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Agrarian transformation in the Russian breadbasket: contemporary trends as manifest in Stavropol'

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A team of US and Russian geographers combines field observations with satellite imagery in an examination of how major trends in Russian agriculture are manifest in one of Russia's most productive agricultural regions: Stavropol' Kray. A nationwide pattern of agricultural consolidation during the 1990s (featuring rural depopulation and a reduction in cultivated area and herd sizes upon the termination of Soviet-era subsidization levels) has had decidedly different outcomes in different parts of the vast Russian countryside. This paper – using Stavropol' as a surrogate for regions which by physical attributes, location, and human capital are best positioned to support agricultural activity – identifies a number of developments that may signal a new growth trajectory for agriculture in Russia: evolving specialization of former socialized farms in response to market conditions (in Stavropol' involving the shrinkage of animal husbandry and the release of surplus labor); increased levels of absentee (corporate) ownership of farmland in the more favorable locations; decoupling of the economic fate of large farms (success) from local municipal budgets (deficiency); and the expansion of non-Russian ethnic communities in the countryside, with attendant land use changes.

Keywords: Russia; Stavropol' Kray; agriculture; crop farming; animal husbandry; rural population; crop rotation; land use; fallowing

Introduction

After experiencing a major decline during the 1990s across Russia as a whole, agricultural output now has rebounded even as the area under crops and the number of cattle has continued to shrink,¹ albeit at a declining rate (Figure 1). Against this broad backdrop, the agricultural fates of Russia's diverse regions have been diverging. In the Non-Black Earth (non-Chernozem) zone, occupying the northern half of European Russia, the downward trend (which includes falling overall output) continued unabated almost everywhere outside the most highly urbanized regions. Developments in Kostroma Oblast are typical of the Non-Black Earth regions (Figure 2). However, in southern Russia the situation has been decidedly more favorable. First, the slump during the 1990s was not as deep as in

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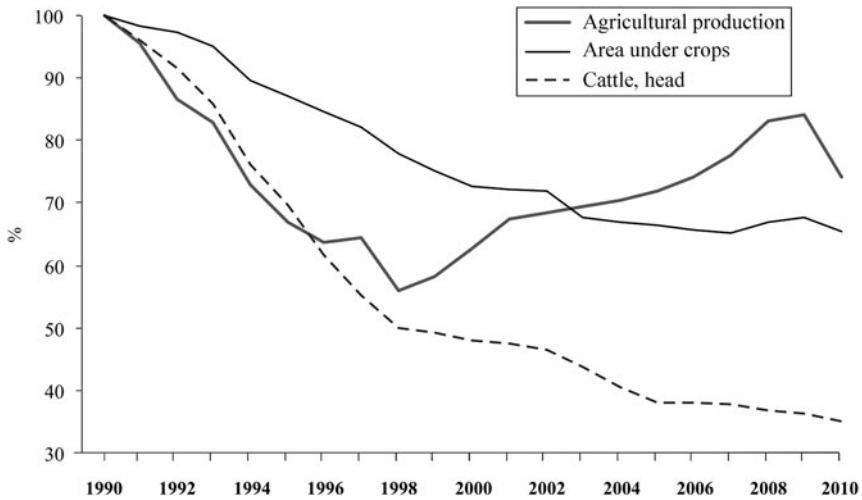


Figure 1. Total agricultural output, area under crops, and cattle in Russia as percentages of corresponding levels in 1990.

the north. Second, the area under crops has now stabilized, and there has been no further decrease in cattle populations since 2000. Stavropol' Kray epitomizes this situation, which can be observed more broadly across the southern regions of European Russia (Figure 3).

Indeed Stavropol' is one of the most important agricultural regions in Russia; it is second – after neighboring Krasnodar – in the volume of grain production. The last Soviet leader, Mikhail Gorbachev, was born in the western part of Stavropol' and became the region's communist leader. He was subsequently promoted to the post of the Secretary of the Communist Party's Central Committee responsible for agriculture. This was possible only due to the perceived success of the region's

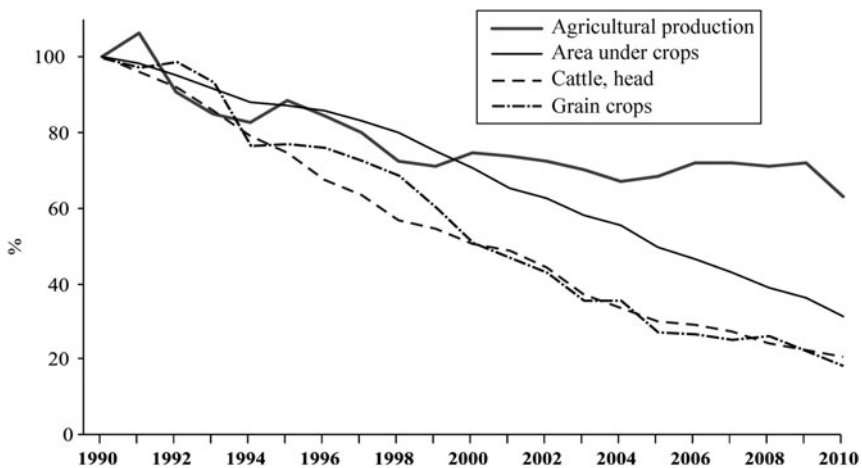


Figure 2. Total agricultural output, grain output, area under crops, and cattle in Kostroma Oblast as percentages of corresponding levels in 1990.

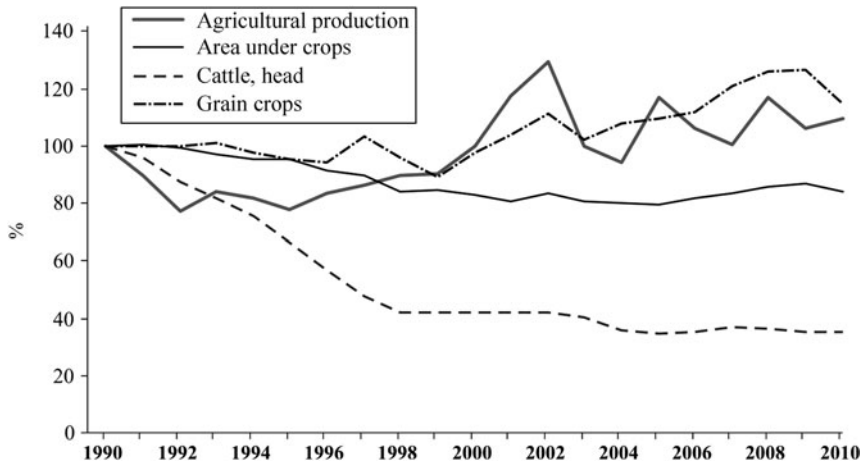


Figure 3. Total agricultural output, grain output, area under crops, and cattle in Stavropol' Krai as percentages of corresponding levels in 1990.

agriculture. As we shall demonstrate below, Stavropol' remains by and large an agricultural success story of Russia. It is for this reason that we wish to subject it to additional scrutiny – to identify developments that may signal a new growth trajectory for agriculture in Russia's Black Earth regions.

