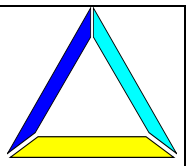
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Rural non-farm employment in Ukraine

1 Introduction

Development of rural non-farm employment (RNFE) opportunities is widely recognised to be a pillar of rural development policy and critical factor for providing rural employment and income in the long-term perspective.

Rural development policy is a complex issue, but is basically about two things: delivering public services in rural areas, in particular physical and social infrastructure, and supporting economic development in rural areas (Kuhn and Demyanenko, 2004). In the latter context, non-farm employment, in addition to agriculture, offers an important source of rural employment and opportunity to raise rural incomes, and hence living standards in rural Ukraine.

RNFE in this paper is defined widely to include all economic activities associated with work either waged or self-employed, located in rural areas, except agriculture, hunting, and fishing (Lanjouw and Lanjouw, 1997). These might be derived from agriculture and natural resource use via upstream or downstream linkages. Other activities (e.g. services, commerce etc) are similar to those in urban areas, in particular manufacturing, services and commerce.

Why RNFE worth particular attention? In general, according to Berdegue et al (2000), RNFE might serve as a partial solution to three major problems of rural areas.

First, RNFE can contribute to sustainable livelihood strategy for the rural population. This means that the existence of assets (human or capital) in rural households related to RNFE strengthens their livelihood position. This is important for rural areas but especially for agriculture specifically as one of the most challenging adjustment facing agriculture in Ukraine today is the need to reduce hidden unemployment and move to more manageable and efficient capital/labor ratios. RFNE is desperately needed to provide alternatives to agricultural employment in rural areas and to 'draw' excess labor out of farming.

Second, modern and efficient agriculture is intensive in terms of inputs, services and commercial linkages. If Ukrainian agriculture is to be transformed and to compete, it will require improved linkages with input supply systems, agricultural processing chains, and systems for the distribution of fresh and processed products. Modern agriculture requires cooperation with agroindustry in order to successfully meet the demanding quality and safety norms and standards of international markets. It also needs access to management, administrative and advisory services. All of these involve RNFE, in both the secondary (processing, agroindustry, etc.) and the tertiary sector (technical, commercial and transportation services).

Third, RNFE can contribute to the "urbanization" of rural. Rural areas in Ukraine have traditionally been associated with underdevelopment and backwardness. A major share of young rural generation strives to migrate to urban areas in pursuit of a "better life" in the form of better facilities, social and physical infrastructure, etc. RNFE opportunities might offer options for labor or professional development which are more attractive than agricultural work to some. Rural spaces exhibiting an increase in RNFE have changed the

characteristics of the rural environment. Non-agricultural trade, transportation systems, and wide range of services oriented to production, consumption and recreational needs significantly strengthen ties between towns and their hinterlands. Ultimately, this offers rural inhabitants not only better economic opportunities, but also for narrowing the quality gap between urban and rural lives (Berdegue et al, 2000).

This chapter consists of four parts. The first part tells about the RFNE situation and policies abroad. Then, using Ukrainian household survey data, we provide a profile of RNFE in Ukraine and an empirical analysis of the access of rural household members in Ukraine to RNFE opportunities. Finally, suggestions for RNFE promotion in Ukraine conclude the paper.

2 Lessons to be learned about RNFE abroad

Bright et al. (2000) review a voluminous literature on RNFE for developing and developed countries and make the following generalizations. Rural households in developing countries typically receive 30-35% of their total rural income from off-farm sources. Numerous studies demonstrate that there is a positive correlation of RNFE activities with:

- higher income levels of rural families;
- higher potential for diversification of income sources;
- higher productivity in agricultural activities. Other studies on RNFE have shown a positive correlation between a higher diversification of non-farm activities and income;
- the level of education;
- quality and access to infrastructure of services;
- quality, objectives and organization of services;
- opportunities created through local, regional and national government policies;
- access to credit and financial services. Studies on RNFE in developing countries suggest the following policies for sector promotion: increase the asset holdings of the rural community (in terms of education and infrastructure);
- remove land market constraints, improve access to credit for non-farm activities (Bright et al, 2000).

