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TOPICS: R&D IN PRIVATE SECTOR AND INNOVATION IN SMEs

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R&D AS A KEY FACTOR FOR PRIVATE SECTOR DEVELOPMENT

Abstract: Knowledge based economy as a desirable goal and task for each economic policy and political orientation in most developed countries in the world. The awareness of the innovation ,new knowledge ,know how ,new technology as a key factors for being competitive economy, is very present economic and political philosophy in a lot of developing countries, including small ones. In globalization process, only prepared counties for the strong competition on the global market could benefit through the competitive products and services, with low prices and high quality. Priority in economic policy at the small and developing countries, that have not lot of human and financial resources, are foreign direct investment. Innovation, research and development are priorities in the macroeconomic policy in the high economic developed countries, where the creation of the people, of the entrepreneurs, are very much supported and promoted. Lack of financial resources has obliged less developed countries to postpone the support entrepreneurs, their innovation and realization of creative ideas. Research and development as a key factor to built a modern, competitive economy need a lot of resources, finance, human capital, institutions for support the SMEs, including networking It should be an important task for reach the competitive economy and to exists on the global market, especially in the world that is the serious financial and economic crisis now. Private sector development depends on R&D that could offer many different inputs in purpose of high quality and competitive economy. SMEs very often are not prepared to establish the units for R&D. That role should have the universities, which have human capacities for that purpose.

The University presents the core of the scientific, research and experts who carries the technological development, promotion of new technology in

communication specially, transfers new knowledge, methods of running companies and implements them successfully. The Universities in the world, especially in high developed countries, have special role and important impact on the industry and human resources in the economy, to raise the competitiveness of the products and services on the global level. Then Universities programs, that contain a lot of entrepreneurial learning, from one hand, and business centers, business incubators, industrial and technological parks, clusters, R&D units and other forms of support SMEs and organization of small businesses, in frames of them, from other hand, play very significant role in development of the economy.

Now, starts new, the third generation of universities that signify a period of close co-operation with industry, research agreement with industry and they became a cradle of new entrepreneurial activities. The experience in this domain from the highly developed countries is very diversify and useful, and presents a good practice for Macedonian model of economic development and to makes Macedonian society entrepreneurial society.

Small countries should use all relevant and available resources and find best practice from other countries, to develop R&D in aim to reach better life, better economic and social life and human development.

Introduction

Modern economy is based on knowledge, new methods of work, skilled human capital, and new technology. All these attributes need a lot of financial resources, including comprehensive and consistent national policy for technological development and sustainable economic development, strong support of the relevant institutions, especially universities and centers/ agencies for R&D and transfer of technology.

SMEs as a core of competition and competitiveness, are innovative ones, they need all kinds of support, but especially of technological approach, as a key factor for fast development of competitiveness in the economy. SMEs have not relatively easy approach to the financial capital, new technology, business information. This is an argument more for their priority in the rank task at industrial policy and economic development policy in contemporary society.

In post-industrial society, informatics one, SMEs are pillars for restructuring of the economy, with their vitality, flexibility and inventiveness, generate new employment and mobilize all production factors. SMEs need to use innovation and most of them are innovative. For that reason, new technology, new methods of management, new methods for transfer of technology, R&D are important tools for fast growing of SMEs which generate competition, therefore and competitiveness on the global market.

For that reason, attention will be put on the question of SMEs, as a main part of private sector, and R&D, as a key factor for economic development.

1. Macedonian official documents support competitiveness and innovation

1.1. Macedonian Government, according to the Lisbon Strategy/Agenda of EC for Competitiveness and Innovation for 2007-2013, Acquis Communautaire and other relevant document, last decade, starts with acceptance of many significant documents for economic development. In 2002 is adopted National Strategy for SMEs Development (2002-2012), revised and innovated in 2007.

Second time, in 2007, the Government adopted Program for Entrepreneurship Development, Competitiveness and Innovation of SMEs for 2007-2010, that is realized by annual ones. The Program consists 4 components: institutional infrastructure, business environment, finance and taxation, innovation and competitiveness.

Macedonian Government, from 2003, successfully has been prepared Chapter for Small Enterprise, which includes results in 10 important fields for SMEs development. Strengthening the technological capacities of SMEs, through the education and training, especially intention for opening R&D units in medium sized enterprises, rising the importance and utilization of centers for transfer of technology in Macedonian universities for SMEs and entrepreneurs were priorities in this field. Agency for entrepreneurship provides co-financing in advisory services, including technical issues, management of production and innovation vouchers, which shows the care of the relevant institutions for new technology application in Macedonian economy.

