EUROEAN INTEGRATION AND THE SURVIVAL OF THE POLISH SMALL ENTERPRISES

By

S.Ghatak, G.Manolas, C.Rontos and I.Vavouras

ABSTRACT

Small and Medium sized Enterprises (SMEs) have a crucial role in the economies of both the developed and developing countries. In the OECD area, the share of SMEs to total employment is between 40 and 80 percent, while their share to GDP is between 30 and 70 percent. Poland, as a country in transition, has undergone in the last decade a second period of rapid economic transformation. This time, the transformation is taking place in the context of its future full economic and monetary integration with the European Union (EU) countries. It must be stressed that economic adjustments need to be rapid as Poland is willing to be in the front line of the countries that will enter the EU in the very near future. In this economic transformation, Polish SMEs have an important role to play. Since they constitute a large part of the Polish economy in terms of output and employment, their survival and development are going to exert a significant impact on Poland's readiness for accession and on its successful European future. For these reasons, it is of a great importance to estimate the ability of SMEs in Poland to survive and develop and the factors that are associated with this survival and growth in the European perspective. The purpose of this chapter is to investigate the characteristics of the successful SME in the European context and to construct a model that will enable us to predict the probability of an enterprise to survive and develop in this environment.

I. Introduction

In both developed and transitional economies, Small and Medium sized Enterprises (SMEs) have a crucial role to play. In the OECD area ,for example, the share of SMEs to total employment is between 40 and 80 percent, while their share to GDP is between 30 and 70 percent. A transition economy like Poland has recently undergone a period of major economic change. This transformation is taking place in the context of its future economic and monetary integration with the European Union (EU) countries. In this context, Polish SMEs have an important role to play. Since they constitute a large part of the Polish economy in terms of output and employment, their survival and development are going to exert a significant impact on Poland's readiness for accession and on its successful European future. Hence, it is of importance to estimate the ability of SMEs in Poland to survive and develop and the factors that are likely to determine their survival and growth in the European perspective.

The integration of markets, due to the European Union, the removal of constraints and the emergence of new competitive incentives affect SMEs in many ways:[1]

- through the reduction of administrative procedures for international trade, which allow a better exploitation of economies of scale and scope;
- through the improved efficiency in firms resulting from innovations, which are induced by more competitive markets;
- through the adjustments between industries, on the basis of a fuller play of comparative advantages;
- through more dynamism and an improved flow of innovations, new processes and new products;
- through stronger economic growth in the long run, which leads to new market opportunities.

The purpose of this chapter is to investigate the characteristics of the successful

[1] See OECD (1997), page 25.

SME in the European context and to construct a model that will enable us to predict the probability of an enterprise to survive and develop in this environment. The classification of SMEs in Poland is 0-5 employees for "microenterprises", 6-50 employees for "small enterprises" and 51-200 employees for "medium-sized enterprises".

This chapter is organized as follows. Section II presents the methodology followed and the data used, while the next section provides the empirical results of the study. Finally, section IV draws conclusions and makes some policy recommendations.

II. Data and Methodology

The data used in this paper have been derived from a special statistical survey carried out in Poland in the last quarter of 1999. Indeed, this survey is an offshoot of the research programme undertaken by the authors on Small and Medium Sized Enterprises in Poland : Phase II financed by the EU Program PHARE -ACE

An extensive questionnaire consisting of 58 questions was employed and a large amount of data was gathered. A representative part of these data will be presented into the next section. Professional enumerators were used to ensure best quality data and minimize the non-sampling errors.

The sample consists of 376 small enterprises, that employed from 10 to 49 persons. The sample was 5% of the total. A proportionate stratification sampling method was used. The stratification factors were the sectors of economic activity selected in the survey. For the purposes of this study small enterprises were defined as those with less than 50 employees but data about enterprises with less than 10 employees were considered as unreliable for not having enough knowledge about the European

environment. They were excluded from the sample and consequently from the survey.

The survey covers two Regions of Poland: Gdansk and Lublin. The sample was drawn separately in the two regions. As the two regions have differences in their economic characteristics, many important conclusions could be extracted. Finally, the selected sectors of economic activity are those of utmost importance for the transformation of the Polish economy.

To achieve the objectives of our paper, we use the dichotomous logit analysis. A Conditional Forward Stepwise Method is also selected. A Logit Analysis is useful in our case as we would like to know the structural characteristics and other factors that explain the dependent variable that is defined by the choice of individuals over a finite and unordered set of alternatives. More specifically, we study the positive or negative influence of the accession of Poland to the European Union on the performance of the small enterprises. In the logit regression analysis,the dependent variable can be a dummy (dichotomous) variable with value '1' if the enterprise is going to be influenced advantageously and the value '0' if it is not. Predicted values could be quantitative or categorical variables. In the latter case, the predicted capability of the model is increasing as the values and the direction of 'b' coefficients predicted for every one of the categories of explanatory variables rise. A useful rule is that the larger a positive estimated coefficient of a variable's category, the higher the probability of a unit (enterprise) included into this category to have the characteristic (positive influence) indicated by the dependent variable and the smaller a negative coefficient the lower the probability (Knapp M.et al, 1982).

