

## **Effects of the Common Agricultural Policy on Non-Family Farm Employment in Primary and Secondary Agricultural Areas**

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### Abstract

The study examines the effects of Common Agricultural Program (CAP) assistance on the potential job creation in rural areas of Poland using the FADN annual observations from 2004 to 2009. Positive effects on hired paid labor (the measure of job creation) are associated with crop and LFA subsidies, two types of targeted subsidies, and decoupled payments available to all farms. The programs appear to have the expected result and the positive effects on job creation may help to slow the depopulation of rural areas. However, within agriculture, horticultural farms outperform all other types in terms of hired paid labor, while the primary agricultural area of Wielkopolska-Śląsk also spends more on hire paid labor than other regions. Future analysis with disaggregated data is necessary to better measure the CAP effects on hired paid labor implying job creation.

Keywords: FADN data, dairy farm, specialized farm, job creation, Poland

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### **Introduction**

The current provisions of the Common Agricultural Policy (CAP) end in 2013 and the new budget of the European Union (EU) and CAP revisions have been a subject to vigorous debate (Rude, J. 2008; Atkin, 2011; EC, 2011; Gocht et al., 2013)]. The previous set of CAP rules shifted the emphasis to rural area development and, to some extent, away from the farm assistance program. The issue of rural development has been an important topic because the concentration of land in new EU member states led to fewer farms and limits rural employment. The recognition acknowledges that more than 50% of the EU population lives in rural areas. In nearly every EU country, there are regions that are relatively less developed or lag in development as compared no to other areas in the country, and are characterized by indicators with values less than the EU average.

The lack of jobs has been associated with migration and rural depopulation has been a continuous phenomenon in many areas of the EU including some regions in Poland (Klepacka and Klepacki, 2011; Klepacki and Klepacka, 2011). Three eastern provinces of Poland have been indentified among most lagging in development in the EU and form the most eastern border of the EU (Pietrzak et al., 2012; Polska wieś 2012;)]. The regions have been losing population and it appears that the process accelerated after Poland's accession to the EU and the liberalization of the labor flow. However, the rural development programs and subsidies to farm production that Polish farmers received after the country became the EU member could be expected to lead to

job creation slowing the depopulation tendencies and such expectations are consistent with the stated goals of the European Commission (EC, 2006).

In Poland, the percentage of labor employed in agriculture has been steadily declining in the past two decades, the farm size has been increasing and many areas have been losing population. The average farm size increased from 7.6 ha in 1995 to 8.0 ha in 2000, and reached 9.8 ha in 2010 (Mały Rocznik Statystyczny Polski 2003; 2011). This paper examines the link between the change in hired on-farm employment and the size and type of subsidies to farms and rural areas provided in the form of direct payments or under the “second pillar” of the CAP. The paper uses the data collected under the EU-wide Farm Accountancy Data Network (FADN) for the period from 2004 to 2009.

Under the FADN, farms are selected from six economic size categories as determined in the FADN (for details about categories see, for example, Polski FADN, 2010) and about 12,100 participating farms are grouped in four geographical regions in Poland, i.e., Mazowsze i Podlasie, Pomorze i Mazury, Małopolska i Pogórze, and Wielkopolska i Śląsk. The first three of those regions are particularly vulnerable to the loss of population, especially in rural areas. The classification is based on the existing administrative division (Kowalski et al., 2011) and individual administrative districts (called Voivodships) are grouped according to their geographical proximity rather than similarities in agricultural endowment, farm size, or farm commercial output. Moreover, the Mazowsze i Podlasie and Małopolska i Pogórze include three regions classified among the least developed in the whole EU (these are Voivodships od Podlasie, Lubelskie and Podkarpackie) (Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej, 2013).

In Poland, many view farm employment as the method of maintaining jobs in rural areas and preventing the unemployment figures from additional increase (Błąd, 2010; Cyrek, 2006). The number of employed in agriculture is subject to debate and affected by the changing methodology of estimating agricultural employment (GUS, p. 181, 2007; GUS, pp 46-47, 2011). Although progress has been made in lowering agricultural employment and the economic growth has been steady in (Florkowski, 2013), the official unemployment rate has remained above 8% in the last few years, and has reached 14.2% in January 2013 (GUS, 2013) as the EU economic growth remains sluggish. The rural population is less dependent on agriculture for jobs, but non-farm jobs are limited, especially in certain areas (Klepcka, 2012).

