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THE FIRST OVERVIEW OF CLUSTERS IN POLAND

Clusters' concept is a brand new issue in Poland, although some bottom-up networking processes have been going on during transformation. The available empirical literature on potential clusters concerns firms in only some parts of Poland and of selected branches. In the paper high-technology clusters in the Gdańsk region, printing cluster in the Warsaw Agglomeration and building cluster in the Świętokrzyskie Voivodeship, as well as rural clusters in the Lubelski Region are presented. The paths of clustering in high-technology, traditional and rural clusters are different and all of them show many bottlenecks. One cannot speak about mature clusters in Poland on the basis of the presented examples. Thus clusters' development seems to be an urgent issue for the Polish economy.

Keywords: clusters, high-technology, regional development, local production systems

INTRODUCTION

Clusters have been defined as 'geographic concentrations of interconnected companies and institutions in a particular field'. Physical proximity facilitates the transmission of knowledge and enhances the development of institutions, which in turn enhance cluster effectiveness. A cluster can contain a small or a large number of enterprises and firms of different size. Porter (1990) counts institutions (formal organizations) such as universities as integral parts of a cluster. The agglomeration of firms and their suppliers permits the creation of locally concentrated and sometimes specialized labour markets. For Porter, clustering can encourage an enhanced division of labour among firms with a physical proximity among numerous competing producers fuelling innovation.

Clusters spontaneously occur in the presence of several factors, such as: the proximity to markets, the existence of a pool of specialized labour, the presence of input equipment suppliers, the availability of specific natural resources and infrastructure, low transaction costs due to geographic proximity among actors and access to information, as can be the case in the vicinity of universities and research institutes. On some occasions, firms

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may decide to base co-operation on more formal arrangements to foster the exchange of information and learning by creating a regional innovation network.

Policymakers should be aware that policies sustaining clusters can enhance productivity, the rate of innovation and the competitive performance of cluster firms. Cluster policies share several characteristics: in general, cluster policy demands a shift from focusing on individual firms to local/regional systems of firms and firms' value adding environment. It commands more interest in the local agglomeration of small and medium sized enterprises (SMEs) and an improvement of regional potential. In addition, cluster policy tries to stimulate social cohesion encouraging trust-based interaction to increase the flow of knowledge. Public actors should play the role of a facilitator creating an environment conducive to endogenous cluster growth (OECD 2002).

Clusters have been deeply studied all over the world. The best known are studies by M. Porter (Porter 1990, 2001) who describes clusters in different countries like Italy, Germany, Japan and the United States of America. Porter perceives clusters as a crucial element of a nation's competitive advantage. The concept of clusters as local production systems was however already recognized in the 19th century by Alfred Marshall (Marshall 1890). Clusters' role has been growing recently due to globalization and the need to create suitable conditions on a local level to face the globalization challenge. Voyer (1998) states that the world's development is driven by about 200 regional and local innovative clusters, which consist of regions and urban agglomerations, where the societies actively work to attract knowledge intensive and high technology investment.

In Poland transformation led to an explosion in private entrepreneurship. The private sector – almost non-existent before 1989 – now accounts for about 74% both of GDP and workforce. It comprises of about 180,000 corporations and 2 million of unincorporated businesses operating mostly in trade, services and civil engineering. Together with the growth in its size – and increasing competition – the structure of enterprise sector changed. The "atomized" structure of the early 1990s was replaced by some linkages among enterprises mostly of capital nature. They developed through privatization deals (in the case of larger enterprises) or outsourcing processes. Growing competition among enterprises resulted in the launching of some networks that were not based on shareholdings. This was observed first of all in the retail and wholesale trade.

But the networks' concept is not entirely new in Poland. Some attempts to create linkages among enterprises can be traced back to the early 1950s when so-called central boards subordinated to the ministries were set up with the aim to co-ordinate input-output relations among enterprises in a particular branch. Shortly after that such networks were enlarged and complemented by research and development institutes. Despite some successes, industry-science co-operation was not effective. The diffusion of innovations was weak and responsible for the overall low innovativeness of the economy. Along with the fall of the communist system, the network structures of the socialist economy disappeared.