Conceptually, this paper proceeds from and feeds into the paradigm developed in earlier publications (Ioffe and Nefedova 2001a, 2002; Ioffe, Nefedova, and Zaslavsky 2004, 2006). One of the key points established in those publications is a bimodality that underlies the geography of agricultural output per unit of land *within* the regions of European Russia. Focusing on multiple Russian regions, over and over again we encountered two major factors influencing the spatial differentiation of agricultural productivity: (1) distance from the largest city (in the region) and (2) natural fertility of the soil. These factors primarily work by affecting rural population density, the major productivity driver in rural Russia (Ioffe, Nefedova, and Zaslavsky 2004). In northern European Russia, distance from the regional capital is by far the most significant factor of population density and therefore of agricultural productivity; in the south, this factor is also significant but not as much as natural fertility of the soil. More recently we found that a third factor, ethnic composition, also matters. For example, in Samara Oblast the most agriculturally prosperous rayons (districts) are those with a high percentage of ethnic Tatars (Ioffe, Nefedova, and De Beurs 2012).

In what follows, we apply our previous analytical experience and current fieldwork to the Stavropol' region. In addition to establishing the general pattern of productivity, our objectives in this paper are to (1) develop a composite typology of agricultural districts (rayons); (2) ascertain the relationships between three principal modes of farming – large farms (successors of Soviet collective and state farms), household farms, and registered family farms; and (3) share insights derived from 2011 fieldwork in various types of rayons within Stavropol'. Among other things, our observations reveal such developments as the evolution

of former socialized farms, including shrinkage of animal husbandry and the attendant release of labor; increased levels of absentee (corporate) ownership of farmland in the more favorable locations; ambivalent coexistence of economic success of large farms and deficient municipal budgets; and the expansion of North Caucasian ethnic communities (mostly from Dagestan) into the eastern rayons of Stavropol', the ensuing shrinkage of ethnic Russian communities, and the attendant land use changes.

Spatial pattern of agricultural productivity for large farms²

In Stavropol', rural population density is rather closely associated with accessibility to the major urban areas (Table 1). To account for the second hypothetical driver of rural population density, we devised a proxy measure for natural setting. This is each rayon's position along an east–west continuum (across Stavropol'), in which humidity tends to decrease from west to east within a range from steppe to semidesert. While rural population density does correlate with this measure, the respective correlation coefficient is less than that with accessibility (Table 1). This situation seems to be a relatively recent phenomenon, as gravitation toward urban centers historically was not as pronounced in Russia's south as in its north. Grain yields and milk yields per cow also correlate with the aforementioned proxy measure, and milk yields closely correlate with accessibility to urban centers (Table 1). Out of these two productivity indicators, grain yield is indeed major in every sense. In Russia, it is a correlate of other

Table 1. Spearman rank-order correlation coefficients between rayon-specific indicators (26 rayons).

	Grain yield per hectare	Milk yield per cow	Rural population density per km ²	Location in the east–west continuum	Accessibility to major urban centers
Grain yield per hectare	1.00	0.41	0.46	0.38	0.21
Milk yield per cow		1.00	0.33	0.59	0.52
Rural population density per km ²			1.00	0.60	0.83
Location in the east–west continuum				1.00	0.69
Accessibility to major urban centers					1.00

Notes: Location in the east–west continuum is a proxy measure for favorability of natural conditions for crop farming. It ranges from 1 to 7 (the westernmost rayons were assigned values of 6 and 7, whereas the easternmost rayons were assigned a value of 1). Accessibility to the major urban centers (the city of Stavropol' and the Mineral'nyye Vody agglomeration) ranges from 1 to 6; 6 was assigned if the respective rayon surrounds the urban center (e.g., Shpakovskiy rayon surrounding the city of Stavropol' and Mineralovodskiy rayon surrounding the city of Mineral'nyye Vody); the remaining rayons were assigned values inversely proportional to the rank of neighborhood or adjacency to one or other of the major urban centers of the region, so the least accessible rayons were assigned a value of 1.

productivity components and of agricultural land use intensity at large (Rakitnikov, 1970) – and grain is the major agricultural specialization of Stavropol'. Except in the least arid western part of the region, farmers typically apply a two-field system, whereby each field is planted with grain one year and is fallowed the next. And yet, this is hardly a mandatory capitulation to climate; rather, it is a result of the large farms' spontaneous adjustment to a deficit of fertilizers. Such a system would normally result in approximately five or six years of crops over our 11-year time period of analysis (2001–2012). Figure 4 reveals the frequency with which the fields are cropped in Stavropol' over this period. In total, 67% of the agricultural land in Stavropol' was cropped between four and seven years over the 11-year period.

In contrast to grain production, the focus on milk and on animal husbandry in general has noticeably waned during the post-Soviet period (see below). Still, milk yield per cow is a reliable indicator of Russian agriculture's detachment from or closeness to Western European practices that have always been the role model for Russia's farming operations.³ Around the city of Stavropol' and in the western part of the region, milk yield exceeds 5000 kg per cow; in provincial Russia – outside the Moscow and St. Petersburg urban agglomerations – this is as good as it gets.

One by-product of the decline in cattle on large farms has been a significant change in their spatial concentration. Just two rayons – Shpakovskiy (surrounding the city of Stavropol') and Kochubeyevskiy, its neighbor – account for 50% of all large-farm output of meat. The same level of concentration typifies large-farm output of milk. In addition, whereas collective and state farms accounted for 87%

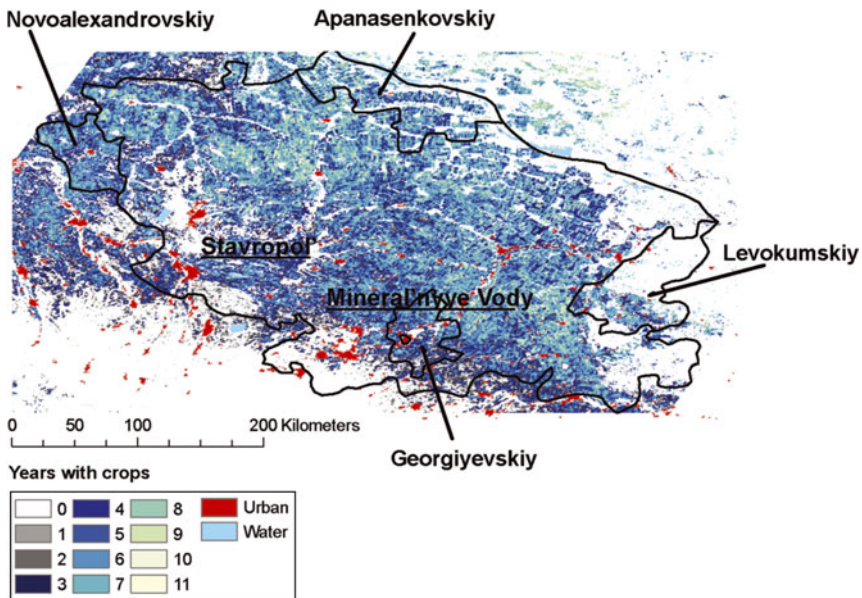


Figure 4. Frequency of crop cultivation (number of years) during the 11-year period 2001–2012.

of cattle in the region in 1990, by 2011 their successors accounted for only 30% – the rest is held on household farms.

