in order to provide rational use and protection of lands in Russia.

Despite the conducted redistribution, the effective and operating institution of private property in agricultural land has still not been established in Russia. Moreover, this is not only the case of Russia, but most of the economies in transition in the region of the former Soviet Union. As of Z. Lerman, private farms, which tremendously contribute to agricultural production and have to be considered as a foundation for sustainable growth of domestic agricultural production, are treated with disdain in the countries of the Commonwealth of Independent States (CIS) [5]. According to Lerman, in the countries of the Central and Eastern Europe (CEE) small individual units (equivalent of the private subsidiary farming in Russia) are often excluded from official agricultural statistics [5] (p. 462). In Russia, the situation has been worsened by existing structural problems of domestic agriculture. Currently, even after 25 years of the transition period, the Russian market of agricultural land is still very far from its liberalization. Numbers of land sellers and buyers do not match [4]. As Wegren points out, there are market manipulators [6] and many externalities on the market, such as state registration of land deals,

existing restrictions on sales and purchases of agricultural land, which hamper development of effective land market and sustainable agricultural development in general. According to Visser *et al.* [7], the experiences with land market in Russia raise concerns about the transparency and fairness of land acquisitions. There are also issues related to inappropriate agricultural land use and pollution, which decrease land productivity and its potential effective output in the short-term, and overall quality of national land resources in the long-term.

The aim of this article is to give an overview and analyze the contemporary land tenure relations in Russia. The analysis is made on the case of Stavropol Krai (crop production). Following Ioffe *et al.* [8], we recognize Stavropol Krai, a region in the southern part of the country, as a surrogate for regions of the Russian Federation which, by physical attributes of land and level of agricultural production, are best positioned to support the agricultural activity.

Primary data were collected by the authors during the survey of 249 agricultural organizations representing all 26 districts of Stavropol Krai. Three parameters were included into the database: size (agricultural land acreage), profit margin, and accounts payable. The survey was conducted during 2011–2012 with an aim to discover the correlation between scale of production, economic efficiency, and financial viability. Secondary data for the purposes of the current research were obtained from the reports of the Land Cadaster Chamber of Stavropol Krai, the Ministry of Property Relations of Stavropol Krai, and the Ministry of Agriculture of Stavropol Krai.

The method of rental payment, which included fixed (guaranteed minimum) and mobile (share in production) parts, was substantiated; a methodology of break-even analysis was implemented in order to find the optimal size of fluctuating land payment rate. The case study involved the selected "model farm"—one of 249 surveyed agricultural organizations of Stavropol Krai, four parameters of which (size, production expenses, production output, and profit) are altogether the closest to the regional average.

2. Approaches to Land Tenure and Sustainable Agricultural Development

Fundamentals of land relations (land market, land use, and land tenure) were developed by classics of economic science. For the purposes of our research we used the approach of A. Smith, who investigated the essence of the land rent and considered it as the "produce of those powers of nature, the use of which the landlord lends to the farmer" [9]. One of the critical points, emphasized by Smith, which will be used for the purposes of our argumentation in this paper, is that the improvements, made in the process of land use, do not always come from the owner of land (landlord), but very often from the user (tenant) [10]. However, it is not always reflected in the rent price, when the lease agreement between the owner and the user comes to be renewed [9]. Formulated in the 18th century, this discrepancy is currently valid for most of the transitional land markets. Tenants are commonly not interested in improvement of used land, or any reclamation and environmental measures, since those additional expenses are not reflected in the rent payment. It is easier for a tenant to exploit land during several years, benefit from high yields, and then abandon it as soon as productivity decreases. This is an extremely dangerous threat, not only for effectiveness of agricultural production and food security of the nation, but also for sustainable life of future generations and environmental sustainability.

Theoretical issues of land relations were intensively investigated by Russian economists in the18th–19th centuries. Their ideas were accepted as a basis of the land reform in Russia in the early 20th century,

initiated by P. Stolypin. The principle aim of the reform was to stimulate the appearance of a class of prosperous land-owning peasants. It was hoped that independence from communes would breed enterprises and lead to higher crop yields. Outcomes of those reforms have been deeply researched by P.C. Dower and A. Markevich [11], who concluded, that, on the one hand, the reform led to increase in land productivity because of better usage rights; however, on the other hand, it contributed to development of land market and, consequently, to an outflow of surplus labor from the countryside, decreasing the overall productivity of land.

Contemporary practical approaches to effective land tenure were researched by authors such as V. Uzun, N. Shagayda, A. Shutkov, A. Sagaydak, A. Lukyanchikova, and others. Namely, N. Shagayda [12] and V. Uzun [13] are among the most respected experts in Russia in the sphere of agricultural land market, specifics of land tenure relations, and approaches to state land policy. A. Shutkov addresses issues of sustainable development of agricultural production and related aspects of national food security [14] while A. Sagaydak and A. Lukyanchikova analyze dependencies between land taxation and development of agricultural land market in Russia [4]. Retrospectives of market relations in agricultural land in particular regions of Russia are obtained from research by S. Wegren [15]. We engaged the research of S. Wegren in the sphere of efficiency of large-*versus* small-scale farming, land use change, and food security [6,16]. For the purposes of this research we also addressed the work of M. Fyodorov and E. Kuzmin [17], who made the retrospective research of agricultural and food security in Russia, and assessed influences on the economic security in terms of price affordability of agricultural products for rural population. We also adopted the approach of I. Ivolga and V. Timofeeva [3] to food security as a complex social and economic phenomenon, not only physical volume of domestic food production and import. Their investigations of economic and land reforms in the 1990s in Russia, which endured decrease in the level of food security, were compared with results of V. Erokhin, who analyzed the effects of trade integration for sustainable development of agribusiness [2].

