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## **Land and Farm Structure in Poland**

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# Land and Farm Structure in Poland\*

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# Land and Farm Structure in Poland

## Abstract

Land has a major influence on the well-being of rural families in Poland. Farming households report significantly higher incomes than families that do not farm. The income level increases for families with larger land holdings, primarily due to the growing share of farm income. Polish farmers realize the advantages of larger holdings and increase their farms through land market transactions. Unfortunately, efficient functioning of land markets in Poland is constrained by administrative and policy distortions, which include high government-determined transaction costs, complex registration procedures, difficulties with access to mortgage facilities, and bias against larger farms built into the unemployment benefits system.

**Keywords:** Individual farming, land markets, rural family incomes, rural employment, transition in agriculture.

Poland is among the largest agrarian economies of Central Eastern Europe (CEE). Its agricultural land resources of 18.5 million hectare account for 60% of the country's total land area and its rural population of 15 million is nearly 40% of the total population. According to official statistics based on labour surveys, Polish agriculture employs 4.4 million people, or 27% of the total number of employed in the country. Yet agriculture accounted only for 6% of GDP in 1997, which points to substantially lower sectoral productivity than in the rest of the economy.

The importance of agriculture in Poland prompted this study of land ownership, land markets, and farm structure on the eve of accession to the European Union. The objective was to identify the critical issues and constraints for Polish agriculture in the context of EU accession. The article starts with an overview based on national-level data from official sources and then presents the findings of a survey of rural households conducted in May 2000. The survey included 2835 respondents spread fairly uniformly in four new voivodships (provinces). The voivodships were chosen to represent the northern, central, and southern belts of the country – Pomorskie in the north-west (capital Szczecin), Wielkopolskie in central-west (Poznan), Mazowieckie in central-east (Warsaw), and Malopolskie in the south-east (Krakow). The survey covered rural households, and not only farming families, which enabled us to elucidate the impact of land and farming on family incomes in rural Poland. The survey primarily focused on issues that had not been covered in sufficient detail in the 1996 census of Polish agriculture. Tables and figures presented without a specific source reference are based on survey data.

## 1. LAND OWNERSHIP AND LAND USE: NATIONAL OVERVIEW

Poland is unique among the CEE countries in that its agriculture was never fully collectivised after World War II. During the 1980s, only 24% of land was cultivated by socialized farms (20% by state farms and 4% by cooperatives or collectives), compared with about 98% throughout the rest of CEE. Thus, Poland entered the transition era with 76% of its agricultural land actually cultivated by family units (Table 1, land-use panel), and issues of privatisation and restitution of land played a much less prominent role than in other CEE countries during the 1990s. Privatisation efforts have primarily focused on the relatively modest land resources owned by the state (about 4.5 million ha, or 24% of all agricultural land). These were transferred in 1990 to the management of the Agricultural Property Agency (APA), a government organization (part of the

State Treasury) that was charged with the task of reallocating state land to non-state users by selling or leasing out its reserves.

**Table 1. Structure of land use and ownership 1990-1997 (in percent of agricultural land)**

	Owned land		Used land	
	1990	1997	1990	1997
Private sector	76	78	80	92
Individual farms	72	76	76	83
Cooperatives	4	2	4	2
Other private	--	--	0	7
State sector	24	22	20	8
Total	100	100	100	100

Source: 1998 Agricultural Statistical Yearbook.

APA's efforts have focused primarily on leasing of state land, and its privatisation activities have not been particularly vigorous (APA, 1999). As a result, the changes in land ownership between 1990 and 1997 were insignificant: the state privatised about 10% of its land reserves (449 thousand ha out of 4.5 million), which declined from 24% of all agricultural land to 22% (Table 2, ownership panel). In parallel, cooperatives lost ownership of about half their land, primarily due to farm liquidations triggered by economic considerations. The privatised and decollectivised land shifted to the individual sector, where land ownership increased from 72% of agricultural land in 1990 to 76% in 1997. Privatisation of state land contributed 2 percentage points to the increase in the pool of individually owned land and liquidation of cooperatives and collectives contributed another 2 percentage points.

**Table 2. Changes in land use and ownership 1990-1997 (in thousand hectares)**

	Owned land			Used land		
	1990	1997	Change	1990	1997	Change
Private sector	14233	14506	273	14978	16982	2004
Individual farms	13497	14112	615	14228	15293	1065
Cooperatives	736	394	-342	750	464	-286
Other private	--	--	--	0	1225	1225
State sector	4551	4102	-449	3742	1475	-2267
Total	18784	18608	-176	18720	18457	-263

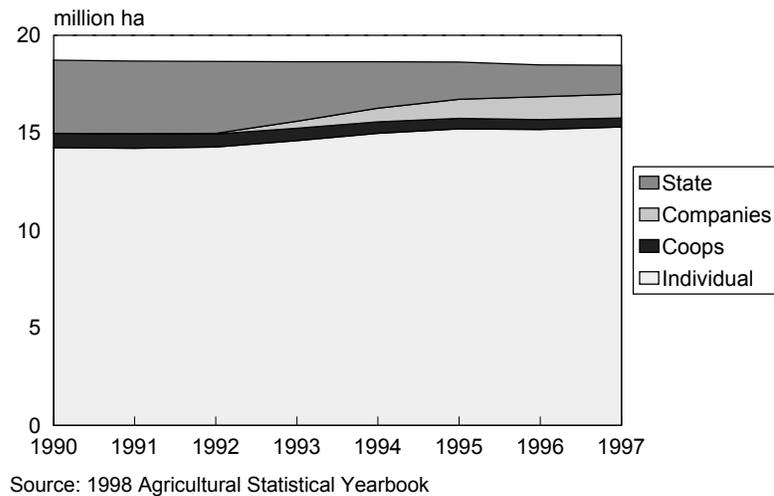
Source: 1998 Agricultural Statistical Yearbook.