The purpose of this study is to examine the capacity of highly specialized farms to create on-farm jobs, while accounting for various programs involving payments and subsidies received under CAP. Specifically, the study focuses on dairy and horticultural (specialized) farms as two types of farms that tend to require more labor than, for example, farms oriented towards grain production. Regionally, dairy and horticultural farms are concentrated in highly developed and less developed areas in Poland. Wielkopolskie Voivodship is an example of highly developed area having both dairy and horticultural farms, whereas Podlaskie Voivodship is less developed but has a very strong dairy sector, while Lubelskie Voivodship, also less developed, has a strong horticultural sector. The former has one of the lowest unemployment rates in the country, while the latter two have above average unemployment rates. Results identify what factors including CAP program contribute to job creation on the two farm types that can plausibly be expected to need labor.

### **On-farm job creation and the depopulation of rural areas**

Job creation is important especially in several regions of Poland, where the unemployment rate exceeds 15% and is much above the national average. Among the regions are some of those specializing in dairy production because of the suitable natural conditions such as Podlaskie and Podkarpackie Voivodships (Polska wieś 2012). In addition, the number of new job market entrants increases currently as the new generation begins to reach the working age. Some experts expect the farm employment to increase as a result of new generation born in the 1990s entering the job market (Poczta, 2012). Should such trend occur, it will support the treatment of agriculture as the labor 'holding tank' (Błąd, 2010). Because jobs are scarce in the country as well as in other EU countries due to the economic slowdown (OECD, 2013), job migration will decrease will contribute less to depopulation of rural areas (Wojewódzki Urząd Pracy w Olsztynie, 2009).

The goals of the CAP and the EC can be viewed as contradictory. On one hand, direct payments are intended to maintain and create jobs, but the decoupled payments can be expected to lower the farm employment because they are no longer tied to production (Petrick and Zier, 2011). In Poland, agriculture was the primary source of income for 14.1 % in 2009, a relatively small share of households, but it was 11.7% in the first year of full EU membership, i.e., in 2005 (Kowalski et al., 2011). The tendency suggests the continuing relevance of agriculture as an employer (Poczta, 2012; Polska wieś 2012).

Labor on Polish farms is still relatively less equipped with capital and land (Kowalski et al., 2011; Poczta, 2012). The average farm size increases, but slowly. However, the accession to the EU accelerated the concentration production and production scale, among others, on dairy farms. The observation reported by Kowalski et al. (2011) is supported by Barnes et al. (2011) who examined the technical efficiency of dairy farms among all EU member countries.

According to their results, Polish dairy sector placed quite high. Polish horticultural farms have been acutely aware of labor costs and total costs because they were never receiving direct subsidies from the government under the centrally planned economic system (Sobczyński, 2009; Sobczyński and Stefko, 2011)]. Indeed, viewed as a private production entity, they had to compete on cost efficiency in the price-controlled environment. Yet due to the nature of horticultural production, they tend to employ more hired labor than traditional farms focused on conventional crop or livestock production.

The amount of hired-labor employed on a farm is a function of several categories of subsidies to agricultural production and rural area development including subsidies to crop production, livestock production, on-farm investment and decoupled payments. In addition to on-farm activities, farmers receive compensatory payments for farming in areas with below average soil quality (LEF, less favorable area), subsidies for undertaking agro-environmental activities and general rural development subsidies (Poczta and Siemiński, 2008; Rude, 2008; Marks-Bielska and Babuchowska, 2010; Sobczyński, 2010; Babuchowska and Marks-Bielska, 2011). The latter do not have a clear *ex ante* effect on on-farm job creation because they could add jobs, but also create rural jobs outside farming. Farmers also qualify for investment subsidies. Although on-farm investment leads, in general, to productivity increase resulting from substitution of labor by capital, the realization of investment actual may create jobs, and, if the investment involves production expansion (e.g., dairy production), it may add jobs in the long run.

The depopulation measure accounts for the primary and secondary agricultural areas. The primary area includes Wielkopolskie Voivodship and several neighboring areas as defined in the FADN for Poland. The other areas are considered secondary agricultural areas because of the

generally lower quality of production conditions although in some forms of specialized production, the farms in the secondary areas match those in the primary areas. For example, dairy farms in the northeastern areas are as productive as in the primary central-western region. However, the secondary areas are effectively losing population, especially farm population. A dummy variable is applied to account for regions losing population.

