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TECHNOLOGY TRANSFER AND CLUSTERS - OPPORTUNITY FOR REGIONAL DEVELOPMENT

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Abstract:
Attracting Foreign Direct Investment (FDI) is a priority to all Western Balkan's (WB) countries in order to improve their economic performance and standard of living. Although there are many reforms and tax incentives in the last two years, Macedonia proves weak responsiveness to attract FDI and is the last country with FDI per capita in the Balkan. Match making matrix have shown good perspective for the two clusters already chosen by Macedonian Government, but still, this is only an estimation and does not represent any empirical experience.

1. INTRODUCTION

The last few years have seen significant developments in the field of small and medium enterprise development in the Republic of Macedonia [1,2].

The institutional architecture for the support of the SME sector has taken shape in the form of the Department for Entrepreneurship and Competitiveness in the Ministry of Economy and the Agency for Entrepreneurship Support (APPRM), responsible respectively for defining SME policies and their implementation. APPRM also coordinates the SME support infrastructure, which consist of a wide spectrum of institutions – business centres, consultancies, incubators, technology transfer centres, etc. – that offer services to small and medium enterprises on the local level. In addition, the recently established SME Forum provides a platform for dialogue and cooperation between the Government and private sector business organisations, and the wider civil society.

On the policy level there have also been major developments. The country has attained EU Candidate Country status in late 2005, and a new Government was elected in mid-2006 with a manifesto that focuses sharply on enterprise development and the promotion of foreign and domestic investment. This has decisively changed the nature of small enterprise policy, which in turn is reflected in the new SME Strategy 2007–2013 [3] and the new SME Programme 2007–2010 [4] that have been adopted by the Government in early 2007.

1.1. Macroeconomic situation

Following a decade of sluggish growth, due both to external shocks and internal difficulties, the economic performance of the country is now improving. Economic growth (in terms of real GDP) was 4% in 2005, driven primarily by strong exports which in 2004 and 2005 increased by 20% each year; for 2006, the growth rate was around 4.5 %, for 2007 and 2008 the growth rate was around 6.5 % [5]. This represents the highest real growth rates in the country since its independence in 1991.

Despite these recent improvements, the country still faces considerable challenges in achieving sustained rapid growth and lowering unemployment. Unemployment was 36% in 2008 (EU25 average: 8.6%), and employment figures have remained more or less stagnant since 1995.

Foreign Direct Investment (FDI) has been recovering since 2002 and reached US$151 million in 2004, after which it declined again somewhat to $113 million in 2005. Total FDI in the country is about US$ 2.2 b or less than US$ 600 per capita. This is lower than the regional average and substantially lower than in neighbouring countries. In late 2006, continuing in 2007, 2008, the Government embarked on an ambitious programme to attract more foreign investment into the country, focusing on specific growth sectors.

1.2 SME dynamics

According to data from the Central Registry, of the almost 45,000 active firms in the country, 43,837 or 98.8% were small enterprises (as defined by the Law on Trade Companies), with the remaining number of 830 companies made up of 490 medium and 340 large enterprises.

The number of active SMEs translates into an SME density of 22 per 1,000 inhabitants. This compares by and large with average figures for the SEE region (23 per 1,000 inhabitants), but is far below the EU average of 45 per 1,000 inhabitants. SMEs are also important in terms of employment creation, accounting for 80% of the total employment in the country in 2008.

Slightly over half of the active enterprises are in the wholesale and retail trade sector. Other important sectors include manufacturing (17.3%), transport, storage and communication (9%), and construction. These four sectors comprise over three-quarters of the total number of active enterprises. (Table 1.3) The four sectors in which most SMEs are operating are also the biggest contributors to employment (65%).

Table 1.3: Active Enterprises by Sector (2005) (Source: Ministry of Economy[5])

Economic Sector	% of total SMEs
Trade	50.1%
Manufacturing	17.3%
Transport and Communication	9.0%
Construction	7.0%
Others	16.6%
Total	(100%)

1.3. The SME Strategy 2007 – 2013

Already in 2002 the Ministry of Economy has published an SME Strategy paper covering a ten year period (2002 to 2013), together with an action plan for implementation of the strategy for the period 2003 to 2006. The overall approach to the development and support for the SME sector that has been outlined in this Strategy paper remains valid.

New EU initiatives such as the EU Commission's Instruments for Pre-Accession Assistance (IPA) and the Competitiveness and Innovation Framework Programme (CIP) present new challenges, in particular in relation to Science, Technology and Innovation (STI) and Information and Communications Technology (ICT) as a means of enhancing the competitiveness of SMEs. The Government must respond proactively to these challenges, in order to create a business environment in which SMEs not just survive, but thrive and are enabled to compete within the EU markets.

