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Kyösti Arovuori

How Have the CAP Reforms Contributed to Structural Development in Agriculture?

Abstract: This study aims to analyse the impact of the Common Agricultural Policy and its reforms on the development of agricultural structures. In the analysis we measure the development of rural structures using the number of farms as policy target variable. Our analysis aims to reveal the impact of agricultural policy and policy reforms on the development of the defined target variable, given the general economic and structural development. The analysis is conducted as an econometric panel data analysis. Our results show that agricultural policies have, in general, reduced the pace of structural development and kept more farms in the sector compared to a situation without policies. However, the implementation of CAP reforms in 1992, 2000 and 2007 has led to more rapid structural development. Overall, agricultural policies have smoothed the transition of resources from agriculture to other sectors.

Keywords: CAP, reform, empirical analysis.

1. Introduction

Agricultural structures have developed rapidly in recent decades. The number of people engaged in agriculture has declined. Increasing productivity and low profitability have been driving the agricultural sector to increasing the average farm-size and thus, to declining the number of farms. Technological progress has led to increasing productivity and decreasing use of labour as input in agricultural production.

Rapid general economic development and GDP growth has smoothed the wider impacts of structural change. Increasing number of off-farm employment opportunities made it possible to shift labour from agriculture to other sectors. In addition, this elastic supply of labour boosted industry and services by easing the economic constraints.

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Since agriculture is the so called last resort sector in the rural areas, the impact of changing agricultural structures on employment and other regional economic activities is most clearly seen in remote rural areas. With only modest number of available off-farm opportunities, decreasing number of farms has led to decreasing number of jobs available. However, in the long run, increasing farm size, contracting and outsourcing of different farm operations has as such created viable off-farm opportunities. Yet, the number of these opportunities is smaller than those lost.

The role of the Common Agricultural Policy (CAP) in this development is twofold. The original objectives of the CAP, set in the Treaty of Rome in 1957, aim to increase agricultural productivity by promoting technical progress and by ensuring the rational development of agricultural production and the optimum utilisation of the factors of production, in particular labour; thus, to ensure a fair standard of living for the agricultural community, in particular by increasing individual earnings of persons engaged in agriculture; to stabilise markets; to assure the availability of supplies; and to ensure that supplies reach consumers at reasonable prices (European Economic Community 1957).

The policy instruments utilised in the CAP have faced a major transformation starting in the early 1990s. The main impact mechanism changed from coupled price support and production controls implemented with high border protection to decoupled single farm payment scheme with cross-compliance and more market orientation (for discussion see e.g. Ackrill, Kay, Morgan 2008; Arovuori 2015; Harvey 2004).

Coupled price support created an incentive to increase production, increasing budget, but it had major distortive impacts on production and resource utilization. Thus, agricultural policies tend to kept more resources in the sector compared to a situation without agricultural policies. This had controversial impact on the income development in agriculture. Agricultural policies have kept farms with low or zero profitability within the sector and with the level of production higher compared to free-market equilibrium. As a result, the average income has remained at a lower level (Arovuori 2015).

Given the objectives of the CAP, agricultural policy aims, among others, to increase productivity and to secure the incomes of the rural population. These targets may contradict in a sense that rapid structural development may, in general, lead to decreasing incomes in the rural areas.

The changes in agricultural structures are most clearly visible when analysing the number of farms within the EU. The number of farms has declined steadily in EU-15 (Figure 1). The trend has been similar in all the Member States concerned as regards both pace and size. The EU enlargements in the 1980s brought large number of new farms, given that Spain, Portugal and Greece all have large

agricultural sectors with small scale production in olive, wine, fruit and vegetables sector, among others.

The other side of the structural development is the rapidly increasing productivity, especially in terms of agricultural value added per worker. Although the number of farms has declined, the value added per worker in agriculture has increased steadily (see e.g. Arovuori, Yrjölä 2016). This indicates that structural development has led to more efficient use of resources in the agricultural sector.

