Chapter 8
Rural Livelihoods in Tajikistan: What Factors and Policies Influence the Income and Well-Being of Rural Families?

Zvi Lerman

Abstract This chapter is an analysis of data derived from several studies of the economic effects of land reform on rural families in Tajikistan. The history of land allocation after the dissolution of the Soviet Union is briefly reviewed, and the implications for agricultural productivity and rural incomes are discussed. Enlarging family land holdings and improving productivity are the keys to raising rural family incomes, which is one of the most direct factors that mitigate vulnerability and poverty. Options for enlargement of family holdings and productivity improvement are outlined.

Family incomes today are strongly dependent on a single source, with 50–70% deriving from agriculture. The risks associated with this income strategy can be reduced through diversification of income sources, which requires strengthening nonfarm occupations, wage employment, and entrepreneurial activities. Risks associated with income variability can also be reduced by diversifying farm production between crops and livestock, on the one hand, and between a mix of different crops (cereals, vegetables, fruits), on the other.

Keywords Rural incomes • Livelihoods • Remittances • Consumption of own products • Productivity • Livestock • Land allocation • Land tenure • Vulnerability • Adaptive capacity • Rural households • Dehkan farms • Land reform • Freedom to farm • Smallholders • Horticulture • Diversification • Microfinance • Azerbaijan • Georgia

Key Points

- The typical farm in Tajikistan is small, cultivating a small land plot and taking care of a small number of animals. Agriculture suffers from low crop and livestock yields, as agricultural productivity is adversely affected by low levels of production technology.

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- Land reform was the mechanism that distributed land to rural households and dehkan farmers after Tajikistan's independence. Land reform has had a mutually reinforcing twofold effect on rural incomes: more land leads to more income through increased production and consumption; more land also creates greater surplus and thus increases the commercial orientation of the households, generating additional sales revenue and further augmenting the income effect of land. Commercialization completes the loop between land reform and rural family incomes.
- Despite the positive income effects of land reform, Tajikistan's large rural population is still judged to be highly vulnerable to risks, including livelihood risks and food insecurity risks. By some measures, Tajikistan is the most vulnerable among all 28 countries in the World Bank's Europe and Central Asia region.
- Enlargement of land holdings, productivity improvement, and diversification of income sources are among the main factors that can be used to raise rural incomes, thus reducing vulnerability. Smallholder farms can be enlarged by redistributing inefficiently used land to more efficient users, returning unused and abandoned land to cultivation, and encouraging development of land markets as a mechanism that allows land to flow from less efficient to more efficient users. Significant productivity improvements can be achieved through a combination of hard (technology, agronomy) and soft (information, know-how) approaches, relying on the development of agricultural extension (advisory and consulting services). Diversification of income sources requires strengthening nonfarm occupations, wage employment, and entrepreneurial activities, all of which will reduce the risks associated with the currently observed reliance on agriculture as the main source of family income.
- Livestock is the most important farm resource after land and water in Tajikistan. The livestock herd is concentrated almost totally in hundreds of thousands of rural households, each with just a few animals. Sale of live animals and livestock products is an important source of rural household income, and the animal headcount is growing rapidly. Livestock productivity, however, is far from satisfactory, and milk yields in Tajikistan are the lowest among all CIS countries.
- Inadequate quantity and quality of animal feed may be one of the reasons for low livestock performance. Despite the increase in animal headcount, the area sown to feed crops declined precipitously after 1990 and the quantity of feed harvested also fell sharply (in 2007 it was merely 15–30% of the harvest in 1990). These changes are largely the outcome of government policies that impose production targets for wheat and cotton and in effect discourage or even prohibit allocation of land for feed crops.
- Pastures suffer from high stress due to the continued increase in the number of animals and general lack of sustainable pasture management practices. Reduction of areas in feed crops combined with shrinkage of pasture areas due to degradation has led to a sharp contraction of the feed base for both cattle and small ruminants. The rural households are forced to rely even more heavily than before on low-quality feed, obtained by grazing their few animals on the grassy verges of roads and canals and on postharvest stubble in the fields.

- Livestock productivity can be increased by paying more attention to availability of quality feed, by focusing on high-yielding varieties of feed crops, by adopting programs for pasture reseeding and rehabilitation, by breed improvement through artificial insemination practices, and by emphasizing all aspects of animal health and veterinary care.
- Higher livestock productivity will allow a slowing down of the rapid growth of the livestock herd without detriment to output and rural incomes. Smaller animal numbers will reduce pasture degradation and enable rehabilitation measures to be put in place. The management of common pastures and commonly herded livestock can be improved through the establishment of user associations dedicated to sustainable pasture management, including planning and monitoring of pastures and maintaining pasture infrastructure (e.g., water points, sheds, and roads). Measures designed to improve livestock productivity will increase the share of livestock production relative to crops, leading to a more balanced and less risky product mix in national agriculture.

1 Introduction

Tajikistan is judged to be highly vulnerable to risks, including livelihood risks and food insecurity risks for its large rural population (about 75% of the national total; TajStat 2011a). By some measures, it is the most vulnerable among all 28 countries in the World Bank's Europe and Central Asia (ECA) region (World Bank 2009).

An individual or a household is *vulnerable to risks* if these risks may result in a loss of well-being to a level below some threshold. The opposite of vulnerability is resilience. Vulnerability assessments usually rely on different combinations of geo-climatic and socioeconomic variables, which are always matched to the three defining dimensions of vulnerability: exposure, sensitivity, and adaptive capacity (Heltberg and Bonch-Osmolovskiy 2011). Exposure and sensitivity both act to increase vulnerability, while higher adaptive capacity mitigates vulnerability.

Exposure typically signifies the chance that assets and livelihoods will be impacted by risks or the likelihood that individuals will experience stress due to external factors – geo-climatic, environmental, or sociopolitical. Sensitivity indicates the susceptibility of assets and livelihoods when exposed to risk. Adaptive capacity signifies the ability to recover, prevent, or mitigate the effects of risks by deploying social risk management strategies (i.e., adjustments in assets, livelihoods, behavior, technologies, or policies). Both sensitivity and adaptive capacity are determined by socioeconomic variables that characterize the sustainability of agricultural production under conditions of uncertainty, the income levels, and the various endowments, including both physical and human capitals (Table 8.1). In the conventional livelihoods framework, the geo-climatic vulnerability variables loosely correspond to the natural capital, while the socioeconomic variables correspond to physical and human capitals.