Modes of farming

In Stavropol', the vast and largely Soviet-style farms are still responsible for much of the grain and sunflower output and for half of the vastly diminished production of meat. As pretty much everywhere in Russia, household farms dominate the output of potatoes, vegetables, and milk. Registered private farms have gained a foothold in the production of vegetables and also grain and sunflower (Table 2). In Stavropol', there are three groups of registered private farmers. In the most fertile western and central rayons, the heads of private farms are former agronomists, animal technicians, and team leaders of Soviet-era collective and state farms. They are for the most part ethnic Russians who are engaged only in crop cultivation; they generally lease quite a bit of land, and in some rayons, their share in grain output is up to 30%. In the arid northeast and in the south, one finds registered private farmers who are mostly engaged in animal husbandry; they are almost exclusively ethnic Dargins from Dagestan or Chechens. Many of them keep more cattle and particularly sheep than they acknowledge in statistical reports. In addition, quite a few representatives of those North Caucasian ethnicities never registered as independent farmers but still keep hundreds and, in some cases, thousands of sheep. A third group of independent farmers includes vegetable growers in the easternmost rayons. Those are people of various ethnicities, including Koreans from Central Asia and Meskhetian Turks.⁴

Typology of rural rayons

The typology of rural rayons used in this paper combines the degree of favorability of the natural setting for crop farming, accessibility to major urban centers, and ethnic composition. As already noted, the major spatial trend in the physical geography of the region is longitudinal: Stavropol's west is much like the

Table 2. Share of mode of farming in the agricultural output.

Commodity	Large farms (former collective and state farms)			Household farms			Registered family farms	
	1990	2000	2011	1990	2000	2011	2000	2011
Grain	99.9	90.3	84.1	0.1	0.3	0.2	9.4	15.7
Sunflower	99.6	86.6	85.6	0.4	0.1	0.4	12.7	14.3
Potatoes	22.0	4.2	9.4	78.0	93.1	85.3	2.8	5.3
Vegetables	74.7	25.0	19.2	25.3	67.7	57.6	7.3	23.3
Meat	63.8	27.9	51.1	36.2	70.5	43.0	1.6	5.9
Milk	77.8	32.8	18.0	22.2	63.7	77.6	3.5	4.4

Sources: Rosstat, 1999, 2013.

American Corn Belt, with superior soil and adequate humidity, whereas the east matches semiarid sections of the Oklahoma panhandle and the south is marked by rugged terrain. Predictably, Stavropol’s satellite image (Figure 5) is predominantly yellow, indicating a preponderance of arable land – everywhere but in the eastern and northern peripheries, which include large swaths of semidesert that appear in beige.

With respect to the second key factor in the typology, accessibility to major urban centers, the region is bicentral, with the urban agglomeration of Mineral’nyye Vody (mineral waters) being a more conspicuous urban magnet than the regional capital of Stavropol’. In terms of ethnicity (Table 3), the largest non-Russian group, Armenians, is largely nonagricultural. In contrast, the Dagestani ethnicities, especially the Dargins, are engaged in farming. When we juxtaposed the three variables – natural setting, urban accessibility, and ethnic composition – the 26 rural rayons broke down into seven types (Figure 6). Each of the types shown in Figure 6 is described below. In these descriptions, all of the types are predominantly ethnically Russian, with the one exception of type 7.

1. Largely semiperipheral⁵ rayons with the best conditions for crop farming.
2. Suburban⁶ rayons with favorable conditions for crop farming.
3. Suburban rayons with less favorable conditions for crop farming due to rugged terrain.
4. Peripheral⁷ rayons with less favorable conditions for crop farming due to aridity.

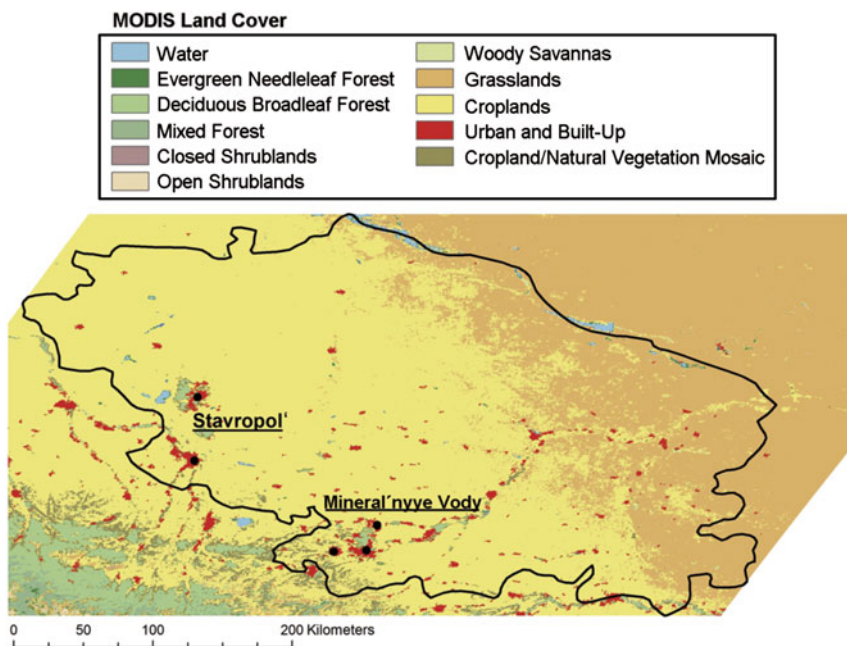


Figure 5. MODIS (Moderate-Resolution Imaging Spectroradiometer) land cover image of Stavropol’.

Table 3. Ethnic composition (%) of the population according to Russian census enumerations.

Ethnicity	1959	1970	1979	1989	2002	2010
Russians	91.3	89.7	87.8	84.0	81.6	80.1
Armenians	1.5	1.5	1.8	2.9	5.5	5.8
Dargins	0.04	0.3	0.7	1.3	1.5	1.8
Greeks	0.7	0.8	0.9	1.1	1.3	1.2
Gypsies	0.2	0.2	0.4	0.5	0.7	1.1
Ukrainians	2.5	2.5	2.4	2.6	1.7	1.1
Nogays	0.5	0.6	0.6	0.6	0.8	0.8
Other ethnicities	3.3	4.4	5.4	7.0	6.9	8.1

Sources: Belozеров, 2008, 45, 126; Predvaritel'nyye, 2012.

5. Semiperipheral and semi-suburban⁸ rayons with favorable conditions for crop farming.
6. Semi-suburban piedmont rayon with less favorable conditions for crop farming due to aridity and rugged terrain.
7. Arid steppe and semidesert peripheral rayons with a sizable number of non-Russian communities.