Unfortunately, only 0,05% of the GDP is oriented for scientific activities in Macedonia, including technological development, but in EU this % is about 3%.

1.2. Macedonian Industrial policy measures

In 2008 Macedonian Government prepared new industrial policy that covers measures in all areas of intervention:

1. Applicable research and development and innovation,
2. Sustainable development,
3. Competitiveness enhancement by collaboration
4. SME development and entrepreneurship,
5. Internationalization for business and knowledge creation.

This approaches in Macedonian industrial policy emphasis the decision of the authorities to build one contemporary economy, based on knowledge and new technology, where R&D are key factor for effective and competitive economic activities.

1.3. Main macroeconomic indicators

Republic of Macedonia has been positioned on the fourth place (in a competition of 179 states) among the best ten reformers for 2006/2007 in the economy. This advance is due to the progress that is made in shortening the time and expenses for starting a business and especially the tax reform which reduced and leveled the rates of personal income tax (from 15%, 18% and 24% to 10%) and withholding tax (from 15% to 10%). This contributed to transparent and efficient administrative procedures, simple and easy calculation of taxes and completion of tax forms, supported by disciplined fiscal policies and consistent monetary policy.

Table 4. Basic Macroeconomic Indicators

	2001	2002	2003	2004	2005	2006	2007
(%)							
<i>Real Sector</i>							
Real growth of GDP	-4,5	0,9	2,8	4,1	4,1	4,0	5,1
Industrial production	-3,1	-5,3	4,5	-2,1	7,0	2,6	3,7
Inflation (cost of living, average)	5,5	1,8	1,2	-0,4	0,5	3,2	2,3
Employment growth	9,0	-6,3	-2,9	-4,1	4,3	4,6	4,0
Unemployment rate (ILO definition)	30,5	31,9	36,7	37,2	37,3	36,0	34,5
Trade balance (% of GDP)	-15,3	-21,3	-18,4	-21,2	-18,3	-20,3	-21,4
Public debt (GFS methodology)	55,5	48,6	44,9	42,6	46,9	40,4	35,2
<i>External Sector - Current prices in USD</i>							
Gross Domestic Product (mil) nominal	3 437	3 769	4 631	5 368	5 815	6 345	7 587
Gross Domestic Product per capita	1 689	1 866	2 285	2 642	2 855	3 106	3 706
Export (million)	1 155	1 113	1 363	1 675	2 041	2 396	3 349
Import (million)	1 682	1 917	2 214	2 814	3 104	3 681	4 976
Trade Balance (million)	-526	-804	-851	-1 139	-1 063	-1 285	-1 627
Foreign Direct Investment (million)	446	105	117	322	94	424	321
<i>Work Force</i>							
Number of unemployed	360 340	374 144	390 361	391 072	359 989	321 274	316 905
Number of employed	599 308	561 341	545 108	522 994	555 938	570 404	590 234

Source: Ministry of Finance

1.4. Entrepreneurship and small and medium enterprise development

Republic of Macedonia is characterized with fast development of SMEs sector that means necessity of bigger and consistent support in all fields: education, finance, business consultancy, business information, new technology, export promotion, institutional infrastructure, networking.

Table 1. Active enterprises

	Number			Participation (%)		
	2005	2006	2007	2005	2006	2007
Small	43877	47740	50541	98,77	98,91	98,98
Medium	463	440	424	1,04	0,91	0,83
Total-SMEs	44340	48180	50965	99,81	99,82	99,81
Large	85	88	95	0,19	0,18	0,19
Total	44425	48268	51060	100,00	100,00	100,00

Source: Central Register

Table2. Number of Employees

	Number			Participation (%)		
	2005	2006	2007	2005	2006	2007
Small	145461	158596	165854	54,43	58,83	61,16
Medium	56947	51029	48617	21,31	18,93	17,93
Total-SMEs	202408	209625	214471	75,74	77,76	79,08
Large	64843	59946	56727	24,26	22,24	20,92
Total	267251	269571	271198	100,00	100,00	100,00

Source: Central Register

Ownership restructuring is done, economic restructuring is in going on.

Table 2. Number of Active Enterprises by Sectors

2007				
Sectors	Small	Medium	Large	Total
Agriculture, hunting and forestry	1 136	25	2	1 163
Fishing	40	0	0	40
Mining and quarrying	112	8	4	124
Manufacturing	6 477	142	48	6 665
Electricity, gas and water supply	74	14	7	95
Construction	3 186	43	5	3 235
Wholesale and retail trade	23 846	119	14	23 980
Hotels and restaurants	2 523	13	1	2 537
Transport, storage and communication	4 920	17	8	4 945
Financial intermediation	257	1	1	259
Real estate, renting and business activities	3 544	20	1	3 565
Public administration and defence	45	1	0	46
Education	376	0	0	376
Health and social work	2 648	3	0	2 651
Social and personal services	1 357	18	4	1 379
Total	50 541	424	95	51 060

Source: Central Registry

There is a lack of relatively easy access to the financial sources in the country and for that reason, a lot of enterprises are operative in the trade activities, especially in retail.