Table 8.1 The effect of main socioeconomic variables on vulnerability

Indicators	Effect on vulnerability	Situation in Tajikistan
Income and well-being	–	Low but increasing
Poverty (also infant mortality, undernourishment, food insecurity)	+	High but decreasing
Debt and financial insecurity	+	Not critical
Agricultural land	–	Small holdings, land not transferable
Livestock	–	Small number of animals in each household, headcount increasing
Commercialization (share of production sold)	–	Low, underdeveloped
Population density: stress on land and water resources	+	Increasing (fast population growth)
Irrigation: stress on water resources	+	Poorly maintained, inefficient system
Water availability	–	Ample, from glaciers
Diversification of income and farm production	–	Underdeveloped
Educational attainment	–	Very high literacy levels

Source: For details and data, see Lerman (2011) (especially Chapter 5)

2 Rural Incomes in Tajikistan

Family well-being is the main determining factor for sensitivity and adaptive capacity. Well-being in turn is mainly determined by family income – both the level of income and the stability of income over time. Families with high and stable incomes are less sensitive to risk and are able to apply a wider range of coping strategies (i.e., have high adaptive capacity). Income creates wealth, and wealth provides a buffer layer that shields families from risks and adversities. Poor families are more sensitive to risk and have no resources to cope with adversity. Rural population appears to be more vulnerable than urban population due to lower per capita incomes and higher poverty rates.

Income generation requires resources. In rural families, where income largely depends on agriculture, resources are primarily land and livestock. To achieve good productivity, farming must also have access to machinery, purchased inputs (such as fertilizers and quality seeds), veterinary services, and extension information. Cash income is augmented through sale of farm output, and this in turn requires marketing channels. Adequate resources and farm services make it possible to maintain income generation at satisfactory levels, acting to reduce vulnerability and mitigate poverty. On the other hand, constraints on availability or use of resources restrict income generation and thus increase vulnerability and poverty.

Labor is another resource, which is obviously crucial for production. In Central Asia with its large families and high birthrates, labor is usually plentiful and cheap

Table 8.2 Structure of rural family income from different surveys (percent of total income for rural families)

	LSMS (2003)	LSMS (2007)	Helvetas (2011)
Wages	35	31	34
Own farm	48	49	38[b]
Remittances	9	13	16
Social transfer	7	5	4
Other[a]	1	1	9

[a]"Other" includes land rental, nonfarm business income, and subsidies/grants for education; in the Helvetas survey of dehkan farms, nonfarm entrepreneurial activity accounts for a relatively large share of 6% of total income
[b]Does not include the value of own products consumed in the household

and does not constitute a constraint. The situation may be somewhat different in Tajikistan, where many able-bodied men migrate to work outside their home village (often in Russia or other countries) and the labor force in some villages is reduced to women, youths, and pensioners. In this setting, families may experience labor shortages (especially in seasons when migrants are not at home), which in turn may lead to increased vulnerability. However, the negative effect of migration on production resources (the labor force) may be offset by the positive effect of cash remittances from migrants on rural family incomes (see Box 8.2).

Agriculture is an important source of family income in Tajikistan. Although official statistics do not publish the structure of family income by sources, they indicate that based on household surveys (TajStat 2010c, p. 112–113), the household plot – which is the small family farm cultivated by every rural household – accounts for almost 30% of per capita income for the rural population (urban household produces much less agricultural output). More detailed information on the role of agriculture in household income emerges from cross-sectional surveys conducted by various donor organizations, often in cooperation with TajStat – Tajikistan State Committee for Statistics. The World Bank's Living Standards Measurement Surveys (LSMS 2003, 2007), carried out with nationally representative samples of rural households, indicate that income from the own farm accounts for nearly 50% of total family income for rural households (Table 8.2). In a recent survey conducted by Helvetas[1] (March 2011), admittedly with a nonrepresentative sample of only 400 dehkan farmers, sale of farm products contributed nearly 40% of the family cash income. This does not allow for the value of own farm products consumed in the household, which may increase the share of agriculture to 50% or even 60% of total family income. Despite these differences, the income structure is fairly consistent across different surveys. In response to a specific question in the survey, 70% of respondents indicated that agriculture was the main (and in some instances the only) source of family income (Helvetas 2011).

[1] Helvetas – Swiss Association for International Cooperation was founded in 1955 as the first private organization for development cooperation in Switzerland. Helvetas operations in Tajikistan are sponsored by SDC – Swiss Agency for Development and Cooperation (see http://www.helvetas.tj/en/).

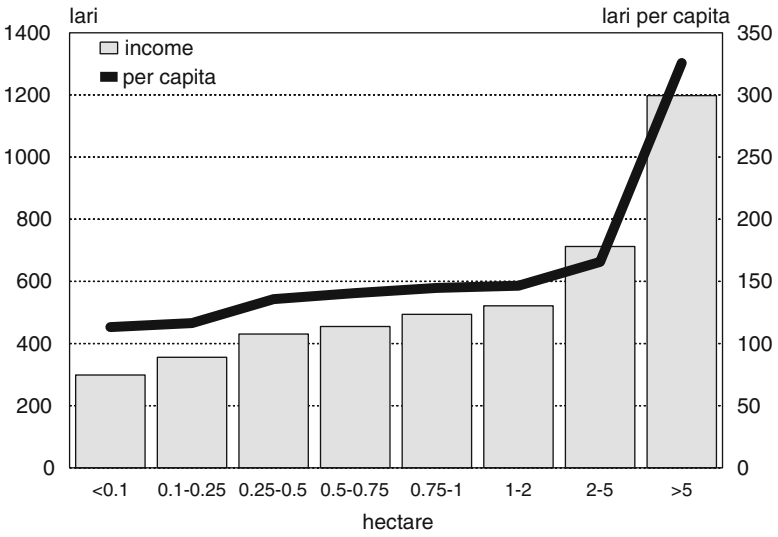


Fig. 8.1 Family income and income per capita increase with farm size (Source: Georgia Household Survey 2009 (Georgia 2009))

