

**Конкурентоспособность стран и регионов  
в мировом хозяйстве:**

теория, опыт малых стран Западной и Северной Европы

**И. В. Пилипенко**

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**КОНКУРЕНТО-  
СПОСОБНОСТЬ  
СТРАН И РЕГИОНОВ  
В МИРОВОМ ХОЗЯЙСТВЕ:  
теория, опыт малых стран  
Западной и Северной Европы**

его экономико-географического положения, имущества, исходя из концепции географического синбиоза, и повышать тем самым жизненный уровень населения.

традиционных кластерах были долговременные связи, в то время как в новых кластерах чаще всего шло формирование временных коалиций. В наукоёмких кластерах наблюдалось большее разнообразие межфирменных связей. 33% связей основывались на временных коалициях, 27% - на связях, ориентированных на рынок и на долговременное партнерство, причем большинство фирм как в традиционных, так и в наукоёмких кластерах все в большей степени ориентированы на временные коалиции и долгосрочное партнерство.

1991 г. модели ТПК по отношению к ним применялись, то

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В книге проведен анализ широкого круга исследований по проблеме конкурентоспособности стран и регионов. Впервые выделены ведущие зарубежные научные школы, формирующие теорию конкурентоспособности стран и регионов в системе мирового хозяйства. Определены основные институциональные факторы конкурентоспособности развитых стран в мировой экономике, действие которых раскрывается на примере наиболее уязвимых развитых государств – малых стран Западной и Северной Европы. Особое внимание уделено анализу развития региональных форм территориальной организации производства – кластеров, промышленных районов и территориально-производственных комплексов.

Для преподавателей и студентов вузов, научных работников и специалистов в области географии мирового хозяйства и мировой экономики, государственных служащих федеральных и региональных органов власти, занимающихся вопросами конкурентоспособности.

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# THE COMPETITIVENESS OF NATIONS AND REGIONS IN THE WORLD ECONOMY:

Theory,  
the Experience of Small Nations  
of Western and Northern Europe



Moscow — Smolensk  
2005

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## Summary

### INTRODUCTION

The problem of national competitiveness is important today for investigations in both economics and economic geography because of increasing competition for foreign direct investments, innovations, and new technologies between countries in the world economy. The notion «national competitiveness» is not so clearly defined as «competitiveness of commodity» and «competitiveness of firm», for instance, as it includes several aspects of national development, namely, economy, management, education, science, and culture that are represented by different actors like federal and local governments, academic and educational institutions, and enterprises. It is also connected with the problem of allocation of resources in the geographical space and their use in global value-added chains within the international and inter-firm division of labour. The question at what scale the competitive advantages are created underlines the importance of regional development. Therefore, the problem of national competitiveness is at the intersection of macroeconomics, microeconomics, regional economics, economic geography, and partly sociology studies.

In this book an analysis of the problem of national and regional competitiveness in the world economy is carried out and the system of factors of national competitiveness inherited to developed nations with its spatial manifestation and application to regional innovation systems is derived. As a case study I take an example of small nations of Western and Northern Europe, Austria, Belgium, Denmark, Finland, Greece, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Sweden, and Switzerland, which are the most vulnerable among developed countries, to reveal how they created specific competitive advantages.

In the first chapter I analyse the notion of «national competitiveness», the evolution of theories to modern concepts of national and regional competitiveness, which I divide into three main theoretical schools – American, British, and Scandinavian – and compare the concept of clusters

with the concept of territorial-industrial complexes (TICs) elaborated in the USSR. Finally, four main factors of national competitiveness are derived and a classification of spatial forms of production organisation is proposed. In the second chapter the notion «small nation» is examined. Different approaches to definition of small nations in general are analysed and an appropriate method for small nations of Western and Northern Europe is determined. The competitiveness level of these countries and their economic performance during the last 40 years is assessed using a range of integrated ratings and indexes. The historical development of each small country is considered and then the export specialisation and innovativeness is analysed from the point of view of their competitiveness in the world economy. Four main factors of national competitiveness with application to small nations of Western and Northern Europe are examined in the third chapter. Each factor, namely «government», «research institutions», «transnational corporations» (TNCs), and «small and medium enterprises» (SMEs), is characterised by a range of statistical indicators, on the one hand. On the other hand, I examined their spatial structures, interaction of state institutions, science and technology parks, business innovation centres and centres of expertise, regional and local cluster of SMEs, and their participation in global value-added chains controlled by TNCs in geographical space. Statistical tables, analytical figures, and cartographical maps corroborate conclusions made in this book.

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## CHAPTER 1. THE COMPETITIVENESS THEORY

### §1. Competitiveness and Evolution of Theoretical Thoughts

It is claimed that national competitiveness has to be considered not only from an economic but also from an economic-geographical point of view with a qualitative assessment of competitive advantages of nations in the world economy. On the one hand, macroeconomic state policy aimed to achieve stable economic growth, full employment, diminishing of state debt and balance of payments' deficit, etc., and activities of the economic actors determine the level of country's involvement in the international division of labour. On the other hand, factors of location and spatial differentiation of resources play also an important role in the determination of the national development strategy. Unfavourable economic-geographical location and nature conditions can even stimulate development of countries by overcoming difficulties and creating new specific competitive advantages.

In order to raise the competitiveness from a geo-economic point of view, nations have to achieve balanced economic growth by production of goods and services of higher quality than competitors, rational use of natural and geographical resources, conversion of disadvantages of location into competitive advantages according to the concept of geographical «possibilism» that finally increase the welfare of the country's population.

The level of productivity proposed by Michael Porter may be taken as one of main competitiveness criteria. This approach was criticised by Paul Krugman, and indeed, according to the David Ricardo theory of comparative advantages, if the country's productivity were lower in all industries than in other countries, this nation would still benefit from the international trade due to a lower level of wages. Otherwise the population would suffer from an even worse level of existence. But such an approach cannot solve the problem of a radical increase in population incomes that could be achieved by raising productivity due to the invention of new technologies and innovations into production processes. Therefore, the second criterion of competitiveness is considered to be the level of national innovativeness in comparison to other countries.