Table 3. Gross Value of Production by Type of Enterprises

	2002	2003	2004	2005	2006
<i>(Basic prices, million MKD)</i>					
Small	184 084	206 368	224 081	246 387	276 235
Medium	38 532	77 890	96 689	61 586	71 227
Large	193 018	146 809	147 653	197 391	220 095
Total	415 634	431 067	468 423	505 364	567 557
<i>(%)</i>					
Small	44,29	47,87	47,84	48,75	48,67
Medium	9,27	18,07	20,64	12,19	12,55
Large	46,44	34,06	31,52	39,06	38,78
Total	100,00	100,00	100,00	100,00	100,00

Source: State Statistical Office

Gross value of production is progressively made in SMEs, that means that on SMEs in Macedonia should be seen as an important factor for economic development.

Entrepreneurship and SMEs development start to be accepted as a key factor in the Government' document last decade. Creative SMEs and entrepreneurship by increasing net growth of new enterprises per year and by promoting fast-growing innovative SMEs by better financing is priority in the official document like macroeconomic policy, strategy, long term programs.

Advance SMEs need favorable business climate, environment without administrative and beaurocratic barriers for business, for development of entrepreneurial culture and spirit that will promote innovation and high-tech, including transfer of technology. With appropriate financial instruments like micro crediting, risk capital funds etc. for SMEs supported by the Government, success will be achieved on long term.

For SMEs development is important networking and clusters associations to reach new market with competitive products and services.

R&D units established in big companies, or in the universities, even alone as centers for new technology or transfer of technology including services and advises are very useful and perspective for development innovative Macedonian SMEs

1.5. Institutional structure for SMEs Support

On national and local level, are established some institutions for strengthening SMEs and entrepreneurship. On the top is Agency for entrepreneurship development with 11 regional centers, 8 new settled in rural regions, 3 centers for transfer of technology at the universities, 9 business incubators, one business incubator for yang people with IT companies, Human Resource Development Fund, Enterprise Europe Network, 15 business association, 17 centers for local development, 120 business consultants.

Remarkable is Center for New Businesses at University Sent Cirilys and Methodius in Skopje, at Faculty of Mechanical Engineer Faculty where exists

business incubator, Center for permanent education and transfer of technology, after, Center for carrier at FON University in Skopje.

All these institutions are not very much effective because the entrepreneurial culture is not very much present and so the entrepreneurial learning. The entrepreneurs have not custom to use the services that they are needed.

However, private sector and SMEs have needs of more support in the field of R&D and technological support. It should be constant aim and task for the Government, for the “spin-off” enterprises, for the universities, as a key component in developing the competitive and fast growing economy.

2. Technological policy towards innovative private sector development

Small countries generally have not opportunity for fast and quality development and growth of new technology and knowledge. Generally, new trends in technological development are appearing and characterizing for most developed countries where there are financial and human resources for this item. Less developed countries, and small ones, are obliged to use new technology through its transfer and innovation from domestic innovators.

With active national policy for technology development with operative programs, small countries, can contribute with innovation and entrepreneurs' creations to the world better future.

For that purpose, Macedonia, including other small countries, should increase applicable research and development and innovation. Interdisciplinary interaction between industry, research and Government for industry development have to be primary task of national policy for development of technology. The strategy and policy should involves enhancement of joint projects between industries and higher education knowledge providers for new products and services, expansion y, access appropriate production technologies and marketing resources.

Fast amortization of the technology requires new knowledge and permanent education, that are not very much available for SMEs. Therefore, it is obviously that institutional infrastructure for support of innovation, transfer and development of new technology should be disseminating in the country and wider.

Licensing, franchising contracts, joint venture are significant transfer of new technology and know-how, which ensure strategic alliances, are specific forms for financing SMEs. In Macedonia these forms of partnership are not very much used, due to lack of confidence in institutions and lack of finance resources.

Fast technological development requires new standards in management and decision making process, on all levels. Macro level is very complex, enterprise' level needs decisions making related to the competition and high quality and efficiency, in frame of limited factors of production.

