Russian Reforms: the Return of the Peasant?*

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I. Introduction

An interesting development in the Russian economy in recent years is the rise of household food production. According to one estimate, some 80 % of Russians engage part-time or full-time in production of food, mainly for own consumption. This phenomenon has been little researched up till now, although it has important implications for the welfare of the population, for labour markets, and for the restructuring of the economy, in particular of the agricultural sector.

Theoretically, household food production can be viewed from three standpoints. First, it can be assessed as a government-administered poverty alleviation method. Allocating land to households was probably the single most effective action that the state undertook in preventing the spread of poverty on an even larger scale than is presently the case. Soviet policies favouring household food production date back to as far as the 1941-1945 war, and have been alternatingly restrictive and more generous since. Hence, the increase in household plots that accompanied the 1992 land reforms was the expansion of an existing practice rather than a novel transition policy. Nevertheless, with the growing deprivation during the transition era (1991-present), these plots have been increasingly important in halting and ameliorating poverty. This is not to say that household production is a main help to the poorest segment of Russian society, or that it is an alternative to poverty combating programmes. The very poor typically lack the resources necessary to produce food[1]. Rather, it is the large group of Russians just above the poverty line who increase real incomes by home production. This production keeps many from falling in poverty rather than helping the poor; it is poverty prevention rather than fighting existing poverty.

Second, household food production may be viewed as the outcome of a time allocation process on the household level. As various sources of welfare, such as salaries, pensions, other allowances, and savings, have been reduced by inflation and payment arrears, many households no longer command enough wealth to acquire all goods through monetised market transactions. Reduced real money incomes and increased opportunities to home-produce resulted in an increase in the opportunity costs of salaried work. In consequence, many households changed their time allocation so as to increase real (pecuniary and in-kind) income. As jobs are often nominally full-time while in practice absenteeism is possible, this shift in time allocation could occur on a large scale. The result is that firms will find it harder to attract workers, lacking as they do in means to offer real income in an inflationary, cash-starved environment. This is a general de-specialisation of labour that is households' best response to given circumstances, but it implies an economic system that is grossly inefficient to any standard, and incapable of significant growth in productivity. An interesting question is then how, and how fast, this trend can be reversed, as this is a condition for the resumption of economic growth.

A third aspect of the rise in household food production is the implied change in the structure of the agricultural sector. In a poor country like Russia, the performance of the agri-food sector (i.e. the method of production and distribution of food) is extremely relevant to the welfare of the population. That structure must therefore be well-understood for any policy aiming at structural reform or poverty reduction to be sensible. Nevertheless, analyses of the household food production sector as such have been rare up till now[2]. The present paper aims to explore features of household food production (henceforth HFP) including (1) the development in acreage used for HFP, (2) the number of people involved over the years, (3) the availability and use of the necessary factors of production, such as land, labour, and variable inputs, (4) characteristics of households involved, and (5) implications for welfare

II. Agriculture, Food, and Households in Russia

The position of traditional agriculture[3] in Russia, which comprises 31,000 enterprises, of which 26,000 are former *kolkhozy*, has been worsening considerably during the reform period[4]. Towards the end of the central planning era, productivity levels had been low in the Soviet era, with *kolkhozy* producing 40 to 65 % less grain per hectare than did farms in similar climatic and soil conditions[5]. In 1995, hectare yields had decreased by another 25 % compared to the 1986-1990 level[6]. With a present average size of 4,800 hectares and hundreds of workers[7], Soviet-era problems in the incentive system of these farms are as relevant as they used to be[8]. In addition, the farming sector now also faced falling purchasing power on the domestic market, a worsening of investment opportunities, and the operation of 'price scissors': the ratio of industrial input price increases to farm output price increases was 2 in 1992, 1.6 in 1993, and 1.3 in 1994, becoming practically one afterwards[9]. As a result, the quantity of acreage and quality of cultivation decreased. In the last few years of the Soviet era, the amount of arable land had already fallen by about 20 % over the 1980's, while one-tenth of arable land still under cultivation lost 30 to 60 % of its fertility, and another quarter 10 to 30 %. Total sown area further decreased by 15 % in 1990-1996, while mineral applications in 1990-1994 decreased by 75 %[10]. Consequently, production collapsed, falling a cumulative 40 % in the 1990-1996 period (table 1).

Table 1

The demise of traditional agriculture was part and parcel of early reform plans for Russian agriculture[11], and so was their replacement by smaller and supposedly more efficient family farms. This development, however, never occurred on any significant scale for a variety of reasons. Property rights were long badly defined and insufficiently protected. Agricultural workers and managers were specialised, and most did not have the array of skills that family farming requires. The costs of setting up a private farm in most cases were and are insurmountable in a loss-making sector with virtually no credit market. Moreover, these costs can be, and frequently are increased in myriad ways by collective farm management or local communities wishing to block the start of family farms[12]. Also family farming is a riskier mode of economic existence than being a collective farm worker, especially as the enabling environment is largely non-compatible to small farms. Consequently, and in contrast to policy

makers' ideological preferences, the prospective family farmers themselves never favoured 'going private': a 1990 study revealed that at that moment private ownership of land was advocated by 17 % of collective farm workers and 12 % of state farm workers. In 1997 only 6 % of agricultural land was cultivated by family farms, while it is not clear how many of them were actually urban residents cultivating a small plot[13]. The number of private farms, originally expected to be one million, was 285,600 in 1994, falling slightly to 279,000 in 1995-1997, and further decreasing to 274,000 in January 1998[14]. Nor are these farms very successful: '(p)rivate farms … are small, financially tenuous, and mainly produce for subsistence'[15]. The contribution of family farming to agricultural output was 'at no time during 1990-1996 more than 10 %': the official figure was 2 % in 1994, 1995 and 1996, and 3.5 % in 1997[16]. Production methods are often primitive: of all 'family farms', only 40 % have tractors, 15 % have a truck, and 10 % have a combine grain harvester[17]. The average size of such farms in 1997 rose slightly from 43 to was 44 hectares in 1992-1997, and increased further to 48 hectares in 1998 – but about 55 % work less than 20 hectares and only 9 % more than 100 hectares[18,19]. Due to the dire situation of both traditional agriculture and newly emerging private farms, Russian food industry output decreased dramatically in the 1990-1996 period, by 76 % for whole milk products, 72 % for meat, 74 % for canned goods, 47 % for bread and bakery products, and 36 % for butter[20].

Severe food shortages on the consumer market have only been avoided through food imports and household production[21]. Imports had played that role already in Soviet (and especially perestroika) times, and their relative importance during 1991-1997 increased for a small group of wealthy Russians only. In 1995, reportedly 70 to 80 % of food imports went to Moscow, St.Petersburg, Ekatarinburg and the Far North[22]. Imports had been and remained substantial until the August 1998 Rouble devaluation, but decreased somewhat during transition in absolute terms (table 2).

Table 2

For most Russians, imports were at best a partial solution to reduced food availability, since they lacked the monetary purchasing power to obtain sufficient high-quality food. Inflation surged in the first phase of the transformation, while nominal incomes rose much slower, causing real incomes to fall. The available figures on these trends, depicted in table 3, should be corrected in two ways: first, payment of salaries and allowances increasingly lagged, and

second, both non-reported and non-monetary income have become increasingly important components of total income during the transition[23].

