The Role of Statistics in Agrarian Policy Formulation: The Russian Case

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Agricultural statistics in transition economies face many problems stemming from the previously applied statistical model designed to serve the needs of centrally planned economies. These include specific transition-related problems, such as the need to register and measure still-evolving and unstable phenomena (farm structure, land tenure and market infrastructure); shortages of statisticians skilled in market-oriented statistical models; and, frequently, budget constraints as the need for statistics competes for budget allocations with a wide range of other, vital national needs.

This natural transition in statistical work coincides in time with agrarian policy reform. Refining new, more market-relevant policy tools requires solid feedback from those affected by said policy tools, but the feedback can be weak due to the failure of statistics to provide reliable information on the policy tools' effect.

The long hiatus since the last agricultural census makes the upcoming effort in July 2006 all the more complicated: there are no traditions in living memory of such a data collection, no institutional memory of methodology, lack of cumulative data from previous censuses to use as a benchmark, and so on.

As is well known, Soviet agriculture was based on two types of large-scale farming: collective and state farms. Historically they differed in their genesis and for decades in both their organization and performance. State farm employees enjoyed

guaranteed state wages, their schools were financed from the government budget; in contrast to this collective farm employees' wages were paid from farmgate receipts and schools were supported from the farms' budgets. However, over the 1960s through the 1980s collective and state farms frequently were reorganized from one form into the other, merged, and split; and ultimately wages and pensions were guaranteed for all agricultural workers regardless of farm type. Thus, by the end of the Soviet era, from the economic point of view there were few real differences between collective and state farms.

Nevertheless, from the legal and ideological points of view, collective farms were cooperatives and thus fell into a different category of the national economy from state farms, where were government property. This created statistical complications. Employment statistics (employment, wages, educational levels, etc.) were kept separately for collective farm employees while those for state farm employees were aggregated with other workers in the state-owned sector. It is thus difficult to extract data on overall agricultural employment for the Soviet period. For this reason, long time series employment data for Russia (and other CIS states) are not very reliable.

Beginning in the mid-1960s the Soviet centrally planned economy used major economic indicators of a market economy such as profits, margins, and net returns. At the same time, the state planners fixed input and output prices, wages, and determined marketing channels, uses for profits, and other aspects of firm performance. Under such circumstances, profits, margins, and net returns were not true indicators of efficiency but rather merely the results of bookkeeping calculations. This means that comparison of pre-reform and current farm efficiency and performance is false.

This is especially clear with regard to agricultural land valuation. In the USSR, land was not considered an asset and no land market existed. Therefore, there was

no land valuation.   Value of land was not included in overall farm assets, in calculations of farm net return, or of individual products' margins. This led to overestimates of indicators of farm profitability (35% of net return was considered the minimum viable net return in agriculture). When land acquired value under market conditions, all nominal efficiency indicators declined noticeably, yet the agricultural establishment of old-thinking farm managers and policy makers continued to focus on achieving these indicators' previous levels. This phenomenon contributed to the agricultural establishment's resistance to reforms.

A related problem arose from another consequence of central planning in agriculture. All Soviet farms were compelled to seek fulfillment of planned production targets and were rewarded for overproduction against the baseline of these production targets. Furthermore, provincial and republic authorities were rewarded for overproduction within their respective territories. This caused global over-reporting at all levels of government. By contrast, market reforms created incentives for under-reporting as a form of tax avoidance. This sudden change from one mode of firm behavior to its opposite inflated the genuine drop in agriculture sector output after reforms got underway.

These are some of the most critical problems of Soviet agricultural statistics that gave rise to current statistical problems. In addition, the transition process itself engendered a set of new problems, to which we shall turn in the second section of this paper.

Under these circumstances, sound policy development can be accelerated by garnering a consensus of agricultural elites on the nature of policy to be adopted. For instance, a consensus of 10 CEECs was inspired by their common desire to accede to the European Union. Almost from the very first moment of the collapse of Communism, EU accession became a transition goal and the Common Agricultural

Policy was accepted as the policy framework for the entire pre-accession period. Russia enjoyed no such focus for driving policy formulation.

Paradoxically, the absence of political consensus in Russia, together with relatively weak agricultural statistics, set the stage for a quite liberal agrarian policy. Poor data do not support strong arguments for either proponents or opponents of particular regulatory measures. This also partly explains the changeability of Russia's agricultural policy since 1991.

