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**Agricultural Recovery and Individual Land Tenure:  
Lessons from Central Asia**

**Zvi Lerman and David Sedik**

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Zvi Lerman is Sir Henry d'Avigdor Goldsmid Professor of Agricultural Economics, The Hebrew University of Jerusalem, Israel

David Sedik is the Senior Agricultural Policy Officer in the FAO Regional Office for Europe and Central Asia.

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# **Agricultural Recovery and Individual Land Tenure: Lessons from Central Asia**

Zvi Lerman and David Sedik

One of the striking features of transition from plan to market in CIS agriculture is the dramatic shift from the predominance of large corporate farms (kolkhozy and sovkhozy, generally referred to as agricultural enterprises) to individual or family agriculture based on a spectrum of small farms. The individual sector, combining the traditional household plots and the new peasant farms that began to emerge after 1992, accounts for most of agricultural production and controls a large share of arable land. This is a dramatic change from the pre-1990 period, when agricultural enterprises produced over 70% of GAO and controlled over 90% of arable land.

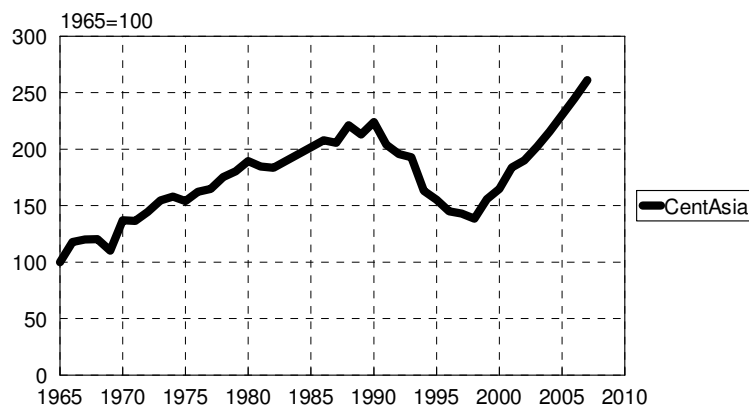
These changes of farm structure, while consistent with the dominant mode in market agricultures, clash with the traditional Soviet philosophy of economies of scale. They also clash with the inherited ideology that views small family farms as an undesirable and even damaging deviation from the capital-intensive, highly mechanized, and commercially oriented mainstream. We therefore witness an ongoing debate, both among CIS decision makers and within the academic community, as to the performance advantages of the two main organizational forms in agriculture – large corporate farms and small family farms.

This continuing debate in effect ignores the well-known theoretical considerations that reveal clearly identifiable advantages of small family farms compared with large corporate farms. There is generally no evidence of economies of scale in primary agricultural production, while individual or family farms are easier to organize and operate than corporations. Family farms are free from labor monitoring costs and are not prone to agency problems, contrary to large corporate farms employing hired labor and run by outside managers. These factors highlight the importance of individual incentives for farm efficiency and account for the predominance of family farms in market economies, where a family farm is not necessarily a very small farm: the optimal farm size is determined in each particular case by the managerial capacity of the farmer, and it may be quite large for highly capable individuals.

In this article we assemble evidence that, in our opinion, shows that individualization of agriculture is associated with the post-transition recovery in CIS and that small family farms outperform the large enterprises, at least by measures of land productivity. The evidence is presented here for the five countries of Central Asia – Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. Previously similar results have been obtained for the Trans-Caucasian states (Armenia, Georgia, and Azerbaijan) and to a certain extent also for the European countries of the CIS.

## The Four Phases of Agricultural Development

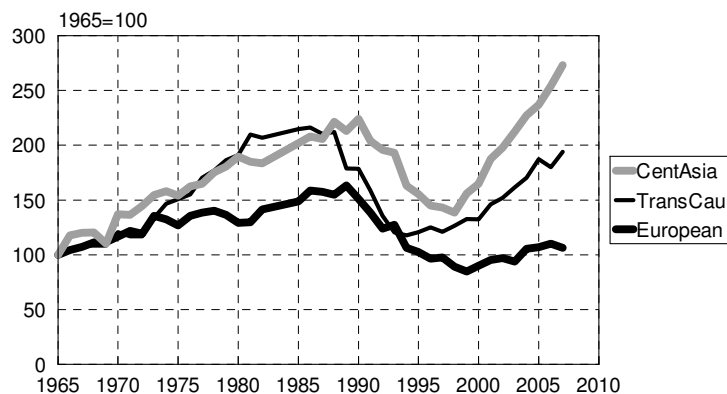
Central Asia, as a region, has gone through three phases of agricultural development during the last 45 years (**Figure 1**). The first phase can be characterized as the Soviet growth period, which was sustained by the stable supportive environment that characterized the post-Stalin attitude toward agriculture in the USSR. The Soviet growth phase extended until 1990, when the GAO index had risen to 225% of its level in 1965. The second phase is the transition collapse triggered by the dismantling of the traditional Soviet system and the disruption of all support services in agriculture. The GAO index dropped by almost 40% between 1990 and 1998, bottoming out in 1998 at about the level of 1975. The third phase is the recovery phase characterized by renewed agricultural growth after 1998, when the cumulative effect of sustained market reforms began to be felt.