Table 3

Also inequality increased rapidly. In 1996, the richest 20 % income group earned 44.7 of total income, while the lowest 20 % income group earned 6.5 %. The Gini coefficient for 1996 was estimated between 0.45 and 0.47, rising from 0.34-0.36 in 1985-1988[24]. The combined effect of these developments left a large part of the population with but a fraction of pre-transition incomes and an estimated third below the poverty line[25]. For many, purchasing power fell to the extent that even food expenditures were threatened. In 1995, the estimated average cost of the individual standard monthly basket of 19 basic food items was Rb (Roubles) 211,200. Average monthly wages were then Rb 361,500, but much lower for many employees in, for example, agriculture (Rb 147,400) and education (Rb 215,500)[26]. According to official statistics[27], households in 1996 spent 42 % of their income on food. This figure varies significantly over sectors, with industrial employees spending 40 % of household budgets on food, and collective farm workers 50 % (Wegren, 1996:173). Casual observation suggest that the actual share in food outlays are substantially higher than the official figure[28]. Moreover, the average figure is an underestimation of the share of food outlays in real incomes, as many employees (especially those in agriculture, the food industry and restaurants or hotels) obtain food or meals at a discount in their firms. In addition much food, especially in the countryside, is home-produced on household plots or obtained through gifts or barter.

Consequently, the Russian diet has become increasingly defective during transition. Between 1990 and 1996, per capita consumption fell by 30 % for meat, 28 % for milk and dairy products, and 19 % for fruit, vegetables and berries. Only consumption of potatoes and cereal products increased by 15% and 5%, respectively, due to Giffen-type substitution. Russian citizens in 1994 consumed on average 22 % less calories than the recommended standard. Especially under-consumed were fruit (55 %), vegetables (45%), fish (41%) and meat (22%)[29]. The main factor that prevented a further deterioration was the development of household food production, the cultivation of crops and raising of cattle labour-intensively on small plots. This has been accounting for an increasing part of consumption, especially outside the larger cities. The share of this production in gross agricultural output roughly doubles during 1990-1996[30].

III. Expansion of Household Food Production

While traditional agricultural production collapsed during 1991-1997, HFP expanded even more in relative terms, as shown in table 4. The contrast is most striking for potatoes. Although this crop is well-suited for labour-saving machine production, it is now largely planted, grown and harvested manually on household plots, which signifies the ongoing primitivisation [31] of Russian agriculture. Table 5 shows that presently household plot producers provide for the bulk of all directly edible produce, while it is left to traditional agriculture to produce its own inputs (fodder) or inputs for the food industry such as cereals, sugar beet, and vegetable oil[32].

Tables 4 and 5

The expansion of production was in the early transition years accompanied by an increase in acreage. This development can be quantified by comparing the various available sources. Production occurs on three types of land worked by households. There are households plots or 'private' (although not necessarily privately owned) plots (*priusedebnyi uchastok, lichnoe podsobnoe khozaistvo*), worked by households with members employed on a traditional farm. The other two plot types are mainly used by town dwellers: plots in collective gardens (in two types: *sadovyi* and *ogorodnyi uchastok*), and *dacha* plots. It is especially on private plots and dacha land that acreage expanded, much less in collective gardens, as is shown in table 6. As in production, this trend is again in contrast to the ongoing loss of acreage in traditional agriculture. This increase was due not so much to an increase in the number of plots, but rather to an increase in the average size. This was a one-time increase of 41 % during the initiation of land reforms in 1991-1992, followed by a 9 % decline. The development in the *number* of plots worked by households is similar, but the magnitude differs. There was a relatively large increase (by 13 %) in 1992 when land reforms were implemented, but most of that increase was compensated by the subsequent decline, bringing the total increase on 6 %[33].

Table 6

IV. Explaining Growth: Capital

The observed increase in acreage owned or used by are one factor in HFP increases. Possible other factors include more efficient production methods due to an increase in inputs, or more labour devoted to HFP. Table 7 shows that during 1991-1997, overall production per hectare decreased slightly.

Table 7

This suggests that technical progress was not a factor in the growth of production, which is in line with the fact that even operators of professional family farms have had difficulties in mobilising capital inputs. Domestic production of fertiliser and pesticides plummeted during the transition, and so did production and sale of durable capital assts such as well pumps or mini tractors, and even of basic tools like forks and rakes[34]. Another factor in declining land productivity of household (not dacha and collective-garden) plots may have been the over-application of mineral fertiliser in the Soviet era. This resulted in the persistence of high soil fertility in the early transition years. When the Soviet-period mineral stock in the soil was used up after some years (in 1994-1995), productivity levels decreased significantly[35]. This explanation is relevant only to plots in agricultural areas.

In the absence of an increased application of capital, the number of people engaged in household production and/or the time they devoted to it may have been behind production increases. An indication for labour input is labour productivity, presented in table 8 with a distinction between rural and urban HFP.

Table 8

Two trends in labour productivity are worth noting: first, that it declined over the whole transformation period, but not monotonously (this is true for all products, except for both rural and urban potato growing). Second, that this decline was much larger for some products than for others.

The *general* decrease can be explained in two ways. First, the amount of labour may have increased with decreasing return to marginal units. Second, labour productivity computations are based on separating the contributions of the various factors of production,

which is inherently difficult and partly arbitrary. It is therefore possible that when the supply of other factors of production (land and capital) decreased, the subsequent decline in production was (partly) attributed to labour. In the Russian context the supply of land did not decrease, but a decline in available capital goods and increases in the number of workers and per capita labour may have been relevant. However, given the capital-extensive mode of production that the small scale and abundance of labour in household production implies, the capital constraint cannot be regarded as a major cause of decreasing labour productivity. Yet it did probably play a role in inducing product substitution.

That substitution occurred can be inferred from the considerable differences in labour productivity decreases over product groups. It is here assumed that by producing more of one product and less of another, the registered labour productivity of the favoured product, if crudely defined as the amount of product per person, will rise[36]. Using this measure, households are seen to have reduced livestock production (meat, milk, eggs) most, and fruit and vegetables much less. There are differences both between products and between household types. The substitution was more pronounced in urban household were livestock productivity fell more and fruit and vegetable production less than was the case for rural households. Moreover, within the product group of fruit and vegetables, urban household more preserved fruit and economised on vegetable production, while the reverse was true for rural households. Both observations are best explained by assuming that substitution was driven by the costs of capital inputs relative to labour costs. Since rural households, and especially those working plots that were historically connected to *kolkhozy*, have more access to capital inputs such as fertiliser, pesticides and tools[37], capital costs are higher for urban than rural households. Hence rural households make production decisions so as to profit from their better access to inputs producing more, while urban households circumvent their constraint by concentrating more on labour-intensive production.

IV. Explaining Growth: Labour

Apart from an expansion of acreage, also an increased labour input may account for production growth. The Russian Longitudinal Monitoring Service (RLMS), conducted during 1992-1996, is one source of information on developments in the use of labour for HFP. The survey was representative of Russian age composition, income distribution, urban/rural population ratios, and ethnicity[38]. Answers to some of the relevant questions in this survey are presented in table 9.

Table 9

This table shows that in 1992, 60 % of households used land. This figure increased to 66 % in 1996[39]. This is an increase of 12 % in the number of households using land during 1992-1996. The data also show that very few households (3-5 %) abandoned land use once they practised it. With regard to the average acreage used by households, only the 1992 and 1996 figures are reasonably reliable[40]. Hence, the data do not provide a picture of the year-on-year development, but do allow for the conclusion that acreage increased by between 20 and 40 % in the 1992-1996 period, which compares to the official increase of 28 % depicted in table 6.

Another indication of the number of workers as well as of per capita labour input in the household sector is given by time usage data from the RMLS. In table 10 the findings are presented. Also the month of interview is reported, as this naturally influences that week's garden work.