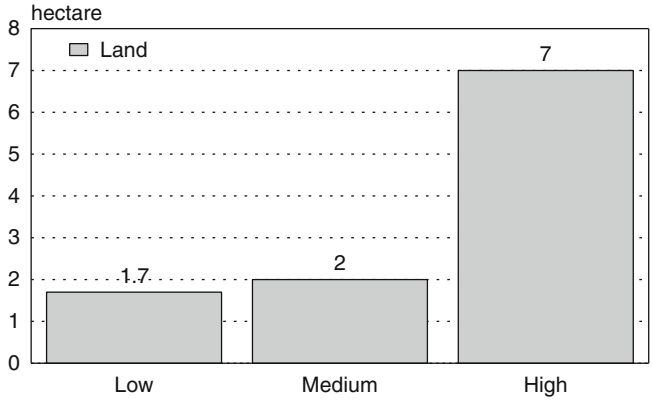


Fig. 8.2 Perceived family well-being increases with farm size (Source: Azerbaijan World Bank survey 2003 (Lerman and Sedik 2010))

3 Land and Commercialization Increase Family Incomes and Well-Being

Evidence from all CIS countries conclusively shows that per capita family incomes and family well-being increase with the increase of the land allotment in family farms. Figure 8.1 shows the effect of farm size on family income and income per capita based on the 2009 household survey in Georgia (Georgia 2009). Figure 8.2 based on a 2003 World Bank survey in Azerbaijan (Lerman and Sedik 2010) shows

Table 8.3 Farm size and share of farm sales in family income for different levels of well-being

Well-being level	Farm size (irrigated land, ha)	Share of farm sales in family income, %
High: comfortable consumption regime ($n=60$)	6.0	42
Low: able to purchase food and daily needs only ($n=46$)	3.5	30

Source: PPCR farm survey, May 2011 (Lerman and Wolfgramm 2011)

that families with more land (7 ha) are more likely to perceive their well-being as "high" compared with families that have only 1.7–2 ha. Evidence for Tajikistan from the May 2011 PPCR farm survey[2] (Lerman and Wolfgramm 2011) also demonstrates that farms with more land attain a higher level of well-being (Table 8.3, first column): respondents who report a high level of well-being (income sufficient to sustain a comfortable consumption regime) have 6 ha of irrigated land, compared with 3.5 ha for respondents reporting a low level of well-being (income sufficient to purchase food and daily necessities only). Table 8.3 incidentally focuses the attention on the importance of irrigation in Tajikistan's semiarid climate: productive farming requires water, but the engineering infrastructure in Tajikistan is not always adequate for uninterrupted delivery to the fields. A different view of the advantages of larger size in small family farms is provided by the recent Mercy Corps survey (May–June 2011) in Rasht, where households with more land (1.5 ha) were observed to be debt-free while households with smaller land endowment (0.8 ha) had to borrow (Mercy Corps 2011).

Farm size has a direct effect on family well-being by increasing food production. Part of farm output is consumed in the household, thus improving the family's food security and providing income in kind. But farm size also has an indirect effect on family income: larger farms are more likely to sell some of their output because they produce a larger surplus after satisfying the family's food needs. Sales of farm products bring in cash revenue, which increases the family's available income. Figure 8.3 based on a small survey in one of Azerbaijan's western districts (Yalcin-Heckmann 2010) indeed shows that the frequency of "commercial" farms (those producing crops for cash sales) increases markedly with the increase of holdings, while the frequency of pure subsistence farms correspondingly decreases.

The positive effect of sales on family income has been observed in several CIS countries; in particular, farm surveys in Moldova and Georgia show that households selling some of their output ("sellers") have higher income than households where the entire output is consumed in the family ("non-sellers"). The results for Moldova (Fig. 8.4) actually show that sales revenue accounts for the entire difference between the income of "sellers" and "non-sellers." The results for Georgia (Fig. 8.5) explicitly allow for the farm size dimension: "sellers" have larger farms than "non-sellers"

[2] PPCR – Pilot Program for Climate Resilience in Tajikistan (February–August 2011). The article draws on the findings of a farm-level survey conducted as part of the PPCR activities. For more details, see Lerman and Wolfgramm (2011).

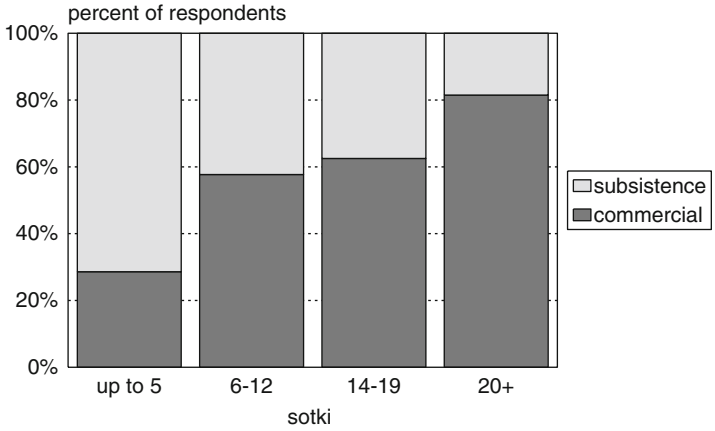
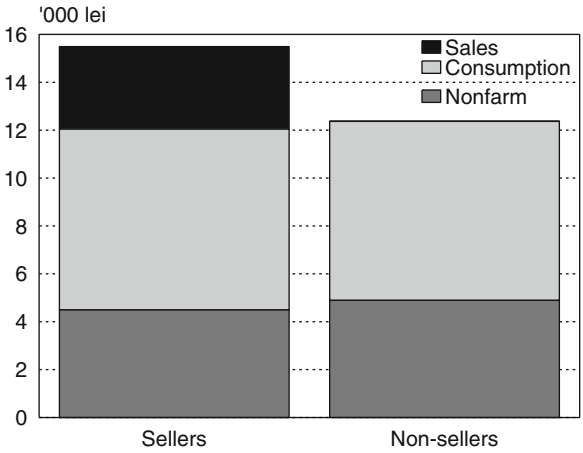


Fig. 8.3 Frequency of "commercial" farms increases with the size of holdings (sotki is a measure of land area equal to 0.10 ha) (Source: Yalcin-Heckmann 2010 (Azerbaijan, Tazakend, $n=77$ households))

