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## **Determinants of profitability of Polish rural micro-enterprises**

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## Determinants of profitability of Polish rural micro-enterprises #

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**Abstract:** Rural micro-enterprises are an important factor in sustainable rural development in post-transitional Eastern Europe. This paper deals with determining the key factors influencing profitability in rural micro-enterprises in Poland. The research design was based on a questionnaire survey of 300 rural micro-enterprises in food-processing sector in rich and poor Polish provinces. The analysis carried out in this study is centered around the Polish EU accession in May 2004. Similar to other related studies, our results show that EU accession was not perceived as a major change by rural Polish micro-entrepreneurs and that the EU related factors were not significant determinants of their profitability. However, our results also show that the success of the rural food processing micro-enterprise in Eastern Europe is most related to its owner/manager and enterprise characteristics. For owner/manager the most significant determinants are his/her age and risk-taking as the main motive for establishing an enterprise. The enterprise characteristics that determine the profitability include enterprise location within a region with competitive situation, enterprise size (being a sole trader or family enterprise), ICT advancements in enterprise and the fact whether enterprise has any certificates for its products. The results have significant implications for the researches and policy-makers and can become a basis for preparing relevant enterprise support policies in post-transitional Eastern Europe.

**Key words:** micro-enterprises, rural development, transition economies, EU Accession, linear regression model

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## INTRODUCTION

This paper presents empirically based analysis of factors influencing profitability in rural micro-enterprises. Our focus is quite unique since as opposed to relatively large literature dealing with micro-enterprises in developing countries we concentrate on rural enterprises in post-transitional Eastern Europe. Our results are based on original survey of micro-entrepreneurs engaged in food processing both in poor and rich parts of rural Poland. According to our knowledge, this is the first empirical study of the determinants of profitability of rural food processing micro-enterprises in any of the European post-socialist countries. Our research therefore fills the gap in the prevailing micro-enterprises literature dealing predominantly either with first world or third world (Schreiner and Woller, 2003).

Our analysis is centered around the period of the Polish accession to EU in May 2004. It reflects attitudes and conditions in a two-year preparatory period before EU accession, when the Polish policies, rules, attitudes, and expectations underwent a process of alignment with EU conditions. This alignment, especially for attitudes, continued during the year 2004, the first year of Polish EU membership. Our results show that the EU accession was not perceived as a major change by rural Polish micro-entrepreneurs and that the EU related factors were not significant determinants of their profitability.

In our survey we asked Polish rural micro-entrepreneurs about the shares of their sales on local, regional, countrywide and international markets, about the support from governmental and EU programs and about their perception of influence of EU accession on the performance of small rural enterprises in Poland. Both descriptive and regression analyses of the results of the survey show that these EU related concerns were not by themselves directly important for the success of enterprises. This is in marked contrast to pronounced positive EU accession effects on Polish farmers (Falkowski, Jakubowski, and Strawinski, 2011).

Our results confirm related findings of Kadooca and Francsovcics (2011) who show that Hungarian small enterprises did not perceive any major impacts of EU accession. The Hungarians small businesses did not capitalize on the opportunities offered by the EU, did not make effort to apply for EU grants and funds and did not attempt to penetrate new markets.

Our analysis shows that the success of the rural food processing microenterprise in Eastern Europe is most related to its owner-manager. Surprisingly, the characteristic of the owner - manager which matters the most is not his education or his experience with food processing but his age. The major policy recommendation for government authorities dealing with support policies is therefore not to look so much on enterprise characteristics but to

concentrate on the characteristics of the entrepreneur. Our analysis also confirms that the profitability of rural food processing microenterprises is positively correlated with favorable micro and macroeconomic conditions differentiating between rich and poor areas.

## **THE IMPORTANCE OF POLISH FOOD-PROCESSING MICRO-ENTERPRISES**

Micro-enterprises in the Polish food-processing sector are important for the development of the entire Polish economy. Poland is a post-communist country that has undergone various transformational changes, including the breaking up and consequent rebuilding of economic and social institutions, particularly that of entrepreneurship. Although private business in some limited form, especially in agriculture, have always existed in Poland, even in the times of the Communist regime, the structural changes of the 1990s caused unemployment, a decrease in production and economic stagnation in the country. Even though the Polish economy has achieved stable economic growth (on average 3-4% annually), the impact of the system's changes is still apparent. Polish rural areas are the most obvious example of this fact. The high level of unemployment and the GDP per capita below the EU average are still their main distinguishing features. This is mainly a result of the poverty and other problems in rural areas. Thus, Polish rural enterprises represent one of the best means how to alleviate poverty and increase the standards of living in Poland. Rural firms' engagement in local issues, creation of new jobs and opportunities for people makes them one of the key factors in the development of rural Poland. Therefore, the success of Polish rural micro-enterprises that constitute most of Polish SMEs is closely connected to the improvement of the quality of life in Poland.

In most European countries micro-enterprises' share of the total employment is 34% with about 93% of firms being micro-enterprises (European Commission, 2003; 2004a and 2004b). However, the growth and development of micro-enterprises is usually described in the broader context of the growth of the whole SMEs sector, of which they constitute the large part (about 95%). Thus, the issues related to micro-enterprise are very similar to those of the issues related to SMEs as a whole and our results may be relevant to much wider area than the rural Polish food industry micro-entrepreneurs covered by the research study underlying the analysis of our paper.

## **DESCRIPTION OF STUDIES REGIONS**

This section provides an overview of the two study region that has been selected for the data collection. Although both regions involved in the research have been already mentioned before in the text, this was done just for the purpose of easier orientation and referencing.

It can be seen that both regions selected for the analysis differ in their level of economic and social development. These regions are represented by the two Polish provinces. On one side, there is less developed Warmia-Mazury province with the highest rate of unemployment in the country, undeveloped infrastructure and low business dynamics. On the other side, there is the wealthiest province of the county, Mazowieckie province. It is the site of the capital city Warsaw and the hub of country's business activity.

In addition, it can be shown that the initial conditions for rural enterprises in food-processing sector in both provinces differ considerably. Whilst favourable business environment and economic development in Mazowieckie province is likely to enhance success of rural micro-enterprises, low level of economic development in Warmia-Mazury province is likely to be an obstacle for their success. The selection of such diverse provinces makes the study of the more interesting and diversified. With regard to the importance of food-processing sector in both provinces, some interesting implications can be made. Mazowieckie province is surpassing Warmia-Mazury province by the gross volume of production in food-processing sector. However, if the value of gross production volume in food-processing sector is calculated per inhabitant, Warmia-Mazury province is in the lead.

Warmia-Mazury and Mazowieckie provinces were selected following the main objectives of the study. It was deemed appropriate to restrict the data collection to two regions. The justification for selecting these two provinces is based on the three reasons:

- The selection has to be narrowed up to few provinces due to better sampling and the data availability;
- Provinces with most differences in incomes, employment and level of life have to be chosen in order to make a sample more diversified;
- Provinces with varied number of economic subjects as well as those containing large cities/urban centres and those located in more remote areas are more interesting for inter-comparison and analysis.

### **Profile of Mazowieckie province**

Mazowieckie province (województwo Mazowieckie) is the largest province in Poland (35.6 thousand sq. km which makes 11.4% of the country's territory). It is situated in the central-eastern part of Poland and is a site of the Polish capital city, Warsaw.

Mazowieckie province borders Kujawsko-Pomorskie province on the north-west, Warmia-Mazury on the north-east, Podlasie and Lubelskie provinces on the east and Swietokrzyskie province on the south. The provinces location in the national context is strengthened by the fact that province's main administrative district, Warsaw, is the country's capital (site of the government and all ministries).

The land-structure in the province shows an extensive use of farming and agriculture. About 71% of all land in the province is used for agriculture. The communications (roads, major routes) occupy 2.85% of all territory and around 4.4% are given to construction.

According to the population size Mazowieckie province occupies the first position in the country's rank (5 146 thousand of people, which makes about 13% of the whole population of the Republic of Poland). The average population density is 144 people/sq. km. and is the largest in the country (country's average is 122) (Polish Central Statistical Office, 2005). The rural population makes about 35.3% of total population (Polish Central Statistical Office, 2005).

The gross reproduction levels in the Mazowieckie province was 0.646 in 2000, 0.592 in 2003 and 0.607 in 2004 (0.568 in urban and 0.685 in rural areas). Relatively low gross reproduction level is fully compensated by the inward migration of people looking for work in Warsaw and neighbouring regions. In 2000-2004 alone the population increased by about 25 thousand people thanks to immigration from another regions of Poland (Polish Central Statistical Office, 2005).

According to the data from the Polish Central Statistical office, 22.8% of the province's population are people before entering the labour force, 60.7% are people constituting the labour force and about 16.5% are those who left the labour force (retired persons) (Polish Central Statistical office, 2005).

The population in Mazowieckie provinces is highly educated: apart from the Polish largest University – Warsaw University, there is a number of Polytechnics, public and private Universities and colleges not only in the capital cities but in every larger town. The easy access to education and the concentration of educational institutions makes this province particularly attractive for potential employers. The graduates of primary school make 65.9 thousand in 2004, and graduates of higher educational institutions (University 1st and 2nd level) about 76.2 thousand people (Polish Central Statistical Office, 2005).

Mazowieckie province is characterized by the high level of industrialization and production. The GDP per capita in 2002 was by about 52.3% higher than the country's average and it occupies one of the highest positions by the number of employees in the industrial sector - 381.1 thousand people (Polish Central Statistical Office, 2005).

About 2 025 thousand inhabitants of Mazowieckie province are employed, among them 896 thousand are employed in the state-owned sector and 1 156 thousand are employed in the private sector (Polish Central Statistical Office, 2005).

