

Elżbieta Jadwiga Szymańska

THE IMPORTANCE OF INVESTMENT IN THE DEVELOPMENT OF PIG FARMS IN POLAND

ZNACZENIE INWESTYCJI W ŚRODKI TRWAŁE W ROZWOJU GOSPODARSTW TRZODOWYCH W POLSCE

Department of Economics and Organisation of Enterprises, Warsaw University of Life Sciences – SGGW
ul. Nowoursynowska 166, 02-787 Warszawa, e-mail: elzbieta_szymanska@sggw.pl

Streszczenie. Celem badań było określenie znaczenia inwestycji w rozwoju gospodarstw trzodowych w Polsce. Podstawę analiz stanowiły gospodarstwa wyspecjalizowane w produkcji żywca wieprzowego, które nieprzerwanie prowadziły rachunkowość w ramach polskiego FADN w latach 2005–2010. Badania wykazały, że w wyniku dokonanych inwestycji zwiększyła się wartość środków trwałych w gospodarstwach. Udział dopłat w finansowaniu inwestycji był mały, chociaż w kolejnych latach zwiększał się, osiągając poziom 11,4% w 2008 roku. Dzięki zrealizowanym inwestycjom było możliwe zwiększenie skali produkcji. Jednocześnie przyczyniły się one do wzrostu produktywności ziemi o 18,7% oraz pracy o 30,7%. Odmienna sytuacja wystąpiła w zakresie produktywności środków trwałych, która w kolejnych latach zmniejszała się. Może to wskazywać na przeinwestowanie gospodarstw trzodowych i brak możliwości wykorzystania zdolności produkcyjnych.

Key words: development, investment, pig farms, productivity of resources.

Słowa kluczowe: gospodarstwa trzodowe, inwestycje, produktywność zasobów, rozwój.

INTRODUCTION

Supplying farms with production fixed assets affects significantly their economic situation as the structure of productive assets decides about the farms' production capacities. Accurate adjustment of the farm equipment to the type of production is equally important. The aim of the investment may be introduction of new technologies, improving the quality of production, diversification of farm businesses towards, for instance, non-agricultural activities or adaptation of agricultural production systems to the requirements of natural environment protection (Woś 2000). Investment is one of the crucial agents of agricultural modernization.

The main goal of investment undertakings is to replace live work with capital, which is due to the changes in price of production factors, among which the most dynamic are the labour costs (Ziętara 2008). This results in specific consequences for the economy and organisational structure of the farms, where labour-saving is prioritized and so are the capital-intensive techniques and technologies (Runowski 2009).

Investment conditions for farms in Poland are varied. They may be inherent in the farms or conditioned by their surroundings. A decisive factor can be the farmer's willingness to invest, as he may either manifest a pro-growth attitude or be consumption-oriented. The direction and objective of investment undertakings are often determined by environmental conditions in which

a farm business is operating. It necessitates equipping farms with adequate plant and machinery needed to carry out production in particular conditions. Investment is conditioned, to a large extent, by the chosen type of production or the type of agricultural holding (Zajac 2012).

Integration of the Polish economy with the EU and covering Polish agriculture by the Common Agricultural Policy (CAP) gave an important impetus to the growth of farms and rural areas owing to increased financial support and improved business climate (Grzelak 2013). These are mostly large farm estates that benefited from investment co-financed by the EU funds. As a consequence, EU aid funds caused polarization of agricultural development and gave rise to processes of concentration and specialization. Another occurrence was the improvement of labour and capital profitability in the farms that carried out investments financed under the Rural Development Programme (RDP) and the Sectoral Operational Programme (SOP). At the same time, the impact of instruments supporting investment on the agricultural income was relatively smaller than price relations and direct payments (Wigier 2009).

Investment is the foundation for sustainable competitive advantage, allowing to gap the bridge between agriculture and other sectors of economy in relation to the use of modern technology, organization of production or management methods. The research objective was to determine the importance of investment in the development of pig farms in Poland in the years 2005–2010.

RESEARCH METHODOLOGY

In terms of theoretical analysis, the study looked into the development of economic entities based on reference books. As for empirical work, the author applied findings stemming from the observation of agricultural holdings specializing in live pig production, in which the share of pigs in the commodity production was 60% and more. The surveyed farms kept accounting ledgers for the years 2005–2010 as required by the Polish Farm Accountancy Data Network. During the considered period there were 951 such farms. The research was based on farm data referring to the amount of gross and net investment, calculated in line with the FADN methodology. Gross investment means the value of purchased and produced fixed assets less the value of fixed assets which were sold and transferred free of charge in a given financial year while accounting for the difference in the livestock (Goraj 2011). The net investment, in turn, covers the gross investment less depreciation calculated for a financial year.