Fig. 8.4 Moldova: structure of family income for "commercial" and "noncommercial" households (Source: WB/FAO baseline survey, 2000)



(2 ha compared with 1 ha), and their base family income is higher even before adding the sales revenue. For Georgia, we thus have a clear demonstration of the twofold effect of farm size: more income due to more production (even without sales, simply through increased consumption of own farm product) plus an additional increment due to revenue from the sale of surplus. A similar effect is observed for Azerbaijan, where both sales activity and size of holdings act to increase family well-being (Yalcin-Heckmann 2010). Figure 8.6 first shows the difference in the level of well-being between subsistence farms, i.e., "non-sellers," and farms that sell at least some of their output: among subsistence farms, 60% report their well-being as "bad" (leftmost column, dark-gray band), while among commercial farms, the corresponding percentage is substantially lower (the two right-hand columns). Furthermore, commercial farms reveal a clear size effect on family well-being: among small

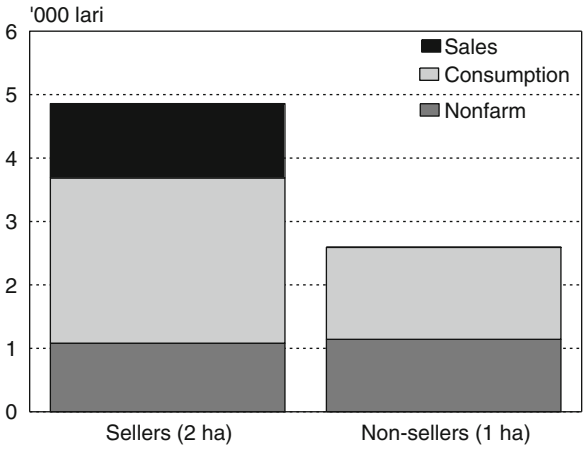


Fig. 8.5 Georgia: structure of family income for "commercial" and "noncommercial" households. Average farm size: 2 ha for "commercial," 1 ha for "noncommercial" (Source: USAID/Hebrew University survey, 2003)

Fig. 8.6 Azerbaijan: higher level of well-being is observed more frequently for farms that sell (leftmost column for "non-sellers," the other two columns for "commercial") and for farms that have more land (farms in rightmost column larger than farms in middle column) (Source: Yalcin-Heckmann 2010 (Tazakend, $n = 77$ households))

commercial farms (selling only from the household plot), 35% report their well-being as "bad," while among larger farms (selling from both the household plot and the additional allotment received through land-share assignment), none of the respondents describes their well-being as "bad."

For Tajikistan, the May 2011 PPCR[3] farm survey (Lerman and Wolfgramm 2011) also shows that greater commercial orientation is associated with higher levels of well-being. The positive effect of commercialization on well-being is demonstrated in Table 8.3 (second column), where respondents who fall in the "high" well-being

[3] Explained in footnote 3.

category earn a higher share of their family income from farm sales than respondents in the "low" well-being category (42% compared with 30%).

Land reform in Tajikistan (and elsewhere in Central Asia) was the mechanism that distributed more land to rural households and farmers since independence (see Box 8.1). We can thus argue that land reform had a mutually reinforcing twofold effect on rural incomes: more land led to more income through increased production and consumption; more land created greater surplus and thus increased the commercial orientation of the households; commercialization created additional sales revenue, which further augmented and reinforced the income effect of land. In a sense, commercialization completes the loop between land reform and rural family incomes.

Box 8.1 Land Reform in Tajikistan with Special Reference to Arable Land

Land in Tajikistan is exclusively owned by the state, and it is given to farmers and households in use rights (legally conferred by a land use certificate). Instead of land privatization, Tajikistan has undergone individualization of agriculture – a shift to individual and family farming on state-owned land (Lerman and Sedik 2008). Prior to 1992, 95% of cultivable land was controlled by agricultural enterprises (collective and state farms), and 5% was in household plots – the smallholder family agriculture that persisted all through the Soviet era. The land reform that began in 1992 reduced the share of agricultural enterprises to just 15% of cultivable land by 2009, while the share of household plots increased dramatically to 20% (through land distribution from the state reserve in 1995 and 1997) and another 65% shifted to dehkan (or peasant) farms, a new organizational form that began to emerge after 1992. Dehkan farms and household plots combined accounted for 85% of cultivable land in 2009, up from just 5% in 1991. Most dehkan farms today are individual and family farms, as the number of originally created partnership (or collective) dehkan farms is rapidly shrinking due to the government's program reallocating land to individual farm members. The use of cultivable land in Tajikistan has been effectively individualized since 1991.

The allocation pattern for pastures is somewhat different: household plots do not have any pastures (only cultivable land); dehkan farms control about two-thirds of all pastures (roughly two million ha), and the remaining one-third is still held by agricultural enterprises (TajStat 2010a). It is impossible to say how much of the two million ha of pastures in dehkan farms has been transferred to individual and family use and how much remains in collective use.

Despite substantial expansion, household plots remain very small, averaging 0.3 ha (compared with about 5 ha on average for individual and family dehkan farms and 100–200 ha for partnership dehkan farms). There are 750,000 household plots in Tajikistan (UNICEF 2009) and only 50,000 dehkan-farms (TajStat 2010a). The increase of land resources in household plots has inevitably led to an increase of their share in agricultural production.