The selection of specific variables includes the dependent variable is the annual work unit of hired labor as defined by the FADN (Polski FADN, 2010). The explanatory variables include the decoupled payments; subsidies to investment, livestock production, crop production, agro-environmental activities, less favorable areas (LFA), and to support rural development. Following previous studies (Petrick and Zier, 2011), the value of total rural subsidies subsidies has been lagged one year because such subsidies may have a delayed effect on job creation.

## **Data**

The FADN data are publicly available in the aggregated form for all EU countries. The data are mean values of specific measures for each farm category. The farm type categories include specialized farms (including horticultural farms), crop farms, dairy farms, livestock (other than dairy), mixed crop and livestock, and mixed with livestock (TF13 crop farms (COP), TF20 horticultural farms, TF 41 dairy farms, TF50 grain-fed livestock, TF60 mixed crop, TF70 mixed crop and livestock, TF80 mixed livestock). The set of measures for each farm type includes several dozen variables, including measures of labor, financial performance, input and output measures, subsidy types, but only a set needed for the estimation of the empirical relationships was selected for this study.

The construction of four FADN regions in Poland is based on administrative division of the country. The adjacent Voivodship (provinces) were clustered into single regions despite

substantial differences in the quality and quantity of agricultural resources and agricultural traditions in farming. The clustering may obstruct a clear view of the effects of specific measures. The potentially different effects may apply to the significance of migration measures. For example, the Mazowsze i Podlasie region consists of the depopulating Podlaskie Voivodship and the population gaining Mazowieckie, while the migration flows from Podlaskie in multiple directions, including areas outside the specified region.

A total of 144 observations are used for the period from 2004 to 2009. The change in the format of data reporting for FADN resulted in the disruption of the observation series. However, the used series captures the first few years of Poland's full membership in the EU and its direct effects on agricultural sector on one hand, and the indirect effect on labor market on the other. The indirect effect resulted from the liberalization of labor flow and ability of Polish citizens to compete on domestic labor markets of the majority of EU member countries. The unobstructed labor movement was not affected by the subsequent global financial crisis that was not fully apparent until 2009, which is the last year of the series used in the current study. The format of calculating some of the performance measures were changed in 2010 causing a discontinuity in the series.

## **Results**

A single equation model is estimated using the OLS with heteroscedasticity consistent errors. The functional form of the equation is log-linear because the primary interest is in the change in the hired farm employment attributable to the CAP programs and the depopulation effect. The overall goodness-of-fit measures suggest a good fit, the F value of 65.34 with 127 df and the adjusted R-squared of 0.8717.



Table 1 shows the results in three sets of variables, i.e., various subsidies, farm type, and the FADN region. Among the explanatory variables accounting for the average amount of various subsidies with the statistically significant and positive effect on the creation of additional jobs, as measured by paid hired labor, are the total subsidies to crop production and to farming in areas with unfavorable conditions. It is possible that farmers receiving direct payments tend to hire labor because the additional payments encourage field production and require assistance during harvest. Such jobs although seasonal, provide some opportunities in rural areas.

It appears that, consistent with the intent, subsidies for the less favorable agricultural areas have meaningfully contributed to farm job creation supporting the expectations of the program administrators. Less favorable areas tend to have a relatively higher production costs (EC, 2008; Sobczyński, 2012) and the subsidies likely evened the farm income between the less favorable and normal agricultural areas leading to increased use of hired labor in the former.

However, the effect of investment subsidies suggests the substitution of capital by labor because it leads to fewer additional on-farm jobs. The result is consistent with the observed level of capital and its quality on many Polish farms and often mentioned low labor productivity (Kowalski et al., 2011). Moreover, the farm investment improves the farm family labor used classified as unpaid, while causes shedding of paid labor. Therefore, any effect of investment subsidies with regard to job creation is to non-farm labor during the investment period, and because of the annual observations used in the current study it has not been captured in the estimated relationship.

Among farm types, all effects are statistically significant, but negative when measured against the omitted type (Table 1). As compared to “specialist horticultural” farms, other farm types exert a negative influence on hired paid labor; especially large effects are associated with

“dairy” and “mixed livestock farms.” Horticultural production tends to be much more labor-intensive than conventional agricultural production (Sobczyński and Stefko, 2011) and the horticultural farms include also those engaged to any extent in organic production. Paid hired labor is common on horticultural farms and is not limited to seasonal employment, especially in large fruit or ornamental plant farms.