**Figure 1.** Long-term agricultural development in Central Asia: GAO index 1965-2007.

## The Turnaround Point

**Figure 2** superimposes the agricultural growth curves for two other regions: Trans-Caucasus and the European CIS. The three phases of long-term agricultural development – growth, collapse, and recovery – are clearly visible in each regional curve. The notable difference is the shift of the point where recovery starts: as early as 1993 in Trans-Caucasus, 1998 in Central Asia, and 1999 in the European CIS.

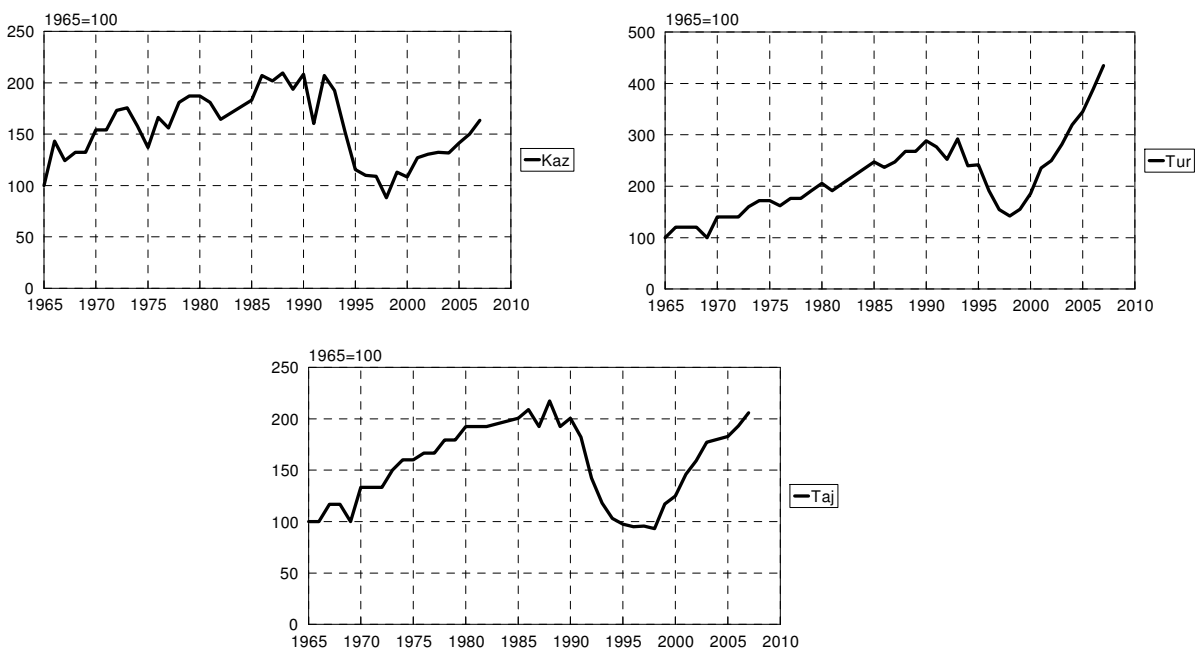


**Figure 2.** Regional GAO growth 1965-2007: averages for three regional groupings of CIS countries.

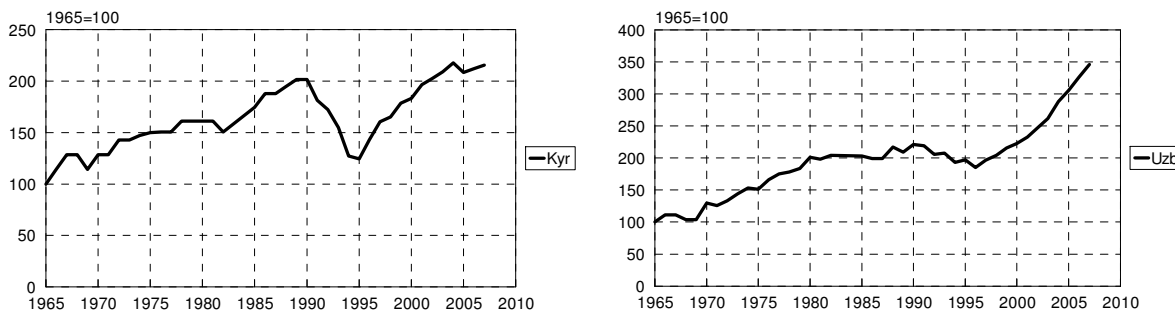
There is a traceable link between the beginning of recovery and the implementation of significant farm structure reforms. In Trans-Caucasus recovery started in 1993, precisely when two of the three Trans-Caucasian countries – Armenia and Georgia – had made resolute efforts to dismantle collective agriculture and distribute land to individual farms at the very

beginning of transition. The rate of recovery in Trans-Caucasus subsequently accelerated after 1996, when Azerbaijan had adopted a farm individualization policy as part of Aliyev's reforms: this acceleration is clearly visible in the steeper slope of the Trans-Caucasus curve in **Figure 2** from 1997 onward. It is sometimes argued that Azerbaijan's agricultural success since 1996 is simply a reflection of the booming oil revenues that fuel the overall economic growth. Armenia and Georgia do not have any oil revenues, and yet the starting point for agricultural recovery in these countries is clearly linked with the implementation of land individualization reforms. In the European CIS, recovery began around 1999, as two of the four countries – Ukraine and Moldova – began moving in earnest toward distribution of land plots to holders of paper land shares. The extent of the recovery in this group is moderate, because two other countries – Russia and Belarus – have not done much by way of actual land reform.