Table 10

Note that the data are problematic since most interviews were done in late fall or winter. At that time of the year, garden work is either finished, or any remaining jobs can be done with long intervals. This increases the probability that respondents who harvested from their garden in the preceding summer did not work their garden in the week in which the interview was done. The total number of people involved in gardening is therefore best measured in summer, when each gardener can be assumed to work her garden each week[41]. This figure was then 55 % in 1993. Over the subsequent four rounds (winter 1993 till winter 1996), the amount of people gardening in any week in late fall and winter rose from 22 to 27 % of respondents. This

would imply an increase[42] of 23 %, which, however, is an overestimation originating in the changes in dates of interviewing over the years. In round 4, interviewing took place between 1 October and 15 January, while in subsequent rounds January was excluded. Plausibly, interviewing in January will produce more negative responses to the first question than is the case when interviewing in October, November or December. The proportion of positive responses should therefore be calculated on the basis of the round 6 and 7 interview periods if comparisons are to be made. This exercise results in a corrected round 4 figure of 25 % if we assume a zero response in January, and 24 % if the frequency of garden visiting in January is assumed to be a third of the average October-December level[43]. If we accept these assumptions as the extreme cases, the corrected 1993-1996 increase in the proportion of gardeners was between 8 % and 13. Furthermore this would imply that the amount of people gardening rose from 55% of the population in 1993 to at least between 59 and 62 % in 1996[44]. Due to the apparent sensitivity of the figures to the period of interviewing, especially with regard to variation in summer and fall, similar statements about the development in rounds 1 to 3 are hard to make. Investigating the 1993-1996 trend in average gardening time requires again an upward correction of the round 4 number so as to make it comparable to the round 6 and 7 figures. This results in a round 4 figure of between 15.4 and 16.1 hours[45], as compared to the uncorrected figure of 14.1. Hence, these figures would indicate that there was a decrease, if anything, in time spent gardening of 10 to 14 % between 1993 and 1996[46].

VI. Which part of the population is involved?

The above figures for the number of Russians involved in 1996-1998 HFP are just some of many, and the different sources can usefully be compared. The OECD figure for 1996[47] mentions 19 million households, which would be over 42 million Russians (assuming average household size), engaging to varying degrees in such food production. This is probably exclusive of collective gardens, which explains the low figure[48]. This report also mentions 13.1 million Russian households raising cattle. As cattle-raising requires land, these households are probably included in the 19 million previously mentioned. Macey mentions 'some 80 %' of Russians households, or about 120 million Russians working 'over 40 million household plots'[49]. Minister for Food and Agriculture Viktor Semenov told the press on October 29, 1998 that 'some 100 million Russians are growing their own potatoes and vegetables', while 'about 50 million Russians are raising their own cattle' - again in all probability included in the 100 million (which would be 67 % of the population)[50]. Both RLMS household survey data from 1996 and 1995 survey data from Tho Seeth et al. suggest a figure of two-thirds of Russians growing their own food[51]. Clarke - surveying a sample of the *urban* population only- finds 48 % of households producing part of their potatoes and vegetables, and an additional 18 % growing all of their consumption of those products[52]. This would imply 64 % of urban households depending on own food production in varying degrees. Figures of similar magnitude were inferred from the above tables, based on other RLMS data: in 1996, between 59 and 62 % of households 'was involved in gardening', while 67 % of households 'used land'. Finally, Goskomstat data show that in 1996, 38.1 million households owned or used a plots of land of some sort were used by households, which would be 57 % of the population, using average household size.

How do we account for the variations in figures? First, it is worthwhile to note that the differences in observation dates can not be seen as the source of variation in the figures. Survey figures for 1995, 1996 and 1998 are remarkably constant (67 %, 67 % and 64 %, respectively). Given the rather stable production and acreage figures in 1995-1997, one indeed would not expect spectacular changes in that short period. The main gap, of about 10 %, is between the various survey data and Goskomstat figures. Taking these official HFP plot figures, one must assume (1) that each plot is worked by one household and (2) that these households were of the average 1997 Russian household size of 2.2 individuals[53], in order to arrive at the figure of 57 % of the population. Relaxing these assumptions is the key to

explaining differences between official and survey figures. Additionally it yields insight into which households engage in (or depend on) food production, and what they do with the produce.

Regarding household size, it must be noted that Clarke surveyed urban households only, while Goskomstat figures are presented as being representative for the entire population. Food-producing households are more often located in rural areas (see below), and hence Clarke's survey may be expected to result in a lower food-producing share of the population than do the all-Russia RLMS and Goskomstat figures. This is vindicated for the RLMS data (67 %) but not for the Goskomstat data (57 %). The 1996 Goskomstat figure of 38.1 million includes only households with some official title to land. Of these, most will work the land themselves, while some do not work it but allow another household to work it. In both cases, Goskomstat and survey data arrive at the same number of households or plots involved in HFP. Some land owners, however, may not work the land nor let others do it, or they may own several plots. Both circumstances would cause the Goskomstat plot figure to be an overestimate of the number of households engaging in HFP. If we assume that the first option is not practised, i.e. that all land owned by households is worked by households, only multiple plot ownership remains to be accounted for as a source of overestimation. On this, the RLMS survey questioned households in 1992 only. In that year, land owners owned 1, 2, or 3 plots, with an average of 1.23 and a S.D. of 0.47. Assuming that the number of households owning 3 plots is negligible, 23 % of all owners is a multiple plot owner, which implies that for every 100 plots there are 81 owner-households. Using this number for 1996 (which makes sense since land ownership changed little after 1992), we see that 38.1 million plots were owned by 30.9 million owners.

This figure should then again be corrected for the fact that a minority of landowners allows another household to work their land (and may in addition work part of it themselves as well). Information on this is given in the Clarke survey, in which one in five individuals who worked land said it was owned by relatives, not by themselves. Hence, of all people working land in 1998, 20 % was not registered as having an official title to it. This difference is confirmed in the RLMS survey which had in its 1992 round (not in other rounds) both the question 'how much land do you own privately?' and 'how much land do you have at your disposal?'[54]. Of the 5,767 households questioned, 60 % had land at their disposal and 44 % owned land. So of the total number of people working land, 17-20 % did not have an official

title to it over the years 1992-1998; or put differently, the number of land owners should be increased by 25-30 % in order to arrive at the number of households working land. An estimate based on the Goskomstat figure that is corrected for all contingencies mentioned would then be between 38.6 and 40.1 million households. Accounting for an average household size of 2.5 for land-owning households compared to the all-Russia average of 2.2. (see below), the corrected Goskomstat figure implies 67 % of the population, as do the surveys. The gap between official and survey figures is explained by the divergence between figures on ownership and those on use of land by households.

Furthermore it is worthwhile to note that the number of people *relying* on food production is again larger than the number of people *engaging* in production. Clarke reports that, in his survey, a third of the urban households that were producing in their dacha gardens gave away food. This amounted to, on average, a third of the produce. This implies that figures for producing households would have to be inflated by 30 % to arrive at the figure for households relying to some extend on HFP. Naturally, this inference leaves unspecified the degree to which they do so; also, in rural areas this figure is likely to be higher. Also there is a (probably large) overlap between this category and that of land owners who allow others to work their land, mentioned above, who will probably receive part of the harvest as payment for use. But even if this were a 100 % overlap, that would still leave an extra 13 % of households depending on other households' food production without any affiliation to land either through ownership or use. A safe conclusion from a comparison of the various sources then appears to be that in 1996-1998, 67 % of household produced (part of) their food, while over 80 % of the population depended to some extend on HFP.

VII. Which households produce?

Turning from the quantitative to the qualitative aspect of the share in the population involved in HFP, three characteristics can be noted. Producing households are on average larger than other households; they are more often rural; and they have lower money incomes than has the average household.

Table 11

It is not surprising that larger households more often have land than smaller households, as is shown in table 11. First, they have more labour to work the land, and hence the return to acquiring it is higher. Second, poverty is generally positively associated with family size, and this is in various studies specifically shown to be the case for Russia[55]. Growing food may then be an effective way of combating poverty, a relation which is further investigated below.