However, the economic structure of Poland is still too atomized and thus not effective enough. Aggregation of the Polish small and medium sized enterprises by linkages and co-operation between them may be a prerequisite of their survival especially in the challenge of European integration. Do any cluster structures exist in Poland? Are any mature clusters? What are the strongest and the weakest points of the emerging socio-economic networks on local level? Which are the barriers to clustering? These are the questions which are tried to be answered in the article. The article is an overview of the existing studies on clusters in Poland. On the basis of the studies some conclusions about different patterns of clustering in different sectors in Poland are being drawn.

1. HIGH TECHNOLOGY BASED EMBRYONIC-CLUSTERS IN NORTHERN POLAND

The empirical literature on clusters in Poland is very scarce. There are only four studies available, mostly on traditional industries that dominate the Polish economy. However, an important impulse for the development of networks and clusters may come from high-technology industries which are based heavily on formal and informal links with various R&D institutions. Moreover, high-technology industries supply traditional industries with modern equipment and production inputs so are crucial for their competitiveness.

High-technology firms are present in all regions of Poland but they concentrate mainly near large agglomerations, which are also major university centres. The sector, however, operates predominantly in the domestic market. According to Neven's definition, the share of high-technology industrial branches in Polish exports in the years 1999-2001 was

13.7%, while in line with the narrower OECD definition only 6.44% (source: GIME calculation basing on CSO data). So far, strong linkages to the R&D infrastructure are one of the characteristics of the Polish high-technology sector. These linkages are much stronger than in the case of traditional firms. Almost 75% of high-technology firms declare some form of co-operation with universities etc., while in the case of all small and medium sized firms in Poland this figure is only 10%. The high-technology sector may push the development of Poland to new heights as its profitability is higher than the domestic sector average (Umiński 2001, Wojnicka et al. 2002, Brodzicki et al. 2001).

The Gdańsk Agglomeration (northern Poland) is one of the leaders in Poland in terms of development of high technology firms and the specific supporting institutions. In 2002 the research on high technology firms in the Gdansk region was carried out (Brodzicki et al. 2002). The branches surveyed were biotechnology, the computer industry, electronics and telecommunication, and control engineering. The research was based on direct and phone interviews in 48 firms of the four sectors, which is about 30% of all the firms of these sectors in the region. Moreover interviews in supporting R&D institutions were carried out. The survey has revealed some evidences of networking or emerging clusters; the strongest evidence was found in the case of control engineering firms.

The emerging control engineering cluster in the Gdansk Region comprises about 60 firms situated in the city of Gdansk and neighbouring towns. Almost half of them deal with manufacturing of control equipment while circa 35% operate in services, about 10% are of a manufacturing-service profile and 15% are purely trading firms. Total employment in the whole sector situated in the analysed area is about 2200 people. (Firms in the panel employed 800 people.) All of the interviewed firms but one (employing about 500 people) are small firms of less than 50 employees.

The surveyed firms are mostly suppliers of different traditional industries like shipbuilding, power utilities, air conditioning, and automotive production. The research confirmed the knowledge intensive character of the branch – on average 60-70% of the employees of the firms hold a university degree. Although the firms operate mainly on the domestic market the products they offer comply with the best world standards.

Major features of the emerging control-engineering cluster are as follows:

- Common knowledge base (some firms are typical spin-offs; most of the firms' founders originated from local university of technology, in particular The Electrical and Control Engineering Faculty);

- Strong links to R&D institutions on the regional level;
- Informal co-operation between the cluster's firms;
- Co-operative form of economic activity – almost all firms have partners, although the majority of them come from outside the region. However, 63% of the firms have partners on a regional level as well;
- Relatively high intensity of trade fairs connected with the sector in the region;
- Quite strong vertical links between the firms and the regional traditional industries they serve.

However, many shortcomings and barriers to cluster development were reported. Firstly, the existing regional firms' associations and chambers are not an effective dialogue and co-operation platforms as firms' membership in these bodies is not developed enough. The firms are most frequently members of domestic organizations situated outside the region. This may be one for the reasons of a lack of formal co-operation between the firms of the emerging cluster. Secondly, tacit knowledge transfer among firms – in the form of thematic seminars and conferences – is predominantly performed on a domestic level. Vertical relations with customers occur mainly with agents from outside the region. Technology and other inputs are in majority imported, although the firms develop foreign technology according to their specific needs. Thirdly co-operation with local authorities is very sporadic.