In this paper we discuss the major problems of Russia's agricultural statistics originating from the Soviet era and emerging under transition conditions, and the ways in which these problems affect agrarian policy. In conclusion we suggest some possible improvements to statistical measurement of Russia's agriculture.

1. Soviet Statistics

Soviet agricultural statistics were based on mandatory farm reporting to the National Statistical Office. Each farm had to fill out and submit several statistical forms weekly, monthly, quarterly and annually.

The annual report of the state and collective farms of the USSR (a fairly expansive volume containing detailed data on various aspects of farm performance) was the main source of data on agriculture at that time.

Survey sampling was not a commonly used statistical tool. It was applied mainly to monitoring subsistence farming by the rural population as well as budget surveys in the framework of budget statistics.

Periodically the National Statistical Office conducted national censuses of livestock and some other, specific items, but the last full agricultural census was conducted in 1920. In the first instance, agricultural and demographic censuses were halted in order to hide the horrible consequences of collectivization and other repressive policies of the 1930s. Later, the mandatory reporting provided sufficiently

reliable information for the purposes it served, and it was assumed that censuses could not add much of value to this dataset. It is also worth noting that mandatory reporting was quite relevant to the totalitarian economic paradigm. A planner set all economic parameters for farms, and the same planner set up the farms themselves. In this environment, direct reporting on achievement of plan targets seems quite natural.

However, this mandatory reporting system suffered from several problems, and these problems continue to affect Russia's statistical system. One must thus bear these problems in mind in order better to understand the current shortcomings of transition statistics.

Mandatory reporting is still viewed as a higher-quality source of data. Russian policymakers, statisticians, and agribusinessmen largely distrust survey data, but in a free-market environment mandatory reporting is difficult to enforce. At present it mainly consists of commercial transaction information used to calculate tax obligations, and aside from that many new, small farms lack sufficient, detailed records able to meet the requirements of the bygone statistical system. At last, in transitional conditions there is now administrative power for enforcement of obligatory reporting (even more nationally important certainly obligatory tax reporting is badly administrated in the early stages of transition). Thus, these data potentially mislead rather than support economic policymakers.

2. Statistical Problems of Transition

Structure

As in many other post-communist countries, Russia's agriculture is based on three types of production units: (1) large-scale enterprises, the successors of collective and state farms and various derivative farming companies; (2) family farms, and (3) household plots of the rural and, to a minor extent, the suburban and urban

population. The types of agricultural production units are mainly defined in a legal sense by their form of registration. Large-scale farms are incorporated in one form or another, family farms are specifically registered as such, and household plots while exempt from both business registration and taxation are defined in terms of the documented allotment of a physical plot of land. This matters because the benchmarks of physical size and economic turnover can differ dramatically from that typical for a given legal definition. Thus, in Russia there exist family farms operating 3 to 5 thousand hectares and employing 50 to 100 or more workers, which makes them comparable in size to the typical Russian incorporated farm in terms of their size. On the other hand there are family farms with no land under cultivation or pasture, but which are registered as family farms and count as such in the statistics. In addition, there is little difference in actual ownership between these two types. A "large-scale" farm cab be controlled by a single individual while a "family farm" is not atypically owned as a partnership or even owned jointly and severally by unrelated persons (Russian law permits membership in a "family farm").

This dramatic variation across farming units within a single farm type makes benchmarking by type ambiguous. Nonetheless, Russian statistics record production units in accordance with these categories. Grouping of farms by size, asset endowment, and output is done separately for each type. Benchmarks of groups differ so greatly that it is not possible to compile meaningful, cross-sector statistics. For example, one cannot determine how many farm units in Russia are smaller than 10 hectares, or 100 hectares, or have fewer than 10 head of cattle, or 100 head of sheep; one cannot determine what share of farms by size produces 30% of gross agricultural output, or 75%, or any other proportion. The intervals of size groups for family farms and household plots do not coincide ("plots" can be up to 50 hectares in some provinces).

Even the forthcoming agricultural census methodology proceeds from the same "three-layer" paradigm. The questionnaires as drafted are differentiated by legal status of the respondent (farming enterprise, family farm, rural household plot, urban household plot). National aggregate statistics will continue to be grouped by different benchmarks (Table 1), which will be stipulated for each different production unit classification.