Special attention is paid to the investigation of international practices of regulations on agricultural land market in the countries of the European Union. We studied the work of F. Strelecek, J. Lososova and R. Zdenek [18], who analyzed the relations between the rent and price of agricultural land in some EU countries, discovered the price inertia of agricultural land with respect to the land rent, and concluded, that the price should reflect the interest on the land rent received. The results of the special case of Slovakia, presented by S. Buday and T. Cicova [19], supported the research idea of consolidated land ownership as a driving factor of domestic land market, while the complex approach of V. Erokhin *et al.* [20] to sustainable rural development provided the full picture of contemporary practices of land tenure relations in the Eastern Europe and Russia. We also addressed R. Prosterman *et al.* [21] in order to summarize the common legal impediments to establishing effective land tenure relations in developing countries. Since the research is made on the data of Stavropol Krai, we referred M. Jelocnik and A. Ivolga [22], who provided analysis of agricultural production in the region and compared agricultural potentials of Stavropol Krai and the Republic of Serbia.

3. Discussion

The contemporary situation on the international agricultural market drives volatility and brings additional threats to sustainability of agricultural production and rural development in general. As of

Patsiorkovsky *et al.*, if such macro-economic trends continue, the rural land market is expected to become more robust and take on a great economic significance for sustainable agricultural development [23].

The key element of land reforms, held in Russia since early 1990s, is development of organizational and economic mechanism of land ownership and land tenure on a basis of land property diversity. The diversification of property forms is bound to create conditions for multifunctional agriculture and sustainable rural development.

The organizational and economic mechanism of land ownership and land tenure is an integrity of management system of land relations and methods of economic influence of this system on development of land relations. Those economic incentives affect interests and motivations of land relationship entities for the purpose of insurance of their effective actions [22]. The solid organizational and economic mechanism of land ownership and land tenure simplifies the management options for agricultural land, stabilizes the land ownership, promotes the development of the land market [19], increases competition between land tenants for better lands, and consequently attracts and retains the most effective players on the market.

The land reform in Russia in 1990s and early 2000s declared establishment of a mechanism, which included land and cadastre legislation, state land control and land monitoring, state environmental and technological inspection, land use planning, agricultural land pricing and taxation, and regulation of financial and credit relations on the domestic land market. However, the established mechanism, clear on paper, does not serve its major purpose in practice: it does not stimulate competitive business environment in land relations and does not increase productivity. Land market in Russia is still underdeveloped, despite all those long years of permanent reforms. In total, 11.9 million land shares were issued during the land reform. The majority of those shares were distributed to private owners, *i.e.*, former employees and members of collective and state farms, pensioners, social service workers. As of Patsiorkovsky *et al.*, over 70% of land was used by large enterprises for rent; 25% was the land invested as a physical capital of the large enterprise; 4% of land were shares, controlled by people who retain the land they have received [23].

The overall majority of agricultural land in Russia is leased by large enterprises. However, those large enterprises are still the same "kolkhozes" and "sovkhozes", which used to be the state collective farms during the Soviet times [24]. De jure they lease land from individual owners, who got land shares during the land privatization in 1990s. De facto they still continue to use the same land, as decades ago, and even more of the same. D. Rylko states that large agricultural enterprises (agriholdings) will continue to expand even further "until they fully digest independent collective farms, until farm land is undervalued" [25]. Ioffe, Nefedova and de Beurs point out that such an agricultural consolidation has had different outcomes in different parts of Russia. In the southern parts of Russia, large enterprises remain operating at the same scale as they used to do in the Soviet period [8]. The land rent institution has not developed.

As of Shagaida, the privatization of agricultural land in Russia was made in a formal manner and did not involve immediate distribution of land plots from former collective farms to new individual owners [12]. According to Serova, shareholders were not aware of the benefits of possession, and the farm enterprises that used the lands did not pay for it. Ownership of a land share meant a right to a land plot, but location and qualities were not specified. Land shares that were leased to large farm enterprises were not identified on a map [26]. That means that an owner of a land share is not able to take his land share, leave collective farm and start individual farming anywhere he likes. As a consequence, most

agricultural land is used by those tenants who do not actually own it. This statement is supported by Visser and Spoor, who declare that land shares the population received during the land reform were insecure, which facilitated land grabbing during the 1990s and 2000s [27] (p. 901).

Such a situation drives instability, since most of the tenants are not motivated to use agricultural lands in a rational manner. There is not system of economic and other incentives for effective land tenure, land conservation, and improvement of land fertility. Tenants are interested in improvement of leased land as far as it gives profit and payback. However, environmental protection measures and land conservations do not bring immediate profit. State control of proper land tenure and environmental measures is not effective.