(continued)

Box 8.1 (continued)

While the share of agricultural enterprises in gross agricultural output (GAO) dropped from 65% in 1995 to less than 10% in 2009, the share of household plots soared from 35 to 65%. The remaining 25% comes from dehkan farms – the second component of the individual farm sector that started to contribute after 1997. Agricultural production, like land use, is now fully individualized in Tajikistan. Since household plots produce 65% of agricultural output on 20% of cultivable land, they are obviously much more productive than other farm types. Due to their high productivity, household plots are the engine of agricultural growth: they are responsible for the recovery of Tajikistan's agriculture, with GAO more than doubling between 1998 and 2009, despite the sharp decline in the output of agricultural enterprises.
(See also Halimova, Chap. 13)

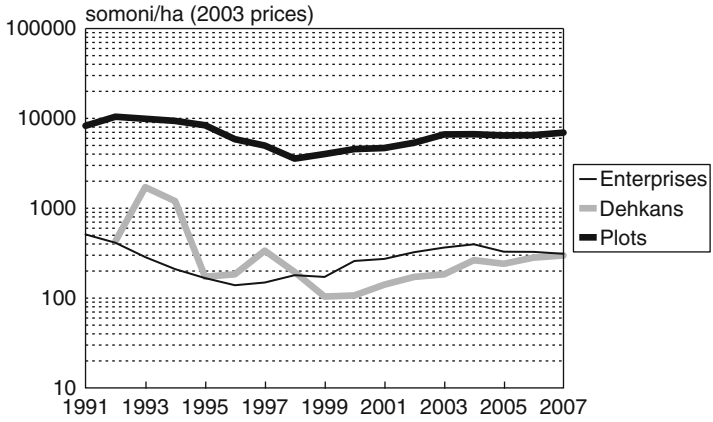


Fig. 8.7 Productivity of land by farm type, 1991–2007 (GAO per hectare of agricultural land, by type of farm, somoni per ha in constant 2003 prices, log scale) (Source: Lerman and Sedik 2008)

The small household plots, despite their high vulnerability due to limited land holdings, have managed to demonstrate exceptional adaptive capacity over time by achieving productivity levels that are orders of magnitude above those achieved by the larger dehkan farms (Fig. 8.7; see also Box 8.1, where small household farms are shown to produce much more than their share of cultivable land). They are also the main driver for agricultural growth: while Tajikistan's gross agricultural output doubled between 1997 and 2008, the output produced by household plots increased by a factor of 2.5, offsetting (together with dehkan farms) the shrinking production of agricultural enterprises (Lerman and Sedik 2008). Similar results are observed for

all Central Asian countries and the rest of CIS (Lerman 2010). These achievements may be attributed to the well-known advantages of the family form of farm organization with its strong internal cohesion and accountability.[4]

4 Livestock

Livestock is the most important farm resource after land and water. In Tajikistan, the livestock herd is concentrated almost totally in rural households (Table 8.4): very few dehkan farms keep animals, and in aggregate they account for less than 3% of the value of livestock production in the country (compared with 41% of crop production) (see TajStat 2011b). The livestock herd is dispersed among a very large number of rural households, each with one to two animals. In the May 2011 PPCR farm survey (Lerman and Wolfgramm 2011), close to 50% of households fall in the category that WFP classifies as "vulnerable" by animal headcount (up to two heads of cattle). The small numbers of animals per household are naturally reflected in low levels of livestock production (milk, meat, fattened live animals) and low levels of livestock-related wealth, increasing the vulnerability of the rural households in this dimension.

The animal headcount increased sharply after 1998, rising from 1.3 million cow equivalents in 1997–1998 to 2.1 million cow equivalents in 2007 (Fig. 8.8, black curve). The household herd continues increasing because livestock is an important source of both food and income for the rural households. There is a ready cash market for live animals, while milk is easily sold to dairies or directly to consumers. All households periodically sell some of their live animals in the livestock bazaar or to intermediaries, but they always treat their herd as a store of value, carefully replenishing the stock to ensure continued growth of the headcount. Livestock sales represent 56%

Table 8.4 Livestock in rural households 2009

	Headcount in rural households	% of national headcount	Average per household[a]
Cattle	1,676.3	92	2.2
Cows	909.7	96	1.2
Sheep and goats	3,456.9	82	4.6

Source: TajStat (2010a)
[a]Based on 757,608 rural households (UNICEF 2009)

[4] Despite the exceptional productivity of household plots compared to other farm types, the average yields of cultivated crops in Tajikistan are generally below the CIS averages (CISSTAT 2010): for cereals 2.1 tons/ha compared with 2.5 tons/ha in other CIS countries and for raw cotton 1.6 tons/ha compared with 2.2 ton/ha in CIS. Tajikistan performs relatively well only in horticultural crops (potatoes and vegetables): 21 tons/ha for potatoes compared with 15 tons/ha in CIS. Tajikistan's predominantly smallholder agriculture is apparently better suited for cultivation of labor-intensive horticultural crops rather than broad-scale cash crops.

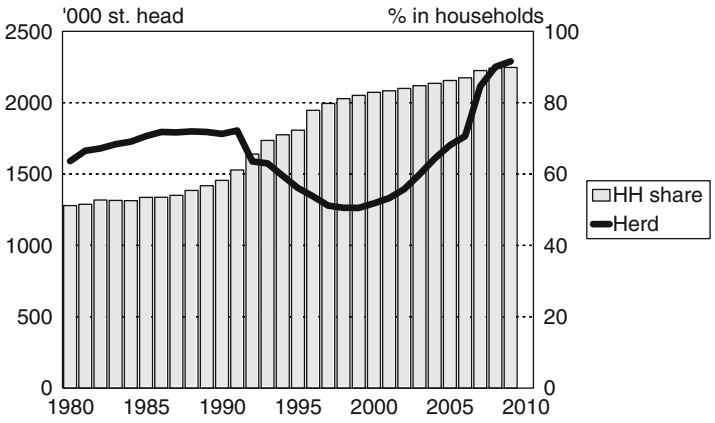


Fig. 8.8 Livestock herd, 1980–2009 ('000 standard head) (Source: pre-1990 from CISSTAT 2010; after 1990 from TajStat 2010a and earlier years)

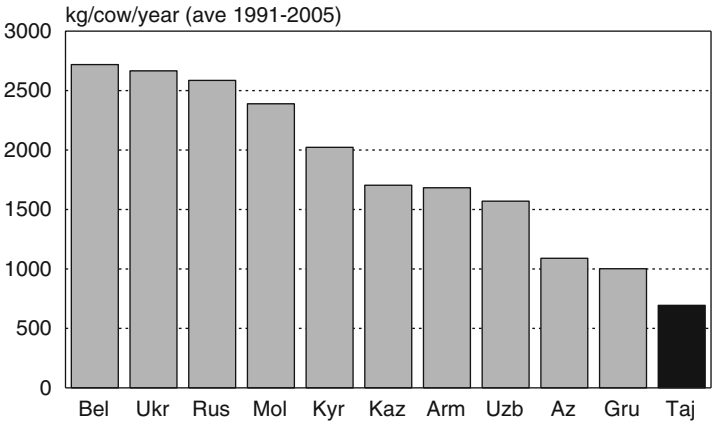


Fig. 8.9 Milk yields in Tajikistan and other CIS countries (averages for 1991–2005) (Source: CISSTAT 2010)

of total sales revenue from household plots, most of it (36%) from sale of live animals and the rest mainly from milk sales (Lerman and Wolfgramm 2011).