For the estimation of our model, we use the maximum likelihood approach. The statistical significance of 'b' coefficients has been tested by the Wald statistic which is equal to the square of the well known 't-statistic' as it is preferred in the case of logit analysis. We also use special tests to avoid missing good candidates that have been hypothesized to be significantly correlated in the past literature (Harissis K., 1986). The model's overall goodness of fit is tested by the likelihood ratio test statistic. After choosing the best model, the probability of an enterprise with certain

characteristics and economic performance to be positively influenced due to the possible accession to the EU can be predicted by using the following formula :

$$P = \frac{1}{1+e^{-(\Sigma\beta)}} \qquad (1)$$

where β are the regression coefficients of the categories to which the enterprise belongs. The expression e denotes the exponential function.

Many authors have discussed methods that have been proposed for estimating logistic models (Nerlove and Press, 1973, Phrtmes, 1978) and some others have revised these methods (Harissis, 1986, Knappe et al, 1982 and Skovgaard, 1990). A brief description of the logit model is also undertaken here.

Let P_i be the probability that the ith enterprise will have a positive influence from the Poland's accession to the EU and let $Q_i = 1-P_i$ be the probability that the enterprise will have a negative impact from the accession. In the specification of the model it is natural to define P_i as an ordinate of a cumulative distribution function (CDF) since P_i lies between zero and one, i.e.

$$Pi = F(t) \qquad (2)$$

where F(.) is a distribution function. If f(.) is the associated density function, then we have

$$P_i = \int_{-\infty}^{t} f(z)dz \qquad (3)$$

This expression will be made more specific in the context of the subject examined by expressing the upper limit t as a function of the characteristics and the performance of the individual enterprise having the view. Thus, we may put

$$t = X_{i.}\beta \qquad (4)$$

where $X_{i.} = (X_{i1}, X_{i2},\ldots, X_{ik})$ is a vector of the determinants of the probability of "having a positive or negative impact" and β is a vector of unknown coefficients.
Hence equation (3) can be written

$$X_{i.}\beta$$

$$P_i = \int_{-\infty} f(z)dz = F(X_i.\beta) \qquad (5)$$

and $Q_i = 1-P_i = 1-F(X_i.\beta)$ (6)

defining

Y_i =1 if the ith enterprise has a positive impact

=0 otherwise

then we have

$$\Pr\{Y_i = 1\} = F(X_i.\beta) \qquad (7)$$

$$\Pr\{Y_i = 0\} = 1-F(X_i.\beta) \qquad (8)$$

Assuming that F(.) is taken to be cumulative distribution function of the standardized logistic distribution; viz.:

$$F(t) = \frac{1}{1+e^{-t}}, \quad -\infty < t < \infty \qquad (9)$$

then we can define the logit pi by using (2), (4), (9) as

$$\text{logit of } P_i = \frac{1}{1+e^{-Xi.\beta}} \qquad (10)$$

or

$$\log \frac{P_i}{1-P_i} = X_i.\beta \qquad (11)$$

The model can be estimated by maximizing the likelihood function

$$L(Y_i/X_i) = \prod_{i=1}^{n} [F(X_i.\beta)]^{Yi} [1-F(X_i.\beta)]^{1-Yi}$$

The log likelihood is

$$L = \sum_{i=1}^{n} Y_i \ln F(X_i.\beta) + \sum_{i=1}^{n} (1-Y_i) \ln [1-F(X_i.\beta)] \qquad (13)$$

setting to zero the first and second order derivatives of the above equation with respect to β and specifying the cdf, F(.), we can obtain an estimator of β.

We emphasize the use of non linear methods of estimation, such as logit and probit analysis when a number of qualitative variables have to be tested for their association with a set of alternatives as these models assume that all explanatory factors determine the dependent variable simultaneously. Alternative methods that could be used are either test χ^2 in cross tabulated data or multiple regression analysis. Neither of these two methods could be considered satisfactory. The former assumes that the various casual factors work quite independently of each other in determing the variable examined, whilse the latter overcomes these problems only to provide results which are neither statistically efficient nor unambiguously determined when the dependent variable is a dummy variable[2].

The logit analysis suggested here overcomes these problems and provides a powerful tool for the examination of discrete decisions or points of views in this or other areas (Knapp M. et al 1982).

III. Empirical Results

In the logit model that was constructed, the dependent variable Yi is the views of owners/managers about the influence of the accession of Poland to the European Union on the performance of their enterprises. In Fact Yi will be a dichotomous variable taking the value 1 if the owner/manager of the enterprise believes that the accession of Poland to the EU will influence the performance of the enterprise " advantageously " and the value 0 otherwise.

The answer "advantageously" could be accepted only when at least one reason is indicated out of the five listed in the questionnaire. These reasons are: Better access on EU members' markets, better access on other countries' markets, increase of the production effectiveness, any other reason.

[2] See Goldberger (1964) and Norlone and Press (1973).