### 1998 turnaround



### 1995-1996 turnaround



**Figure 3.** Turnaround points for Central Asian countries: Kazakhstan, Turkmenistan, Tajikistan (1998 turnaround), Kyrgyzstan (1995), and Uzbekistan (1996).

The recovery in Central Asia as a region began in 1998 (see **Figure 2**), by which time all five countries had moved toward implementing various reform measures in various ways. Looking at the detailed country patterns (**Figure 3**), we note that in three of the five cases – Kazakhstan, Tajikistan, and Kyrgyzstan – the actual turnaround from decline to recovery

indeed came in 1998. In Kyrgyzstan and Uzbekistan, on the other hand, the turnaround came earlier (1995 and 1996, respectively), but the advance contribution of these two countries to overall recovery is masked in the average regional curve by the majority with 1998 turnaround.

## **Individualization of Central Asian Agriculture**

During the Soviet era, the farming structure in all the former republics of the USSR was dominated by large agricultural enterprises – collective and state farms, which coexisted with small household plots cultivated by the rural population – the traditional “private” sector of Soviet agriculture. The large enterprises produced most of the commercially traded output, while the household plots were largely subsistence oriented and sold only their surplus output that remained after satisfying the family’s needs for food.

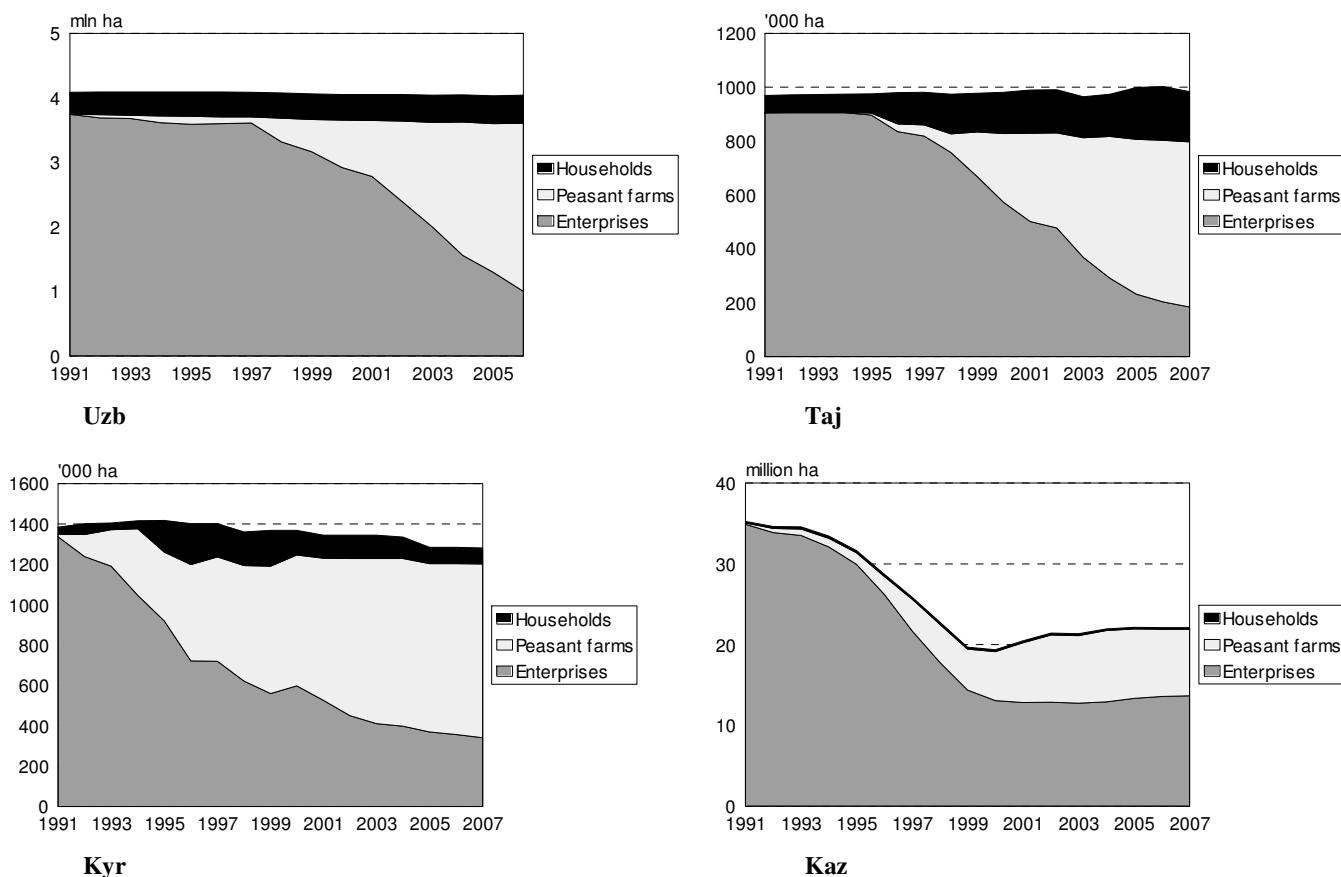
Two changes began to be implemented in this dual farming structure already in the early 1990s: the household plots were substantially enlarged by additional land allocations from the state and a totally new organizational form – the “peasant farm” – emerged after 1992. While household plots were typically managed on a part time basis by workers of agricultural enterprises, rural administrative employees, or pensioners and had many symbiotic links with the local agricultural enterprise, peasant farms were created as independent entities outside the existing collectivist framework. They were substantially larger than the household plots (although much smaller than the agricultural enterprises) and, unlike household plots, they had a clear commercial orientation. As a result, the dual farming structure that prevailed during the Soviet period evolved into a three-component structure: a “private” or individual sector that now consisted of both household plots and peasant farms and the corporate enterprise sector inherited from the Soviet era. We refer to this process involving enlargement of household plots and creation of new peasant farms as “conventional” land individualization.

