BLEKINGE TEKNISKA HÖGSKOLA
BLEKINGE INSTITUTE OF TECHNOLOGY

# CREATIVE CITY ASSESSMENT OF RIGA, TALLINN, AND VILNIUS

## Master Thesis


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## ABSTRACT

The aim of this study is to investigate the current status of the capitals of the Baltic States according to the Creative Class Theory. With increasing role of knowledge, creativity and innovation in the today's economy, the role of the Creative Capital increases. Riga, Tallinn, and Vilnius are the capitals of the Baltic States, experiencing dynamic growth. Therefore, such a study would add to the assessment of the current status and identification of the possible improvements.

The Creative Class Theory suggests that knowledge or creativity of people is the main driving force of the economic growth. Thus, for the economic development, a place needs combination of three factors, 3Ts – Talent, Technology, and Tolerance. Each of them is necessary, but not sufficient factor.

In order to examine Talent, the authors use three measures of the Creative Class, the Human Capital, and the Scientific Talent. The findings indicate that all three cities have competitive level of the Creative Class in comparison with the other EU countries; however, low level of the Scientific Talent. The authors conclude that the Scientific Talent is an important part of the Creative Class; thus, the cities must find the means to develop it. By comparing the three capitals, Vilnius is the most competitive in terms of the Talent indicator; Tallinn has the second position, and Riga is the least competitive among the capitals of the Baltic States.

The second component, Technology, is measured by the Innovation Activity Index and E-commerce Index. These measures indicate that the three cities are rather uncompetitive in comparison with the leading EU countries. Among the capitals of the Baltic States, Tallinn is the most developed according to Technology; Vilnius is the second, and Riga is lagging behind in the Technology measures. To summarize, all three cities need to put an important emphasis on developing Technology.

Lastly, Tolerance is measured by using three different indicators of the values and attitudes. According to these measures, Tallinn is the most tolerant city among the three capitals, but the level of Tolerance is rather similar in Riga and Vilnius. From the study of literature, the authors find that the level of Tolerance is related with the economic development; thus, an increase in the income level in the three cities might increase the level of the tolerance.

The authors conclude that despite the fact that the Creative Class Theory suggests the need to build people's climate for the economic development, the three capitals of the Baltic States still need to build the business climate in order to increase the level of Technology, as it is currently the missing component of the 3Ts.

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# 1. INTRODUCTION

The "new economy", the knowledge-based or information economy, or the post-Fordist period are becoming more common terms when considering today's economy. The main reason for these claims is the existing view that the importance of traditional resources have shifted. Knowledge has become "the primary resource for individual and for the economy overall"; thus, traditional resources like capital, labour, land, have become secondary (Drucker, 1992, September-October, p.95). Consequently, one can claim that economic growth today is driven by the application of knowledge. The new view is implied by bringing innovation as the priority on agenda of single companies, as well as countries.

This shift can be linked to globalization, "a worldwide integration of spatially spread activities since the 1980s (Dunning 1997; Dicken 1998; Storper 2001)" indicated by "the gradual disappearance of borders, the rise in exports and imports, an increase in foreign investments and the lively mobility of labo(u)r and capital" (Hospers, 2003, p.144).

The impact of the knowledge economy for cities is seen from two aspects. The pessimistic perspective considers that the "space-shrinking technologies" – transport technology, and information and communication technology - have made "the world smaller"; thus real cities are being replaced by "city of bits" (Hospers, 2003, p.145). However, another perspective suggests that cities have exceptional opportunities as face-to-face contacts between people are necessary to "develop new knowledge and the resulting innovations" (Hospers, 2003, p.145).

Consequently, knowledge-, innovation- and creativity-based approaches boost regional development and gain more and more popularity. Richard Florida has developed a new theory, the Creative Class Theory, to explain necessary factors for economic growth, building around this increasing importance of human creativity and knowledge. His book has become the worldwide best seller, and been widely discussed, implemented and criticized.

## 1.1. Three Baltic Capitals

Riga, Tallinn, Vilnius, the capitals of Latvia, Estonia, and Lithuania, are "highly concentrated locations of population within their national economies" in comparison with other European capitals (Vanags, Chandler, Leduskrasta, & Padam, 2006, p.12). Around 30% of the population of Latvia and Estonia lives in Riga and Tallinn (Central Statistic Bureau of Latvia, 2007, May 11a; Statistics Estonia, 2007, February 27). However, Vilnius has around 16% of the population of Lithuania, being less concentrated in comparison with Riga and Tallinn (Statistics Lithuania, 2007, March 27). Moreover, another city of Lithuania, Kaunas, has around 10% of the population (Statistics Lithuania, 2007, March 27). In absolute size of

population, Riga is the largest of these cities with 727 578 inhabitants in 2006 (Central Statistic Bureau of Latvia, 2007, May 11a). Vilnius has 553 553 inhabitants (Statistics Lithuania, 2007, March 27), and Tallinn has 396 193 inhabitants in 2006 (Statistics Estonia, 2007, February 27).