To assess the development of agricultural holdings, productivity indicators determined by the added value in relation to the basic factors of production: land, labour and capital were used. The added value includes all benefits generated in an agricultural holding and then collected by the owners, workers, capital providers and the state, or left in the holding. It reflects the increased value of the goods produced in a farm and it simultaneously measures the farm's contribution to national income (Kulawik 1997). The relation between the added value and the factors of production allows to assess the use of the farm's resources. The calculations are made at current prices. The choice of productivity indicators was dictated by changing economic conditions and growing market competitiveness which compels farm holdings to manage their resources wisely. What is more, it is necessary to evaluate the use of resources so as to be able to assess their actual revenues and to determine the farms' development opportunities.

DEVELOPMENT AND INVESTMENT IN ECONOMIC THEORY

In terms of general economy, development denotes the long-lasting and complex process of positive quantitative and qualitative changes, owing to which in the sphere of any business, be it cultural or social, in relations of production, social, political and structural nature, existing phenomena are refined and new phenomena appear (Kupiec 2008). In economic terms, development can be understood as qualitative and structural changes being the consequence of economic growth which, in turn, means increased country's capacity to produce socially desirable goods and services (Nasiłkowski 2007). According to Gabrusewicz (1995) agricultural development means a long-lasting, purposeful process of quantitative and qualitative changes, fundamentally transforming the internal structure and operations of entities thus contributing to the improved efficiency and increased value of their operations.

According to Rokita (Metody...1988) a production enterprise develops when there is a close relationship between the spheres of production and consumption. Their mutual interaction raises different preferences in terms of needs, satisfaction of which is the social rationale. Diversity of needs is a causative factor of development targeted at satisfaction thereof. The status and structure of these needs are the external criterion of functioning and development of an enterprise.

Investment in agriculture can be seen as a long-term allocation of financial resources for economic purposes, which leads to accumulation of capital (Brandes and Odening 1992). Expansion of farm resources allows to increase production and it is conducive to its development in the long term. Investment in fixed assets means investment which is associated with capital spending on tangible fixed assets (Róžański 1998). It is carried out, depending on the adopted strategy, in order to increase the scale of production, diversify activities, change the range of goods, improve the quality of production, increase the profitability of enterprises and improve their competitive position (Kusz 2007). With regard to their purpose, replacement and development investments can be distinguished.

- Replacement investment (restitutive) consists of replacing used fixed assets with new ones, whose role is to maintain the existing production potential of the business entity. During the reproduction, used fixed assets are modernized (reconstruction, introduction of more efficient assets) as are production processes themselves; therefore this type of investment is referred to as reconstruction and modernization;
- Development investment consists of increasing the ownership of fixed assets and in result, it contributes directly to the increase of a business entity's production capacity.

Owing to investment, fixed assets are reproduced after being used and ongoing investment develops the assets further. Of all investment in agricultural holdings the dominant ones were productive property investments (Ziółkowska 2006) which most often result in increased efficiency of the farming and production potential, as well as in the competitive strength of agricultural holdings.

RECENT STUDIES IN THE FIELD OF INVESTMENT

In the second half of the twentieth century, Manteuffel (1966) raised the issue of efficiency of investment in agriculture. In studies on the effects of agricultural mechanization he stated

that as farms become more mechanized, a reduction in employment in the agricultural sector can be seen, and yet, the costs of labour remain unchanged due to the raise in wages. Although the costs of mechanization also increase, their percentage share in the gross income decreases. On the other hand, with increasing mechanization, the use of assets decreases leading to excessive costs. The phenomenon of over-investment was also explored by Wojtaszek (1961) in his studies on English agriculture. According to him, in the mid-twentieth century England excessive equipment of farms with machinery led to a reduction in the net income by 1/3, and also resulted in the decrease in productivity.

The issue of investment processes in Polish agriculture was also analysed by Grzelak (2013). In a study conducted in 2012 he rated as positive recent trends in the investment activities of agricultural holdings in the period 2000–2011, while highlighting their considerable variation depending on the scale of production. He said that running investment processes can bring multiple effects in those units that actively benefit from support schemes under the CAP, however, they may also contribute to further polarization of farms in the country. Kusz (2009), in turn, analysed the issue of diversification of investment in the regional dimension. He proved in his research that in Poland there is a problem of spatial diversity of investment. The main reason for such an occurrence are differences in the farms' ability to generate income. He claimed that if such a trend persists, disparities in Polish agriculture will deepen. This was also confirmed by the studies of Dziwulski (2013), who showed, basing on the CSO data, that the investment made in the sector of agriculture and hunting in Poland are significantly differentiated regionally and contribute to the growth of differences in the technical equipment of farms in different regions.