Table 1. Example of Output Tables for Russia's Agricultural Census (drafted as on May, 2006). Grouping of three types of farms by land size (hectares)

Farm enterprises	Family farms	Household farms
		<0.11
		0.11-0.15
		0.16-0.2
		…
	<3	
>50		
	3-5	
	6-10	
	11-20	
	21-50	
51-100	51-70	>1.5
	71-100	
101-200	101-200	
201-500-	201-500	
501-1000	501-1000	
1001-1500	1001-1500	
1501-2000	1501-3000	
2001-3000		
3001-4000	>3000	
4001-5000		
5001-10000		
>10000		

Source: National Statistical Agency (unofficial)

This approach hampers international and domestic comparisons. Very often the aggregate share of family farms and household plots is regarded simply as the share of production of small, family-run farms. It is thus used as a measure of progress of reforms or of sector fragmentation (e.g., 2, 3, 4). If we shelve the debate over the extent to which the depth of agrarian reforms is reflected in this indicator, we can turn to the statistical aspect of the problem. Distribution by production unit types

does not reflect actual production unit distribution by size: family farms and household plots can be substantial in size and incorporated farming enterprises can be relatively small. This is especially true when comparing provinces of Russia and successor states of the Soviet Union with differing agricultural systems, farm structure traditions, and population densities. Thus, a typical family farm in Kazakhstan is bigger than the typical Armenian or Moldovan farm by a factor of 120, and the same, dramatic difference can be found between certain Russian provinces.
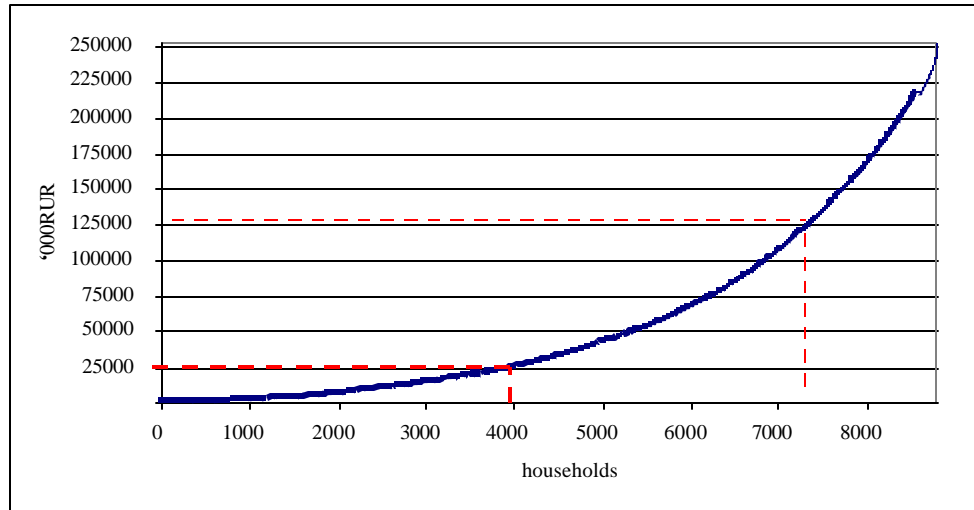
The concept of household plot production originated during collectivization, when peasants were deprived of most farm assets including land, livestock, and implements, and collectives were compelled to deliver nearly all their output to the government. In order to assure subsistence for peasants, they were endowed with small plots for household, subsistence production. Later they were allowed to sell surpluses to markets in towns and cities.

Under today's economic conditions, this approach is no longer conceptually relevant. Further, the multitude of these production units (16 million household plots in Russia) is tremendously heterogeneous. At one extreme are the purely subsistence plots which supply households with day-to-day sustenance under conditions of social and economic instability. At the other extreme are utterly market-oriented farms, sometimes of 50 to 100 hectares.

In 2005 the National Statistical Office conducted a pilot census in 6 rayons (counties) of 3 Russian provinces. We used the data from this survey of household plots to construct a distribution curse for the gross agricultural output of these producers (Figure 1). The results were rather similar for all 6 rayons. From 42 to 71% of households generated 10% of gross agricultural output of the household sector, or 5% of gross agricultural output of the corresponding rayon. In the case of the rayon depicted in Figure 1, such households averaged 0.06 hectare and 2 head

of cattle.   Doubtless these 42% of households in this particular area are purely

subsistence plots.   In contrast, 50% of output originated on the upper 20% of

household plots, presumably market-oriented, commercial producers who do not

register as family farms in order to avoid taxation and to obtain concessional services

from an adjacent, large-scale, "mother" farm. (1)

Figure 1. Distribution of households by gross ag. output, one rayon

case

Source: (1)

There is thus no excuse for classifying these significantly diverse units into

one group of production units, and it is even less sensible to include this entire

multitude in the definition of "farms".   In accordance with the FAO approach to

national agricultural censuses, the census should cover those farms providing 95% to

99% of gross agricultural output. Using this approach in Russia would allow dropping

of at least 40% of household plots significantly reducing the cost of the census while

scarcely affecting its impact on the statistical data's usefulness to policy makers and

economic analysts.