On the contrary to the control engineering case, biotechnology firms can hardly be classified as cluster even in an embryonic stage. There are less than ten firms dealing with various biotechnology tools. The major reason is that domestic demand for their products is very low, while industrial demand in the region almost does not exist. The computer industry may be described as a mature cluster-like form, which is in the phase of capital concentration. However, it shows some features of a new path of cluster development based on capital relationships. In the rest of the sectors analysed, especially in electronics and telecommunication, most of the clustering is connected with linkages to the scientific infrastructure. The co-operation of firms on a regional level, both vertical and horizontal, is, however, predominantly weak. Only the control engineering case shows quite strong vertical linkages to other firms in the region. Co-operation with local authorities is almost non-existent in all of the sectors so there is no "triple-helix phenomenon". Table 1 shows cluster-like features, major shortcomings of the clusters and other findings of the research for the rest of the high-technology branches surveyed that is biotechnology, computing and electronics and telecommunication.

Table 1

High-technology firms in the Gdańsk Region

Biotechnology	Computing	Electronics and Telecommunication
Features of a cluster		
• Common knowledge base and business development path – the founders come from the same science society and still have strong linkages to it. Moreover, all of them spent some years in foreign research units before setting up the enterprises • Well-developed science and business supporting base for biotechnology firms in the region (The Biotechnology Joint Department of the Gdańsk University and The Gdańsk Medical University, strong biotechnology research at the Gdansk University of Technology, Technology Transfer Centre and Science – Technology Park of biotechnology profiles) • Intensive scientific and business contacts with foreign biotechnology sector • Intensive informal co-operation with scientific sector • High scientific demand for firms' products	• Most of the major firms originate in one computing firm "Computer Studio Kajkowski", which was set up in 1982. Due to administrative regulations the founder Ryszard Kajkowski was forced to establish different firms specializing in different computing issues. Smaller firms were established by graduates of the Electronics, Telecommunication and Computing Department of the Gdańsk University of Technology) • Potential of cluster development based on capital relationships due to detachment of small units for specific purposes from large corporations • Strong informal co-operation between firms in the sector and specialists in different branches acting as individual consultants	• Well-developed research infrastructure for the sector in the region (research connected with the sector is done at the Gdansk University of Technology, Gdynia Maritime University, Naval University of Gdynia, Ship Design and Research Centre, Maritime Design and Technology Centre, the Gdansk branch of the Industrial Institute of Telecommunication) • Informal linkages of firms and R&D infrastructure, sporadic formal co-operation • Sporadic joint R&D research of firms in the region
Major shortcomings of a cluster		
• Very low industrial demand and hence weak vertical relationships with the industry • Very few biotechnology firms mainly due to lack of industrial customers • Lack of formal co-operation with scientific sector due to its high cost	• Weak vertical co-operation among firms on the regional level	• Limited co-operation among firms mainly in the form of subcontracting • Hardly any suppliers on the regional level, most production inputs are imported or come from domestic suppliers (not regional) • Hardly any horizontal linkages among firms • Lack of financial institutions providing capital for research activity
Other findings		
• Strong co-operation with foreign industry and customers is the most promising chance for development of the sector	• Availability of well-educated personnel and relatively low labour and overall operational costs attract foreign firms to the region	• Majority of firms operates in niche markets with a limited number of customers • The products are developed on the basis of their own structural projects and product lines

Source: The Gdańsk Institute for Market Economics, T. Brodzicki, P. Rot, S. Szultka, P. Tamowicz, S. Umiński, E. Wojnicka (2002)

The survey of clustering efforts in high tech-sectors allowed to draw some proposals for cluster-based regional policies:

- Promotion among firms of cluster concept and co-opetition: "competition through co-operation" ;
- Improvement of the quality of the existing regional firms' associations as knowledge transfer platforms (e.g. EC BIC procedure), and setting up new institutions that facilitate dialogue among various bodies;
- Improvement of the environment for entrepreneurship development – mostly in the regional academia;
- Development of venture capital institutions, promotion of business angels' networks;
- Providing better business information for firms, especially about European Programmes and funds.