The performance of the livestock sector is far from satisfactory. Milk yields in Tajikistan are the lowest among all CIS countries, averaging 800 kg per cow per year (Fig. 8.9). Inadequate supply of animal feed may be one of the reasons for low livestock performance. Despite the increase in animal headcount, the area sown to feed crops declined precipitously after 1990, and the quantity of feed harvested also fell sharply (in 2007 it was merely 15–30% of the harvest in 1990). These changes are largely the outcome of government policies that impose production targets for wheat and cotton and in effect discourage or even prohibit allocation of land for

feed crops. In principle, decrease in feed crops should have been compensated by increased grazing, but in reality the area of pastures has decreased by 300,000 ha (about 10%) since 1997 (TajStat 2010a). This was another outcome of government policies, which ignored efficient pasture management, contributing to unsustainable use and degradation of pastures. Pastures in Tajikistan suffer from high stress due to the continued increase in the number of animals and general lack of sustainable pasture management practices.

Reduction of areas in feed crops combined with pasture shrinkage indicates a sharp contraction of the feed base for both cattle and small ruminants. The rural households are forced to rely even more heavily than before on low-quality feed, obtained by grazing their few animals on the grassy verges of roads and canals and on postharvest stubble in the fields. Inadequate quantity and quality of animal feed have a negative effect on livestock performance. Lack of systematic breed selection and artificial insemination programs is another obvious reason for low milk yields due to poor genetic profiles of livestock in Tajikistan.

5 Policy Measures to Improve Rural Incomes and Livelihoods

The typical farm in Tajikistan is small, cultivating a small land plot and taking care of a small number of animals. Moreover, agriculture in Tajikistan suffers from low crop and livestock yields: agricultural productivity is adversely affected by low levels of production technology. The analysis of rural incomes and well-being in the previous section suggests that enlargement of land holdings and increased commercialization is among the main factors that can be used to raise incomes and improve livelihoods. Productivity improvements through a combination of hard (technology, agronomy) and soft (information, know-how) approaches should also make a significant contribution to better livelihoods. The following measures counteracting the effects of smallness can fundamentally improve rural livelihoods:

- Implement policies that will lead to enlargement of household plots and small individual and family dehkan farms – the most vulnerable segment in rural Tajikistan.
- Implement policies to increase agricultural productivity (technology, information).
- Implement policies that will improve the access of small farms to market services:
  - Services for marketing farm products (to facilitate commercialization)
  - Channels for purchase of farm inputs (including quality seeds)
  - Farm machinery services (rental and maintenance)
  - Veterinary and artificial insemination services
  - Extension services to raise the level of technology and know-how among small farmers
  - Credit services for small farms
- Implement policies to encourage greater diversification at the farm level.

6 How to Get More Land to Small Family Farms?

A clear policy prescription for increasing rural incomes and improving livelihoods is to enlarge the highly productive household plots with the object of increasing their contribution to Tajikistan's agricultural growth and productivity (see Box 8.1). In addition to supporting household plots, it is also necessary to enable individual and family dehkan farms to enlarge their land holdings, as world experience definitely proves that individual and family forms of organization have higher productivity than collective and corporate farms. Enlargement of smallholder farms can be accomplished in several ways.

6.1 Distribution of Inefficiently Used Land

The state land reserve in Tajikistan is less than 1% of arable land (land balance data for January 2010), which rules out another wave of land distribution for expansion of the small farms. However, 15% of cultivable land (nearly 130,000 ha) is still managed by agricultural enterprises (TajStat 2010a), which achieve relatively low productivity levels. In addition, a substantial area of cultivable land is held in collective ("partnership") dehkan farms, which are not more productive than the former Soviet-era *kolkhozes* that they succeeded. Land in agricultural enterprises and collective dehkan farms is a large hidden reserve that may be as high as 30% of Tajikistan's 1.1 million ha of cultivable land (Lerman and Sedik 2008). Making at least part of this land available for distribution to small family-based farms could further increase the productivity of the agricultural sector and increase rural incomes. Government initiatives promoting transformation of partnership dehkan farms into family farms since 2007 have already produced noticeable increases in the average size of small farms (TajStat 2010a). These and similar efforts for expansion of small farms should be broadened and intensified.

6.2 Development of Land Markets

Since the options for additional land distribution are inherently limited, it would be important to enable farmers to adjust the size of their holdings through land market transactions. Land markets allow land to flow from less efficient or inactive users to more efficient and productive ones, and the development of land markets will allow enterprising farmers to increase the size of their farms and achieve higher incomes. Given that all agricultural land in Tajikistan is owned by the state and thus cannot be bought or sold, the only feasible way for land markets to develop today is by allowing transferability of land use certificates – either temporarily (through leasing) or permanently (through selling). This option is included as one of the proposed

amendments in the new Land Code approved by the government of Tajikistan as recently as June 2012 (Halimova, Chap. 13; Robinson, Chap. 11). Safeguards ensuring that distressed smallholders cannot be pressured into giving up their land to more powerful land users will have to be introduced as land markets develop. These safeguards may restrict transactions in agricultural land to bona fide farmers, thus precluding land accumulation in the hands of rich investors; they may ensure that no household remains landless through bankruptcy or forced sales by allowing distressed families to keep at least their household plots.

6.3 Return of Unused Land to Cultivation

Another option involves identification of currently unproductive or unused lands that have a potential for being upgraded to productive use. To implement this option, unproductive and unused lands should be fully inventoried at the village level and earmarked for distribution to small farmers for productive cultivation. Such practices have already been implemented in Tajikistan: examples are listed in the online database of World Overview of Conservation Approaches and Technologies – WOCAT (www.wocat.net).

The process may require overcoming certain legal obstacles, such as permissions to convert pastures into orchards. Farmers willing to invest in rehabilitating degraded land should benefit from incentives, such as tax credits, exemption from the higher tax applicable to orchards, and access to low-interest microloans or grants for investment in conversion.