Therefore, the SME Department undertook a major revision of the existing strategy paper in the course of 2006, leading to the revised SME Strategy 2007 – 2013. This document has identified the following key areas for policy improvements in relation to the SME sector:

- the legal, regulatory and institutional environment; the business climate; support to small businesses; access to finance; taxation for SMEs; access to Information and Communication Technology (ICT); access to Science, Technology and Innovation (STI); education, training and promotion of entrepreneurship; Clustering enforcing.

1.4. The SME support infrastructure

Business Development Services (BDS) for SMEs are primarily available from the various regional business support centres and related organisations, most of them originally created with donor support. These are variable in terms of quality and type of business services delivered. In addition, various donor projects also provide BDS on a regional or sectoral basis, and private consultants are also increasingly offering these services on a commercial basis.

The key ***Business Support Organisations*** providing business development services are given below [5,7,8]:

- Business Centres: overall ten regional centres are in operation, five Regional Enterprise Support Centres (RESCs), three Enterprise Support Agencies (ESAs) and Regional Enterprise Development Agencies
- Business Incubators: eight incubators are operating established with World Bank support
- EuroInfo Correspondence Centre acts as a “first-stop” for SMEs for all matters involving EU issues (standards, market access, and contact points in EU member states).
- Local Economic Development Centres (LED Centres) supported by the United States Agency of International Development (USAID) and by the United Nations Development Programme (UNDP).
- Three GTZ-funded Technology Transfer Centres (TTCs) design and implement R&D and other technical consulting and engineering services for new hi-tech SMEs.

APPRM cooperates with all these institutions (and with other organisations dealing with entrepreneurship and SMEs, as well with business consultants and trainers)[10] in order to integrate all these institutions and activities into an efficient SME support infrastructure, and to build up the capacity and quality of these BDS providers.

2. ENTERPRISE COMPETITIVENESS

2.1 Current Situation

Economic growth is closely connected with competitiveness which, in turn, is linked to enterprise-level productivity, since it is enterprises that drive economic growth, and it is the competitiveness of individual companies (in terms of innovation, human capital, marketing, technology, costs, etc.) that ultimately determines the competitiveness of a national economy.

According to the World Economic Forum's 2005/06 Global Competitiveness Report [13], the country ranks 85 (out of 117 countries) in the Growth Competitiveness Index (GCI) and similar with micro-level Business Competitiveness Index (BCI) and the excellent country ranks on 4th position for 2007 and on 18th position for 2008.

The report notes certain improvements in the business environment; the availability of capital for investment, the quality of the available scientists and engineers, and the general level of education are seen as positive factors of the business environment. However, there has been deterioration in the sophistication of the operations of local companies, and in the quality of their business strategies. Weaknesses are also manifest in the quality of managers, in the overall low customer orientation of businesses, and in the high dependence on foreign technologies and technology transfer. The rigidity of the new law on environmental protection and insufficient competition in the domestic market are also noted as negative factors.

The index puts the country ahead of Serbia, Montenegro, Bosnia and Herzegovina, and Albania, but gives it lower rankings than Bulgaria and Croatia. According to the GCI, the National economy is transiting from competitiveness based on the exploitation of available production factors ("stage 1") to competitiveness based on efficiency ("stage 2").

2.2 Clusters

Clusters may be defined as inter-related firms and other institutions that drive the competitiveness of a given industry, usually (but not always) concentrated in a defined geographical area. Clusters consist of private enterprises of various sizes, including producers, suppliers and service providers, plus (local) government bodies, labour organisations (government or private, such as trade unions), business and professional associations, and research and training institutes.

The last 10 years have witnessed several attempts to enhance small firm competitiveness through the promotion of the cluster concept in Republic of Macedonia. With assistance from an USAID-funded project, clusters have been stimulated during 2004-08 in the following sectors/sub-sectors:

- Lamb and cheese, Tourism, Information Technology (IT) / Digital Media, Wine, Apparel.

An evaluation (INOTEH, 2005) [1] was carried out to assess the impact of this $12 million project, the main findings of which are that the project had a significant influence in *initiating* the process of building competitiveness of enterprises in domestic, regional and global markets; the best results were recorded in initiating export growth and in promoting cooperation and partnership between the participating enterprises.

However, only the active cluster members experienced increases in exports and productivity, but not the sector/sub-sector as a whole; thus there was no "ripple on" effect. Also, there was no visible increase in employment and in remuneration levels, but the report noted qualitative improvements in the professional and business skills of the programme participants. Most importantly, little, if any, self-organisation and representation of the cluster enterprises emerged, and synergies and linkages have not developed beyond the initially identified member enterprises.