The effect of farm location in a region suffering from depopulation has a negative influence on hired paid labor as compared to the core agricultural region of Wielkopolska-Śląsk. The effect was particularly large, in terms of the coefficient magnitude, if a farm is located in Mazowieckie-Podlaskie-Łódzkie region. The result is not surprising because, for example, Podlaskie belongs to regions considered most underdeveloped in the EU and has been losing population (Ministerstwo Rozwoju Rolnictwa, 2010), while Łódzkie has not been a strong agricultural area. Mazowieckie, which surrounds the agglomeration of Warsaw has been known for its horticultural production, but included in the large FADN region, the effect was likely outweighed by the two areas losing population. Also, farms located in Małopolskie-Pogórze have been less likely to spend on hired paid labor than Wielkopolska-Śląsk and this result has been expected. The region is characterized by fragmented farms and the smallest average farm size among all regions of Poland.

### **Concluding comments**

Overall, the effects of the CAP program have a mixed effect on the job creation on Polish farms. Crop and LFA subsidies lead to an increase in hired paid labor as do the decoupled payments benefiting all farms. The positive effect in areas where the jobs matter most, which is in the less favorable agricultural areas, is a desirable effect. However, to what extent that program can stop or even reverse the depopulation will require additional analysis using further

disaggregated data. Access to such data has been restricted, requires effort and is time consuming.

Farm type and regional effects have been negative as compared to the benchmarks, the omitted farm type (horticulture) and the leading agricultural area of Wielkopolska-Śląsk. The effects are not a surprise because horticultural farms tend to be labor intensive, while the core agricultural area, characterized by highly efficient and capital-intensive agriculture, is the most productive and capable of paying hired labor.

The near future will provide a picture of the level and form of subsidies under CAP. Poland was among the top four recipients of allocations from the EU budget. The farm sector clearly benefitted from the direct and indirect payments, while Polish agriculture has become more competitive as reflected in the surplus in agricultural trade since joining the EU in 2004 (EC. 2011; Gocht et al., 2013).

## References

Atkin, C. 2011. New CAP, Old Hat? Some thoughts on the EU's Common Agricultural Policy 2014-2020. *International Journal of Agricultural Management*, 1(2): -10

Babuchowska, K. Marks-Bielska, R. 2011. Płatności bezpośrednie w kontekście dochodów polskich rolników (Direct payments in the context of Polish farmers' income). *Zeszyty Naukowe SGGW w Warszawie - Problemy Rolnictwa Światowego*, 11(26) 1:7-15.

Barens, A. P., C. Revoredo-Ghia, J. Sauer. 2011. A metafrontier approach to measuring technical efficiencies across the UK dairy sector. Paper presented at the 122<sup>nd</sup> EAAE Seminar "Evidence-based agricultural and rural policy making methodological and empirical challenges of policy evaluation," Ancona, Italy, February 17-18.

Błąd, M. 2010. Rolnictwo jako „przechowalnia” nadwyżek siły roboczej w okresie transformacji systemowej w Polsce. In: *Wielofunkcyjność rolnictwa - Kierunki badań, podstawy metodologiczne i implikacje praktyczne*. J. Wilkin, ed. Chapter 9, pp 181-196, Warszawa, IRWiR PAN.

Cyrek, M. 2006. Sfera usług jako obszar kreowania miejsc pracy w nowej gospodarce. In: *Problemy wzrostu gospodarczego we współczesnych gospodarkach*, D. Kopycińska, ed. Chapter 14, pp 145-158, Szczecin, Katedra Mikroekonomii, Uniwersytet Szczeciński.

EC, 2011. Cap towards 2020 impact assessment. Impact of scenarios on the distribution of direct payments and farm income. European Commission, Directorate-General For Agriculture And Rural Development, 09.08.2011. Available online at [http://ec.europa.eu/agriculture/rica/pdf/PO0204\\_Full\\_impact.pdf](http://ec.europa.eu/agriculture/rica/pdf/PO0204_Full_impact.pdf). Accessed March 10, 2013.

EC, 2008. Overview of the less favoured areas farms in the EU-25 (2004-2005). European Commission, Directorate-General for Agriculture and Rural Development. Brussels, September 2008, pp. 1-39. Available online at [http://ec.europa.eu/agriculture/rica/pdf/rd0101\\_overview\\_lfa.pdf](http://ec.europa.eu/agriculture/rica/pdf/rd0101_overview_lfa.pdf). Accessed March 20, 2013.