The total number of unemployed in Mazowieckie province was 352.9 thousand people in 2002 (11.8% of the total number of unemployed in the country). The total number of women in this share was 174.5 thousand (50.6% of all unemployed in the country). The largest share of unemployed was represented by the age group of 25-34 (98.2 thousand people) which is 27.8% of all unemployed in the province (national average is 28.1%).

Mazowieckie province has a total number of 2.4 million employees, which is 15.4% of the total number of people in Poland, who are employed. The province also has the largest share of employees per 1000 inhabitants - 467.4 (405.8 being the country's average). The proximity of a capital city, which results in multiple employment opportunities, makes Mazowieckie province to be the Polish region with the lowest unemployment rate in the country; 14.7% in 2004 (national average rate of unemployment in Poland in the same year is 19%). The unemployment rate has slightly grown over the several preceding years rising from 10.8% in 2002 to the present 14.7% level (Polish Central Statistical Office, 2005).

Labour force occupational profile is largely affected by the localization of Warsaw agglomeration and relatively high level of urbanization in the country (with relatively high share of rural population). Around 25.1% of all employees are employed in agriculture (national average is 27.6%), 23.5% on industry and construction (national average is 27.7%) and 52% to services (national average is about 44%).

Mazowieckie province can also boast by the highest average personal income among the other provinces. In 1999 the average monthly wage was 2.2 thousand PLN (30% higher than the national average).

The significance of small and medium enterprises in Mazowieckie province is considerably high. The share of SMEs of the total number of enterprises is 99.7% (of them about 96% are micro-enterprises).

Mazowieckie province has 16% of all enterprises operating in Poland which is the highest share among the other provinces. The majority of business enterprises in Mazowieckie



province are sole-traders, which is, however, followed by the commercial companies which has gained more share in the last years.

The share of state-owned enterprises, cooperatives and foundations is similar in both provinces. The province participates in the total national export by 18.2% (in 2001) of which almost half belongs to the export done by the SMEs (3489.6 million USD) (Polish Agency for Entrepreneurial Development, 2005).

Of all enterprises 16% were constituted by the sole-traders (one-man firms), 18% civil partnerships, 28% of companies limited, 16% of partnerships, 17% of cooperatives and 16% of state-owned enterprises. The province seems to be very attractive for FDI – in 2002 there were registered 14.3 thousand enterprises with foreign capital (34% of all foreign-owned firms in Poland).

The share of private enterprises to all enterprises in the province is also above the national average (77%) and constitutes 86% (Mazowieckie regional office, 2002).

The food-processing sector in Mazowieckie province is dynamic and evolves fast thanks to high level of economic development and the proximity of capital city Warsaw. The absolute share of food-processing sector in Mazowieckie province is higher than in other Polish provinces .

It is apparent that Mazowieckie province occupies the leading position in the country by the slaughter of cattle and second position by the slaughter of pork. Further, it is on the fifth position (after Kujawsko-Pomorskie, Wielkopolskie, Lubelskie and Dolnoslaskie provinces) in production of sugar and it is third in production of beer and beverages.

Although it is hard to follow the situation in all sections of food-processing industry by province (Polish Central Statistical office does not keep these data) on the basis of the available information it can be deducted that food sector plays an important role in the province. Due to the competitive equilibrium situation in Mazowieckie province and the large share of private business companies a well-developed food-processing. Rapidly-growing capital and its suburb create a demand for food-processed goods. This is more than likely to induce high demand for processed food and beverages in the province.

### **Profile of Warmia-Mazury province**

Warmia-Mazury province (województwo Warmińsko-Mazurskie) is the fourth largest province in Poland (24.2 thousand sq. km which makes 7.7% of the country's territory). It is situated in the north-eastern part of Poland.

Warmia-Mazury province borders Kaliningrad district (a Russian Federation special-status administrative region) in the north, Podlasie province in the east, Mazowieckie province in the south and Kujawsko-Pomorskie and Pomorskie provinces in the west. The province's location in international context is strengthened by its position on the shore of the Baltic Sea (delta of Vistula River), within a reach of Mazury Lake District as well as its profound co-operation with the Baltic states (Lithuania and Latvia). The land-use structure of Warmia-Mazury province a dominance of agricultural lands and forests is apparent.

According to the population Warmia-Mazury province occupies the 12th position in the country's rank (1 463 thousand of people, which makes 3.8% of the whole population of the Republic of Poland). The average population density is 60 people/sq. km. and is one of the lowest in the country. Especially rural areas which are a focus of this research have low density of population – about 25 people/sq. km (Institute of Market Economy Research 2002). The rural population makes about 39.9% of total population (Polish Central Statistical Office, 2005).

Being the region with one of the highest gross reproduction levels in the country (0.732 in 2000, 0.655 in 2003 and 0.645 in 2004, 0.572 in urban and 0.759 in rural areas), Warmia-Mazury province is also characterized by the highest rate of rural emigration (in 2004 it was 1.3 per thousand of inhabitants, with the national average of 0.3) (Polish Central Statistical Office, 2005). It can be explained by the high unemployment, lack of perspectives and severe social situation. With a regard to all these problems people tend to move to the large urban agglomerations, primarily in a search of employment opportunities.

According to the Polish Central Statistical office, 28% of the province's population are people prior to entering the labour force, 59.7% are people in the labour force and 12.1% are those, who left the labour force (retired persons) (Polish Central Statistical office, 2004).

The biggest problem of the labour market in Warmia-Mazury province is a low level of education and poor qualifications of the potential employees. Starting from the 1999 Warmia-Mazury University in Olsztyn (a joint co-operation of Agricultural and Technical Academy, High School of Pedagogy and Warmia Institute of Technology) opened its doors to students. Today 25 thousand students are enrolled in its educational programs (Polish Central Statistical Office, 2002). Altogether, there are 36.7 thousand students in the province, which makes the ratio of 172.1 students per 10 thousand inhabitants (the lowest one in the country according to the Central Statistical Office, 2006). The graduates of primary school make 21.7 thousand in 2004, and graduates of higher educational institutions (University 1st and 2nd level) about 11.8 thousand people (Polish Central Statistical Office, 2005).

Warmia-Mazury province is characterized by a relatively low level of industrialization. Its share in the country industrial productions makes 2.5% and a mere 2.9% in country's employment. Besides, it occupies the 14th position in the rank of the number of employed in industrial sector (for 1000 inhabitants) (Institute of Agricultural and Food Economics, 2005).

In 2004 about 386.6 thousand inhabitants of Warmia-Mazury province were employed. Among them, 257 thousand people are employees in the private sector and 129 thousand are employees in the state-owned sector (Polish Central Statistical Office, 2005). The majority of province labour force is allocated to the sector of services, which is followed by industry/construction and agriculture.

In the 1998 more than 70% of all employees were employed in a private sector. In the same time Warmia-Mazury province is the region marked by the highest rate of unemployment in the country. The unemployment rate has increased from 25.8% in 2000 to 29.2% in 2004 making the province the worst-placed region in Poland in terms of unemployment (Institute of Market Economy Research, 2002 and Central Statistical Office, 2006).

High rate of unemployment in the province is especially apparent when compared to the national average of registered unemployment in the related periods – around 19% (Polish Central Statistical Office, 2006). Of the whole number of unemployed women constitute the largest group – around 55.4%. More than 77% of the unemployed do not receive any social security transfers from the state; 48% of the unemployed live in rural areas. The rate of unemployment differs from parish to parish: in 1999 the lowest unemployment rate was in Olsztynskie, Iławskie and Elbląskie parishes, the highest was measured in Piskie and Bartoszyckie parishes (Central Statistical Office, 2002). High unemployment is combined with the monthly average wages below the country's average. The average monthly gross wages in Warmia-Mazury province in 2004 was 1967.23 PLN, a mere 86% of the country's average (Polish Central Statistical Office, 2006).

Another problem, typical for the Warmia-Mazury province is the surplus of labour committed to farm production. This constitutes the major barrier to the development of the agricultural sector in the province. Excessive employment slows down the rate of improvement of the agrarian structure, farming efficiency, technological progress, and this in turn leads to low income in the agricultural sector and incomplete use of the competitive potential. Gradually worsening price relations make the situation more serious.

Though the limitation of employment in agriculture is one of the basic challenges to be confronted in the immediate future, the opportunities for labour to leave agriculture are and may remain few due to the general unemployment level and low mobility of farmers and the rural population on the labour market. It is obvious that the social function of the absorption of domestic labour by the agricultural sector (at the expense of economic effectiveness of the sector) should be limited in the interest of competitiveness.

Migration of the population from agriculture is considerably hampered by a worse access to education and thereby a worse level of education of farmers and the rural population. Hence, there is difficulty in competing with the urban population for attractive jobs. The growing costs of secondary and university education also play an important role (costs of commuting, board and accommodation) for the relatively impoverished rural population.

A low level of human resources may be a barrier to the structural transformation process, technological progress and to the opportunities arising from the participation in the EU Single Market. The search for off-farm jobs which require appropriate qualifications is hindered not only by a low level of general education but also by poor agricultural education (a too slowly changing curriculum).

Therefore, it remains a well-known fact that a large proportion of the population employed in the agricultural sector will remain on farms until retirement age even at the expense of a lower income. Opportunities for quick and substantial reduction of the employment level in the agricultural sector are mainly associated with the possibilities for general economic development.

Rural unemployment and limited opportunities for finding a job in rural areas seem the most important and the most difficult problems to be overcome. Counteracting unemployment in rural areas, e.g. facilitating access to the labour market or the generation of non-agricultural jobs in rural areas, is, therefore, one of the most important challenges.

