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Structural Changes in the Polish Agriculture

1. Introduction

Agriculture in Poland as well as in other Central and Eastern European countries is going through a painful and difficult transformation, which is intended to make it a more competitive and market-oriented sector of the economy.

Poland entered a phase of dynamic transformations of its political system in 1989.

Transformation processes in many countries have numerous characteristics in common. Generally, we can distinguish their three main characterististics. The first is a liberalization of economic activity including a removal of restrictions for state-owned enterprises, relaxation of prices, opening up of the state borders for international trade, convertibility of the domestic currency, and introduction of anti-monopoly regulations. The second characteristic includes measures aimed at ensuring a macroeconomic stabilization through a restrictive money supply policy, abolition of state subsidies, removal of exchange rate and wages control, cuts in other budgetary expenditures, maintaining positive interest rates, and developing free market institutions. The third characteristic refers to the privatization of state-owned enterprises, land, and banks.

In the course of transformation there are evidently many achievements to note. One of the most important achievements is a shift from a producer to

a consumer orientation. Competition from external producers of commodities is also appearing and free market institutions have begun to develop.

The privatization process has already been started, though with a different intensity in particular sectors. Hyperinflation was checked and in recent years the inflation rate has been lower than 20 per cent.

These successes were achieved at a very high price: economic recession, unemployment, and real income decline - especially of farmers.

The macroeconomic conditions had a strong impact on agriculture. The first outcome was a considerable decrease in the apparent demand for food products, though consumption decreased less mainly owing to the elimination of waste in trade and processing [see Zegar J.S (1995)].

A major impact is also exerted by food imports, which due to non-subsidized foodstuffs in the internal market brought about a drop in demand for Polish agricultural products. Meanwhile, the deterioration of export opportunities as a result of the collapse of trade among the post-communist countries after the disbandment of the COMECON caused a decrease in the domestic output.

Moreover, the macroeconomic policy resulted in deteriorated terms of trade facing agriculture.

The emergence of unemployment affects rural areas with the greatest intensity. The lack of job opportunities outside farming poses a major impediment to desirable changes in the agrarian structure.

2. Changes in the structure of land ownership and in the agrarian structure

Significant changes have occurred in the structure of land use in the years 1988-1996. The ownership structure of arable lands after several years of the adaptation of Polish agriculture to a market economy is shown in Table 1.

The total area of arable lands amounted to 18,474,000 ha in 1996 and it was by 268,000 ha (i.e. by 14%) smaller than in 1988. The share of arable lands owned by private farms in the total area of arable lands rose from 76.3% to 82.1% in 1996 in comparison with 1988. It was a result of the transfer of land from the public sector, and primarily from state-owned farms to private farms. In 1988 state-owned farms operated on the area of 3,521,000 ha of arable lands (18.8% of total area of arable lands), and in 1996 already on the area of only 1,242,000 ha of arable lands (6.7%). Moreover, the share of arable lands owned by agricultural production cooperatives in the total area of arable lands dropped from 3.7% in 1988 to 2.7% in 1996. Alongside changes in the ownership

structure of arable lands the analyzed years witnessed changes in the farm size structure. The reduction of the total number of private farms and the growing area of arable lands under use caused that the average area of arable lands in private farms increased from 6.3 ha to 7 ha (increase of about 11%) in the analyzed period. There can be observed a growing number of the smallest and the largest farms accompanied by a diminishing number of intermediate farm size groups (see: Table 2).

Thus, the average area of arable lands in private farms tended to increase only in the group of large farms with the area of arable lands reaching 15 and more hectares. A disturbing phenomenon, on the other hand, was a shrinking area of arable lands in small farms (see: Table 3).

The data of the General Agricultural Census of 1996 indicate that the most important factor paving the way for an improved farm size structure was the flow of land between different farm size area groups, with 45% of all lands being subject to restructuring coming from this source, 30% are lands coming from the State Treasury Agricultural Property Agency, and only 25% were lands from liquidated farms. The land consolidation process was taking place not only through the increase of average farm area but also through the polarization of farm size structure.