The experience with RNFE in developed countries is also relevant to Ukraine. Rural employment growth in the EU is driven by both endogenous and exogenous factors. Endogenous factors include local impulses and local resources, while exogenous externally determine the transplantation of employment into the region. EU policy experience shows that multi-sectoral, bottom-up approach must be taken to rural employment promotion, rather than concentration on just one sector, be it agriculture, or agro-food, tourism (von Meyer et al. 2000). Other policy lesson to be learned from the EU are that infrastructure should be improved to make rural areas attractive to business and for living. Governments should try to improve the general conditions in rural areas and not target particular enterprises. Resources should be directed not to regions with potential for growth due to their location, comparative advantage, or other reason, but which suffer from poor physical infrastructure, a poorly trained labor force or lack of processing and marketing facilities (Bright et al, 2000).

Berdegue et al. (2000) draw very similar conclusions after reviewing RNFE literature for Latin America:

- RNFE is strongly concentrated in areas characterized by dynamic and prosperous agriculture; poor or depressed agricultural areas have access to RNFE as well but, however, of a quite low income in absolute terms;

- poor households depend to a higher degree on RNFE, but the level of this type of income is very low in absolute terms; while households with higher agricultural incomes tend to have higher levels of non-farm incomes;
- the conventional view is that households with greater levels of access to land have less access to RNFE;
- educational level is a powerful determining factor in access to RNFE;
- RNFE arise as a consequence of prior investment in infrastructure (roads, electrification, etc);
- gender has a significant influence in determining access to RNFE (Berdegue et al, 2000).

3 Non-farm employment in rural Ukraine

3.1 The profile of non-farm employment in rural Ukraine

In 2004 almost one-third (15.5 m) of Ukraine's population (total 47.4 m) lived in rural areas. While agricultural production constitutes the backbone of the rural population, the non-farm sector and income are increasingly significant for them as well. As Table 1 indicates, a significant share of the rural population is employed in agriculture (about 10%), but approximately the same share is employed in non-farm sector (education, healthcare, extracting industry, etc). On the other hand, approximately 71% of the rural population is non-employed. These include those seeking work but not able to find it (unemployed), pensioners, pupils, students etc. However, one should take into account the specifics of rural life in Ukraine. Most rural households, including those involved in non-farm sector, tend to spend a considerable amount of time on subsistence or subsidiary farming as well. For example, rural, households produce about 2/3 of Ukraine's total raw milk production. Moreover, according to official statistics, households produce about 60% of the gross agricultural produce of Ukraine.

The RNFE profile is approximately the same across all regions. The most important sectors, in terms of rural employment, are the food processing industry, wholesale and retail trade, transport, and education. The relative importance of employment in agriculture largely reflects the degree of regional agriculture specialization. For example, in the leading Southern and Eastern regions higher percentages of the rural population are employed in agriculture than in other regions.

The fact that almost the whole rural population of Ukraine formally or informally works in agriculture represents an important challenge for rural development policy. Ukrainian agriculture has been in a process of restructuring over the last 15 years. Based on its natural endowments (climate, soils, geographical location) and given an adequate agriculture policy, Ukrainian agriculture can be expected to gradually restructure towards an internationally competitive and efficient sector. However, technical progress will release labor from agriculture, as illustrated in Table 2, which documents the steady and ongoing decline in the number and share of agricultural employment in counties such as Germany, France, and the USA.

Table 1
Sectoral profile of rural employment of primary occupation in Ukraine, 2004, %

	Branch of activity	Ukraine	West[1]	North	Center	South	East
Employed	Agriculture	9.27	4.76	11.09	9.92	13.58	10.48
	Fishery	0.11	0.09	*	0.03	0.16	0.23
	Extracting industry	0.50	0.38	0.25	0.40	*	1.82
	Processing industry	2.12	2.63	2.46	2.07	0.83	2.05
	Electricity, gas, and water supply	0.61	0.71	0.86	0.58	0.42	0.89
	Construction	1.55	1.68	1.28	0.99	2.56	1.29
	Whole- and retail sale	1.95	1.74	2.43	1.65	1.56	2.65
	Hotels	0.25	0.39	*	0.33	0.29	0.18
	Transport and communication	1.60	1.11	2.64	1.84	1.67	1.52
	Finance	0.13	0.12	0.15	0.04	0.25	0.15
	Real Estate	0.04	0.05	*	0.10	0.03	0.07
	State government	2.07	2.56	1.91	2.53	1.71	1.79
	Education	3.83	4.05	3.59	3.35	4.29	3.22
	Healthcare	2.05	1.96	3.17	2.08	1.85	1.73
	Public services	0.45	0.55	0.29	0.37	0.86	0.13
	Servants	0.01	0.03	*	*	*	*
Non-employed (pensioners, pupils, students, unemployed, children etc)		73.43	77.07	69.85	73.71	69.94	71.76