At present, the labour market does not allow one to quickly move surplus rural labour outside rural areas. This is because the unemployed rural population fails in competition with the urban unemployed in local labour markets which are concentrated in towns. Moreover, investors tend to generate new jobs in towns rather than in rural areas. Low mobility of the rural population on the labour market is another problem aggravated by the lack of appropriate housing infrastructure.

The level of well-being (measured in personal wealth), especially for the rural population, is different from the country's average. This is largely caused by the low level of incomes per capita in the region, high level of unemployment as well as the considerable amount of people

living on social security. From the analysis of the homesteads it stems that on average there are 3.27 dwellers per one homestead (the province's average), while only 1.02 dwellers are employed, 1.32 are supported by the members of their family or relatives and 0.9 dwellers per homestead are on social security (the country's average is 3.17, 1.15, 1.17 and 0.82 respectively).

In 2004 there were 108 910 officially registered enterprises in Warmia-Mazury province (a 6% increase in comparison with the 2000). Of those enterprises 6 770 were enterprises in public sector and 102 140 in private sector (Polish Central Statistical Office, 2006).

Small enterprises in Warmia-Mazury province play a crucial role (110 166 enterprises in 2002 which is about 95% of all enterprises). This group of enterprises is dominated by the micro-enterprises (chart 4.5). This situation is reflected in the rural areas, where micro-firms play the decisive role and often represent the only reliable employer.

Around 96% of all business enterprises in Warmia-Mazury province are sole-traders ("natural persons" according to the Polish statistical definition) and a mere 3% of the economic subjects are considered to be large enterprises.

Sole-traders, civil companies and commercial companies dominated the structure of all business enterprises in the province. All business entities of the province constitute 3% of all entities of national economy (5% of entities in public sector and 3% of entities in private sector of the national economy).

The province's share in the Polish GDP is about 3% (OECD, 2002). The dominating sections of economy where most of the business enterprises from Warmia-Mazury province operate are trade and services and industry (which also includes manufacturing and food-processing).

Food-processing represents one of the most economically important sectors in Warmia-Mazury province. High share of agriculture and rural economy in the province provide an abundance of raw materials and goods for the local food-processing industry. The province is famous for some traditional food products such as smoked meat, sausages as well as alcoholic beverages. Apart from that, food-processing draws from the popularity of the province as the popular holiday destination. Considerably high share of agro tourist farms provide a good supply of home-made food products, especially during the summer months.

Warmia-Mazury province occupies the fourth place in the country (after Mazowieckie, Lubelskie and Wielkopolskie provinces) by the cattle slaughters, third place (after Wielkopolskie and Mazowieckie provinces) according to the production of pork. In addition, it ranks above the national average in the production of butter. Warmia-Mazury province

produces around 12% of all Polish beer and beverages (fourth place after Slaskie, Wielkopolskie and Mazowieckie provinces). This ranking of Warmia-Mazury province conveys one more important message about the importance of food-processing sector. As it was mentioned above, the province occupies the 12th position in the country by the population size (1 463 thousand people) among all 16 Polish provinces. Thus, when a share of output in various sections of food-sector is computed per one inhabitant, the result highlights the importance of food-processing in the province. This is apparent even in comparison with such economically developed province as Mazowieckie province (Polish Central Statistical Office, 2006).

## **DATA**

The analysis of this paper is based on survey of rural food processing micro-enterprises in Poland. Micro-enterprise is defined according to the Recommendation of the EU Commission 2003/361/EC as an enterprise with 9 or less employees.

Two regions, represented by two Polish provinces, selected for our analysis sharply differ in their level of economic and social development. On one side, there is less developed Warmia-Mazury province with the highest rate of unemployment in the country, undeveloped infrastructure and low business dynamics. On the other side, there is the wealthiest province of the country, Mazowieckie province. It is the site of the capital city Warsaw and the hub of country's business activity. The initial conditions for rural enterprises in food-processing sector in both provinces differ considerably. While favourable business environment and economic development in rich Mazowieckie province are likely to enhance success of rural micro-enterprises, low level of economic development in poor Warmia-Mazury province is likely to be an obstacle for their success.

In order to test the first version of our survey questionnaire, 30 pilot surveys were conducted in September-October 2004 in both Warmia-Mazury and Mazowieckie provinces. All pilot surveys were completed and no rejection was registered. The pilot survey has shown that the direct data (numbers) on enterprises profits, incomes and turnovers are unavailable to obtain and time horizon longer than three years creates problems for the surveyed. In accordance with this two major adjustments were done: (i) the questions about profits, incomes and turnovers were re-arranged in such a way that the surveyed entrepreneurs would have to choose clusters (ranges) of the values and not the direct values themselves and (ii) the

time horizon of three years (2002-2004) was selected for all the variables in the main survey. In addition to that some minor re-wording and corrections have been done.

The face-to-face questionnaire with 52 questions which was implemented between October 2005 and February 2006 consisted of six main sections. The main information section was used to get to know each enterprise better. The characteristics and motivation of the owner section was designed to obtain all relevant information about enterprise owner/manager. Section three provided the in-depth view into the history and profile of the enterprise. Assets and sources of capital sections gave an overlook of enterprise most “sensitive” financial information. Section five was designed to obtain information on enterprise market position and competition. Section six is concerned with an overview of subjective factors of enterprise development. The detailed questionnaire is provided in Appendix 1. The data obtained using the questionnaire have been used in order to construct a profile of typical owner/manager of Polish rural micro-enterprise in food-processing sector and typical micro-enterprise in this sector and to carry out an econometric analysis.

The scope of our questionnaire covered the main characteristics identified as important determinants of success, performance, profitability in recent studies of microenterprises all over the world. For representative most recent studies, see Adekunle (2011), Anim-Somuah (2011), de Mel, McKenzie, and Woodruff (2008, 2009), Mano et al. (forthcoming), Mmbengwa (2011), Munoz (2010), and Rankhumise and Rugimbana (2010). Obviously, since the realities of Polish rural areas are very different from predominantly African or Asian areas covered by the vast majority of literature, the set of particular determinants of profitability in our paper is different from the determinants considered in the above presented literature dealing with developing countries.

Of the 351 enterprises contacted 306 surveys were obtained. Two surveys were not used (not complete for all variables) and the remaining 304 cases were entered into the database. On the examination it was found that 14 cases were not appropriate for the survey. This was either because the enterprise size was beyond the sample objectives or because the surveyed enterprises were not classified as strictly food-processing. In order to reach the samples objective additional 10 surveys had to be done which finally made the sample complete.

## **DESCRIPTIVE STATISTICS OF OUR SAMPLE**

The general profile of owner/manager in our sample was as follows. He was 40 years old, male, with a college or University diploma who established an enterprise himself using his

own savings and has owned and managed it for 10 years. This high education level of rural Polish food processing entrepreneurs is quite interesting feature showing unusually high level of human capital. Obviously, the education level refers only to general human capital, not to any specific business training as considered by Berge, Bjorvatn, and Tungodden (2011).

Typical owner/manager in our sample never followed any economic indicators. He came from the same province where he was currently working and was previously employed in the same or similar enterprise. His main motive for enterprise creation was seeking independence or risk-taking, although his enterprise registration was not smooth and easy. While the search for independence seems as an obvious incentive, seeking of risky activities as a main reason for establishing enterprise is an interesting motivation.

The typical enterprise in our sample was established by its owner in 2000 or 2001 and it was a sole-trader company. It employed 6 people and was engaged in bakery, confectionery or meat-processing. It never applied for any patents and certificates for its products but had an Internet connection (usually Broadband). The typical enterprise was doing quite well: its turnover increased throughout the previous three years, it gained new clients and its average annual gross profit per employee was around 8 000 Zloty (about 2 000 EUR). It had its own branded products and was selling them mostly on local market.

The typical enterprise had 15 main competitors in the same parish and it was trying to compete with them by increasing the quality of its products and decreasing the price. It chose the region where it operated due to the easy access to natural resources. The typical enterprise never received any financial help from local or central government and never applied for EU funding. In fact, Polish EU Accession was declared to be of no importance for the typical small rural enterprise. The main problems faced by the enterprise were locally and centrally-imposed taxes, fear of domestic competition and unfair governmental policies towards SMEs. Generally the typical enterprise would welcome the improvement of favourable climate for conducting business activity in Poland.

## **REGRESSION MODEL – SPECIFICATIONS AND INTERPRETATION**

### **Specification of Regression Model**

The linear econometric model used in our paper is a multivariate statistical model of the form:



$$Y = \beta_0 + \beta_1 X_1 + \dots + \beta_n X_k + \varepsilon_i$$

where  $Y$  is the dependent variable defined as the enterprise profit per employee in 2004,  $X_1, \dots, X_k$  are the explanatory variables (the full list of variables with their description and expected signs is presented in Appendix 2) and  $\varepsilon$  is the error term.

The results of our estimations are conditional on a set of specification and diagnostic tests. First, heteroscedasticity test was run and heteroscedasticity was detected. Therefore, robust standard errors were used. Second, Breusch and Pagan Lagrangian multiplier test for individual community effects has been run. The results of the test are the following:  $\chi^2(1) = 0.33$ ,  $\text{prob} > \chi^2 = 0.5671$ . This means that no individual community effects were detected. In addition, a Chow test with province dummy has been run. This was done in order to tests interaction model against the whole sample model. The results of this test are the following:  $F(50, 199) = 0.83$ ,  $\text{prob} > F = 0.7809$ . This clearly shows that in this case the whole sample model is better for explaining the small enterprise profitability than using the model with detailed provincial level interaction terms. Given the results of our testing the ordinary least squares technique has been employed. The full results of the estimation are presented in Appendix 3.