Presenting the first result of our research concerning the views of the owners of the enterprises about the influence of the accession in the EU, we can say that almost two thirds of them are optimistic [i.e. 61.4 %] while 35.3 % are pessimistic. Another 5.1 % did not respond. The main expectations of those who predicted a positive performance in the EU are the easier possibilities of selling of goods in the EU and an increase of production efficiency.

The independent variables of our model are categorical variables of two types. The first category reveals the structural characteristics of the enterprises. The second category represents several aspects of the economic performance of the enterprises that determine their ability to survive under the increased competition that they will face within the EU The explanatory variables initially examined and the categories in which they had been divided are provided in Table 1.

First of all, economic activity (X1a), region of establishment (X59), sector (V03), legal status (V04), legal status change (V06) and size (X39) are structural factors of great importance for a country in transition, like Poland. As far as each separate region is concerned, Gdansk has different economic characteristics than Lublin and it is useful to see how SMEs in different regions have different future within the EU. The SMEs in Gdansk are assumed to present better opportunities to gain positively from Poland's accession to the EU. The size of the enterprise seems to be an important factor for the enterprise to be competitive in the wide market of the EU. Given that only small enterprises are examined in the present paper, it is expected that the larger the enterprise the higher the probability to have positive impact from the accession of Poland to the EU, as large enterprises benefit from scale economies. We stress that the number of empoyees is used to express the size of the enterprises. This variable is not fully representitive of the size especially where the enterprise is capital intensive. Unfortunately, other variables such as the value of sales that could represent better the size of the enterprise and that had been included in the quastionnaire had an extremely low response rate. The branches of economic activity that are more likely to have a succesful performance in the competitive environment of the EU market are of a great importance. Finally, privatization is considered as a very important factor for the enterprises of the previously planned economy

countries to survive. The sector (public/private), the legal status and the change in legal status change are employed to examine the influence of privitazation for the enterprises' survival. Private enterprises are expected to have a higher probability to survive in the EU market.

.

The degree of international competitiveness is a factor of great importance when the succes of an enterprise which is entering into a wider market is examined The origin of competitors (V20) provides evidence whether or not the enterprise has already been effected by the international competition. It is expected that the indigenous enterprises will be better prepared when the barriers come fall down. It is also expected that if an enterprise is already producing for international markets, it will have a natural advantage after the accession of Poland in the EU in relation to those producing for the national or local market (X12). Finally, if efforts are made by the enterprises to export or to increase the exports (X16), it is obvious that they have a better understanding of the future competitive conditions that will be created after Poland's accession in to the EU and are prepared to perform under these conditions. It is expected that enterprises working to this direction will have higher chances to survive in the Single European Market. These factors could be expressed by the term "degree of openness" as it indicates the degree to which the entrprise is already open to international competition.

Another way for an enterprise to survive under conditions of a stronger competition is its cooperation with other Polish or foreign enterprises. Cooperation can be expressed by alliances, participation with other enterprises in order to create a group of enterprises, franchising, venture capital firms, etc. Cooperation of the above kind permits the enterprises to get to the optimum size, to overcome financial problems and to approach more readily both national and international markets. This factor is sought to be captured in our model by the variables X9, X10 and X7.

The R & D factor is generally recognized as crucial for productivity growth and competitiveness in both the microeconomic and macroeconomic level (Basant and Fikkert, 1996, Lichtenberg and Siegel, 1991). This factor is very important in both the developing and in transition countries as the technological problems of these

countries are not always perfectly understood. Most of the variables employeed in our model represented several aspects of the R&D factor that have been suggested by the standard literature or are used in the construction of more complicated and sophisticated technology indices (Palaskas,1999). The economic significance of every single variable is obvious and any explanation is ommited (V22, V23, V24d, V25, V26b, X28 and X29). The definition and the categories of these variables are clear, since they are derived directly from the quastionnaire, except variable X29 (innovation introduced in 1998-99). This variable takes the answer "Yes" if at least one of the following actions was taken during 1998-99 :

- New or technologically improved goods (services) produced
- More modern production methods are introduced
- Significant organisational changes are introduced
- Significant organisational-property changes introduced.

The staff quality and spesialization factor is represented by the percentage of higher education employees in the total number of employees (X40a). The higher this percentage the higher the specialisation of the staff and the higher the probability of a succesful perfromance in the EU. Training the employees when is needed or not cover the policy of the enterprise to keep their employees informed with the new techniques and methods (V42b). Next variable "existence of written policy for training" (V43) reveals the degree of study about the staff training needs and the implementation of the training according to a certain program. A positive answer to these questions providea an advantage to the enterprise to have a positive impact after the accession of Poland to the EU. Here we could mention that in recent times, one of the main reasons that made Irland the 7^{th} most competitive country in the world is the attention that has been paid to education and training of the labor force.

The knowledge level of enterprises' owners/managers about the EU countries' markets (V48) and the action taken by the enterprises towards the accession of Poland to the EU (X50) are two variables with obvious associations to the issue examined.