Demographic situation

One characteristic, however, appears to be common for all the types listed above, and that is the dominance of large rural villages. According to the 2010 Russian census, 43% of the rural population lived in the 56 settlements of Stavropol' Kray exceeding 5000 residents, and settlements with more than 1000 residents were home to 88% of the rural population (Predvaritel'nyye, 2012). This is in striking

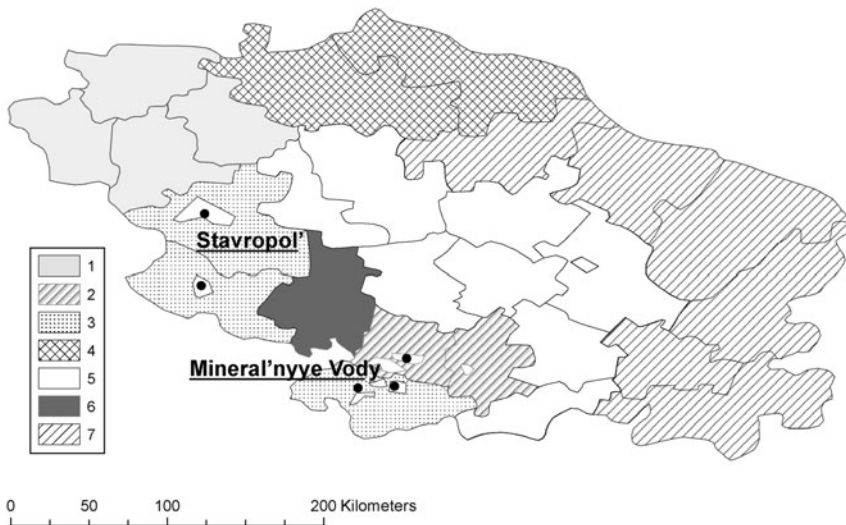


Figure 6. Typology of rural rayons in Stavropol'. For a brief description of each of the seven types, see text.

contrast to the prevailing settlement pattern within the Non-Black Earth zone, encompassing the northern half of European Russia. There, even some towns (i.e., settlements with *urban* status) have 5000 residents or less, and rural settlements are still smaller. In Novgorod Oblast, for example, only 38 rural settlements are larger than 1000 residents. But even in Russia's south such dominance of large villages is not widespread. For example, in Saratov Oblast there are only four villages with more than 5000 residents, and they are home to only 4% of that region's rural population (Predvaritel'nyye 2012).

In Stavropol', negative natural increase in the countryside (a result of the persistent outflow of young people to the cities) has been the case since 1993. But the excess of deaths over births commenced later here than elsewhere in the ethnically Russian regions of the Russian Federation. By 2000, only Stavropol's northeastern rayons, with a sizable Dagestani minority, retained a positive rate of natural increase, and by 2009, not a single rayon recorded an excess of births over deaths in the countryside. Still, the rural population of Stavropol recorded by the 2010 census was only slightly less than that in 2002 (1,193,800 versus 1,204,500). This is because the Stavropol' countryside has received a lot of migrants from other regions of Russia, especially from the nearby ethnic republics of the North Caucasus. That migration helped offset much of the negative natural increase. Migration to cities in the kray continues, especially given that Stavropol' is less urbanized than Russia as a whole, with the respective shares of rural population being 42.8% and 26.3%, according to the 2010 census (Predvaritel'nyye 2012).

Rayon case studies

The remainder of this paper provides case studies of the rayons selected for detailed fieldwork during the summer of 2011.⁹ Field observations have always been the primary and indispensable source of information about the Russian countryside. Today this is even more true, as multiple aspects of rural life – such as the relationship between different modes of farming, the role of outside investors, and interethnic relationships – can hardly be studied in any other way. We purposefully conducted detailed fieldwork in rayons exemplifying four specific and contrasting types, capturing the full range of variation in natural setting, location relative to markets, and ethnic composition: (1) semiperipheral, with good natural conditions for farming (type 1; Novoaleksandrovskiy rayon); (2) peripheral, with less favorable conditions due to aridity (type 4; Apanasenkovskiy rayon); (3) peripheral regions with semiarid to arid natural conditions with a sizable non-Russian ethnic composition (type 7; Levokumskiy rayon); and (4) suburban (reasonably close to urban markets) with favorable conditions for crop farming (type 2; Georgiyevskiy rayon) (Figure 7).

Novoaleksandrovskiy

This is a semiperipheral, overwhelmingly ethnic Russian rayon located in the westernmost part of the kray, with the best conditions for crop farming. Our

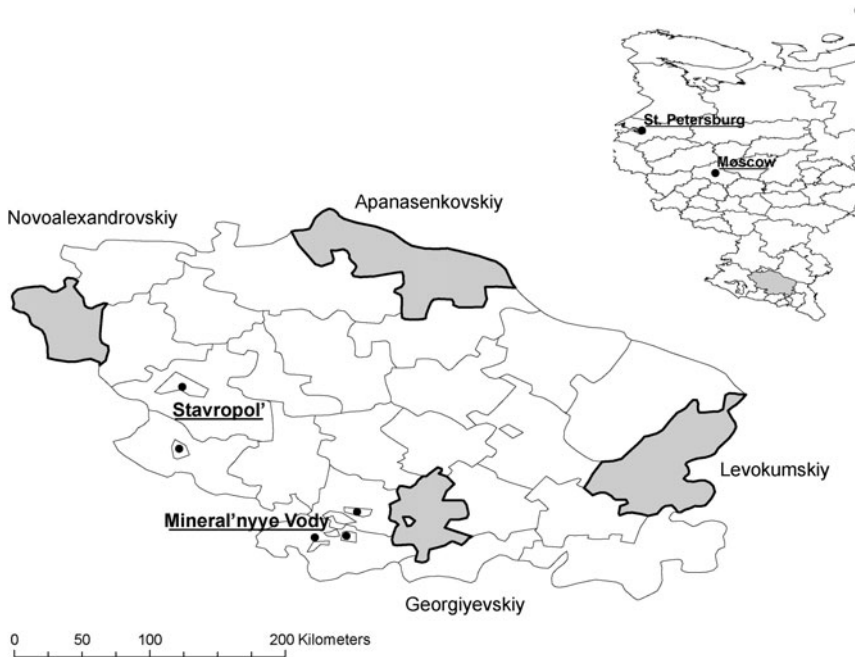


Figure 7. Location of case-study rayons in Stavropol'.

fieldwork in the rayon was guided by a previous effort by Nefedova and Pallot (2006), whose 2003 joint fieldwork in this rayon is summarized in their book (53–55). By now, the trends first described by them have been reinforced. Fields of grain in the rayon evoke images of the American Midwest or west-central France (Figure 8). They yield about six tons per hectare, a high level of productivity for Russia. The locals describe themselves as Cossacks, and there are indeed three historically Cossack settlements in the rayon (so-called *stanitsy*).

Fourteen large, Soviet-style farms remain in the rayon, five of which retain the word “kolkhoz” (collective farm) in their names. Between 100 and 800 people are employed on each of these farms. Altogether, these 14 successors of Soviet-era farms have 100,000 hectares of arable land at their disposal, compared to the 44,000 hectares in aggregate held by registered private farmers. Of the roughly 1000 would-be private farmers (who withdrew from collective farms and took their land shares with them), only about 100 actually work the land; the rest have leased their land to those active farmers. There is no abandoned land in the rayon. In fact, in 2011 the area under crops exceeded that in 1990. Winter wheat accounts for 64% of the sown area on large farms and 68% on lands owned by independent private farmers. All major crops, including winter wheat, sunflower, and sugar beets, generate a healthy profit margin. Large farms make every effort to use regionally approved crop rotation schemes. Despite the high natural fertility of the local chernozem soils, the rayon’s actual fertilizer input is the highest in Stavropol Kray’ – 105 kg of active ingredient per hectare compared with the kray average of 53 kg per hectare.