In this section, we report the results of a stepwise regression model which has been applied in order to identify the factors that are most significant for enterprise success. The model has been run using the stepwise procedure in Stata. The removal threshold for entering the model has been set at 15% significance level (in order to see the variables which will over-bounce the 10% significance level). The results of our stepwise estimation are as follows:

Profitability = -15347 (10931)+3579 (1693) Rich Province Dummy\*\*- 14 (6) Age Squared\*\* + 16473 (10228) Risk - 5609 (2393) Cash\*\* + 9994 (5230) Certificate\* - 2987 (1973) Company Limited + 1386 (575) Enterprise Age Squared\*\* - 4333 (2877) Family Firm - 1118 (530) Enterprise Size\*\* -121 (80) Enterprise Age - 4904 (2902) Cooperative\*. Numbers in parenthesis are robust standard errors,  $R^2$  is 0.17, and \*, \*\*, \*\*\*, denote 10, 5, and 1 percent levels of statistical significance respectively.

### **Interpretation of Regression Model**

The major factors that have come through as significant in our model are owner/manager age, owner/manager motive for enterprise creation, enterprise size, and enterprise location by province enterprise. Profitability is also on a lesser degree of statistical significance influenced by legal status of enterprise and by use of modern technology as proxied by a use of international certificates for the products manufactured by the enterprise.

Generally, our results showed that support of innovativeness, entrepreneurial spirit as well as some specially-targeted programs of entrepreneurial support might be crucial in increasing the success of Polish rural micro-enterprises.

It stemmed from the analysis of all enterprises that owner/manager's age and enterprises location played the key role in enterprise success. This suggested that those two factors should be paid some special attention in analyzing the success of Polish rural micro-enterprises or influencing this success. These results also showed that enterprises in rich Mazowieckie province are more profitable than those in poor Warmia-Mazury province.

Enterprise size and enterprise legal status (being on a more advanced legal status – e.g. being a limited company or a stock company rather than a sole trader) were negatively impacting enterprise success. This suggested that enterprises that were created as family enterprises and limited companies are less successful (earn less profit per employee) than sole-trader companies. Since by the definition the microenterprise cannot have more than 9 employees, the very successful dynamically growing enterprises are by definition out of our sample. For the microenterprises with less than 10 employees, the negative influence of the size may indicate the governance and incentive alignment problems. These problems appears immediately when the entrepreneur (principal) employs the first worker (agent). They grow with the number of worker employed, especially when there is more workers, maybe even as little as 3 or 4, who do not work all the time alongside the entrepreneur so that direct management and monitoring of their effort level by the principal is not possible. The problems of coordination and moral hazard therefore may negatively influence the profitability of the enterprise as a function of its size measured by number of employees.

Factors such as Broadband Internet connection in enterprise (which was indicated as significant in an alternative specification of the model), cash motivation of owner/manager and certificates obtained by the enterprise were also of considerable importance for enterprise success

An interesting finding was that owner/manager's highest level of education did not matter for enterprise success in most of the cases. In addition, contrary to prior expectations, our

working hypotheses about the importance of owner/manager business experience, competence in the field of enterprise activity and training in this field did not prove to be significant.

Our statistical inference also leads to rejection of our working hypotheses about importance of enterprise branded products, number of main competitors and areas of advantage concerned the competitive environment for enterprise (assuming that all those would positively influence enterprise success). The main reason for this rejection might be due to the fact that due to the size of most enterprises (employing 6 people or less and usually being sole traders or small companies) it does not pay off to care too much about branded products or fighting competition.

The insignificance of our working hypotheses concerning “hard” and “soft” supports: e.g. grants, subsidies, loans, etc. (“hard supports”) and advice and schooling (“soft supports”) also raised some questions. The main reason for those factors to be insignificant for enterprise success might be the fact mentioned earlier that the majority of rural enterprises, particular those in food-processing sector, did not use those supports or simply did not know about them. Alternative argument would be that perhaps the criteria for allocation of both “hard” and “soft” supports were set too high and there was much paperwork and administration involved so that it did not pay off for small entrepreneurs to apply for them considering time and business constraints.

## LIMITATIONS

An analysis like the one undertaken in this research brings a number of limitations, which should be outlined here.

First, some bias might arise in relation to which enterprises have been chosen to participate in survey. In a way, all enterprises that have survived on the market for more than three years (e.g. mostly those included in the survey) might be called “successful”. That is why a different, financial measure of enterprise ‘success’ has been adapted to deal with this issue.

Second, this study has not attempted to draw a link between small enterprise development and farm diversification. In fact, all the enterprises selected for data collection were engaged in the food-processing sector and therefore, by definition, were not envisaged to have any additional farm activity. It is fully recognized that this issue might have been relevant for small firms in rural Poland; however the question about the existence of farm activity was not included in the questionnaire.

Third, as with all surveys, some bias might occur in relation to the answers the respondents (owner/managers of the selected enterprises) have given. Some of the survey's questions concerned "sensitive" financial enterprise information, which entrepreneurs are not always eager to answer. Nevertheless, clusters (ranges) for reporting such information have been implemented into the survey, and the whole questionnaire has been limited to twelve pages with the possibility to answer the questions quickly and clearly.

Fourth, it is fully recognized that the survey and its data date back to 2002-2004; therefore some of the findings presented in this study might no longer reflect the actual state of things. In particular, this concerns the Polish EU accession: in the time the survey was conducted, the majority of respondents seemed to be worried about the possible negative consequences of Polish EU membership, caused by the loss of competitiveness of micro-enterprises or the massive entry of firms from the EU15 into the Polish food market. However, none of these fears materialized and Polish EU membership has been widely accepted by small entrepreneurs who learned to draw money from EU structural funds to help their business development. Therefore, it is understood that if this survey had been run today, the answers regarding EU membership and its consequent opportunities might have been different somehow.

Fifth, some problems have emerged during data analysis, namely in the econometric modeling of enterprise success. In particular, the problem of individual-specific effects that is notorious for panel and cross-section data has been detected. In order to deal with it, the models of enterprise success have been run both with and without individual-specific dummies (location dummies) and tested using Breusch-Pagan and Hausman tests. Where necessary, the fixed-effects or random-effects models have been applied.

Leaving these limitations aside, the methods used in this work are based on those employed previously in related research with successful results.

## **CONCLUSIONS AND POLICY IMPLICATIONS**

It follows from our analysis that enterprises established by the owners/managers who were eager to engage in risky business activities were more successful than those which were established for owner's self-realization. Additionally, enterprises that were established by the owner/manager who did not have any "inner" purpose (i.e. simply needed cash or followed the advice of family or friends) tended to be less successful than those which were established by owner/manager for achieving self-realization. A wish for independence and self-efficiency

of Polish rural entrepreneurs (owners/managers of the enterprise) is, therefore, confronted with the fear of unemployment and the need of cash. Those three factors can be equally important motives in enterprise creation. It appears that the majority of the new enterprises established in Poland were created by people who were trying to utilize their business opportunity, get independency and self-realization and very few were created by the individuals who were led mainly by the necessity to improve their harsh life conditions.

These findings about the inter-dependence of risk-seeking motive of establishing an enterprise and enterprises' success are very important as far as they unveil an important insight of the psychological profile of owners/managers of Polish rural micro-enterprises. Generally, they showed that risk-averse people who started their own business in rural Poland were less likely to become successful. Knowing this gives Polish policy-makers very powerful information. The main policy implication for the relevant Polish stakeholders is the need of being very careful about lending money to people who are starting their own businesses without a specific vision and motivation. In another words, Polish governmental funding and various programs of rural and entrepreneurial development should be carefully targeted at the right groups of people. In addition, banks and financial institutions should not treat all Polish entrepreneurs according to the same standards. There are different categories and reasons for becoming an entrepreneur in rural Poland and that reasons might be the determinants of the business success. Polish lenders or international agencies should be very weary to give too many loans to people who are starting their enterprises just because they have no other employment opportunity. This investment might be an unsuccessful one.

Moreover, it seems necessary for Polish policy-makers to identify the people who are risk-takers because they might make very successful rural entrepreneurs. In that sense, recruiting graduates at the Universities, schools and other educational establishment (e.g. organizing student competitions) might help. Additionally, it seems appropriate for the Polish government to create a good image of entrepreneurial activity in the country. Due to the rapid changes during the transformation, many entrepreneurs in the early 1990s made their money using frauds and illegal activities. That is why, even today, for the majority of Poles, the word "entrepreneur" is still a synonym of the word "thief". This image should be changed; being an entrepreneur should not be perceived as something negative. Possible promotion might include advertising campaigns that would highlight the excitement and self-reliance of being an entrepreneur, television spots and radio commercials in central and local TV and radio stations, information campaigns in schools and other educational establishments and organizing schooling for those who show interest in opening their own business.

The results of our descriptive statistics and statistical inference indicated that neither young, nor old entrepreneurs were successful in running their enterprises. It seems that young owners/managers might have enough strength and energy in order to grow their enterprises; however, they are the ones who lack credibility and skills possessed by the old owners/managers. It seems that a compromise between two is the best acceptable solution.

It appears that the success of rural food-processing micro-enterprises is stronger in enterprises owned (or run) by the middle-aged owners/managers (with the optimal age for doing business equal to 40 years of age). This suggests that policies for support of small enterprises should develop specific forms of support for middle-aged entrepreneurs. For instance, attention should be paid to the fact that middle-aged owners/managers are not that dynamic and innovative, not so well-acquainted with modern technologies and do not have such a good knowledge of foreign languages as their young counterparts. Older owners/managers obtained their education during socialism and many of them have difficulties to catch up with the novel advancements of today. If the aim of Polish enterprise policy is to increase success of those enterprises run by middle-aged owners/managers, specific forms of conveying information they lack should be found (i.e. free courses of using Internet, language training, free information about applying for EU structural funds, governmental funding, etc.).