2. TRADITIONAL INDUSTRIAL POTENTIAL CLUSTERS IN POLAND

The Polish economy is dominated by traditional industries. These industries have the highest share in Polish exports (shipyard industry, furniture and textile industry, vehicle industry or metal industry) as well as in employment. Traditional industrial branches perceived as different than high technology were the source of 80% of Polish exports (according to Neven's definition of high-tech or of almost 87% according to the OECD definition). The well being of these sectors is crucial for the Polish economy. Clustering might enhance their competitiveness and innovativeness and sustain employment. So far two studies of traditional clusters have been done in Poland: the printing cluster in the Warsaw Agglomeration and the building/mineral cluster in the Świętokrzyski Region. The printing industry, which is concentrated mainly in the Mazowiecki Region, where the study was done, operates mainly in the domestic market. On the contrary, the mineral industry – producing inputs for the building industry, with maximal on the regional level concentrations in the Świętokrzyski Region, is an important exporter, and Poland has demonstrated a comparative advantage in this industry in comparison with the EU.

2.1. The Printing Cluster in the Warsaw Agglomeration

The printing industry is the most concentrated and dynamic industry in the Warsaw Agglomeration. The questionnaire applied in 55 enterprises dealing with publishing and printing, and interviews in institutions connected with the industry in the Warsaw Agglomeration have shown some features of an emerging cluster (Dziemianowicz et al. 2002). The different firms of the industry, especially competitors, are situated in geographical proximity. The printing houses and publishing houses are strongly related to the local market. The market is the major source of qualified labour and capital for them. The customers are also mainly local. Co-operation with the R&D sphere is most often among distributors of printing machines and materials. However, in the whole industry it is weak, and usually takes the form of expertise ordered from universities.

Intensive co-operation among firms involves mainly vertical relations. There are strong linkages of printing and publishing houses, as well as between them and marketing and leasing firms. The leasing firms are the agents of the industry in its relations to the distributors of machines. Moreover, the printing houses specializing in inscriptions co-operate with the packaging industry. There are also some interesting, although sporadic, examples of co-operation of the publishing houses and IT firms. Large publishing houses, however, tend to internalize all their activities.

The shortcomings of the cluster are connected mainly with the overall weak co-operation with the R&D sphere. One of the reasons is that the industry relies mainly on imported machines and production inputs. The role of the industry associations as self-government is very restricted. The existing chambers have a relatively small number of members and they are not connected to the small and medium sized printing enterprises. Thus the weakness of horizontal linkages among the printing firms. Moreover, the public authorities are only customers of the industry.

The major recommendations for cluster-based local policy given by the authors of the study are: improvement of information transfer in the industry and between industry and related branches, local assistance aiming at integration and partnership in the industry and assistance in internalization of the firms, especially the SMEs. One of the tools to achieve this could be an Internet platform for the industry with information about and for the firms.

2.2. The Building Cluster in the Świętokrzyski Region

The Świętokrzyski Region is an important centre of building and mineral industry. The analysis of the building industry in the region showed some features of a cluster (Olesiński et. al. 2002). The research method were interviews (100) and questionnaires (290) in firms and institutions (business supporting firms, banks, local governments) connected with the industry.

The base for cluster development in the region is the supplier-firm-customer chain, originating in the firms producing building materials (cement mills, quarries, gypsum and lime, firms producing ceramic fixtures as well as firms producing wooden items for building). Another important impulse for clustering was the abundance of a mobile labour force. Before transformation the region had developed industry, especially military industry. In the 1990s most faced huge difficulties, however the difficulties were not so severe in the case of the mineral and building machinery industries. Even before transformation, many design offices, research institutes and advisory firms were present in the region. The development of the building cluster stimulated growth of new consulting, marketing and exhibition design firms, as well as business incubators. Moreover it attracted the interest of state and local authorities, as well as political parties, workers' unions and professional and local associations.

