

Extended Abstract

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Paper	Research on overinvestment of farms - the example of Poland
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Abstract prepared for presentation at the 98th Annual Conference of The Agricultural Economics Society will be held at The University of Edinburgh, UK, 18th - 20th March 2024.

Abstract	<i>200 words max</i>
<p>Agriculture is not only one of the sectors of the economy, but also an economic and social system that ensures food security. In terms of investment, agriculture is a specific sector of the economy, as it requires a large commitment of fixed assets (machinery, buildings, etc.), with relatively little use of them. The primary purpose of investment in agriculture is to improve labor productivity and the accompanying increase in income or production. Overinvestment in farms, understood as an increase in the technical armament of labor that is not accompanied by an adequate change in labor productivity, can give rise to a number of consequences. One of them may be adverse changes in productivity and profitability on extremely overinvested farms. The study assessed 3274 farms in terms of their affiliation with the level of investment, using the author's method of measuring it. Overinvestment was present on some of the farms surveyed, especially on those that received investment support under the Common Agricultural Policy. This indicates a certain extent of irrational spending of public funds. The conducted research indicates the need for better monitoring of investments at the microeconomic level, especially investments made in farms benefiting from investment support.</p>	
Keywords	investment in agriculture, overinvestment, farms, farm productivity
JEL Code	C10, C18, D20, D24, D29 see: www.aeaweb.org/jel/guide/jel.php?class=Q)
Introduction	<i>100 – 250 words</i>
<p>Investments are the development core of every economic operator and the driving force for national economic development. The growth in global population makes it imperative to increase agricultural production volumes which, in a context of technical progress, must involve investments. While finding the optimal investment point is extremely difficult, every operator may seek to attain a level of fixed assets which will allow them to maintain an increase in production and keep their incomes flowing. The difficulties in finding that optimum may lead to overinvestment. This, in turn, sometimes has a declining effect on production, which is particularly dangerous in the context of maintaining food security. The purpose of research is to identify the relationship between investment levels, the use of productive inputs, and growth or decline in production (output) levels.</p>	
Methodology	<i>100 – 250 words</i>

The farms were divided into those that are subsidized by investment grants from CAP public support and those that are not. Agricultural overinvestment can be defined as a condition where investments are excessively high compared to the production potential. Two essential parameters need to be developed in order to determine the levels of overinvestment: the assets-to-labor ratio and labor productivity. This research assumes that increasing the value of farm assets through investments is a reasonable thing to do if it results in a proportional growth in labor productivity.

The calculations were based on microdata and used the FADN's system variables. Panel data was created by calculating two-year arithmetic means for each group, which resulted in obtaining 5 periods. Growth/decline rates were calculated as the next step.

$$LP_t = \frac{\sum_t^{t+1} \left(\frac{SE410 - SE360 - SE406 - SE605}{SE010} \right)}{2}$$

$$\Delta LP = \left(\frac{LP_{t5} - LP_{t0}}{LP_{t0}} \right) * 100\%$$

where:

LP_t: labor productivity in period t

LP₀: labor productivity in the base period

ΔLP: change in labor productivity

SE410: gross value added

SE360: depreciation

SE406: investment subsidy installments

SE605: operating subsidies

SE010: total labor inputs (AWU)

Next step:

$$ALR_t = \frac{\sum_t^{t+1} \left(\frac{SE441 - SE446}{SE010} \right)}{2}$$

$$\Delta ALR = \left(\frac{ALR_{t5} - ALR_{t0}}{ALR_{t0}} \right) * 100\%$$

where:

ALR: assets-to-labor ratio in period t

ALR₀: assets-to-labor ratio in the base period

ΔALR: change in the assets-to-labor ratio

SE441: fixed assets

SE446: land, permanent crops and production quotas

SE010: total labor inputs (AWU)

After calculating the two parameters necessary to determine investment levels, farm data was distributed between the groups in accordance with the author's own methodology.

I. Absolute overinvestment.

II. Relative overinvestment.

III. Underinvestment.

IV. Optimum investments.

V. Optimum investments with no increase in the assets-to-labor ratio.

Results

100 – 250 words

1. The distortion of the relationship between factors of production has been proven, as indicated by the situation of the farms overinvested absolutely. These farms were accompanied by an increase in land resources by 14%, while an increase in capital resources by 46% in the group of farms benefiting from investment support, as well as a decrease in land resources of land by 3% and an increase in capital resources by 34% for farms not from investment support.
2. Income performance of farms worsened only in farms underinvested and overinvested absolutely.

3. An average annual basis, there was a decline in output in farms at both relative and absolute overinvestment levels, and in underinvested farms. It was established that unfounded investments are not accompanied by growth in production value, and that lack of investments does not boost production either. Another important finding is that the average annual production decline rate was only 0.47% in farms affected by relative overinvestment, but was as much as 2.58% in members of the “absolute overinvestment” group. In the context of the analysis of their economic performance, it can be expected that members of the “relative overinvestment” group are not currently witnessing any increase in output due to considerable growth in capital inputs. However, in the long run, they can be reasonably expected to move to the “optimum investment” group.

Discussion and Conclusion	100 – 250 words
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This study demonstrated the existence of a series of farm groups which are more or less rational in their approach to investments. The worst production performance, reflected in an absolute decline in labor productivity, was witnessed in holdings which invested either too little or too much in relation to their production capacity. Underinvested farms can experience a gradual decline in agricultural production caused by being non-competitive. Overinvested farms, made major mistakes in planning and implementing their investments, which is a more serious problem. It is also worth noting that overinvestment is indicative of having allocated considerable financial resources to investments which ultimately did not contribute to improving the farm’s economic situation. In fact, it was quite the opposite, they brought a significant deterioration in it. Another equally important remark is that overinvested holdings intended to develop their activity rather than to restrict it. Hence, in the future, misallocated investment funds may require such farms to adjust their unplanned development path, or even to discontinue agricultural operations.