The average area of arable lands belonging to private farms tends to vary considerably in the country's territorial cross-section. Large farms can be found mainly in the country's northern and western administrative provinces, while the biggest atomization of private farms is recorded in the southern provinces.

Unfortunately, as regards the farm size structure the situation in Poland looks much worse than in the European Union's countries (see: Table 4). The average area of farms in the EU surpasses 16 ha reaching, for instance, 35.3 ha in France, 69.9 ha in the United Kingdom. The smallest farms can be found in Greece (5.4 ha), while Portugal (7.4 ha) and Italy (8.6 ha) have the average farm size similar to Poland.

3. Changes in the structure of population connected with farming

The economic situation of particular farms depends, to a large extent, on the socio-demographic characteristics of persons connected with them. The Polish farming is of family type and, that is why, the analysis of population can not be restricted to operators of private farms and it should encompass the members of their families as well.

Over the years 1988-1996 the number of rural population remained at almost the same level and amounted to 14.7 million people. However, the share of rural population in total population declined from 38.8% to 38.1%. In June 1996 7,497,500 persons, i.e. 50.9% of rural population were connected with private farms in rural areas, which was by 2.3% less than in 1988.

The analysis of educational background indicates that the farming population is characterized by an average lower education level than the total population, as the share of persons with secondary school and higher education is lower. In relation to 1988 almost all indices of above-secondary education have improved, which confirms some positive trends.

Since the last general census, which was carried out in December 1988, the number of persons working in farms rose by over 590,000, i.e. by 14.5% (see: Table 5) by June 1996. Simultaneously, the share of peasant population working in its own farms in the total number of economically active population rose from 22.0% in 1988 to 22.4% in 1996. It means that the share of work force in private farming in the total number of economically active population remained at the same level. However, it is difficult to determine explicitly the causes behind the growth in the number of people working in farms. It could be due, first of all, to statistical changes in the size of work force resulting from differences in defining this aggregation, as well as the time of the census. Secondly, the bigger number of persons working in farms was due to the fact that persons employed outside the farm earlier began to return to the village as a result of intensifying unemployment in non-agricultural sectors of the economy and state-owned farms. Significant changes took place also in the age structure of work force between 1988 and 1996 (see: Table 5). It could be generally said that the age average of working peasant population went down. In 1988 the age average amounted to 49.3 years and in 1996 it decreased to 47.5 years. The share of population in the pre-working age rose by 2.7 percentage points and major changes occurred among working peasants in the mobile working age. The size of this group rose by 2.8 percentage points. On the other hand, the number of working peasants in the immobile age dropped by 6.6%. Moreover, the share of working persons in the post-working age increased by 1.1%.

One of the effects of transformation is unemployment. When analyzing the causes of agricultural unemployment from the viewpoint of socio-demographic aspects several significant issues should be noted. One of them is the collapse of long-term migration trends. In the late seventies over 200,000 persons migrated from villages to cities each year. This trend was slowed down in the eighties and at the end of that decade the volume of rural-urban migration reached about 100,000 persons annually (see: A. Rosner [1997, p.151]). The scale of

migration declined further in the 1990s, and in 1997 the net migration from villages to cities did not exceed 20,000 persons.

The experience of the first years of transformation shows that many persons working in towns and living in villages lost jobs. This situation concerned primarily the category of peasants-workers and youth from peasant families. The number of such biprofessional population declined to 1,010,800 between 1988 and June 1996, i.e. by 187,700 persons (18.6%) (See: Assessment ... [1997, p. 40]).

Unemployment in rural areas was intensified also by non-peasant families, and particularly those connected with state-owned farms. In 1989 the public agricultural sector employed 594,700 persons as compared with only 53,400 in 1996. As regards the possibilities of overcoming unemployment among this group, the problem is not only the number of jobless persons but also the spatial concentration of unemployment mainly in the northern and western administrative provinces of Poland.