Figure 8. Field of grain in Novoaleksandrovskiy rayon in 2011.

Against the backdrop of highly and visibly successful crop farming, there has been a virtual collapse of animal husbandry. From 1990 to 2010, the number of cattle in the rayon declined from 60,000 head to just 11,000, including 4000 head on household farms. Part of the problem is low prices and lack of a subsidy that would ensure a reasonable profit margin.¹⁰ The other part has to do with the expansion of more profitable crops that leaves no room for producing animal feed. The shrinkage of animal husbandry on such a scale has led to unemployment for many farm workers – for the most part hidden as few of those who lost their jobs register as job seekers. Rather, they get by operating household farms and selling their output to fellow villagers.¹¹

In addition to the decline in animal husbandry, there are some other peculiar phenomena that only fieldwork reveals. First, unlike in the Non-Black Earth region, land shares really matter here, as land is highly productive and there is a competitive demand for it. There is a popularly perceived injustice in the distribution of land shares, whereby some people received a share by joining a farm in the early 1990s as land shares were being assigned, while many *lifery* who happened to be away or employed elsewhere temporarily did not receive a share. One farm chairman indicated that farms may resolve this problem by gradually buying up shares from those who no longer work the land. But people are reluctant to sell, as they receive an allotment of grain for each share they hold, which makes it easier for them to engage in household farming. From 2009 to 2011, a land share of 6.4 hectares resulted in an average annual allotment of 2.5–3 tons of grain, 50–100 kg of sugar, and 40 L of sunflower oil. Those willing to receive these payments in cash can do so, and the share of cash payment has been on the rise.

The second and perhaps more acute and pervasive problem is the visible contrast between the economic success of large and not-so-large farms on the one hand and substandard local infrastructure on the other. Usually, the local church is in perfect order, but not the roads or the local administration's headquarters. The

problem goes back to how local budget revenues take shape. Given such prosperous farms, one would think their profits would deliver those revenues. This is not the case, however, due to Russia's self-governance law. According to Article 55 of that law (Federal'nyy, 2003), revenue only from personal income and property taxes are assigned to the local budgets, but with wages being low and effective unemployment widespread, this amounts to deficient local revenues. Only 10% of corporate tax collections are directed to the local budget, with the rest going to the higher-level (regional and federal) jurisdictions. And it is from these higher levels that local budgets are subsidized. Thus, in this visibly prosperous rayon, local budget revenues account for just 28% of the total; the remainder consists of top-down subsidies, and these are targeted – that is, they can only be spent on purposes stipulated in advance.

In our judgment, this practice should be of interest to a broad range of social scientists. Against the backdrop of Russia's wild capitalism and social stratification, it purports to maintain a sort of equality in poverty at the municipality level; it undermines the interests of local administrators in economic success but gives higher-ranking bureaucrats ample opportunities to distribute money on the basis of their personal preferences (Belyayeva 2013).

The third phenomenon is a generally low level of entrepreneurial activity among the local population, despite the high natural fertility of the soil, sizable land shares of 6–10 hectares, and the possibility of leasing land from other farms. In this environment, the ethnically non-Russian migrants stand out in terms of their entrepreneurial activity. They lease land, use it to grow vegetables, and hire locals for a meager daily rate of about \$3–4. Still, several large independent farms operate in the vicinity of Stanitsa Rasshevatskaya (the large rural village of 5300 nearest the Kolkhoz Rodina), headed by former collective farm specialists (engineers, agronomists, and animal technicians), including 8 farmers with substantial areas of land (500–2000 hectares) and 10–20 hired workers per farm. In order to ensure some stability in operations on the tracts they lease, these independent farmers have switched from 1-year to 10-year lease agreements with the owners of the land shares they work.

Apanasenkovskiy

Apanasenkovskiy rayon, located in the far northern part of Stavropol' Kray along the border with the Republic of Kalmykia, is quite different from the region's fertile western flank. First, it is noticeably drier here than in the west. Second, the area under crops has shrunk from 148,000 hectares in 1990 to 108,000 hectares in 2011, and about a quarter of the arable land is fallow at any given time. Perhaps most importantly, the rayon has retained a good deal of its animal husbandry sector, which makes it unique in Stavropol' and quite a rarity within the Southern Federal District as a whole. In fact, the cattle herd dwindled slightly, from 32,000 in 1990 to 25,000 in 2010, including only 11,000 now held on large (former collective and state) farms and most of the rest on household farms. The local cattle are almost exclusively beef, not dairy, although one large farm actually produces milk.

In 1990 there were 414,000 sheep in the rayon, of which only 147,000 are left, almost two-thirds of which are on large farms.

Historically, Apanasenkovskiy rayon was inhabited by ethnic Kalmyks; Russian colonization of the area commenced in 1864 after the end of the Caucasian War. Then, in the 1930s many local Russians were resettled to Krasnodar Kray and Rostov Oblast, and the rayon received a large group (about 30,000) of forced migrants. Labeled *spetsposelentsy* (special settlers), these were the so-called kulaks – wealthy peasants dispossessed by the Soviet authorities and exiled to specially designated areas. It is now recognized that kulaks were the cream of the crop of the Russian peasantry. Many descendants of those exiled in the 1930s still live and work in the rayon, and the retention of cattle, in the face of the pervasive downward trend in Russia as a whole, must be credited to these people.

Ethnic Russians now account for 88% of the rayon's population of 34,000. The largest non-Russian group is the Dargins (5%), who first migrated to the rayon in the 1970s to work at sheepfolds (livestock enclosures). Now many former collective farm shepherds own cattle and sheep kept at the same folds.

There are 11 super-large (10,000–20,000 hectares) farms in the rayon, 2 of which are still labeled collective farms, whereas the rest are referred to as cooperatives. For the most part, a two-field system is employed, whereby each field is planted with grain one year (mostly hard wheat) and is fallowed the next year. About 76% of the agricultural area was cropped between four and seven times over the 11-year period we investigated (2001–2012). In the summer of 2011, we visited three of these super-large farms.

The Apanasenko cooperative, headquartered in the village of Derbetovka, has 14,500 hectares, consisting for the most part of land shares owned by the locals and leased to the cooperative. Here, on semiarid land, individual shares are vast – 16.8 hectares, including 12.8 hectares of arable land. The cooperative pays 2.5 tons of grain per share. Part of the wages of cooperative members is also paid in kind, mostly grain, which is used as animal feed on household farms. Derbetovka contains roughly 600 households with 2000 residents. In contrast, in the 1930s special settlers alone (i.e., dispossessed kulaks) numbered 4500.

Today, on average, there are 2 cows, 8 sheep, and 40 chickens per household. This in part reflects a restriction imposed by the local administration: no more than 6 cows and 20 sheep per household. This is because pastures close to the village are limited, and local Dargins (5% of the village population) tend to own a lot of livestock. At the cooperative itself, there are 1300 cattle and 2200 sheep. Both segments of animal husbandry have low profit margins under current prices, so the cooperative generates profits mostly by cultivating hard wheat. Derbetovka's municipal budget largely relies on subsidies from regional and federal sources for the reasons described above. Much like during the Soviet era, most local problems, such as paving roads or supplying schools and medical facilities, are resolved by the cooperative. But unlike in Soviet times, the numerous inspectors impose fines for misuse of financial resources.