Riga, Tallinn, and Vilnius play an important role in their national economies and can be seen as the driving locomotives. As noted by Vanags, Chandler, Leduskrasta, and Padam, "the cities are of course both contributors to the growth of the region and beneficiaries from it" (2006, p.12). Riga and Tallinn generate almost 60% of GDP of Latvia and Estonia (calculated, using data from Tallinn City Government. 2005a; Central Statistic Bureau of Latvia, 2007, May 11a); and Vilnius generates "about one third of GDP" of Lithuania (Vanags, Chandler, Leduskrasta, & Padam, 2006, p.8). Furthermore, the capitals have important role in the national economies as "importers and transmitters of knowledge and new technology (Vanags, Chandler, Leduskrasta, & Padam, 2006, p.13). Vanags, Chandler, Leduskrasta, and Padam (2006) points that:

> The Baltic capitals are the main national and regional attractors of both investment and employment and their continuing attractiveness for capital and people is a prerequisite for transformation of living standards in the Baltic countries towards the EU average, where currently they lag towards the bottom of the European league table. (p.8)

Taking into account the small size of the Baltic States, three capitals are facing competition among each other. First, these cities are competing for becoming an economic centre of the region. Often, when international organizations are choosing location for their activities, they take one of these cities as their centre from which further activities are performed in the whole region. Such inward investment is important for all of three cities, as it increases economic activity. Furthermore, cities are competing for becoming a cultural centre – for hosting different kind of events meant for people from all Baltic States.

Finally, with open EU boarders since 2004, today three capitals as well as the Baltic States in general are facing a problem of emigration. People have freedom to move and can easier work in other, more prosper EU countries. Taking into account that the Baltic States are among the poorest EU countries, such workforce emigration is rational; however, it creates problems for these countries. Not only low skilled work force, but also high qualified employees are emigrating to work in abroad. The issue of workforce emigration is particularly alarming for Latvia and Lithuania, where it "is high on political agenda" (Vanags, Chandler, Leduskrasta, & Padam, 2006, p.17).

Although it is difficult to estimate the precise number of emigrated people, among the top destinations are Ireland, the UK, and Sweden (Vanags, Chandler, Leduskrasta, & Padam, 2006, p.17). To illustrate, statistics of Immigration Council of Ireland indicates that between May 2004 and April 2005, 18 063 Lithuanians, 9 207 Latvians, and 2 260 Estonians applied for Personal Public Service number (2005). Furthermore, recent news report that the number of emigrants from Latvia has more than doubled in 2006 while the number of immigrants has increased only by about 50% (LETA, 2007, April 26).

There have been several studies to assess attractiveness of the Baltic States for investors and other development indicators; however all of these studies have focused on business climate, i.e., analysing how attractive the Baltic States are for business enterprises. Furthermore, when investigating the competitiveness of these countries, it has been generally done by analysing the technology intensive industries and their development. Thus, the authors feel that a study from a different perspective is required, emphasizing people and their contribution to the economic development.

### 1.2. Research Questions & Objectives

The authors want to investigate the capitals of the Baltic States using the Creative Class Theory in order to compare their current status. Thus, the research question of the study is following: what is the current status of Riga, Tallinn, and Vilnius as creative cities[1]?

To answer the research question, the authors set following goals:

- to investigate the Creative Class Theory;
- to determine the status of the capitals of the Baltic States according to the Creative Class Theory;
- to compare these three cities;
- to discuss the impact of the Creative Class Theory on the existing development strategies of the cities;
- to discuss implications.

### 1.3. Relevance of the Study

Examining the capitals of the Baltic States by using the Creative Class Theory, the study is assessing the competitiveness of the capitals and countries by addressing important issues in the today's economy, i.e., knowledge, creativity, and innovation. Such kind of study contributes to the other competitiveness studies of the Baltic States, adding the novel

[1]A creative city in the paper is defined as a city that attracts the Creative Class according to the Creative Class theory.

perspective – the Creative Class. Thus, the study investigates up-to-date topic that has not been investigated for the capitals of the Baltic States.

Additionally, the conclusions and implications of the study would be useful to the local policy makers to include in the development strategies the activities that would stimulate economic growth.

### 1.4. Paper Outline

The paper consists of 10 sections. *Section 2* presents the Creative Class Theory, examples of its application, as well as critique. *Section 3* describes the methodology used to assess the status of the capitals according to the Creative Class Theory. *Section 4* presents the empirical findings of Talent assessment, *Section 5* provides the assessment of Technology, and *Section 6* presents the assessment of Tolerance. *Section 7* provides the discussion of the policies in relation to the Creative Class Theory. The conclusions are summarized in the *Section 8*; and *Section 9* presents the implications. Finally, *Section 10* suggests the topics for further research.