The evolution of theoretical thought to the competitiveness concepts since the end of 18<sup>th</sup> century was analysed and the following conclusions were drawn. All contemporary competitiveness concepts continue the

permanent investigations of countries' participation in the international division of labour and processes of territorial industrial concentration and localisation. Developed economies initiated research on this topic due to insertion of new competitors into global value chains. Such nations as Japan, newly industrialized countries, other developing economies, and finally countries in transition had new competitive advantages, which the developed economies, formerly predominated in the international trade, did not have.

I identified three stages in theoretical development between the ends of the 18<sup>th</sup> – 20<sup>th</sup> centuries (see table 1). During the first stage (end of the 18<sup>th</sup> century – 1950s) the basic theories of international trade (Adam Smith, David Ricardo, Eli Heckscher, Bertil Ohlin) and territorial production organisation (Johann von Thünen, Wilhelm Launhardt, Alfred Marshall, Alfred Weber, Nikolay Kolosovsky, Nikolay Baransky, Walter Christaller, August Lösch, Francois Perroux, Torsten Hägerstrand et al.) were elaborated. On the second stage (1950s – end of the 1980s) new theories that forego the competitiveness concepts were created. They explained new processes in production concentration and organisation (models of TICs by Mark Bandman et al., Italian or Marshallian industrial districts by Giacomo Becattini et al., concept of «flexible» specialisation by Michael Piore and Charles Sabel), international trade (New Trade Theory by Paul Krugman), increasing role of human capital in economy (New Growth Theory by Paul Romer), and internationalisation (works of Steve Hymer, Charles Kindleberger, Richard Caves, Steve Magee, Peter Buckley, Mark Casson et al.). From the end of the 1980s onward, the third stage lasts during which the competitiveness concepts have been elaborated that genetically connected with the theories of international trade and industrial concentration, and proposed new paradigms and solutions in national competitive development in the world economy. Germany, UK, and USSR were leading centres of theoretical development prior to 1950s. Later the USA took the leading position in the second half of 20<sup>th</sup> century, as well as Scandinavian nations and the UK.

On the basis of this analysis I identified geographically three main theoretical schools (groups of researchers) that have formed and developed the theory of competitiveness in the world economy – American, British, and Scandinavian ones. Such division was also made due to an influence of social and economic environment, and the economy's territorial organisation of those countries, where investigations were carried out, on the main conclusions of these concepts. They enrich

each other and give answers to a wide range of questions raised by the problem of national competitiveness.

## **§2. Theories Preceded the Concepts of Competitiveness**

The theories created in the 1970s and the 1980s, and which preceded the concepts of competitiveness, are examined in this paragraph. First, the value-added chain theory is reviewed from the beginning of the 1960s. Different variants of value-added chain analysis – the firm's value chain of Michael Porter, the commodity chain of Michael Storper, the production chain of Peter Dicken – are examined. Special attention is paid to the concept of shifting governance structures in global commodity chains during the investment-based globalisation (1950-1970), trade-based globalisation (1970-1995), and digital globalisation (1995-onward), elaborated by Gary Gereffi.

Secondly, New Trade Theory and the concept of geographical economics, both elaborated by Paul Krugman that explain changes in the international trade and agglomeration effect within nations, and Paul Romer's New Growth Theory that stresses the importance of technologies and human capital in the world economy, are considered. Thirdly, the evolution of the theory of internationalisation and foreign direct investments is analysed where the development of views on the ownership and internationalisation advantages of TNCs is given. Fourthly, I considered the main achievements of Italian school of industrial districts led by Giacomo Becattini et al. and its connection to earlier works of Alfred Marshall on development of industrial districts with external economies of scale in Sheffield and Birmingham at the end of the 19<sup>th</sup> century. Also, special attention is paid to the role of industrial districts as socio-economic entities in the Italian economy according to the works of the Italian Statistical Institute. Fifthly, the Swiss school of localized production systems and innovative milieus formed by Denis Maillat, Nikolas Grosjean et al. is reviewed, which is closely connected with the Groupe de Recherche Européen sur les Milieux Innovateurs (GREMI) in France. Sixthly, analysed are generalizations of the theory of industrial districts made by Ann Markusen who identified different types of sticky places in slippery space: Marshallian new industrial districts, hub-and-spoke districts, satellite industrial platforms, state-centred districts, and sticky mixes; «technology districts» outlined by Michael Storper; possible evolution paths of different types of districts elaborated by Paolo Guerrieri and Carlo Pietrobelli.

**§3. The American School of the Competitiveness Theory**

The American school of the competitiveness theory formed by the leading scholar in the field of competitiveness and strategy Michael Porter, his colleague Michael Enright and other scholars, is mostly oriented on praxis and policy-making of competitive development of nations with different standards of living. Porter's «diamond» of national competitive advantages (factor conditions; demand conditions; firm strategy, structure, and rivalry; related and supporting industries; two outside forces – chance and government), as well as the concept of four stages of national competitive development, from factor-driven via investment-driven to innovation-driven economy with the risk to fall into the wealth-driven stage, offered a clear framework in the determination of the main strengths and weaknesses of a country's competitive position in the world economy. It is stressed that Porter's emphasise on the vital role of not inherited but created factor endowments like skilled labour, strong technology, knowledge base, government support, and business culture can explain to a great extent successful development of nations with scarce natural resources, while richer nations failed to achieve such level of prosperity.

Special attention is devoted to his works on industrial clustering and cluster policy that brought a new practically targeted view on the process of industrial concentration, which was considered mostly from the academic point of view before. The concept of regional cluster, elaborated by Enright with several case studies of different scales of competitive advantage's creation (supranational – in Germany and Switzerland, regional – in Japanese prefectures, and local – in Italian industrial districts), is analysed afterwards. It is concluded that Porter and Enright's concepts identify competitive forms of territorial production organisation by joining economic and economic-geographic knowledge in a practical way that is profitable for economic geography as well.