In general, it appears that younger and more educated people might be slightly more entrepreneurial. It also appears that more educated people in more developed regions tend to be successful and the firms they lead quickly overpass the limits of the micro-enterprise and grow into the medium or large enterprises or they tend to search for paid employment in large regional centres. It is in less developed regions in Poland that more educated people usually create their own enterprises. This brings one important recommendation for relevant Polish policy-makers: something should be done to attract more educated people to establish their enterprises in more developed regions. Although paid employment in Poland might seem less stressful and more secure for the majority of people, advantages of running a micro business enterprise in rural areas should be highlighted. Perhaps, this can be done using some system of bonuses during enterprise establishment (e.g. lower interest rate on enterprise credit or larger sum of a start-up loan) that are awarded to more educated people in more developed regions.

There is one more implication that comes from the data analysis and has to do with the level of education of owners/managers in rural food micro-enterprise in Poland and with EU funding. It appears that EU SAPARD funding went mostly to the enterprises headed by

highly-educated owners/managers (e.g. those with Master and PhD. degrees). The causation, however, can be reverse: it might not be SAPARD funding that makes enterprises more successful. It might be that successful enterprises governed by the better-educated owners/managers are the ones who usually apply for SAPARD funding. In one way or another, this creates additional recommendation for relevant Polish stakeholders and policy-makers: if they are going to provide Polish rural entrepreneurs with more funding (especially from the EU structural funds), better-educated entrepreneurs should be the first to receive them.

Overall, it seems that allocation of people into entrepreneurship might be not so good in poor or less-developed regions in Poland (represented here by the Warmia-Mazury province). There are some problems with allocation of people and enterprises by provinces: education matters in one province and does not matter in another. Probably poorly-educated people who become entrepreneurs should not really go into business but still do (because they would not find any employment). It seems that in the context of intra-regional differences in rural Poland, establishing a micro-enterprise might be misused in less economically developed regions. As a result there are enterprises created due to the lack of other employment alternatives by the people who cannot become successful entrepreneurs. The existence of such enterprises is doomed and their creation and existence cannot be viewed as meaningful contribution to the well-being of Polish rural regions.

Our results suggest that conditions for establishing and running the enterprise in rural Poland were region-specific. It is clear that rural micro-enterprises located in rich Mazowieckie province were more successful than micro-enterprises in poor Warmia-Mazury province.

It appears from our descriptive data analysis that establishing and running a company limited or stock company requires enormous effort to set it up and a good knowledge of enterprise-related specifics for operating in business, such as “tacit” knowledge (commercial law or accounting). Badly-educated owners/managers might not want to get involved into these troubles and prefer to run their business as sole-traders. Given the fact that sole-traders constitute the majority of small firms operating in Poland it yields one important suggestion for Polish policy-makers. It might be that simplifying the process of registration of companies limited and stock companies can increase their numbers in Polish rural areas. This, in turn, might lead to increasing employment and well-being of population in these areas, especially in less developed rural regions.

The fact that all forms of commercial enterprises were less successful with respect to sole-trader can be partially explained by the existence of “gray” economy and a problem with incentives alignment in joint decision-making in small rural enterprises when too many people (i.e. family-members or relatives) are trying to run the company. This might also suggest that many individuals who established a small business enterprise did not want to get involved in creation and maintaining the limited company or cooperative. Enterprise laws and tax regulations in Poland are very complicated and intransparent, which is supported by the findings by entrepreneurs and entrepreneurial agencies (see the report of Polish Agency for Enterprise Development, 2003). Becoming a sole-trader is seen by Polish entrepreneurs as less cumbersome, especially with regard to enterprise administration and taxation. A clear message for the relevant Polish stakeholders is that enterprise law should be amended considerably. Softer regulation and less pressure on enterprises, especially within the first years of their existence, might be a good start for such a policy. This might be followed by the introduction of considerable changes in enterprise law and labour law. Polish policy-makers might also consider changing these laws using a more liberal approach to the entrepreneurship that exists in other EU countries.

The number of enterprise’s main competitors was important in Warmia-Mazury province and was not important in Mazowieckie province. Moreover, the results of our descriptive data analysis show that either the number of enterprise’s main competitors negatively/positively impacted enterprise profit per employee in the previous years (for which the data is not available), or that micro-enterprises are so small and supply such small regional units that they can find their customers without competing with each other. This finding might suggest a lack of development on the respective markets. People are becoming entrepreneurs because they have to (although some of them should not). The number of competitors would not matter if people were doing what they wanted to do because everybody would be in the job. People would be going to the jobs and occupations where the returns to their abilities and qualifications are the highest (providing that the labour market allocation process works well). If this allocation process does not work properly, people create enterprises in the business sectors where lots of other competing firms operate. This makes it quite clear for the newcomers that they will have to compete and will not probably do so well. However, there is simply nothing else they can do and the creation of small business is often their only opportunity. This provides some sensible explanation of the processes that are going in the Polish labour market. The problem about it is that there is nothing much to be done in policy terms. Perhaps, as poor regions and provinces in Poland develop, the situation will improve



(as well as labour market allocation will improve). However, if policy-makers are concerned about labour market allocation today and they think that giving assistance to entrepreneurs is crucial, they should also realize that lots of potential entrepreneurs are probably not that good. There should be a lot more screening before providing assistance to the micro-enterprises in less-developed province, than in the more developed ones. Enterprises that are eligible for that assistance should be carefully selected and monitored.

Additionally, the results of this study show that modern technologies (especially information and communication ones) can play a very decisive role in the success of Polish rural micro-enterprises. First of all, it appeared that more educated owners/managers of rural micro-enterprises located in both provinces used Internet more often. Second, it appeared that the quality of the Internet connection also mattered: well-educated owners/managers of micro-enterprises in both provinces tended to use Broadband Internet connection.

Generally, it seems that Internet and, in particular high-speed Internet (via Broadband), can be very significant determinants of success of micro-enterprises in rural areas. High-speed Internet might be used by rural enterprises in many ways: from IP Internet telephony to buying and selling items/products through the Internet, as well as advertising products on the Internet. According to Gillet and Lehr (1999), the importance of Broadband Internet access has important policy implications. The presence of Internet in the firm induces telecommunication companies to broaden their definition of universal service; another aspect is that Internet can help facilitate competition among alternative physical infrastructure networks (telephone networks, electric utility power lines, cable television cables, or wireless networks) which can result in liberalization and competition among providers of telecommunication services (Gillet and Lehr, 1999). Thus, policy support should include extending the fast and reliable Internet network all over the country with a special impact on rural areas. If the goal of national policy is to make small rural enterprises competitive and successful, it should enable them to go hand in hand with technological progress and innovations.

Finally, it seems that micro-enterprises that were concerned about their property rights and authorship were the ones that tended to be more successful. Enterprises that had branded products also had broader spread of sales (they supplied not just local markets, but also tended to sell country-wide and even exported abroad). Enterprises with certificates for their products seemed to be more successful than those without them. Certification of products still remains a problem in rural Poland: the costs of certification are too high and obtaining them might be problematic (Polish Agency for Enterprise Development, 2006; Zolnierski, 2005). Therefore,

there is a need for the relevant governmental policy targeted at overcoming these barriers. For instance, introduction of reduced fees for small entrepreneurs or bearing the part of the certification costs (especially with regard to international certificates) might be of some help in familiarizing small firms with certification. Another question is whether rural micro-enterprises need those certificates and licenses. It might be that small firms are not interested in obtaining them. However, the strict environment of the EU Single Market and tightening competition among enterprises in the EU and between EU and other parts of the world makes certificates and licenses to be one of the essential rules in doing business in Europe. Polish rural micro-firms have to learn how to play by these rules.

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## APPENDICES

### Appendix 1

(Translation from Polish)

IDARI SURVEY



#### SUCCESS FACTORS OF POLISH RURAL MICRO- ENTERPRISES

##### A. MAIN INFORMATION

<b>A1. Date of survey</b>	<b>A2. Province</b>	<b>Code</b>

<b>A3. Name</b>	<b>A4. Parish/community</b>	<b>Code</b>

<b>A5. When was the enterprise created?</b>	<b>Code</b>
<i>Please fill in the year</i>	

<b>A6. Legal form of enterprise (Polish small business classification) (Please, mark the most appropriate)</b>	<b>Code</b>
Sole-trader	
Family firm (joint stock company)	
Limited liability company	
Unlimited partnership	
Civil law partnership	
Cooperative	
State-owned enterprise	
Other (What?)	

<b>A7. Structure of ownership (in %)</b>	<b>Code</b>
Physical entities	
Financial institutions	
Local producer (firm) inside the main type of production	
Local producer (firm) outside the main type of production	
Foreign investor	
Cooperative	
Other (What?)	