Linked to household size of food producers is the location of residence. Plausibly, rural households will more often work land for themselves than do urban households, for three reasons. First, access to land may be easier as land is less scarce and allocation policies more generous. Second, for those families living in the vicinity of -or even employed by- collective farms, access to inputs is also much better than for urban citizens. It is an established facts that high household plot productivity is to a large extend due to access to collective-farm inputs such as fertiliser, pesticide, sowing seed, tools, etc[36]. Third, money wages in agriculture are much lower than are average wages, and so part of the location effect may in fact be an income effect. Food production may supplement incomes, and hence households in the lower income strata can be expected to have larger incentives to grow their own food. In addition, the opportunity costs of working the plot are lower for people living in households which depend on income from a low-paid job or welfare benefits.

The statistics confirm the idea that HFP is more important in rural areas. The 'value HFP' figures in table 12 imply that the monetary value of food produced per household was nearly 5 times the urban figure. This is a combined effect of *productivity* (each producing rural household produces more than urban households due to more land, labour, and capital inputs per household) and *involvement* (a higher percentage of rural than urban households home-produces).

Table 12

The all-Russia figures do not, however, clearly indicate an income-HFP relation[56]. Throughout welfare classes, households in the general population buy about 60 % of their food consumption and produce about 40[57]. Deviations from these shares are never higher than 5 % and erratic. The very poor do engage only slightly more in production than do the somewhat better off lower-incomes groups, while in the upper half no income effect can be discerned. On the one hand this implies that access to land for household use is fairly equal over welfare classes; on the other hand that money income is not an important factor in explaining differences in HFP. The increase in real income brought about by HFP is considerable (about a third), but does not differ much between the very poor and the better off lower-income groups. The same is true for the share of produce that is traded rather than consumed: this is about three quarters, and does again not clearly increase with increasing income. This implies that the much-publicised demonetisation of the Russian economy is far from complete as far as consumers are concerned. Even those in the poorest segment of the population, where malnutrition is known to be serious, exchange food for money. Various goods and services as vital as food (such as shelter, heating and water) can apparently still be obtained in exchange for money payment only. Neither can the relatively rich dispense with HFP. Apparently impoverishment and deprivation are so pervasive that virtually all welfare classes have a need for home production. The tiny elite to which this does not apply is not sufficiently numerous to cause production figures to be significantly lower than average even in the 10th decile.

What is relevant to explaining HFP is location. In cities, three quarters of consumed food is bought, one quarter produced; in rural areas, the reverse is true. This divergence is again constant throughout all welfare classes (deviations are never more than 5 %). The importance of HFP for inclusive incomes[58] clearly varies with location. Urban consumers increase their income by a fifth through HFP, rural households double it. They do so by selling about half of their produce, while urban households sell only a fraction. Within both sub-groups, the inverse income-production relation is clearer than in the whole population: it holds in all deciles except the sixth, although its magnitude is small. Rural households decrease production from 79.0 to 73.1 %, or by 8 % when moving from the poorest to the richest decile. For the urban population, the decline with increasing income is more pronounced, both in absolute and relative terms: from 29.0 % to 20.2 %, which is a 30 % decrease. This can be

attributed to better opportunities for food production as well as lower opportunity costs in the countryside.

VIII. Summary, Discussion and Conclusions

Russian agriculture in transition (1991-1998) was characterised by a production collapse due to a loss in quality and quantity of acreage, disinvestments, falling purchasing power, and increased imports. Neither traditional agriculture nor the nascent family farm sector have been able to ensure sustained food production. Instead, the impoverishment of the population has resulted in a considerable increase in the relative importance of household food production (HFP), as well as a more modest increase in physical production of food by households. This production increase can be accounted for by increases in acreage and, to a much smaller extend, labour, while more efficient production methods through an increased application of capital inputs does not appear to have played a role. Clearly, product substitution occurred in the period investigated: household labour was re-allocated towards the production of potatoes at the cost of production of other food products such as vegetables, fruit, milk and dairy, and meat. Differences between rural and urban households in the intensity of substitution within the group of other products indicate that household do consider their particular access constraint to inputs in the process of product selection.

It appears that in recent years about two thirds of the Russian population was involved in HFP. One fifth of them does not have a formal title to the land they work, and a third shares the produce in informal networks. Hence, the percentage of Russians relying on HFP fully or to some extend is probably over 80 % of the population. Households producing food can be found much more often among rural than urban households, while also per household production is much larger in rural areas than it is in urban areas. Hence, rural households benefit more from production than do urban households in terms of real welfare increases. It appears that this even brings them on a higher welfare level in real terms, which is a reversion of the situation when measured in money incomes only[59]. Food-producing households are larger than the average, which is correlated to the fact that they are often rural dwellers and that they are poorer than is the average household. As the very poor do not benefit much more from production than do the somewhat better off, household food clearly cannot be seen to reduce serious poverty (although it may prevent it). Neither is production much less observable in higher income classes. An inverse relation between income and production exists but on it is average relatively weak, and is in fact a location effect: within the groups of urban and rural dwellers the relation is clearer, while in urban areas it is much stronger than in rural

areas.

How is the household sector to be assessed? In current analyses of the agricultural situation in Russia the household sector is frequently viewed unfavourably, or even ignored. One reason for this attitude is the view that the development of HFP contributes to the still continuing breakdown of the official food production system. Alternatively, it is argued that the phenomenon is inherently transitory, and does not merit investigation. If only a recovery of general economic conditions, and in particular an improvement in the official farming and food allocation system is realised, HFP would then vanish spontaneously[60]. Oddly, it is an argument somewhat similar to that of the early agricultural reformers, who argued that a reform of property rights would automatically imply the demise of collective farms and the emergence of an efficient, commercial family farming sector. However, the claim that the phenomenon is transitory is unconvincing. First, income increases were shown to have a relatively small effect on HFP shares in the total amount of food available per household. Second, even in the stable and relatively wealthy Soviet era, HFP made a significant contribution to food provision. It is hard to see why it should now largely disappear soon, as some believe. Third, the considerable increase in HFP during transformation was mainly due to the expansion of acreage, not predominantly to the increased use of labour in this sector; hence there is ample scope for labour-intensification and increase of production. Fourth, there are also theoretical reasons to expect the persistence of HFP: a more primitive system of production and allocation is likely to be better able to deal with the chaotic, deficient and unpredictable situation on Russian markets (although, admittedly, at the cost of technical efficiency). HFP will not easily be dominated by maffia interests, as the official food system presently is. It is not very vulnerable to inflation or to problems in transportation and storing systems. It does not rely on good connections with input market or with marketing systems. Given disintegrating markets, HFP is more robust than other, commercial food production modes. Hence it is likely to persist.

Given such persistence, an interesting question then is what the effects on economic welfare and growth potential are. It is worthwhile to note that, apart from cereals production, HFP is currently the dominant form of food provision in Russia, which implies that HFP is essential in preventing dramatic decreases in welfare for most Russians. Although that HFP is necessarily a less efficient food production methods than is traditional agriculture due to the capital constraint, it would be mistaken to regret the trend towards more HFP for this reason only. HFP is a symptom rather than a cause of the disarray in Russian agriculture and in the

economic system and, given the adverse environment, it has positive welfare effects in the short run[61]. One concern, however, may be the longer-run effects, for HFP is likely to persist in the foreseeable future. As long as jobs do not provide real welfare due to a combination of wage arrears and inflation, HFP will compete with industry for family working hours. This is likely to be a source of inefficiency in firms if managers cannot impose labour discipline, nor provide pecuniary incentives to their employees that are stronger than the incentive to spend time growing food. As Chayanov has pointed out in this respect, once it is rational to unite the consumer and the producer function in one household, the economic incentive structure of that household changes fundamentally. When the opportunity costs for household production are low, there is a real danger of lock-in: opportunity costs of home production have to increase disproportionally compared to the initial situation in order to achieve a re-commercialisation of food production and a re-specialisation of labour[62]. If there is a problem with HFP, it is the high costs in economic efficiency and the possible threat of a lock-in on a low level of labour skills available for industry and services. These are all longer-term concerns. In the short-term they are outweighed by the positive welfare effect of household production itself. Moreover, labour supply is not now a bottleneck factor to the resumption of economic growth in Russia. Likelier candidates for such impediments include financial chaos, political and administrative impotence, and the criminalisation of the economy.