The concept of clusters as one of the main ideas in the competitiveness theory has many followers as well as some critics whose remarks concerning an impact of international business activities (John Dunning), definitions (Ron Martin, Peter Sunley, David Robinson) etc. are examined. The genetic connection of the «diamond» of national advantages with the new growth theory, user-producer relationship theory and network models distinguished by Finnish scholars Petri Rouvinen, Hannu Hernesniemi et al. is reviewed.

The further development of the concept of clusters is considered, including the dimensions of regional clusters elaborated by Enright as

well as Danish researchers (Bent Dalum et al.) – geographic scope, breadth, depth, activity base, growth potential, role of R&D institutions, etc., and possible ways of clusters' evolution incorporated in the «ideal» cluster's development plan that includes formation of pioneer firms, creation of a set of specialised suppliers and service firms, support organisations, attraction of external companies, creation of intangible assets, and a possible «lock-in» situation. Finally, an analysis of advantages and pitfalls of different methods of cluster identification based on works of Edward Bergman and Edward Feser is carried out.

**§4. The British School of the Competitiveness Theory**

This scientific school pays more attention to the role of TNCs as one of the main drivers in the development of international division of labour and the changing position of developing economies in the competition processes. John Dunning, who created the eclectic OLI paradigm, John Humphrey, Raphie Kaplinsky, Hubert Schmitz, who investigated the interaction of global value chains and local clusters, and Christopher Freeman, who proposed the techno-economic paradigm, formed the British school of the competitiveness theory.

OLI paradigm as a tool for determination of an economy's position in international investment flows that is one of the main indicators of national competitiveness in connection with Dunning's concept of four stages of a country's development is examined. An impact of TNCs on Porter's «diamond» as the third outside force affecting four determinants, which was called by Dunning «international business activities», is analysed. The importance and peculiarities of the upgrading process and governance in local clusters and global value chains are considered according to the works of Humphrey, Kaplinsky, and Schmitz who joined research on global value chains and local clusters in a unique way to investigate how competitiveness of local firms in developing nations would change with a cluster's position in different kinds of the international division of labour. Several types of governance in global value chains distinguished by Humphrey and Schmitz are reviewed, namely arm's-length market relationship, networks, quasi-hierarchy, and hierarchy, and some case studies with value chain analysis from works of Kaplinsky on developing states are analysed. Finally, Freeman's techno-economic paradigm of national development as a main framework of countries' success in international competition if some countries do correspond to a contemporary paradigm is considered. It is stressed that

developing nations may catch up in terms of standards of living if they use a window of opportunity and transform well-timed their economies in compliance with the transition to a new techno-economic paradigm.

### **§5. The Scandinavian School of the Competitiveness Theory**

The investigations done within the Scandinavian school were initially aimed to elaborate a new development paradigm for small European economies like Nordic countries, Benelux state etc. at the end of the 1980s when technological pressure from big nations and low-wage pressure from newly industrialised and big developing countries were leading to a «small-country squeeze» in the international trade. But later, the main theoretical works of this school were successfully implemented in large European developed countries, economies in transition, as well as in developing nations with lower standards of living. Concepts developed within this school have a strong social-economic inclination determined by peculiarities of small countries where research was conducted, i.e., tight user-producer relationships, higher importance of family relations and backward linkage-effects that play an important role in product upgrading and enable the process of learning, on the one hand, and higher state regulation in the economy, on the other hand.

I distinguished the Scandinavian school of the competitiveness theory according to four groups of theoretical works of Danish, Finish, Norwegian, and Swedish economists and economic geographers. First, the concepts of a learning economy and national systems of innovation worked out at the ends of the 1980s by Bengt-Åke Lundvall, Björn Johnson and their colleagues, which built the main theoretical background for further research in this field; second, Bjorn Asheim and Arne Isaksen who proposed the concept of regional innovation systems and learning regions with case studies from Norwegian economy; third, Erik Reinert's works on the historical evolution of the competitiveness and «quality index» of economic activities; fourth, the investigations of Örjan Sölvell, Goran Lindqvist, Christian Ketels, Anders Malmberg, Peter Maskell, Lars Christensen, Petri Rouvinen and others on local industrial dynamics, inter-firm cooperation that developed and polished up the concept of industrial clusters and applied it to conditions in small European countries as well as economies in transition. Particular attention is paid to the concept of different kinds of human knowledge, namely, know-what, know-why, know-how, and know-who created by Lundvall and its practical application to the problem of rising of regional competitiveness.

### **§6. Generalisation of the Competitiveness Theory and the Soviet School of Territorial-Industrial Complexes**

It is concluded that, although scholars in distinguished schools of the competitiveness theory analyse the problem of national competitiveness from different points of view, all the works have three major features in common. First, they argue that the competitive advantages are created and mainly utilised on the regional level with support of central and regional governments. Secondly, they emphasise the main role of economic actors in the national and regional competitiveness, i.e. competitive enterprises of different size and structure (American and Britain schools), research institutions (American and Scandinavian schools), governments, which should catalyse the whole innovation process in the country (American and Scandinavian schools). Third, it is claimed that local concentration of activities and building of enterprise networks within industrial districts, regional and local clusters as new forms of industrial organisation are essential conditions for stimulating regional and national competitiveness in the world economy.

Hence, I identified a group of main factors of competitiveness, which can be defined as economic actors that are forming a spatial structure of national economy under the pressure of international competition in industrial and service sectors to use their competitive advantages in the international division of labour in the most efficient way. These are - «government», «research institutions», «transnational corporations» (TNCs), and «small and medium enterprises» (SMEs), which build a system where «government» plays a key role (figure 28).

