

Bogdan Gregor^{*}

RELATIONS AND EFFECTIVENESS
OF UTILIZATION OF PRODUCTION FACTORS
IN POLISH AGRICULTURE

1. INTRODUCTION

Agricultural production is based on combination of three factors of production: land, labour, and capital. Their mutual relations tend to vary (substitution of production factors). The same amount of a product may be produced with a different combination of factors. According to H. Herlemann and H. Stamer (1963), their optimal proportion results from marginal productivity and prices of factors of production.

Observation of long-term changes in relations of production factors in highly developed countries allows to express a view that the main driving force of these changes is a rapidly growing price of labour factor¹. The shrinking of labour resources and land is compensated by a stream of relatively cheaper capital resources flowing to agriculture from other sectors of the economy (mainly from industry). Capital becomes the most dynamic factor of growth of agricultural production.

Similar trends can be also observed in the Polish agriculture because factors promoting development of agriculture in particular countries are characterized - irrespective of socio-poli-

^{*} Associate professor of marketing in the School of Economics and Sociology of The University of Łódź, Łódź, Poland.

¹ For example, in the FRG remuneration paid to hired labour in agriculture was growing at an average annual rate of 7.9% over the period 1973-1983, while prices of supplies for current production by - 5.0%, and of machines by - 5.2% Die Lage der Landwirtschaft in der Gemeinschaft, Bericht 1983 (1984). Kommission der Europäischen Gemeinschaften, Brüssel-Luxemburg, p. 218 and 220.

tical differences and those in level of industrialization - by a certain common logic of development. However, the main difference between Poland and highly developed countries is a considerable retardation of these transformations being a derivative of a general development level and structure of the national economy (among others, underdevelopment of these branches of the economy which work for agriculture).

An attempt has been made in this paper:

- to analyze the rate and directions of changes in relations of production factors in agriculture,
- to evaluate how effectively the existing production potential, mainly in its sectoral cross-section is utilized,
- to determine the impact exerted by limited accessibility of production factors (mainly capital) on farmers' production motivations.

The analysis of changes in the structure of production factors and their productivity has been based on secondary data sources (mainly on statistical materials of the Central Statistical Office). For comparative purposes, wherever it was possible and justified, there has been presented information concerning the EEC countries, and especially the FRG². On the other hand, the findings of empirical studies carried out among 782 private farms in 1986 have been utilized for evaluating the access of private farms to factors of production and their importance for development of agricultural production.

2. TENDENCIES OF CHANGES IN RELATIONS OF PRODUCTION FACTORS IN AGRICULTURE

Visible changes in production factors in agriculture took place over the years 1960-1985 (see: Table 1). Similarly to most other countries, the agricultural production in Poland witnessed an absolute drop in two factors of production: land and labour. The area of arable lands decreased by 7.7% during the analyzed period. This process combined with a relatively high natural in-

² The author of the article was in the FRG on a fellowship granted by the Alexander Humboldt Foundation in the early eighties and conducted comparative studies on effectiveness of agriculture and agricultural market in Poland and the FRG.

crease of the population caused a significant decrease of area of land "feeding" a statistical inhabitant of Poland (from 0.68 ha in 1960 to 0.51 ha in 1985)³.

Huge labour resources were the force propelling development of agriculture (and to a big extent also of the entire economy) in the postwar period. The seventies proved, however that labour ceased to be the main factor imparting dynamics to agricultural production. In the years 1960-1985, the potential of labour factor involved directly in agricultural production declined by 31.7%. Resources of marginal labour force - with the existing level of work mechanization in agriculture - are almost exhausted and labour deficit is already felt in many regions of Poland and groups of farms.