The size of unemployment registered in rural areas according to the data of the National Employment Agency is shown in Table 6. The registered unemployment in villages encompasses not only landless and farming population in farms below 2 ha. In 1996 among jobless persons living in rural areas over 500,000 did not have the right to unemployment benefits. The number of registered unemployed persons having a farm amounted to only 45,914 in December 1996. The unemployment in private farms registered by the General Agricultural Census in June 1996 looks somewhat different and reaches 61,900 persons. According to the census data, unemployment affects primarily young people. The average age of unemployed persons from private farms reached 27.5 years.

The difficult situation in the rural labor market is worsened by the presence of considerable hidden unemployment in agriculture. The census estimated the scale of such unemployment among persons in the working age at 720,000.

4. Changes in the structure of agricultural production

An important role in assessing the state and growth rate of agricultural production is played by its variability from one year to another due to changeable agro-meteorological conditions. The data for the years 1988-1996 indicate that the increase or decrease of total agricultural production ranging from 0.2% to 13.7% can be expected in each successive year. Such variations make it difficult

to predict the future, but primarily they exert a very strong and negative influence on agricultural activity due to the instability of farmers' incomes and their purchasing power.

The annual total agricultural production in the period 1990-1997 was lower than its 1988 volume. Namely, in 1997 it was lower by 7.7%, of which the vegetable production was lower by 9.4% and the animal production by 0.4%. The agricultural production indices in constant terms allow to formulate a general thesis. Namely, it appears that in recent years the agricultural production was at the level by 8-12% lower than in the period before systemic transformation.

Major changes in the structure of crops in their particular groups and types took place in the years 1988-1997. The share of grain cereals and sugar-beets rose, while the share of fodder crops and potatoes dropped. The share of grain cereals in the total area of crops reached 58.5% in 1988 and 71.3% in 1997 (see:Table 7). The bigger land area under grain crops was due, first of all, to a substantial growth of the area under more productive and profitable grain crops, i.e. wheat, barley, wheat-rye. The share of potatoes in the structure of crops declined from 13% in 1988 to 10.5% in 1997. The arable area under potato crops was reduced in all sectors, but in private farms its reduction was much slower than in the public sector. The reduced area under potato crops is due to changes in the ways of feeding hogs and poultry, and a lower demand of alcohol distilleries.

The arable area under fodder crops was shrinking steadily in the analyzed years, and in 1997 it was by 59% smaller than in 1988.

Variations in crops harvests in particular years of the analyzed period were due primarily to fluctuations in yields caused mainly by the character of agro-meteorological conditions and the quantity of used fertilizers and plant protection agents (see: Table 10).

The yields of most cultivated crops generally dropped in the years 1991-1994 (see: Table 8). A tangible increase in the yields, particularly, of grain cereals and oil crops was recorded in 1995.

The size of livestock tended to decrease in its particular categories over the period 1988-1997. In the case of cattle it decreased by 29.2%, in which of cows by 27.4%, hogs by 7.5%, sheep by 89% (see: Table 9). The overall drop in the size of livestock was quite big in the analyzed years, although it was several times bigger in the public sector. Meanwhile, positive changes occurred in milk production. The dairy production seems to have entered the stage of cattle breeding rationalization, at which a bigger milking capacity compensates a drop in cattle stock. A radical drop in sheep stock occurred as a result of unfavorable prices of sheep for slaughter and wool, as well as big difficulties encountered in selling sheep for slaughter for export.

The volume of production of family-owned farms is determined by many different factors. A very big role is played here by machines and farming equipment possessed by farms. A tractor is the main element of farming mechanization. The total number of agricultural tractors recorded in the entire agriculture in 1996 reached 1,303,000, which was by 26.9% more than in 1987. In 1996 there were about 14 ha of arable lands per one tractor as compared with 18 ha in 1987. However, the average age of many tractors in private farms exceeded over 16 years.