The changes in land use between 1990 and 1997 were much more significant than the changes in land ownership. Land users in Poland fall into three categories: corporate farms, individual private farms, and household plots. A farm, in official Polish statistics, is a unit with more than 1 hectare of land. According to this classification, there are 2.1 million individual farms averaging 7 hectares of agricultural land each. They control over 80% of agricultural land—the bulk of the land resources in the individual sector. In addition, there are about 975,000 so-called household plots averaging 0.4 hectares each, which control about 2% of agricultural land. The individual sector thus consists of 3 million units that cultivate nearly 85% of agricultural land. The corporate farms (all of them privatised state farms or successors of former cooperatives

organized as private companies) are much larger, averaging 620 hectares each. The total number of corporate farms is only 2,000, so that the corporate sector cultivates about 15% of agricultural land (down from nearly 25% before 1989). Because of the small concentration of land in large-scale farms, the farming structure in Poland has never displayed the sharp duality characteristic of other transition countries. The distribution of farm sizes in Poland is fairly close to the distribution in market economies, with a somewhat greater weight of the smallest farms, which in a certain sense is a sign of excessive fragmentation.

Land use by the state sector declined from 3.7 million ha in 1990 to less than 1.5 million ha in 1997, a decrease of 60% (Table 2, land-use panel). Almost 2.3 million ha shifted from the use of state farms to the use of individual farms and new private companies, increasing the land resources used in the private sector by nearly 15% relative to 1990. Cooperatives lost about 300 thousand ha of the 750 thousand ha that they originally cultivated in 1990, but this decollectivised area is offset by the decrease in the total amount of used land between 1990 and 1997. Figure 1 illustrates the sharp decline of the state sector, the increase of land used by individual farms, and the emergence of private companies as a new category of land users since 1990.

Fig. 1. Users of Agricultural Land 1990-97



Comparison of land use and land ownership numbers in Table 2 suggests that most of the 1.3 million ha cultivated by the new private companies is not privately owned and is probably leased from the state. The state is indeed an important source of land for private agriculture. In 1997, the state farm sector cultivated only 35% of state-owned land, and the remaining 65% (nearly 2.6 million ha) was leased out for cultivation to the private sector (evenly divided between individual farms and new private companies).

## 2. LAND AND FARMING IN THE RURAL HOUSEHOLD SURVEY

Additional insights into issues of land and farming at the household level were obtained through a survey of 2,835 rural households conducted in May 2000. The survey covered rural households, and not only farming families, which enabled us to elucidate the impact of land and farming on family incomes in rural Poland.

We start with a terminological clarification. A ‘farm’ in this survey is any unit where land is cultivated, i.e., where respondents report using land to grow crops or raise livestock. Contrary to the official statistical convention in Poland, no a priori lower limit is imposed on what constitutes a farm. Moreover, the classification into farmers and non-farmers is made regardless of the time and labour inputs into farming activities and regardless of the share of farming in family income: a person reporting any farming activity (growing crops or raising livestock) is regarded as a farmer.

Despite this very liberal definition of farms and farming, a characteristic feature of the rural scene in Poland is that not everybody farms, not even part-time. Only 53% of rural respondents actually cultivate land, i.e., are classified as ‘farmers’ for the purposes of this study. The remaining 47% do not farm (although some of them own land) and their entire income is derived from sources outside agriculture. In this respect, Poland markedly differs from its eastern neighbours—Russia, Ukraine, Belarus, Moldova, where every rural family farms at least on its household plot. Farming households are on average larger than non-farming households and are headed by a younger person with a higher educational attainment (Table 3).

**Table 3. Family characteristics and cash income for non-farming and farming households in the survey**

	All sample (n=2835)	Non-farming families (n=1320)	Farming families (n=1515)
Family size	3.9	3.2	4.4
Age of head of household	50.8	53.2	48.8
Education of head of household			
Higher and secondary	21%	23%	20%
Uncompleted primary	11%	16%	8%
Cash family income (zloty per year)	20,628	16,853	24,121
Salaries, pensions, other personal income	14,246	15,006	13,583
Non-farm business income	1,747	1,847	1,661
Farm income (net of cost of purchased inputs and payments to non-family labour)	4,634	--	8,877

### 2.1. Land and Family Income

The average family income is 21,000 zloty per year based on all rural households in the survey (both farming and non-farming, Table 3). This is roughly on a par with the average household income of 20,400 zloty reported by official statistics for all of Poland (GUS, 1998). Rural households derive their income from diversified sources: 70% is personal income in the form of off-farm salaries, pensions, and other transfers, 22% is net cash income from the farm (including

all production costs but excluding the value of farm products consumed by the family), and 8% is net income from non-farm business activities.

Farming families, i.e., families that cultivate some land, report significantly higher total incomes: 24,000 zloty compared with 17,000 zloty for families that do not cultivate land (Table 3). Although personal income is statistically significantly higher for non-farming families (15,000 zloty compared with 13,600 zloty), the small absolute difference of less than 2,000 zloty is offset with a large margin by net farm income of nearly 9,000 zloty per year for farming families. As a result, the difference between the two groups of families is statistically significant: farming families earn 7,000 zloty per year more than non-farming families even before we take into account the value of own farm products consumed in the household. Net farm income represents 37% of cash family income in farming households.

The perceived standard of living of rural households was elucidated through qualitative questions that recognized three standard-of-living levels: 'low' corresponding to households that were just able to meet their subsistence needs, i.e., had enough food (or not even that); 'medium' corresponding to households with an 'adequate' standard of living, able to purchase clothing, shoes, and other daily necessities in addition to food; and 'high' characterizing households that, in addition to daily necessities, could afford durable goods, had some savings, and felt 'comfortable', without particular material difficulties. In 2000, 45% of households characterized their existence as not better than subsistence ('low' standard of living). At the other extreme, 21% of respondents reported a 'high' standard of living. This, incidentally, revealed a significant deterioration in the standard of living during the transition, as in 1990 only 11% were in the 'low' subsistence category and fully 60% were in the 'high' comfortable category.