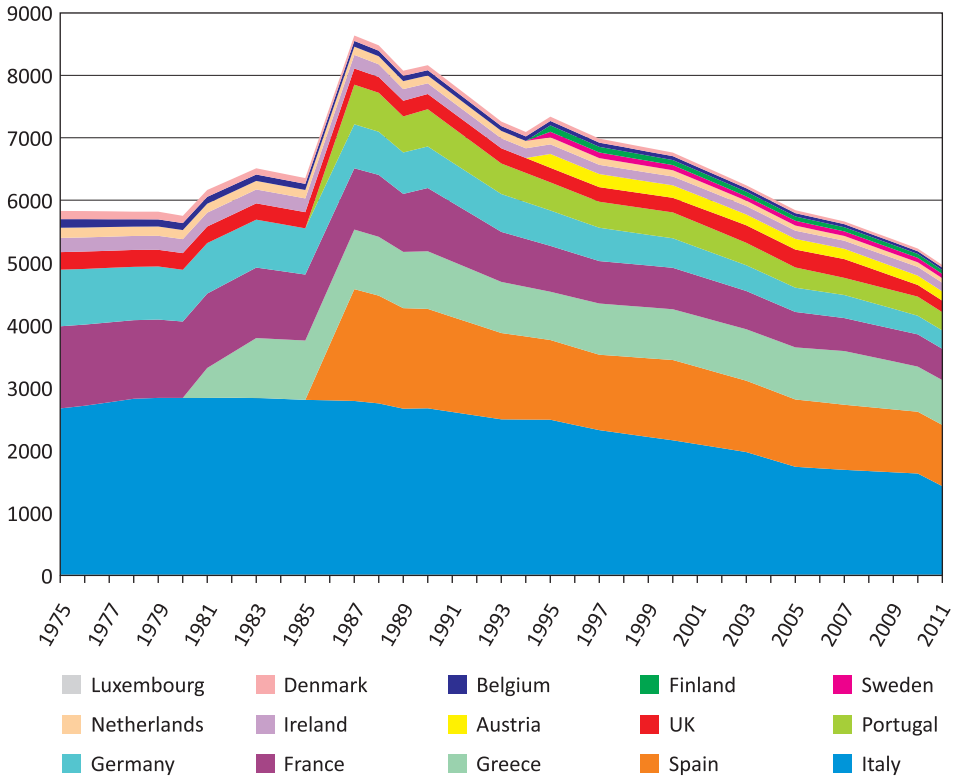


Figure 1. Number of EU farms in the EU-15 (1000)

Source: Eurostat, own calculations. Base statistics utilised are Agricultural statistics yearbook Finland and Eurostat. Since structural statistics cover only selected years, data set is interpolated to country level time-series by using the averages between available data points throughout the data.

Objectives

In this study, we analyse the impacts of agricultural policy development and policy reforms on the agricultural structures, given the general economic

and structural development. The policy target variable is set as the number of farms. Since the declining number of farms correlates negatively both with the employment opportunities in agriculture and the increasing average farm size, it can be stated that the defined policy target variable approximates the overall structural development in agriculture.

In our analysis we will answer the following research questions: first, *What is the policy impact of the CAP on structural development in agriculture given the general structural and economic development?* and second, *How have the implemented reforms contributed to this development?*

The main hypothesis is that agricultural policies have reduced the pace of structural development.

2. Empirical applications of policy analysis

In this study, the relation between policy instrument variables and defined policy target variables are analysed. The analysis contributes to exploring the well-known agricultural policy issues which are nevertheless rarely analysed empirically in the literature. According to Arovuori (2015), although constantly discussed in the literature, the relations of agricultural policy instruments and stated objectives are rarely analysed – that is, with the exception of the income objectives. The income objective is, however, usually analysed using indirect measurement, mainly producer surplus (see e.g. Bullock, Salhofer 2003; Bullock, Salhofer, Kola 1999; Alston, James 2002). This study broadens the scope to include the analysis of structural policy target variables.

The theoretical background for an empirical analysis of policy effectiveness comes from the Theory of Economic Policy (Tinbergen 1952; Tinbergen 1967). The Theory of Economic Policy holds as the normative premise that government can pursue an optimal economic policy by operating a set of instruments and by fine-tuning the instrument levels to reach a priori well-defined targets (van der Zee 1997, p. 12). This target-instrument approach allows the comparison of different policies based on their ability to achieve these objectives.