Table 1

Dynamics of agricultural production and its factors of growth
in Poland in the years 1960-1985

Item	1960	1970	1975	1980	1985
Total agricultural production ^a 1961-65 = 100	92.9	116.8	140.1	128.7	142.8
Final agricultural production ^a 1961-65 = 100	91.9	116.8	140.2	138.2	150.9
Commodity agricultural production ^a 1961-65 = 100	88.6	126.5	170.4	176.3	185.5
Net agricultural production ^a 1961-65 = 100	94.6	96.9	94.3	76.2	99.7
Land (arable lands in ha) 1960 = 100	100.0	95.8	94.1	92.9	92.3
Investment outlays in agriculture ^a 1960 = 100	100.0	267.7	511.6	493.6	393.7
Gross value of production fixed assets ^a 1960 = 100	100.0	135.4	173.2	239.5	271.9
Labour involved in agricultural production 1960 = 100	100.0	91.8	83.0	71.2	68.3

Note: a - in constant prices

S o u r c e: Based on data of the Central Statistical Office in Warsaw.

³ It continues to be, however, a higher index than those in most West European countries, because in 1980 it amounted to: 0.20 ha in the FRG, 0.14 ha in Holland and Belgium, 0.31 ha in Italy, and 0.33 ha in Great Britain. On the other hand, a bigger nutrition area per one inhabitant is possessed by, among others: France - 0.59 ha and Denmark - 0.57 ha. See Statistisches Jahrbuch über Ernährung, Landwirtschaft und Forsten (1981). Landwirtschaftsverlag GmbH, Münster-Hiltrup, p. 346.

The shrinking acreage of agricultural lands and decrease in the number of population working in agriculture must be compensated by increased capital outlays. In the analyzed period, the gross value of production fixed assets in agriculture went up over 2.5 times and the volume of working assets consumed by agriculture - 3.5 times. In statistical terms, the increment of capital stock was quite significant. However, there is a clear evidence that the inflow of means of production to agriculture was insufficient, because it is necessary to take into account a very low level of capital stock in agriculture in the initial period. Moreover, a part of these means had to be used to make up for decreased productive capacities (due to the already mentioned losses in the two remaining factors of production). According to J. Rajtar (1981), 20-25% of increment of means of production provided for agriculture was utilized for this purpose and in private farms - a high 35-40%. In the opinion of F. Tomczak and J. Rajtar (1973), the Polish agriculture was still at an early stage of its technical development in the early seventies, which corresponded to the stage ended in developed capitalist countries in the thirties of the present century.

Since the mid-seventies, there could be observed a declining trend of growth of investments, production supplies, development of production potential of agriculture, which was changing into regression in the case of some of these elements. Starting from 1979 provision of agriculture with fixed and circulating means of production was even displaying a marked downward trend. An improvement in this sphere did not take place until the years 1984-1985. The scale of shortages in production supplies is best reflected by the fact that the value of both investment outlays and consumption of purchased materials and services in agricultural production (in constant prices) was much lower in the years 1981-1985 than in the preceding five-year period. Growing deficit of means of production led to distortion of an equilibrium of factors of production in agriculture. This is generally recognized to be the main cause of the crisis or, more exactly, destruction of agriculture and food market. Apart from this, there are most often pointed out mistakes made in the agricultural policy finding their reflection, first of all in improper intersectoral and spatial allocation of production factors and in administrative method of the managing of agriculture, as well as psychosocial elements in the countryside. These elements determine attitudes

(decisions) of agricultural producers (J. Dietl, et al. 1982). Unfavourable conditions created by the environment of agriculture and impact of internal factors led to a decay in growth dynamics of agricultural production and appearance of a downward trend in production effectiveness of many kinds of inputs such as fodders, artificial fertilizers, energy, etc. Attempts to overcome the stagnation in production by means of gradual changes of agricultural prices in the situation of deepening destruction of the rural market (shortage of means of agricultural production and industrial consumer goods and services becoming increasingly more acute) led to the undermining of production stimulating function of prices and incomes.