A final comment relates to agricultural reforms in Russia. There is no question that improving the performance of Russian agriculture is urgent. In the debate, opinions differ over the question of the optimal form for farms, be it family farming or joint-stock structures, or again some sort of co-operative production. The current pervasiveness of HFP does not appear to play a role in policy proposals. Nevertheless, it might be sensible to start with the existing situation when discussing possible future modifications to the food system. As has become increasingly clear in various challenges in the post-communist transformation process, failure to ground reforms in reality is a typical barrier to success.

Appendix

Correcting 1996 Goskomstat Figures for Sample Bias

Consider the example of the money value of HFP in 1996, which in the Goskomstat data is Rb 218,546 for rural Russians and Rb 44,763 for urban Russians[63]. The average for the whole population given there, however, is Rb 96,090. This is naturally not an unweighted average of Rb 218,546 and Rb 44,763, but neither is it *only* weighted for population figures (of 147 million Russians, in 1996 40 million (27 %) lived in the countryside and 107 million (73 %) in cities[64]. As the reported average of Rb 96,090 is higher than the population-weighted average of Rb 91,683, the higher of the two constituting shares (the rural figure) apparently receives more weight than is justifiable on considerations of population figures alone. How much more can be inferred by considering

$$44{,}763 * (0.73 - x) + 218{,}546 * (0.27 + x) = 96{,}090$$

which solves for x = 3 %. Apparently, the sample figures lead to a misallocation of 4.4 million Russians[65] in whole-population figures as in the sample rural households were over-represented by 11 % (3/27) and urban households under-represented by 4 % (3/73). This does not affect the averages for rural an urban figures (although it does change the variation), but the aggregate figure should be corrected by

$$(3/73 * 44{,}763) - (3/27 * 218{,}546) = -22{,}443$$

which results in a corrected whole-population average value of HFP of Rb 73,647 (96,090 – 22,443), i.e. a correction of 23 %. The number of people involved is too large to be attributed to the use of different population figures by Goskomstat compared to OECD, to different rounding procedures, etc. In general, when Goskomstat figures imply rural, urban, and average values R, U and A for some measure, the implied rural and urban population shares r and u are r = (U-A)/(U-R) and u = (1-r). If this reasoning is applied to the other Goskomstat figures in which a rural/urban distinction is made, different corrections must be applied as some variables are defined as shares of biased variables. In table A below, sample biases of the variables originally given by Goskomstat are given, as well as corrected values. In table 12, additionally inferred variables are used which are corrected in the same way. Note that the correction is not applied to separate income deciles as there is no reason to assume that the urban/rural population ratios in any single decile should match whole-population urban/rural ratios.

Table 1: Agricultural Production by Product, 1990-1996

Year	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**change 1990-1996**
(1000 tonnes)								
cereals	116,676	89,094	106,855	99,094	81,297	63,406	69,301	- 41 %
potatoes	30,848	34,329	38,330	37,650	33,828	39,909	38,529	25 %
vegetables	21,771	21,883	20,749	20,251	19,700	23,172	21,944	1 %
fodder crops	40,976	37,405	27,426	25,218	18,137	14,300	9,300	- 77 %
meat	10,112	9,375	8,260	7,513	6,803	5,796	5,315	- 47 %
milk	55,715	51,886	47,236	46,524	42,174	39,241	35,713	- 36 %
wool	227	205	179	158	122	94	77	- 66 %
eggs (*mln)*	47,470	46,875	42,902	40,297	37,473	33,830	31,458	- 34 %

Source - OECD, *Agricultural Policies in Transition Economies. Monitoring and Evaluation 1997*, (Paris: Organisation for Economic Co-operation and Development).

Table 2: Russian Food Imports 1991-1997

	1991	1992	1993	1994	1995	1996	1997p
(US$ billion)							
Exports*	1.3	1.6	1.6	2.8	2.7	3.2	n.a.
Imports*	12.4	.6	5.9	8.6	9.7	7.8	n.a.
Balance*	-11.1	-8	-4.3	-6.3	-7.4	-5.1	n.a.*)*
Share of net food imports in (%):							
• gross agricultural production*	n.a.	n.a.	n.a.	23.6	18.4	14.9	n.a.
• total domestic use of:							
- grains	18.6	22.0	10.7	3.2	2.5	4.1	1.4
- meat and meat products	13.2	13.8	15.5	19.1	27.8	28.0	33.2
- milk	11.4	5.9	10.9	9.9	13.1	10.1	13.2
- potatoes	2.5	0.4	0.2	0.2	0.0	0.1	n.a
- sugar	32.0	25.8	33.3	29.7	36.6	27.0	n.a.
- eggs	1.1	-0.6	-0.7	-0.2	0.2	0.7	n.a.
- vegetables	22.3	21.3	12.6	14.4	9.2	n.a.	n.a.

*p: provisional; n.a.: not avaliable. *Trade with the New Independent States is excluded from the 1990-1993 figures.* Source - *OECD*, Review of Agricultural Policies: Russian Federation, *(Paris: Organisation for Economic Co-operation and Development, 1998), p. 62.*

Table 3: Russian Purchasing Power and Poverty during the Transition

Year	1990	1991	1992	1993	1994	1995	1996	1997
(year-on-year changes, %)								
CPI	5.3	92.6	2,564	879	193.0	120.5	17.8	13.5
Food prices	n.a.	n.a.	n.a.	n.a.	214.1	123.4	17.7	10.3
Nominal wages	n.a.	67	1,200	988	367	222	166	n.a.
Real wages	-3	-34	6	-9	-26	13	11.0	17.0

Sources - S.Hedlund and N. Sundstrom,"The Russian economy After Systemic Change", *Europe-Asia Studies*, September 1996, *p.893,89;* Sedik, D., C. Foster, and W. Liefert, "Economic Reforms and Agriculture in the Russian Federation, 1992-1995" *Communist Economies and Economic Transformation*, 8 (1996): 142; and RECEP, *Russian Economic Trends*, *1997: II* (London: Russian European Centre for Economic Policy of the London School of Economics), p. 38, 54.