The research conducted by Józwiak (2008) proved that there is a significant difference in investment efficiency among Polish farms, depending on what their economic size is. In part this has to do with the issue of spatial diversification as Polish farms are characterized by a high degree of polarization of economic strength depending on the region in which they are located. The research shows that farms with economic size not exceeding 8 ESU are characterized by stagnation in investment in the owned assets, which means that they do not develop their agricultural business activity. In addition, investing free capital in economically weak farms generates losses. Whereas stronger economically farms show higher propensity to invest, but the rate of investment in their case is still not sufficiently high. Attention to the issue of diversified circumstances of agricultural investment was also drawn by Gołębiowska (2010) who divided them into internal, that is inherent within the farms and external ones, i.e. present in the surroundings. One important factor differentiating the level of investment in the agricultural sector is the strength of relationship between the farms and their surroundings.

In the world literature, the topic of investment in agriculture is part of more general issues of development economics dealing with aspects of economic development in low-income countries. It emphasizes the importance of agricultural investment for the development of many countries, mainly in terms of its potential to improve the quality of life, as well as its role in ensuring food security in the world. It is important in view of the issue of the fast growing population, especially in Asia and Africa. In a study conducted for the FAO by Miller et al. (2010) it is

concluded that investment in agriculture plays a key role in supporting the agricultural sector in developing countries as it contributes to economic growth, increase in productivity or reduction of poverty, while positively affecting sustainable development of agriculture. This thesis was also supported by Kusz et al. (2013) who have found in the studies of endogenous determinants of investment in agriculture that it is a key factor in economic and social development of the country.

According to Mikołajczyk (2006), investment is necessary to reproduce and develop production capacity in order to improve profitability and competitiveness of Polish agriculture. Whereas according to Józwiak and Kagan (2008) investment undertakings are evidence of commercial activities, modernisation of farms and the scaling-up of production. Productive investment therefore is crucial for the development opportunities of farms. It indicates that a farmer expands his fixed asset inventory or increases its quality, which shall contribute to the increase in his farm's potential in the future. Improving technical work as well as introduction of modern machinery and equipment in agricultural production leads to increased productivity in both crop production and livestock. This is largely possible due to investment activities.

INCREASE IN THE RESOURCES OF PRODUCTION FACTORS IN FARMS EXAMINED

According to Józwiak (2010), stable conditions for development are to be found in those farms that are able to make investment paving the way for changes in the production structure and improved product quality. Whereas Wilkin (2007) claims that development opportunities refer to farmers-ranchers' households, but they are dependent on the their owners' (users) capacity to cope with competition. Existence and development of a farm in competitive economy is conditioned upon optimal competitive performance (Kwejt 1998).

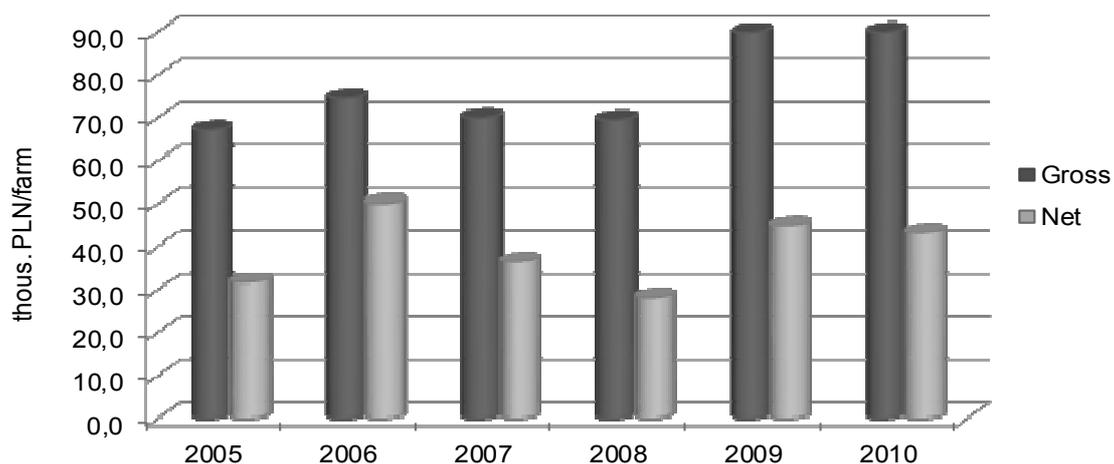


Fig. 1. Gross and net investment in analysed farms
Source: own study based on FADN data.

In the farms surveyed in years 2005–2008, average value of gross investment was maintained at a similar level and amounted to approximately 70.000 PLN (Fig. 1). The value of net investment, due to different levels of depreciation varied in the range of 28.300 to 50.100 PLN. The highest value was reported in 2006 and the lowest in 2008. Over the next years the rate of farmers'

investment was definitely higher. The gross investment value reached 90.000 PLN, whereas the net investment amounted to approximately 44.000 PLN.