1 West: Transkarpathian, Lviv, Volyn, Ivano-Frankivsk, Ternopil, Rivne, Khmelnitsky, Chernivtsi oblasts; North: Zhytomyr, Kyiv, Chernigiv, Sumy oblasts; Center: Vinnytsya, Cherkasy, Poltava, Kirovograd oblasts; East: Kharkiv, Dnipropetrovsk, Zaporizhzhya, Donetsk, Lugansk oblasts; South: Odesa, Mykolaiv, Kherson oblasts and Crimea Autonomy.

Note: * no records

Source: own calculation on the basis of household survey conducted by the Derzhkomstat in 2004

Table 2
Farm employment in selected OECD countries and Ukraine

		1960	1970	1980	1990	2000	2010*
Australia	Farm employment, m persons	1.2	1.0	0.9	0.9	0.9	0.8
	% of total economic employment	27.8	18.6	14.2	11.1	9.0	7.6
Canada	Farm employment, m persons	2.5	1.8	1.8	1.0	0.8	0.6
	% of total economic employment	38.0	20.6	14.5	6.9	4.7	3.4
France	Farm employment, m persons	10.1	6.9	4.4	3.1	2.0	1.3
	% of total economic employment	51.1	32.0	18.7	12.6	7.4	4.6
Germany	Farm employment, m persons	10.9	6.8	5.4	3.2	2.1	1.3
	% of total economic employment	31.1	19.1	14.5	7.9	5.1	3.3
New Zealand	Farm employment, m persons	0.3	0.3	0.3	0.3	0.3	0.3
	% of total economic employment	38.6	29.7	25.8	21.0	17.6	15.3
Ukraine	Farm employment, m persons					5.2	
	% of total economic employment					24.8	
USA	Farm employment, m persons	13.1	9.6	8.5	7.7	6.3	5.2
	% of total economic employment	17.3	10.7	7.6	5.9	4.3	3.2

Note: * - projections

Source: FAOSTAT, State Committee of Statistics of Ukraine

Increasing rural unemployment, unless new jobs are created, implies significant social and economic problems for the government: increased rural-urban migration creating more stress on urban areas, increased rural poverty, reduced local tax bases, etc. RNFE opportunities can reduce these personal and public costs (Johnson, 2005).

Entrepreneurship is the basis for much economic development, and in most countries, farmers and other rural residents have been among the most entrepreneurial segments. It is widely agreed that entrepreneurship is essential to the development of the Ukrainian, and particularly rural Ukrainian economies (Akimova et al., 2003).

If we look at the profile of employment in rural areas in Ukraine, we notice that entrepreneurs and self-employed persons constitute only a small fraction of the total rural population, with almost negligible differences across the regions (see Table 3). The rural self-employed population of Ukraine is primarily engaged in agriculture, construction, processing and wholesale and retail activities (Table 4). Nevertheless, hired workers constitute the bulk of the employed rural population.

Table 3
Profile of rural employment by type, Ukraine, 2004, %

Type of Employment	Ukraine	West[1]	North	Center	South	East
Hired persons	26.44	22.78	30.14	25.99	30.02	28.19
Entrepreneurs (with hired persons)	0.16	0.14	*	0.41	0.09	0.03
Self-employed (w/o hired persons)	2.35	4.37	0.54	1.31	2.12	1.13
Subsistence and subsidiary farming	0.07	0.05	0.24	0.05	0.09	*
Non-employed (pensioners, pupils, students, unemployed, children etc)	70.96	72.64	70.82	72.24	67.65	70.66

1 West: Transkarpathian, Lviv, Volyn, Ivano-Frankivsk, Ternopil, Rivne, Khmelnitsky, Chernivtsi oblasts; North: Zhytomyr, Kyiv, Chernigiv, Sumy oblasts; Center: Vinnytsya, Cherkasy, Poltava, Kirovograd oblasts; East: Kharkiv, Dnipropetrovsk, Zaporizhzhya, Donetsk, Lugansk oblasts; South: Odesa, Mykolaiv, Kherson oblasts and Crimea Autonomy.