Table 4: Household food production by main products, 1991-1997

Year	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**change 1990-1997**
(mln tonnes)								
potatoes	24.8	29.9	31.1	29.8	35.9	34.9	33.8	37 %
vegetables	4.8	5.5	6.3	6.4	8.3	8.2	8.5	76 %
fruit	1.4	2.0	1.9	1.6	1.7	2.4	2.2	56 %

Source - Goskomstat, "The Development of the Agricultural Sector" (in Russian), *Goskomstat homepage: http://www.gks.ru. Goskomstat, p.:3*

Table 5: Share of household food production in total production by product, 1990-1996

Year	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**change 1990-1996**
(%)								
potatoes	66	72	78	82	88	90	90	36 %
vegetables	30	46	55	65	67	73	77	256 %
fruit	51	65	69	69	77	77	79	55 %
meat	33	35	44	50	62	61	66	100 %
milk	46	48	55	58	64	70	78	70 %
eggs	32	32	37	39	42	39	46	44 %
wool	27	30	37	35	46	50	58	215 %

Source - OECD, *Agricultural Policies in Transition Economies. Monitoring and Evaluation 1997*, (Paris: Organisation for Economic Co-operation and Development), p.212

Table 6: Acreage worked by households, 1991-1997

Year	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**change 1991-1997**
Total acreage *(ths. hectares):*								
private plots and dachas	4,590	6,826	5,825	6,062	5,810	5,805	5,923	29 %
collective garden	1,440	1,639	1,821	1,830	1,845	1,843	1,809	26 %
total household acreage	6,030	8,467	7,646	7,892	7,655	7,648	7,732	28 %
total agricultural acreage	222,125	222,332	220,788	220,767	n.a.	n.a.	219,231	- 1 %
share in acreage *(%)*	2,7	3,8	3,5	3,6	n.a.	n.a.	3.5	31 %
average plot size*(hectares):*								
private plots and dachas	0.27	0.35	0.35	0.37	0.36	0.36	0.36	33 %
collective gardens	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0 %
overall weighted average	0.22	0.30	0.29	0.30	0.29	0.29	0.29	32 %
number of plots*(millions):*								
plots at house	17.1	19.3	16.6	16.6	16.3	16.3	16.4	-4%
collective gardens	19.0	21.4	22.5	22.3	22.4	22.1	21.7	14 %
total	36.1	40.7	39.1	38.9	38.7	38.4	38.1	6 %

Sources - OECD, *Agricultural Policies in Transition Economies. Monitoring and Evaluation 1997*, (Paris: Organisation for Economic Co-operation and Development), p.88; OECD, *Agricultural Policies in Transition Economies. Monitoring and Evaluation 1997*, (Paris: Organisation for Economic Co-operation and Development), p.205; and Goskomstat, "The Development of the Agricultural Sector" (in Russian), *Goskomstat homepage:* http://www.gks.ru, *p.1*

Table 7: Changes in Productivity of Land in Household Food Production by main products, 1991-1997

Year	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**change 1991-1997**
Land productivity *(tonnes/ ha)*								
Potatoes	11.5	12.3	11.4	10.6	12.0	11.6	11.3	- 2 %
Vegetables	15.9	15.6	15.1	13.9	16.1	15.4	15.1	- 5 %
Fruit	4.2	5.4	4.9	3.7	3.6	5.0	4.5	7 %

Source: Goskomstat, "The Development of the Agricultural Sector" (in Russian), *Goskomstat homepage: http://www.gks.ru*, p.4 and author's calculations

Table 8: Changes in Productivity of Urban and Rural Labour in Household Food Production by products, 1991-1996

Year		**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**relative change 1991-1996**	
Labour Productivity** *(kg. per household member; urban/rural)*								**urban**	***rural***
Potatoes		**urban**	**7.5**	**7.8**	**8.4**	**7.5**	**7.9**	**7.7**	**2.7 %**
	rural	***11.7***	***12.6***	***12.9***	***12.3***	***13.3***	***12.6***		***7.7 %***
Vegetables	**“**	**6.9**	**6.3**	**6.0**	**5.6**	**6.5**	**6.1**	**-11.6 %**	
	“	***7.9***	***7.4***	***7.4***	***6.3***	***8.0***	***7.3***		***-7.6 %***
Fruit	**“**	**3.0**	**2.6**	**2.7**	**2.1**	**2.7**	**2.8**	**-6.7 %**	
	“	***2.2***	***2.0***	***2.2***	***1.9***	***1.9***	***1.9***		***-15.8 %***
Milk & dairy	**“**	**28.1**	**23.4**	**23.8**	**22.8**	**18.3**	**17.2**	**-38.8 %**	
	“	***30.5***	***31.0***	***33.3***	***29.5***	***27.6***	***25.9***		***-17.8 %***
Meat	**“**	**5.5**	**4.9**	**4.8**	**4.9**	**4.3**	**4.0**	**-37.5 %**	
	“	***5.5***	***5.6***	***5.3***	***4.8***	***4.8***	***4.2***		***-31.0 %***
Eggs (pieces)	**“**	**18**	**20**	**19**	**17**	**16**	**14**	**-28.6 %**	
	“	***21***	***23***	***22***	***18***	***17***	***15***		***-40.0 %***

Source: Goskomstat, “The Development of the Agricultural Sector” (in Russian), *Goskomstat homepage: http://www.gks.ru Goskomstat, p.8* and author’s calculations.

Table 9: Household Land Use, 1992-1996

interview round	***Did you use farm land last year?***		***If yes*, did you use farm land this year?***			***If you used farm land this year, what amount (ha)?***		
--	**N**	**Mean (S.D.)**	**N**	**Mean**	**(S.D.)**	**N**	**Mean**	**(S.D.)**
1 - 1992 (July)	n.a.		6,321	1.398	(0.489)	3,773	0.144	(0.449)
2 - 1992 (Dec.)	n.a.		5,767	1.400	(0.490)	2,474	0.123	(0.132)
3 - 1993	n.a.		n.a.			n.a.		
4 - 1994 (Jan.)**	n.a.		4,117	1.616	(0.564)	1,554	1.318	(41.68)
5 - 1994 (Dec.)	3,965	1.336 (0.472)	2,631	1.034	(0.226)	2,474	0.502	(8.046)
6 – 1995	3,771	1.340 (0.474)	2,489	1.047	(0.211)	2,373	0.378	(2.639)
7 – 1996	3,742	1.339 (0.473)	2,475	1.036	(0.185)	2,335	0.172	(0.790)

Notes: For all questions except "What was the amount of land you worked?", the answer 'yes' was assigned a value 1, the answer 'no' the value 2.

**'If yes' applies to rounds 5,6 and 7 only. In both the 1992 and the first 1994 rounds, different questions were asked, from which these data are constructed.*

*** In the first 1994 round, only the number of land* owners *was reported. These figures were inflated by 20 % to arrive at the number of land* users*, based on the 1992 ratio between land owners and land users.*

Source: RLMS and author's calculations.

Table 10: Time Spent on Gardening by Members of Households, 1992-1996

interview round	**months/year of interview**	***Did you garden last week?* (1=yes, 2=no)**				***If yes*, how much time did you spent gardening?* (in hours)**		
		N	**Mean**	**(S.D.)**	**% 'yes'**	**N**	**Mean**	**(S.D.)**
1	7-10 / '92	n.a.	n.a.	n.a.	n.a.	1,6465	6.50	(11.83)
2	12/'92 – 3/'93	13,818	1.82	(0.39)	18 %	2,497	15.40	(11.94)
3	7-9 / 1993	14,207	1.45	(0.50)	55 %	7,555	18.02	(14.74)
4	10/'93 - 1/'94	13,697	1.78	(0.42)	22 %	2,972	14.05	(10.85)
5	11-12/'94	10,272	1.87	(0.34)	13 %	1,333	15.49	(13.28)
6	10-12 /'95	9,735	1.74	(0.44)	26 %	2,454	13.89	(13.88)
7	10-12 /'96	9,767	1.73	(0.44)	27 %	2,545	13.50	(13.34)

Note: This clause was omitted in the first round

Source - RMLS, *Russian Longitudonal Monitoring Service Homepage*: *http://www.cpc.unc.edu/projects/rlms/home.html* and author's calculations

Table 11: Ownership of various types of land according to household size, 1994

(%)	**all households**	**households of size…**				
		1	**2**	**3**	**4**	**5 or more**
all households	100	100	100	100	100	100
households owning land	58.3	48.4	57.9	55.6	63.8	71.7
households not owning land	41.7	51.6	42.1	44.4	36.2	28.3

Source - Goskomstat, *Russia 1997: Social-Demographic Situation* (in Russian), p.300