Use of agricultural land is one of the factors that explain the differences in the perceived standard of living. The sample is evenly divided between households that farm (possibly on leased land) and households that do not farm (even if they own land). Among non-farming households, 50% report that their income is at best sufficient for subsistence, compared with only 40% among farming households. Fully 60% of farming households report that their standard of living is adequate or better, compared with 50% among non-farming households. The differences in these percentages are statistically significant. A closer look at the use of agricultural land shows that the average holdings increase for households reporting a higher standard of living. Thus, farming households in the lower standard of living category average 7.6 ha of land, whereas farming households in the upper standard of living category average 15.4 ha. The differences in land holdings between the three standard-of-living categories are significant (Table 4).

The probability of being in a particular standard of living category as a function of land holdings was analysed by multinomial logistic regression. The explanatory variable 'land' included all farming and non-farming households (2829 observations), with land in non-farming households assigned the value zero. The logistic regression produced highly significant results, which show that an increase of one hectare in farmed land increases by nearly 3% the odds of advancing from low to high standard-of-living category and by over 2% the odds of moving from low to medium category (Table 5). The regression results are statistically significant, but the simple model provides a relatively poor fit of the data. This is not surprising, given more than 2000 noisy

observations, and it indicates that land use is not the only determinant of the standard of living: additional variables may be added to the multinomial logistic model to improve the fit.

**Table 4. Relationship between land and standard of living**

Standard of living category	Non-farming households (n=1314)	Farming households (n=1515)	Average land holding for farming households
Low	49%	41%	7.6 ha
Medium	31%	37%	10.7 ha
High	20%	22%	15.4 ha

Note: The difference in the distribution of farming and non-farming households by standard-of-living categories is statistically significant by chi-square test. The difference in average land holdings between any two standard-of-living categories is statistically significant by the Bonferoni simultaneous comparison test.

**Table 5. Standard of living as determined by use of land: multinomial logistic analysis\* (n=2829)**

	Low vs. High	Low vs. Medium	Medium vs. High
Intercept	0.91	0.39	0.52
Land in agricultural use	-0.0290	-0.0216	-0.00738
Odds ratio	0.9714	0.9786	0.9926
Percentage change in odds of being in lower standard-of-living category per one unit increase of land	-2.9%	-2.1%	-0.7%

\*The logistic regression was run using the procedure CATMOD in the SAS software system.

## 2.2. Imputed Income from Consumption of Own Products

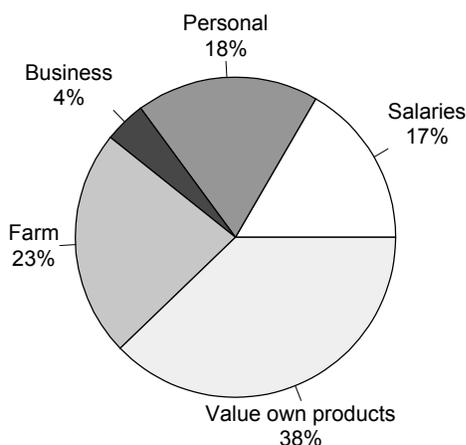
Farm income in Table 3 is cash farm income from sales. It is based on sales revenues net of all production costs. A certain part of the farm output, however, is not sold: some farm products are consumed by the family, some remain in store on the farm. These unsold components are accounted for in the total production costs reported by the respondents, yet their value is not reflected in any way in sales revenue. To estimate the value of unsold production and its contribution to total family income, we need to analyse the distribution of farm production between sales and other uses. This analysis is presented in Table 6, which shows that farmers reporting sales revenue on average sell half their output. This means that reported sales of 100 zloty should be grossed up to 200 zloty to account for the full value of production, including unsold product. More conservatively, we may allow only for the value of products explicitly consumed by the family, which represent about one-quarter of output, or one-half of sales. In this approach, reported sales of 100 zloty are grossed up to 150 zloty, where the extra 50 zloty is the estimated value of products consumed by the family (valued at the same prices as product sales). This technique of estimating the imputed income from consumption of own farm products is applicable only to farms that report sales. For the ‘non-sellers’, the value of own consumption is calculated from their land holdings using the coefficients of the regression model that estimates the output as a function of land for the ‘sellers’.

**Table 6. Disposition of farm production between sales, consumption, and other uses (percent of output)**

	All farmers (n=1488)	'Sellers' (n=1040)	'Non-sellers' (n=387)
Consumed by the family	43.5	27.4	78.4
Sold for cash	35.6	49.8	--
Bartered	0.7	0.8	0.4
Gifts, payments in kind, other uses	3.0	2.3	5.2
Remains in the farm	17.2	19.8	15.9
Total output	100.0	100.0	100.0

**Table 7. Imputed family income including cash income and value of own consumption of farm products**

	Farming families (n=1515)	'Sellers' (n=1065)	'Non-sellers' (n=457)
Total personal income	13,583	12,629	15,799
Non-farm business income	1,661	2,251	466
Farm sales	21,513	30,641	0
Farm costs (inputs + non-family labour)	-12,636	-17,024	-2,490
Farm cash income (net of cost of purchased inputs and payments to non-family labour)	8,877	13,617	-2,490
Cash family income	24,121	28,497	13,776
Value of own consumption (estimated at 50% of sales)	14,655	15,321	13,323
Imputed family income including own consumption	38,776	43,818	27,099
Average family size	4.4	4.6	4.0