There are some structural characteristics of a building cluster in the region that includes the agglomeration of firms and supporting institutions, as well as a growing regional network based on local partnerships. Some of the firms in the cluster build relations to achieve globalization – they create holdings with larger corporations. For other firms, most important are regional vertical linkages in the production chain. Moreover, informal co-operation appears due to the geographical proximity of some building firms.

The questionnaire and interviews conducted in the enterprises and other institutions like banks, local authorities, and institutions supporting businesses showed that mainly the top managers perceive the importance of the external relationships. The business environment is the source of new clients, strategic partners and partners which may provide suitable information for future strategic activities. The strongest external linkages characterized firms and business support institutions, while in the case of local self-governments and banks they were much weaker. The

organizations surveyed operate both on domestic and regional levels. However, banks and business support institutions operate mainly on the domestic level, while firms and local self-governments are mainly regional. In terms of reciprocal relations among these different groups of agents located in the region the strongest are interactions of firms and banks as well as firms and business supporting institutions. Weak are relations of firms and local authorities as well as banks and local governments. The linkages of local authorities and business supporting institutions are also weak but they are being intensified.

The Świętokrzyski region shows many features of the building cluster based on co-operative and competitive relations. The appearance of this regional network stimulates the development of the entire region.

2.3. Rural "Clusters" in the Lubelskie Voivodeship

The Lubelski region of Poland is dominated by rural areas – 54% of the inhabitants live in the countryside. Hence the development of rural clusters should be of prime importance in the region, as a way to increase agricultural productivity and improve the situation of farmers. The study of rural clusters based on associations of rural producers showed some clustering in the sector (Szymoniuk 2002). Presently, two types of cluster-like forms may be found in the region: groups of rural producers and agrotouristic clusters.

There are about 110 groups of rural producers in the Lubelskie Voivodeship. These groups are legal entities (in the form of associations) and their main aim is marketing of their members' products. They offer different agricultural products but most important are fruits and vegetables. Their main customers are trading networks in Poland and abroad. The strength of such a group is the ability to supply customers with large quantities of homogenous products. To achieve this, the groups jointly build sorting and refrigerating plants and warehouses. One type of rural cluster is the group of firms from Rybczewice commune, which is starting to be an important orchard centre in eastern Poland. The cluster originated in a successful fruit trading firm. The owner of the firm set up an association of fruit growers, which now has 41 members. The association, being a form of a cluster, organizes training courses for its members, co-operates with scientists from the University of Agriculture and other associations. Moreover, the marketing of products is a joint activity. The association also works on obtaining quality certificates for

its products. To meet the requirements of the international market, the cluster is going to expand and unite with four other associations of fruit growers.

One kind of agrotouristic cluster are the local associations of agrotouristic firms. There are eight such associations in the Lubelski Region, which together form the Lubelski Union of Agrotouristic Associations. All the local associations in Poland belong to the Polish Federation of Rural Tourism "Hospitable Farms". The local associations provide many joint activities for their members. These activities are marketing, development of quality standards, lobbying and fundraising. For example, the Agrotourism Association "Ziemia Lubartowska" is a formal core of a kind of cluster. Its members – households, although competitors, co-operate with each other by negotiating the scope of specialization, investment plans and forms of mutual assistance. In an informal way, the cluster co-operates with external partners from the region like farms, museums, the Regional Centre for Agricultural Counselling, church organizations and local authorities.

Despite some positive examples, the process of clustering in the Lubelski region meets a lot of obstacles. The major barrier is the lack of tradition and the will to co-operate among firms, especially if it concerns rivals. The situation in agriculture is even more complicated as the farmers remember very well the socialist times when they were forced to unite in producers' cooperatives. There are also legal barriers for clustering as in the form of higher taxes for associations than for individual farmers. Lack of an entrepreneurial spirit and tradition in Polish society is a general obstacle for clustering, maybe less severe in terms of agriculture, which even during communist times was based on individual farms. However, management skills in agriculture are usually lacking. Also, there is no central or regional policy supporting clusters. Moreover, the linkages between vocational schools, universities and enterprises are very weak, which results in an imbalance between educational programmes and market needs.