As for the surveyed farms' equipment with the basic production factors (land and labour) in 2005–2010, no significant changes have been reported. Size of agricultural land owned increased from 30.27 to 33.05 ha, with the share of leased farmland of approximately 26.7% (Fig. 2). In turn, labour force accounted for an average of 1.87 to 1.89 persons employed on a full-time basis.

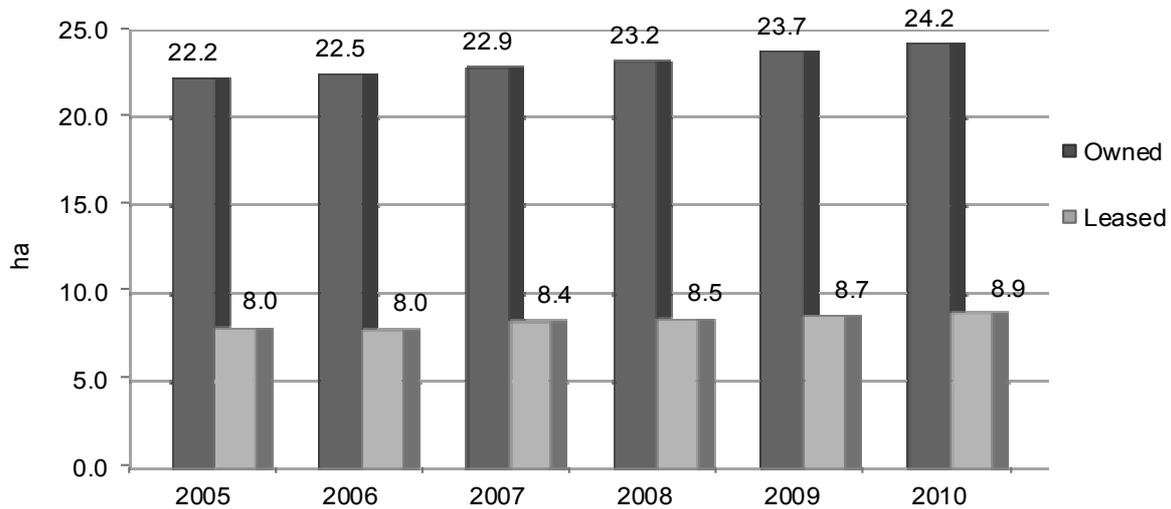


Fig. 2. Changes in the area of owned and leased farmland
Source: own study based on FADN data.

More significant changes occurred in the value of fixed assets¹. In 2005 an average value per farm was 383.800 PLN (Fig. 3). Over the next three years it has amounted to 14.6%. A considerable increase in the value of fixed assets was observed in the years 2009-2010. At the time they reached 463.200 PLN. Compared to 2004 the value of fixed assets increased by 22.3%.

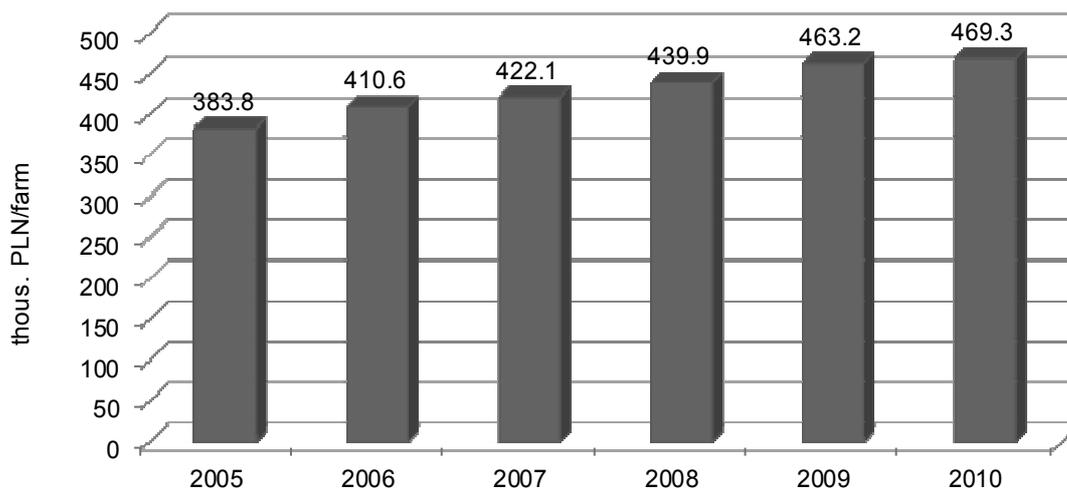


Fig. 3. Changes in the value of fixed assets excluding agricultural land
Source: own study based on FADN data.