Gocht, A., Britz, W., Ciaian, P. and Paloma, S. G. 2013. Farm Type Effects of an EU-wide Direct Payment Harmonisation. *Journal of Agricultural Economics*, 64(1):1-32.

GUS. Rocznik statystyczny rolnictwa 2011. Available online at [www.gus.gov.pl](http://www.gus.gov.pl). Accessed March 27, 2013.

GUS. Rocznik statystyczny rolnictwa i obszarów wiejskich 2007. Available online at [www.gus.gov.pl](http://www.gus.gov.pl). Accessed March 27, 2013.

GUS. 2013. Bezrobotni oraz stopa bezrobocia wg województw, podregionów i powiatów. Available online at [http://www.stat.gov.pl/gus/5840\\_1488\\_PLK\\_WAI.htm](http://www.stat.gov.pl/gus/5840_1488_PLK_WAI.htm). Accessed April 11, 2013.

Florkowski, W. J. 2013. Evidence of Household Consumption Changes Associated with the Global Economic Slowdown. *Poznan University of Economics Review* 12(2):43-55.

Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej – Państwowy Instytut Badawczy, Zakład Rachunkowości Rolnej 2013. Available online at [www.fadn.pl](http://www.fadn.pl). Accessed March 27, 2013.

Klepacka, A. M. 2012. Procesy społeczne i gospodarcze zachodzące na obszarach zagrożonych depopulacją (na przykładzie Podlasia), Ph. D. dissertation, Faculty of Economics, Warsaw University of Life Sciences, Poland.

Klepacka, A.M. and B. Klepacki. 2011. Procesy “zanikania” skupisk ludzkich na przykładzie wsi Klepacze na Podlasiu w latach 1948-2010 (The phenomenon of peoples conglomerations “disappearing”, based on the example of Klepacze village from Podlasie in years 1948-2010). *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, XIII(3):117-121.

Klepacki, B. and A.M. Klepacka. 2011. Procesy depopulacji regionu północno-wschodniej Polski na przykładzie powiatu siemiatyckiego (Depopulation processes of North Eastern region of Poland on example Siemiatycze District). *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, XIII(1):177-182.

Kowalski, T., M. Pietrzykowski, and S. Heciak. 2011. Development of the Institutional Framework of Local Government during the Transition Period. In: T. Kowalski, S. Letza, C. Wihlborg, eds, Poznan, Poland. Chapter 8, pp. 155-202.

Kowalski, A., S. Figiel, M. Halamska. 2011. Społeczne i ekonomiczne uwarunkowania rozwoju sektora rolno-spożywczego. *Polish Journal of Agronomy* 7:29-42.

Marks-Bielska, R., Babuchowska, K. 2010. Functioning of the direct subsidies system in Poland and other European Union countries. *Journal of Agribusiness and Rural Development*, 17(3):89-100.

Mały Rocznik Statystyczny 2003. GUS, volume XLVI, Warszawa, 687 p.

Mały Rocznik Statystyczny 2011. GUS, volume LIV, Warszawa, 737 p.

Ministerstwo Rozwoju Rolnictwa 2010. Strategia Rozwoju Polski Wschodniej do 2020, Warszawa. Available online at <http://www.mrr.gov.pl/> Accessed March 27, 2013.

OECD, 2013. Gross domestic product (GDP): GDP, volume – annual growth rates in percentage, Economic Outlook No 93 - June 2013 - OECD Annual Projections. Available online at <http://stats.oecd.org/>. Accessed June 03, 2013.

Petrick , M., P. Zier. 2011. Regional Employment Impacts of Common Agricultural Policy Measures in eastern Germany: A Difference-in-difference Approach. *Agricultural Economics* 42:183-193.

Pietrzak, M. B., Drzewoszewska, N., Wilk, J. 2012. The Analysis of Interregional Migrations in Poland in the Period 2004–2010 Using Panel Gravity Model. *Dynamic Econometric Models* 12(2):111-122.

Poczta, W. 2012. Przemiany w rolnictwie ze szczególnym uwzględnieniem przemian strukturalnych. In: *Polska wieś 2012. Raport o stanie wsi*. Wilkin, J. i Nurzyńska, I. (ed.), Chapter 2, pp 65-99, Fundacja na rzecz Rozwoju Polskiego Rolnictwa (FDPA Foundation for the Development of Polish Agriculture), Warszawa .