The investigation of practical issues of land relations was held on the case of Stavropol Krai, the region with one of the most developed agricultural production in Russia. The analysis covered corporate farms (agricultural enterprises), peasant farms (unincorporated entities: "krestyansko-fermerskiye khoziaystva" in Russian), and private subsidiary farming ("lichniye podsobniye khoziaystva" in Russian). Individuals own about 66% of agricultural land of Stavropol Krai (Table 1). About 31% of agricultural land is in the state and municipal property, while legal entities, *i.e.*, agricultural enterprises and corporate peasant farms (incorporated "krestyansko-fermerskiye khoziaystva" as legal entities) own the rest 2%.

The development of land property diversity has not essentially influenced either a character of land tenure or structure of major agricultural producers. Over 94% of individual owners of land shares in Stavropol Krai leased back their land property to those agricultural organizations, from which they got their shares during privatization. Only 3% of new minted owners got land plots against their land shares for establishment of individual peasant farms. Another 1.8% contributed to charter (share) capital of various legal entities, while 0.1% used land shares for enlargement of their private subsidiary farming (Table 2).

The majority of agricultural land in Stavropol Krai is leased from owners of shares. The biggest tenants are agricultural organizations of various types and legal forms, which are based on individual or collective share ownership. Those organizations cultivate about 74% of agricultural land in Stavropol Krai. State and municipal entities use 4.5% of agricultural land, non-corporate peasant farms—10.9%, and private subsidiary farming—6.9%. The prevailing part of leased agricultural land is in the ownership of those individuals, who are not directly involved in agricultural production. We made a selection of agricultural enterprises from the top three highest-yielding districts of Stavropol Krai (average 2001–2012) and then analyzed the structure of land ownership (Table 3).

The tendency is rather illustrative: land ownership is very much separated from land management and control. Shareholders in their overwhelming majority do not monitor how effectively their property is used by tenants. They are disconnected geographically, have no political unity, and probably will not be able to argue strongly for their interests, according to Serova [26]. Share of land owners who actually work in agricultural enterprises tends to decrease because of continuing retirement and leaving. Development of this process leads to alienation of employees from land property and, consequently, to lack of performance motivation.

Table 1. Owners of agricultural land in Stavropol Krai, Russia.

Category of Land Property	2001		2004		2010		2011		2012	
	Thousand Hectares	Share in Total, %	Thousand Hectares	Share in Total, %	Thousand Hectares	Share in Total, %	Thousand Hectares	Share in Total, %	Thousand Hectares	Share in Total, %
State and municipal property	1859.4	28.10	1950.5	31.91	1824.0	29.85	1823.7	29.85	1816.6	29.74
Individuals, total, incl.:	3941.9	65.63	4029.9	65.93	3936.6	64.42	3901.1	63.85	3877.7	63.48
owners of shares in land	3748.8	62.32	3727.1	60.98	3281.6	53.70	3230.6	52.88	3216.7	52.66
peasant farms (non-corporate)	173.6	2.89	205.0	3.35	215.6	3.53	216.6	3.55	220.4	3.61
private subsidiary farming	11.2	0.18	69.4	1.14	11.7	0.19	12.8	0.21	12.8	0.21
others	8.3	0.14	22.1	0.36	427.7	7.00	441.1	7.22	427.8	7.00
Legal entities, total, incl.:	214.1	3.56	200.8	3.29	349.9	5.73	385.0	6.30	414.3	6.78
agricultural enterprises	91.4	1.52	92.9	1.52	246.3	4.03	282.3	4.62	311.6	5.10
peasant farms (corporate)	122.7	2.04	107.8	1.76	103.6	1.69	102.7	1.69	102.7	1.68
Total *	6015.4	100.00	6112.2	100.00	6110.5	100.00	6109.8	100.00	6108.6	100.00

* the increase of land in ownership during the analyzed period is due to conversion of land use from fallow to agricultural uses during 2000–2004 and back starting from 2005. Source: authors' development based on the compilation of the data, obtained from the Land Cadaster Chamber of Stavropol Krai, the Ministry of Property Relations of Stavropol Krai, and the Ministry of Agriculture of Stavropol Krai.

Table 2. Tenants of agricultural land in Stavropol Krai, Russia.