It is important to note that individualization of land tenure is different from privatization of legal ownership of land. First, land can be privatized only in countries that legally recognize private ownership of agricultural land, i.e., Kazakhstan and Kyrgyzstan. In Tajikistan and Uzbekistan all land remains state owned and it is transferred to farmers in use rights. Turkmenistan formally recognizes private land ownership (with severe transferability restrictions), but virtually all land in the country is owned by the state and is given to farmers in use rights, as in Tajikistan and Uzbekistan where no private land ownership is recognized. Second, new landowners may decide not to farm their privatized land individually and instead transfer it to others for farming through various lease or rental arrangements. This is the experience in many Central and Eastern European countries, where land privatization often created absentee landowners with more lucrative jobs in the city, or alternatively, in countries such as Moldova or Romania, where the new landowners, while residing in rural areas and relying mainly on income from agriculture, felt unprepared to assume the risks of individual farming and therefore entrusted their land to others under contract. Private land owners and individual farmers are therefore two different groups of people with only partial overlap.

Since land resources in each country are inherently limited, the enlargement of household plots and the creation of new peasant farms have necessarily come at the expense of the agricultural enterprises, which lost much of their land to the individual sector. **Figure 4** illustrates the shift of arable land from corporate farms (enterprises) to the individual sector (household plots and peasant farms) in four of the five Central Asian states, which adhered to



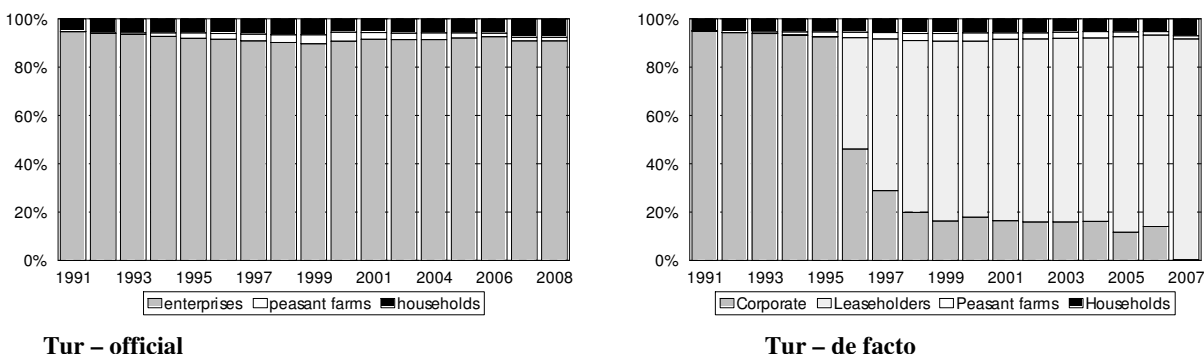
the process of reform as described above. In all four countries we witness substantial expansion of the individual sector and the corporate farms have clearly lost their exclusively dominant position. Kazakhstan is somewhat of an outlier in three respects: first, this is the only country that suffered from significant shrinkage of arable land inventories through abandonment; second, the household sector in Kazakhstan controls a much smaller proportion of land than in the other countries; and third, the corporate sector continues to retain a much greater share of arable land than in the other countries. Still, the share of corporate farms in arable land in Kazakhstan went down from virtually 100% in 1990-91 to about 60% in 2007.



**Figure 4.** Shift of arable land from agricultural enterprises to individual farms 1991-2007 (countries with “conventional” individualization: Uzbekistan, Tajikistan, Kyrgyzstan, Kazakhstan).