Note: * no records

Source: own calculation on the basis of household survey conducted by the Derzhkomstat in 2004.

As Table 5 shows, almost a half of the total public expenditures earmarked for agriculture and rural development in Ukraine in 2006 are enterprise targeted, or directly aimed at production. Such expenditures, as for example EU experience has shown, might increase agricultural output, but not agricultural competitiveness. Rural development measures (social and physical infrastructure, gasification, etc) receive only about 15% of the planned spending. Moreover these expenditures were largely neglected over the last several years, receiving only a tiny fraction of the total agricultural budget (Kuhn and Demyanenko, 2004). It would be more efficient to reallocate budget funds toward 'green box' measures (according to WTO classification[1]), and within the green box towards rural development measures, thus making agriculture more competitive and rural areas more attractive for the private sector. (Demyanenko and Galushko, 2004).

[1] According to WTO classification, farm support is divided into two broad categories: support, exempted from reduction commitments ('green box' measures) and support, which is subject to reduction ('amber box' measures).

Table 4
Sectoral profile of rural self-employment in Ukraine, 2004; %

	Branch of activity	Ukraine	West[1]	North	Center	South	East
Self-Employed	Agriculture	0.62	0.61	0.04	0.35	1.26	0.81
	Fishery	0.01	*	*	0.06	**	*
	Extracting industry	0.01	*	*	*	0.09	*
	Processing industry	0.18	0.47	*	0.03	*	*
	Construction	0.89	2.34	*	0.35	0.16	0.04
	Whole- and retail sale	0.59	0.88	0.50	0.41	0.59	0.21
	Hotels	0.01	*	*	*	0.06	*
	Transport and communication	0.07	0.15	*	0.04	*	0.04
	Real estate	0.02	0.07	*	0.08	*	*
	Education	0.008	0.02	*	*	*	*
	Healthcare	0.01	0.02	*	*	*	*
	Public services	0.08	0.19	*	0.09	*	*
	Servants	0.006	0.01	*	*	*	*
Others		97.49	95.21	99.45	98.53	97.81	98.90

1 West: Transkarpathian, Lviv, Volyn, Ivano-Frankivsk, Ternopil, Rivne, Khmelnitsky, Chernivtsi oblasts; North: Zhytomyr, Kyiv, Chernigiv, Sumy oblasts; Center: Vinnytsya, Cherkasy, Poltava, Kirovograd oblasts; East: Kharkiv, Dnipropetrovsk, Zaporizhzhya, Donetsk, Lugansk oblasts; South: Odesa, Mykolaiv, Kherson oblasts and Crimea Autonomy.

Note: * no records

Source: own calculation on the basis of household survey conducted by the Derzhkomstat in 2004.

Table 5
Public expenditures on agriculture and rural development, 2006

State support measures	**b UAH**	**%**
'Amber box' measures	4.6	45.8%
'Green box' measures:	5.4	54.3%
Administrative expenditures	0.7	6.9%
Inspection services, pest and disease control	0.2	2.0%
Rural development	1.5	14.9%
Selection	0.2	2.4%
R&D, education	1.4	13.7%
Land reform and environmental protection	0.6	6.2%

Source: Draft Law "On State Budget 2006", second reading

3.2 The Determinants of RNFE in Ukraine

To cast light on the determinants of access to RNFE in Ukraine, an econometric analysis is carried out using over 9000 rural households and their members from the State Statistic Committee 2003 household survey. Since no similar analysis on Ukraine, as yet, is