Category of Land Property	2001			2004			2010			2011			2012		
	Agricultural Land, Thous. Ha	Incl. Leased Land (from Owners of Shares in Land)		Agricultural Land, Thous. Ha	Incl. Leased Land (from Owners of Shares in Land		Agricultural Land, Thous. Ha	Incl. Leased Land (from Owners of Shares in Land		Agricul-tural Land, Thous. Ha	Incl. Leased Land (from Owners of Shares in Land		Agricul-ttural Land, Thous. Ha	Incl. Leased Land (from Owners of Shares in Land	
		Thous. Ha	%		Thous. Ha	%		Thous. Ha	%		Thous. Ha	%		Thous. Ha	%
Agricultural organizations of private and collective share ownership	4626.0	3216.0	69.5	4465.3	2950.3	66.1	4410.6	2530.2	57.4	4406.0	2476.6	56.2	4393.6	2442.9	55.6
State enterprises	248.8	7.1	2.9	271.5	-	-	124.3	-	-	123.7	-	-	123.5	-	-
Individuals, total, incl.:	869.5	110.1	12.7	1076.3	192.0	17.8	1682.2	262.3	15.6	1691.0	264.2	15.6	1707.0	270.2	15.8
peasant farms (non-corporate)	550.8	110.1	20.0	660.1	173.0	26.2	846.4	238.6	15.6	849.9	239.5	28.2	866.3	245.3	28.3
private subsidiary farming	318.7	-	-	416.2	19.0	4.6	835.8	23.7	2.8	841.1	24.7	2.9	840.7	24.9	2.9
Total	6010.3	3401.3	56.6	6044.9	3142.3	52.0	6092.8	2792.5	45.8	6097.0	2740.8	44.9	6100.6	2713.7	44.5

Source: authors' development based on the compilation of the data, obtained from the Land Cadaster Chamber of Stavropol Krai, the Ministry of Property Relations of Stavropol Krai, and the Ministry of Agriculture of Stavropol Krai.

Table 3. Structure of land ownership in selected agricultural enterprises of Stavropol Krai in 2012, percentage.

Administrative District	Number of Surveyed Enterprises	Owners of Shares in Land Per Agricultural Enterprise, Average				
		Total, People	Including:			
			Enterprise Employees	Retired Employees	Workers Engaged in Rural Social Sphere	Others
Krasnogvardeysky	6	580	27.0	19.0	24.0	30.0
Ipatovsky	7	545	25.0	19.0	21.0	35.0
Novoaleksandrovsky	9	760	24.0	19.0	22.0	34.0

Source: authors' survey.

During 2011–2012 we surveyed 249 agricultural organizations of Stavropol Krai of different size. Three characteristics were taken into consideration: size (agricultural land acreage), profit margin, and accounts payable. The target of the survey was to discover the nature of relationships between the scale of production, its economic efficiency, and financial sustainability. Our research has resulted in grouping the investigated organizations into five groups depending on acreage of used agricultural land (Table 4).

Table 4. Grouping of selected agricultural producers of Stavropol Krai on farm size, profit margin, and accounts payable.

Classification of Agricultural Organizations by Agricultural Land Area, Hectares	Number of Agricultural Organizations	Average Agricultural Land Area, Hectares	Average Profit Margin, Euro/ha	Average Accounts Payable, Euro/ha
Group I: 1000–5000	58	2653.64	5.80	119.54
Group II: 5000–10,000	71	7235.24	9.56	35.32
Group III: 10,000–15,000	47	11,596.96	14.25	28.40
Group IV: 15,000–20,000	26	17,570.73	17.90	18.00
Group V: Over 20,000	47	30,753.28	20.74	14.59
Total	249	13,961.97	13.65	43.17

Source: authors' survey.

The survey shows the direct correlation between the farm size and profitability. The highest profit margin (20.74 Euro/ha) belongs to agricultural producers of Group V with a farm size over 20,000 hectares, while the lowest profit margin is for the smallest farms below 5000 hectares. The accounts payable have a reverse correlation: the smaller the farm, the higher accounts payable it has. The obtained results are in accordance with Z. Lerman, who discovered, that the level of commercialization of agricultural production in Russia, the CIS, and countries of the Central and Eastern Europe consistently increased along with the increase of farm size [5]. He suggested that in the conditions of transition economy larger farm size is an important factor to achieve greater commercialization, while at the same time ensuring higher and more sustainable incomes [5].

However, as our analysis shows, farm size itself does not automatically bring effectiveness and sustainability. Moreover, it does not mean effectiveness of land tenure. For example, Rylko argues, that the long term efficiency of large farms and agriholding is highly questionable [25]. In the southern parts of Russia such megafarms, as those of Group V, expand very fast, re-industrialize domestic agriculture, but not impact into sustainability [25]. This point of view is supported by Visser, who emphasizes, that

among the 25 largest agriholdings in Russia, 12 have experienced financial problems [28] (p. 18). Technological innovations introduced by agriholdings do not necessarily increase their efficiency. Higher profits of agriholdings can be caused by many non-production factors, taking into account benefits from the strong state support, subsidies, and other indirect forms of subsidization, according to Visser [28] (p. 19).

Indeed, about 20% of surveyed agricultural organizations of Stavropol Krai have poor financial condition. Their accounts payable essentially exceed profit margin (up to threefold in some cases); gross output per hectare is below 90 Euro, which is twofold lower than regional average. Part of agricultural land in such farms is not used, losing its production qualities and creating serious environmental problems and social tensions. Consequently, such poor performance leads to the deterioration of the entire rural infrastructure and a decline in the living standards in nearby rural areas, according to Serova [26]. Under these circumstances land shareholders do not get substantial benefits from their land ownership.

Low level of land rent payments is one of the hampers of effective land tenure. The average lease payment in Stavropol Krai is 62 Euro per hectare in 2012; however, the actual size varies very much depending on particular farm: from 11 Euro to 220 Euro. Nevertheless, the coefficient of correlation between lease payment and cadaster value of agricultural land is 0.9. Data on selected agricultural enterprises of Stavropol Krai confirm direct relationship between these values (Table 5).