Alongside with conventional individualization of land tenure in the four countries, Turkmenistan also achieved remarkable changes of farm structure despite its image as a “slow” reformer. In fact, Turkmenistan allowed farm structure to shift in 1998 from collective form of organization to family leaseholding. Leaseholding is basically a form of individual farming (with many restrictions), although land in family leasehold is not counted as individual tenure in official statistics and is not reflected as an advance in land reform in the formal land reform indexes published by international organizations. Turkmenistan is the only country in the region where individual agriculture is mainly leasehold-based and the bulk of land in individual land tenure is not reported in official statistics. In **Figure 5**, the left-hand panel reflects the official land statistics, which show very little individualization since 1990. The right-hand panel uses indirect land-use data to separate out the component of arable land

cultivated in family leaseholds: with this adjustment most of the arable land is seen to be in individual use since 1998.



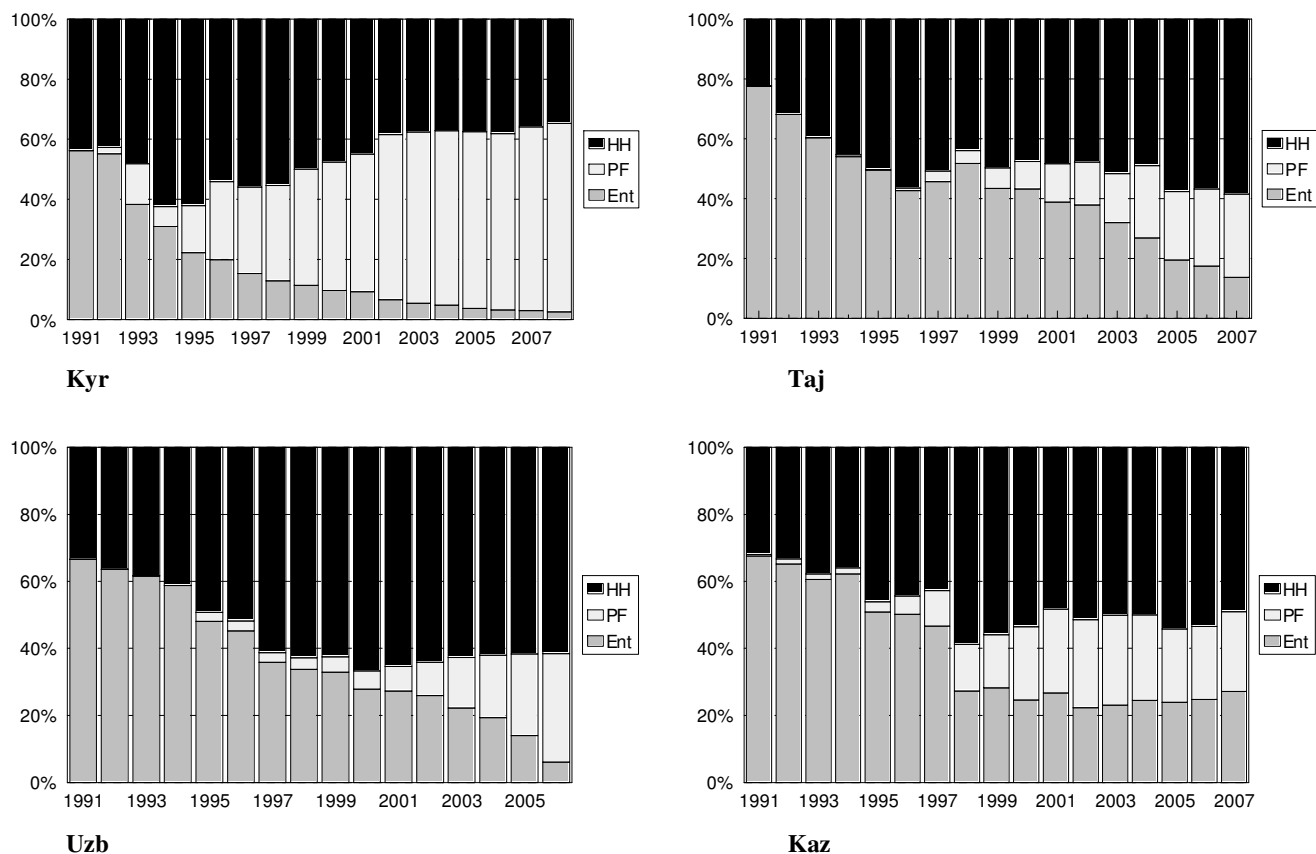
**Figure 5.** Individualization through leaseholding in Turkmenistan. Left panel: farm structure based on official statistics; right panel:

The shift of the main productive resource – arable land – from enterprises to the individual sector has resulted in a significant increase in the share of individual farms in agricultural production. At the end of the Soviet era individual farms (the traditional household plots at that time) contributed one-third of Gross Agricultural Output (GAO) in Central Asia and agricultural enterprises produced the remaining two-thirds; in 2007, individual farms (household plots and peasant farms combined) contribute 88% of GAO and the share of the enterprises had shrunk to 12%. **Table 1** summarizes the data on the dramatic shift of land and production to the individual sector between 1990 and 2007 in the Central Asian states. For comparison it shows Azerbaijan as a representative of the Trans-Caucasus region, where individualization has been comparable to that in Central Asia, and also Russia and Ukraine, where individualization lags far behind both Central Asia and Trans-Caucasus.