Tinbergen's (1952; 1967) target-instrument approach is formalised as follows. Let

$$(1) \quad Y = (y_1, y_2, y_3, \dots, y_n)$$

be a vector of well-defined policy objective variables. Let

$$(2) \quad X = (x_1, x_2, x_3, \dots, x_n)$$

be a vector of policy instruments and let

$$(3) \quad Z = (z_1, z_2, z_3, \dots, z_n)$$

be a vector of exogenous variables. Now, the economy is presented as

$$(4) \quad Y = AX + BZ$$

where A and B are reduced form matrices of coefficients. If the number of target variables equals the number of instrument variables, it is possible to express X in terms of Y so that

$$(5) \quad A^{-1} = [Y^* - BZ]$$

where Y^* can be interpreted as the vector of optimal target levels.

In this study, we define the policy target variable Y and vector of policy instruments Z which are implemented under the given general economic and structural conditions and empirically estimate the relation between the changes in policy variable and policy target variable. Policy target variable is included in the analysis as an argument in the social welfare function.

The theoretical restrictions imposed in the Theory of Economic Policy need to be relaxed for the desired empirical analysis in this study. Independent variables cannot be selected purely on a theoretical basis. Examples and insight can be drawn from both the empirical and theoretical literature, but not a clear justification for the model variables as such.

According to Pokrivcak, Crombez and Swinnen (2006), the majority of empirical studies on the political economy of the CAP use either reduced form models that relate indicators of policy distortions to a set of political indicator variables, or more descriptive methods to analyse purely the historical development of the CAP. Examples of the former category are discussed by Olper (1998) and the latter by Olper (2008) and Jensen, Lind and Zobbe (2009).

Olper (1998) analyses the determinants of CAP protection across the EU Member States and over time from a political economy perspective. The analysis is aimed to shed light on whether or not the traditional hypothesis advanced in the theoretical and empirical literature is consistent with the CAP policy game, given that the decision-making is strongly influenced by the political and economic interests of the Member States. The analysis covers both the time-series and cross-country dimensions. The results show that agricultural protection increases when market conditions are against the farming industry and in countries with a comparative disadvantage in agriculture. Intra-EU trade is an important determinant of protection levels. Also, the number of farms strongly conditions the protection patterns across the Member States, showing that small countries and small agriculture sectors are the most likely to gain CAP transfers. A high budget share for food consumption appears to reduce protection. In addition, the estimation results indicate that CAP policy-makers are sensitive to income indicators when assessing how much they are supporting farmers.

Olper (2008) analyses the constraints and causes of the 2003 Fischler reform in a more qualitative setting. His main argument is that the reforms were accomplished because of two reasons. The first was the ability of the then Agriculture Commissioner to take advantage of the very complex political environment, in which budget pressures and enlargement mattered. Second, the imposed reform package had relatively low redistributive effects, which means that it had only marginal effects on the pre-reform political economy equilibrium.

Jensen, Lind and Zobbe (2009) apply a rational choice theory to analyse whether the CAP positions of the EU Member States are related to structures in their agriculture sectors. Their overall hypothesis is that intensiveness of agricultural production corresponds to the willingness to reform the CAP, given the structural fundamentals in each Member State. Thus, the likelihood of a fundamental policy reform is related to the level of intensification of agriculture within the EU. The study concludes that future development of the CAP, i.e. the level of future CAP reforms, highly depends on the political positions of the new Member States.

In addition to the studies analysing purely the political economy of the CAP, there are several more recent empirical applications of different aspects of the political economy of agricultural policies that are relevant for this study, especially in terms of the econometric procedures applied. These studies include Thies and Porsche (2007), Masters and Garcia (2010), Olper and Raimondi (2010), Bates and Block (2010), Dutt and Mitra (2010) and Gawande and Hoekman (2010). All these studies analyse well-known political economy theories with different panel data estimation settings and, thus, provide significant added value to the empirical research of agricultural policies.

Thies and Porsche (2007) analysed the political economy of agricultural producer support in the OECD countries. In the analysis, they use the average producer nominal protection coefficient as a dependent variable and a set of economic and political variables as independent variables. These variables include agricultural employment and the share of agriculture in GDP, among others, as well as shock indicators for economic recession and fiscal crisis. Other variables are the terms of trade, labour productivity ratio and the factor endowment ratio. The political variables are drawn from the Database of Political Institutions (Beck et al. 2001). These include variables for veto players, federalism, constituency and party fragmentation. In addition, dummy variables for the EU and post-Uruguay round were included. The statistical models were estimated using the panel-corrected standard errors estimation technique. The results of the study show that all political institutional variables play a very important role in determining the level of agricultural producer support, while the impact of structural economic variables is not as uniformly significant. The political variables have relatively robust effects

across the four models, but cyclical downturns in terms of recession or fiscal crisis do not seem to enable agricultural producers to achieve greater protection.