The second cooperative that we visited, named Lenin's Path, is headquartered in the village of Raguli. It is the rayon's largest farm, possessing 20,000 hectares

of farmland, 22,000 sheep, and 2600 cattle. It leases an additional 13,500 hectares of arable land in the Kalmyk Republic and practices the same two-field (wheat–fallow) system. The farm is 65 years old and its chairman has had 16 years of experience in that capacity. Under current prices, sheep breeding is barely profitable, while beef cattle provide a higher profit margin. From mid-April to late November, cows use natural pastureland (dry steppe). The farm is not quite satisfied with the local Kalmyk breed of beef cattle and making a concerted effort to naturalize the French Limousin breed. About one-quarter of all harvested grain goes to the locals in exchange for their land shares; locals also receive 2–3 tons of hay from the farm. This allows the people to feed their own cattle on household farms. In the village of Raguli, with 800 households, there are more than 2000 cows, 1000 pigs, 8000 sheep, and 22,000 poultry. The farm is gradually buying land belonging to those who left the area.

In contrast to the two aforementioned large farms, the farm Gvardeyets (Guardman), headquartered in the village of Apanasenskoye, was on the verge of bankruptcy when in 2003 it was purchased by the corporate group Severokavkazsky Agrokhim, which in all bought a total of eight farms in Stavropol' Krai. The new owner appointed the farm manager, a former animal technician who even authored a book about cattle productivity in the region. The crucial difference between this large farm and most others is its much less paternalistic attitude with respect to the village. Unlike the chairmen of other large farms, the Gvardeyets manager has a narrower view of his task – solely farm management. In other respects it is similar, including the use of a two-field system in crop farming and a decrease in the livestock herd (from 2500 to 1000 cattle and from 14,000 to 8000 sheep since 1990). As a result, the number of employees decreased from 350 to 220.

Given the emphasis on large farms and the ensuing difficulties of acquiring contiguous land parcels, there are relatively few registered independent farmers in the rayon. Still, in every village, at least one or two family farms are registered. We interviewed one such farm owner, Vladimir Apanasenko (incidentally the most widespread surname in Apanasenskiy rayon). Formerly a tractor operator on a collective farm, in 1992 (when independent farming was viewed as a beacon of hope), he withdrew from a collective farm with his own land share and purchased 30 more shares from fellow villagers. Now Mr Apanasenko has 1600 hectares, including 1200 hectares of arable land. In the Non-Black Earth macro-region of Russia, this is the size of an average collective farm or its successor. But due to resistance from his large-farm neighbors, Mr Apanasenko failed to consolidate his holdings. Rather, they consist of dispersed parcels, some of which are 40 km apart. His major products are wheat, mustard, and millet. Altogether, 19 shareholders withdrew from the same collective farm simultaneously with Mr Apanasenko, but none succeeded in their private farming ventures, and in the end leased their land back to the farm. Mr Apanasenko's major complaint is similar to those voiced by the large-farm leaders: Too many inspectors, regional and federal, are terrorizing them, mostly by soliciting bribes.

Levokumskiy

Levokumskiy rayon is located on the arid eastern flank of Stavropol' Kray (Figure 7), bordering the Republic of Dagestan. In agricultural terms, the rayon, in effect, consists of two different "worlds." The first is in the south, in the Kuma River valley, where viticulture and grain production constitute the main activities. Levokumskiy rayon accounts for 40% of the Stavropol' region's vineyards and neighboring Budyonnovskiy rayon (also in the Kuma River valley) accounts for 35%. It is not by accident that the head of the rayon administration, Sergey Lysenko, is vice president of Russia's Union of Winegrowers. Unfortunately, the rayon's winery, Levita, is teetering on the margin of unprofitability. Only the primary wine stock is produced here, while the finished product is bottled in the city of Rostov. Since the late 1980s, the winery has laid off about 800 employees, with only 225 remaining; an additional 130 workers from among ethnic Dargins are hired seasonally in the spring and the fall. Levita's problems have a lot to do with low interest in wine consumption among the Russian population in general. The enterprise can produce high-quality dry wine, but to ensure a reasonable profit margin, the product has to be pricey (at least \$7 per 0.75-L bottle). The alternative is to produce large amounts of low-quality fortified wine.

The second "world" consists of a vast area in the northern part of the rayon, where a dry steppe environment gradually grades into a semidesert. Here, the ethnic Russian population is declining and ethnic groups from Dagestan and elsewhere are on the rise. Owing to their efforts, the rayon has not only retained the number of sheep that existed here in 1990 but even expanded it; in 2011 there were officially 564,000 sheep here (and probably even more, as no one knows exactly how many sheep are kept in private folds). Ethnic Dargins from Dagestan began to migrate here in the 1970s to work as shepherds on collective farms, and this migration intensified during the 1990s. The fieldwork of Nefedova and Pallot (2006, 188–192) in the rayon already recorded a certain stage of Dargin incoming migration and settlement. By 2011, their share in the rayon's overall population had reached 21%, but in the north their share is much higher, making up more than half of the population in some villages. In the 1990s the Dargins managed to privatize many former collective farm folds (*koshary*), where they keep their sheep; today officially 56% of the sheep raised in the rayon belong to registered independent farmers.

In the village of Turksad, which we visited, the total population is 2000, of which 990 are Dargins and only 830 are Russians. Each year more and more Russian youths leave the village. In 2010, for example, 49 people departed and there were 42 newcomers, mostly from Dagestan. With 664 households, the villagers held 2100 cows and 29,000 sheep. In addition, 12,600 sheep are held at a large private farm headed by a Mr Gasanov, a Dargin who used to be a collective farm shepherd but in the 1990s became a registered independent farmer. There are many signs of non-Russian dominance, like the name of the chairman of the local village administration (Sultan Magomedovich Murtazaliyev) and his headscarved associates (Figure 9). As a rule, when non-Russian ethnicities begin to exceed 30%

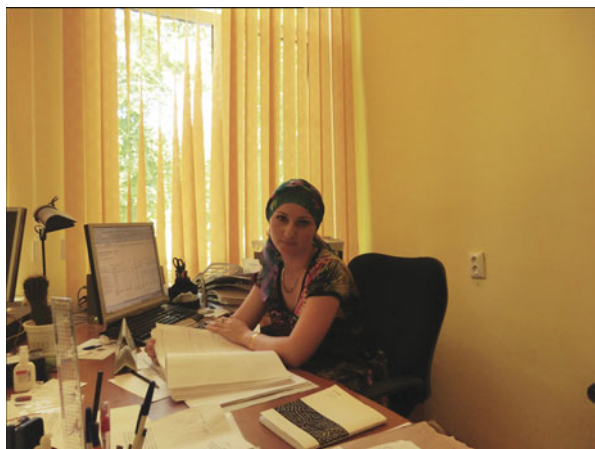


Figure 9. Ethnic Dargin associate working in the Turksad village administration, Levokumskiy rayon, 2011.

of local population, the outflow of ethnic Russians intensifies. This may not be so much a result of overt mutual hostility, although it is reported in some publications (Kurbanov, 2010). Rather, it is a result of incompatible patterns of land use, whereby cattle and sheep belonging to the newcomers graze wherever they can procure grass or brush. This pattern conflicts with the more modest animal feed requirements of the Russian households and often damages their vegetable gardens and commons.