Table 12: Household Food Production and Income, 1996

Income decile (increasing incomes)	1	2	3	4	5	
	Reported money income (Rb) (*)					
All	170,600	234,400	274,400	318,300	360,400	
	Money income spent on food (Rb)					
all	62,466	90,564	102,774	104,253	123,466	
urban	71,770	105,300	118,320	120,938	142,596	
rural	36,566	39,526	48,672	64,413	574,26	
	money income spent on food (% reported money income)					
all	36,6	38,6	37,5	32,8	34,3	
urban	42,1	44,9	43,1	38,0	39,6	
rural	21,4	16,9	17,7	20,2	15,9	
	value HFP (Rb)					
all	62,716	75,609	83,410	84,233	98,197	
urban	29,457	39,741	40,712	39,670	46,212	
rural	137,559	134,599	167,647	194,273	176,732	
	Share HFPO traded (% value HFP)					
all	30	21,6	23,3	36	24,4	
urban	9,9	13,9	13,7	13,4	14	
rural	36	38	41,6	40,7	40,2	
	Share HFP consumed (% value HFP)					
all	70	78,4	76,7	64	75,6	
Urban	90,1	86,1	86,3	86,6	86	
Rural	64	62	58,4	59,3	59,8	
	inclusive income (money income plus value HFP, Rb)					
All	233,316	310,008	357,810	402,533	458,596	
Urban	154,639	205,914	226,896	228,534	267,874	
Rural	238,785	279,639	326,679	354,881	365,350	
	income increase resulting from HFP (% money income)					
All	36,8	32,3	30,4	26,5	27,2	
Urban	23,5	23,9	21,9	21,0	20,8	
Rural	135,9	92,8	105,4	121,0	93,7	

Table 12: Household Food Production and Income, 1996 (continued)

Income decile (increasing incomes)	6	7	8	9	10	All-Russia average(**)
	Reported money income (Rb)					
All	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Money income spent on food (Rb)					
All	117,162	135,225	142,235	170,570	217,700	127,375
Urban	135,869	156,716	159,985	196,031	247,944	146,534
Rural	66,669	72,779	76,329	89,774	130,926	73,627
	value HFP (Rb)					
All	86,245	102,012	98,434	124,024	147,569	96,090
Urban	45,290	45,238	42,528	54,328	62,763	44,764
Rural	218,242	201,860	206,373	250,281	355,789	218,546
	share HFP traded (% value HFP)					
All	23,6	24,7	24,2	25,3	26	23,8
Urban	15,1	11,9	12,8	13,8	13,2	13,7
Rural	46,7	41,8	41,4	44,4	46,6	41,6
	Share HFP consumed (% value HFP)					
All	76,4	75,3	75,8	74,7	74	76,2
Urban	84,9	88,1	87,2	86,2	86,8	86,3
Rural	53,3	58,2	58,6	55,6	53,4	58,4

Rb = Rouble; n.a. = not available.

(*) Income data were available for the lower half of the income distribution only. This covers approximately 75 % of the Russian population[9.]

(**) Note that these are corrected values. See the Appendix for calcuations.

Source: Goskomstat, *Russia 1997: Social-Demographic Situation* (in Russian), p.197-198 and author's calculations

Table A : Sample Biases and Corrections

	(1) total value of food consumed and traded	(2) money value spent on food as % of (1)	(3) value HFP as % of (1)	(4) share of HFP consumed as % of (3)
		Goskomstat figures		
All	22,3465	57,0	43,0	76,2
Urban	19,1298	76,6	23,4	86,3
Rural	29,2174	25,2	74,8	58,4
		Implied population shares (U,R) and correction factor (x)		
U	0,68	0,62	0,62	0,64
R	0,32	0,38	0,38	0,36
x	0,05	0,11	0,11	0,09
		Corrected values (U=0.73, R=0.27, x=0)		
All	21,8535	62,7	37,3	78,8

Source: Goskomstat, *Russia 1997: Social-Demographic Situation* (in Russian), p.197 and author's calculations.

NOTES

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[1] Simon Clarke, "Household Survival in a Non-Monetary Market Economy", paper presented at the Seminar on Household Survival Strategies and New Forms of Employment in Russia at Cambridge, UK, January 18, 1999.

[2] For two exceptions, see Harm Tho Seeth, S. Chachnov, and A. Surinov "Russian Poverty: Muddling Through the Transition with Garden Plots." *World Development* 26 (1998): 1611-1623, and Clarke (n.1 above).

[3] 'Traditional agriculture' here denotes large-scale enterprises, including both former *sovkhozy* and *kolkhozy*. In 1997 there were 27,000 enterprises receiving 70 % or more from their revenues from agricultural production, and an additional 14,000 enterprises partly engaging in agricultural production. See OECD, *Review of Agricultural Policies: Russian Federation*, (Paris: Organisation for Economic Co-operation and Development, 1998), p.86.

[4] OECD, *Agricultural Policies in Transition Economies. Monitoring and Evaluation 1997*, (Paris: Organisation for Economic Co-operation and Development).

[5] Prosterman, R.L, R.G. Mitchell and B.J. Rorem, "Prospects for Family Farming in Russia.", *Europe-Asia Studies* 50 (1998):1383-1407, p.1383.

[6] Laird, R. "Kolkhozy, the Russian Achilles Heel: Failed Agrarian Reforms", *Europe-Asia Studies* 49 (1997): 469-478: p.470 and Sedik, D., C. Foster, and W. Liefert, "Economic Reforms and Agriculture in the Russian Federation, 1992-1995" Communist Economies and Economic Transformation, 8(1996),:133-148, p.142.

[7] Prosterman et al., n. 5 above.

[8] Günther Schmitt, "Why is the Agriculture of Advanced Western Countries Still Organised by Family Farms? Will This Continue to be So in the Future?" *European Review of Agricultural Economics*, vol. 18(1991): 444-458.

[9] IET, *Russian Economy in 1996. Trends and Outlooks*, (Moscow: Institute for Economy in Transition, 1997), p.78

[10] Laird, n.6 above, p.472; and OECD, n.4 above, p.206.

[11] See, for example IMF et al., *A Study of the Soviet Economy. Volume 3*, (Washington, D.C. and Paris, 1991: IMF, WB, OECD, EBRD), p.157.

[12] Andrew Barnes,"What's the Difference? Industrial Privatisation and Agricultural Land Reform in Russia, 1900-1996", *Europe-Asia Studies*, vol. 50 (1998): 843-857, p. 852-853.

[13] OECD, n.3 above, p.8; Barnes, n.12 above, p.849.

[14] Laird, n. 6 above, p. 475; Prosterman et al., n. 5 above, p.1386; OECD, n. 4 above, p.109; and OECD, n. 5 above, p.91.

[15] Stephen Wegren, "From Farm to Table: the Food System in Post-Communist Russia" *Communist Economies and Economic Transformation* 8 (1996): 149-183, p.176.

[16] IET, n. 9 above, p.81; and Laird, n. 6 above, p.475.

[17] Laird, n.6 above, p.474-475.

[18] OECD, n.5 above, p.109; and OECD, n.3 above, p.90.

[19] It must be emphasised that these 'family farm' figures are problematic because the definition of 'family farm', and especially the delineation from household plots is unclear. Many people use the label 'family farm' to overcome size limits set to their household plots. Moreover, a (probably considerable) share of family farm (or household plot) production is consumed and never marketed. Another share is sold on local markets, and also never registered. Hence the actual number of commercial family farms is certainly lower than the official figure, while the share of output of family farms in total production is certainly higher than the official figure.

[20] OECD, n.4 above, p.214.

[21] In addition, in the 1991-1992 and 1998-1999 winters food aid from the USA increased food supplies.