<b>A8. Number of employees:</b>	<b>Code</b>

<b>A9. Short description of the enterprise activities:</b> <b>Please, name 3 main products your enterprise produces/sells:</b>
1. _____
2. _____
3. _____

##### B. CHARACTERISTICS AND MOTIVATION OF THE OWNER

<b>B1. How did the entrepreneur start his career in the enterprise?</b>	<b>Code</b>
Created it himself/herself	1
Inherited the enterprise	2
Bought the enterprise from the family members	3
Bought the enterprise from the strangers	4
Partly inherited, partly bought	5
Was appointed a lead manager without owning the enterprise	6
Was employed by the owner of the enterprise	7
Other – explain	

<b>B2. What is the educational level of the entrepreneur?</b>	<b>Code</b>
Incomplete primary school	1
Primary school	2
Colledge	3
Post-college education	4
University 1st level	5
University 2nd level (M.A. or PhD.)	6

*In case the entrepreneur does not have post-college education (last three categories of the question B2) proceed to the question B4*

<b>B3. What are the most important skills the manager of the successful firm has? (Please, mark one most appropriate)</b>		<b>Code</b>	
Computer literacy	1		
Motivating personnel for more effort in work	2		
Familiarity with finances and book-keeping	3		
Administrational skills	4		
Gathering relevant information	5		
Familiarity with marketing and sales	6		
Defining of the enterprise's policy	7		
Familiarity with technological and industrial processes	8		
Other (please name)	9		

<b>B4. When did the entrepreneur take up the leading/managerial position in the enterprise?</b>	<b>Code</b>	
Year:	15-16	

<b>B5. What was the occupation of the entrepreneur before taking up a leading position in the surveyed enterprise?</b>	<b>Code</b>	
Employed in this very enterprise	1	
Employed in the similar enterprise	2	
Employed in the organization or enterprise with another form of activity	3	
Being a student (full or part-time)	4	
Unemployed	5	

<b>B6. What is the link of the entrepreneur to the region in which operates the enterprise?</b>	<b>Code</b>	
Entrepreneur comes from the region and has been working here	1	
Comes from the region, left it and came back	2	
Came to the region regardless to the enterprise	3	
Moved to the region to work in the enterprise	4	
Drives/comes to work from another region	5	

<b>B7. What is the age of the entrepreneur?</b>						<b>Code</b>	
Below 29	30-39	40-49	50-59	60-69	Above 70		
1	2	3	4	5	6		

### C. HISTORY AND PROFILE OF ENTERPRISE

<b>C1. What was the main reason for establishing the enterprise? (Please, mark one most appropriate)</b>	<b>Code</b>	
Seek of self-realization	1	
Seek of independency	2	
Seek of risky activities	3	
Need to make money	4	
Unemployment or threat of unemployment	5	
Following family or friends	6	
Family tradition	7	
Other (what?)	8	
No answer	9	

<b>C2. Why was your enterprise located in that region? (Please, mark one most appropriate)</b>	<b>Code</b>	
Family or personal reasons	1	
Wish to make extra money in non-farm activity (for farmers)	2	
Favorable perspectives for the entrepreneurs	3	
Proximity to the resources what resources? State explicitly.	4	
Low costs of resources used in production	5	
Proximity of the local agents	6	
Proximity to the labor sources	7	
Proximity to the sales markets	8	
Specialization of the region in the firm's product	9	
Good infrastructure and communication	10	
Financial help from the Polish government or the EU	11	
Other forms of governmental assistance	12	
Other (please, name what)	13	
Do not know	14	

<b>C3. Does your firm holds:</b>		<b>Code</b>	
International certificates (ISO, TUV, etc.)	1		
Licenses for specific production	2		
Own patents for the good/s it produces	3		
Awards or diplomas (i.e. entrepreneur of the year) of national and international importance	4		
Other (please, name what)	5		
None of the above	6		
<b>C4. Does your firm have stable internet connection?</b>	<b>Yes</b>	<b>No</b>	<b>Code</b>
Does your firm have broad-band??			

<b>C4a. Does your firm have its own website?</b>	<b>Yes</b>	<b>No</b>	<b>Code</b>

#### D. ASSETS AND SOURCES OF CAPITAL

<b>D1. Sources of the founding capital:</b> <i>(Please, mark one most appropriate)</i>	<b>Code</b>		
Owner or the leading manager	1		
Family members	1		
Private entities (not family members)	1		
Other enterprises, banks or financial institutions	1		
Subsidies	1		
Do not know	1		

<b>D2. What is the source of the firm's assets?</b> <i>(Please, mark one most appropriate)</i>	<b>Code</b>		
Incomes of the enterprise	1		
Loans from physical entities	1		
Bank loans	1		
Subsidies	1		

<b>D3. Share of the own capital in the enterprise in the 2002 (in %)</b>	<b>Code</b>		
Own capital	59-62		

<b>D4. If you were to compare the level of firm's assets 3 years ago and now, what would be the change?</b>	<b>Code</b>		
No change	1		
Increase (% increase)	2		
Decrease (% decrease)	3		

*If there was a change in capital, please answer question D5*

<b>D5. What was the increase/decrease of firm's physical capital in the last 3 years?</b>	<b>Code</b>		
Increased by:	Decreased by:		

<b>D6. Which of the following ranges best describes enterprise's annual turnover in each of the last three years?</b>	<b>Code</b>		
<b>PLN</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
Less than 59 thousand PLN	1	1	1
60 thousand PLN – 99 thousand PLN	2	2	2
100 thousand PLN – 149 thousand PLN	3	3	3
150 thousand PLN – 209 thousand PLN	4	4	4
210 thousand PLN – 279 thousand PLN	5	5	5
280 thousand PLN – 259 thousand PLN	6	6	6
260 thousand PLN – 349 thousand PLN	7	7	7
350 thousand PLN – 450 thousand PLN	8	8	8
More than 450 thousand PLN	9	9	9

<b>D7. Has the enterprise had gain or profit* in the last three years?</b>	<b>Code</b>		
	<b>2002</b>	<b>2003</b>	<b>2004</b>
	<b>Loss</b>	<b>Loss</b>	<b>Loss</b>
	<b>Profit</b>	<b>Profit</b>	<b>Profit</b>
<i>If your firm has achieved profit, please mark which cluster better describes its value</i>			
Profit up to 19 thousand PLN	1	1	1
Profit from 20 ths. PLN to 39 ths. PLN	2	2	2
Profit from 40 ths. PLN to 69 ths. PLN	3	3	3
Profit from 70 ths. PLN to 109 ths. PLN	4	4	4
Profit from 110 ths. PLN to 159 ths. PLN	5	5	5
Profit from 160 ths. PLN to 219 ths. PLN	6	6	6
Profit from 220 ths. PLN to 289 ths. PLN	7	7	7
Profit from 290 ths. PLN to 369 ths. PLN	8	8	8
Profit from 370 ths. PLN to 459 ths. PLN	9	9	9
Profit from 460 PLN to 560 ths. PLN	10	10	10
Profit above 600 thousand PLN	11	11	11

**\* profit is defined as the gross profit (revenues minus costs) per enterprise per year (before taxing)**

<b>D8. What is the age of: machines and equipment used in your firm?</b>	<b>Code</b>		
buildings and warehouses used in production process?			

#### E. FACTORS OF THE ENTERPRISE DEVELOPMENT

##### Position on the market

E1. What was the structure of the firm's sales in each of the following years according to the geographic spread of sales (in %)					Code				
2002	Local markets								
	Region								
	Rest of the country								
	Abroad								
2003	Local markets								
	Region								
	Rest of the country								
	Abroad								
2004	Local markets								
	Region								
	Rest of the country								
	Abroad								

E2. What was the share of the marked products in the whole volume of sales in 2004 (in %)?					Code				
No trademark									
Own trademark									
With a trademark of a processor									
With a trademark of a distributor									
With other trademarks									

E3. How many new clients did your firm gain in the last three years?						Code	
none	1	2 - 5	6 - 19	20 - 49	50 +		
1	2	3	4	5	6		

E4. How does your enterprise distribute its products?					Code			
Own shop								
Warehouses								
Supermarkets								
Small retail shops								
Bazaars								

#### General conditions for competition

E5. How many enterprises in the county/region produce similar products to what your enterprise produces?					Code			

If question E5 states that there are no such enterprises, please proceed to question E7

E6. What gains and losses for your enterprise brings the presence of competition in the region? (Please, mark one most appropriate)					Code			
Firms bidding for qualified workers (buying them out)					1			
Production at lower costs but with lower quality					1			
No gains					1			
Possibilities of informal marketing and distribution					1			
Possibilities of formal cooperation in marketing and distribution					1			
Easier access to new technologies					1			
Easier access to the sources of raw materials					1			
Easier access to the local labor force					1			
Selling your products in another region					1			
Selling your products abroad					1			
Other gains (please name which)								
E7. In which of the following spheres does your enterprise compete more often?					Code			
Prices	Services and client's care	Product quality	Innovativeness of the product					
1	2	3	4					

#### F. EXTERNAL FACTORS OF DEVELOPMENT

F1. What regional factors either helped or impacted negatively on the development of your enterprise in the last 3 years? (Please, mark one most appropriate)					Code			
	Positive influence	No influence	Negative influence		Code			
Strategy of local government (support of SMEs)	1	2	3					
Financial help of local government for SMEs	1	2	3					
Attitude of local government to SMEs	1	2	3					
Locally-imposed taxes (regional tax)	1	2	3					
Centrally-imposed taxes (i.e. income tax)	1	2	3					
Organization of thematic schooling for rural society	1	2	3					

Access to resources	1	2	3		
Access to sales markets of products and services	1	2	3		
Costs of entering the business	1	2	3		
Other (please, specify)	1	2	3		

<b>F1a. What factors represent the most serious barriers to the development of small and medium (SMEs) enterprises in the country? (Please, mark one most appropriate)</b>				
Fears of competition with the firms from the "old" EU				Code
Fears of Polish competition				
Inexistence of business networks and cooperation between Polish SMEs				
Unfair competition of foreign enterprises operating on the Polish market				
Loss of the Eastern markets (former USSR)				
Unfair competition between Polish SMEs				
Economic crisis in Poland and in the EU				
Availability and cost of labor force				
Availability and cost of service necessary for your business				
Unstable and unclear laws concerning SMEs				
Unclear and inexplicit state tax and revenue system				
Inexistence of formal groups lobbying for the SMEs of agricultural and food sector				
Costs of innovation				
Technology used in production process				
Gaining new qualifications				
Gaining new methods of production and accounting				
Unsatisfactory work of the self-governments				
Problems with entering the EU Single Market				
Quality norms introduced by the EU				
Unclear governmental policy towards SMEs				
Consumption of good and services by consumers (consumers' purchasing power)				
Other (please specify):				
<b>F2. Has your enterprise received:</b>	<b>Yes</b>	<b>No</b>	<b>Code</b>	
<b>a preferential credit for your business in the last 3 years?</b>	1	0		
<b>a business credit for your business in the last 3 years?</b>	1	0		

If the answer to the above question is "yes" please answer question F2a.