**Table 1. Changing role of individual farms 1991-2007**

	Share of arable land in individual use, %		Share of GAO from individual farms, %	
	1991	2007	1991	2007
Kaz	1	38	32	73
Kyr	3	73	44	97
Taj	7	81	22	86
Tur	5	87		
Uzb	8	75	33	94
<i>Average</i>	<i>5</i>	<i>71</i>	<i>33</i>	<i>88</i>
Azerbaijan	4	78	35	95
Russia	2	18	24	57
Ukraine	7	37	27	64

There are certain differences in the composition of individual sector GAO across countries (**Figure 6**). Kyrgyzstan stands out as the country where peasant farms contribute the largest share of GAO. In Tajikistan, Uzbekistan, and Kazakhstan the role of the household plots in production is much more prominent. The share of agricultural enterprises in GAO has collapsed across the entire region, but in Kazakhstan they retain a relatively large share of production (although also much smaller than the share of the individual sector). The relatively large share of production contributed by corporate farms in Kazakhstan is consistent with their relatively large share in arable land (see **Figure 4**).



**Figure 6.** Structure of GAO by farm type 1991-2007.  
 Legend: HH – households, PF – peasant farms, Ent – agricultural enterprises.

## The Turnaround Point and Individualization

The turnaround point in all Central Asian countries is characterized by a significant jump of the share of arable land in individual cultivation (**Table 2**). This share increased abruptly by a factor of between 1.6 and 2.0 in just two years: the year before the turnaround point (t-1) and the year after the turnaround point (t+1).<sup>1</sup> These abrupt increases in the share of individual land tenure were triggered by identifiable pieces of legislation adopted near the turnaround point (**Table 3**).

**Table 2.** Change in the share of arable land in individual use before and after the turnaround point

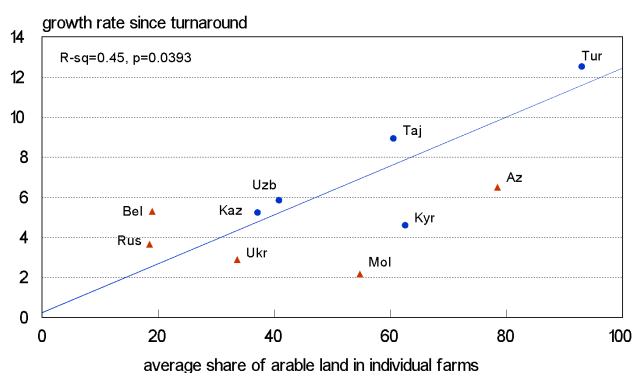
	Turnaround year, t	Arable land in individual use, %		Jump (t+1)/(t-1)
		Year t-1	Year t+1	
Kaz	1998	16	27	<b>1.69</b>
Kyr	1995	26	49	<b>1.88</b>
Taj	1998	16	32	<b>2.00</b>
Uzb	1996	12	19	<b>1.58</b>
Tur (incl. leaseholds)	1998	54	84	<b>1.56</b>

<sup>1</sup> In Azerbaijan the shift of arable land resources on two sides of the turnaround point (1997) has been even more dramatic: the share of arable land in individual use went up from 6% in 1996 to 82% in 1998, a 14-fold increase.

**Table 3. Significant land-reform legislation passed near the turnaround point**

	Turnaround year	Date of significant land reform legislation	Name of legislation
Kaz	1998	8.1997 3.1998	Land shares Peasant farms law
Taj	1998	6.1996 6.1998	Enterprise reorganization Right to land use
Tur	1998	12.1996 1.1997	Land allocation to individuals Improving farm incentives
Kyr	1995	2.1994 8.1994	Measures for deepening land and agrarian reform Procedures for implementation of land reform; reorganization of ag enterprises; land share determination
Uzb	1996	8.1994	Measures for economic encouragement of the development of agriculture

The significant change of individual land tenure around the turnaround point and the existence of identifiable legal acts associated with the turnaround year provide strong evidence of a link between individualization of agriculture and agricultural recovery. Further evidence is provided by the comparison of individualization in Central Asia, on the one hand, and Russia and Ukraine, on the other (**Table 1**). Two facts are apparent for Russia and Ukraine. First, agriculture in Russia and Ukraine is much less individualized than in Central Asia (**Table 1**). Second, agricultural recovery in Russia and Ukraine after the turnaround point in 1999 was much more sluggish than in Central Asia or Trans-Caucasus (**Figure 2**). In our view, the sluggish recovery in Russia and Ukraine is the result of indecisive and half-hearted individualization attempts: these two large countries continue to maintain policies that give preference to large corporate farms rather than small family farms. By contrast, the robust recovery in both Trans-Caucasus and Central Asia is associated with decisive land individualization policies in these regions.