7 How to Improve Livestock Productivity?

As noted, livestock accounts for 56% of total sales from the household plot (Lerman and Wolfgramm 2011). Given the importance of livestock production for rural incomes, it is essential to achieve higher animal yields than so far. Measures for improving livestock productivity may include the following:

- Greater attention to feed sufficiency, including development of high-yield varieties of feed crops and rehabilitation of pastures (reseeding, fencing, adoption of pasture rotation schemes, gully rehabilitation)
- Provision of more watering points for animals in grazing areas
- Attention to animal health through modernization of veterinary services
- Improvement of animal breeds through artificial insemination, including breed selection for both higher yields and greater tolerance to local climate

Higher livestock productivity will enable to slow down the rapid growth of the livestock herd without detriment to rural incomes. Smaller animal numbers will reduce pasture degradation and enable rehabilitation measures to be put in place. It is necessary to improve the management of commonly used pastures and commonly

herded livestock through the establishment of user associations engaged in sustainable pasture management, including planning and monitoring of pastures and maintaining pasture infrastructure (e.g., water points, sheds, and roads).

8 How to Improve Farm Services?

While larger farms almost automatically have greater commercial orientation, the willingness to sell should be supported by ensuring access to functioning market services, especially channels and mechanisms for selling farm products. Improvements in other farm services – input supply, machinery (rental and maintenance), extension, and credit – will lead to more efficient production and generate higher incomes. Renewed focus should be placed on extension services: this is the key to knowledge transfer and human capital development. As such, extension services are central for increasing crop and livestock yields and thus raising agricultural productivity.

Best-practice world experience suggests that farmers' service cooperatives provide the most effective way of improving the access of small farmers to market services. Such cooperatives can cover the whole field-to-market value chain, including joint purchase of farm inputs, organization of machinery pools for field work, establishment of sorting and packing facilities, transport of farm products to markets, processing, etc. Service cooperatives do not rule out private initiative: private trade intermediaries, integrators, and service providers should be allowed to coexist with service cooperatives and continue their currently developing operations. The main issue here is the attitude of the government. It has to undergo a radical change from neglect and disdain of household plots and small farmers to full recognition of the huge role that small farms play in Tajikistan's agriculture. Government officials and decision makers have to acknowledge the contribution and importance of small farms, abandon the traditional preference for large farms, and focus on policies that ensure a supportive market environment for successful operation of the small-farm sector. This change of attitude will require a comprehensive "reeducation" effort in all ministries and should probably be guided from the very top.

9 Diversification of Income and Farm Production

More land, improved livestock productivity, and greater commercialization will allow farmers to achieve higher levels of income and better livelihoods. Yet income flows are always prone to variability and therefore risky. Diversification is a standard risk-reducing tool in economic theory and financial practice.

Diversification should be practiced on two levels: (a) diversification of income sources to reduce income risks and (b) diversification of the agricultural product mix to reduce production risks. Farmers in Tajikistan diversify both their income sources and their production. However, in both dimensions diversification is still not sufficient.

Table 8.5 Impact of remittances from migrant labor on household income

Wealth indicator	Families without migrants	Families with migrants	1 migrant	2 migrants	3 and more migrants
Has a car, % of households	29	68[a]	63	83	83
Expenditure on fuel, somoni/year	1,390	2,240[a]	2,000[b]	2,700	3,000[b]
Number of animals, st. head	1.7	2.3	2.1	2.8	3.2

[a]Difference between families with and without migrants statistically significant at $p=0.1$
[b]Difference between families with 1 migrant and 3 or more migrants statistically significant at $p=0.1$

Box 8.2 Remittances from Migrants Help Build Household Wealth

Shahtuti Bolo is a village of 569 inhabitants in Hakimi Jamoat, Nurabad District, RRP,[5] located at the end of a single mud track some 5 km from the Jamoat center, 40 min by a mudslide-prone track from the main communication route between Dushanbe and Garm. A small survey designed to collect data on energy usage prior to implementation of a rural energy efficiency program was conducted in spring 2011 among all 58 households in the village. The survey unexpectedly provided interesting insights into the role of remittances from migrants working abroad to the well-being of the village population.

Three-quarters of the households in the village (44 out of 58) have someone working abroad (basically in Russia). The number of migrant workers is generally 1–2 per household, but 10% of the households in the village report from 3 to 5 migrants. A total of 67 people work abroad, which constitutes 23% of the working-age population in the village (aged 16–60). According to informal interviews in the village, the migrants usually work abroad from March to October and return home for the winter months.

Family incomes today are strongly dependent on a single source, with 50–70% deriving from agriculture (Lerman and Wolfgramm 2011). Diversification of income sources is generally achieved by accepting wage employment outside agriculture and by expanding entrepreneurial activities. Wage employment (including remittances from family members working abroad as migrants) constitutes already now a significant component of family income (see Table 8.5, Box 8.2). Income from entrepreneurial activities, however, is so far negligible. Policy measures should be

[5] RRP stands for Raiony Respublikan skogo Podchineniya – Districts of Republican Subordination, a region consisting of 13 districts (raions) that extends from the border with Uzbekistan in the west to the Pamir region (GBAO) in the east. Unlike the other three major administrative divisions in Tajikistan (Sughd, Khatlon, and GBAO), RRP does not have a regional capital or a regional governor of its own: its constituent districts answer directly to the central government in Dushanbe.