¹ Value of fixed assets does not include the value of agricultural land. This is due to changes in the methodology of calculating the value of farmland under the Farm Accountancy Data Network (FADN) introduced in 2009.

This resulted mainly from investments made. In the years 2009–2010 most funds were allocated to fixed assets, majority of which came from earned income and loans. In the years 2005–2006 the share of subsidies for investment was less than 1% of the gross investment but over the next years their proportion increased to 11.4% in 2008.

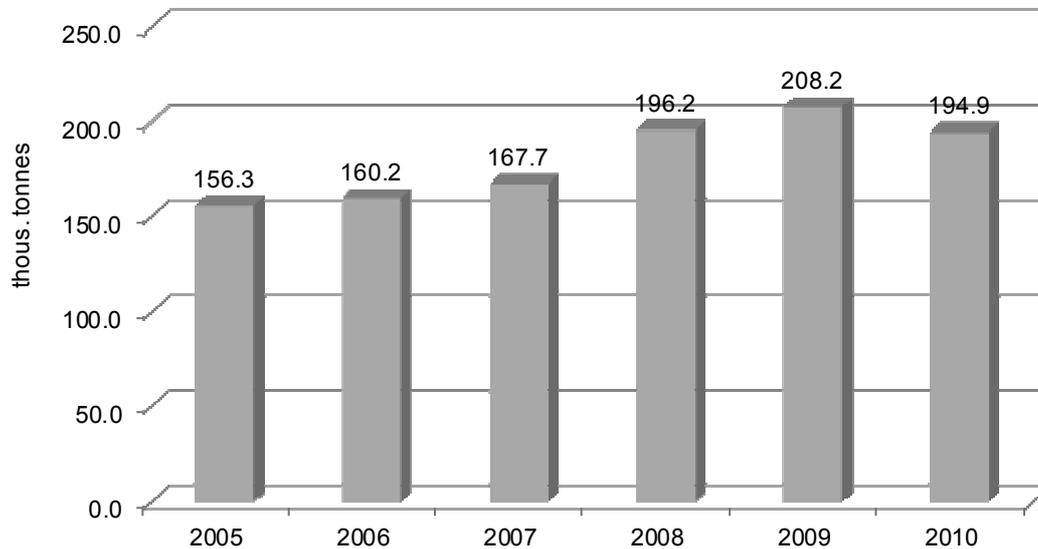


Fig. 4. Changes in pork production in the analyzed farms
Source: own study based on FADN data.

Realized investments contributed to increased productive potential of agricultural households. The scale of pork production in the analysed farms in the years 2005–2009 increased from 156.300 to 208.200 tonnes in 2009 (Fig. 4). This increase was due to the fact that the analysed farms specialized in the production of live pig and despite the downturn in the market kept increasing their scale of production. The reduction in the scale of production occurred only in 2010.

INCREASE IN RESOURCE PRODUCTIVITY ON FARMS

Improved productivity in an open economy is a key element of sustainable income growth in agriculture. The research shows that upon Polish accession to the EU there was an increase in productivity of land and labour in Polish agriculture. However, productivity of production factors in the country is still at a lower level than in developed countries. This is due to many factors, including the difficult situation on the labour market, preventing the outflow of excessive labour force from agriculture to other sectors of economy. The increase in agricultural productivity is also hampered by unfavourable agrarian structure and excessively slow biological and technological progress (Nowak 2012).

In the surveyed farms productive use of the basic factors of production developed in a similar way. Gross added value increased throughout the analysed period by 18.7% per one unit of UAA (Fig. 5). In the first years after the EU integration, land productivity was about 3.200 PLN/ha, except in 2006 when it totalled 3.500 PLN/ha. In turn, a higher productivity was reported in the years 2009–2010, reaching 3.800 PLN/ha.