This is not only a question of the census budget and amount of effort required.

It is also relevant for agricultural policy. If every household producing two baskets of

potatoes for home consumption is a farm, it should be the subject of agricultural

policy and be eligible for applicable subsidies (regardless of one's attitude toward the

scope and methods of subsidization). Theoretically, this should expand budget expenditures on agriculture dramatically, but in practice a majority of household plots are excluded from support policies as bureaucrats are empowered to decide who will or will not receive subsidies envisioned by general policy (and indisputably, this power degrades policy effectiveness and increases corruption).

The last issue of household plot statistics we intend to touch upon is employment. If we consider every household plot a "farm" providing employment, there is little unemployment in Russia's countryside. Unemployment offices tend to exclude members of households with any plot of land from lists of the registered unemployed. However, in many cases these plots provide no viable income for the family.
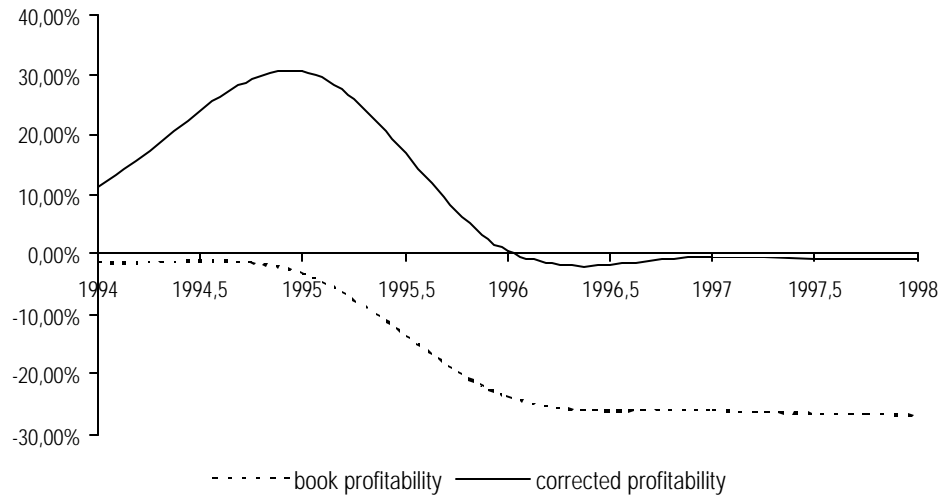
Farm performance

There are problems also with farm performance statistics. Under the Soviet tradition of agricultural bookkeeping, production costs were registered separately for crop and livestock production, then were summarized. Thus the cost of feed and seeds produced on the farm were counted first on the crop side and then the costs were included in the calculation of livestock production costs. In the transition period, on-farm production of feed and seeds increased significantly (thus, survey of Russian American project showed that in 2001 share of purchased feed and seed in total feed and seeds consumed was negligible - (1)). So double-counting of these on-farm production costs both overestimated true production costs in agriculture and correspondingly underestimated farm profits.

In addition, Russian agriculture is exempted from taxation of assets. This is an incentive to overappraise assets in the faint hope of appearing more solvent to creditors. However, overvalued assets cause overestimation of depreciation and, therefore, overestimation of production costs. This also contributes to

underestimation of farm profitability. Figure 2 depicts the extent to which farm profitability was underestimated in the 1990s. The corrected level of profitability is also rather low but is at least positive (land rent is still not included in production costs). There is probably no need to discuss how much such a wrong, aggregate indicator of sector profitability affected agricultural policy.