Georgiyevskiy

The city of Georgiyevsk (71,000 residents), the administrative center of Georgiyevskiy rayon, is only 40 km away from Pyatigorsk, the capital of the North Caucasus Federal District (population more than 142,000). So Georgiyevsk and the southern part of its rayon are an integral part of the Mineral'nyye Vody agglomeration. Predictably, this is the most populous rural rayon in Stavropol' Kray, with a total population of 91,500 and the highest rural population density (47 people per square kilometer). There are five Cossack *stanitsy* in the rayon, accounting for 57% of the total rural population. Although ethnic Russians account for 82% of the urban and 77% of the rural population in the rayon, there is a growing Armenian community.¹² Probably due to its better accessibility, multiple corporate holding companies own quite a bit of farmland in the rayon, a trend observed earlier by Ioffe and Nefedova (2001b) and Visser and Spoor (2010). Some of the companies are Moscow-based (e.g., Razgulyai) and have bought dozens of former collective farms all across Russia, whereas others are headquartered in nearby Krasnodar Kray (e.g., VIKO) or within Stavropol' Kray in the city of Yessentuki (MIG). As Georgiyevskiy is a densely settled rayon, the local farms are not as large here as in more peripheral and arid locations. Here the average large (former state and collective) farm size is 5500 hectares. Grain

accounts for 75% of the rayon's total area sown to crops, sunflower for 11%, and rapeseed for 8%. Only 980 hectares in the entire rayon is occupied by forage crops. Indeed, practically no cattle are left on large farms. Households own 6500 cattle, 5500 pigs, and 7000 sheep.

Fieldwork conducted in three settlements in the rayon – the villages of Krasnokumskoye and Obilnoye and the *stanitsa* Lysogorskaya – provide a sense of local life. Krasnokumskoye has 15,000 residents, including a large (16%) Armenian minority. The population increased 30% over the course of just seven years (2004–2011) and has to some extent become Georgiyevsk's bedroom community. However, out of 9400 working age residents, only 4000 are employed, including roughly 1000 within the village, while the rest work in Georgiyevsk. The major local employers are two private fur coat factories now using Australian sheepskin and wool, a brickyard, and a prison. Regional and federal subsidies account for 80% of the village budget.

The locals do not keep a lot of livestock. Only one-eighth of the 4300 households do. Altogether there are 254 cows, 400 pigs, and 50 sheep. Many more keep poultry (12,000 head), nutrias (2000 head), and rabbits. There are, however, a few households that keep their cattle outside the village and produce cottage cheese and hard cheese for sale. During the Soviet period, a state farm was headquartered in the village. In the 1990s, the Moscow-based Interinvest, a company that used to be active in grocery retail, bought the farm, which specialized in cereal grains and even purchased beef cattle. But in 2006 Interinvest sold the farm to a new owner whose permanent place of residence is unknown. The new owner changed the specialization of the farm. Only 800 hectares sown with grain are left in order to furnish in-kind payments to individual shareholders; on the remaining 1200 hectares, apple and cherry trees were planted. As a result, a modern orchard with drip irrigation emerged. Apples ensure a high profit margin and qualify for federal subsidies amounting to 20–25% of production costs. The business plan envisions the production of both dried apples and juice concentrate and also the building of a vegetable greenhouse. Currently 150 people are employed by the farm, with an average monthly pay of 7000 rubles (\$218); seasonal labor is also hired and paid in kind (10–15% of the picked apples and cherries). Because few locals want these jobs, the farm is building a dorm for seasonal workers from Ukraine.

The village of Obilnoye, located on the Budyonnovsk–Pyatigorsk highway, has a population of 6600. Its residents are predominantly ethnic Russians, but there are several large families of Kurds who migrated here from Armenia in the 1990s. They keep 20–30 cows per family in this pasture-deficient area, and that causes conflicts with the Russian majority. The village administration offered to move the troublemakers' cattle to the abandoned feedlot of the former collective farm Zarechnyy, but the Kurds declined. The Russians keep very few cows; most household livestock consists of pigs (490 head) and poultry (29,000). At the site of the Soviet-era state farm Obilnenskiy, several production units have formed. They include a poultry farm, three limited liability companies producing wheat and sunflower, and an experimental turkey-breeding station. This is one of the few

domestic breeding units in Russia, a specialization almost entirely lost during the post-Soviet period, so the bulk of purebred livestock and poultry are now obtained abroad. The station employs 500 people; its current director is a former pilot who does not deal with the intricacies of breeding, but positions himself as a manager. The products of the station are eggs of purebred turkeys, young turkeys (sold to households and to private farms in the Stavropol' and Krasnodar regions), and ground turkey sold by the station's own retail store.

The third settlement we visited, Stanitsa Lysogorskaya, is only 15 km from the city of Pyatigorsk, and that location has determined the nature of the locals' employment. More than 1000 local residents work at the spacious Pyatigorsk retail and wholesale market. Out of the stanitsa's total population of 10,400 people, 6700 are ethnic Russians, and the rest are mostly Armenians. There are also 82 Koreans and 83 Kurds. Armenians mostly work as sales clerks and guards at the Pyatigorsk market. Altogether there are about 1000 working-age people in the stanitsa who are not officially employed. The stanitsa was founded in the early 1800s, and living in a multiethnic settlement has boosted a certain Cossack nostalgia among the local Russian population (Figure 10). There is a Cossack Circle (association) with 250 members, and in local secondary schools Cossack traditions are taught.

The locals do not keep a lot of cattle. Currently only 540 cows are owned by the households there, whereas as recently as the 1990s there were up to 3000 cows in the stanitsa. In addition to cows, there are about 400 pigs and 570 sheep. In the words of the head of the local civil administration, the people have become "the slaves of the retail market." In Soviet times, a state farm with a large pig feedlot and a collective farm were headquartered in the stanitsa, with the total employment numbering 1500. After the farmland was divided into individual shares, some entrepreneurs began to reconsolidate them through lease agreements. Currently two large "investors" work on 7500 hectares. One of these investors is



Figure 10. Chairman of the village administration of Stanitsa Lysogorskaya, Georgiyevskiy rayon, with a Cossack banner, 2011.

MIG, a Yessentuki-based financial group. In addition, there are several private farms, two of which own about 1000 hectares of farmland. On the one hand, land is fought for, and the members of the Cossack Circle believe that land ought to be distributed among their families. But at the same time, about 300 land shares are left idle. The local administration has managed to claim some of that land so it can be used as a common pasture for household cattle and sheep. No livestock remain on the large farms.