Finally, the extent to which the credit system is constraining the financing of the enterprise (X52b) and the difficulty of an enterprise to get a bank loan (X53) represent the degree of credit system's development and the access of the enterprise to that system. As self-financing of the enterprise are not sufficient to finance investments nowadays, the development of the credit system as a basic sourse of financing and an easy access to that system are supposed to havee a positive impact on the survival of the enterprises, especially in the new competitive European economic environment.

In the light of the above analysis, we can now define our logit model by the following general formula containing all the above variables:

Yi = f (X59, X1a, V03, V04, V06, X9, X10, X12, X16, X17, V20, V22, V23, V24D, V25, V26b, X28, X29, V30, X39, X40a, V42b, V43, V48, V52b, X50, X53) where independent variables are defined in table 1.

The results of this model are provided in table 2, model 1. Statistically positive and significant associations with the performance of the enterprises after the accession of Poland to the EU are as follows:

the region of establishment (X59), the branch of economic activity (X1a)**,** the ownership of other Polish enterprises (X9), the use of internet (X25) and the difficulty to get a bank loan (X53). The overall fitness of the model is excellent as indicated by the Likelihood Ratio Test statistics (39.28, P=0.0002)

In model 1, where numerous independent variables are employed, the cases finally included in our analysis are reduced by those with missing values in several variables. So, in model 1 from the 376 cases of the sample, only 182 remain in the logit analysis, a number which is not efficient in relation with the number of variables employed. In many cases, the categories of the variables have less than 5 cases (redundancies), causing problems to test the model's efficiency. To overcome this problem, a number of independent variables of no significance in model 1 and with a large number of missing values are removed from the model. Efforts have been made to ensure that the remaining variables represent all factors/groups of variables which

we discussed earlier in this section (table 1). The results of the new conditional forward logit procedure are provided in model 2 of table 2.

Model 3, is a new application according to the same criteria of removing variables. The structural characteristics and almost one variable from each factor remains in the model. The stability of the successive models is obvious and the increase in the statistical signficance of the remaining variables is considerable.

In the final model 4, the method is repeated after the removal of all the rejected variables in model 3. According to this methodology in model 4, only 30 cases are rejected because of missing data.

We can notice that in models 2,3 and 4, in comparison to model 1, there is only one change in the statistically significant variables. Variable V26b (existence of a formal cooperation with research institutions) is replaced by the variable V48 (knowledge level of the E.U countries' markets). To summarize, the region of establishment (X59), the branch of economic activity (X1a), the ownership of other Polish enerprises (X9), ihe extent of the Internet use (V25), the knowledge of EU countries' markets and the difficulty to get a loan (X53) are according to the model the explanatory factors that are associated with the direction of influence to the performance of the enterprise which will caused by the accession of Poland to the EU. As we noticed earlier, these factors are very important for the subject examined but we could also notice that some more important factors as the size (X39) and factors related to the staff quality (X40a, V42b and V43) are rejected from the models constructed. As far as the size of the enterprise is concerned, we could mention that differences in performance may appear among the small, medium and large enterprises rather than within small enterprises. On the other hand some variables as the participation of higher education employees to the total (X40a), the existence of formal cooperation with research institutes (v26b) and with consumers' organizations (V26c) have a high percentage of missing values (15 or 20 %), a fact leading these variables out of the model.

In table 4, we can see the b's coefficient values of the categories of each variable included in model 4, and the statistical significance of them. Considerable results for

the enterprises of certain category to have a higher probability for positive influence associated with the Poland accession are provided.

As was expected, enterprises at the region of Gdansk have a higher probability than enterprises at Lubelskie to be positively influenced from the Poland's accession to the EU and consequently to survive (b=0,31, P=0,027). In comparison to Lubelskie, Gdansk has a higher proportion of enterprises with:

- orientation of their production to the international markets,
- advantages over their competitors as far as the price achieved, the quality of the products, the reputation of the enterprise, the effectiveness of the marketing and promotion, the technological level of the products/services,
- formal cooperation with providers

On the other hand, Lubelskie in comparison to Gdansk, has a higher proportion of enterprises with:

- Higher effectiveness,
- advantages over their competitors as far as the attractiveness and modernity of their products and services and the relatively low cost of production,
- formal cooperation with consumers' organizations,
- existence of R & D Department,
- investments made for fixed assets in 1999.

The tourism sector (hotels and restaurants) also has a higher probability to be positively influenced by the accession of Poland to the EU. Polish owners/managers of enterprises operating in the above sector consider that the fall of barriers will increase the tourists towards Poland from the rest EU countries. It is important that all owners/managers in this branch of economic activity are optimistic about their future in the EU markets (see table 5). Their optimistic views might arise because of their high rate of profitability, since all of them are profitable (see table 6). The sectors of manufacturing, construction, trade and other services seem to have a higher probability for negative impact from the EU accession. The owners/managers may believe that they have not an advantang in comparison to the other enterprises in the developed European countries as it is idicated by the negative b coefficients. The

findings should be aproved with some caution as most of the branches of economic activity have not statistical significance in the decided level (up to 25 %). Sectoral differences referring to the probability of survival in to the European context appeared in both countries Greece and Poland. This fact provides additional evidence that enterprises are convinced that several sectors will be effected in a different way from the accession of their country to the EU. According to the Italian experience, a positive effect from the participation to the European Single Market took place in sectors with comparative advantages, while the medium and high technology sectors suffered from the increased competition that the participation had caused (Monako T., 1994).