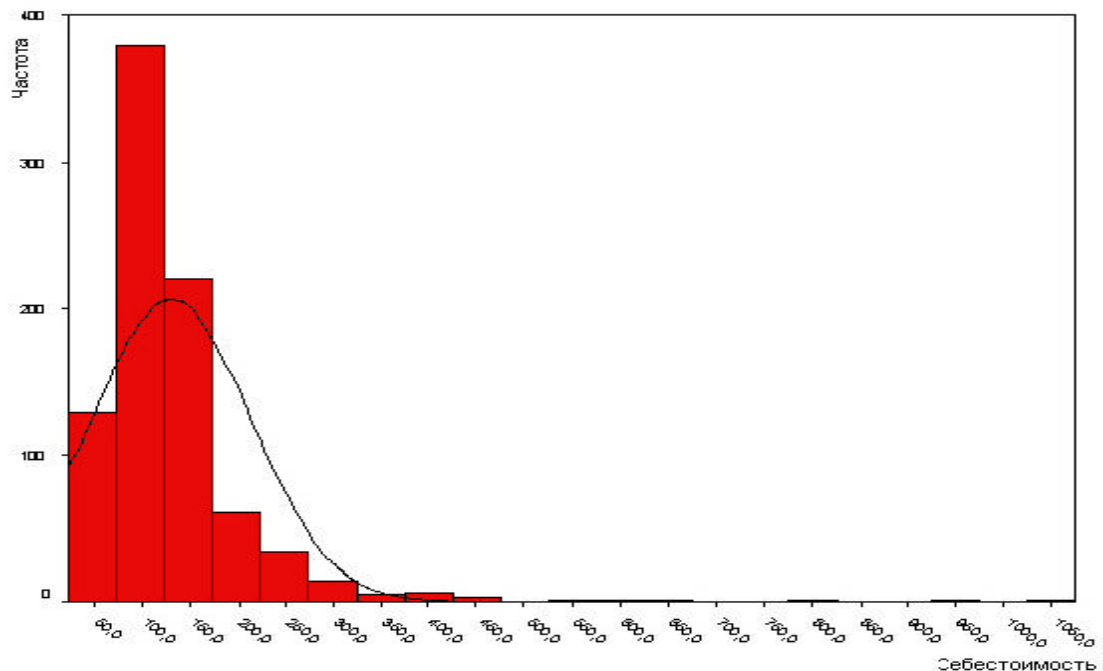**Figure 2. Official and Corrected Profitability of Russia' Agriculture**

Another problem of information on industry performance is directly connected to the transition. Let us consider unit cost of production. The frequency function of this indicator in the equilibrium state of the sector is likely to be normally distributed. In the event of some technological change in the industry this distribution is likely to have a left tail: some farms have already introduced the new technology and reduced the unit cost of production, which others still apply old technologies. In case of a shock to the industry, it can acquire a right tail because some producers are lagging in adjusting to the new environment. But a right-tail distribution is not sustainable under normal conditions: producers with extremely high costs of production go out of business. In Russia, though, the frequency distribution curve of cost of production for any major agricultural product and any region possesses a well

articulated right tail (Figure 3 depicts an example of such a curve for one Russian province for one year. The curves were constructed for 3 commodities over 3 years in 6 regions and display very similar shapes - (7)).

Figure 3. Example of frequency distribution curve for unit production cost: Rostov area, grain, 2000, RUR/MT

Source: (7)

The shape of the frequency curve of unit costs of production have policy consequences. Normally, policymakers base decisions on national average indicators or at least on their distribution by regions. In view of the aforementioned rightward bias, a national or provincial mean will be very biased to the right as well. If we assume that the level of support chosen for a particular agricultural commodity is based on mean cost of production, that level of support will support many inefficient producers and worsen market conditions for the most efficient producers.

The durability of large numbers of farms in the "right tail" of Russia's agriculture is caused mainly by the basing of support measures on sectoral means rather than sectoral modes. In only one case has a policy decision been based on a

sectoral mode. The sugar trade regime provided an instant result – expansion of national sugar beet production (regardless of one's attitude toward protectionism, here one should consider the effectiveness of the measure itself).

Prices

The last problem of agricultural statistics we intend to discuss is the problem of price statistics. Marketing regulation policy normally is based on an analysis of national (or sub-national) average prices that proceeds from the assumption of existence of a single market. During transition, such a market is only emerging, and there are tremendous price ranges for given products across regions and marketing channels. In addition, arbitrage is time-consuming under conditions of underdeveloped market infrastructure. For instance, a study at the end of the 1990s showed that prices for one product on the average farm sampled differed by 20 to 25% depending on the marketing channel. Moreover, a huge share of products (80% for grain, for instance) was marketed via barter at unreported prices, while the national aggregate statistics reflected only cash prices. (6)

3. Conclusions

The main conclusion we wish to draw is the following. Agricultural statistics of transition economies face severe and inevitable problems. Traditional indicators do not reflect adequately industry performance and the state of rural households. Under these circumstances, conventional approaches to policy formulation based on statistics (common for developed countries) are not applicable, and should not be replicated as they can mislead policymakers.

3. References

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