«Government» represented by central, regional and local authorities is responsible for the creation of a generally favourable environment for enterprise development, organisation of special forms of technological cooperation (centres of expertise, etc.), and realisation of cluster policy «top-down» on the federal and regional level. «Research institutions», which are mainly scientific institutes and higher schools, provide creation of new knowledge, convert knowledge into innovations, which are applied in production in technology and science parks. «Transnational corporations» own, use, and constantly develop key innovations in the countries of their origin. They are able to take in innovations from other nations and use competitive advantages from different localities abroad through global value-added chains and interaction with local clusters of SMEs. «Small and medium enterprises» tend to form competitive forms

of industrial organisation, i.e. clusters and some types of industrial districts with external economies of scale, where they obtain high competitiveness due to permanent upgrading by way of creation of incremental innovations. SMEs also cooperate with TNCs by participation in value-added chain activities. All these factors interact in the geographical space through different forms of knowledge creation and production organisation that build a backbone of regional innovation systems sustaining and raising national competitiveness. The interaction between this spatial forms and the creation of new commodities and services within regional innovation systems can be outlined on the regional level as the following chain: (1) regional innovation policy – (2) knowledge creation in research institutes – (3) innovation application in technology parks – (4) production of new goods in clusters of SMEs – (5) production of new goods by TNCs in global value chains (figure 29).

I analysed the negative tendency of attaching the term of «industrial cluster» to all phenomena connected with concentration processes that might have different genesis and nature (even to technology parks). This leads to a losing of the scientific meaning of the notion «cluster». At least three ways of applying of the notion «regional cluster» are distinguished: (1) several interconnected locations with activities' concentration (Enright); (2) industry with supporting services spatially represented by a number of companies (Rouvinen, Hernesniemi, et al.); (3) value-added chain concentrated in one location (Dalum et al.). It is proposed to identify different types of clusters according to a spatial component in this notion. Hence the non-spatial kinds of clusters like industrial or national ones can be defined as a group of inter-related, adjacent industries and services that specialise most successfully in the international division of labour. The spatial forms of clusters such as regional, transborder (situated in two or more countries) or local clusters are groups of geographically concentrated companies in regions or localities from adjacent industries and services, which produce similar or inter-supplemental goods and services and are characterised by information exchange established between cluster firms and their personnel due to which the overall cluster competitiveness in the world economy is raised.

An analytical comparison of the concept of clusters of Porter and Enright with the concept of territorial-industrial complexes (TICs) elaborated in the USSR during the 1920-1980s is further carried out. Originally, TICs were closely connected with economic regions identified in the 1920s in the USSR for realisation of planned economy

development. Later in the 1950s the concept of TICs was developed in the works of Nikolay Kolosovsky about energy-production cycles (production chain) as TICs' basis and the works of Nikolay Baransky about the geographical division of labour between economic regions. It received a practical importance and clear spatial structure in the 1970s with an implementation of a new development paradigm of «Shift of productive forces to East» when mathematical models of TICs elaborated by a group of scholars led by Mark Bandman were applied in Western and Eastern Siberian, the Far East and Kazakhstan SSR to exploit effectively natural resources and develop city network and infrastructure. Models of non-spatial territorial-industrial combinations (non-spatial TICs) were also applied in Eastern European countries and the developing nations of Southern Asia where interaction between big, medium and small enterprises was planned according allocation of resources available in a region (works of Yuly Lipets and others).

It is shown that non-spatial clusters (industrial or national) and TICs (combinations of a group of interconnected industries) have many features in common including mathematical methods of their identification. On the contrary, regional/local clusters and spatial TICs differ in several groups of features – (1) conditions under which concepts were created, i.e. market and planned economy with different goals of enterprise functioning; (2) genesis – spatial manifestation of market forces in the case of clusters and realization of applied research in practice in the case of TICs; (3) location – clusters are formed within agglomerations and regions with high population density while TICs were mainly built in newly developed and low populated regions with scarce infrastructure; (4) structure – one industry of specialization with supporting industries in clusters and a multiple industries complex (core and supplementary industries) in TICs; (5) specialization – new high-technology or traditional with innovative customer-oriented industries in clusters and traditional resource- and producer-oriented industries in TICs; (6) role of information – information channels between networks of cluster firms and their personnel and information exchange between separate plants and central authorities in TICs; (7) role of human factor – the rise of welfare in regions where cluster exists and the crucial role of highly-qualified labour pool in the case of clusters and human resources as one of the factors of TICs' creation along with natural resources, infrastructure etc. It is concluded that the concept of clusters and TICs exist in parallel and correspond to different social-economic systems where different goals are and were targeted.

Finally, a classification of spatial forms of production organisation in order to clarify the meaning of notions of different production and knowledge creation forms is proposed. Two dimensions are used – genesis and size of enterprises involved (small, medium and large). Regional and local clusters, all types of industrial districts according to Markusen, and locations of vertically integrated plants in old industrial regions fall into the group where spatial production forms are developed under the spatial manifestation of market forces. In the second group spatial TICs, technology and science parks, innovation technological and business innovation centres are distinguished, i.e., all spatial production and knowledge creation forms that were artificially created by authorities' decision and after scientific research (table 14). This classification can contribute to a better understanding of the genesis of production forms and provide a base for their correct implementation to raise the competitiveness level of countries.

## **CHAPTER 2. SMALL NATIONS OF WESTERN AND NORTHERN EUROPE IN THE WORLD ECONOMY**

### **§7. Characterization of Small Nations of Western and Northern Europe**

All methods used in the definition of small nations can be divided into two main approaches: (1) subjective or relative when smallness is attributed to a country in comparison to a larger one after considering subjective characteristics; (2) objective or absolute when statistical indices like area, population, GDP value, etc. are taken into consideration. We use Boris Zimin's method proposed in the 1970s within the second approach and distinguish small nations of Western and Northern Europe as countries with economic potential 2-3 times less than the potential of a «standard economic region» of a large developed country (USA, Japan, Germany, UK, France, and Italy). «Standard economic region» is taken as a mean among all regions in a country according to a standard economic-geographical division (for instance, 9 regions in the USA). Hence, the following countries can be included in the group of small nations of Western and Northern Europe – 3 Benelux states (Belgium, The Netherlands, and Luxembourg), 5 Nordic countries (Denmark, Finland, Iceland, Norway, and Sweden), Austria, Switzerland, Ireland, Greece, and Portugal, 13 countries in total.

