

TENDENCIES ON THE POLISH TRACTOR MARKET

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Summary. In Poland, the average value of the reproduction rate of tractor resources for 1990-2003 amounted to 0.90%. The value of the respective index for 15 „old” EU countries ranged between 1.96 in Denmark and 2.99 in the UK. Due to this situation, tractor resources are growing older and the technological advance is slower on most Polish farms. As a result, the technological distance in agriculture between highly developed countries and Poland becomes larger. The accession of Poland to the European Union in May 2004 was connected with the imposition of VAT on farm machines. This caused a dramatic increase in the prices of farm machinery.

Key words: agriculture, tractor market

INTRODUCTION

The development of tractor fleet in Polish agriculture was influenced by political and economic factors. The effect of the first of the above-mentioned factors was predominant during the years fifties and sixties of the XXth century. Starting from 1990, the economic factor decided about the situation on the tractor market and about the changes in the number of tractors in use.

The purpose of this paper is to analyze the situation on the Polish tractor market and to identify main factors affecting the situation on the market. The period of 1950-2003 is taken into consideration.

MATERIAL AND METHODS

The Central Office of Statistics in Poland [Yearbook of Agric.: 1971, 1982, 1986, 1987, Agriculture and Food...1992] reports on the situation on farm machinery market [Market of product...:2000, 2003, 2004], and other published [Pawlak 2002] and unpublished sources were used as a base of the study.

The reproduction rate of resources is one of the indicators characterizing the situation on the tractor market. It is defined as a per cent ratio between the number of brand-

new machines sold during the year period and number of machines in use in the same year. The reproduction rate of tractor resources R_t can be calculated using the formula:

$$R_t = \frac{P_t}{T_u} \cdot 100 \quad (1)$$

where: P_t – annual purchases of tractors, pieces,
 T_u – tractors in use in agriculture, pieces.

The term reproduction rate fits to the situation of replacement of an old machine by a new one. In practice, new investments are involved both when a farmer buys his first tractor and when he pays for the renovation of his tractor fleet. In Poland, the latter situation is the commonest, even if the number of farms equipped with tractors is growing.

THE SITUATION IN AGRICULTURE AND TRACTOR MARKET IN POLAND

During the years 1950-1959 in Poland the small number of tractors available were assigned to state farms and to machinery stations serving co-operative farms. Almost all purchases were still undertaken for new investment purposes. Since 1959 also agricultural circles, being farmers' organizations aimed at mechanizing private farms in the form of machinery services, were allowed to purchase tractors. This resulted in the growth in the number of both the purchases of tractors and of the tractors in use (Fig. 1).

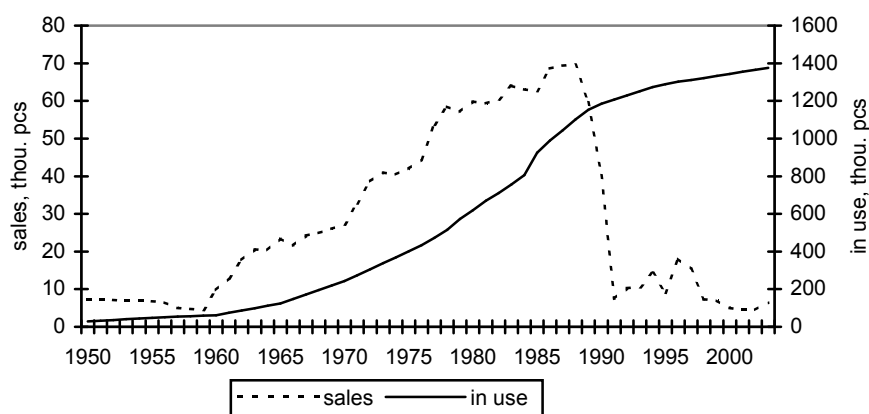


Fig. 1. Tractors in use and purchases of brand-new tractors in Polish agriculture

After 1956, the state authorities gave up the idea of forced agricultural collectivization. As a result, Poland was the only country in Central and East European socialist block, where private sector agriculture dominated. However, for doctrinal reasons, private farmers were not permitted to buy tractors (unless purchased for „hard” currency). That is why in spite of the increase in the number of tractors in agricultural circles, animal power dominated on private farms with a 70% share in total power resources in

1970. Besides, the tractors of the agricultural circles were only in 20-30% engaged in services for farmers. The dominant work assignment for the tractors was as transport services for state industrial enterprises.