Table 5. Correlation between lease payments and cadaster value of agricultural land in Stavropol Krai.

Agricultural Enterprise	Agricul-tural Land Area, Hectares	Share in Land, Hectares	Cadastral Value of Agricultural Land, Thousand Euro		Annual Lease Payment, Thousand Euro		Period during which Amount of Lease Payment Reaches Buy-Back Price of Share in Land, Years
			Per One Share in Land	Total	Per One Share in Land	Total	
APC * n.a. M. Gorky	14,872.2	13.4	8.4	9322.9	0.03	18.8	492.7
APC * "Yankulsky"	29,384.4	20.6	6.0	8558.6	0.04	32.2	266.4
-	7183.0	11.0	6.3	4113.9	0.03	14.0	369.6
LLC ** "Kurshava"	13,161.7	14.5	9.9	8986.3	0.02	8.8	1023.0
APC * "Zagorsky"	11,377.6	9.6	8.1	9599.8	0.06	49.1	195.9
APC * "Vpered"	8821.2	16.5	4.3	2298.8	0.02	7.0	337.0
APC * "Put' Lenina"	21,662.6	18.0	6.4	7702.3	0.02	12.3	625.5
APC * "Rodina"	9195.7	10.7	11.3	9711.3	0.02	17.5	557.1
APC * "Nagutsky"	6360.4	9.6	6.8	4505.3	0.03	10.4	435.0

* APC—Agricultural Production Cooperative; ** LLC—Limited Liability Company. Source: authors' survey.

The comparison of lease payments and cadastral value of agricultural land shows us two things. The first is that land lease is more beneficial than purchase. However, this fact is commonly known: we see that it makes no sense for agricultural organizations in Stavropol Krai to purchase land. The second and more valuable outcome of Table 5 is that the rent paid for leased land plots is extremely low (between 20 Euro and 60 Euro). The land share lease should provide the local rural population with a certain level of subsistence. About 60% of land shares in Russia belong to the elderly people living in rural areas, according to Serova [26] (p. 5). For them, rental of land shares is supposed to be an additional source of income, which is not the case now.

4. Results

In the situation when the lease form of land tenure prevails, establishment of effective and mutually beneficial lease relations between owner and tenant gains a critical importance for effective and sustainable development of agricultural production and insurance of environmental sustainability of land relations. Rental value has to reflect the effectiveness of land tenure and meet the interests of both owners and tenants. These two conditions are met in case the rental payment includes two parts: guaranteed minimum and share in production (yield). The formula which we propose is as follows:

$$P = A + a \times B \quad (1)$$

where:

P—rental payment per hectare;

A—guaranteed minimum payment per hectare;

a—payment rate per hectare, %;

B—actual production output, tons per hectare.

Rental payment, calculated in such a manner, will reflect the share in production (actual production output, or yield), equal or above the guaranteed minimum. In such a case the owner of a land share gets the guaranteed income and becomes a party interested in the effective usage of land property. It is how the mechanism of land redistribution from the least effective tenants to the most effective should work.

The level of the guaranteed minimum (A) should be agreed between the land owner and land tenant upon entering the lease agreement, and should reflect the cadastral value of agricultural land. The question is how to set the optimal size of the payment rate (a), so it is not too high for a tenant, not too low for an owner, and makes both sides interested in the effective and sustainable land tenure.

In order to calculate the optimal level of payment rate we have selected a "model farm" out of 249 surveyed agricultural organizations of Stavropol Krai, which four major parameters (size, production expenses, production output, and profit) are altogether the closest to the regional average. For this particular farm, which has been selected (LLC "Urozhaynoe", Ipatovsky District), we have then constructed the breakeven chart (Figure 1) based on the actual economic indicators of 2012 and existing method of rental payments. Input data are: Y—expenses involved in agricultural production; X—production output (current prices of 2012); BEP—breakeven point; unit of measure—million Euro (annual average Euro/Ruble exchange rate for 2012 is applied).

LLC "Urozhaynoe" resulted in 2012 with revenue of 5.5 mln Euro (Y0), expenses of 3.7 mln Euro (Y1) (including fixed costs of 0.7 mln Euro). Thus, the profit (Y0–Y1) was 1.8 mln Euro. BEP1 is a breakeven point of LLC "Urozhaynoe" at the current method of rental payments calculation.

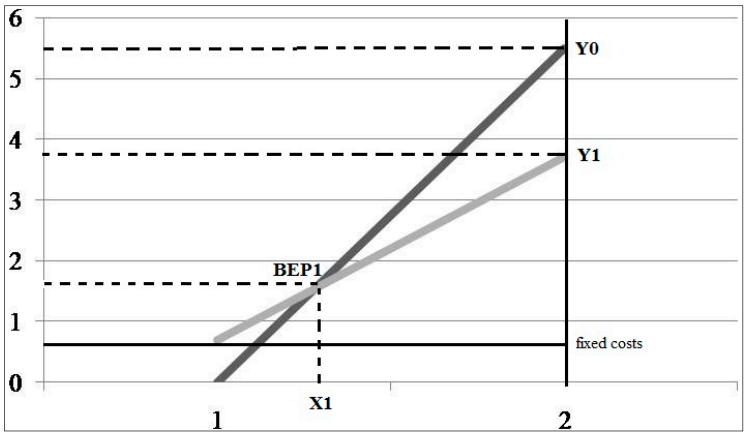

Figure 1. Breakeven point of LLC "Urozhaynoe" at the current method of land rental payments (Source: authors' development).