The historical development of small countries is considered and it is stressed that most of them became «small» only in the 20<sup>th</sup> century. The

Netherlands, Portugal, and Denmark were centres of world-scale empires, Austria and Sweden were among leading European empires, and Belgium possessed vast colonies at the end of the 19<sup>th</sup> century. On the contrary, Finland, Greece, Iceland, Ireland, Luxembourg, and Norway were parts of empires for a long period of time. Only Switzerland has been developing and specializing in the world economy as a small country practically from the beginning of its existence.

Due to a number of disadvantages, small countries have a priori, an ability of permanent modernisation and rapid transformation according changing market trends under the creative activity of national governments was obtained that led to a considerable increase in welfare during 1950-1990s. That is further verified by an analysis of 12 integrated indices, eight ratings and four coefficients as well as many other indices reflecting features of geographical location, area, population, migration, infrastructure, standard of living (map 1), level of productivity in industries (map 2), and contemporary development of primary, secondary, and tertiary sectors as a basis for subsequent examination of a small nation's competitiveness in the world economy. Small countries of Western and Northern Europe occupy only 1.3 per cent of the land area and have only 1.5 per cent of the world's population, but they produce 6.5 per cent of the world's GDP, 5.4 of the primary, 6.8 of the secondary, and 7.4 per cent of the tertiary sectors of the world economy, i.e. these countries play an important role in the world economy though they are very small in terms of area and population.

### **§8. Level of Competitiveness of Small Nations**

In this section, examined was the level of competitiveness of each small country in the world economy using three main ratings of competitiveness – IMD World Competitiveness Yearbooks 1998-2002, Growth Competitiveness Index and Business (Microeconomic, Current) Competitiveness Index from the Global Competitiveness Reports 1998-2002, World Economic Forum (WEF). An average level of national competitiveness in 1998-2002 for 75 countries was calculated according to ratings from the Global Competitiveness Reports and small countries were allocated in the following groups: highest competitive countries – Finland, Netherlands, Sweden, Switzerland, and Denmark; high competitive countries – Norway, Austria, Ireland, Belgium, and Iceland; countries with more than average competitiveness level – Portugal and Greece (see map 3).

This division is also confirmed by a number of statistical indices, for example, simple GDP per capita level where similar gradation can be seen and two unequal groups of small nations can be distinguished. Highly developed Finland, Switzerland, Sweden, Netherlands, Denmark, Austria, Belgium, Iceland, Norway, and Ireland form the first group, while Greece and Portugal can be characterised as developed nations. Finland is shown to be the most competitive nation among small countries of Western and Northern Europe as it has been continuously improving its performance in 1998-2000 and occupied the second or first position in all competitiveness ratings in 2001-2002.

According to an examination of small countries' changing positions in all three ratings versus that of large developed states (USA, Japan, France, Germany, Italy, Spain, and UK) it was found that the economic recession of 2001-2002 affected large countries in the short-term period much more than the small nations, which have improved their relative positions. This could be evidence of higher flexibility of small economies in comparison to big ones that have more inertia in their development features.

### **§9. Export Competitiveness of Small Nations**

Having an average share of exports of goods and services of 49.7 per cent (imports – of 45.8 per cent) small countries made up to 15.5 per cent of the world exports, and 14 per cent of the world imports in 2001 that proves once again that their competitiveness depends strongly on trade performance. The majority of small nations had a positive balance of trade in 2001; moreover it has been increasing since 1985, except Greece and Portugal, while Austria and Iceland have had slightly negative balance of trade since the beginning of the 1970s. Coefficient of international division of labour, exports intensity as value of exports per capita and exports efficiency were calculated for small countries. Coefficient of international division of labour reveals all small nations except Greece and Portugal participate actively in the international trade (see map 4). Export efficiency index (receipts per capita from every percentage of country's exports in comparison to world's average which is equal to 100) shows small countries' exports are four to five times as much as the world's average index. Greece and Portugal have the smallest indices among small countries, but they are still three times as much as the world average.

Small countries' trade is primarily oriented to EU-15, EEA, EFTA states that compose two thirds of their exports, while developing nations

– 12 per cent, USA and Canada – 9 per cent, countries of Central and Eastern Europe – 6 per cent, and Japan – 1.9 per cent (see map 6). To reveal patterns of the small countries' export competitiveness I examined their top ten industries in terms of share in the country's export at the 3-digits level of SITC. Also analysed were the trade performance index and the specialisation index that shows a country's revealed comparative advantage in 14 groups of industries, namely fresh food, processed food, wood products, chemicals, leather products, basic manufacturing, non-electric machinery, consumer electronics, electronic components, transport equipment, miscellaneous manufacturing, and minerals, calculated by UN International Trade Centre.

According to the indices used, the small countries of Western and Northern Europe are mostly competitive and specialise in the international division of labour in the following sectors: high-tech and medium-tech products – Switzerland; high-tech and low-tech products – Sweden, Finland, Ireland, Netherlands; medium-tech and low-tech – Austria, Belgium, Luxembourg; high-tech and agricultural products – Denmark; low-tech and agricultural products – Greece and Portugal; natural resources and low-tech – Norway; fish processing – Iceland. The export diversification index (share of top ten industries in country's exports), which is 51 per cent along the whole group of small nations and varies from 33 per cent in Austria up to 90 per cent in Iceland, reveals that small countries' narrow but deep specialisation in a limited number of industries reflects scantiness in domestic resources due to modest size of these states (map 5).

### **§10. Innovative Development of Small Nations**

Since the innovativeness in all three sectors of the economy was recognized in the 1980s as a key aspect of small nations' survival in the international division of labour, the innovative development of small countries of Western and Northern Europe is analysed in this section. It is worth mentioning, WEF experts estimated a large number of small nations as core-innovators in the world economy in terms of patent applications per million of population in 2001. Switzerland, Sweden, Finland, and Denmark are found to be among the top ten countries; Netherlands, Austria, Belgium, Iceland, Norway, and Ireland are also on the list.