Poczta, W., Siemiński, P. 2008. Kierunkowe rozwiązania systemowe modelu płatności bezpośrednich z punktu widzenia interesu polskiego rolnictwa. In: *Reforma Wspólnej Polityki Rolnej w kontekście potrzeb i interesów polskiego rolnictwa*, pp. 171-207. UKIE, Warszawa.

Polski FADN. 2010. Wyniki standardowe uzyskane przez gospodarstwa rolne uczestniczące w polskim FADN w 2009 roku. IERGŻZ, Warszawa, 61p. *Polska wieś 2012. Raport o stanie wsi*. Wilkin, J. i Nurzyńska, I. (ed.), pp 1-245, Fundacja na rzecz Rozwoju Polskiego Rolnictwa (FDPA Foundation for the Development of Polish Agriculture), Warszawa .

Rude, J. 2008. Production Effects of the European Union's Single Farm Payment. *Canadian Journal of Agricultural Economics/Revue canadienne d'agroeconomie*, 56(4):457–471.

Sobczyński, T. 2009. Wybrane czynniki zrównoważenia ekonomiczno-społecznego największych przedsiębiorstw rolniczych UE (Chosen factors of economical and social sustainability in largest agricultural enterprises of EU). *Roczniki Nauk Rolniczych, seria G*, 96, (3):152-162.

Sobczyński, T. 2010. Wydajność pracy a poziom wsparcia gospodarstw rolniczych w Polsce na tle UE (Labour productivity versus level of subsidies for polish farms compared to EU). *Roczniki Nauk Rolniczych, seria G*, 97(3):244-257.

Sobczyński, T. 2012. Wyniki gospodarstw z terenów ONW na tle pozostałych – czy grozi nam zaniechanie produkcji w trudnych warunkach? (The results of farms from LFA compared with others – are we in danger of giving up the production in unfavorable environment?). *Journal of Agribusiness and Rural Development* 24(2):243-251.

Sobczyński, T., Stefko, O. 2011. Zmiany rentowności gospodarstw ogrodniczych w UE i Polsce (Profitability changes in horticultural farms in Poland and in the European Union). *Zagadnienia Ekonomiki Rolnej*, 329(4):139-152.

Wojewódzki Urząd Pracy w Olsztynie 2009. Migracje zarobkowe i powrotne – raport ekspercki, Warszawa. Available online at <http://www.up.gov.pl>. Accessed March 27, 2013.

Table 1. Results for the job creation equation estimated using the OLS with heteroskedasticity consistent errors.

Variable name	Coefficient	Std. error	t-value	Pr>t
Intercept	0.5407	0.1068	5.06 <sup>a</sup>	0.0001
		<i>Subsidies</i>		
Investments subsidies	-0.0010	0.0004	-2.28	0.0244
Crop subsidies	0.0005	0.0001	2.86 <sup>a</sup>	0.0050
Livestock subsidies	0.0021	0.0141	0.15	0.8810
Environmental subsidies	-0.0003	0.0002	-1.31	0.1934
LFA subsidies	0.0012	0.0004	3.15 <sup>a</sup>	0.0020
Rural subsidies <sup>b</sup>	-0.0000	0.0001	-0.48	0.6295
Decoupled payments	0.0004	0.0001	3.35 <sup>a</sup>	0.0011
		<i>Farm type</i>		
Dairy farm	-4.1747	0.2038	-20.49 <sup>a</sup>	0.0001
Livestock farm	-2.2464	0.2144	-10.47 <sup>a</sup>	0.0001
Non-cereal crop farm	-2.5988	0.1796	-14.47 <sup>a</sup>	0.0001
Mixed livestock farm	-4.3297	0.1649	-26.25 <sup>a</sup>	0.0001
Mixed farm	-3.4657	0.1667	-20.79 <sup>a</sup>	0.0001
		<i>Region</i>		
Pomorze-Mazury	-0.2926	0.1167	-2.51 <sup>a</sup>	0.0135
MazowszePodlasie	-0.7610	0.1176	-6.47 <sup>a</sup>	0.0001
Malopolska-Pogorze	-0.4532	0.1627	-2.78 <sup>a</sup>	0.0062



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<sup>a</sup> Significant at  $\alpha=0.01$ .

<sup>b</sup> Lagged one year.