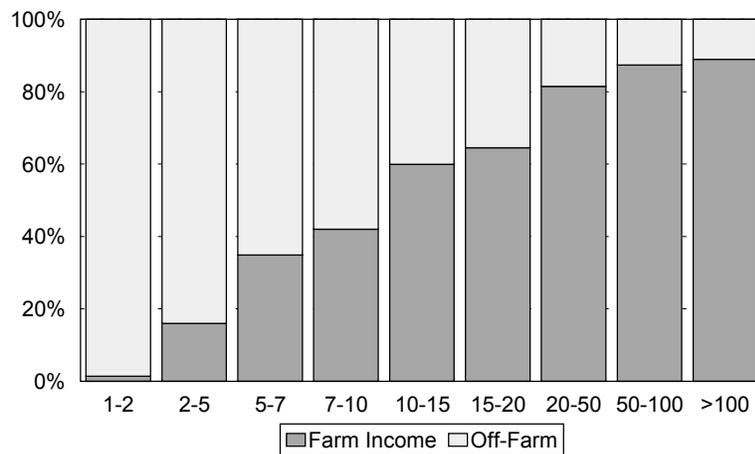
**Fig. 2. Structure of Imputed Income: Farming Families**

Average family income: 24,121 zloty cash + 14,655 zloty imputed

Table 7 presents the calculation of the imputed family income, which includes the cash income from Table 3 plus an adjustment for the value of own consumption calculated as a percentage of sales (based on the conservative alternatives). The imputed income of farming families is about 15,000 zloty higher than their cash income on account of the value of own production consumed

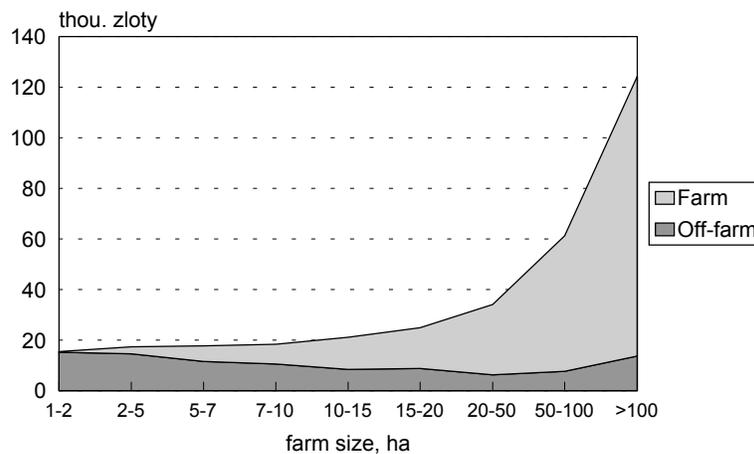
by the family, which represents more than one-third of total family income (Figure 2). Cash revenue from the farm accounts for 37% of cash family income (see Table 3). The total contribution of the farm to family income, including cash revenue plus the value of own consumption, reaches 61% – a much higher percentage of a substantially greater amount. Land and farming thus make a very significant contribution to the welfare of rural families in Poland. The high share of the farm in total family income is confirmed by data from an independent source: in a sample of 1,300 ‘book-keeping’ farmers who keep full accounts in accordance with a confidential private agreement with the Institute of Agricultural and Food Economics in Warsaw, farm income (including the imputed value of own consumption) is 69% of total family income (Goraj, 2000).

Fig. 3. Structure of Family Income by Farm Size:  
Book-Keeping Farms



Source: Goraj (2000)

Fig. 4. Family Income by Farm Size:  
Book-Keeping Farms



Source: Goraj (2000)

The proportions of farm and off-farm income change dramatically with farm size. Overall, the share of farm income increases in larger farms (Figure 3). Off-farm income accounts for more than 50% of family income in farms that have between 1 hectare and 10 hectare of land. The situation is reversed in households with more than 10 hectare, where farm income exceeds 60% of the total. In farms with more than 20 hectare, farm income accounts for more than 80% of family income, while off-farm sources make up less than 20%. These findings observed in the sample of ‘book-keeping’ farms (Goraj, 2000) are supported by the results of the Polish Household Budget Survey, where the respondents who report farming as the main source of family income have on average 12 hectare of land per household, whereas respondents with a large component of off-farm income have on average less than 4 hectare of land.

There is a clear increase in total family income with the increase of farm size (Figure 4). The average family income from all sources in farms with more than 50 hectare is 2.5 times the average income in families with 1-2 hectare (Goraj, 2000). This is entirely attributable to the increase in the farm income component for larger farms, as the off-farm income component for farms with more than 50 hectare is half the off-farm income in farms with 1-2 hectare. Larger farms thus achieve a higher level of total family income while at the same time relying less on income from off-farm sources.

### 2.3. Changes in Land Holdings

To what extent do Polish farmers recognize the income advantage of a larger farm and accordingly adjust farm sizes through land transactions? The survey produces some evidence of adjustment from smaller to larger farm sizes, but the frequency of such transactions is low. Indeed, most farms participating in the survey (82%) did not change their size between 1997-1999. Yet 11% report size increases of slightly more than 7 hectares per farm and 7% report decreases of about 4 hectares per farm. In both cases, the change is nearly 40% of the 1997 size (Table 8). Although size changes are generally infrequent, the tendency is clearly toward enlargement of the existing farm.

**Table 8. Change in mean land holdings between 1997-99 (in hectares)**

	No change	Increase	Decrease	All (n=1,515)
1999	8.5	26.7	6.7	10.3
1997	8.5	19.3	10.8	9.8
Change	0	7.4	-4.1	0.5
Number of farms	82%	11%	7%	100%

**Table 9. Sources of change in land holdings between 1997-99**

Source of change	Increase	Sources of change	Decrease
Total change	+1,220 ha	Total change	-470 ha
Inherited	6%	Gave away as a gift	9%
Purchased	42%	Sold	26%
Leased in	51%	Leased out	16%
Acquired by other means	1%	Disposed by other means	22%
Began cultivating fallow	0%	Let lay fallow	26%

Land market transactions play an important role in farm size changes (Table 9). In farms that increased their size between 1997-1999, over 90% of additional land was acquired through purchase or leasing. In farms that reduced their size in the same period, over 40% of land was sold or leased out. The actual demand for land among the farms in the survey reached 1,220 hectares, while private landowners supplied 470 hectares in total between 1997-99 (Table 9). Private land is thus insufficient to meet the full demand, and as we have noted previously APA plays an important role in maintaining a sufficient supply of land from state reserves. Unfortunately, the distribution of APA land across the country is extremely uneven, and availability of state land in specific regions determines the actual growth pattern of private farms across the country.