Basic data were taken from the 2001 European Innovation Scoreboard and represented following criteria: science and engineering graduates (20/29 years), population with tertiary education, participation in life-

long learning, employment in medium- or high-tech manufacturing, employment in high-tech services, public R&D expenditure, business, R&D expenditure, high-tech patents in EPO and USPTO, SMEs innovating in-house, SMEs innovation cooperation, innovation expenditure, high-tech venture capital, new capital raised on stock markets, sales of new-to-market products, home Internet access, ICT expenditure, value added in high-tech manufacturing. A tentative European Innovation Index was considered as a resumptive index showing overall innovativeness of a country. Revealed was a substantial advantage of Nordic countries of EU (Sweden, Finland, and Denmark) over other EU-15 nations except UK. Sweden and Finland occupied the first positions in this rating; Netherlands and Ireland's outcomes were above the EU-15 average, while other small EU nations stayed well behind with negative overall innovation indices. In addition, strengths and weaknesses in innovative development of every small EU country were analysed and positions to be improved were identified.

### **CHAPTER 3. ANALYSIS OF MAIN COMPETITIVENESS FACTORS OF SMALL NATIONS**

#### **§11. Government**

«Government» is the first competitiveness factor, and it actively influences economy in small countries providing nevertheless a high level of economic freedom in comparison to large developed countries, except the USA and the UK, and much lower bureaucracy level versus developing nations. In this analysis included are such integrated indices as Index of economic freedom, Globalization index and several simple criterion such as number of days and permit to start new firm, etc. According to an IMD sub-rating «Government efficiency», 10 small countries excluding Belgium, Greece and Portugal were in the top twenty countries in the world in 2002 and were continuously improving their positions. Specific models of social and economic development also determined an active role of government in small economies. Some of these models, such as Nordic welfare state with different variations (Swedish model, distributive Norwegian model, Danish social-liberal model, etc.) and Austro-Keynesianism, have been appreciated already, while others are being evaluated nowadays (Irish model – «Celtic tiger economy»).

Though small countries are very modest in area and population, they are no doubt among leading economic nations in the world. But their dominating geo-economic strategy in maintaining interests in the world economy would not have been so effective without considered transfer of some sovereignty's function to supranational institutions and international organisations – EU, EFTA, Nordic Council, OECD, and NATO. Membership in these and other international organisations enables small countries to take part on equal terms with larger nations in finding solutions in international affairs.

One of the main functions of «government» in raising national competitiveness is to ensure the basic economic and social conditions favourable to all other institutional actors in the country, including permanent improvement of the educational system. This task is of greater importance, particularly in small nations, due to limited opportunities to import high-skilled personnel from abroad. A range of indices is taken to evaluate primary, secondary and tertiary education in small countries – OECD Pisa Studie 2000, education expenditures by source and distribution, level of teachers' salary, education attainment, distribution of teacher per students number, etc. According to results from Pisa Studie, the Finnish primary and secondary education system was evaluated as the best in the world, and the cause of such performance is further examined. Moreover, all small countries are characterized by high median education expenditures that exceed 4.5 per cent of their national GDP, and these results, together with other positive indices allow predicting subsequent improvement in education standards that will then maintain and ameliorate the small nations' competitiveness in the world economy.

#### **§12. Research Institutions**

Availability of a highly skilled labour force in universities and higher schools, research institutes, technology and science parks, and research departments of enterprises determines the solidity of the second competitiveness factor – «research institutions». The mean R&D expenditure among small nations exceeds 1.5 per cent of GDP, but there are considerable disparities between countries with about 0.55 per cent in Greece and Portugal, on the one hand, and 3.7 per cent in Sweden, on the other hand. It was revealed that domestic innovation potential enables small countries to compete with bigger ones only in a narrow spectrum of industries, which is also corroborated by the

analysis of export competitiveness in §9. Know-how for a broader range of industries is obtained from abroad; it is also reflected in the technology balance of payments of small countries, which is slightly negative in most of them.

Technology and science parks as well as business innovation centres provide a fruitful atmosphere for application of new inventions into the production process and the creation of new start-up firms. A network development of almost 150 technology and science parks and more than 40 business innovation centres in small countries is examined and its spatial location is mapped (see map 7). Special attention is paid to Sweden, Finland, Austria, and Netherlands who are leaders among small countries in terms of number of technology and science parks. Analysed is the vital role of associations of innovation centres, existing in a majority of countries, that coordinate activities of technology and science parks and raise chances of innovative start-ups to survive and develop successfully in the future.

Using the case study of Finland and Oulu region, it is shown how effective cooperation between government, scientific institutions and the business sector contribute to a growth of regional and national competitiveness and can develop a new regional specialisation in the international division of labour. The rapid headway of Finland to a group of world's richest and most competitive nations during the last two decades is based on a long-term national strategy creating a network of technology parks and centres of expertise (Programme launched in 1994), which provides an efficient use of specific knowledge located in different regions to achieve common national goals. Regional and local authorities also have been playing a vital role in the competitive development of Finland, and Oulu region is a remarkable example of it. The mainly resource-oriented regional economy until the 1970s has been replaced step by step by a high-tech specialisation that has led to the creation of the world's leading local cluster in this field. The main reasons are – the foundation and effective development of Oulu «Technopolis» in 1982, which was the first science park in the Nordic countries, and the Oulu «Medipolis» in 1990; strategic planning by regional government to create «Technology city» carried out since 1984 and upgraded in 1996; fruitful cooperation of new forms of R&D and production activities with the University of Oulu. However a high economic growth caused a higher unemployment rate, decreasing diversity of the regional economic structure, and did not settle such problems as the lack of tradition of

entrepreneurship, etc. that have to be solved within the «Oulu region business strategy» that has been realised by the regional government since in 2002.