OECD ¹ give the recommendation for support of new technology and innovation in 6 fields::

¹ OECD Science, Technology and Industry Outlook 2000,

- Stimulation of diffusion of technology and relation between universities and enterprises,
- Strengthening the innovation and technology policy,
- Strengthening and reforms of scientific research and scientific basis,
- Strengthening the efficiency of the stimulation for R&D in the economy,
- Relise the growth of SMEs, based on new technology, including risk capital and new enterprises,
- Strengthening the framework for design policy and active realization,

5. Universities as an active factor in R&D

Highly developed countries are characterized by active cooperation of the private and public sector, between large enterprises and the Universities, national and local governments. As a result of those partnerships and mutual actions, exist developed private sector in the economy. It means constant progress of the innovation, entrepreneurship, creativity and innovative new technological-technical solutions based on R&D.

The Republic of Macedonia does not present innovation society such as USA, Germany, Japan and others. With active national entrepreneurship policy, policy for transfer of technology and sustainable economic development and application of new knowledge and permanent education could ensure transfer of the foreign technologies and knowledge and develop own innovation in purpose for economic growth.

Macedonia should aim to support the inventors through establishing R&D units in the large companies, at the universities, as a mutual action of many stakeholders. With respect that the innovations and the knowledge are primary into the strengthening the competitive capacity of the SMEs, their support on strategic, institutional and level of the enterprises is essential.

The third generation² of the university is present in the modern society at international competitive market. The university of the third generation is open for cooperation with industry and other partners/stakeholders, its R&D is interdisciplined and multicultural, characterized by cosmopolitanism and internationalization.

Macedonian universities should have in mind those new tendencies and new aspects of activities towards industry and entire economy. It is a future, common activities of the knowledge and industry. An active R&D supported by Government would accelerated economic growth and prosperity.

² Hans Wissema: Towards the Third Generation University ,Navigating the University in Transition, published by University American College, Skopje, 2008

Conclusions

Small countries as the Republic of Macedonia are obliged to follow the new trends on the global market, to use the new technology and knowledge, methods of effective business running, networking and cooperation in purpose to reach desirable economic growth and sustainable economic development. Lack of financial resources has obliged less developed countries to postpone the support entrepreneurs, their innovation and realization of creative ideas.

Research and development as a key factor to built a modern, competitive economy need a lot of resources, finance, human capital, institutions for support the SMEs, including networking and regional cooperation.

It should be an important task for reach the competitive economy and to exists on the global market, especially in the world that is the serious financial and economic crisis now. Private sector development depends on R&D that could offer many different inputs in purpose of high quality and competitive economy. SMEs very often are not prepared to establish the units for R&D. That role should have the universities, which have human capacities for that purpose.

The universities today have more roles than education, it means, other aim and role in society, to help directly industry, especially in R&D, cooperation and common projects with industrial capacities and companies. The third generation of universities is appeared. In contemporary society, the universities should have one very important role in development of competitive economy, because of many available resources for develop new technology and R&D.

For entrepreneurial vitality and innovation processes, universities and other relevant institutions should raise the level of awareness about innovation, entrepreneurship and competitive advantage strengthening the regional and international network among SMEs representatives from neighbour countries and wider.

Awareness raising activities for the promotion of applicable R&D and innovation in industry through the :

- Stimulation of interactions between university/research institutions and industry,
- Stimulation of development of new market driven products, services and technologies that will be commercially exploited.

- Support to the industry to employ higher education researchers to strengthen their technological and innovation competence.
- Technology transfer stimulation with different tools,
- Intellectual Property Rights protection.
- Support of entrepreneurial ideas and projects, especially innovative ones.

The long term national policy for new technology and transfer of technology with consistent realization will be suitable for sustainable economic development of the Republic of Macedonia for near future.

BIBLIOGRAPHY:

1. Hans Wissema: Towards the Third Generation University ,Navigating the University in Transition, published by University American College, Skopje, 2008
2. Industrial Policy of Republic of Macedonia (2009-2020) draft version, Government of the Republic of Macedonia,Skopje,2007,
3. SMEs Observatory 2007,Agency for Entrepreneurship in the Republic of Macedonia,Skopje,2008
4. Charter for Small Enterprise, National Report for 2008,Ministry of Economy
5. Basics in Technology Transfer and Technology Transfer Centers, GTZ Project for Technology Transfer, 2001, Skopje
6. Marija Zarezankova-Potevska: 'The Role of the Macedonian Universities in Raising the of Development of Entrepreneurial Spirit, Culture and Support the Cooperation with Industry and Economy', published by Proceedings of the International Conference for Entrepreneurship, innovation and regional Development, 8th-11th May 2008,Skopje&Ohrid Macedonia, pages 690-697
7. Dr. Marija Zarezankova-Potevska: "Perspectives of the Small Business" NEOL,Skopje,2000