As the experience of highly developed countries shows, the level of rural infrastructure development is of great significance for the effective operation and development of agriculture. It appears that the level of rural infrastructure development continues to be insufficient in Poland, although it has been developed intensively in recent years. Major variations can be still observed among particular regions of Poland, while the indices characterizing the state of infrastructure in urban areas are significantly higher than in rural areas.

5. Changes in farming incomes

One of negative effects of transformation are low incomes of farmers. The low level of farming incomes and, in particular, their decline, implies difficulties connected with restoring the agricultural production.

The opening up of the Polish economy in January 1990 combined with the stable macroeconomic policy, the abolition of state control over prices, and the reduction of subsidies deteriorated the conditions of farming. A new phenomenon was a dramatic drop in demand for foodstuffs, which was due, to a smaller extent, to the reduction of consumption and more to the elimination of losses in food trade and production. Moreover, imports increased considerably, which proved to be a barrier to the agricultural production growth. The price differentials widened to the detriment of agriculture (see: Table 11). Looking synthetically backward at the years of systemic transformation it can be seen that during the years 1990-1997 the prices of agricultural produce were increasing faster than the prices of goods and services purchased by farmers only three times, i.e. in the years 1992, 1994, and 1995. Unfortunately, it was only once - in 1995 that it happened in the conditions of production growth, while in the remaining two years price increases were accompanied by cuts in agricultural production. The most dramatic fall in incomes was recorded in the years 1990-1991 and it reached almost 50% of real farming incomes. The successive years 1992-1995, with the exception of 1994, witnessed a growth of incomes, although their level

from before 1990 was still not achieved (see: Table 12). The most favorable year in the analyzed time interval was 1995, in which a 8.7% increase of farming incomes in relation to the preceding year was recorded. Unfortunately, that insignificant growth trend was checked already in 1996 and the income situation of agriculture deteriorated again. More light on the economic situation of farms is shed by an analysis of the ratios of nominal incomes in peasant farms and nominal employee incomes (see: Table 12).

6. Conclusions

In order to ensure an internal equilibrium and competitiveness of the Polish agriculture in international markets it is necessary to restructure and modernize farms and agricultural production services. The Polish agriculture needs through transformations leading to changes in its structure.

The new production-economic conditions generated different trends in the development of agriculture and rural areas. Both positive and negative phenomena took place.

Undoubtedly, such negative phenomenon is unemployment. The conditions prevailing in rural areas, especially in certain regions of Poland being characterized by a small number of manufacturing firms and a big concentration of population of the former state-owned farms, as well as the low level of rural population's education all caused that unemployment in these regions has assumed a long-term character and it is more difficult to eliminate than in cities. The overpopulation of agriculture hampering any changes in the agrarian structure is confirmed not so much by the scale of open unemployment but rather by the work force surpluses estimated on the basis of opinions expressed by farm operators. These surpluses are estimated at over 700,000 persons. Meanwhile, the absence of any prospects of finding jobs outside agriculture causes that the farm continues to be a form of social insurance for the family.

The next negative phenomenon is the reduction of farming incomes, which was, particularly, marked in the first years of transformation, and which was intensified additionally by poor effects recorded in the crops production being a result of unfavorable agro-climatical conditions and a smaller use of main means of production. The worsening ratio of the prices of products sold by farmers and the prices of products bought by them produced a regress in the use of fertilizers and plant protection agents, which affected unfavorably the yields and harvests of crops.

In recent years the overall agricultural production has been at a level by 8-10% lower than in the period before transformation, which means that approximately a corresponding part of the production potential has been left idle permanently. It is simply useless at the present level of demand for domestic food products. Simultaneously, the market of food products is balanced and the range of supplied products is much wider than before transformation. The domestic offer is supplemented by imports, and competitive challenges posed by foreign producers lead to an improved quality of Polish foodstuffs.