3. SHARE OF NONAGRICULTURAL BRANCHES OF ECONOMY IN STIMULATION OF AGRICULTURAL PRODUCTION

As it has already been said, the main barrier to growth of agricultural production is insufficient external supply of means of production for agriculture. The inputs provided by other sectors of the economy for agriculture constituted not quite 22% of the overall value of goods and services consumed by it in 1982. This fact should be evaluated critically, because the scale of production self-provision of agriculture continues to be too high, while changes occurring in this field are still very slow (see: Table 2).

The share of products of agriculture in material costs of agricultural production went down by only 10 percentage points in the years 1961-1982. It is also worth noting that at the beginning of the eighties the level of production self-provision increased. That could be interpreted as a sign of adaptation of agriculture to unfavourable conditions created by its environment.

The backwardness in the industrialization level of agriculture in Poland becomes much more apparent if we compare the structure of inputs to agricultural production in Poland and highly developed countries, in which the share of goods and services produced by different branches of industry is much bigger. Thus, participation of industry in material costs of agricultural production in the FRG is twice higher than in Poland. Supplies of industrial means of production and services for agriculture in Poland are still quite disproportionate in relation to huge de-

Table 2

Structure of materials costs in agricultural production
of Poland and the FRG (in %)

Type of inputs	Poland				FRG	
	1962	1971	1977	1982	1965	1978
Products and services from industrial sector	13.43	17.35	25.22	21.44	33.22	38.69
in this:						
- fuel and energy industry	1.43	1.87	2.39	4.48	3.78	3.86
- metallurgical, engineering and electrical industries	2.49	2.23	2.53	2.85	7.32	5.83
- chemical and mineral industries	3.82	5.99	6.58	5.46	5.95	8.94
- other industries	5.69	7.26	13.72	8.65	16.17	20.06
Services in construction sphere	0.58	1.38	1.25	1.63	1.22	2.21
Products of agriculture	76.40	68.30	63.60	66.05	47.14	32.34
Services in the field of transport and communications	0.19	0.25	0.71	0.34	1.97	4.79
Services provided by units of goods turnover	2.41	2.30	1.18	2.67	5.33	5.22
Remaining products and services	1.30	4.71	2.98	2.80	1.40	4.66
Overall material products and services	94.03	94.29	94.94	96.15	90.28	87.91
Amortization	5.67	5.71	5.06	3.85	9.72	12.09
Total material costs	100.00	100.00	100.00	100.00	100.00	100.00

Source. for Poland - Statistical Yearbooks (1964, 1973, 1980, 1984), Central Statistical Office, Warsaw; for FRG - Volkswirtschaftliche Gesamtrechnung. Reihe 2, Input-Output Tabellen (1972, 1981). Statistisches Bundesamt Wiesbaden-Stuttgart-Mainz.

mand of agricultural farms. Despite frequently repeated declarations of the central authorities about priority for development of industrial production of supplies for agriculture, industry is poorly oriented at manufacturing agricultural means of production. Over the last 20 years, agriculture was consuming not more than 7% of industrial goods and services in the sphere of material production. The present share of agriculture in "consumption" of industrial products (6.1% in 1982) is similar to that in the

fifties. This index is, moreover, the lowest among all the CMEA countries (F. Kolbusz, 1981).

4. PRODUCTIVITY OF FACTORS OF PRODUCTION IN AGRICULTURE

Substitution of human labour by embodied labour leads to an increase of capital-labour ratio. In the years 1960-1985, the gross value of fixed production assets per one employee (in constant prices) rose over three-fold in agriculture just as it happened in the whole sphere of material production (see: Table 3). However, every person employed in agriculture has at his disposal a much smaller capital stock than its average level in other sectors of the economy. An opposite situation can be observed in highly developed countries (taking the capital-labour ratio in the entire economy of West Germany to be 100, its level in agriculture amounted to 90 in 1960, 109 in 1969 and already 119 in 1979). This is perhaps the best proof of poor technical equipment of the Polish agriculture and of hard working conditions of the Polish farmer.