<b>F2a. How has the level of credit (interest rates) impacted the growth of your enterprise?</b>				
Nature of impact	Positive influence	No influence	Negative influence	Code
	1	2	3	

<b>F3. What economic processes evolved positive or negative influence on the enterprise's success in the last 3 years? (Please, mark one most appropriate)</b>				
	Positive influence	No influence	Negative influence	Code
Exchange rate	1	2	3	
Per cent (level) of credit	1	2	3	
Central governmental taxes	1	2	3	
Local taxes	1	2	3	
Level of inflation	1	2	3	
Enterprise creation procedure	1	2	3	
Purchasing power of the consumers	1	2	3	
Economic growth in the country	1	2	3	
Labor law	1	2	3	
Opening of EU Single Market for Polish goods				
other (please specify):				

<b>F4. Whether the enterprise has been receiving public assistance (governments and local governments) in the last 3 years? (Please, mark the appropriate).</b>					
Nature of assistance	YES	Regional sources	Central governmental sources	EU sources (SAPARD)	Code
Grants or investments loans	1	2	3	4	
Funds for research and development	1	2	3	4	
Funds for the promotion of local production groups	1	2	3	4	
Assistance in schooling of the personnel	1	2	3	4	
Space for the enterprise (housing)	1	2	3	4	
Export guarantees	1	2	3	4	
Consulting in the sphere of governance	1	2	3	4	
General economic consulting	1	2	3	4	



Other (please, specify)	1	2	3	4				
Has not received	0							

If the answer to the question F3 is „has not received”, please proceed to question E5. If your firm has received some assistance from EU SAPARD fund, please answer the following question:

F5. What was the amount of funds your enterprise has received from EU SAPARD program in the last 3 years? (Please, mark the appropriate cluster)	Code		
Funds below 8 thousand PLN	1		
Funds 9 thousand - 19 thousand PLN	2		
Funds 20 thousand – 39 thousand PLN	3		
Funds 40 thousand – 59 thousand PLN	4		
60 thousand PLN – 99 thousand PLN	5		
100 thousand – 149 thousand PLN	6		
150 thousand – 179 thousand PLN	7		
Above 250 thousand PLN	8		

F6. How does your firm participate in EU Single Market after the Polish accession to the EU?	Code		
We are not interested in this issue/the EU accession has not impacted on our firm	1		
Participation in schooling and conferences	2		
Looking for new partners on EU Single Market	3		
Improving the quality of our own products and services	4		
Learning foreign languages by the management of the firm	5		
Increasing of export	6		
Looking for new markets in the EU	7		
Other (what?)	8		
No answer	9		

F7.Regarding Polish EU accession, what could be the main reasons for SMEs in rural Poland to go bankrupt or leave the business? (Please, mark one most appropriate)	Code		
Low quality of products created by Polish SMEs	1		
High production costs of Polish SMEs	2		
Inability to cope with EU standards	3		
lack of basic capital	4		
lack of managerial skills	5		
takeover by the foreign competitors	6		
Other (what?)	7		
No threats	8		
Do not know	9		

F8.What are the most relevant actions local governments can undertake to help the development of your enterprises? (Please, mark one most appropriate)	Code		
Playing mediators in the potential conflicts between SMEs	1		
Creation of suitable environment for SMEs	2		
Supporting enterprises using the means of local governments	3		
Interconnecting the success of SMEs with the strategy of regional development	4		
Influencing competitiveness between SMEs through the policy of issuing licenses and permits	5		
Others (please, mark the appropriate)	6		

F9. Do you know the development strategy of your parish?	Yes	No	Code
If the answer to the question F9 is „yes”, please proceed to question F9a	1	0	
F9a. Is the growth of SMEs foreseen in the development strategy of your parish?	Yes	No	Code
	1	0	

F10.Which targets of the regional policy are the most relevant from your point of view for the success of your enterprise? (Please, mark one most appropriate)	Code		
Creation of work places	1		
War with unemployment by modernization of production of trade and services	2		
Creation of favorable environment for conducting business activity	3		
Support of the production and services	4		
War on unemployment by re-animating the traditional sectors of economy	5		
Creation of favorable climate for the increased inflow of FDI	6		
Helping enterprises to enter the EU Single Market	7		
Rebuilding Polish entrepreneurial tradition lost in socialism	8		
Increasing the competitiveness of Polish SMEs	9		
Supporting innovations and research in SMEs	10		
Others (please, mark the appropriate)	11		

F11. Would you describe local authorities as open for negotiations with SMEs concerning reducing local taxes and providing favors for entrepreneurs?	Yes	No	Code
	1	0	

F12. How would you describe the process of registering your firm at the local parish economic office? (please mark up to two relevant answers)	Code		
Quick and easy			

Transparent			
Taking no time and energy			
Slow and complicated			
Taking too much time and energy			
Excessively bureaucratic			
Is not transparent, includes giving bribes to the officials			
Other (what?)			
None of the above			

F13. Do you follow the main economic indicators in your daily business? Please, mark the ones you do follow:			Code
PLN/EUR (or USD) exchange rate	1		
GDP growth of Polish economy	2		
Stock exchange indices	3		
Interest rate as set up by the Polish Central Bank	4		
Economic indicators/price variations in the EU	5		
Level of inflation	6		
I do not follow any indicators	7		

**Thank you for the cooperation!**

## Appendix 2

**Table A1:** Variables used in the econometric model for testing the main research hypotheses and their categories (levels)

Name	Variable Definition	Variable type	Expected sign
<b>Enterprise success (dependent variables)</b>			
Y	Enterprise gross profit per employee in 2004	Polish Zloty (PLN)	
X <sub>1</sub>	Owner/manager reason for establishing an enterprise	1 = self-realization 2 = independence 3 = risk 4 = need of cash 5 = threat of unemployment 6 = influence of family and friends 7 = family tradition	+ self-realization, independence and risk are expected to have higher influence on enterprise success
X <sub>2</sub>	Owner/manager education	1 = primary 2 = secondary 3 = college 4 = university second level 5 = university third level	+ relationship between education and enterprise success
X <sub>3</sub>	Owner/management business experience	Years	+
X <sub>4</sub>	Owner/manager training	Dummy (1 = obtained some training in the field related to the firm area of business, 0 = otherwise)	+
X <sub>5</sub>	Owner/manager age	Years	+
X <sub>5</sub>	Owner/manager age squared	Years	-
X <sub>6</sub>	Owner/manager previous sector experience	Dummy (1 = experience in the same sector of economy, 0 = otherwise)	+
X <sub>7</sub>	Owner/manager ties to the region	Dummy (1 = close ties, 0 = otherwise)	+ relationship between
X <sub>8</sub>	Age of the enterprise	Years	-
X <sub>8</sub>	Age of the enterprise squared	Years	-
X <sub>9</sub>	Establishing of enterprise on local market	Dummy (1 = strategic reasons, 0 = otherwise)	+

X <sub>10</sub>	Legal form of the enterprise	1 = sole-trader 2 = family enterprise 3 = limited liability company 4 = unlimited partnership 5 = civil law partnership 6 = cooperative	Sole-traders are expected to perform better than commercial companies
X <sub>11</sub>	Location of the enterprise by the province	Dummy (1 = Mazowieckie province, 0 = Warmia-Mazury province)	Expect some regional differences
X <sub>11</sub>	Location of the enterprise by parish	Parish dummy	Expect some regional differences
X <sub>11</sub>	Location of the enterprise by community	Community dummy	Expect some regional differences
X <sub>12</sub>	Distance from the parish to the regional center	Kilometers	Expect some differences
X <sub>13</sub>	Size of the enterprise	Number of employees	-
X <sub>14</sub>	Ownership of the enterprise	Dummy (private sources =1, 0 = otherwise)	Enterprises owned by physical entities of families tend to be more successful
X <sub>15</sub>	Internet in the enterprise	Dummy	+
X <sub>16</sub>	Broadband in the enterprise	Dummy	+
	Enterprise product/good	1 = products of vegetal origin 2 = products of animal origin 3 = secondary-processed products 4 = beverages	Expect some product differences
X <sub>17</sub>	The fact that enterprise has branded products	Dummy	+
X <sub>18</sub>	Number of enterprise's main competitors	Number of firms	-
X <sub>19</sub>	Areas in which enterprise is exploiting its advantage	1 = prices 2 = services 3 = quality of products 4 = innovativeness of products	- + + +
X <sub>20</sub>	Enterprise's innovation	1 = know-how 2 = international certificates 3 = licenses 4 = patents (valid on the national level)	+ + + +
X <sub>21</sub>	Government financial support	Dummy	+
X <sub>22</sub>	Negotiations with local governments on tax reduction	Dummy	+
X <sub>23</sub>	EU SAPARD funds in the enterprise	Dummy	+ Enterprises that managed to obtain funds from EU program are more successful
X <sub>24</sub>	Public non-monetary assistance to the enterprise	Dummy	+
X <sub>25</sub>	Enterprise participation in local schooling	Dummy	+
X <sub>26</sub>	The fact whether enterprise obtained the credit	Dummy	+
X <sub>27</sub>	Enterprise distribution of sales in 2002-2004	Dummy (1 = local market and beyond (local market +), 0 = local market )	Enterprises with broader distribution of products are more successful
X <sub>28</sub>	Impact of Polish EU accession on the enterprise	Dummy (1 = some impact, 0 = no impact)	+ enterprises that utilize the opportunities of EU Accession tend to be more successful