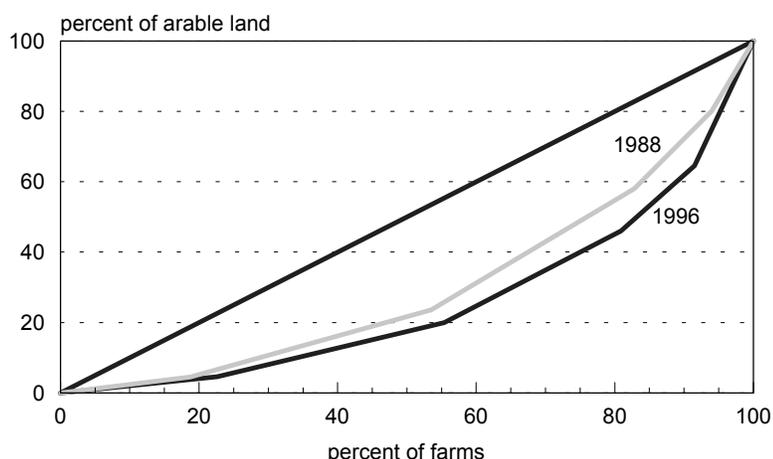
**Table 10. Change of farm size between 1997-99 for farms in different size categories**

Farm size (1999)	Number of farms	Mean change 1997-99, ha	Farms increasing their size, %
Up to 20 ha	1,276	-0.18	6
20-30 ha	124	1.30	28
30-50 ha	78	4.67*	42
>50 ha	37	12.37*	54
All farms	1,515	0.50	11

\*Statistically significant at  $p < 0.05$ .

The change in land between 1997-1999 is positively correlated with the initial farm size in 1997 ( $R=0.35$ ): on average, each additional hectare of initial holdings increases the size change by 0.10 hectares. The large farms thus show a tendency to grow through acquisition of more land, whereas small farms become even smaller by selling or leasing out some of their holdings. Table 10 shows that farms with up to 20 hectares of land (in 1999) on average lost 0.2 ha between 1997-1999, whereas farms with more than 30 ha (in 1999) on average gained 7 ha during this period. The size increase in farms with more than 30 ha is significantly greater than in farms with less than 30 ha (by Bonferoni and similar tests); there are no statistically significant differences in farm size changes among the smaller size categories (up to 20 ha).

**Fig. 5. Size Distribution of Individual Farms: 1988 and 1996**



Source: Agricultural Statistical Yearbooks

National data also provide some evidence of farm consolidation, with land flowing from small to larger farms. The shift in farm structure is illustrated in Figure 5, which shows the Lorenz distribution curves for individual farms in 1988 and 1996. The share of arable land controlled by the 10% of largest individual farms (the right-hand tail of the curve) increased from about 25% in 1988 to almost 40% in 1996. This clearly implies that the larger farms grew even larger during this period. At the other extreme, the share of arable land controlled by the 50% of smallest individual farms (the left-hand tail of the curve) declined from 22% in 1988 to 17% in 1996, which implies that the smallest farms grew even smaller. The change in the shape of the curve between 1988-96 provides evidence of ongoing consolidation among the larger individual farms in Poland. We should mention perhaps that the Lorenz land-concentration curve in 1996 is closer to the market pattern (as exemplified by the US, Canada, or the European Union countries) than the 1988 curve, which was characterized by higher fragmentation of farms.

### 3. LAND MARKET ACTIVITY

Both survey data and national aggregate statistics indicate that the farm structure in Poland is not static. Land markets began to emerge after 1990, allowing farmers to engage in land transactions with other farmers and with the state. We now turn to examine the evidence of these transactions.

We have noted at the very beginning that only 53% of rural residents report any farming activity. Yet landownership is reported by a somewhat higher percentage of respondents (60%). This essentially implies that almost 15% of landowners do not farm: their land is either left fallow or is rented out to other farmers. The average amount of privately owned land is 8.5 ha and half the respondents own up to 3.7 ha (based on 60% of households reporting land ownership). The mean size of an active farm in the sample is 10.4 ha and the median size is 4.3 ha (based on 53% of respondents who cultivate land). By both these measures, the average amount of cultivated land is greater than the average amount of own land, which means that farmers resort to land leasing.

**Table 11. Land ownership and land use (percent of respondents)**

Land ownership, ha	Use less than own	Use = own	Use more than own	Respondents
0	--	96	4	1,126
0-2	34	61	5	614
2-10	17	76	7	656
>10	18	46	36	439
All sample	14	76	10	2,835

**Table 12. Frequency of land transactions and estimated prices per hectare**

Land transactions	Percent of respondents	Reference subsample	Hectares (mean)	Price, zloty/ha (regression estimates)
Lease in	17%	Farmers (n=1,515)	12	79
Lease out	8%	Landowners (n=1,709)	3.4	80
Sell 1995-99	4.8%	All respondents (n=2,835)	2.6	1,800
Buy 1995-99	6.4%	Ditto	6.7	2,300
Plan to buy*	4.9%	Ditto	12	2,350
Planning to sell	7.4%	Landowners (n=1,709)	NA	NA

\* Of these potential buyers, 96% already have land.

Small landowners with up to 2 hectares show a relatively high tendency to cultivate less land than they own. Large landowners, on the other hand, frequently cultivate more land than they own (Table 11). Thus, among landowners with 0-2 hectares, 34% use only part of their land and 5% report using more than the land they own. Among landowners with more than 10 hectares, 18% use part of their land and 36% use more than the land they own. This essentially means that land flows from small to large landowners, presumably because larger farms are more profitable.