Consequently, we are dealing with a relatively low social productivity of labour, which is twice lower in agriculture than in the entire sphere of material production. This index is also unfavourable for agriculture in highly developed countries (for example, in the FRG the net output per one person employed in agriculture represented 48% of its value for the entire economy in 1980 but displayed a marked upward trend). In Poland, on the other hand, the difference in the social productivity of labour in agriculture and outside it was increasing over the last 25 years. Taking the labour productivity in the sphere of material production for 100, in agriculture it amounted to 80 in 1960 and 49 in 1985. The productivity of fixed assets dropped over two-fold as well. The net output produced by agriculture after converting it for the value of fixed production assets in 1985 was, moreover, by one-third lower than its average value for the entire sphere of material production.

The above analysis points at a relatively low effectiveness of agriculture in Poland. This will be better visible if we compare it with highly developed countries. For instance, the West German agriculture having over one-third less arable lands and over four times smaller labour resources produces more agricultu-

Capital-labour ratio and productivity of factors of production
in agriculture as compared with Poland's national economy
in the years 1960-1985

Item	National economy (sphere of material production)				Agriculture			
	1960	1975	1982	1985	1960	1975	1982	1985
Fixed production assets per 1 employee in '000 zloty	138	261	416	455	100	199	291	326
Index of dynamics: 1960 = 100	100	189	301	330	100	199	291	326
National income generated per employee in '000 zl.	46	104	93	108	37	48	46	53
Index of dynamics: 1960 = 100	100	226	202	235	100	130	124	143
National income generated per 1000 zloty of value of fixed production assets in zloty	333	398	223	237	367	243	154	163
Index of dynamics: 1960 = 100	100	120	67	71	100	66	42	44

Note: Values of national income and gross fixed production assets are given in constant prices of 1st Jan. 1977.

Source: Own calculations based on data of the Central Statistical Office in Warsaw.

ral articles (in conversion into grain units) than the Polish agriculture (ca. 64 and 57 million grain units respectively). Hence, each hectare of arable lands yields agricultural production equivalent to 5.3 tons of grain units as compared with 3 tons (i.e. over 40% less) in Poland. There are many causes behind a low effectiveness of the Polish agriculture. They are inherent in agriculture itself and, primarily, outside it. The factor promoting broadly understood agricultural progress, including mainly technical, biological and organizational progress is the environment of agriculture, and especially industry and the sphere of services for agriculture. On the other hand, carriers of this progress are industrial means of production and services put at the disposal of agriculture. In order to understand the causes of these differences in production effects it is sufficient to say that the West German agriculture has over twice as many tractors (or over three times more after their conversion for arable land acreage), six times more grain combines and other highly

efficient machines, it uses 50% more fertilizers and over four times more plant protection agents per each hectare, it possesses an efficient trade system and technical service, it enjoys a free access to well-developed advisory services.

5. ECONOMIC EFFECTIVENESS OF AGRICULTURE ACCORDING TO SECTORS

Taking into account the structure of ownership in agriculture, Poland is an exception among centrally-planned economies (without Yugoslavia). It is characterized by dominance of the private sector possessing three-fourths of agriculturally used lands.

In the agricultural policy pursued mainly in the seventies, there could be observed unfavourable phenomena both from the social and economic points of view. They include, on the one hand, a preferential attitude towards the socialized sector (mainly state-owned enterprises) and, on the other hand, instability of the agricultural policy towards the private agricultural sector, and sometimes its actual discrimination being a result of the above mentioned attitude towards the socialized sector⁴. As a result of it, the share of production factors engaged in agricultural production and possessed by the non-socialized sector declined (see: Table 4). This refers particularly to land and capital. It is worth noting, however, that participation of this sector in effects of agricultural production declined to a much smaller extent. Moreover, the share of the private peasant agriculture in particular categories of agricultural production is incomparably high in relation to its production potential. This is a result of much bigger economic effectiveness recorded in the private agriculture (see: Table 5).