The decrease in the number of horses only started during the seventies, when private farmers were allowed to buy tractors (at the beginning second-hand from state farms and agricultural circles, then also the brand-new ones). The appearance of private farmers on the farm machinery market caused the demand for tractors in Poland to increase. During the seventies and eighties tractors were mainly supplied by the national factory „Ursus” and partly by imports from Czechoslovakia and the Soviet Union. At that time the government established the price of farm machines as well as of other goods. The price relationship between farm machines and agricultural products were, in general, favorable for farmers. This fact and the low number of tractors in use on farms caused that the market demand was higher than the supply.

The situation of the farm machinery market, both as seen from qualitative and quantitative points of view, is strictly linked with the stage of development of agricultural mechanization. At the beginning of the process, starting theoretically from a moment when the first machine of a given kind was purchased and introduced into agricultural production, all purchases were considered as new investment. At the beginning the number of machines sold was low, and the increase of machines in use was slow as expressed in absolute values, but very fast in relative (%) values, because of the very low starting point. At this stage of the motorization process the value of reproduction index is high. In the year when first tractor was purchased it amounted to 100%, no matter how many tractors were purchased. In Poland, in 1950 it amounted to 25% even though the sales amounted to only 7.3 thousands pieces. During next years the value of the index had a decreasing tendency as the number of tractors in use was increasing (Fig. 2).

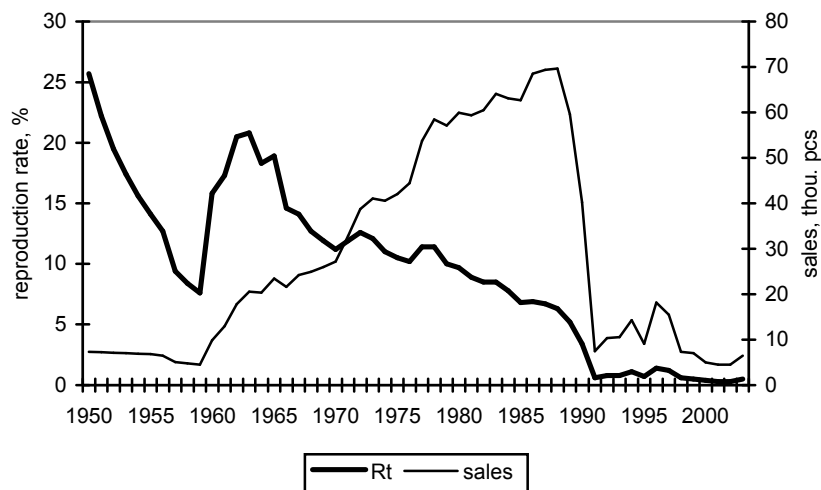


Fig. 2. Reproduction rate of the tractor fleet in Poland

In the next (second) stage, the rate of absolute increase in the number of machines in use became more and more dynamic along with the gradual decrease of the relative growth. Most of the purchases at this stage were still considered as new investments, but

with a growing share as replacements. At this stage the sales of machines achieved the highest level. In Poland during the years 1960-1963 the value of reproduction rate (Rt) of tractor fleet was growing thanks to the dynamic increase in sales. However, since 1964 the decrease of Rt value was observed even though until 1989 the sales had, in general, an increasing tendency. The growth in the number of tractors in use was more dynamic than the growth of sales. Dramatic fall of sales in the nineties and at the beginning of the 21st century resulted in an even more dramatic decrease of reproduction rate of tractors in Poland. There is a danger of the decapitalization of resources and the break up of the technological advances achieved. In Poland the average value of the reproduction rate of tractor resources for 1990-2003 amounted to 0.90%. The value of the respective index for 15 „old” EU countries ranged between 1.96 in Denmark and 2.99 in the UK.