# 2. THE CREATIVE CLASS THEORY

It is widely accepted that economic growth is regional, differing by regions, cities or even neighbourhoods. So called, a traditional view suggests that "places grow either because they are located on transportation routes or because they have endowments of natural resources that encourage firms to locate there" (Florida, 2002, p.221). Such a view has been developed from Marshal's observation of agglomeration to the widely known Porter's cluster model. Consequently, the main concern for a place is to offer efficiency benefits to attract business; thus local governments have been using cost-related factors, like tax breaks, and infrastructure (Florida, 2002, p.221).

However, another approach suggests that the metropolitan economic development cannot be explained by reduced costs of doing business. The Human Capital Theory suggests that it is workforce of a place that drives its economic development, stressing the difference of well-educated people in comparison with the general labour as resource used in the traditional approach (Thomas & Damton, 2006, p.154). Thus, the well-educated people are the main driver of the economic development in a place.

Richard Florida builds his theory of the Creative Class "on regional growth theories focused on knowledge-based, cluster-oriented and technology-led job growth" (Holzheimer & Hodgin, 2005, p.1). He acknowledges the role of Technology and Talent, namely human capital, in the economic growth, but does not see them "as stocks that accumulate in regions or nations" (Florida, Gates, Knudsen, & Stolarick, 2006, p.5). Florida suggests that it is a particular characteristic of a place that attracts these factors – "the openness of a place to new ideas and new people" (Florida, Gates, Knudsen, & Stolarick, 2006, p.5)

Florida's theory adds to already existing approaches by identifying a type of human capital that drives the economic growth and the underlying factors that "shape the location decision of these people, instead of merely saying that regions are blessed with certain endowment with them" (Florida, 2002, p.223).

This part of the paper presents the theory in details. Furthermore, the cases when the Creative Class Theory has been applied are presented. Finally, the critique of the theory is reviewed.

## 2.1. Presentation of the Theory

The Creative Class Theory suggests that the "regional economic growth is driven by the location choice of creative people – the holders of creative capital – who prefer places that are diverse, tolerant and open to new ideas" (Florida, 2002, p.223).

As already stated, the role of, depending on the formulation, knowledge, creativity or innovation is crucial in the today's economic development. Creativity is not something that can be separated from people, "it is not something that can be kept in a box and trotted out when one arrives at the office" (Florida, 2002, p.22). Likewise the economic development, also the distribution of the Creative class is not equal and differs from country to country, region to region, and city to city. Florida argues that with the increasing importance of creativity, the role of the Creative Class has increased; thus companies will go to the places where these creative people are (2002).

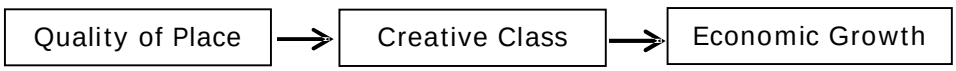
Furthermore, Florida states that the Creative Class, i.e., creative workers, can be characterized with distinct characteristic valuing individuality, meritocracy, diversity and openness (2002, p.77). From his research in the USA, he finds that there has been a shift "from 'survival' to 'self-expression' values, when "today people are increasingly concerned with what life is all about" (Florida, 2002, p.81-82). Furthermore, creative people are more flexible to move, in order to settle in a place where they like to live; and the employment relationships are becoming shorter by people changing jobs more frequently.

Florida has carried out the study of factors that people value in a location. From his interviews and focus groups in the USA, these factors are: thick labour market, lifestyle, social interaction, diversity, authenticity, identity (Florida, 2002). Florida summarizes these factors as the quality of a place.

- what's there – "the combination of the built environment and the natural environment, a proper setting for pursuit of creative lives";
- who's there – "the diverse kinds of people, interacting and providing cues that anyone can plug into and make a life in that community";
- what's going on – "the vibrancy of street life, café culture, arts, music and people engaging in outdoor activities – altogether a lot of active, exciting, creative endeavours" (2002, p.232).

Thus, the Creative Class Theory claims that the creative people, i.e., the Creative Class are the driving factor of the today's economy, and these people are attracted to particular places (see Figure 1).

**Figure 1: The Creative Class Theory**




*Source:* the authors' interpretation.

As a result, Florida argues that the business climate, i.e., attracting companies, is not enough for the economic development of a place, but the people's climate is needed - "a series of ingredients that spice up the city making it 'cool'" (Hansen, Vang, & Asheim, 2005, p.5).

To assess the Creative Class Theory, Florida offers the 3Ts model – Talent, Technology and Tolerance. Thus, two following parts present the definition of the Creative Class and the 3Ts.

### *2.1.1. The Creative Class*

The distinction of the Creative Class comes from an economic function that "both underpins and informs its members' social, cultural and lifestyle choices (Florida, 2002, p.68). According to Florida, "the Creative Class consists of people who add economic value through their creativity"; thus "the distinguishing characteristic of the Creative Class is that its members engage in work whose function is to "create meaningful new forms"" (2002, p.68 - 69).