### **§13. Transnational Corporations**

Small countries have a moderate number of large TNCs, the third competitiveness factor, that are generally encouraged by national governments and societies, which treat them as a driving force of national prosperity. Four rankings are used to reveal small countries' largest TNCs and their specialization in the world economy – «Fortune Global 500» (ranking by revenues), «Financial Times Global 500» and «Europe 500» (ranking by market capitalization), «Forbes Global 2000» (ranking by sales, profits, assets, and market value), UNCTAD World Investment Report with transnationalization index (see map 8 with geographical distribution of headquarters of the largest TNCs). The Netherlands, Switzerland, and Sweden, as countries with the longest history of industrial development, are characterised by the highest number of large TNCs. Moreover, it was calculated and found that the five largest TNCs from Switzerland and the Netherlands had considerably lower market capitalization in 2002 than that from the USA and the UK, slightly less than the top five Japanese companies, but excelled the largest TNCs from France, Germany, Italy, Spain, the Republic of Korea, and Canada. Considerable market capitalization of some small nations reaching 330 per cent of GDP in Switzerland, 242 in Finland, 180 in Luxembourg, and 176 per cent in the Netherlands in 2000 resulted from an inclination of these countries towards the Anglo-Saxon model of capitalism instead of the Rhine capitalism, which dominated before.

To compete successfully with leading TNCs from large countries with vast domestic markets TNCs from small countries need to be more internationalized to achieve internal economies of scale. A number of them, like ABB and Nestle headquartered in Switzerland, Electrolux from Sweden, and Interbrew from Belgium, have more than 90 per cent of assets, sales, and staff outside their country of origin. Also the general transnationalization of small economies of Western and Northern Europe is much higher than that of large nations; it is verified by UNCTAD transnationalization index from 2000, which shows that the mean value among the group of small nations was more than twice as much as that for seven large countries (21.2 vs. 8.9). Besides highly competitive industrial TNCs that form the export performance of small countries,

financial TNCs play an increasing role, especially in Switzerland, Sweden, Austria, Ireland and Greece as totally 91 from 165 TNCs located in small economies from «Forbes Global 2000» operate in the tertiary sector.

A share of the small countries in the world FDI stock (21.2 per cent) exceeds 15 times the small countries' share in the world population. I identified seven types of small nations according to the analysis of their position in the international FDI flows up to 2001: (1) Switzerland – one of the biggest net FDI exporters; (2) Finland, Sweden, Netherlands, Norway – net FDI exporters but with considerable influence of foreign companies on the domestic market; (3) Iceland – net FDI exporter but with a small outward and inward stock; (4) Belgium and Luxembourg – FDI recipient with the largest inward and outward stock among small countries; (5) Denmark – recipient of FDI but with large outward investments; (6) Austria, Portugal, and Greece – big FDI recipients with modest FDI outward stock; (7) Ireland – biggest FDI recipient with a hypertrophied foreign sector and relatively weak domestic companies.

#### **§14. Small and Medium Enterprises**

Small and medium enterprises, the fourth competitiveness factor, tends to build networks and to concentrate geographically in regional and local clusters, which interact with global value-added chains. A special innovative environment (milieu), well-developed horizontal inter-firm linkages, co-operation and creation of alliances together with permanent competition pressure are indispensable features of clusters that contribute to every firm's competitive development, and without which the simple geographical proximity of firms does not function like a cluster.

As SMEs make up more than 95 per cent of enterprises, account for 60 to 70 per cent of jobs and 50 to 70 per cent of value-added in manufacturing in small countries their competitiveness level is a vital issue for national governments that were among pioneers in conducting cluster policy after seminal works of Michael Porter. Since the beginning of the 1990s a considerable attention was paid to investigate the current process of firm clustering and its impact on regional and national competitiveness. The following methods were used to identify spatial and non-spatial clusters in small countries – (1) input-output tables with analysis of forward and backward linkages, (2) location quotients, (3) network analysis, and (4) surveys with questionnaire distribution. After an analysis of literature on clusters in small countries, three main types

of clusters from traditional and science-based industries are distinguished. National clusters that are non-spatial groups of adjacent inter-connected industries form the first group of 43 clusters in total. Twenty regional clusters including eight transborder clusters located in two or three countries represent the second group. Fifty-two local clusters situated within a locality are allocated in the third group. I plotted regional, transborder and local clusters on map 9 to have geographical view on their spatial location. Besides «top-down» cluster policy, the importance of «bottom-up» strategy with development of cluster initiatives is stressed, and works of Michael Porter, Michael Enright, Örjan Sölvell, Emiliano Duch, Ifor Ffowcs-Williams, Göran Lindqvist, and Christian Ketels in this field are analysed.

Cluster development and cluster initiative activities in all 13 small countries of Western and Northern Europe are further examined. Special attention is paid to experience of Finland in development of national clusters since the mid-1990s based on the work of Petri Rouvinen, Hannu Hernesniemi, Markku Lammi and Pekka Ylä-Anttila, as well as cluster development in two Austrian states (Bundesländer) – Styria and Upper Austria. The common features of traditional and science-based clusters are generalized on the basis of an analysis of surveys conducted by Claas van der Linde, Michael Enright and European Network for SMEs Research (ENSR), where 34 clusters from 17 European countries were examined (see map 10 for their geographical distribution in small nations). The main findings in the concepts of Raphie Kaplinsky, John Humphrey, Hubert Schmitz, Bengt-Åke Lundvall, Björn Johnson, Bjorn Asheim and Arne Isaksen are verified using the results of the ENSR survey.

It is concluded that modern science-based cluster development reflects a distinct transition to post-Fordist methods of production organization since the mid-1970s, while traditional clusters have been developing since the end of 19<sup>th</sup> century and are constantly changing their technological performance according techno-economic paradigms, but both types of clusters can fruitfully contribute to regional and national competitiveness. State cluster «top-down» policies with «bottom-up» initiatives are key tools in the common policy of competitiveness rising of small nations in the world economy. Thus, nowadays high national and regional competitiveness and high national standards of living can only result from developing and stimulating new regional forms of production, R&D and services organisation where leading actors of economic activities could effectively co-operate within regional innovation systems.