The net final production is the most appropriate category of production for analyses of productivity of land and capital inputs. Each hectare of arable land and each unit of capital inputs yields a much higher effect in the private sector than in the socialized one⁵. In the latter, the productivity of capital

⁴ Certain positive changes in the agricultural policy towards the private sector took place in the last few years. They found their reflection among others in introduction of an entry about permanence of private farms (family farms) in agriculture to the Constitution of the Polish People's Republic.

⁵ In earlier years, there prevailed and was widely publicized a view that the socialized sector was giving the society much bigger commodity production from each hectare than the private farming. That is true if we mean the gross

Table 4

Share of the non-socialized agriculture in overall factors
of production and effects of agricultural production
in the years 1961-1985^a (in %)

Item	1961-1965	1966-1970	1971-1975	1976-1980	1981-1985
Land - acreage of arable lands	85.7	84.1	80.7	75.9	76.0
Labour ^b	91.6	91.0	89.6	86.1	88.8
Fixed production assets	75.5	70.7	66.1	61.1	71.8
Material outlays on agricultural production (without amortization)	84.9	82.7	78.5	70.8	72.1
in this:					
consumption of purchased materials and services	67.3	66.1	62.6	54.2	58.8
Agricultural production:					
total	88.4	86.6	83.3	77.9	80.3
final	87.2	84.8	80.5	74.6	77.5
net final	90.1	88.4	85.8	82.2	83.0
commodity	83.3	80.4	77.1	71.9	73.6
net commodity	87.2	84.7	83.2	80.3	79.8
net	92.8	92.2	91.3	93.2	90.6

Explanations: a - in long-term periods - annual average values; b - including only persons employed in agricultural production (without the agricultural services sector).

S o u r c e: Own calculation based on data of the Central Statistical Office in Warsaw.

commodity production, which also incorporates, however, the transferred production in the form of purchased means of production of agricultural origin (e.g. fodder concentrates). Deducting their value, it will appear that the remaining commodity production (the so-called net output) is much lower than in private farms. In the years 1981-1985, the net commodity production (in constant prices of 1982) represented in the socialized sector 86% of its level from 1 ha achieved in the non-socialized sector.

Table 5

Productivity of factors of production in agriculture according to sectors
in the years 1981-1985 (average annual values)

Item	Total agriculture	In this	
		socialized sector	private sector
<u>Productivity of land</u>			
a) gross final production per 1 ha of arable lands in '000 zloty	61.2	58.3	62.6
b) net final production per 1 ha of arable lands in '000 zloty	51.0	36.2	57.0
<u>Productivity of labour</u>			
a) gross final production per 1 employee in '000 zloty	255.7	512.9	223.6
b) net final production per 1 employee in '000 zloty	212.9	327.5	198.5
<u>Productivity of capital inputs</u> (purchased materials and services, and amortization)			
a) gross final production in zloty per 1 zloty of inputs	2.41	1.34	3.12
b) net final production in zloty per 1 zloty of inputs	2.00	0.85	2.77

S o u r c e: Own calculations based on data of the Central Statistical Office in Warsaw

inputs is especially low⁶. That is partly due to objective premises resulting from different techniques of production. Thus, a function of a part of these inputs in the socialized sector is substitution of the labour factor. There is no doubt, however, that effectiveness of consumption of many means of production is relatively low in this sector (e.g. mineral fertilizers or fodder concentrates).

The best solution while evaluating the labour productivity is to use the category of net output (because it is produced by people). Taking the labour productivity in the private agricul-

⁶ Material-intensity of the final agricultural production (value of amortization and working assets necessary to manufacture 1 unit of value of the final production) is higher in the socialized sector than in the FRG's agriculture, and in 1981 it amounted to 0.95 and 0.70 respectively, which is accompanied by twice bigger labour resources per one ha of arable land.

ture to be 100, its level in the socialized sector amounted to barely 33 in the years 1981-1982.