Masters and Garcia (2010) analysed the political economy hypothesis on the form of agricultural distortions using the data from Anderson and Valenzuela (2008). The policy impacts are measured for seventy-two products chosen to account for over 70 per cent of agricultural value added in each country, resulting in a total of over 25,000 distinct estimates from particular products, countries and years. They use nominal rate of protection (NRA) as the dependent variable. Independent variables include border prices, crop area, checks and balances, entry of new farmers, monetary depth, policy transfer costs and urban population, among others. Their analysis confirms three well-known stylised facts in political economy. It is shown that a consistent anti-trade bias exists in all countries, the development paradox of anti-farm bias in poorer countries and pro-farm bias at higher incomes exists, and there is a resource abundance effect toward higher taxation of agriculture in more land-abundant countries. The study concludes that, while there is robust support for some theories and not for others, none of their regressions account for more than half of the variance across countries and over time. To explain the remainder would require deeper analyses of the institutional context of policies, in particular countries and commodities.

Olper and Raimondi (2010) conduct an empirical analysis with the aim to better understand the interaction between institutions and agricultural policy distortions. They estimate the average effect of constitutions on policy outcomes using difference-in-differences approach. In the analysis, NRA is used as a dependent and different constitutional variables as independent variables. The constitutional effects on the protection levels are measured by calculating the difference in average protection before and after the transition in the countries concerned and comparing it to the changes in protection levels in control countries. Their study showed that transition towards democracy has significant effects on agricultural protection levels, but the effects are heterogeneous across different forms of democracy. On the other hand, the results do not indicate that significant differences exist across alternative forms of government.

Bates and Block (2010) explore the political economy of agricultural trade protection in sub-Saharan Africa. They argue that policies towards agriculture are often by-product of other political concerns, which is why analysts should take into account a broader political setting when addressing agricultural policies. In addition, while the analysis should still continue to focus on normative and welfare issues, close attention should be paid to the incentives faced by the policy-makers. Dutt and Mitra (2010) use a similar approach to explain the cross-country variation in agricultural protection and within-country evolution of this protection over time.

Based on the empirical literature of policy analysis there exists no direct reference to the construction of a social welfare function for empirical application. In addition, the stated policy objectives lack actual target levels. In the welfare economic analysis, the target can be set as Pareto optimal or zero deadweight cost. The stated policy objectives are qualitative as such and need to be specifically quantified. However, while not directly measured in quantitative terms, no exact target levels have been defined. Thus, the social welfare function constructed will only approximate the overall welfare levels via the stated objectives.

Empirical applications in both the normative and positive analysis of agricultural policies have been carried out to analyse the efficiency of policies in terms of social costs and deadweight losses (normative), or the economic, structural and political factors which had impact on policy formation or on the level of agricultural protection (positive). The question remains what is the effect of implemented policies on the stated objectives, given the economic and structural conditions under which the policies are implemented. This study aims to contribute to this discussion.

3. Methodology and Data

In this paper, we follow the analysis framework by Arovuori (2015) to empirically estimate the impact of CAP and its reforms on the structural development in agriculture. We approximate this development via the number of farms in EU-15.

Due to the lack of direct theoretical basis, the initial selection of model variables is based on the reviewed literature and deduction. The final selection was made based on the overall statistical significance of the variables. The independent variables were selected based on deduction and statistical efficiency in the final estimations. The utilised variables were selected to fulfil the requirements for a structural and economic variable that has an exogenous role in agricultural policies.

In the final model, the control variables included were net food exports in the form of export-import ratio, GDP per capita, net indirect taxes as a share of GDP, and the share of rural population on total population. Control variables and data sources are described in Table 1 and policy variables in Table 2.

The export-import ratio measures the proportions of all food¹ exports and all food imports at the country level. Higher than one ratio means a country is a net exporter and a ratio less than one that a country is a net importer. Food

¹ Besides agricultural products, it includes processed food as well. Food exports are used instead of agricultural exports to also approximate the importance of total food industry.

trade is expected to have a significant role in balancing and absorbing the impacts of agricultural policy changes at the country level.