The enterprises that did not participate in other Polish enterprises (X9=1) have a higher probability to be influenced in a negative way from the accession of Poland to the EU in comparison to those with a participation of this kind (b=-7.32, P=0.07). The creation of groups and the official synergy among the enterprises seems to be very important in Poland. The fact that this factor had been proved important also in the case of Greece, provides a generalized view that enterprises, especially in developing and transition countries, are convinced that this factor is essential for their development in the context of the winder European market.

The extent of using the Internet by the enterprise (X25) is of high statistical significance (P=0.018) and is going to influence the future of the enterprise in the European context in a positive way as it was expected. According to the model, enterprises with no use of Internet (V25=1) or with a slight use of Internet (V25=2) have a higher probability to be effected in a negative way after the elimination of the barriers (b1=-0.38 and b2=-0.36) in comparison with these which use the Internet to an significant extend { b3=-(-0.38-0.36)=0.74}. As we can notice this variable is the only one in the model from those examined which expresses the factor R & D. The importance of the Internet use for the Polish enterprises may be connected with the possibility of development of the electronic trade, which is expected to cover a considerable part of the future trade.

The level of knowledge that the enterprises have about the European Union members' markets is highly associated with the impact expected from the Poland's entrance to the EU (P=0.0002). Enterprises with a high level of knowledge have the highest probability to be positively influenced (b1=0.6696, P=0.01). In addition, enterprises with medium level knowledge about European markets have a higher probability for positive influence (b2=0.28, P=0.13) than these with low knowledge.

Enterprises which did not meet any problems to get a bank loan (V53=1) have also a higher probability to be positively influenced by the entrance of Poland to the EU (b1=0.32, P=0.08) than those which meet problems (b2=0.26, P=024) or they did not try to get a loan so far. The access to the credit system in order to finance the investments or current obligations seems to be a crucial characteristic for the Polish enterprise success in the European Single Market. It is also an important problem as 18% of the enterprises declare that they have a problem to get a loan while another 28% did not try to get a loan so far and did not know nothing about the difficulties of the whole procedure. A 40 % of those having such a difficulty determine two main problems here. The very strict requirements of banks regarding the credibility of the creditor and the bureaucratic system of the application for a loan. These factors indicate the existence of problems in both the credit system and the credibility of the enterprises. The existence of difficulties to get a loan seems to spread to all branches of economic activity as it is indicated by the results of the chi square test computed after the cross tabulation of the two variables X1a and X53 (X2 = 121, P=0.43).

Finally, the positive Constant Coefficient (b=2.32, P=0.12) indicates that for the whole sample of enterprises examined a positive impact is expected from Poland's accession to the EU according to the views of the people responsible for these enterprises.

To summarize, enterprises in Gdansk, in the tourism sector, with participation to other Polish enterprises, using Internet to a significant extent, with a high knowledge of the EU countries' markets or having no problems in getting a bank loan, are expected to have a higher probability to be positively effected by Poland's accession to the EU according to their owners/managers views.

The probability of an enterprise to have a positive influence from Poland's accession to the EU is calculated using formula 1 and the b coefficients provided in table 4 for the particular categories of each significant variable. Probabilities lie between 0 and 1), with 0 indicating certainty for an enterprise to have negative influence from the Poland entrance to the EU and 1 indicating certainty of it to have a positive influence.

For the total number of enterprises examined, where the constant coefficient is the only one introduced in the model, the probability of an enterprise to be positively influenced be the accession of Poland to the EU is 0.91 or 91 %. The probability is reaching the value of 1 or 100 %, indicating a certainty of positive effect, in the case that all characteristics are positive as provided above. Taking another example of the opposite side, i.e an enterprise established at Lubelskie, with its activity in the sector of manufacturing, with no participation to other Polish enterprises, with no use of Internet, with no knowledge of the EU countries' markets and finally with difficulties to get a bank loan, the probability of a positive influence is drastically falling dawn to 0.10 or 10 %.

IV. Conclusions

Poland is a country in transition and its accession to the EU is in progress. The extent to which this accession process influences Polish enterprises is very important to the whole economy. So it is of vital importance to predict these factors and to determine their economic influences.

The characteristics and the performance of the Polish enterprises in this study are associated with the views of their owners about the perceived impacts on them emerging from their country's accession to the EU.

Logit analysis is employed to measure this association using data from a special statistical survey carried out during the end of 1999. The analysis provides evidences

that the majority of Polish managers are optimistic about the impact that Poland's accession to the EU is going to have on their enterprises. According to our analysis, the probability of an enterprise to have a positive impact from this accession reach the 91 %.

This optimization view is associated following the required statistical criteria with factors such as the region of the enterprise's establishment, the branch of economic activity, the participation to other enterprises, the extent of Internet use, the level of knowledge of EU countries' markets and the existence of problems associated with the financial system.