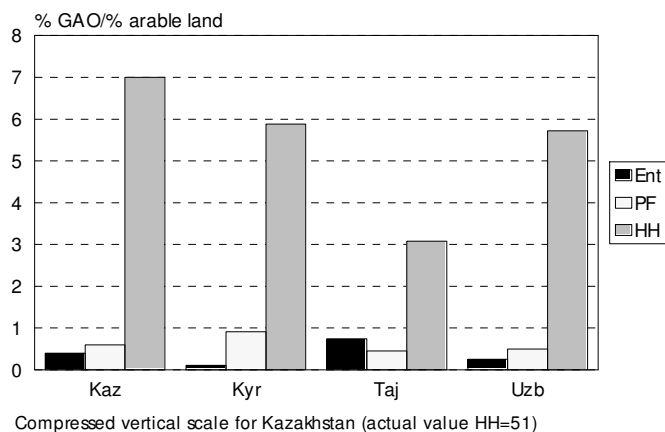
**Figure 7.** GAO growth rate since turnaround increases with the increase of the average share of arable land in individual farms: Central Asia and other CIS countries.

Finally, a simple analysis for Central Asia and other CIS countries shows that the annual growth rate achieved after the turnaround year is positively associated with the share of arable land in individual farms (**Figure 7**;  $R^2=0.45$ , the regression coefficient is significant at 5%). In other words, post-turnaround growth is faster in countries that have more land in individual use.

## Productivity of Individual Farms

Central Asia enjoys robust agricultural growth despite the steady decline of corporate farms (enterprises) and their shrinking share of both land and production. This implies that recovery in agriculture is driven entirely by growth in the individual sector of household plots and peasant farms, while the formerly dominant sector of agricultural enterprises continues its decline. In fact, individual farms are the engine of recovery because they achieve higher productivity than enterprises.

A rough and easy way to assess the productivity of farms of different types is by comparing their share in production to their share in arable land. In Central Asia, the individual sector – household plots and peasant farms combined – contributes 88% of GAO (the value of agricultural output) on just 71% of arable land (see **Table 1**). This disparity between the share of individual farms in output and land is a persistent phenomenon that was observed also in the Soviet period, when household plots – the only type of family farm in existence at that time – produced 45% of GAO on just 2% of land. The disparity between shares of production and land provides a measure of relative productivity: the entire agricultural sector produces 100% of GAO on 100% of land with relative productivity of 1; relative productivities higher than 1 (when the share of output is greater than the share of land) are indicative of land being used more efficiently than the average for the entire sector, while relative productivities less than 1 (when the share of output is less than the share of land) suggest that land is being used less efficiently than the sectoral average.



**Figure 8.** Relative productivity of land by farm type in Central Asia, 2006-2007.

Estimates of relative efficiency of land utilization for farms of the three main types – agricultural enterprises, peasant farms, and household plots – present a clear ranking for the Central Asian countries (**Figure 8**): the efficiency of land utilization rises sharply from enterprises (the lowest) to household plots (the highest). Peasant farms generally fall in the middle between enterprises and household plots (except in Tajikistan). The low relative productivity of agricultural enterprises suggests that they are very inefficient in the utilization of the large land resources that they continue to control: more efficient farming could generate substantially greater output from the available arable land and thus contribute more to rural incomes and poverty alleviation.

Alongside relative productivities of land utilization, we can also calculate the absolute land productivity for different farm types as the value of crop production per hectare of sown land. So far such calculations have been carried out for three countries: Kyrgyzstan, Tajikistan, and Uzbekistan. The pattern for Kyrgyzstan is the closest to our theoretical expectations: individual farms in Kyrgyzstan are observed to achieve consistently higher levels of land productivity than agricultural enterprises (Figure 9). Among the two components of the individual sector, the traditional small household plots outperform the newly emergent peasant farms. Productivity calculations in absolute values reveal the same ranking for Kyrgyzstan as relative productivity: efficiency of land use rises from enterprises to peasant farms and finally to household plots. This efficiency ranking provides strong evidence in support of land reform, which has been responsible for the strengthening of the relatively more productive individual farms.

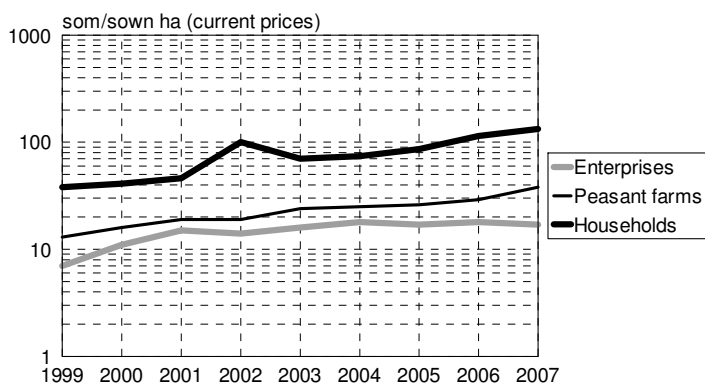


Figure 9. Kyrgyzstan: land productivity by farm type 1999-2007 (based on value of crop production in current prices).