The present situation on the tractor market is caused by the structure of farms as well as by productivity and profitability of agricultural production. In 1996 there were 3067 thousand farms in Poland, of that 2147 thousand farms with the agriculturally utilized area (AUA) larger than 1 ha. In 2002, when compared to the situation from 1996, the number of farms decreased by 4.3%. The average AUA of 1 farm in 2002 was 5.76 ha and was bigger by 1.8% than in 1996. The area of 1 farm with AUA more than 1 ha amounted to 8.44. The acreage of AUA on farms in 2002 was 16.9 million ha, of which 13.1 million ha of arable land, 271.0 thousand ha of orchards, 2.5 million ha of meadows and 1.0 million ha of permanent pastures.

Small average size of farms is one of reasons of high number of persons engaged in farming, as related to the AUA. This is one of causes of low labor productivity in Polish agriculture.

In Poland, the average income from farming amounted to 716 euro per hectare of AUA in 2002. The average expenditures of farmer households amounted to 6279 euro per year. Labor productivity, measured in terms of Gross Value Added per one person working in agriculture, compare badly with other countries. In 2002, Gross Value Added per one person working in agriculture amounted to 2497 euro (almost 8 times lower than in Germany).

The fragmentation of farms, poor basic infrastructure, a small scale of production have limited the ability of the majority of farmers to invest in modern means of production. Delays in structural transformation, low levels of education, lack of specialization and under-developed links between agriculture and business, low scale of production and high employment on most households hamper the modernization of farms.

The transformation from central planned economy to the market one, started in Poland in 1989, placed home agriculture in a new position. The liberalization of prices in 1990 resulted in deteriorating relationships between market prices of agricultural products and prices of means of production for farming. Very high inflation during the first years of transformation produced a dramatic rise in the prices of credit.

During the transition period in Poland prices of tractors as expressed in units of measure of agricultural products had an increasing tendency (Fig. 3).

This was the main reason of low profitability of farming and of limited ability to invest in farm machinery. Difficult economic situation in Polish agriculture generates a recession on farm machinery market. A more rapid increase in machinery prices than agricultural product prices is a major factor affecting the demand. At the beginning of the XXIth century, the sales of brand new tractors amount to about 10% of the level achieved at the end of 1980's. In 2002, the shipments of brand new tractors as related to

the number of tractors in use amounted to 0.3%. Demand for tractors decreased as their prices grew.

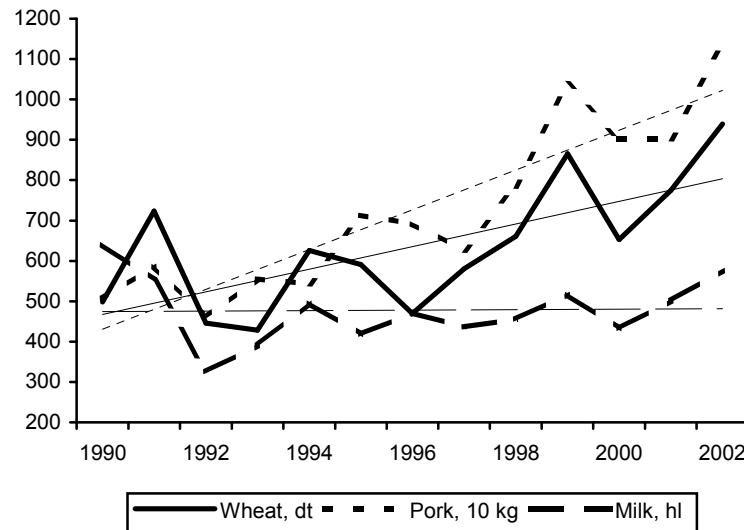


Fig. 3. Price of 28 kW tractor in units of measures of selected agricultural products

As a result, also the production and sales of tractors for Polish agriculture had a decreasing tendency (Table 1).

Table 1. Production and sales of tractors in Poland

| Year | Production | Sales |
|------|------------|-------|
| 1990 | 36000 | 40200 |
| 1991 | 17500 | 12600 |
| 1992 | 8017 | 9646 |
| 1993 | 11480 | 10552 |
| 1994 | 15277 | 11024 |
| 1995 | 21500 | 9030 |
| 1996 | 24118 | 18126 |
| 1997 | 22793 | 15418 |
| 1998 | 13916 | 7302 |
| 1999 | 8272 | 5247 |
| 2000 | 7180 | 3715 |
| 2001 | 5703 | 4523 |
| 2002 | 5104 | 4473 |
| 2003 | 5770 | 7491 |

Sources: [Market of product...:2000, 2003, 2004]

Only in the mid-nineties the short period of increase was observed, followed however by a fall in the next years. In spite of this, the number of tractors in use in Polish agriculture was growing. In 2002, there were 1364.6 thousand tractors on farms, by 15.2% more than in 1990 and by 4.7% more than in 1996. On private farms the increase

was, respectively, 31.8% and 6.9%. The growth in the number of farm machines in Poland results from imports of second-hand machines and prolongation of their working life.