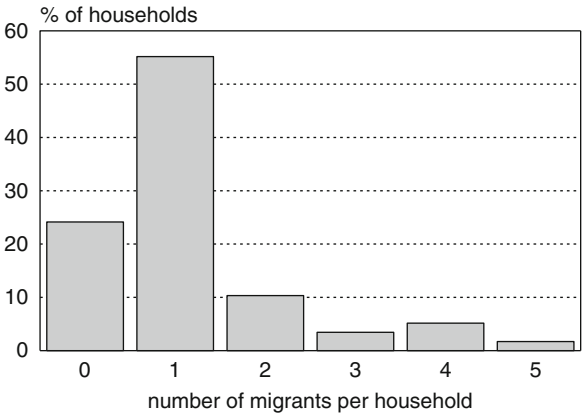


Fig. 8.10 Shahtuti Bolo: distribution of households by number of migrants working abroad

put in place to encourage development of off-farm activities in rural areas, including small-scale processing (dairy and meat, dried fruits, jams), cottage industries (carpet weaving, traditional arts and crafts), and small business initiatives (transport, trade, intermediation). Encouragement of off-farm activities requires an intelligent public awareness and education campaign, with information and support materials developed and provided by the government and NGOs; it may also require microfinancing with reasonably priced loans or grants, establishment of alternative credit mechanisms (e.g., credit unions as an alternative to commercial banks), and innovative tax measures to provide additional incentives.[6]

In terms of product diversification, Tajikistan's agriculture is 70% crops and only 30% livestock (TajStat 2010a). Only one-quarter of small dehkan farms engage in both crop and livestock production (Helvetas 2011; Lerman and Wolfgramm 2011); the rest produce crops, but no livestock. Tajikistan's agriculture thus bears an unbalanced risk due to the dominance of crop enterprises with their exposure to weather and climate change risks. Measures designed to improve livestock productivity (see above) will inevitably result in higher output and increase the share of livestock production in national agriculture, leading to a more balanced and less risky product mix.

There is a clear relationship between various household wealth indicators and the fact that at least one of the family members works abroad. Families with migrants are more likely to have a car; families with migrants can afford to spend more on

[6] There is no clear information on the borrowing capacity of rural households in Tajikistan. While survey results published by various NGOs (WFP, IPC, Save the Children, Mercy Corps) paint a picture of considerable financial stress in rural households, official statistics based on a representative sample of 11,600 rural households indicate that just 2.4% of respondents reported any borrowing (TajStat 2011c). Among dehkan farms, debt is mainly concentrated in relatively large cotton-growing collective dehkan farms, while the smaller individual and family farms are without significant indebtedness. Overall, it seems that rural indebtedness in Tajikistan is not a critical factor that should seriously constrain future borrowing for purposes of diversification and productivity improvement.

Fig. 8.11 New houses being built by returning migrants from Russia. Jamoat Saied, near Shaartuz (Photographed by Zvi Lerman, 8 April 2011)

coal and on fuel in general; families with migrants have more livestock. Furthermore, all three indicators increase as the number of migrants in the household increases. The differences are statistically significant, except for livestock.

Wealth creation in Shahtuti Bolo is thus facilitated by the earnings of migrant workers abroad.[7] This is a positive effect of labor migration, but it is apparently achieved at a huge human cost, not least because of the discrimination and violence that Tajik migrants suffer in Russia and other countries where they go to work. It is interesting to note that, unlike the model of a Turkish "gastarbeiter" in Europe, Tajik migrants work abroad mainly during the summer months and return home in the winter. Many of them return permanently after a number of years, once they have accumulated sufficient wealth. Returning migrants contribute in various ways to the rejuvenation of their community, e.g., by building new modern homes, as is seen in the photograph from Jamoat Sayed near Shaartuz (Fig. 8.11).

[7] Yalcin-Heckmann (2010, p. 192) reaches a similar conclusion regarding the economic contribution of migrant remittances to rural development in western Azerbaijan (the village of Tazakend). In addition to supporting livelihoods, remittances also provide funds for investment, such as the construction of a regional wholesale market near Tazakend (2007), development of trade links in Russia for local herbs and vegetables, and promotion of domestic livestock sales.

Tajikistan never became a cotton monoculture in the Soviet era. Both cotton and cereals (mainly wheat) were always present in Tajikistan's crop mix, occupying in varying proportions up to 70–80% of total sown area (TajStat 2010a). The remainder was split between feed crops and horticulture (potatoes, vegetables, melons, fruits, and grapes), with area under feed crops shrinking significantly since 1980 and the area devoted to horticultural crops increasing with the progress of farm reforms after 1995. Here again, as with the crop/livestock mix, we witness basic diversification of crop production, but the diversification is not particularly pronounced: cotton and wheat dominate the cultivated area.

Labor-intensive horticultural crops are ideally suited for small farms, with their abundance of relatively cheap labor, which may in fact explain the growth in horticulture since 1998. Vegetables account for a much larger share of the cultivated area in household plots than in either dehkan farms or agricultural enterprises.

The specialization in cotton and wheat is an inherited feature of the government policies that prevailed until about 2008. During most of the period since independence, authorities in effect dictated the allocation of land to "strategic" crops and set production targets for cotton and wheat. Dehkan farmers were not free to decide what to grow, and failure to meet the targets could trigger the ultimate sanction leading to confiscation of one's land. To encourage further diversification of dehkan farms away from cotton and wheat, while strengthening livestock production and improving pasture management, the government should ensure strict compliance – at all levels – with the full intent of the "freedom to farm" provisions adopted in several rounds since 2007. These provisions release farms from production targets on cotton and wheat, eliminate administrative intervention in production and land allocation decisions, and allow farmers to decide where and how to sell their output (Lerman 2011). Implementation of the "freedom to farm" principles should enable small farms to maximize their relative advantage by specializing to a greater extent in labor-intensive horticultural crops, which are ideally suited for small farms with their abundance of relatively cheap labor. Relaxation of production constraints should also lead to allocation of more land to feed crops, ensuring that livestock is supplied with enough feed to maintain reasonable milk yields.

10 Summary and Conclusions

The rural population in Tajikistan is judged to be highly vulnerable to risk due to low incomes and high poverty levels. Empirical evidence demonstrates that land and commercialization increase family well-being and thus reduce vulnerability. This evidence suggests four policy recommendations for increasing family income and mitigating rural poverty: (1) enlargement of family land holdings, (2) improving livestock productivity, (3) increasing commercialization through improvement of farm services, and (4) diversification of income and farm production.

More land, improved livestock productivity, and greater commercialization will allow farmers to achieve higher levels of income and better livelihoods. Yet income flows are always prone to variability and therefore risky. Diversification is a standard risk-reducing tool in economic theory and financial practice.

Diversification should be practiced on two levels: (a) diversification of income sources to reduce income risks and (b) diversification of the agricultural product mix to reduce production risks. Farmers in Tajikistan diversify both their income sources and their production. However, in both dimensions diversification is still not sufficient.

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