Although there are clear indications of leasing activity among landowners and farmers, transactions in land are not particularly widespread in Poland (Table 12). Among landowners, only 8% lease out land. Among farmers, only 17% lease in land and the great majority (83%) rely entirely on their own land. Purchase of land is also infrequent. About 5% of respondents report selling or buying land at some time in the five years between 1995-99. Another 5-7% have plans to buy or sell land in the near future. However, the great majority (82% of respondents) have no plans to acquire additional land in the immediate future.

**Table 13. Sources of leased and purchased land among farmers**

	Leased land (percent of total leased area, n=255)	Purchased land (percent of respondents who bought land between 1995-99 (n=181)
Private persons	34%	85%
Of which: with formal contract	17%	
APA	59%	12%
Other	7%	3%

Despite the active involvement of some individual landowners in lease markets, APA is the main source of leased land. Nearly 60% of land leased in by individual farmers is state land from the APA reserve. One-third is leased from private persons, and about half of this land is covered by formal lease contracts (Table 13). Transactions with APA always involve signing an official contract, so that overall three-quarters of the land leased in by individual farmers (76%) is subject to a formal lease contract. Buying and selling transactions with the state are infrequent. Land is primarily bought and sold among private individuals from the same district.

There is no national monitoring of land transactions in Poland to supplement the survey results. Partial information on land transactions of private farmers has been obtained from L. Ostrowski's studies at the Institute of Agricultural and Food Economics (Szemberg, 2000). The annual volume of land transactions has been generally increasing in the 1990s, and a total of 5.7 million ha changed hands in 1.5 million transactions during the seven years 1992-1998 (Table 14). Most of this land (cumulatively 4 million ha, or nearly 70%) was transacted by leasing, and not by buying and selling. It is significant that more than 60% of land in these transactions was privately owned, moving directly between individuals. APA was nevertheless a major player in the creation of land markets in Poland, with state-owned land representing nearly 40% of the total volume of transactions during this period. While leasing dominates land-market transactions for both state-owned and private land, the tendency toward buying and selling is more apparent for private land. Only 25% of state-owned land affected by transactions was sold during this period, compared with 34% for private land (Table 14).

**Table 14. Land transactions 1992-98****A. Cumulative volume of transactions (thousand hectares)**

	All transactions	Buying and selling	Leasing
Total transaction volume	5730	1754	3976
Private land	3537	1205	2332
State land	2193	549	1644

**B. Structure of sources of land in different types of transactions (in percent of transaction volume)**

	All sources of land	Buying and selling	Leasing
Private land	62	69	59
State land	38	31	41
All land	100 (5,730 ha)	100 (1,754 ha)	100 (3,976 ha)

**C. Distribution of land by different types of transactions (in percent of transacted land)**

	All transactions	Buying and selling	Leasing
Private land	100 (3,537 ha)	34	66
State land	100 (2,193 ha)	25	75
All land	100 (5,730 ha)	31	69

Source: L. Ostrowski, Institute of Agricultural and Food Economics (Szemberg, 2000).

**Table 15. Size and structure of farms with and without leased land (in hectares)**

	All farms (n=1515)	Farms with leased land	Farms without leased land	Landowners leasing out land (n=133)
Farm size	10.4	25.7	7.3	2.1
Own land	8.4	13.8	7.3	5.4
Leased land	2.0	11.9	0	-3.3
Number of farms	100%	17%	83%	8%

The average leasing transaction is generally larger than the average land purchase transaction. Moreover, transactions in state land are on average substantially larger than transactions in private land. The average lease of state land is close to 11 hectares, compared to 6 hectares for private land leases. Buy-and-sell transactions are much smaller, averaging about 3 hectares for both sources.

Since land leasing is relatively infrequent, access to family-owned land is still the main determinant of farm size: there is a very high correlation (0.82) between farm size and own land, and own land accounts for most of the land under cultivation in farms of all sizes. Nevertheless, land leasing plays an important role in adjustment of farm sizes. Farmers operating with leased land accumulate much larger holdings (Table 15): they cultivate on average 25.7 ha, compared with 7.3 ha for farmers who do not lease in land (the difference is statistically significant). On the supply side, the average lessor leases out more than 60% of the land the family owns (3.3 ha out of 5.4 ha owned in the subsample of lessors).

**3.1. Lease Payments and Land Prices**

Land leasing usually involves some sort of payment. In about 30-40% of the cases the lessee is only required to pay the land tax instead of the owner. In another 45% of the cases the lessee is committed to higher payments in cash or in kind. Sharecropping arrangements that involve

payment of an agreed percentage of output from leased land are not practiced. The information on lease payments provided by lessors and lessees was used to estimate the average lease rate per hectare (by regression analysis). The results proved surprising consistent, producing estimates of about 80 zloty per hectare for each category of respondents (R-square=0.29 and  $p < 0.0001$ ; the difference in estimates between lessors and lessees was not statistically significant).

The average sale transaction between 1995-99 involved 2.6 ha at a price of 1,800 zloty per hectare (estimated by regression analysis). The average buy transaction involved 6.7 ha at a price of 2,300 zloty per hectare. The difference in prices is not statistically significant, and the survey thus suggests average land prices of around 2,000 zloty per hectare. This result is confirmed by the responses of potential buyers (5% of respondents), who report their willingness to pay an estimated price of 2,350 zloty per hectare. Since the rate for land leasing is estimated at 80 zloty per hectare, the price of land in buy-and-sell transactions is equivalent to 25 years of leasing. The land prices obtained in the survey are substantially lower than the officially reported national prices, which in 1998 averaged 4,400 zloty per hectare of arable land, ranging from 2,500 zloty for land of poor quality to 6,000 zloty for best-quality land. This was the price for transactions in privately owned land between farmers. The price charged by APA for state land in that year was 3,000 zloty per hectare, about 30% less.