The growth of imports (mainly from the EU countries) accompanied by declining exports releases a dangerous growth trend - starting from 1992 - of deficit in trade in agricultural and food products.

The analyzed years witnessed advantageous changes in the structure of land ownership and farm size area. The process of land consolidation was taking place through the polarization of farm size area, which caused that the average area of arable lands per farm grew from 6.3 ha in 1988 to 7 ha in 1996.

The Polish agricultural policy has to solve the main problem of transforming the agrarian structure of agriculture being ineffective due to overpopulation. It seems that in the present economic situation of the country (lack of jobs outside agriculture) the emphasis should not be laid solely on the development of a small group of highly productive farms. Also small farms have *raison d' être* in the Polish agriculture, because their big part will be involved only in subsistence farming, with non-agricultural activity being their main source of income. Moreover, small farm holdings can shift to labor-intensive types of production.

Table 1. Arable land use according to users in the years 1988-1996

Item	Unit of measure	1988	1989	1990	1991	1992	1993	1994	1995	1996
Total arable lands	1,000 ha	18,742	18,727	18,720	18,674	18,664	18,642	18,648	18,622	18,474
State-owned farms	1,000 ha	3,521	3,507	3,490	3,477	3,304	2,586	1,868	1,367	1,242
% share of state-owned farms in all arable lands	%	18.8	18.7	18.6	18.6	17.7	13.9	10.0	7.3	6.7
Private farms	1,000 ha	14,295	14,274	14,228	14,211	14,267	14,602	14,977	15,205	15,173
% share of private farms in all arable lands	%	76.3	76.2	76.0	76.1	76.4	78.3	80.3	81.7	82.1
Agricultural cooperation	1,000 ha	701	705	696	674	655	623*	576*	535*	502*
Agricultural circles	1,000 ha	59	57	54	50	22	-	-	-	-
% share of agricultural cooperation and circle in all arable lands	%	4.1	4.1	4.0	3.9	3.6	3.3	3.1	2.9	2.7

*- Including agricultural cooperation and circles

Source: Assessment of changes in rural areas, agriculture and food economy in the years 1988-1996, Ministry of Agriculture and Food Industry, Warsaw 1997

Table 2. Private farms according to size area groups in the years 1988-1997

Item	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
in 1,000 ha										
Total	2,168	2,143	2,138	2,138	2,144	2,149	1,967	2,048	2,041	2,008
1-2	406	384	378	377	381	385	378	429	462	439
2-5	753	749	751	754	757	758	663	690	668	691
5-7	319	318	319	318	318	318	270	273	261	255
7-10	317	319	318	317	317	318	273	272	260	247
10-15	243	243	242	242	241	241	224	219	217	207
15 and more	130	130	130	130	130	129	159	164	173	169
in %										
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1-2	18.7	17.9	17.7	17.6	17.8	17.9	19.2	20.9	22.6	21.9
2-5	34.7	34.9	35.1	35.3	35.3	35.3	33.7	33.7	32.7	34.4
5-7	14.8	14.9	14.9	14.9	14.8	14.8	13.7	13.4	12.8	12.7
7-10	14.6	14.9	14.9	14.8	14.8	14.8	13.9	13.3	12.7	12.3
10-15	11.2	11.3	11.3	11.3	11.3	11.2	11.4	10.7	10.7	10.3
15 and more	6.0	6.0	6.1	6.1	6.0	6.0	8.1	8.0	8.6	8.4

Source: Assessment of changes in rural areas, agriculture and food economy in the years 1988-1997, Ministry of Agriculture and Food Economy, Warsaw 1997

Table 3. Average arable land area of private farms according to farm size groups in the years 1988 and 1996