The above remarks testify to relatively high social costs of agricultural production in the socialized sector. According to W. Herer (1978), unit costs of the net final output in the socialized sector were by 40% higher than in the private sector in 1975. Thus, strenuous promotion of development of the socialized sector had no economic or social justification. Only political considerations could be at work here. The society suffered, however, huge losses as a result of it. In the opinion of Z. Grochowski (1981); if the productivity of land in the socialized agriculture were as high as in the private agriculture, taking into account the present level of meat production Poland could abandon import of grain and even have some surpluses of fodders.

6. RESTRICTED ACCESS TO FACTORS OF PRODUCTION AS A BARRIER TO EXPANSION OF AGRICULTURAL PRODUCTION

In 1984, we started together with J. Dietl empirical studies focussed on adaptative process of private farms in the centrally planned economy. The studies aimed, first of all, at determining exo- and endogenous constraints in the adaptative process of farms and farmers' reaction to these constraints. In this paper, we shall present the results of studies carried out in 1986, in their part concerning availability of production factors as a determinant of production growth. One of questions in our questionnaire referred to plans of farmers in the field of production within the next three years. Its aim was to obtain information about their decisions taken ex ante. It appeared that 52% of the respondents planned to increase their production (through bigger inputs of direct or embodied labour, or biological progress), 43% - its stabilization (keeping it at previous level), and 4% - its decrease. Despite some progress in relation to the results of similar studies conducted in earlier years⁷, the above data are not very optimistic. It is true that only an insigni-

⁷ In comparison with the studies conducted in earlier years (J. Dietl, B. Gregor, 1985, 1986), the share of the respondents intending to increase production was higher. Moreover, among farmers there was recorded a bigger determination and awareness as regards their future behaviour in the field of agricultural production.

ficant share of all farmers envisaged a drop in their production. The fact, however, that over two-fifths of farmers wished not to change their production implies a step backwards in relation to the changing environment, especially in the situation of such absorptive market as that in Poland.

The respondents expressing their willingness to stabilize or decrease production were asked to give their reasons. 88.2% of the interviewed farmers sought justification for their decision giving as a rule one basic reason. A part of the respondents (ca. 15%) pointed at several reasons. They have been compiled in Table 6. It appears that a difficult access to factors of production was the main factor accounting for decisions to stabilize or decrease production (53% of the respondents). Farmers seem to be more aware these days of existing limits in growth of production. Their decision was also partly due to unwillingness to change relations between factors of production especially in conditions of considerable uncertainty and to the fact that they were afraid about further increase of hardships of their work and reduction of amount of their free time. Therefore, it may be assumed that limits of production growth were somewhat exaggerated by the interviewed farmers. Deficit of labour held a dominant position, and especially among causes behind intended decrease of production (40% of the respondents). This statement is quite disturbing taking into account availability of relatively big labour resources in the Polish agriculture. The farmers proved to be often unaware of these reserves, which was mainly a result of considerable disproportions between the structure of capital resources and the potential of labour factor.

Every seventh farmer planning to stabilize or decrease production would justify his plans by shortages in supply of means of production. The importance of this factor in relation to others was twice bigger than in the earlier studies. It corresponds to the prevailing opinion about deteriorating supply of agriculture with means of production.

29% of the respondents, who were not inclined to increase their production, were pointing at lack of perspectives for running their farms. Fortunately, only not quite 18% of the farmers would list one of the causes accounting for lack of sufficiently strong motivation to increase production - a satisfactory level of production, its unprofitability, lack of confidence for the agricultural policy.

Table 6

Causes inducing farmers to stabilize or decrease their production

C a u s e s	Intensity of causes as % of farmers pointing at them (n = 322)	Structure of causes in % (all causes = 100)
I. <u>Restricted access to factors of production</u>	52.9	44.7
1. Labour deficit	29.0	24.5
2. Difficulties in buying means of production	14.6	12.3
3. Achievement of maximum production level	9.3	7.9
II. <u>Lack of perspectives for further running of a farm</u>	28.9	24.4
1. Old age of a farmer or his poor health	14.9	12.6
2. Absence of a successor (readiness to pass a farm over to the state in exchange for a pension or selling it in coming years)	5.9	5.0
3. Desire to transfer a farm to a successor in coming years	8.1	6.8
III. <u>Lack of sufficiently strong motivation</u>	17.5	14.8
1. Sufficient level of production	7.2	6.1
2. Unprofitability of production	6.9	5.8
3. Lack of confidence for agricultural policy	3.4	2.9
IV. <u>Other causes</u>	19.0	16.1

Source: Own empirical studies.