Moreover, Florida distinguishes two components of the Creative Class, depending on the extent of the creative work – the Super Creative Core and Creative Professionals. The Super Creative Core consists of "computer and mathematical occupations, architecture and engineering occupations, life, physical and social science occupations, education, training and library occupations, art, design, entertainment, sports and media occupations" (Florida, 2002, p.328). The second component of the Creative Class is the Creative Professionals, including "management occupations, business and financial operations occupations, legal occupations, healthcare practitioners and technical occupations, high-end sales and sales managers" (Florida, 2002, p.328). The other classes outside the Creative Class are the Working Class, the Service Class and Agriculture (Florida, 2002). Although, Florida suggests that the Creative Class is the main growth driver, other classes are also needed.

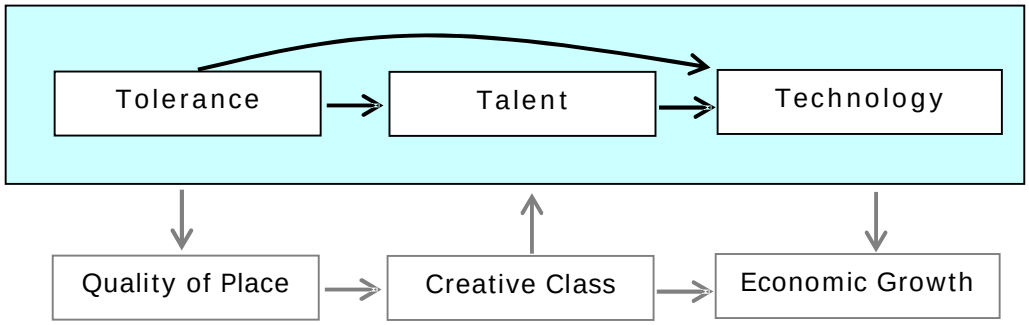
Furthermore, Florida argues that as "creativity becomes more valued", the size of the Creative Class rises (Florida, 2002, p.71).

### *2.1.2. Talent, Technology, and Tolerance*

Florida builds his model on three main components: Technology, Talent, and Tolerance. He claims that these are the key parts to "understanding the new economic geography of creativity and its effects on economic outcomes"; and "each is a necessary but by itself insufficient condition: To attract creative people, generate innovation and stimulate economic growth, a place must have all three" (Florida, 2002, p.249). For an illustrative presentation of

the 3Ts and relation with the Creative Class Theory, *see Figure 2*. All three factors, Talent, Tolerance, and Technology, add to the quality of place, attract the Creative Class and result in the economic growth.

**Figure 2: 3Ts and the Creative Class Theory**




*Source:* the authors' interpretation.

Additionally, these three factors are also related with each other. Technology is dependent on high skilled developers; thus, Talent is an important part of developing and applying Technology. Furthermore, Talent is attracted to places that are tolerant, with a diversity of people and "environment open to new people and ideas" (2002, p.249). Finally, Tolerance is also needed for development of new technologies, as tolerant places are a necessary environment for innovation and entrepreneurship to boost.

## 2.2. Application of the Theory

The Creative Class theory has been widely used not only by academicians, but also by policy makers, gaining remarkable popularity. Although the theory has been developed by using data from the US, the Creative Class theory has been also broadly applied in other countries, mostly in developed countries. The application of the theory varies from one case to another according to the different measures used and depth of discussion of applicability for local conditions. Therefore, the authors consider such a review of these cases as a good insight of applicability of the theory for different countries as well as possible suggestions for improvement.

### *2.2.1. The United States*

*The comparison of the regions in the US.* Florida developed and tested his theory by using the data from various statistical institutions in the US. From his study, he found that almost 30% of workforce in the US belongs to the Creative Class; moreover, 12% of workforce belongs to the Super Creative Class. Investigating the data for the period of a century, he

observes high growing trend of the Creative Class in the last two decades, while other classes have a declining trend, starting from the 80s. (Florida, 2002)

In order to compare different regions across the US, Florida develops the Creativity Index, which is "a mix of four equally weighted factors: (1) the Creative Class share of the workforce; (2) innovation, measured as patents per capita; (3) high-tech industry, using the Milken Institute's widely accepted Tech Pole Index; and (4) diversity, measured as the Gay index" (Florida, 2002, p.244).

When testing the relations between Talent and Technology, Florida finds that there is a strong association between innovation and the Creative Class, and the high-tech industry and the Creative Class. Obviously, there exists also string correlation between the Creative Class and distribution of people with bachelor degree or higher education. (Florida, 2002)

Furthermore, out of the different Tolerance indicators, Florida finds that the Gay Index outperforms the measure of immigrants. He also develops a new index – the Bohemian Index, which "measures the number of writers, designers, musicians, actors and directors, painters and sculptors, photographers and dancers" (Florida, 2002, p.260). The Bohemian Index shows high correlation with the distribution of the Creative Class (Florida, 2002).