Table 1. Summary of control variables²

| Control variables | Specification | Source |
|--|--|------------|
| EXIM (Export exim) (Food export-import ratio) | Net food exports (export-import ratio > 1) indicate that a country is competitive in agricultural markets and agriculture has a significant role in the economy. Agriculture gains income from a broader market. Net food imports (export-import ratio < 1) indicate that a country has the ability to buy food from the markets and agriculture has a less significant role in the economy. Net food imports increase competition in the domestic markets. The role of policies with respect to policy objectives may differ depending on whether a country is a net food importer or exporter. | FAOSTAT |
| GDPperc (GDP per capita constant 2000 USD) | In general, the source of GDP growth in the EU has been in sectors other than agriculture. General economic growth leads to more efficient use of resources and an increase in the added value. It also increases the other employment opportunities for people engaged in agriculture, and thus has a push effect on structural change in agriculture. Technological development is the main source of economic growth. | World Bank |
| NetTax (Net indirect taxes ratio as a share of GDP, constant 2000 €) | Structural variable. Net taxes on products (net indirect taxes) are the sum of product taxes less subsidies. When proportioned to GDP, it allows controlling the magnitude of taxation relative to general economic development. A change in the share of net indirect taxes of GDP captures both the effect of policy-oriented changes on taxation levels and the relative changes in overall economic activity, especially in production. | World Bank |
| RurPop (Rural population as a share of total population) | The share of rural population in total population indicates the structure of a country and the importance of rural economy in the overall economy. | World Bank |

Source: own study.

GDP per capita measures general economic development. It increases off-farm employment opportunities for people engaged in agriculture, and thus has a push effect on structural change in agriculture. Moreover, increased economic growth leads to more efficient use of resources and an increase in the overall added value. Technological development is the main source of economic growth.

² See also Arovuori 2015; Arovuori and Yrjölä 2016.

A higher level of net indirect taxes in proportion to GDP indicates an economy with higher tax returns from domestic production, higher general taxation, or both, with respect to the total size of the economy.

Table 2. Summary of policy variables³

| Policy variables | | Source |
|---|--|--------------------------------------|
| <i>NRA</i> (Nominal rate of assistance, %) | Aggregated variable for all price distorting agricultural policy instruments. Higher (lower) NRA indicates severe (slight) distortions. Includes all national support measures. If policies are effective, variables should have significant impact on all objectives. | Database of Agricultural Distortions |
| <i>capre</i> (Dummy for MacSharry reform 1992) | Captures the policy reform shock and shift towards less market distorting agricultural policies. Price support policies were abolished and farmers received full compensation for price reductions through direct hectare-based payments. | |
| <i>capre2</i> (Dummy for Agenda 2000 reform) | Captures the policy reform shock and shift towards less market distorting agricultural policies. Price support policies were abolished and farmers received partial compensation for price reductions through direct hectare-based payments. | |
| <i>capre3</i> (Dummy for Fischler Reform (SFPS) 2007) | Captures the policy reform shock and shift from hectare based decoupled support to single farm payments. Decisions on Single Farm Payment schemes were made in the Fischler reform in 2003, but they were fully enforced from 2007 onwards. | |

Source: own study.

The importance of the rural economy is approximated with the share of rural population on total population. The larger the relative share of rural population the higher the weight of rural employment and agriculture in the political agenda of a country.

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In a multi-country analysis the inclusion of individual policy instruments as such to the analysis is extremely difficult due to the lack of data. In this study, instead

³ See also Arovuori 2015; Arovuori and Yrjölä 2016.

of specific policy instrument variables, the aggregate impact of agricultural policies is measured using nominal rate of assistance (NRA). Moreover, to emphasize the structural changes in the CAP, dummy variables for MacSharry reform, Agenda 2000 and Fischler reform 2003 were included in the model.

3.1. Policy variable

Nominal rate of assistance aggregates all policy instruments which distort agricultural markets. It mainly describes the government-imposed distortions that create a gap between the domestic prices and what they would be under free markets. Included are any product specific input subsidies. In this study, a weighted average NRA is used. The weighted average NRA for all the products covered is derived using the value of production at undistorted prices as product weights, which are expressed as a percentage of the distorted price.