The Lubelski Region, as a border region, may be a good platform for multinational clusters. Some forms of such co-operation are noticeable at the Polish-Ukrainian border. However, the clustering is difficult mainly due to the incoherence of legal resolutions and duty barriers.

3. DIFFERENT PATTERNS AND BARRIERS TO CLUSTERING IN POLAND

The presented cluster studies allow drawing some conclusions about different patterns of clustering in different sectors of the Polish economy. However, none of the studies gives evidence of the existence of mature clusters in Poland. Only some elements of co-operation and interactions are present in different potential clusters, although all of them are agglomerations of firms. Moreover, the level of internationalization is in general very low. Table 2 presents the conclusions of the cluster studies. It shows different patterns of clustering in terms of cluster base and the character of dominating interactions as well as paths of internationalization and development barriers in high-technology branches and traditional industrial branches as well as in agriculture. Figure 2 shows the intensity of interactions in the Polish potential clusters analysed.

The most important conclusion is that the strongest co-operation and the base of networks in the case of high-technology firms is the relation between firms and research institutions while in the case of traditional industrial branches the strongest is buyer-supplier link between firms. Rural "clusters" tend to institutionalize their co-operation in the form of firm's associations. Firms' associations are however of little importance for industrial firms. Most internationalized are traditional industrial clusters. Co-operation with knowledge-intensive business services as well as business supporting infrastructure is quite strong in the industrial clusters while weak in rural. The weakest point in all the cases is the relation with local authorities, which are not engaged in the development of cluster-like cultures and socio-economic networks. Clusters' development should be a bottom-up process but facilitated by public authorities. Moreover it seems impossible that clusters in Poland could develop without public involvement. Lack of regional and local policy supporting clusters is thus one of the obstacles of their development. The other barriers for clusters' development in Poland are: lack of trust among entrepreneurs, lack of tradition and the will to co-operate among firms, lack of financial supporting institutions, lack of business information and information about potential partners, limited to top managers interest in the external relationship building, fiscal barriers (e.g. higher taxes for associations), low management skills of farmers and individual entrepreneurs, as well as the youth of the SMEs sector – lack of entrepreneurship's tradition.

Table 2

Summary of empirical cluster studies

Cluster base	Interactions on regional level		Internatiolization	Development barriers
	Strong	Weak		
High-technology firms (control engineering, biotechnology, computing, electronics and telecommunication)				
- common knowledge base (one university or research institute) and/or business development path (foreign contacts or origin in one firm); - geographical proximity in terms of Gdansk Agglomeration; -well developed R&D infrastructure for the sector.	- with R&D institutions; - informal contacts among firms; - some formal horizontal among firms based on capital relations (computing).	- vertical relations with customers and suppliers (domestic level dominates); - formal horizontal linkages among firms; - interactions based on participation in regional entrepreneurial organizations; - co-operation with local authorities.	- technology and production inputs in majority foreign; - Strong linkages to foreign scientific institutions (biotechnology); - co-operation with foreign firms in some cases.	- lack of financial supporting institutions; - low demand; - lack of trust among entrepreneurs.
Traditional: printing cluster				
- geographical proximity in Warsaw Agglomeration; - relying on local market: customers, capital and employees.	- vertical supplier - customer relations among firms; - interactions with KIBS (knowledge intensive business services) like marketing firms, sometimes IT firms.	- linkages to R&D institutions (weak overall) - interactions based on participation in entrepreneurial associations; - co-operation with local authorities.	- technology and production inputs in majority foreign;	- lack of business information and information about potential partners; - lack of internationalization.
Traditional: building cluster				
- agglomeration of firms and supporting institutions, as well as a growing regional network based on local partnerships	- supplier-customer relations, - linkages to supporting institutions (KIBS, banks, public supporting institutions) - growing role of capital relations - informal co-operation among firms.	- weak co-operation of firms and banks and local authorities.	- co-operation with large foreign enterprises sometimes in the form of holdings to enter foreign markets.	- limited to top managers interest in the external relationship building.