Finally, Florida tested two measures of the economic growth – the population growth and the employment growth – to see the correlation with the 3T's. He finds that population growth has association with diversity and creativity, but not with Technology, but employment growth correlates with creativity. Furthermore, when considering only large regions with more than 1 million people, both the creativity and diversity correlates with the population growth and the employment growth. But for regions with less than one million people, the immigration tends to be better measure of the economic growth. (Florida, 2002)

*The study of Arlington.* In the study of Arlington, Holzheimer and Hodgin proposed eight measures that reflect the Creative Class Theory measures proposed by Florida:

- "The proportion of the population aged 25–34 represents the mobile, educated and creative heart of the Creative Class;
- The foreign born proportion of the population reflects cultural and ethnic diversity;
- The proportion of the adult population with a bachelors degree or higher level of education is the source of innovation and creativity;
- The proportion of the population in "super creative core" occupations - scientists, artists, designers, architects, engineers, writers, etc. are the Creative Class as defined by their work;

- The percentage of the population moving within the past five years measures mobility;
- The concentration of employment in technology sectors measures high tech economic activity;
- Patents per capita over a ten year period measure innovation; and
- The percentage of renters spending less than 35 percent of their income for housing costs indicates relative housing affordability" (Holzheimer & Hodgin, 2005, p.3).

*The study of the role of universities*. Apart from the studies of the particular regions, a study by Florida, Gates, Knudsen and Stolarick was carried out to investigate the role of a university in the 3T's model, "looking in detail at the effects of university R&D, technology transfer, students and faculty on regional technology, talent, and tolerance for all 331 U.S. metropolitan regions" (Florida, Gates, Knudsen, & Stolarick, 2006, p.1). In the study, different measures of the university were used: students, research and development, technological innovation, and commercialization. In addition, a new index for measuring Talent was introduced, called the Brain Drain/Gain index in order to measure "the extent to which region is gaining or losing college educated talent"; and a new measure the University-Creativity Index was used, which combined ranking of "a region's university strength and its creative class" (Florida, Gates, Knudsen, & Stolarick, 2006, p.6-7).

The findings from the study reveal that universities are important for all three components – Technology, Talent, and Tolerance. Being an "important hotbeds of invention and spin-off companies, universities are often at the cutting edge of technological innovation" (Florida, Gates, Knudsen, & Stolarick, 2006, p.1). Interestingly, universities' technology is not always transferred into the local regional growth. Second, universities have both direct and indirect effect on Talent. Universities not only directly attract top faculty, researchers and students, but also they can "act as magnets for other talent, attracting talented people, research laboratories and even companies to locate near them to access their research and amenities" (Florida, Gates, Knudsen, & Stolarick, 2006, p.22). Finally, by attracting "students and faculty from a wide variety of racial and ethnic backgrounds, economic statuses, sexual orientations, and national origins", universities can "help shape a regional environment open to new ideas and diversity" (Florida, Gates, Knudsen, & Stolarick, 2006, p.2).

The main conclusion of the study is that the universities are "a necessary but insufficient component of successful regional economic development", because "to harness the university's capability to generate innovation and prosperity, it must be integrated into the region's broader creative ecosystem" (Florida, Gates, Knudsen, & Stolarick, 2006, p.2)

### *2.2.2. Global Creativity Index*

With the help of Tinagli, Florida has carried out the study of the Creative Class in the global context. Their findings indicate that the Creative Class accounts for more than 30% in many European countries as well as in Canada, Australia and New Zealand. When considering the annual growth of the Creative Class, Ireland, South Korea, Turkey, Mexico, Israel, Bulgaria, Sweden, Norway, Switzerland, and Germany are the leading countries, but the US, Canada and the UK are among the ones with negative growth rate (Florida, 2005). In Technology Indexes, considering the R&D Index and the Innovation Index, the leading countries are the US, Sweden, Japan, Israel, Finland and Switzerland (Florida, 2005). Tolerance is tested by considering the Value Index and the Self-Expression Index. The results show that Sweden, Denmark and the Netherlands are among the most tolerant countries.

Finally, in order to compare the nations in all three components, Florida and Tinagli develop the Global Creativity Index. The leading countries in this index are Sweden, Japan, Finland, leaving the US in the forth place (Florida, 2005). Florida concludes that the results of the Global Creativity Index correlates with other global competitiveness indicators, like, the Porter's Innovation Index, the Foreign Policy's Globalization Index, and the United Nations Human Development Index (2005).

Latvia and Estonia also have been included in this study; however Lithuania has not been included. Among 45 countries, Estonia ranks in the 24$^{th}$ position, and Latvia ranks in the 32$^{nd}$ position in the Global Creativity Index (Florida, 2005).