According to Anderson et al. (2010, p. 31), 'the NRA for each farm product is computed as the percentage by which government policies have raised gross returns to farmers above what they would be without the government intervention' and defined as (Anderson et al. 2010, p. 30–31)

$$(6) \quad \text{NRA} \equiv \frac{P_d - P_f}{P_f},$$

where P_d is the observed domestic price in local currency for a given product, country and year, and P_f is the estimated domestic price that would hold in the absence of commodity market or exchange rate interventions. By definition, NRA is zero in a competitive free-trade regime and positive where producers are subsidised by taxpayers or consumers.

The nominal rate of assistance (NRA) has developed in the same direction in all the EU Member States. Until the mid-1980s, the NRAs were going upwards and since then the trend has been downward. National policies as well as producer price levels explain the difference in the actual level of NRAs between the countries. The differences between country-level NRAs have decreased towards the end of the research period. This development indicates that the policy reforms and EU enlargements have led to more harmonized policies in terms of NRA within the EU-15. Some national policies are still implemented, but their relative role in market distortions has declined. More importantly, individual EU Member States do not impose any direct border protection measures that would increase the difference between farm gate and world market prices.

3.2. Model specification

In total, four models are estimated using stepwise regression. First, a model with only NRA as a policy instrument variable and the control variables was estimated. Next, a dummy variable for MacSharry reform was included followed by dummy variable for Agenda 2000 and Fischler reform respectively.

The estimated model specification is:

$$(7) \quad y = \alpha + \beta_1 \text{exim}_r + \beta_2 \log \text{GDPperCapita} + \beta_3 \log \text{NetTax}_r + \\ + \beta_4 \log \text{RurPop} + \beta_5 \log \text{NRA} + \beta_6 \text{capre} + \beta_7 \text{capre2} + \beta_8 \text{caore3} + \varepsilon.$$

3.3. Data

For the analysis a panel of EU-15 Member States is compiled following the enlargement of the European Union during the research period from 1975 to 2011. The structure of the panel is presented in Table 4. Due to the chosen approach to follow the development of the EU, the structure of the panel is heterogeneous. From 1975 to 1994 the panel is unbalanced, since the number of Member States evolves throughout the period. From 1995 onwards the panel is balanced.

Table 3. The structure of the panel data

| | 1975– | 1981– | 1986– | 1995– |
|------|--|--------|-----------------|--------------------------|
| EU9 | Belgium, Denmark, France, Germany, Italy, Ireland, Luxembourg, The Netherlands, UK | | | |
| EU10 | | Greece | | |
| EU12 | | | Portugal, Spain | |
| EU15 | | | | Austria, Finland, Sweden |
| | unbalanced panel | | | balanced panel |

Source: own study.

4. Results

Estimation results are presented in Table 4. The estimated coefficients are statistically significant for all models, with two exceptions. Explanatory power of the model is good and the signs are as expected. Based on the Hausman test statistics, one model is consistent for two out of four models. Thus, increasing

individual effects improves the statistical significance in two models, while in the other two developments can be observed with single intercept.

The results indicate that the impacts of policies and the policy reforms on the structural development in agriculture are somewhat heterogenous within the EU-15, but the overall development is very similar.

According to our analysis, agricultural policies have reduced the pace of decline in the number of farms. The positive sign of the coefficient indicates that agricultural policies have, in aggregate, led to a higher number of farms compared to a situation without policy implementation. This result is consistent with the hypothesis set and supported by the theoretical assumptions in welfare economics.

The sign for the estimated coefficients of the two first policy reforms is negative. A negative sign indicates that policy reforms have contributed to faster structural development, or in other words, to increasing number of exits. For the first policy reform, inclusion of country level aspects in the analysis improves the model. In the model with two policy reforms, the model is reduced to a single constant.

The third policy dummy variable is not statistically significant and has a positive sign. This indicates that the structural policy impact of the latest reforms is weaker compared to the first two reforms.