### Appendix 3

**Table A2:** Complete results of the model estimation

	Interact Model		Whole Sample Model	Rich Province Only	Poor Province Only
	Poor	Rich*Dummy	FullFull	RichFull	PoorFull
Independence	-4879.227**	7690.613*	-450.965	2811.386	-4879.227**
	[2326.191]	[4465.039]	[1661.613]	[3870.294]	[2295.371]
Risk	-860.405	28914.773*	15417.722	28054.368*	-860.405
	[2310.763]	[16175.833]	[10854.081]	[16258.082]	[2280.148]
Cash	-839.787	-7230.869	-5516.105*	-8070.657*	-839.787
	[1720.035]	[4790.153]	[2828.158]	[4539.981]	[1697.246]
Unemployment	1163.376	-841.91	225.34	321.466	1163.376
	[1616.715]	[6714.343]	[2688.016]	[6617.805]	[1595.295]
Family and friends	-3698.703	-3893.988	25.796	-7592.691	-3698.703
	[2471.873]	[9969.158]	[2804.136]	[9807.537]	[2439.124]
Family tradition	8376.180***	-14295.651**	488.691	-5919.471	8376.180***
	[2253.847]	[6380.053]	[2823.775]	[6061.203]	[2223.986]
Secondary	4050.646	-6209.66	-108.404	-2159.014	4050.646
	[3223.200]	[14239.394]	[7309.527]	[14084.777]	[3180.496]
College	6705.950**	-5179.548	2977.408	1526.402	6705.950**
	[3029.934]	[16226.303]	[8129.896]	[16187.983]	[2989.790]
University Second Level	2683.841	-1351.674	799.034	1332.166	2683.841
	[2990.964]	[14920.651]	[7702.123]	[14844.368]	[2951.337]
University Third Level	2242.24	-6835.293	-2621.97	-4593.053	2242.24
	[2567.331]	[14926.355]	[7612.109]	[14931.813]	[2533.316]
Years of Experience	174.264	-399.713	-132.575	-225.449	174.264
	[143.960]	[345.798]	[207.997]	[319.280]	[142.053]
Training	1126.89	-6490.381	-2476.185	-5363.491	1126.89
	[1587.154]	[8859.795]	[3319.756]	[8851.576]	[1566.126]
Age	23.923	2483.228	1747.731**	2507.150*	23.923
	[665.867]	[1557.164]	[846.488]	[1429.433]	[657.045]
Age Squared	-0.892	-23.349	-17.119**	-24.242*	-0.892
	[7.654]	[15.584]	[8.328]	[13.786]	[7.553]
Previous Experience	-2101.268	794.288	-285.37	-1306.98	-2101.268
	[1959.161]	[5825.875]	[2145.442]	[5571.615]	[1933.205]
Ties to the region	-1792.893	1950.517	1508.339	157.624	-1792.893
	[1788.102]	[6426.071]	[2549.664]	[6267.951]	[1764.412]
Enterprise Age	87.053	-801.108	-404.269	-714.054	87.053
	[212.427]	[658.448]	[368.048]	[632.900]	[209.613]
Ent. Age Squared	-5.041	17.766	6.137	12.725	-5.041
	[4.493]	[13.929]	[7.342]	[13.389]	[4.433]
Position on Local Market	-1709.12	2717.529	-187.852	1008.408	-1709.12
	[1615.801]	[4021.753]	[2079.895]	[3739.974]	[1594.394]
Family Firm	-2315.448	-2560.523	-3938.441	-4875.971	-2315.448
	[4425.126]	[6810.199]	[2902.323]	[5256.825]	[4366.498]
Company Limited	-1586.57	-7728.254	-3122.072	-9314.825	-1586.57

	[2247.897]	[6462.077]	[2674.628]	[6152.403]	[2218.115]
Unlimited partnership	-2221.737	8996.111	1967.436	6774.374	-2221.737
	[2147.831]	[9099.524]	[3560.811]	[8979.462]	[2119.374]
Civil Law Partnership	2220.713	2330.49	4486.705	4551.203	2220.713
	[1631.208]	[6876.313]	[3651.632]	[6783.572]	[1609.596]
Cooperative	2278.973	-18820.948**	-6955.796*	-16541.975*	2278.973
	[3913.659]	[9244.871]	[3569.493]	[8505.434]	[3861.807]
Distance from City	-20.814	-121.57	-42.513	-142.384	-20.814
	[18.671]	[88.179]	[29.462]	[87.516]	[18.424]
Enterprise Size	-967.166**	-652.12	-1279.577**	-1619.286**	-967.166**
	[420.548]	[866.398]	[534.684]	[769.227]	[414.976]
Ownership	2523.141	-7953.918	-2871.24	-5430.777	2523.141
	[4437.272]	[8743.351]	[4322.631]	[7650.481]	[4378.483]
Internet	1090.495	-3694.233	571.427	-2603.739	1090.495
	[1590.438]	[5681.551]	[2236.916]	[5538.946]	[1569.367]
Broadband	3140.063	4624.058	2801.958	7764.121	3140.063
	[2392.986]	[5815.045]	[2692.783]	[5381.992]	[2361.282]
Animal Origin Products	-1122.974	-5054.812	-2915.222	-6177.786	-1122.974
	[4190.953]	[10168.009]	[4855.725]	[9407.733]	[4135.427]
Secondary-processed	-2215.041	-4017.584	-3302.457	-6232.625	-2215.041
	[3590.915]	[9364.197]	[4455.974]	[8782.371]	[3543.340]
Beverages	-4326.46	-17121.936	-4870.743	-21448.396*	-4326.46
	[3305.966]	[12772.391]	[5758.735]	[12528.343]	[3262.165]
Trademark	2592.625	-6566.443	-302.534	-3973.817	2592.625
	[1683.782]	[4182.132]	[2487.619]	[3887.534]	[1661.474]
No. of Main Competitors	-159.748*	200.885*	-25.547	41.137	-159.748*
	[93.856]	[115.027]	[55.386]	[67.530]	[92.613]
Competition in Price	2122.757	-1912.327	1084.647	210.43	2122.757
	[1393.043]	[3928.881]	[1722.795]	[3730.567]	[1374.587]
Competition in Services	-1252.179	14828.549	2988.28	13576.37	-1252.179
	[2151.548]	[11287.980]	[4039.091]	[11252.787]	[2123.043]
Competition in Quality	-1139.222	15228.401**	2903.644	14089.179**	-1139.222
	[1716.336]	[6851.433]	[2457.365]	[6735.781]	[1693.596]
Competition Novel Products	4905.301	-514.506	5367.254	4390.796	4905.301
	[5883.812]	[9255.640]	[4297.290]	[7255.504]	[5805.858]
Innovation	3208.438*	380.21	2885.171	3588.648	3208.438*
	[1862.799]	[6079.570]	[2871.604]	[5876.853]	[1838.119]
Certificates	1131.176	9206.492	7793.001	10337.668	1131.176
	[3337.758]	[9380.597]	[4768.458]	[8902.578]	[3293.536]
Licenses	-452.309	-1972.354	-3448.77	-2424.663	-452.309
	[2734.045]	[6885.605]	[3249.927]	[6417.489]	[2697.822]
Patents	-6600.508**	-820.65	-5804.595	-7421.158	-6600.508**
	[3229.641]	[7983.597]	[3834.470]	[7414.347]	[3186.852]
Financial Help	-3960.001	7164.805	-2364.786	3204.804	-3960.001
	[2837.151]	[8688.956]	[3292.034]	[8340.000]	[2799.562]

Tax Neg.	356.509	-1495.901	1220.802	-1139.392	356.509
	[1617.087]	[7421.758]	[3569.590]	[7355.718]	[1595.662]
SAPARD	12133.332	-16640.746*	3818.879	-4507.413	12133.332
	[7613.062]	[9710.799]	[4038.077]	[6121.779]	[7512.197]
Schooling	1683.613	-2609.099	313.698	-925.486	1683.613
	[1517.101]	[4397.404]	[1899.377]	[4191.391]	[1497.001]
Credit	-134.354	-2855.972	-571.255	-2990.327	-134.354
	[1584.994]	[4377.676]	[2588.190]	[4143.916]	[1563.995]
Distribution of Products	448.821	133.583	576.558	582.404	448.821
	[1528.661]	[4301.986]	[2182.191]	[4083.556]	[1508.408]
Polish EU Membership	-1291.968	-747.8	-159.882	-2039.767	-1291.968
	[1643.119]	[4417.382]	[1749.315]	[4163.973]	[1621.349]
Rich Province Dummy			6349.443*		
			[3339.157]		
Constant	10693.742		-17957.776	-11423.405	10693.742
	[13652.785]		[19064.051]	[35873.601]	[13471.900]
Observations	299		299	141	158
R-squared	0.43		0.23	0.41	0.47

Robust standard errors in brackets; \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Source:** own estimations

**Table A3:** Results of the tests used in computations of the large model

Cook-Weisberg test for heteroskedasticity using fitted values of profit per employee in 2004 (dependent variable)		Breusch and Pagan Lagrangian multiplier test for random effects		Chow test with province dummy	Chow test without province dummy
<b>Ho:</b>	Constant variance	profit_per_employee_2004[nsc omm,t] = Xb + u[nsc omm,t] + e[nsc omm,t]		Tests interactions model against the full model	Tests interactions model against the full model
<b>chi2(1)</b>	1101.57	<b>chi2(1)</b>	0.33	F( 50, 199) = 0.83	F( 50, 199) = 0.83
<b>Prob &gt; chi2</b>	0.0000	<b>Prob &gt; chi2</b>	0.5671	Prob > F = 0.7809	Prob > F = 0.7809

**Source:** own estimations