Table 2 continued

Cluster base	Interactions on regional level		Internatiolisation	Development barriers
	Strong	Weak		
Rural clusters				
-associations of firms realizing some joint activities in the common interest of the members	- formal co-operation of the associations' members - informal co-operation with local external partners	- relations with customers; - with universities and vocational schools (weak overall)	- co-operation with foreign firms (customers); - opportunity of Polish-Ukrainian formal co-operation.	- lack of tradition and the will to co-operate among firms; - low management skills of farmers - fiscal barriers (higher taxes for associations); - lack of regional and local policy supporting clusters.

Source: The Gdańsk Institute for Market Economics

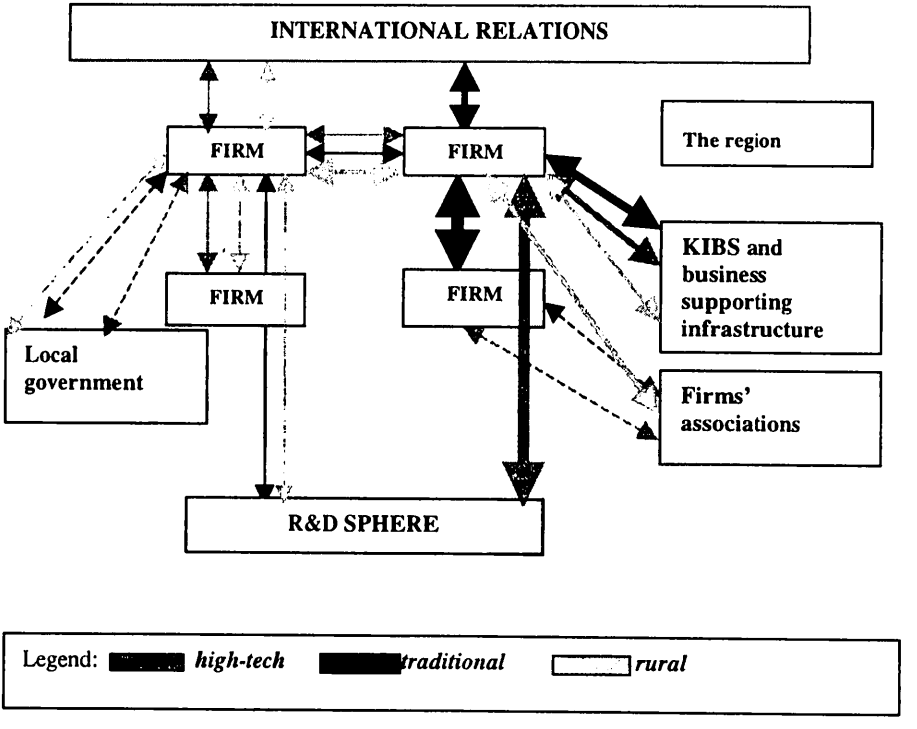

Fig. 1. Strength of interactions in the Polish potential clusters
Source: The Gdańsk Institute for Market Economics

CLOSING REMARKS

The clusters issue is a new phenomenon in Poland. So far the economy has not been perceived from this perspective. The majority of network structures, which existed before transformation, were destroyed after 1989. Small and medium sized enterprises, which should be the base of clusters, could start to operate without restrictions only after the transformation. That is why the entrepreneurs are still learning how to operate in the market economy. They do not trust each other which is a serious obstacle for clustering. In recent years, economic growth slowed down in Poland. This means that simple sources of growth are exhausted. It is inevitable that new sources of growth must be found, and they could come from the creation of co-operative competition and clusters, which allow network benefits to occur.

The policy supporting small and medium sized enterprises has been of prime importance for Polish government in recent years. The institutions of a market economy supporting them are already established. However, their effectiveness is low, partly due to restricted resources. Moreover, they are weakly recognised by entrepreneurs. They also often do not complete their original tasks – for example innovation centres often focus on tasks connected with the labour market instead of innovation. A cluster-based policy *sensu stricto* does not exist in Poland. So far most interest in such a policy or in the concept in general has been noticeable among research units and local authorities. The promotion of the cluster idea and inclusion of cluster policy in the national development policy should, therefore, be of prime importance.

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