The importance of the variables and their categories that have been proved by the analysis as the explanatory factors of an enterprise to be positively effected by the entrance of Poland to the EU and the considerable decreasing probability from 100 % to 10 % if these characteristics became from positive to negative, indicates the general directions of the policy that must be implemented :

- Regional policy to improve the performance of the enterprises in the less favored regions. An integrated study of regional economic disparities must precede this policy. As far as the Lubelskie region gap in relation to Gdansk region, the results of our study summarized in last section must be fully examined.
- Strengthening the enterprises tendency to participate to other enterprises, to create groups and in general to improve their competitiveness through cooperation.
- As Poland seems to have an advantage in tourism, the economic activity of this sector should be encouraged. General speaking the sectors with comparative advantage in Poland should be determined in order to get additional economic incentives for their development in the European context.
- Efforts from enterprises must be made and initiatives from the state must be provided in order to develop the sector of telecommunications. The future role of telemarketing in sales should be exploited by the small Polish enterprises.
- Information should be given by the state and official organizations about the needs and the other characteristics of the markets in the European countries.

- Finally, the access of Polish enterprises to the credit system should be facilitated in order to make easier the access to the banking system. Banks and other financial agencies should reduce the bureaucratic barriers for a loan application and should change the criteria of a loan provision in order to be based more and more on the prospects of an enterprise and less and less on its assets.

The above strategy will provide incentives to the Polish enterprises to survive and to be developed in the environment of increased competition of the Single European Market.

References

Acs, Z. and D. Audretch (1989), "Small Firms in US Manufacturing: A First Report", *Economic Letters*, vol.31, no.4, pp. 399-402.

Acs, Z. and D. Audretch (1990), *The Economics of Small Firms : A European Challenge*, Kluver Academic Publishers.

Anagnostaki V. and H.Louri (1994), "Determinants of Entry in Greek Manufacturing Industry 1982-88", *Greek Economic Review*, vol.16:1.

Anagnostaki V. and H.Louri (1995), "Manufacturing Entry in Greece 1982-99: Did sectoral policy work?", *Journal of Economic Studies*, vol.22:6.

Basant R. and Fikkert B. (1996) "The effect of R & D Foreign Technology, Purchase and Domestic and International Spillovers on Opportunity in Indian Firms" *The Review of Economics and Statistics*, vol.29:187-199.

Balicki A., Jurkiewicz T. and Szreder M, (2000), "Development of Small Enterprises in Poland. Results of a sample survey conducted in the province of Gdansk", paper prepared for the ACE workshop in Kingston, 11-15 March.

Blawat F, Ossowski J and Zieba k, (2000), Development of small enterprises in Poland : Results of a sample survey conducted in the Province of Lublin, paper presented at the ACE Workshop in Kingston, March 11-15

Chassid I. And G.Katsos (1992), *European Integration and Greek Industry*, IOBE, Athens (in Greek)

Dhrymes P.J. (1978), *Introduction Econometrics*, Springer Verlag, N.Y.

Droukopoulos V. and St. Thomadakis (1993), "The Share of Small and Medium-sized Enterprise in Greek Manufacturing", *Small Business Economics*, pp. 187-196.

EIU (1983), *The European Climate for Small Businesses. A 10 Country Study*, London.

Eurostat (1996), "Statistics in Focus", *Energy and Industry*, vol.25.

German Development Institute (1978), *Greece and the European Community: Problems and Prospects of the Greek Small and Medium Industry.*

Ghatak S. (2000), Small and Medium Size Enterprises in the U.K Economy : Lessons for Poland, paper presented at Kingston Workshop, march 11-

15, U.K

Giannitsis T. (1993), "The Structure of the Technological - Research Activities in the Greek Industry", in *Technological Structures and Technological Transfer in the Greek Industry*, Giannitsis T. and D.Mavri (eds.), Gutenberg, Athens.

GoldbergenA., (1964), *Econometric Theory*, Willey, N.Y

Harissis k., (1986) *Staff Turnover in the Personal Social Services : A statistical Approach.* Ph.D Degree, University of Kent, U.K.

Knapp M., Harissis K. and Missiakoulis S., 1982, Investigating labour turnover and wastage using the logit technique, *Journal of Occupational Phychology*, v.55:129-138, U.K

Liargovas P. and H.Tsipouri (1997), *Structural Problems of Greek Industry and the Implementation of the White Paper on Development, Employment and Competitiveness in Greece*, Hellenic Center for European Studies, Research Paper, no.44.

Lichtenberg F and Siegel D., (1991), The impact of R & D Investment on Inquire Productivity – new evidence using linked R& D –LRD Data Economic vol.29: 203-209

Lymperaki A. (1991), *Flexible Specialization*, Gutenberg, Athens (in Greek)

Manolas, G., Rontos C. and Vavouras I. (2000), Research of small and medium sized enterprises in Poland, paper presented at Kingston Workshop, March 11-15, U.K

Manolas G., Rontos C. Vavouras I. (1999), The future of SMEs in poland in the context of the European Union, Gdansk Workshop, October, Poland.