Conclusion

Our observations in the fields and villages of the Stavropol' countryside reinforce the picture of agrarian change evident at the national level. Russian agriculture was strongly impacted by drastic economic changes that followed the end of the Soviet era in the early 1990s, particularly the scaling back of subsidies, the elimination of the provision of farm machinery to collective and state farms, and an end to guaranteed sales of output. Since the late 1990s, when it began to leave the crisis behind, the fortunes of Russia's agricultural regions have diverged. Some regions have succeeded whereas others have not. Stavropol' definitely belongs in the former group. Even the financial crisis of 2008–2009 and the drought of 2010 affected it less than many other regions. Also, the decline in cattle, a pervasive trend in Russian agriculture, was halted in Stavropol' after 2000.

As in most Russian regions with favorable conditions for crop farming, the increased emphasis on grain and sunflower production has supplanted animal husbandry. On the one hand, the share of grain in the area under crops has increased from 50% to more than 70%. On the other, most large farms have disposed of their cattle. The existing technologies simply do not allow profitable production of milk on most large farms under current market prices. Some farms have switched to beef cattle, but even this change in specialization will be difficult to sustain without multifaceted state support.

However, a virtual monoculture of grain exhausts the soil. Only the most successful farms in the western part of the region can afford to offset this exhaustion with adequate fertilizer input. In many other areas, particularly in the drier eastern and east-central rayons, crop farming has become less intensive, with almost half of all arable land fallowed in any given year.

Less intensive crop farming is only possible on vast tracts of land. That puts registered family farms at a disadvantage. Their large farm neighbors are often unwilling to sell or lease out their land, which may prevent smaller farmers from consolidating the individual shares of farmland they have been able to obtain. But despite resistance from former collective and state farms and arbitrary rule by regional and local bureaucrats, independent family farming has taken root in the region. It is somewhat ironic that in the Non-Black Earth regions where there is much vacant land, family businesses in agriculture are rare, whereas in Stavropol' where land is in high demand and difficult to obtain, private farms are in many cases alive and well. The roots of this seeming paradox probably lie in the much healthier demographic situation in the Stavropol' countryside (compared with the

Non-Black Earth regions) and in its attraction to migrants from the ethnic republics of the North Caucasus.

The monofunctional nature of rural villages, where employment in agriculture or in the local government are the only options, makes it difficult to mitigate the release of labor due to shrinking animal husbandry (which is always more labor intensive than crop farming). The development of food processing and construction businesses might reduce social tension and reduce the flow of the country folk to urban centers.

Overall, most of the large-farm managers, as well as the registered private farmers, have adjusted to Russia's agrarian capitalism. However, an artificial financial dependency on regional and federal subsidies keeps local initiative in check, as does aggressive control by the authorities who oversee the spending of revenues by local managers and business owners.

Interethnic tension caused by the accelerated migration from the North Caucasus into Stavropol' is palpable and reveals itself in interviews with locals and in the gradual displacement of ethnic Russians, particularly from the arid eastern part of the region. The reemergence of the Cossack identity, historically typical of the Russian frontier, in addition to the construction or restoration of Orthodox churches in practically every sizable village, is reflective of a revived defensive frontier mentality. Aside from the migrations resulting in a permanent change of residence, tensions are also elevated by temporary workers from Dagestan and other ethnic homelands. These people do not drink and are ready to work for much lower pay when harvesting grapes and other fruits or when weeding fields. Thus, their presence in the job market lowers pay and boosts unemployment among the locals.

The ongoing migration results in ethnic polarization of the Stavropol' countryside. In the eastern rayons, ethnic Russians are leaving in droves once the percentage of North Caucasian ethnicities exceeds 30% of the village population. In the western part of the region, every effort is seemingly being made to prevent those ethnicities from settling in the largest and most centrally located villages. The local village administrators simply preclude the sale of homes in cases where the buyer is from Dagestan or Chechnya. But the migrants are percolating into the smaller and more peripheral villages from which they will sooner or later migrate to other settlements. Given negative natural increase in most Russian communities, this migration is unlikely to be halted by bureaucratic measures, and the Stavropol' countryside will become increasingly multiethnic. Keeping interethnic tensions in check will require effort and a certain creativity on the part of the regional government. Despite these problems, Stavropol' exemplifies Russia's agricultural success story. This was the case when Mikhail Gorbachev climbed the ladder of the Soviet nomenklatura, and remains so today.

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Notes

1. By 2011, the number of cattle and hogs in Russia as a whole were only 35% and 45%, respectively, of their numbers in 1990. This immense decline has been caused by a combination of factors, the most important of which were the withdrawal of state subsidies in the early 1990s and the collapse of central planning and control. When federal and regional subsidies resumed in the late 1990s, much of the cattle herd already had been slaughtered. Russia's surplus grain production is in large measure a result of livestock shrinkage.
2. Here and elsewhere in the paper, "large" farms refers to former state and collective farms that have not disbanded but have continued to operate after at least nominal reorganization.
3. The ratio of Russia's average milk yield per cow to that in Western Europe used to be 1:5 in the 1870s; in the late 1980s, the gap had narrowed to 1:3; and in 2003, it was 1:2.5 (Ioffe, Nefedova, and Zaslavsky 2006, 52–53). By 2009–2011, the ratio closed even further to 1:1.8 – that is, about 4.2 tons per cow in Russia to about 8.0 tons per cow in Germany, Sweden, Denmark, and Finland (http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Milk_and_dairy_production_statistics). A drastic decline in the number of cows in Russia facilitated higher productivity per cow, as unproductive and sick animals were sacrificed first.
4. For a recent assessment of the phenomenon of private farming in Russia more broadly, see Wegren (2011).
5. These are of rayons that are second-order or in some cases third-order neighbors of the rayons enveloping Stavropol' and the cores of the Mineral'nyye Vody agglomeration.
6. These are of rayons enveloping the cities of Stavropol', Nevinnomyssk, and the cores of the Mineral'nyye Vody agglomeration.
7. These are rayons that are at least third-order neighbors of the rayons enveloping Stavropol' and the cores of the Mineral'nyye Vody agglomeration.
8. These are second-order neighbors of the rayons enveloping Stavropol' and the cores of the Mineral'nyye Vody agglomeration.
9. The statistical information presented in the rayon case studies is a mixture of data on file in rayon centers and of information derived from interviews with heads of farms.
10. At the national level, and at least over the near term, Russian agricultural officials appear to be resigned to the fact that much of the domestic demand for meat and milk will be met through imports, which for the most part have proven more price-competitive than domestic meat and dairy production. Russia's accession to the World Trade Organization (WTO) also means that current agricultural subsidies in Russia will generally need to be revised downward over time to conform with broader WTO trade policies. On the latter, see Wegren (2012) and Sedik, Lerman, and Uzun (forthcoming).
11. The scale of the problem is illustrated by Kolkhoz Rodina (Motherland Collective Farm), one of the most successful in the rayon. Between 1999 and 2011 employment on that farm decreased from 1000 to 433 people. While the collective farm still had 1200 head of cattle as recently as 2003, by 2011 their number had dwindled to 400, and all of it is beef, not dairy cattle. It seems that only subsidies can rescue what

remains of the cattle herds. In 2010, a subsidy from the regional budget worth 2 rubles per liter of milk was introduced. Considering that the price at which farms sold 1 L of milk was 13 rubles, this was a significant subsidy. However, only household farms have responded to that measure, so the number of dairy cattle on those farms has stopped declining.

12. As noted previously, Armenians in the kray are for the most part engaged in nonagricultural activities.

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