### *2.2.3. Canada*

A similar study to the Florida's study in the USA was carried out for Ontario city-regions and the rest of Canada. The aim of the study was to compare the Ontario's city region with other regions in Canada and the US. The key variables used in the study are the Talent index, "the proportion of the population over 18 years of age with a bachelor's degree or higher"; the Bohemian Index, the Mosaic Index, "the proportion of the total population that is foreign-born"; and the Tech-Pole Index" (Gertler, Florida, Gates, & Vinodrai, 2002, p.3).

The findings suggest that there is strong relationship between Talent and the Bohemian Index, a positive correlation between Talent and the Mosaic Index, and the Tech-Pole Index has strong association with the Talent Index (Gertler, Florida, Gates, & Vinodrai, 2002). Consequently, Gertler, Florida, Gates, and Vinodrai conclude that the findings in Canada indicate the same relationship that has been determined in the study of the US (2002).

### *2.2.4. Australia*

The study of the Creative Class in Australia has been built on the work of Florida. The main conclusions of the study are that Australia is "well placed in the attraction and development of high concentrations of creative forces"; areas of Sydney and Melbourne are on the same level as the top ten cities in the US; and the regions with the highest concentration of the creative class are the ones with the "greatest levels of high technology industries and innovation, producing superior economic outcomes" (Brecknock, 2004, p.6).

### *2.2.5. Europe*

*Study by Florida and Tinagli.* Continuing the research on the global level, Florida and Tinagli investigates 14 European countries (EU-15, except Luxemburg) and compare them with the US (2004). To measure Talent, Florida and Tinagli develop an overall Euro-Talent Index, combining the Creative Class Index, based on occupational classifications, the Human Capital Index, "based on the percentage of population age 25-64 with a bachelor degree or above", and the Scientific Talent Index, "based on the number of research scientists and engineers per thousand workers" (Florida & Tinagli, 2004, p.15).

Technology measure is based on the Technology Index that consists of three separate measures – the R&D Index, "based on research and development expenditures as a percent of Gross Domestic Product", the Innovation Index, "based on the number of patent applications per million population", and the High-Tech Innovation Index, "based on the number of high technology patents in fields such as biotechnology, information technology, pharmaceuticals and aerospace per million population" (Florida & Tinagli, 2004, p.19).

Florida and Tinagli claim that the developed Euro-Tolerance Index significantly differs from the Tolerance measures in the US due to different data available for the European countries (2004). This index is based on "larger-scale surveys of popular attitudes" and consists of three measures – the Attitude Index, indicating attitudes towards minorities based on the Eurobarometer Survey; the Value Index, measuring "to what degree a country reflects traditional as opposed modern or secular values"; and the Self-Expression Index, indicating the extent "to which a nation values individual rights and self-expression" (Florida & Tinagli, 2004, p.27). Finally, the Euro-Creativity Index is developed that combines measures of Talent, Technology and Tolerance.

The core findings of the study show that more than 25% of workforce belongs to the Creative Class in half of the countries. Moreover, the Netherlands, Belgium and Finland are the leading countries with more than 30% of the workforce belonging to the Creative Class. North European countries are the leading ones in Technology after the US. Florida and

Tinagli conclude that competitiveness is shifting from "the traditional powers especially France, Germany and the United Kingdom, to a cluster of" Scandinavian counties (Florida, Tinagli, 2004, p.5). The top performer in the Euro-Creativity Index is Sweden, outperforming also the US. (Florida & Tinagli, 2004)

*The research project "Technology, Talent and Tolerance in European Cities: a Comparative Analysis".* To test and expand the theory proposed by Florida in the European context, a research project "Technology, Talent and Tolerance in European Cities: a Comparative Analysis" has been carried out. This project involves seven European countries - Denmark, Norway, Sweden, Finland, Germany, Great Britain and the Netherlands. The project aims to asses the importance of the quality of place. This project is still in the finalizing stage; thus, the authors are not familiar yet with the findings. The available report about Denmark is presented in the *Section 2.2.7*.

### *2.2.6. Sweden*

Mellander and Florida perform a study of 81 Swedish regions (2006). They develop a model to test: "the differential effects on development of educational versus occupational measure of human capital or talent"; role of technology; and "the effects of regional cultural and institutional factors - amenities, universities, and openness - on talent and turn on economic development" (Mellander & Florida, 2006, p.4). Regional wages are used as the dependent variable to measure the regional development, but the measures of "technology, educational and occupational talent, university presence, amenities" are independent variables (Mellander & Florida, 2006, p.4).