Apart from information about the future production intentions in each farm under survey, we were also interested in obtaining opinions of the farmers interviewed in the capacity of experts. What was important here was not so much to shed some light on possible decisions of farmers but rather to determine negative determinants of agricultural production increase independent of these decisions. The respondent was asked not only to provide an answer from the viewpoint of his own farm but also taking into account other conditions of agricultural production known to him.

Namely, they were asked a question: do there exist distinct causes, inherent in agriculture and outside it, which may be restricting the willingness and possibilities of increasing production? As many as 95% of the respondents gave affirmative answers which testifies to a common awareness of these constraints. Those 95% of the respondents were asked next to point at circumstances restricting the willingness and possibilities of expanding production. The question was of a semi-open character. There were listed 9 probable causes in the questionnaire and chances were also created for including other circumstances. The farmers were asked, moreover, to indicate which cause was the most important one in their opinion. The findings of this survey are compiled in Table 7. It appears that exogenous constraints predominated by far and they constituted three-fourths of all causes considered to be the most important.

Most external and internal constraints are connected with a shortage of factors of production in agriculture and their difficult accessibility. Deficit of labour, insufficient equipment of farms with machines, and difficulties with purchasing means of production were considered to be the most important causes by 52% of the respondents.

94% of the farmers pointed at insufficient supply of means of production, with 39% of them ranking it first. To an additional question about means of production, 90% of the respondents answered that their shortage was "a major barrier" to production increase.

Shortages in material supplies for agriculture make it impossible, moreover, to utilize rationally the production potential possessed by farms. They lead to the freezing of capital in agriculture. Deficit of spare parts causes that agricultural equipment may be left idle for some time. Difficulties in purchasing building materials force farmers to start collecting them a long time before actual construction is begun.

From among all the respondents, 52% considered labour deficit to be a factor hampering agricultural production, and 9% called it the biggest impediment. The farmers from regions with intensive agricultural production and those with larger farms were attaching a greater attention to labour deficit. Significance of this factor was increasing along with increase in the respondents age. It was bigger in agricultural farms than in biprofessional farms, and naturally in farms without successors in comparison

Table 7

Causes restricting willingness and possibilities of expanding
production in farmers' opinions (n = 753)

C a u s e s	Share of respondents quoting a given cause	
	those who considered total in the most im- portant	
<u>I. External causes (resulting from market and institutional environment)</u>		
1. Difficulties in purchasing means of production	94.0	38.7
2. Unfavourable price relation for agriculture	88.2	17.3
3. Unstable agricultural policy	51.8	12.6
4. Difficulties in purchasing consumer durables	46.9	0.5
5. Insufficient provision of services for agriculture	57.1	5.6
<u>II. Internal causes (inherent in farms themselves)</u>		
1. Labour deficit	52.2	8.9
2. Insufficient equipment of farms with machines	54.7	4.4
3. Deficit of water for production purposes	27.6	2.5
4. Absence of a successor	17.4	2.4

S o u r c e: Own empirical studies.

with those which had them. It should be noted, however, that in as much as deficit of labour constituted the main determinant of decisions about the future stabilization or decrease of production the last-mentioned factor was attached a smaller importance by the farmers, who were perceiving it not only from the viewpoint of their own farms. Thus, farmers are aware of existing labour reserves but they are not inclined to refer them to their own farms. This reflects their unwillingness to increase own effort or improve organization of work and, simultaneously, a desire to decrease hardships of work.