Monaco T. (1994), European Integration and Regional Cohesion-An Evaluation of the Economic Impact of the Single Market on Italian Regional Development, Esoc-lab, the European Institute, LSE, paper presented for the second meeting of the Economic and Social Cohesion network, Florence, 3-4 June.

Merlove M and Press J., (1973), Univariate and Multivariate Loglinear Logistic Models, R-1306-EDA/NIH, Rand, Santa Monica.

NSSG - National Statistical Service of Greece (1997), *Positive and Negative Impacts of SMP on Greek Enterprises*, Athens.

OECD (1997), *Globalisation and Small and Medium Enterprises*, vol.1 and 2.

Palaskas T., Reppas p and Christopoulos D. (1999), An analysis of the determinants of R & D activities in the Greek industrial sector, Panteio University of Athens, paper financed by the E.U, Fourth Framework Programme, TSER.

Skovgaard M (1990), *Analytic Statistical Models*, Lecture Notes – Monograph Series, Institute of Mathematical Statistics, USA

TABLE 1
Explanatory variables initially examined grouped in performance factors

Variable	Code	Category
STRUCTURAL CHARACTERISTICS		
Region of Establishment	X59	
		Gdansk
		Lubelskie
branch of Econ. Activity	X1a	
		Manufacturing
		Construction
		Trade
		Hotels-Restaurants
		Transport-Storage-Communication
		Financial Intermediation
		Other Services
Sector	V03	
		Public
		private
Legal Status	V04	
		State owned and communal Enterprise
		Indivinduals' Partenership
		Indivinduals' Bussiness
		Joint Stock
		LTD
		other
Leg.Status change in recent 3 years	V06	
		No
		Yes
Size	X39	
		Up to 19 employees
		20-39 employees
		More than 39 employees
COOPERATIOM FACTOR		
Ownership of other enterprise(s)	X9	
		No
		Yes
Is the enterprise based on franchising?	X17	
		No
		Yes
DEGREE OF OPENESS		
Main destination of production	X12	
		Local market
		National Market
		International Market
		Mixed
Orientation of competitors	V20	
		Domestic
		Foreign
		Both
Ownership of any foreign enterprise	X10	
		No
		Yes
Efforts made to export/increase exports	X16	
		No
		Yes

R & D FACTOR		
Technological level of the enterprise	V22	
		Medium
		High
		Very High
Technological level of the products/serv.	V23	
		Medium
		High
		Very High
I.D Used in the production process	V24d	
		No
		Yes, slightly
		Yes, in a significant extent
Extent of Internet use	V25	
		No use
		Yes, in a slight extent
		Yes, in a significant extent
Formal cooperation with R & D instittutions	V26b	
		No
		Yes
Existence of R & D department	X28	
		No
		Yes
Innovation introduced in 1998-99	X29	
		No
		Yes
STAFF QUALITY FACTOR & TRAINING		
Higher education employees as % of total employees	X40a	
		Up to 19%
		20-49 %
		More than 49 %
Training the employees when is needed	V42b	
		No
		Yes
Existence of written policy for training	V43	
		No
		Yes
KNOWLEDGE ABOUT E.U		
Knowledge level of E.U's markets	V48	
		High
		Madium
		Low
Action towards the accession of Poland to the E.U	V50	
		No
		Yes
FINANCING-DEGREE OF CREDIT SYSTEM DEVELOPMENT		
Are banks loans essencial for the enterprise's finance?	V52b	
		No
		Yes
Is there any difficulty foe the enterprise to get a loan?	X53	
		No
		Yes
		No attempt to get a loan so far

TABLE 2
Models created by the use of Contitional forward logit method

Variable	*MODEL 1* Wald statistics (Sign. Level)	*MODEL 2* Wald statistics (Sign. Level)	*MODEL 3* Wald statistics (Sign. Level)	*MODEL 4* Wald statistics (Sign. Level)
X59	2,81 (0,09)	2,72 (0,0978)	2,82 (0,09)	4,87 (0,03)
X1a	6,61 (0,36)	9,79 (0,13)	11,97 (0,06)	14,58 (0,02)
V03	…	…	…	
V04	…	…	…	
V06	…	…	…	
X9	0,14 (0,71)	0,23 (0,62)	3,43 (0,06)	3,22 (0,07)
X10	…			
X12	…	…		
X16	…	…	…	
X17	…	…		
V20	…	…		
V22	…	…		
V23	…	…		
V24d	…	…		
V25	5,32 (0,70)	5,25 (0,07)	6,79 (0,03)	7,96 (0,018)
V26b	2,73 (0,10)	…		
X28	…	…	…	
X29	…			
V30	…	…		
X39	…	…	…	
X40a	…			
V42b	…	…	…	
V43	…	…	…	
V48	…	2,02 (0,15)	15,73 (0,0004)	17,21 (0,0002)
V52b	…	…		
X50	…	…	…	
X53	5,17 (0,07)	3,63 (0,16)	3,87 (0,14)	3,20 (0,20)
Constant	0,29 (0,59)	0,41 (0,52)	2,27 (0,13)	2,34 (0,12)
Cases	182	270	309	346
LRTS (P)	39,28 (0,0002)	67,37 (0,00)	77,98 (0,00)	88,70 (0,00)