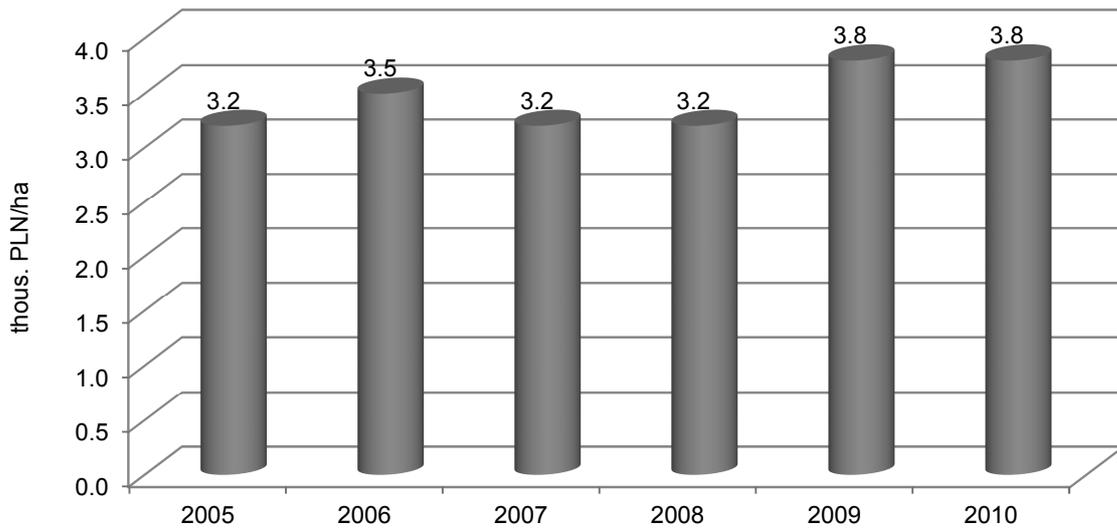


Fig. 5. Changes in land productivity of the surveyed farms
Source: own study based on FADN data.

An even greater increase occurred in the field of labour productivity (30.7%). In the years 2005–2008 an average value of this ratio varied in the range of 51.000 to 56.500 PLN (Fig. 6). A still higher level, exceeding 10.000 PLN, was reported over the next years. It can be thus concluded that the data prove that increased investment in fixed assets contributed to increased land and labour productivity.

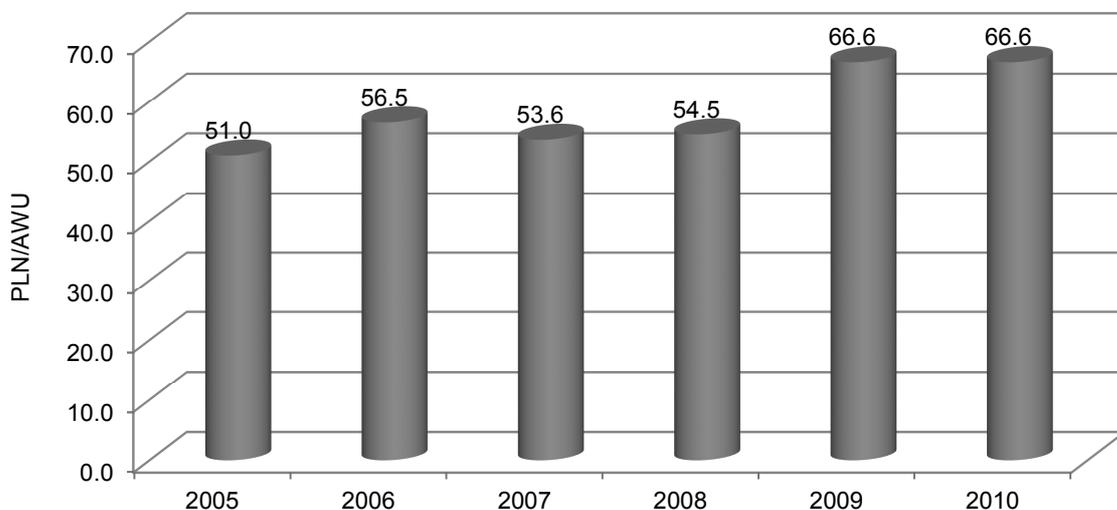


Fig. 6. Changes in labour productivity
Source: own study based on FADN data.

Similar trends were reported for fixed asset productivity. In the years 2005–2006 average value of this ratio increased from 0.25 to 0.26 PLN (Fig. 7). Over the next years the value of this ratio decreased to 0.23 PLN in 2008. Higher fixed asset productivity was reported in turn in the years 2009–2010, reaching 0.27 PLN. Fixed asset productivity depends on the situation on the live pig market. It may therefore indicate over-investment in pig farms and also lack of opportunities to use their full production capacity caused by the economic downturn in the market.