How might different levels of land payment rate move the breakeven point? Figure 2 is the calculation of breakeven point at various levels of land payment rate: from 1% (X2) to 15% (X4).

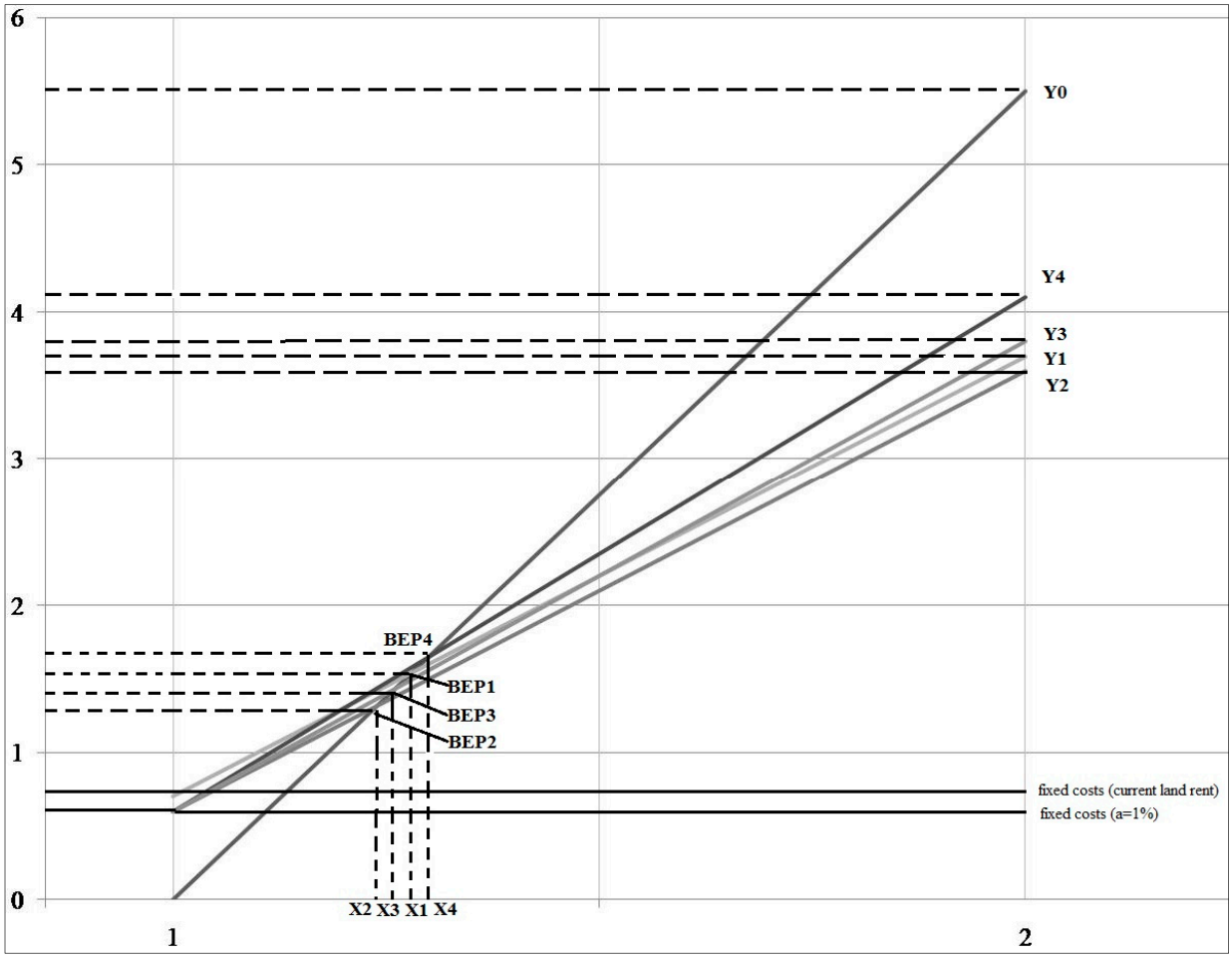

Figure 2. Breakeven points of LLC "Urozhaynoe" at the land rental payments with guaranteed minimum and fluctuating land payment rate (Source: authors' development).

When a = 1%, total expenses (Y2) of LLC "Urozhaynoe" fall down to 3.6 mln Euro (including fixed costs down to 0.6 mln Euro). Thus, profit (Y0–Y2) grows, while breakeven point (BEP2) moves

essentially down the Y-axis and left the X-axis. This means that agricultural organization achieves breakeven point much easier in comparison with the current scenario.