Farm size groups (in ha)	Average farm size (in ha)	
	1988	1996
1-2	1.5	1.4
2-5	3.4	3.3
5-7	6.1	5.9
7-10	8.6	8.4
10-15	12.4	12.1
15 and more	20.7	29.2
Total	6.3	7.0

Source: Own estimates based on Table 2

Table 4. Agrarian structure in the EU countries (1993) and in Poland (1996)

Country	Share of farms in size groups (%)					Number of farms (1000)	Average size (ha)
	1-5	5-10	10-20	20-50	50 and more		
Belgium	34	15	19	25	7	75	18.0
Denmark	2	16	23	36	22	74	37.2
France	27	10	13	26	24	797	35.3
Greece	68	20	9	3	1	632	5.4
Spain	55	18	12	9	6	1,373	18.0
Netherlands	33	17	19	26	6	117	17.2
Ireland	10	14	29	35	12	168	26.4
Luxembourg	26	9	9	23	34	4	36.6
Germany	30	17	20	25	9	617	18.9
Portugal	78	11	6	3	2	488	7.4
United Kingdom	11	13	16	26	34	236	69.9
Italy	67	16	9	5	2	1,736	8.6
Poland (1996)	55.3	25.5	15.1	3.7	0.4	2,041.4	6.99*

* Data for private farms

Sources: The Agriculture in the Community, 1993 Report, Brussels, Luxembourg 1994 p.26, General Agricultural Census, Use and quality of lands, Central Statistical Office 1997, table 4, p 16

Table 5. Work force in private farms and farming plots according to age in the years 1988 and 1996

Age	General National Census 1988 (GNS)		General Agricultural Census 1996 (GAC)		GAC 96 - GNC 88 in 1,000	GAC 96 - GNC 88 in %
	in 1,000	in %	in 1,000	in %	in 1,000	%
Total	4,067.2	100.0	4,658.9	100.0	+591.7	114.5
Pre-working	24.7	0.6	155.5	3.3	+130.8	629.6
Working	3,007.7	74.0	3,268.7	70.2	+261.0	108.7
-Mobile	1,525.5	37.5	1,876.9	40.3	+351.4	123.0
-Immobile	1,482.2	36.5	1,391.8	29.9	- 90.4	93.9
Post-working	1,031.5	25.4	1,234.7	26.5	+203.2	119.7

Source: Work status of population connected with agriculture, General Agriculture Census 1996, Warsaw 1997, table 3.2, p23

Table 6. Unemployed persons in thousands living in rural area in the years 1994 - 1996

Periods	Total (in 1,000)	of which woman (in 1,000)	% of all registered unemployment
1994 December	1,157.9	565.0	40.8
1995 December	1,126.5	574.1	42.0
1996 December	1,037.2	564.1	44.0

Source: Assesment of changes in rural areas, Agriculture and Food Economy in the years 1988-1997, Ministry of Agriculture and Food Economy, Warsaw 1997

Table 7. Structure of areas under crops in the years 1988 – 1997 (in %)

Item	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total grain cereals	58.5	58.1	59.5	61.2	61.0	63.0	65.1	66.1	70.4	71.3
Wheat	15.2	15.3	16.0	17.2	17.8	18.5	18.6	18.7	20.2	20.5
Rye	16.2	15.9	16.3	16.2	15.0	16.5	18.8	19.0	19.6	18.4
Corn	2.5	2.7	2.7	2.3	1.8	1.8	1.6	1.4	1.8	1.8
Pulse crops for seeds	0.4	0.4	0.3	0.4	0.5	0.4	0.3	0.4	0.4	0.4
Potatoes	13.0	13.0	12.9	12.2	13.0	13.1	13.0	11.8	10.9	10.5
Total industrial crops	6.6	7.4	7.0	6.1	6.0	5.8	6.6	7.9	6.1	6.2
Sugar – beets	2.9	2.9	3.1	2.6	2.8	3.0	3.1	3.0	3.7	3.4
Rape and turnip	3.3	4.0	3.5	3.3	3.1	2.6	2.9	4.7	2.3	2.5
Total fodder crops	15.5	14.8	14.2	14.2	14.1	12.3	10.1	8.5	7.0	7.3
Root crops	1.5	1.5	1.4	1.4	1.4	1.5	1.5	1.1	0.9	0.9
Vegetables	1.8	1.8	1.8	1.9	2.0	2.1	2.3	2.2	1.9	1.9
Others	1.7	1.8	1.6	1.7	1.6	1.5	1.0	1.7	1.5	0.6