Table 4. Estimation results

| | N = 373 | N = 373 | N = 373 | N = 373 |
|------------------------------|----------|----------|----------|----------|
| | FE | RE | FE | RE |
| <i>intercept</i> | | 11.40*** | | 9.18*** |
| <i>logsEXIM</i> | 0.11*** | 0.13*** | 0.17*** | 0.16*** |
| <i>logGDpperc</i> | -0.60*** | -0.36*** | -0.10 | -0.10 |
| <i>logsNETTAX</i> | 0.61*** | 0.59*** | 0.61*** | 0.61*** |
| <i>logsRURPOP</i> | 0.33*** | 0.31*** | 0.29*** | 0.29*** |
| <i>logNRA</i> | 0.09*** | 0.09*** | 0.08*** | 0.08*** |
| <i>capre</i> | | -0.13*** | -0.16*** | -0.16*** |
| <i>capre2</i> | | | -0.11*** | -0.11*** |
| <i>capre3</i> | | | | 0.002 |
| <i>R-squared</i> | 0.70 | 0.72 | 0.73 | 0.73 |
| <i>Adj. r-squared</i> | 0.66 | 0.68 | 0.69 | 0.69 |
| <i>F-statistics</i> | 163.3*** | 151.3*** | 138.8*** | 121.2*** |
| <i>Hausman test (chi-sq)</i> | 19.5*** | 8.93 | 14.1. | 14.5 |

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Source: own study.

The coefficient for the agricultural policy variables is relatively smaller compared to those of the structural variables. This indicates that general economic and structural development has outpaced the impact of policy variables.

All control variables receive expected signs. The most interesting result relates to the changing statistical significance of the GDP per capita coefficient. The estimation results indicate that general economic growth has boosted exit from the agricultural sector. However, this impact seems to diminish along with the increasing number of policy reform dummies. Net food exports, higher share of rural population and higher share of indirect taxes on GDP all indicate slower pace of structural development in agriculture, when measured in the development of the number of farms.

5. Conclusions

One of the five stated objectives of the Common Agricultural Policy is to increase agricultural productivity by promoting technical progress and by ensuring the rational development of agricultural production and the optimum utilisation of the factors of production, in particular labour. Rapid technological progress has led to increased productivity, increased average farm size and thus, to decreased number of agricultural labour input. This all is clearly seen in the rapidly declining number of farms within the EU.

The observed structural development is similar despite of the fact that average farms sizes and production structures vary significantly between countries. In addition, also the general economic and structural development impacts on the agricultural sector with different weight in different countries.

In this study, a framework to assess policy effectiveness in terms of a policy objective set was utilized. Our analysis shows that overall, implemented agricultural policies have reduced the pace of structural development. Thus, the number of farms within EU-15 would have declined more rapidly compared to a situation without policies.

However, in the long term, general structural and economic development has to some extent outpaced the impact of agricultural policies. Thus, although policies have smoothened the structural development, it has been out of the policy-makers' control.

Policy reforms have increased exits from farming and led to a more rapid decline in the number of farms. Thus, implemented policy reforms have released resources from agricultural sector to be utilized in other sectors. This indicates that the welfare distortive impacts of agricultural policies have been reduced due to the policy reforms.

To empirically assess the effectiveness of policies and individual policy instruments, more emphasis needs to be put on the definition and measurement of a particular policy objectives. Clearly defined target levels are essential in evaluating whether the implemented policies have been able to address the objectives set.

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Jak reformy WPR przyczyniły się do zmian strukturalnych w rolnictwie?

Streszczenie: W niniejszym artykule przedstawiono analizę wpływu wspólnej polityki rolnej (WPR) i jej reform na zmiany strukturalne w rolnictwie w UE-15. Autor bada rozwój tych struktur, posługując się pewną liczbą gospodarstw jako zmienną docelową polityki. Analiza ma na celu zbadanie wpływu polityki rolnej i wprowadzonych reform na rozwój zdefiniowanej zmiennej docelowej, przy uwzględnieniu ogólnego rozwoju strukturalno-ekonomicznego. W badaniu zastosowano ekonometryczną analizę danych panelowych. Z otrzymanych rezultatów wynika, że realizacja różnych inicjatyw w ramach WPR ogólnie zredukowała szybkość zmian strukturalnych i przyczyniła się do przetrwania większej liczby gospodarstw rolnych w sektorze w porównaniu z wariantem zakładającym brak tych inicjatyw. Jednocześnie reformy WPR wprowadzone w latach 1992, 2000 i 2007 doprowadziły do zdynamizowania zmian strukturalnych. Ogólnie rzecz biorąc, różne inicjatywy realizowane w ramach WPR ułatwiły przejście zasobów z sektora rolnego do innych sektorów gospodarki.

Słowa kluczowe: WPR, reforma, analiza empiryczna.