7. CONCLUSIONS

Changes in relations of production factors in the Polish agriculture correspond, as regards their directions, with general trends in the world. However, the speed of these transformations and the existing structure of production factors differ significantly in comparison with highly developed countries.

Shortages in provision of capital goods for agriculture constitute the main barrier to its development. They make it impossible, moreover, to utilize effectively the remaining factors of production. Difficulties in purchasing means of production and absence of the well-functioning markets of land and labour cause that supply of production factors is a basic constraint in adaptive processes of private agricultural farms. The consequently limited possibilities of optimizing the combination of these factors in an agricultural farm decrease effectiveness with which they are used. The productivity of factors of production is particularly low in the socialized sector. The structure of productive forces and technology of production in the private sector (more labour-intensive and less capital-intensive) cause that private agricultural farms are characterized by their higher adaptability to changes in their environment.

BIBLIOGRAPHY

- Die Lage der Landwirtschaft in der Gemeinschaft, Bericht 1983 Kommission der Europäischen Gemeinschaften, Brüssel-Luxemburg (1984).
- Dietl, J., Gregor, B., Constraints in Adaptive Process of Private Farms (findings of empirical studies), "Więś i Rolnictwo" No. 1, 1986 (in Polish).
- Dietl, J., Gregor, B., Relationships of Private Agricultural Farms with their Market and Institutional Environment (findings of empirical studies), published by The University of Łódź, Łódź 1986 (in Polish).
- Dietl, J., Herer, W., Hunek, T., Leopold, A., What doesn't Depend on Agriculture, "Zycie Gospodarcze" No. 34, and What Agriculture Needs, "Zycie Gospodarcze", No. 35, 1982 (in Polish).
- Grochowski, Z., Key Issues Concerning Villages, "Więś Współczesna", No. 1, 1981 (in Polish).

- Herer, W., Economic Relations Characterizing Development of Polish Agriculture in the Years 1960-1975, "Zagadnienia Ekonomiki Rolnej", No. 6, 1978 (in Polish).
- Herlemann, H., Stamer, H., Agriculture in the Era of Technization, PWRiL, Warsaw 1963 (in Polish).
- Kolbusz, F., Contemporary Problems of Village and Polish Agriculture, "Wieś Współczesna", No. 4, 1981 (in Polish).
- Rajtar, J., External Determinants of Development of Agriculture, "Wieś i Rolnictwo", No. 4, 1981 (in Polish).
- Statistisches Jahrbuch über Ernährung, Landwirtschaft und Forsten (1981), Landwirtschaftsverlag GmbH, Münster-Hiltrup.
- Tomczak, F., Rajtar, J., Economics of Agriculture. Outline of Theory, SGPiS, Warsaw 1973.
- Volkswirtschaftliche Gesamtrechnung, Reihe 2. Input-Output Tabellen (1972 1981) Statistisches Bundesamt, Wiesbaden-Stuttgart.

Bogdan Gregor

RELACJE ORAZ EFEKTYWNOŚĆ WYKORZYSTANIA CZYNNIKÓW PRODUKCJI
W ROLNICTWIE POLSKIM

W artykule podjęto próbę ustalenia tendencji zmian w relacjach czynników produkcji oraz efektywności ich wykorzystania w rolnictwie polskim. Analizę tempa oraz kierunków zmian owych relacji ujęto na tle krajów wysoko rozwiniętych (głównie RFN). Ocenę produktywności czynników wytwórczych przedstawiono w przekroju sektorów.

Potwierdzenie znalazła teza, iż w ekonomice niedoborów indywidualne gospodarstwa rolne napotykają w procesach dostosowawczych na różnorodne ograniczenia. Podstawowe znaczenie ma jednak podaż. Wśród wielu barier rozwoju rolnictwa, mających charakter zarówno endo- jak i egzogeny w stosunku do gospodarstw decydujące znaczenie ma - zdaniem rolników ograniczona dostępność do czynników produkcji (głównie czynnika kapitału).