Source: Own estimates based on: Area of crops, orchards, meadows, and grase lands, General Agricultural Census 1996, Central Statistical Office, Warsaw 1997, table 1, p. 1 and 2

Table 8. Agricultural crops (in tons/ hectare) in the years 1988 - 1997

Item	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Grain cereals	29.0	32.2	32.8	31.9	24.0	27.5	25.7	30.2	29.0	28.5
Wheel	34.8	38.5	39.6	38.0	30.6	33.3	31.8	36.0	34.6	32.1
Rye	23.7	27.3	26.1	25.8	19.6	22.6	21.8	25.6	23.4	23.1
Potatoes	186.0	185.0	198.0	168.0	133.0	206.0	136.0	164.0	203.0	159.0
Sugar – beets	341.0	340.0	380.0	316.0	294.0	392.0	292.0	346.0	394.0	379.0
Rape and turnip	25.5	27.8	24.1	22.3	18.2	17.1	20.4	22.7	15.9	18.7
Vegetables										
Cabbage	301.0	309.0	335.0	335.0	246.0	353.0	293.0	336.0	383.0	366.0
Onion	182.0	191.0	196.0	201.0	156.0	216.0	159.0	197.0	204.0	192.0
Carrot	256.0	246.0	264.0	259.0	211.0	274.0	221.0	247.0	275.0	270.0
Sugar – beets	234.0	229.0	236.0	236.0	193.0	245.0	201.0	225.0	244.0	235.0
Cucumbers	151.0	112.0	126.0	136.0	122.0	115.0	107.0	123.0	114.0	120.0
Tomatoes	185.0	156.0	143.0	151.0	142.0	127.0	127.0	141.0	97.0	94.0

Source: Statistical Yearbook 1990, Central Statistical Office Warsaw 1991, table 23(472), p.342, table 24(473), p. 344
Statistical Yearbook 1995, Central Statistical Office Warsaw 1991, table 17(454), p.349, table 18(455), p. 351
Statistical Yearbook 1997, Central Statistical Office Warsaw 1991, table 16(466), p.331, table 17(467), p. 333

Table 9. Livestock dynamics in the years 1988 - 1997

Item	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
previous year =100.0										
Cattle of which:	-	104.0	93.6	88.0	93.0	93.0	100.7	94.9	97.7	102.4
Cows	-	103.9	98.5	93.1	93.0	93.6	97.0	92.7	96.7	100.8
Flogs	-	96.1	103.3	112.3	101.1	85.4	103.2	104.9	88.0	100.9
Sheep	-	100.7	94.3	77.8	57.8	67.8	68.6	81.9	77.4	88.9
Year 1988 = 100.0										
Cattle of which:	100.0	104.0	97.4	85.7	79.7	74.1	74.6	70.8	69.1	70.8
Cows	100.0	103.9	102.4	95.2	88.6	82.9	80.4	74.5	72.0	72.6
Flogs	100.0	96.1	99.3	111.5	112.7	96.2	99.3	104.2	91.6	92.5
Sheep	100.0	100.7	95.0	73.9	42.7	29.0	19.9	16.3	12.6	11.2

Source: Livestock, General Agricultural Census 1996, table 1, p. 1, Warsaw 1997,
Land use, area of crops, and livestock according to farm size group and animal breeding scale, Results of 1997, Agricultural Census table 2(61), p.77 Warsaw 1997