Putting these – not too encouraging – results into a wider perspective, it must be noted that all SEE countries have initiated projects focusing on the promotion of clusters and their competitive advantages; many of these projects have been funded by USAID.

For example, clusters were established in Croatia in the following sectors: wood industry, graphics, construction, IT, leather and footwear, tourism, shipbuilding, medical equipment, utility equipment, food, metals. According to an evaluation report by the Croatian Ministry of Economy, the clusters in the northern parts of the country are the most viable ones, but weaknesses include a lack of cooperation between the participating entrepreneurs, and a lack of institutional support. Moreover, only a few clusters were demand-driven, rather than donor-initiated.

These experiences have provided "food for thought" in relation to future plans for cluster development in Macedonia. A new USAID funded programme for enhancing enterprises'

competitiveness (*Macedonian Competitiveness Activity* – phase 2) is planned for a five year period, starting in 2007. The programme is expected to incorporate the recommendations of the evaluation report into its further support measures for the existing clusters, domestic supply chains, industry organisations.

The Ministry of Economy and APPRM Agency for Promotion of Entrepreneurship of Republic of Macedonia) are also pursuing the development of new clusters in the following fields:

- Automotive industry and construction (established at February 2009)
- IT sector: software development and export
- Agribusiness: cooperation among vegetable producers for organised sale and export
- Dairy: cooperation for restructuring and to compete with foreign brands pushing into the market
- Furniture: joint sales and promotion activities, shared services and workforce training.

3. PERFORMANCE INDEX OF ATTRACTING FDI IN WESTERN BALKAN (WB)

Performance index is based on the simple formula presented by UNCTAD and can have three different situations. If the value of the ratio is 1, means that the country has no more and no less than world proportion of FDI. If the value is less than 1, means that the country can not manage to attract enough FDI proportionally to its share of the world GDP and if the value is bigger than 1, means that country attracts FDI more than the world's average share.

Fig.1 shows the FDI performance index for WB countries and Fig.2 shows the FDI stock in WB countries, for period 2006-2007.

Performance index = County's share of world FDI / Country's share of world GDP

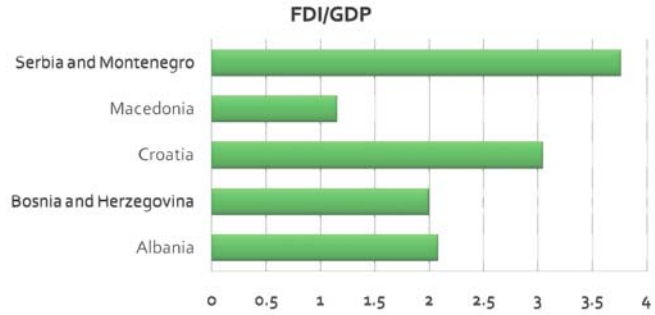

Fig.1 FDI Performance Index for Western Balkan Countries (2006/2007) (Source: World Bank online database)

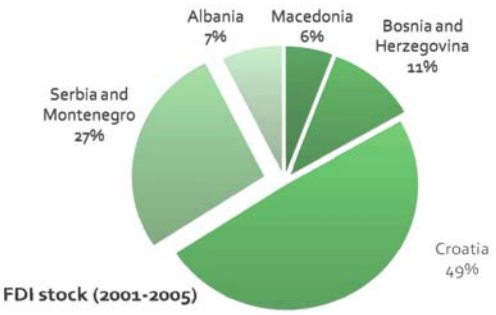

Fig.2. FDI stoks for WB countries (2006/2007)

Match making matrix methodology [14] for Macedonian clusters is based on own judgments, therefore is it essential to be realistic and selective.

- **Weight** measures the correspondence of the variables to the local economy needs (1 less important, 5 very important).
- **Rating** measures the industrial segment attitude to satisfying local needs (1 less relevant, 5 very relevant).

4. CASE STUDY FOR MACEDONIA

In the follow the Fig.4 and the Fig.5, there are shown data for automotive industry and agribusiness and food processing industry sector in Macedonia. Both of them are analysed by weight and rating measures in order to find the sector with attractive performance index using the match making matrix. The sector for which the index is attractive, it is attractive sector for starting with clustering. We analyses the both sectors for which is planned establishing the clusters in Macedonia, during this 2009 years.