Notes: LRTS=Likelihood Ratio Test Statistic
By … Denotes that the Variable was included in the model but rejec
as no statisticacal significant
If the variable did not included in the Model there is no indication in

Variable	Category	Code	Frequency
Region of establishment		X59	
	Gdansk	1	223
	Lubelskie	2	123
Branch of Econ.Activity			
	Manufacturing	1	
	Construction	2	
	Trade	3	
	Hotels-Restauta	4	
	Transport-storage communication	5	
	financial Interme	6	
	Other Services	7	

TABLE 3
Explanatory variables in Model 4

Variable	Category	Code	Frequency
Region of Establishment		X59	
	Gdansk	1	223
	Lubelskie	2	123
Branch of Econ. Activity			
	Manufacturing	1	70
	Construction	2	41
	Trade	3	139
	Hotels-Restaurants	4	12
	Transport-Storage-Communication	5	26
	Financial Intermediation	6	10
	Other Services	7	48
Ownership of other enterprise(s)		X9	
	No	1	322
	Yes	2	24
Extent of Internet use		V25	
	No use	1	137
	Yes, in a slight extent	2	133
	Yes, in a significant extent	3	76
Knowledge level of E.U's markets		V48	
	High	1	62
	Madium	2	220
	Low	3	64
Enterprise's difficulty to get a loan		X53	
	No	1	185
	Yes	2	64
	Never try to get a loan	3	97
Sector		V03	
	Public	1	
	private	2	
Legal Status		V04	
	State owned and communal Enterprise		
	Indivinduals' Partenership		
	Indivinduals' Bussiness		
	Joint Stock		
	LTD		
	other		
Leg.Status change in recent 3 years		V06	
	No		
	Yes		
Size		X39	
	Up to 19 employees		
	20-39 employees		
	More than 39 employees		
COOPERATIOM FACTOR			
Ownership of other enterprise(s)		X9	
	No	1	322
	Yes		
Is the enterprise based on franchising?		X17	
	No		
	Yes		
DEGREE OF OPENESS			
Main destination of production		X12	
	Local market		
	National Market		
	International Market		
	Mixed		
Orientation of competitors		V20	
	Domestic		
	Foreign		
	Both		
Ownership of any foreign enterprise		X10	
	No		
	Yes		
Efforts made to export/increase exports		X16	
	No		
	Yes		

TABLE 4
Results of the Contitional Forward Logit Model (4) fitted on Polish Enterprises sample data

Variable	Category	Code	b coef.	S.E	Wald Stat	Sign.level
Region of Establishment		X59				
	Gdansk	1	0,31	0,14	4,87	0,027
branch of Econ. Activity		X1a			14,58	0,024
	Manufacturing	1	-1,87	1,48	1,6	0,2
	Construction	2	-1,26	1,49	0,71	0,39
	Trade	3	-1,23	1,47	0,7	0,4
	Hotels-Restaurants	4	5,54	8,69	0,41	0,52
	Transport-Storage-Communication	5	-1,05	1,54	0,47	0,49
	Financial Intermediation	6	-0,3	1,74	0,03	0,86
Ownership of other enterprise(s)		X9				
	No	1	-0,73	0,41	3,21	0,07
Extent of Internet use		V25			7,96	0,019
	No use	1	-0,48	0,2	3,73	0,05
	Yes, in a slight extent	2	-0,36	0,19	3,68	0,05
Knowledge level of E.U's markets		V48			17,21	0,0002
	High	1	0,67	0,26	6,55	0,01
	Madium	2	0,28	0,19	2,32	0,13
Enterprise's difficulty to get a loan		X53			3,2	0,2
	No	1	0,32	0,18	3,11	0,08
	Yes	2	-0,26	0,22	1,35	0,24
Constant			2,32	1,52	2,35	0,12

TABLE 5
Sample Polish enterprises by branch of economic activity and the impact of Poland accession expected on them

Branch of Economic Activity	Impact of Poland accession to the E.U Negative	Positive	Total
Manufacturing	38	32	70
Construction	18	23	41
Trade	56	83	139
Hotels-Restaurants	0	12	12
Transport-Storage-Communication	5	21	26
Financial Intermediation	1	9	10
Other Services	5	44	49
Total	123	224	347

Test x2 =39,6 P=0,00

TABLE 6
Sample Polish enterprises by branch of economic activity and Profitability during 1998

Branch of Economic Activity	Profitability during 1998		
	Profit	Loss	Total
Manufacturing	62	9	71
Construction	39	3	42
Trade	128	8	137
Hotels-Restaurants	9		9
Transport-Storage-Communication	19	4	23
Financial Intermediation	7	1	8
Other Services	41	7	48
Total	305	32	338

Test x2 =8,8 P=0,72