Technology is measured as "a location quotient that takes into account the technology industry national share and its relation to the technology industry regional share" (Mellander & Florida, 2006, p.10). University is measured as a dummy variable "equal to 1 (otherwise 0) if the number of university teachers is 100 or more" (Mellander & Florida, 2006, p.10). Furthermore, the diversity of consumer and personal service firms is used as a proxy for amenities and service diversity, while Tolerance is measured as openness toward the gay and lesbian population (Mellander & Florida, 2006).

The findings indicate that the Creative Class measures outperform the measures of educational attainment. Furthermore, the universities seem to have the most significant role in affecting the distribution of the Creative Class in comparison with amenities and tolerance. Finally, Mellander and Florida conclude that "the structure of relationships between the above factors, talent, and regional development is more complicated and differentiated than previous approaches have allowed" (2006, p.29-30).

### *2.2.7. Denmark*

As a part of the research project "Technology, Talent and Tolerance in European Cities: a Comparative Analysis", two thorough studies have been done to investigate the Creative Class approach in the case of Denmark. The first report maps and analyses the distribution and correlations, while the second report is based on qualitative analysis to explain the distribution of the Creative Class.

As the Creative Class Theory has been developed by using data from the US data; first, differences between the US and Denmark are emphasized, like the smaller size of cities and the closer distances between them. Andersen and Lorenzen claim that "to settle in the Danish countryside is not the same as compromising on access to hospitals, culture, city life and labo(u)r" (Andersen & Lorenzen, 2005, p.14). They argue that the mobility in the case of Denmark and Europe differs from the US due to language differences, labour market regulations, cultural habits etc (Andersen & Lorenzen, 2005). Finally, Andersen and Lorenzen suggest that Tolerance in the case of Denmark cannot be measured as the attitude towards gays, because high acceptance of the same sex couples exists in Denmark (2005). As an alternative, they suggest openness to people of different origin, particularly Non-Western citizens (Andersen & Lorenzen, 2005).

Andersen and Lorenzen use several measures of the quality of place. First, three indicators are used to measure Tolerance: the indicator of diversity as "the proportion of residents who are foreign citizens in total and the proportion which are and Non-Western citizens"; the Openness Index showing the employment among resident non western citizens; and the Bohemian Index (2005, p.17). Second, cultural and recreational opportunities are used as an indicator of the quality of place, measured by the proportion of employees in the cultural and recreational industries. Finally, Andersen and Lorenzen suggest measuring the general functioning of the society by using the employment rate and the level of public provision, i.e., "the amount of people employed in central welfare sectors in an area compared to the population of that area" (Andersen & Lorenzen, 2005, p.18).

To measure the technological and economic development following indexes are used: the population growth, indicating the attractiveness of a place; the employment growth, indicating economic development, the share of employment in high-tech industries; and the business life growth as the number of firms (Andersen & Lorenzen, 2005).

Andersen and Lorenzen find that "the Creative Class tends to locate in city regions with major cities", "the localization of the Creative Class correlates with a tolerant environment, as well as a high level of cultural and recreational opportunities, public provision and

employment"; and "the places with high level of economic development tend to be places where the Creative Class is localized" (Andersen & Lorenzen, 2005, p.72).

The second study analyses several city regions considering "three dimensions: people climate, business climate and the opportunities for development and exploration of creativity" (Andersen, Johnsen, & Lorenzen, 2007, p.i). During the study, Andersen, Johnsen, and Lorenzen find that quality of place and tolerance are influencing the choice of location of the Creative Class. Furthermore, they observe that "city regions with many small happenings attract the creative class more than those regions with big monuments and large events (Andersen, Johnsen, & Lorenzen, 2007). This study supports the transformation from manufacturing and heavy industry to knowledge creation; thus the demand for highly specialized labour is increasing. Remotely located city regions have "the problems of matching labour supply to demand in the most specialised industries" (Andersen, Johnsen, & Lorenzen, 2007, p.ii). Finally, Andersen, Johnsen, and Lorenzen argue that the Creative Class influences the local community in different ways, like having the effect on educational institutions, the creative industries, and entrepreneurship (2007). The study is concluded with the statement that both the people's climate and the business climate have an impact on the distribution of the Creative Class; thus Florida's theory does not explain the whole situation in the case of Denmark (Andersen, Johnsen, & Lorenzen, 2007).

#### *2.2.8. The Netherlands*

Marlet and von Woerkens studied Dutch cities in order to compare the Creative Class Theory with the Human Capital Theory. During the study, they perform the detailed Creative Class estimation and find that 22, 2% of workforce belongs to the Creative Class in the largest 50 cities (Marlet & von Woerkens, 2004). The employment growth is used as an indicator of the cities' development instead of the population growth due to centralized urban planning. The findings suggest that both, the Creative Class and Human Capital have positive correlation with the employment growth; however the Creative Class has stronger correlation (Marlet & von Woerkens, 2004).

When investigating "which mechanisms – productivity, startups or spending - is responsible for the growth effect", Marlet, and von Woerkens find that not only productivity of mature firms matter, but also "creative people are more willing to start up new companies" (2004, p.22, 24).