## CONCLUSION

Which conclusions applicable to Russia can be drawn? Russia has a significant scientific potential and an essential backbone of universities and research institutes within the Russian Academy of Sciences. The main goal is to increase productivity in all sectors, wages and hence the standard of living in the whole country. The experience of small nations of Western and Northern Europe evidences that a range of tools has to be invented – (1) gradual application of cluster policies on the national and regional level, (2) elaboration and realisation of innovative development strategies for regions, (3) encouragement of cluster initiatives from local authorities and business communities. But simple imitation of foreign policies in Russian conditions would more likely result in negative consequences and their discredit, and that is evidenced by the Russian domestic experience in the 1990s, as well as by the small nations' example that scrutinized and adapted thoroughly common principles of cluster policies to local context, business environment, cultural and institutional frameworks.

It should be taken into account that the modern spatial structure of Russian economy was completely built during the Soviet period and full integration with other Soviet republics to achieve precise goals within the planned economy. Unlike the small nations of Western and Northern Europe and large developed countries, big enterprises still prevail in Russian economy accounting for 84 per cent of jobs and 85 per cent of GDP in 2004. They were built within the centralized planning system and strictly bound up with such location factors as allocation of raw materials, fuel, and consumers that were frequently other industrial plants. In the Asian regions of Russia (Western and Eastern Siberia and Far East) the spatial interaction between main and supporting industries built according TIC models depending on the location of natural resources is seen even more distinctly.

Though the majority of plants have been privatised since 1992 and new vertically integrated financial-industrial groups were formed, the value-added chains have not changed considerably due to production expediency. And it is too early to bring up the question of development of networked groups of SMEs as suppliers for big enterprises. Therefore, efforts to identify non-spatial industrial clusters in Russia by input-output analysis or location quotients would repeat the process of TICs planning (region – basic development parameters – industrial structure), but in a reverse consecution.

Investigations of new propulsive industries developing under market conditions since 1991 seem to be more promising, in my opinion. Such industries like information-communication technologies (ICT sector), biotechnologies, production of new construction materials, innovative services, etc. are represented primarily by SMEs. These industries play an insignificant role in job and GDP creation of Russia at the moment, but they are an indispensable part of future regional innovation systems, where all four leading competitiveness factors have their spatial manifestation. They also have a strong potential for future development that will positively affect traditional industries and may ensure a timely transition to the new techno-economic paradigm in the world economy by way of regional innovative development, which can be illustrated by two case studies – Tomsk region (Tomskaya oblast'), and Novosibirsk region (Novosibirskaya oblast').

The Academic City of Novosibirsk (Akademgorodok) is nowadays the third ICT-centre of Russia after Moscow and Saint Petersburg with more than 20 SMEs working in this field from about 150 innovative firms located there. The Academic City was originally built in 1957 to host the headquarters of the newly set up Siberian division of Russian Academy of Sciences followed by the foundation of Novosibirsk State University (NSU) in 1958 and the building of research institutes. The essential features of this centre were diversity and interactivity in research disciplines, close connection of academic and education sectors, and active application of innovations into practice. These attributes played a crucial role when some academics began to start up ICT-enterprises in the early 1990s in geographical proximity to each other, developed close interaction with research institutes as source of innovations and established cooperation with NSU as a source of new gifted personnel, while NSU profited from financial support provided by ICT-firms. Up to 2004 the classical local ICT-cluster had been formed with the main specialisation on offshore programming that stopped «brain-drain», on the one hand, and raised productivity and welfare in this region, on the other hand. Though Novosibirsk ICT-companies lack for the government's encouragement and favourable business environment, they gradually diversified their activities and began to re-orient them to the domestic market.

The government of Tomsk region was one of the first in Russia to elaborate and begin to realise an innovative strategy of regional development in 2001, which is the framework for a number of measures

to increase innovativeness of the regional economy. However, small innovative biotechnology and new construction material firms, started up in innovation and technological centres in the city of Tomsk, have still considerable troubles with the application of innovations in the production process and overall development. Tomsk Technology Park was reorganised from a traditionally centralised to a decentralised organisation in 1997, and the business innovation centre was closed in 1996 due to absence of a favourable business environment (benefits for hosting of new start-ups, credit ease, etc.). Nowadays Tomsk Technology Park functions successfully but more as an expo-centre and regional business agency, promoting local enterprises in Russia and abroad.

These two case studies show that there is a pressing demand to elaborate the national strategy of competitive development of Russia in the world economy by stimulating development of regional innovation systems that should include a number of measures on macro (federal), meso (regional), and micro (local) level:

- Macro level (federal government) – determination of current and future techno-economic paradigm of a country's development; constant maintaining and modernisation of educational and scientific systems in the country; creation of favourable framework conditions for SMEs development, organisation of effective support for new innovations and technology projects proposed by domestic companies; encouragement of existing technology and science parks and business innovation centres by giving benefits and development of new forms of R&D and innovative production; realization of cluster policy «top-down» to identify new growth poles in the spatial structure of the economy – existing or embryonic regional and local clusters in propulsive industries – and further stimulation of its competitive export-oriented development.

- Meso level (regional government) – determination of current and latent regional competitive advantages in domestic and international division of labour; creation of a positive regional image in Russia and abroad (regional branding); elaboration of the regional innovation strategy; coordination of «top-down» and «bottom-up» cluster policies; stimulation of regional and local cluster development, encouragement of cluster initiatives, innovative production and insertion of local firms into global value chains; development of regional innovation system (identification of its weak elements and stimulation of their development); attraction of foreign TNCs into the region for new jobs creation, management and technology exchange with local companies.

- Micro level (local authorities) – creation and support of cluster initiatives involving local companies, educational and research institutes – cluster policy «bottom-up»; assistance in development of local innovative forms of R&D and production activities; promotion of competitive forms of production organisation by training and other educational programmes.

The development of a dual spatial structure of Russian economy in the future may be predicted. On the one hand, the locations with big enterprises in traditional industries built during Soviet period will be upgraded. On the other hand, regional and local clusters with predominantly SMEs working in new propulsive industries and services will develop. But the balanced headway of the economy is unfeasible without realisation of a special competitiveness strategy by way of stimulation of new inland forms of R&D and production organisation and coordination of main actors in the economy. Only coordination of activities of the government, educational and research institutions, SMEs and TNCs can contribute to raise national competitiveness and standards of living under the strong competition in the world economy.