The average price of agricultural land sold in private transactions in Poland is much lower than in EU (Prosterman and Rolfes, 2000). Agricultural land in the western region of Germany sells on average for DM 15,000 per hectare (about 32,000 zloty per hectare), and such land in the eastern region of Germany sells for DM 7,000-9,000 per hectare (about 15,000-19,000 zloty per hectare).

#### **4. LEGAL FRAMEWORK AND CONSTRAINTS FOR TRANSACTIONS IN LAND**

Transactions in agricultural land were always legally allowed in Poland, but in practice land markets failed to develop in the socialist period due to high legal costs and various administrative restrictions, such as the requirement that the buyer have proper agricultural qualifications, limits on maximum size of privately operated farms (50-100 hectares depending on location), and the emphasis on attainment of 'desired' farm sizes (Zientara, 2000). The legal framework for land transactions was changed significantly by the amendment to the Civil Code of July 28, 1990. This amendment relaxed many of the inherited restrictions on land transactions. At present, any person may purchase agricultural land and there are no limits on total holdings. Polish land law no longer contains draconian penalties for 'irrational use' or 'non-use' of agricultural land.

The earlier government policy of intervening in land allocation with the purpose of attaining the 'desired' farm size also has been abandoned. There are no minimum size restrictions on land holdings, although to be legally recognized as a farm the unit must have at least one hectare of land. Two legal provisions in social insurance and pension legislation, however, appear to favour farms of between one and two hectares. First, only rural residents with at least one hectare of land qualify for the heavily subsidized agricultural pension plan (Krus). Second, rural residents

with farm holdings of two hectares or more are not entitled to unemployment benefits if they lose their off-farm job.

Despite the changes in legislation, transaction costs remain at a relatively high level. The two main components calculated as a percent of the value of land in the transaction are the treasury tax (5%) and the notary fee (3%). Combined with other fees and charges for preparation of maps, extracts, and new entries in the mortgage register (when land is mortgaged), the transaction cost generally reaches 12.5% of the value of land or more (Zientara, 2000). Prosterman and Rolfes (2000) quote an interview with a farmer who purchased 0.26 ha for 500 zloty and had to pay another 500 zloty in notary fees, taxes, and registration charges. These relatively heavy transaction costs are a serious barrier to buying and selling of land. They encourage informal transactions between individuals, which are not registered by cadastral organs and thus cannot be monitored. On the positive side, the revenue from the sale of farmland is exempt from personal income tax, provided that the transaction does not change the agricultural use of the land.

Land and mortgage registers were originally set up in post-World War II Poland by the decree of October 1946. Currently, the land and mortgage registers ('the perpetual books') are maintained by nearly 300 district courts, and registration entries must be made by a judge. The system is cumbersome and obviously prone to serious delays. There is no universal obligation to register land, except in the event of sale. As a result, an estimated 30-40% of land in Poland is not registered (Prosterman and Rolfes, 2000), and treatment of unregistered land is a major issue. Land registration is not a simple process, as it draws on numerous sources of documents, including documents held by the right-claimant, notarial documents, and materials kept in government offices (especially the land and building register). With only such 'sporadic' transaction-driven registration, decades may pass before all land is registered.

There are no legal restrictions on mortgaging land, and mortgage liens occupy the third place in the order of priority of creditors' claims: they are preceded only by foreclosure costs and alimony claims (Prosterman and Rolfes, 2000). Yet banks complain that foreclosure proceedings, which must be conducted through the courts, are very slow and costly. Mortgagors also suffer from delays, because mortgages do not become effective until notarised and registered, which, as noted previously, is an inherently slow process in Poland. Despite these difficulties, significant numbers of loans using agricultural land as security are made by state, cooperative, and private banks. In 1998, the BGZ Bank made about 3,500 mortgage loans for the purchase of agricultural land (these loans were subsidized by the government). The greatest impediment to agricultural land mortgage appears to be social rather than legal in nature: many rural residents feel uneasy with bank foreclosures and may be unwilling to buy their neighbour's land from the foreclosing bank.

Poland, unlike some CEE countries, allows ownership of agricultural land by legal bodies (corporate land ownership). Land ownership by foreigners is not explicitly prohibited, and land leasing is apparently permitted without limitation. Indeed, APA has leased more than 100,000 hectares of state land to nearly 300 companies with majority foreign ownership (APA, 1999). The issue of foreign ownership is one of considerable political and practical importance for Poland, as for all transition countries. On the political front, there is considerable resistance to possible foreign acquisition of agricultural land, especially by German citizens in the western

areas that were German territory up to the end of World War II. On the practical front, land prices in Poland are currently lower than the prices for comparable agricultural land in EU – around 3,000 zloty per hectare compared with 15,000 zloty per hectare in eastern Germany and 30,000 zloty per hectare in western Germany (Prosterman and Rolfes, 2000). Thus, Polish farmland could be bought up relatively easily by the wealthier EU nationals. It is also argued that allowing foreign ownership would drive the prices up and make farmland less affordable to local farmers. Foreign ownership of land is one of the issues that will have to be dealt with as part of the EU accession strategy: EU member-states are generally required to eliminate all barriers to land ownership by EU nationals from any country, and only very specific exceptions are allowed.

A general assessment of land market performance carried out by Dale and Baldwin (2000) assigns a score of 30 to Poland (100 is the EU benchmark). This is lower than for Hungary and the Czech Republic (45 and 35, respectively), mainly because the land title database in Poland is judged to be less complete. The level of annual title transfers and the level of mortgage activity are also lower in Poland.

## **5. MEASURES TO ACHIEVE A FULLY FUNCTIONING LAND MARKET**

Our analysis highlights the current features of land ownership, land use, and land markets in Poland. The comparison with farm structures and land use patterns in developed market economies shows that Poland has a fairly fragmented structure of land ownership and use: a large number of very small farms operate on a relatively large proportion of the available agricultural land. Although there is a positive correlation between the amount of land used by the household and the level of family income and welfare, there is only limited activity in land markets and consolidation is taking place very slowly.