[22] OECD, *Agricultural Policies in Transition Economies. Monitoring and Evaluation 1996*, (Paris: Organisation for Economic Co-operation and Development), p.128.

[23] It is estimated that respondents to a large-scale household budget survey in 1997 earned on average 190 % more than they report to the authorities. See Paul Frijters and Bernard van Praag, "The Extend To Which Incomes Are Under-Reported in Russian Surveys" (Department of General Economics, University of Amsterdam, mimeo).

[24] The Gini coefficient is closer to zero as incomes are more equally distributed.

[25] Clarke, n.1 above; RMLS, *Russian Longitudonal Monitoring Service Homepage*: *http://www.cpc.unc.edu/projects/rlms/home.html* ; Jennifer Klugman, and J. Braithwaite, "Poverty in Russia during the Transition: An Overview." *World Bank Research Observer* (13): pp. 37-58; and World Bank, *From Plan to Market. World Development Report 1996* (New York: Oxford University Press).

[26] Laird, n. 6 above, p:470-471; and RECEP, *Russian Economic Trends, 1997: II* (London: Russian European Centre for Economic Policy of the London School of Economics), p.147.

[27] Goskomstat *Russia in Figures* (Moscow: Goskomstat, 1997 – in Russian)

[28] Wegren, n. 15 above: p.173.

[29] OECD, n.4 above, p. 215.

[30]OECD, n.5 above, p.1; and Gavriliyuk, "Treshing is the Work That A Peasant Finds Most Pleasant." (in Russian), *Rossiskaya Gazeta*, October 6, 1998.

[31] Defined as an increase of the share of produce with low added value.

[32] IET, n.9 above, p. 81.

[33] Unsurprisingly, the figures do not add up correctly because of the difficulties inherent in measuring small-scale household production, the rapid developments in this area, and the problems in maintaining output quality that the statistical bureaus, like all state agencies, faced during transformation.

[34] Goskomstat, "The Development of the Agricultural Sector" (in Russian), *Goskomstat homepage: http://www.gks.ru.*

[35] Sedik, D., C. Foster, and W. Liefert, "Economic Reforms and Agriculture in the Russian Federation, 1992-1995", *Communist Economies and Economic Transformation* 8 (1996):142.

[36] Theoretically, labour productivity (properly defined) of the favoured product will *decline* relative to the other product, if we assume decreasing returns to marginal labour units. Yet it is unlikely that households have attributed labour units to various products when reporting their production, or that statisticians have done so afterwards.

[37] OECD, n.4 above, p.109

[38] RLMS, n.25 above.

[39] The drop to 40 % in January1994 is improbable, but could not be explained by reference to data collection methods.

[40] The changes in average amount of land used per household were rather erratic, and the standard deviation large in the round 4, 5 and 6 figures (1994-1995), were S.D. was 32, 16 and 7 times the average, respectively. Also comparison with the small change of households using land in these years renders these figures implausible. The 1996 figure is again more reliable, having a much lower S.D

[41] Women do most of the garden work – see Clarke, n. 1 above.

[42] This rise may have been continuous if the drop to 13 % in winter 1994 can be attributed to the exclusion of the month October from the interview period.

[43] To see this, solve the equation

$$22\% = (13*M + 2*F*M)/15$$

Here M denotes the mean in round 4, if calculated for the 13-week interview period in October, November and December that was used in round 6 and 7. F denotes the assumed ratio of the frequency of garden visits in January over the frequency in October/November/December. In the table, F=1 and M=22%. Substituting F=0 and F=1/3 yields M=25% and M=24%, respectively.

[44] In fact the 1996 figure will be over 62 %, as part of the gardeners that is covered in summer will be missing in fall.

[45]To see this, solve

$$14.05 = (13*M + 2*F*M)/15$$

Now M denotes the mean time in round 4, while F denotes the assumed ratio of gardening time in January over gardening time in October/November/December. Solving for F=0 and F=1/3 yields M=16.06 and M=15.44.

[46] Again we should attribute the higher round 5 figure not to a real increase in time spent gardening,

but to the fact that October is excluded from the interview period. In November and December, regular and frequent work on the standing crop is finished, and jobs left relate to clearing the garden and making it ready for winter. These jobs can be more easily concentrated on particular days, which is efficient because of costs in money and time connected to travelling from dwelling to garden are often considerable (especially for urban gardeners). The smaller total workload and the concentration in time of the jobs explain why we observe a smaller number of respondents working in any one week, but for those who do so, longer hours per week, if we exclude October.

[47] OECD, n. 4 above, p.109.

[48] Given the similarity of magnitude of the OECD figure given above and the 'household plots' category in table 6, this OECD report probably indicated only one type of plot, accounting for only half of the total amount of land used for household food production. OECD (n.3 above) mentions, more precisely, 16 million household plots, which again does not include household food production in collective gardens.

[49] David Macey, *Book Reviews*, Economics of Planning 31:1 (1998), p.85. Macey indicated in correspondence that this is an expert assessment rather than a figure based on statistical sources.

[50] Interfax, October 29, 1998, *No Threat of Famine inRusia*, Moscow: Interfax Press Agency

[51] Tho Seeth, n. 2 above.

[52] Clarke, n. 1 above.

[53] Goskomstat, *Russia 1997: Social-Demographic Situation* (in Russian), p.196

[54] Here we can interpret 'having at your disposal' as 'working', since the alternative (having but not working) is already covered in the other question.

[55] Timothy Mroz and Barry Popkin, "Poverty and the Economic Transition in the Russian Federation", *Economic Development and Cultural Change*, (1995):1-31, p.17; Klugman & Braithwaite, n. 25 above. p.44; and Christiaan Grootaert and J. Braithwaite, *Poverty Correlates and Indicator-Based Targeting in Eastern Europe and the Former Soviet Union*. World Bank Policy Research working Paper no. 1942. (Washington, D.C.: The World Bank), p.49.

[56] Note that money income figures are unreliable in absolute terms (note 23), but may still be useful if under-reporting is assumed not to differ widely over the lower half of the income distribution.

[57] Note that a sample bias in the Goskomstat figures is here corrected. This results in a decrease in the value of household food production for the 'average' group, while leaving the 'rural' and 'urban' figures unaffected. See the Appendix for calculations.

[58] Note that 'inclusive income'one includes money incomes and food production, not other real income components.

[59] See on this also Tho Seeth, n. 2 above, p.161.

[60] See, for example, Oleg Patlassov, *Influence of the Competitiveness of Reformed Large-Scale Farms, Entrepreneurial Activity and Household Plots on the Structure of the Agricultural Labour Market* (in Russian), paper presented at the conference "Competitiveness of Agricultural Enterprises in and Farm Activities in Transition Countries", November 22-24, Wittenberg, Germany.

[61] See on this Leonid Polischuk, "Missed Markets: Inplications for Economic Behaviour and institutional Chnage" in J.M Nelson et al., *Transforming Post-Communist Political Economies* (Washington DC, 1997).

[62] A. *Chayanov, The Theory of Peasant Economy (1966 ed.)*. Edited by: Thorner, D., B. Kerblay, and R. Smith. (Homewood, Ill.: Richard D. Irwin for the American Economic Association). For an overview of Chayanov's theory on peasant time allocation, see E. Durrenberger, (ed.*), Chayanov, Peasants, and Economic Anthropology. Series: Studies in Anthropology* (Orlando etc.: Academic Press Inc).

[63] Based on Goskomstat, 1997, n. 27 above.

[64] See OECD, n.4 above, p. 202 and EBRD, *Transition Report 1998*, (London: European Bank for Reconstruction and Development, 1998), p. 225.

[65] This figure is based on the assumption of equal household size in urban and rural areas. The actual bias is larger due to the larger (but unknown) rural household size.