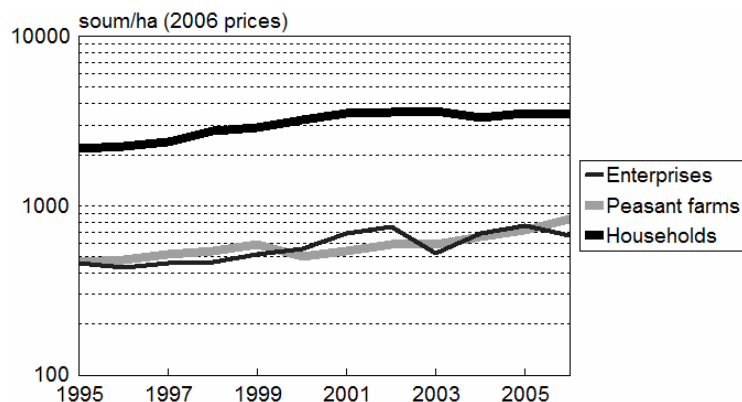
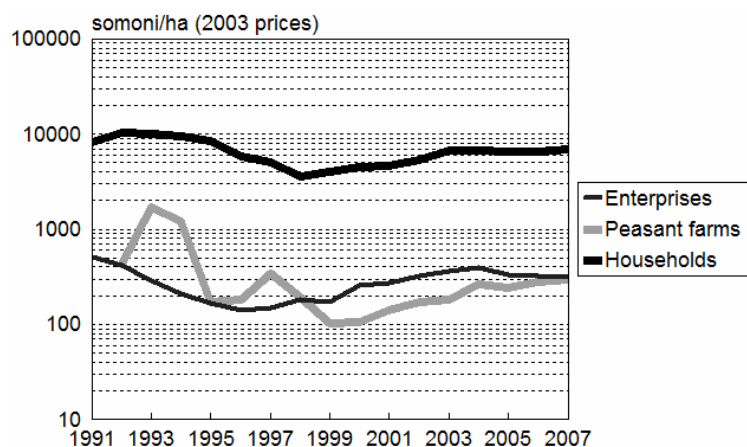


Figure 10. Land productivity by farm type in Tajikistan (1991-2007, top panel) and Uzbekistan (1995-2006, bottom panel). Based on value of crop production in constant prices.

The diagrams for Tajikistan and Uzbekistan also demonstrate the case for land reform and its potential yield improving effects. **Figure 10** shows the huge differences in productivity of land between household plots on one side and enterprises and peasant farms on the other. Household plots – the undisputed individual farms in all CIS countries – consistently achieve much higher levels of land productivity: agricultural land in household plots is utilized 20 to 50 times more productively than in farms of other types. Further redistribution of land to household plots could substantially increase average productivity in agriculture, thus leading to a large increase in agricultural production. The productivity results for peasant farms are puzzling in our theoretical framework: there are no statistically significant performance advantages to family-run peasant farms compared with manager-run enterprises in Tajikistan and Uzbekistan.

In Tajikistan, this puzzling result may stem from the fact that at least one-third of the peasant farms in this country are not really individual farms at all: they are collective dehkan farms (partnerships) created in the process of reorganization of traditional farm enterprises and their incentives are closer to those of corporate farms than individual farms. Many of these collective dehkan farms were only cosmetically reorganized and the management structures have remained unchanged. Under these circumstances we should not be surprised that the productivity of peasant farms in Tajikistan, taken as a heterogeneous group, is not different from that of the farm enterprises they succeeded. Future analytical efforts should attempt to separate the performance of individual dehkan farms from collective dehkan farms in Tajikistan.

More generally we can conjecture that the newly emergent peasant farms are still in the learning stage, trying to adapt to the market environment and to optimize their operations. The infrastructure and support services in all CIS countries are grossly inadequate in general and are ill-adapted to serving mid-sized family farms in particular. Inadequate marketing and supply channels, as well as almost total lack of extension and advice services, constitute a serious obstacle to efficient operation of new peasant farms and prevent them from realizing the inherent advantages of their individual form of organization. It is conjectured that the performance of peasant farms will rise in line with theoretical expectations when the market environment improves.

## **Conclusion**

Recovery of agricultural growth is associated with individualization of farming. Because of the higher productivity of family farms, and especially household plots, the individualization of agriculture has led to significant recovery of agricultural production in Central Asia. The steep decline in GAO that characterized the early years of transition (1990-1994) changed to robust growth in the second half of the 1990s. Following the shift to more productive individual agriculture GAO had recovered to the 1990 Soviet-era peak by 2004-2005

Small family farms have become the backbone of the post-transition farming structure, replacing the agricultural enterprises that dominated during the Soviet era. A new farming structure requires a new market infrastructure for farm services, including channels for sale of products and delivery of farm inputs, as well as provision of extension, training, and advice services for the small private farmers. Government policies should be designed to take these new factors into consideration.

The empirical results of this paper have important implications for the ongoing policy debate between the supporters of large corporate farms, who continue to advocate economies of scale, and the supporters of smaller family farms, who emphasize the advantages of individual incentives. This debate is not limited to Central Asia, and it is relevant also for the rest of the CIS. The results will hopefully inform this ongoing debate and incrementally add to the growing body of evidence that highlights the performance advantages of family farms in transition countries.



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**Regional Office for Europe and Central Asia**  
Food and Agriculture Organization of the United Nations  
34 Benczur ut.  
1068 Budapest, Hungary

Telephone: +36 1 461 2000

Fax: +36 1 351 7029

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