Unlike other countries in the region, Poland did not introduce sweeping collectivisation after World War II and individual farms operating on privately owned land uninterruptedly dominated its agriculture. Yet, because of restrictive government policies that limited farm sizes and prevented land market transactions, Polish private agriculture remained less efficient than even the collective agriculture in some Central European countries, such as the German Democratic Republic, Czechoslovakia, or Hungary. The private farm sector received much less attention than the state-dominated sectors of the economy at the beginning of transition, until the opening of domestic agricultural markets to imports and the plummeting prices of agricultural commodities in the mid-1990s highlighted the low efficiency and limited competitiveness of Polish agriculture. Unfortunately, because of the frequent changes of government in the 1990s and the strong political clout of the large farming population, Poland was neither ready nor able to implement policies for consolidation of land and farming structures. This situation froze the fragmented structure of Polish farms without allowing adjustment, and the land relations became a major liability for the country.

Poland has one of the best legal bases for private land ownership and agricultural land markets among the transition countries. Polish citizens may engage in the full range of market transactions with their privately owned land. Registration and mortgage laws exist and function

well. Land use rules are generally reasonable. However, certain basic problems persist. These include the delays in privatising some of the former state land, the cumbersome land registration procedures, the high level of transaction costs for land sales, and restrictions on foreign ownership of agricultural land.

There are significant institutional and procedural bottlenecks for efficient operation of the land market. The cost of land transactions is high, especially when compared to the advanced market economies (e.g., USA). Since consolidation is a high-priority task for Polish agriculture, the government-controlled component of land transaction costs should be reduced and their structure should be simplified. As a minimum, the costs should be lowered to match the expenses related to the actual administration of the transaction. Transaction taxes should be eliminated, and an upper limit on notary fees should be set (a flat rate per transaction, instead of a percentage-based fee). Although the land registration law is basically sufficient, the treatment of 'unregistered rights' requires attention. The registration procedures are very time consuming. The system is thought to be seriously underfunded and lacks adequate personnel. The cumbersome and time-consuming procedures should be streamlined and simplified. Improved access to land mortgage facilities should be achieved by streamlining the linkages between land registration and mortgage.

Some additional actions can be implemented to facilitate the functioning of land markets and the process of land consolidation. The government should stop the policy of discriminating against households with more than 2 hectares for the purpose of unemployment benefits. The fact that a family controls 2 hectares does not guarantee that it can survive on farming. On the other, the government policy is clearly a deterrent to farm consolidation beyond the 2-hectare limit. The official statistical organs and ministries should also review the current definition of farmer, which requires cultivation of more than 1 hectare of land. Farming is not the main source of family income even for households cultivating more than one hectare. On the other hand, households with less than 1 hectare are also capable of farming and augmenting their family income with revenue (cash or imputed) from agricultural products, thus creating a safety net against possible unemployment in other occupations. All people who use land are farmers in one sense or another. It makes sense to distinguish between different categories of farmers based on the degree of commercialisation or the share of farm income in the family budget, not on the amount of land or the family labour participation in farming activities.

According to the traditional liberal view, the government should strive to minimize its active role in land markets and preferably avoid participating in any land transactions. The two million hectares (about 11% of all agricultural land) leased out by APA constitute a problematic component in this respect. Leasing should obviously remain an important component of land tenure, but leasing decisions should be made by private owners in an open lease market, not by government agencies. APA has to accelerate the privatisation of state-owned land and the liquidation of the remaining 'inventory' of the former state-farm system, thus removing the government from direct involvement in farming and land relations. To facilitate consolidation, land should be made available for purchase in units that are much smaller than the average size (450 ha) of the 6,000 farms that are currently the principal lessees of state land.

Nor should the government attempt to control land consolidation by entering into various arrangements that involve buying land from some farmers and reallocating it to others (the SAFER model in France). By the same logic, the government should stop buying land from households in return for funding pension rights. Buying and selling of land, like leasing, is best left in the hands of landowners, who should be assisted by market-driven real estate agents, not government officials.

Elimination of distortions along the lines discussed in the previous paragraphs will go a long way toward energizing and activating land market transactions. However, the present situation in many Central European countries, Poland included, makes land consolidation a somewhat different issue than in fully functioning market economies. First, the present farm structure is the product of restrictive policies or politically motivated procedures from the past, rather than a product of long and smooth evolution. Second, agriculture in Poland suffers from low profitability and low efficiency, which limits the incentives for investing in agriculture compared with other sectors and reduces the demand for land. EU membership is expected to improve the situation, but basically it will not change these conditions unless land consolidation occurs prior to EU accession. Accordingly, while market methods should definitely be the main tool to achieve land consolidation in Poland, they may not achieve this goal sufficiently fast without some form of government assistance.

In addition to ensuring that market forces can function as the primary engine for land consolidation, the government may consider a program that provides incentives and support for voluntary land consolidation. Such a program should include establishment of a system for monitoring and reporting all land sales (including price, profile of investor, type and condition of the farm) with the objective of increasing transparency and improving information flows; elimination of specific entry barriers and excessive transaction costs; clear definition of procedures and budgetary resources available for the program; and an information campaign to publicize the program among farmers. The likelihood of success of a voluntary land consolidation program can be increased by linking the program to various measures for the development of non-agricultural activities in rural areas.

The petrified farming structure, characterized by a very large number of very small farms, is a major potential obstacle in the process of EU accession. The activation of land markets and the acceleration of the ongoing process of land consolidation in larger farms is an overdue necessity, which should receive a high priority in the process of preparing for EU membership. Farm consolidation obviously cannot be separated from the complex nature of Polish agricultural strategy and policies. Yet EU accession determines Poland's choices in this regard. It is already clear that the current structure of farming and the political interests that support it lead to conflicts with the rational policy choices required both by the globalising world economy and by the demands of EU accession.

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