available we mainly rely on RNFE studies from abroad in determining factors that might influence the probability of RNFE access. The dependent variable is a qualitative (dummy) variable that takes the value of one if a member of the household is primarily employed in the rural non-farm sector and zero otherwise[2]. As section 2 has shown, a broad set of demographic characteristics of the household and its members might influence the access to RNFE. Level of education, gender, and age play a significant role (Berdegue et al., 2000; Bright et al., 2000; Ferreira and Lanjouw, 2001; Gordon and Craig, 2001). Specifically, level of education is expected to have a positive effect on RNFE access. Women are expected to have less access to RNFE. The impact of age is often found to be nonlinear, increasing the probability of RNFE up to some point and decreasing it thereafter (Ferreira and Lanjouw, 2001). Locational factors also proved to determine the access to RNFE (Isgut, 2004). Since our data does include information on the distance of households from small towns or cities, we can only consider a very broad geographical factor (e.g. Eastern or Western regions of Ukraine) as an explanatory variable. Such a practice is common (e.g. Ferreira and Lanjouw, 2001) and the information on the profile of RNFE in Ukraine presented above in section 3.1 also leads us to this decision. Availability of land might also have an impact. As Berdegue et al. (2000) mentions "the conventional view is that households with greater levels of access to land have less access to RNFE". Also it might be highly relevant for Ukraine since a bulk of rural households tend to spend a considerable amount of time on subsistence or subsidiary farming as well (see section 3.1). It is also conventional to consider household size and number of children as explanatory variables (e.g. Ferreira and Lanjouw, 2001; Buchenrieder, 2003; etc).

The marginal effects or elasticity indicate the strength of the correlation between the probability of RNFE and a respective explanatory variable[3], holding all other explanatory variables at their means.

The results in Table 6 illustrate that Ukrainian men, as expected, are more likely to be engaged in the non-farm sector than women, controlling for all other variables. Being a man increases probability of RNFE by almost 19%, implying that more attention should be paid to rural women in order to facilitate their access to RNFE. Interestingly, the probability of RNFE declines with age down to a turning point of around 45 years (at speed 2.0% per each additional year) and then increases. This result is opposite to what, for example, Ferreira and Lanjouw (2001) find. This implies a lack (need) of (for) programs, such as micro-finance, that would especially support young rural inhabitants. As expected, the more land that household owns, the lower the probability of RNFE, but up to 45.45 ha per household member (at a speed .06% per each additional .01 ha), and after it increases. Probably removing some land market constraints in Ukraine (e.g. moratorium on sale and purchase of agricultural land) would allow a greater consolidation of land (more than 45 ha per member), thus increasing the access to RNFE. Controlling for other characteristics, the probability of RNFE does not appear to be associated with household size, while the number of children in the household negatively influences RNFE probability (i.e. every additional child decreases probability of RNFE by approximately 6.2%). Geographical location seems to influence the probability of non-farm participation, in particular living in the Western region increases the probability of RNFE by 31.5% and only by 9.8% in the Northern region. It might be explained that traditionally Western oblasts are less agriculturally specialised than, for example, Eastern or Southern oblasts. The influence of education levels on the probability of non-farm labour participation has some peculiarities. Graduation from high and secondary school has a negative impact (decreases probability of RNFE by 14% and 38% respectively), whereas high education has a positive impact (increases probability by 11%). This result may be related to the fact that graduation from high and secondary school does not give a qualification, whereas graduation from high education establishments provides such a qualification,

[2] Note that we considered only employed rural population

[3] Table 7 in the appendix presents information on the exact definitions and descriptive statistic of the variables used in this analysis.

making the individual flexible on a labour market. However, technical (secondary) education (which also provides a qualification) does not have a significant influence on RNFE, controlling for all other variables.

Table 6
Probit estimates of RNFE

Variable	dF/dx (elasticity)	Coefficients	p-value
Male*	.1898666	.5144023	0.000
Age***	-.0200476	-.0543145	0.057
Age squared***	.0002235	.0006054	0.090
Higher education*	.1139984	.3856681	0.008
High school education*	-.1423096	-.3905377	0.000
Primary education	.2511969	.9079051	0.104
Secondary education*	-.3816893	-.9966030	0.000
Technical (secondary) school	.0489094	.1338975	0.145
Number of children in household*	-.0619971	-.1679677	0.004
Household size	.0039011	.0105693	0.788
Land owned per capita*	-.0006891	-.0018671	0.000
Land owned per capita squared*	7.58E-08	2.05E-07	0.000
North Region**	.0985969	1.124556	0.047
South Region	.0664452	1.029380	0.167
West Region*	.3152760	1.781260	0.000
East Region	.0789343	1.065700	0.107
Number of obs	1332	Prob > chi2	0.0000
Log likelihood	-699.8044	Pseudo R2	0.2056
LR chi2(16)	362.28		