In the public sector the amount of tractors was systematically decreasing, which was connected with the change of proprietary structure in the agriculture. As compared to 1990, the number of tractors decreased in the described sector by 92.4% and as compared to 1996, by 56.6%. In 2002, there were about 8 tractors per 100 ha of AUA in Poland. In the structure of tractors, the vehicles with the medium power dominate (Fig. 4)

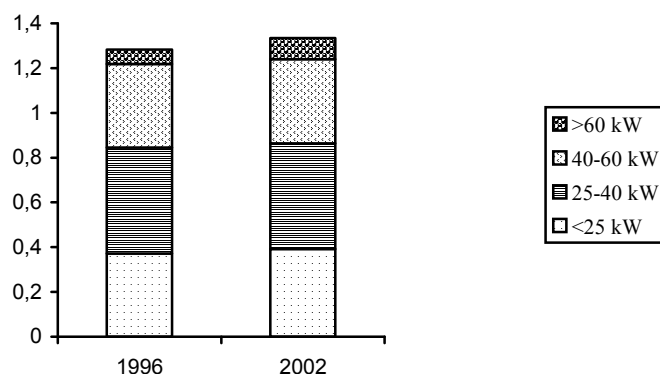


Fig. 4. The structure of tractors according to the power of engines in 2002

As compared to the situation of 1996, the share of tractors with the engine power over 60 kW is growing. However, about 63% of tractors in use have engines up to 40 kW. The share of higher power range tractors was increasing proportionally to the growth of the AUA of farms. Tractors of 60 kW and more amount to 2.9% of total tractors in the group of farms 1-5 ha AUA and 45.8% in the group of farms of 50 and more ha AUA.

In 2002, as compared to 1996, the number of tractor owning farms increased by 2.1% and was 1075.6 thousand, which made up 36.7% of the farms in total.

Under the present difficult situation in Polish agriculture, only few farms of the highest scale of production can afford to buy brand new tractors, including high-tech imported machines. On large farms more and more powerful tractors are needed. The demand for high quality modern machinery ensuring efficiency and comfort on the part of rapidly growing farms is increasing. Imports of farm machinery from western countries keep increasing. Small farmers buy rather second-hands. A relation between farm size and quality of purchased machinery is becoming more and more visible.

In 2003 the sales of tractors were by 67% higher than in 2002. The power of sold tractors grows. During the years 2000-2003 the share of tractors with engines below 18 kW decreased from 6.2 to 0.9%. The number tractors in this power group decreased by 86% (Fig. 5).

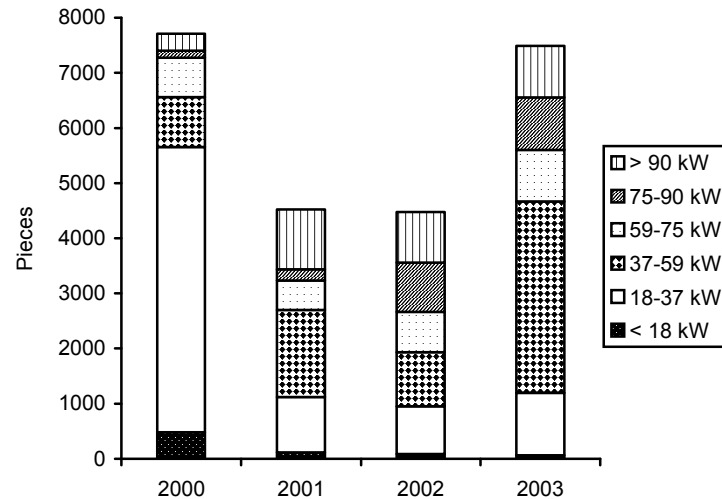


Fig. 5. Structure of tractor sales according to engine power

The number of sold 18-37 kW tractors also decreased, by 78%. Their share on tractor market decreased from 67.1% to 15.1%. At the same time the shipments of 75-90 kW tractors increased by 661% and tractors with engines over 90 kW by 203%, and their share, respectively from 1.6% to 12.7% and from 4.0% to 12.5%. The most important increase in absolute value was observed in the power group 37-59 kW. The relative growth was less important (284%). This category of tractors dominated in 2003 sales with a share of 46%. The per cent share of 59-75 kW tractors increased too (by 30%), but without as significant change in absolute values as in the group 37-59 kW.