Table 10. Chosen indices of economic situation in the Polish agriculture

Item	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Dynamics of total agricultural production value (previous year=100)	101.2	101.5	97.8	98.4	87.3	106.8	90.7	110.7	101.1	99.8
- Crops production	99.7	102.7	100.1	97.2	78.8	123.2	85.1	112.2	102.1	95.8
- Animal production	103.2	99.9	94.8	99.6	95.9	88.9	99.3	118.7	99.7	105.4
Dynamics of total agricultural production value (1988=100)	100.0	101.5	99.3	97.7	85.3	91.1	82.6	91.4	92.4	92.3
- Crops production	100.0	102.7	102.8	99.9	78.7	97.0	82.6	92.6	94.6	90.6
- Animal production	100.0	99.9	94.7	94.3	90.5	80.4	79.9	94.8	94.5	99.6
Use of fertilizers in kg per 1 ha of arable lands	176.4	195.5	163.9	95.1	62.1	65.8	71.1	79.7	84.5	88.3
Use of plant protection agents per 1 ha of arable lands	1.59	1.40	0.52	0.36	0.46	0.47	0.50	0.48	0.60	.
Arable land area per one tractor (in ha)	17	16	16	16	16	16	14	14	14	.
International trade in agricultural- food products (USD million)										
Export	1,660	1,850	1,903	2,469	1,931	1,646	2,084	2,511	2,757	3,297
Import	1,705	1,402	666	2,082	1,973	2,256	2,411	2,987	3,989	3,766
Balance	-45	448	1,237	387	-42	-610	-327	-476	-1,232	-469

Source: - Information about social-economic situation in 1996 and elements of forecasts for 1997, Government Centre for Strategic Studies, Warsaw 1997, p. 26-27,
- Assessment of changes in rural areas, agriculture and food economy in the years 1988-1996, Ministry of Agriculture and Food Industry, Warsaw 1997, table 1
- Information about socio-economic situation in the country in 1997, Central Statistical Office, Warsaw 1988, p.1

Table 11. Price indices of production sold and bought by farmers compared with price of consumer goods and services in the years 1989-1997

Item	1989	1990	1991	1992	1993	1994	1995	1996	1997
Prices of consumer goods and services total	351.1	685.8	170.3	143.0	135.3	132.2	127.8	119.9	115.1
of which: food	420.1	674.7	146.1	136.9	133.6	133.0	127.0	118.6	114.2
Prices of goods sold by farmers	354.9	378.7	129.4	159.8	132.6	137.1	127.3	115.7	109.3
Crops	439.1	292.1	116.8	184.3	129.5	134.0	135.4	114.6	101.7
Animals	307.0	449.1	135.8	149.1	134.3	138.7	123.2	116.5	113.8
Prices of goods and services bought by farmers	330.7	764.3	173.1	138.4	135.9	125.9	125.0	120.5	114.1
Index of price differentials	107.3	49.5	74.8	115.5	97.6	108.9	101.8	96.0	95.8

Source: Statistical Yearbook 1992, table 7(270) p.165, table 13(276) p.168, Statistical Yearbook 1997, table 4(434) p.297, table 13(443) p.301

Table 12. Dynamics of real incomes in peasant farms and ratios of nominal incomes in peasant farms to nominal incomes of employees in the years 1990-1996

Years	Real incomes in peasant farms per capita		ratios of nominal incomes in peasant farms to nominal incomes of employees
	Previous year=100	1989=100	
1990	63.9	63.9	102.5
1991	85.9	54.9	84.2
1992	102.5	56.3	62.9
1993	102.8	57.8	87.8
1994	99.8	57.7	87.4
1995	108.7	62.7	87.4
1996	100.7	63.2	86.8
1997	.	.	90.3

Source: Assessment of changes in rural areas, agriculture and food economy in the years 1989-1996, Ministry of Agriculture and Food Industry, Warsaw 1997, Table 1

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