Note: *, **, *** - statistical significance at 1%, 5%, and 10% levels respectively

Source: authors estimates on the basis of household survey conducted by the Derzhkomstat in 2003

Conclusions and suggestions for policies to promote RFNE in Ukraine

Promotion of RNFE is very difficult and not the responsibility of one ministry or one organization (e.g. any state or private organization responsible for particular activity, be it road building, gasification, construction etc) but rather of the whole government. It requires coordination among different organizations and ministries. Definitely this task is likely to be easier at the local level, in the context of decentralization, than at the national level. Since the rural non-farm sector is heterogeneous, blanket policy recommendations are inappropriate. Bearing all this in mind and based on worldwide experience, however, some recommendations can be made. Below we present such recommendations for RNFE in Ukraine.

Policies targeted at the rural areas must be oriented toward providing incentives that stimulate RNFE participation, as well as the capacity of households to respond to such incentives. For example, micro-finance can improve access to financial resources for the rural population. These might include micro-loans for non-farm investments or micro-insurance services to improve risk management strategies. Currently, in Ukraine micro-loans are mostly neglected, since state loan program funds are targeted towards agriculture (i.e. the partial interest rate compensation program). Hence, the credit policy should be widened to include the non-farm sector, and particularly to benefit local non-farm self-employment initiatives. Secure ownership and use rights of natural resources, particularly land, would provide the capacity to respond to incentives provided by micro-financing opportunities. Hence, allowing land sale and purchase in Ukraine would make it possible to use land titles as collateral and improve natural resources allocation, thereby increasing RNFE opportunities.

It is necessary to locate state support to agriculture in the wider context of rural development, shifting it from so-called 'coupled support' (or, according to WTO classification, 'amber box' measures) towards decoupled support ('green box' measures). It would be a more efficient public funds allocation, thus making agriculture more competitive and rural areas more attractive for the private sector. The competitiveness of the agricultural sector cannot be increased without the development of the industrial, commercial and service sectors that characterise modern agriculture. Technology promotion policies, human capacity building, increasing the attractiveness of rural areas to the private sector (roads, electrification, telecommunication, etc) are not neutral in this regard. Voluminous empirical evidence shows a positive effect of education and infrastructure on RNFE opportunities.

Ukraine has no public institution responsible for RNFE. The ministries of industrial policy, health, and education are clearly urban oriented, whereas the ministry of agriculture rarely looks beyond agricultural production. We recommend that a public institution should be responsible for the design and implementation of rural development (including RNFE) policy be established. The EU's experience in this regard might be helpful.

Gender is an important factor that determines access to RNFE. In Ukraine women generally have less access to RNFE. Thus, RNFE policies that support rural women must pay greater attention to facilitating their access to RNFE.

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Appendix

Table 7
Variable definitions and summary statistics

Variable	Definition	Mean	Std. Dev.	Min	Max
Male	1 if female, 2 if male	1.47	0.49	1	2
Age	Age of a household member, in years	39.70	10.17	17	72
Age squared	Age of a household member squared, in years	1678.60	819.47	289	5184
Higher education	1 if a member has a higher education, 0 otherwise	0.14	0.35	0	1
High school education	1 if a member has a high school education, 0 otherwise	0.55	0.49	0	1
Primary education	1 if a member has a primary education, 0 otherwise	0.005	0.07	0	1
Secondary education	1 if a member has a secondary education, 0 otherwise	0.09	0.29	0	1
Technical (secondary) school	1 if a member has a technical (secondary) education, 0 otherwise	0.32	0.47	0	1
Number of children in household	Number of children in household	1.02	0.96	0	8
Household size	Number of household members	3.81	1.42	1	10
Land owned per capita	Quantity of land owned by household per household member, in 0.01 ha	115.38	406.67	0	9008
Land owned per capita squared	Squared quantity of land owned by household per	1.78e+05	3.15e+06	0	8.1e+07
North region	1 if household located in north region, 0 otherwise	0.15	0.36		
South region	1 if household located in south region, 0 otherwise	0.19	0.39		
West region	1 if household located in west region, 0 otherwise	0.35	0.48		
East region	1 if household located in east region, 0 otherwise	0.18	0.38		

Source: author's estimates on the basis of household survey conducted by the Derzhkomstat in 2003