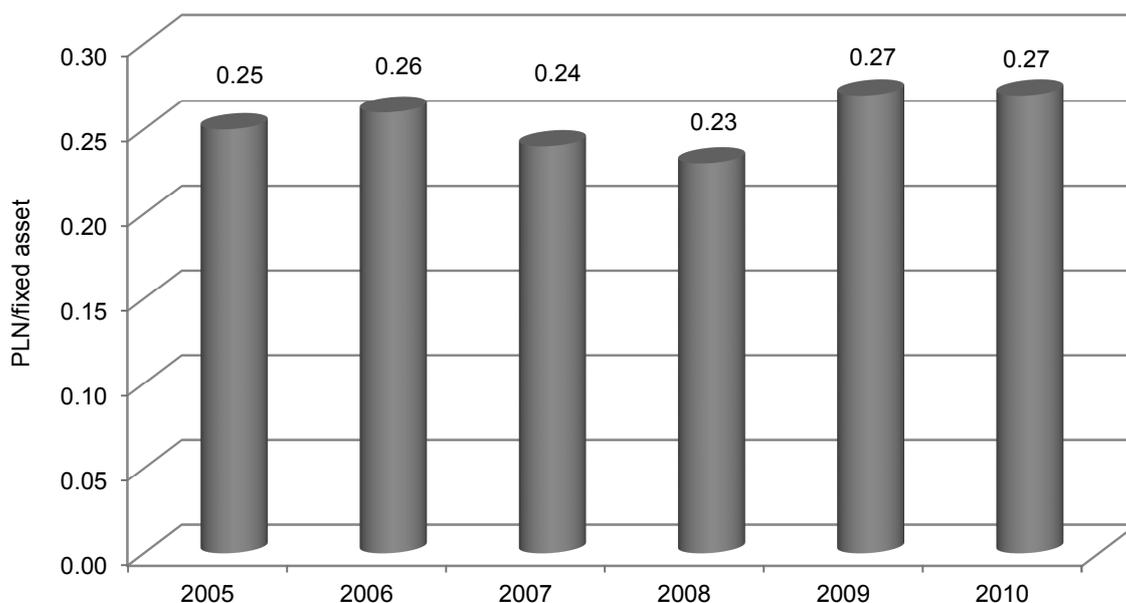


Fig. 7. Changes in fixed asset productivity (excluding agricultural land)

Source: own study based on FADN data.

CONCLUSIONS

The study conducted does not fully cover the issue of the importance of investment for the development of farms. However, some conclusions can be made on their basis.

1. In the farms surveyed over the years 2005–2010 no major changes in the area of agricultural land and labour resources could be observed. However, in result of investments completed, the value of fixed assets increased by more than 22.3%. The highest increase in the value of investments was reported in the years 2009–2010.
2. The source of finance was mainly earned income and foreign capital in form of loans. The share of subsidies from the EU programs in 2005–2006 was only 1% of the investment value. Over the next years the proportion of subsidies increased and in 2008 reached 11.4%.
3. The investments completed contributed to the increase of the farms' production potential. The scale of pork production in the farms surveyed over 2005–2009 increased by 1/3. Increased production volumes were also due to the fact that the surveyed farms specialized in the production of pigs and despite the market downturn kept increasing their scale of production.
4. The land and labour productivity increased during the considered period by 18.7% and 30.7% respectively, which likely indicates increased farm development. A similar situation was observed with regard to fixed asset productivity. This ratio changed over the next years from 0.23 to 0.27 PLN. This might have been caused by lack of opportunities to use the production capacity in periods of downturn in the live pig market.

ACKNOWLEDGEMENTS

The project was funded by the National Science Centre on the basis of the decision: DEC-2013/09/B/HS4/03606.