Location factors	Weight	Rating	Value
People			46
Skilled labour	4	5	20
Labour costs	4	5	20
Multi-Lingual personnel	1	4	4
Productivity track record	1	2	2
Physical & Market infrastructure			61
Distribution cost and system	4	5	20
Judicial system	4	1	4
Success of other companies	5	5	25
Proximity to University & Research Institutes	4	3	12
Business environment			55
Political and Social stability	4	3	12
Financial and Fiscal incentives	4	5	20
Tax system	3	5	15
GDP rate of growth	2	4	8
TOTAL			162

Fig.3. Location factors in Macedonia

Economic Impact indicators	Weight	Rating	Value
Employment			61
Wages and Salary levels	4	3	12
Proportion of service jobs	3	3	9
Proportion of skilled job	5	4	20
Track record of working with universities and research institutes	3	4	12
Level of training expenses	4	2	8
Trade & Balance of payments			59
Volume and value of exports	4	5	20
Local sourcing	5	5	25
Complexity of components	2	4	8
Current volume of imports	3	2	6
Technology transfer			29
Level of innovation/ R&D	2	4	8
% of personnel in R&D	2	4	8
Centralized vs. Decentralized R&D	2	2	4
Track record of working with universities and research institutes	3	3	9
TOTAL			149

Fig.4. Automotive industry in Macedonia

The match making matrix on the Fig.6 for potential new clusters in Macedonia shown many advantages:

- Both clusters observed have shown competitive advantages for the location factors and economic impact values;
- Employment subsection of the economic factors table has big impact of overall scoring as a result of well trained and low cost labour;
- Macroeconomic subsection favours cluster's value as a result of low inflation rate, stability of the tax system and exchange rates etc.
- Weak point still remain the part of University cooperation, R&D, productivity level of Macedonian workers and technology transfer;

Good geographic position, market access to EU, South East European markets and relatively good infrastructure makes Macedonia attractive country for FDI.

Economic Impact indicators	Weight	Rating	Value
Employment			43
Wages and Salary levels	4	4	16
Proportion of service jobs	3	1	3
Proportion of skilled job	4	3	12
Track record of working with universities and research institutes	2	4	8
Level of training expenses	2	2	4
Trade & Balance of payments			64
Volume and value of exports	3	5	15
Local sourcing	5	5	25
Complexity of components	3	4	12
Current volume of imports	3	4	12
Technology transfer			45
Level of innovation/ R&D	3	3	9
% of personnel in R&D	2	4	8
Centralized vs. Decentralized R&D	3	1	3
Track record of working with universities and research institutes	5	5	25
TOTAL			152

Location factors	Weight	Rating	Value
People			46
Skilled labour	4	5	20
Labour costs	4	5	20
Multi-Lingual personnel	1	4	4
Productivity track record	1	2	2
Physical & Market infrastructure			61
Distribution cost and system	4	5	20
Judicial system	4	1	4
Success of other companies	5	5	25
Proximity to University & Research Institutes	4	3	12
Business environment			55
Political and Social stability	4	3	12
Financial and Fiscal incentives	4	5	20
Tax system	3	5	15
GDP rate of growth	2	4	8
TOTAL			162

Fig.5. Agribusiness and food processing industry

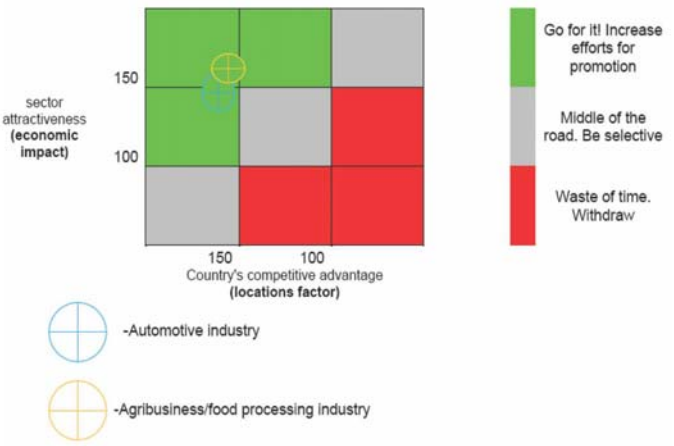

Fig.6. Match making matrix of the Macedonian new potential clusters

5. CONCLUSIONS

As far as the privatization process is finished , there are less state owned companies, western Balkan governments are facing to run budget deficits that are not sustainable on a middle/long term. Attracting FDI is a priority to all WB countries in order to improve their economic performance and standard of living.

Although there are many reforms and tax incentives in the last two years, Macedonia proves weak responsiveness to attract FDI and is the last country with FDI per capita in the Balkan. Match making matrix have shown good perspective for the two clusters already chosen by Macedonian Government, but still, this is only an estimation and does not represent any empirical experience.

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