When a = 10% and a = 15%, total expenses (Y3 and Y4 correspondingly) grow over the current level of Y1. This leads to shrinkage of the "zone of profitability". When a = 10%, profit (Y0–Y3) is expected to decline on 0.1 mln Euro; when a = 15%, profit (Y0–Y4) goes down even more essentially (on 0.4 mln Euro). Breakeven point in the latter case (BEP4) moves up the Y-axis and right the X-axis, overpassing the current X1 level, which means that in case of the land payment rate of 15% agricultural enterprise would achieve breakeven level with a substantially higher volume of production output (X4).

In the situation, when a = 10%, breakeven point BEP3 approaches the current level of BEP1, however, does not overpass it. Land payment rates over 10% move BEP up the Y-axis and right the X-axis, until it increases the existing level of BEP1. In contrast, land payment rates below 10% move BEP down the Y-axis and left the X-axis, substantially below the existing breakeven level.

Concluding the obtained results, we may state that land payment rate with a guaranteed minimum and share in production output between 1% and 10% increases the profitability of agricultural enterprise (through lower breakeven level) and at the same time makes the land owner more interested in the effective usage of his land property. The methodology enables particular agricultural enterprises to set their own levels of "mobile" part of the land payment rate, depending on the quality of land and effectiveness of land tenure.

5. Conclusions

The land reform in Russia aimed at the development of organizational and economic mechanism of land relations and promotion of land property diversity. De jure those targets have been achieved. However, for a number of reasons the existing mechanism of land relations does not stimulate rational and effective land tenure, and does not provide environmental protection and reclamation of agricultural lands.

As our analysis, conducted on the case of Stavropol Krai, Russia, shows, the prevailing part of agricultural land after privatization and distribution of land shares is now concentrated in the property of those people who are not directly involved in agricultural production. Rural dwellers, being alienated from those land which they farm, do not have strong performance motivation, do not care much about land improvement and reclamation measures, and are not interested in economic efficiency of land tenure.

Rural inhabitants, who own land shares, commonly lease them to agricultural organizations of various types, mostly to big farms. De facto those big farms, even though of different legal status, are the same collective agricultural enterprises as they used to be in the Soviet times, and they continue farming the same land plots as they used to do decades ago. Transformation of land property was a mere formal act, and land market is underdeveloped.

Despite the fact that land lease is the prevailing form of land redistribution, rental payments are extremely low. The comparative research, which we had conducted for nine selected agricultural organizations of Stavropol Krai, confirmed that rental payments were incomparably lower than the buy-back prices of land shares. It makes land purchasing nonsense in economic terms, and hampers effective land turnover. One of the tools to drive the market is a fair and motivating rent. During our research we have developed the methodology of rental payment, which included fixed (guaranteed minimum) and mobile (share in production) parts. We believe that such an approach may revive the land

market, since land owners would gain guaranteed income and, what is more important, become an interested party. Their income level will become connected with the efficiency of land tenure. Most of the land owners will reconsider the status of their land property, and definitely take a decision on how and by whom this property should be used. Non-effective land tenants will be forced to increase efficiency in order to retain land shares under their tenure. This is how the competition will drive land market, help redistribution of land from the non-effective tenants to the more effective ones, and in the long term ensure sustainability of land market, agricultural production, and rural development in general.

Acknowledgments

This paper is supported by the Stavropol State Agrarian University. All the authors thank the reviewers and editor.

Author Contributions

Each author contributed equally to this work. Vladimir Trukhachev designed the research concept, and did critical revision and final approval of the manuscript to be published. Marina Lescheva developed the introduction section and approached to land tenure and sustainable agricultural development. Data acquisition, analysis and interpretation and drafting of manuscript were made by Anna Ivolga. All authors read and approved the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

References

1. Brooks, K.; Lerman, Z. Restructuring of traditional farms and new land relations in Russia. *Agric. Econ.* **1995**, *13*, 11–25.
2. Erokhin, V.; Ivolga, A. How to ensure sustainable development of agribusiness in the conditions of trade integration: Russian approach. *Int. J. Sustain. Econ. Manag.* **2012**, *1*, 12–23.
3. Ivolga, I.; Timofeeva, V. The analysis of the main tendencies of food security in the Russian Federation. *Agric. Bull. Stavrop. Reg.* **2014**, *1*, 70–73.
4. Sagaydak, A.; Lukyanchikova, A. Development of Agricultural Land Market and Agricultural Land Taxation in the Russian Federation. In *State Land Management in Transitional Countries: Issues and Ways Forward*, Proceedings of the International Seminar, Budapest, Hungary, 20–21 September 2012.
5. Lerman, Z. Policies and institutions for commercialization of subsistence farms in transition countries. *J. Asian Econ.* **2004**, *15*, 461–479.
6. Wegren, S.K. Food security and Russia's 2010 drought. *Eurasian Geogr. Econ.* **2011**, *1*, 140–156.
7. Visser, O.; Mamonova, N.; Spoor, M. Oligarchs, megafarms and land reserves: Understanding land grabbing in Russia. *J. Peasant Stud.* **2012**, *39*, 899–931.
8. Ioffe, G.; Nefedova, T.; de Beurs, K. Agrarian transformation in the Russian breadbasket: Contemporary trends as manifest in Stavropol'. *Post-Soviet Aff.* **2014**, *30*, 441–463.