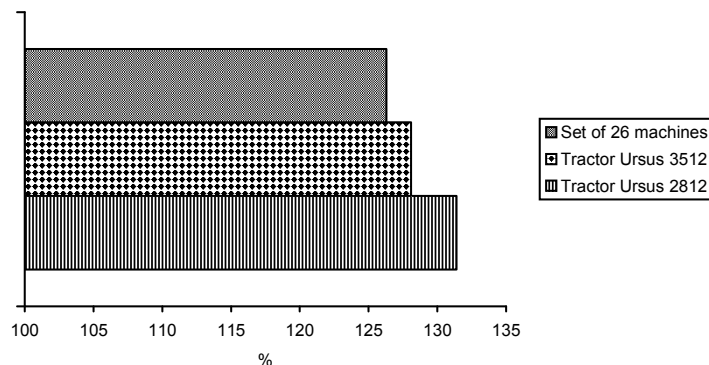


Fig. 6. The rise in prices of the selected machines in Poland until June 2004. December 2003 = 100

The accession of Poland to the European Union in May 2004 was connected with imposition of 22% VAT on farm machines. This caused a dramatic increase in the prices of tractors and farm machinery (Fig. 6).

The growth in the prices of farm machinery exceeded the rate of VAT. Therefore, the tax was not the sole reason for this growth. There were others, like the rise in steel and energy prices.

In the the second half of 2003 and the first months of 2004 the increased demand for tractors and other means of mechanization was observed in Poland. There were two main reasons for this increase: implementation of Special Accession Programme for Agriculture and Rural Development (SAPARD) and eagerness of farmers to realize investments before the imposition of 22% VAT on farm machines. When compared to the first half of 2003, the number of brand-new tractors purchased during the first six months of 2004 was by about 70% higher. Consequently, the production of tractors increased by 62%. The rise in prices of tractors stopped the increase of demand for farm machinery.

Accession of Poland to the European Union will improve the situation on tractor market already in 2005. Possibilities given by CAP to farmers will enlarge the number of potential buyers of brand new equipment. In effect, the reproduction rate of tractor resources will be slowly growing after accession.

Instead, there are not significant changes in international tractor trade between old 15 EU countries and Poland. Already before the accession, the liberalization of import regulations and suspension of border payments with imports of agricultural machinery resulted in a much broader availability of most modern farm equipment and machinery for farms generating high profits. Stronger market competitiveness and increasing cooperation of Polish producers with foreign companies force the producers to improve the quality of their machinery. The importance of those factors will grow after the accession of Poland to the EU.

CONCLUSIONS

A more rapid increase in tractor prices than in agricultural product prices and reduction in incomes generated by agricultural production are major factors affecting the demand for tractors in Poland.

Only few farms with the highest scale of production invested in brand new equipment, including high-tech imported machines. Other farmers purchased second-hands. A relation between farm size and quality of purchased machinery is becoming more visible. Tractors and farm implements are growing older and the technological advance is slow in Polish agriculture.

In Poland, the increase in number of tractors in use was due to imports of second-hands and their working life prolongation, especially on small farms.

An increase in the number of produced and sold tractors in the second half of 2003 and first months of 2004 was due to the implementation of Special Accession Programme for Agriculture and Rural Development (SAPARD) and eagerness of farmers to realize investments before imposition of 22% VAT on farm machines.

The accession of Poland to the European Union in May 2004, connected with imposition of 22% VAT on farm machines, caused a dramatic rise in the prices of tractors and farm machinery.

The accession of Poland to the European Union will improve the situation on the tractor market not earlier than in 2005. Thanks to the possibilities given by Common

Agricultural Policy a number of farmers able to carry into effect machinery investments will grow. In effect, the reproduction rate of tractor resources will grow after the accession.

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