REFERENCES

- Brandes W., Odening M.** 1992. Investition, Finanzierung und Wachstum in der Landwirtschaft, Ulmer, Stuttgart, 6.
- Dziwulski M.** 2013. Regionalne zróżnicowanie nakładów inwestycyjnych w sektorze rolnictwa i łowiectwa w Polsce, *Rocz. Nauk. Ser.*, 3, 75–79.
- Gabrusewicz W.** 1995. Istota rozwoju przedsiębiorstwa, *Zesz. Nauk. Akad. Ekon. w Poznaniu, Ser. I*, nr 225, Poznań, 35–50.
- Gołębiewska B.** 2010. Kierunki podejmowanych działań inwestycyjnych w gospodarstwach rolniczych o zróżnicowanych powiązaniach z otoczeniem, *Rocz. Nauk Rol., Ser. G. T 97, 4*, 60–68.
- Goraj L.** 2011. Wyniki standardowe uzyskane przez gospodarstwa rolne uczestniczące w Polskim FADN w 2010 roku, IERiGŻ-PIB, Warszawa, 34.
- Grzelak A.** 2013. Ocena procesów inwestycyjnych w rolnictwie w Polsce w latach 2000–2011. *J. Agribus. Rural Dev.* 2 (28), 111–120.
- Józwiak W.** 2008. Efektywność funkcjonowania, aktywność inwestycyjna i zdolność konkurencyjna polskich gospodarstw rolnych osób fizycznych, IERiGŻ-PIB, Warszawa, 232–238.
- Józwiak W.** 2010. Strategie adaptacyjne gospodarstw rolnych w Polsce w latach dziewięćdziesiątych. 1998: http://www.krus.gov.pl/fileadmin/ moje_dokumenty/obrazki/kwartalnik/nr_1/kwrt_1_2.pdf [dostęp: marzec 2013].
- Józwiak W., Kagan A.** 2008. Gospodarstwa towarowe a wielkotowarowe, *Rocz. Nauk Rol. Ser. G. T. 95, 1*, 22–30.
- Kulawik J.** 1997. Rozwój finansowy a wzrost i rozwój ekonomiczny w rolnictwie. *Stud. i Mong.* 83. IERiGŻ, Warszawa, 46.
- Kupiec L.** 2008. Jaki rozwój? w: *Rozwój regionalny a rozwój zrównoważony*. Red. A.F. Bocian Wydaw. Uniw. w Białymstoku, Białystok, 22.
- Kusz D.** 2007. Działalność inwestycyjna gospodarstw rolniczych korzystających z funduszy strukturalnych Unii Europejskiej, *Probl. Rol. Światowego, T 2 (17)*, Wyd. SGGW, 140.
- Kusz D.** 2009. Zróżnicowanie regionalne nakładów inwestycyjnych w rolnictwie polskim, *Zesz. Nauk. SGGW – Ekon. i Org. Gospod. Żyw.* nr 75, Wydaw. SGGW, Warszawa, 79–89.
- Kusz D., Gędek S., Kata R.** 2013. Egzogeniczne uwarunkowania inwestycji w rolnictwie polskim. IX Kongres Ekonomistów Polskich, 28–29 listopada 2013 Warszawa. <http://www.pte.pl/kongres/referaty/Kusz> Dariusz, Gądek Stanisław, Kata Ryszard (dostęp: kwiecień 2014)
- Kwejt J.** 1998. Zarządzanie gospodarką materiałową. PWE, Warszawa, 231–237.
- Manteuffel R.** 1966. Efektywność inwestycji rolniczych, PWRiL, Warszawa.
- Metody oceny gospodarki majątkiem trwałym w przedsiębiorstwie.** 1988. (red.) J. Rokita, AE, Katowice, 13.
- Mikołajczyk J.** 2006. Inwestycje rolnicze w Polsce w latach 1990–2005, *Rocz. Nauk. Ser., T. IX, 1*, 316–319.
- Miller C., Richter S., McNellis P., Mhlanga N.** 2010. Agricultural investment funds for developing countries, food and agriculture organization of the united nations, Rome, 2–14.
- Nasiłkowski S.** 2007. System rynkowy. Podstawy mikro- i makroekonomii, Key Text, Warszawa, 377.
- Nowak A.** 2012. Zmiany wydajności rolnictwa Polski i innych krajów Unii Europejskiej. *Zesz. Nauk. SGGW w Warszawie – Prob. Roln. Świat. T. 11 (26), 1*, 130–139.
- Różański J.** 1998. Inwestycje rzeczowe w procesach rozwojowych przedsiębiorstw. Wydaw. Uniw. Łódź, Łódź.
- Runowski H.** 2009. Tendencje zmian w organizacji i ekonomice przedsiębiorstw rolnych – aspekty teoretyczne, *Zesz. Nauk. SGGW w Warszawie, Ekon. i Organ. Gospod. Żyw.* 75, SGGW, Warszawa, 202.
- Wigier M.** 2009. Ocena oddziaływania programów PROW i SPO na działalność inwestycyjną w rolnictwie. Konferencja IERiGŻ, 30 listopad – 2 grudzień 2009 w Pułtusku, www.ierigz.waw.pl/download/MzY5NA [dostęp: styczeń 2012].
- Wilkin J.** 2007. Uwarunkowania rozwoju polskiego rolnictwa w kontekście europejskim i globalnym. Implikacje teoretyczne i praktyczne. VIII Kongres Ekonomistów Polskich. Polska w gospodarce światowej – szanse i zagrożenia rozwoju, 29–30 listopada w Warszawie.
- Wojtaszek Z.** 1961. Problemy mechanizacji gospodarstw w Anglii – maszynopis.
- Woś A.** 2000. Inwestycje i akumulacja w rolnictwie chłopskim w latach 1988–1998. Komunikaty, Raporty, Ekspertyzy, z. 466, IERiGŻ-PIB, Warszawa.
- Zajac D.** 2012. Inwestycje jako czynnik modernizacji gospodarstw rolnych z działalnością pozarolniczą, www.ur.edu.pl/file/21668/24.pdf (dostęp: marzec 2014).
- Ziętara W.** 2008. Wewnętrzne uwarunkowania rozwoju polskiego rolnictwa, *Rocz. Nauk Roln. Ser. G, T. 94, 2*, 81.
- Ziółkowska J.** 2006. Mikroekonomiczna ocena efektywności finansowego wsparcia polskiego rolnictwa ze środków unijnych i krajowych w 2005 roku. *Kom. Rap. Eksp.* 522. 6.