9. Smith, A. *An Inquiry into the Nature and Causes of the Wealth of Nations*; The Electronic Classics Series; Pennsylvania State University: University Park, PA, USA, 2005; pp. 124–222. Available online: http://www2.hn.psu.edu/faculty/jmanis/adam-smith/wealth-nations.pdf (accessed on 29 October 2014).
10. Marxists Internet Archive. Available online: https://www.marxists.org/reference/archive/smith-adam/works/wealth-of-nations/book02/ch05.htm (accessed on 29 October 2014).
11. Dower, P.C.; Markevich, A. Land tenure and productivity in agriculture: The case of the Stolypin reform in late imperial Russia. *CEFIR/NES Work. Pap. Ser.* **2013**, *202*, 1–49.
12. Shagaida, N. Agricultural Land Market in Russia: Living with Constraints. *Comp. Econ. Stud. Palgrave Macmillan* **2005**, *47*, 127–140.
13. Uzun, V.; Shagaida, N.; Ustyukova, V. Approaches to the Development of the Concept of Improving the State Land Policy in Russia (Agricultural Land). In *Published Papers*; Russian Presidential Academy of National Economy and Public Administration: Moscow, Russia, 2014; nvg 168.
14. Shutkov, A. Risks and threats of agriculture security. *Russ. Agric. Sect. Econ.* **2011**, *4*, 30–41.
15. Wegren, S.K. The development of market relations in agricultural land: The case of Kostroma Oblast. *Post-Soviet Geogr.* **1995**, *8*, 496–512.
16. Wegren, S.K. Food security in the Russian Federation. *Eurasian Geogr. Econ.* **2013**, *1*, 22–41.
17. Fyodorov, M.; Kuzmin, E. Agriculture and economic security of Russia: Retrospective research. *J.Int. Sci. Res.* **2013**, *5*, 42–45.
18. Strelecek, F.; Lososova, J.; Zdenek, R. The relation between the rent and price of agricultural land in the EU countries. *Agric. Econ.* **2010**, *56*, 558–568.
19. Buday, S.; Cicova, T. The transactions in the agricultural land market in Slovakia. *Agric. Econ.* **2014**, *60*, 449–457.
20. Erokhin, V.; Ivolga, A.; Andrei, J.; Cvijanovic, D.; Ion, R.; Ivolga, I.; Jelocnik, M.; Labenko, O.; Subic, J.; Trukhachev, A.; *et al*. *Contemporary Issues of Sustainable Rural Development: International Approaches and Experiences of Eastern Europe and Russia*; Erokhin, V., Ivolga, A., Eds.; AGRUS: Stavropol, Russia, 2014.
21. Prosterman, R.; Hanstad, T.; Giovarelli, R.; Rolfes, L.; Schwarzwalder, B.; Duncan, J.; Bledsoe, D. *Legal Impediments to Effective Rural Land Relations in Eastern Europe and Central Asia—A Comparative Perspective*; World Bank Technical Paper; no. WTP 436; Europe and Central Asia Environmentally and Socially Sustainable Rural Development Series; World Bank: Washington, DC, USA, 2000.
22. Jelocnik, M.; Ivolga, A. International approaches to analysis of regional agricultural potential: Cases of Stavropol Region and Republic of Serbia. In *Actual Problems of Agribusiness in the Conditions of Economic Modernization*, Proceedings of the International Conference, Stavropol, Russia, 12–13 December 2012; AGRUS: Stavropol, Russia, 2012; pp. 10–16.
23. Patsiorkovsky, V.; O'Brien, D.; Wergen, S.K. Land reform and land relations in rural Russia. *East. Eur. Countrys.* **2005**, *11*, 5–18.
24. Visser, O.; Spoor, M.; Mamonova, N. Is Russia the emerging global "breadbasket"? Re-cultivation, agroholdings and grain production. *Eur.-Asia Stud.* **2014**, *10*, 1589–1610.

25. Rylko, D. New Agricultural Operators ("Agroholdings") in Russia and Black Sea FSU: Causes, Current State, and Future Challenges. Available online: http://www.agribenchmark.org/fileadmin/Dateiablage/B-Cash-Crop/Conferences/2010/Presentations/a2-_agroholdings_in_Russia_Rylko.pdf (accessed on 1 December 2014).
26. Serova, E. Farm restructuring in transition: Land distribution in Russia. In *Case Study #7-7 of the Program Food Policy for Developing Countries: The Role of Government in the Global Food System*; Cornell University: Ithaca, NY, USA, 2007.
27. Visser, O.; Spoor, M. Land grabbing in post-Soviet Eurasia: The world's largest agricultural land reserves at stake. *J. Peasant Stud.* **2011**, *38*, 299–323.
28. Visser, O. *Running out of Farmland. Land Deals, Land Value and the Sluggishness of Commoditisation*; IUAES World Congress: Manchester, UK, 2013. Available online: http://www.iss.nl/fileadmin/ASSETS/iss/Documents/Conference_papers/Food___farmland_Jan.2014/Visser-Land_value___superb_soil__commoditisation-FFF-conf.pdf (accessed on 1 December 2014).