### *2.2.9. Dublin*

Boyle attempts to investigate the Creative Class Theory in the case of so called Tiger economies, countries with rapid economic growth. He argues that "Ireland stands as a classic Tiger economy not only because of its rapid economic growth in the past decade but more importantly because growth was commanded by a developmental state that shares the same family roots as many of the Tiger economies of Pacific Asia" (Boyle, 2006, p.405). The study is conducted, using focus group interviews of Scottish expatriates who work in Dublin. The results indicate that the majority of interviewees have moved to Dublin because of "the city's outstanding career opportunities" (Boyle, 2006, p.416). Although, most of them enjoy the environment of Dublin and its liberal workforce practices, they do not see it as a place to build a long-term future. Consequently, the Creative Class approach gives "only a partial explanation of Scottish migration to Dublin" (Boyle, 2006, p.423).

### *2.2.10. China*

Li and Florida have investigated the distribution of Talent and Technology and their impact on the economic growth as well as effect of amenities and diversity on Talent, Technology and growth in the 100 largest city-regions in China (2006). First, they claim that "the ability of a city or region to produce and attract talent is not simply a result of its employment opportunities or its population size, but is shaped by quality-of-life factors and lower barriers to entry (diversity)" (Li & Florida, 2006, p.4). Further, higher level of Talent should lead to technological innovations; and the technological innovation further leads to the economic growth (Li & Florida, 2006). These assumptions are tested by using several measures.

Non-Market factors are measured using following indexes: average temperature, the number of recreational amenities, the Minority Index, and the dummy variable of language spoken in region. As data of educational attainment and occupational structure is not available for the Chinese regions, the number of universities per capita is used as a proxy index to measure Talent. Furthermore, Technology is measured by using the number of invention patents. Finally, regional output is measured in absolute terms. (Li & Florida, 2005).

The findings show that "talent production is associated with non-market factors: amenities and diversity", but climate and language cannot be related to Talent, Technology or the regional growth (Li & Florida, 2006, p.7). Furthermore, Li and Florida find that "talent production and technological innovation in China are highly concentrated and uneven" (2006, p.14). They claim that these findings suggest the need to "think about economic growth in China, and perhaps in emerging economies in general, less as a "national" phenomena and

much more in terms of regional dynamics" (Li & Florida, 2006, p.14). The economic growth in China could be viewed as based on following processes: "(1) non-market factors condition talent production; (2) regional concentrations of talent effect technological innovation; and (3) technological innovation in turn affects economic output" (Li & Florida, 2006, p.14). Finally, Li and Florida draw a conclusion that this study indicates the importance of Talent in the economic growth for both advanced and emerging economies (2006).

### 2.3. Critique

The Creative Class Theory has been widely discussed, thus the aim of this section is to present some of the main critique.

Glaeser questions the novelty of the Creative Capital Theory, suggesting that it does not differ from the Human Capital Theory (2004). Furthermore, he claims that "Florida is also not unique in highlighting the rise of bohemianism and social freedom" as these ideas were already present in the David Brooks' classic "Bobos in Paradise" (Glaeser, 2004). However, Glaeser acknowledges Florida's novelty in suggesting that lifestyle differs across occupations and "changing workplace patterns assuredly do matter for changing lifestyle preferences" (2004). Glaeser also doubts the idea of 'cool' cities suggesting that most of the Creative Class like "most well-off people like - big suburban lots with easy commutes by automobile and safe streets and good schools and low taxes" (2004).

There have been claims that the whole theory is based on circular reasoning by considering technologically savvy workers as the part of the Creative Class, working in computer-related occupations, and establishing a creative economy, defined by "the presence of high-technology firms" (Thomas & Darnton, 2006, p.166).

Malanga also suggests that the measures of economic growth used by Florida are not precise, illustrating that thorough study based on figures by a National Commission of Entrepreneurship in the US "concludes that "most fast-growing, entrepreneurial companies are not in high tech industries," but rather "widely distributed across all industries" (Malanga, 2004).

Thomas and Darnton claim that the indexes of the presence of high-technology industries or the level of regional income, used as measures of metropolitan economic performance by Florida, are problematic (2006). The measure of high-tech industries does not include technological innovation in older manufacturing industries (Chapple et al. 2004 qtd. in Thomas & Darnton, 2006). Furthermore, the measure of income level is "problematic from the perspective of social equity" (Thomas & Darnton, 2006, p.154). Consequently, Thomas and Darnton suggest other potential measures of the economic performance of a region like

overall relative income growth, growth in main industries or job growth, creation of "certain promising ethnic enterprises, industry clusters, or occupations", "avoidance of persistent economic sinks or locations characterized by high segregation or inequality" or "avoidance of high indications of distress, such as high levels of poverty or unemployment throughout the region" (Thomas & Darnton, 2006, p.155).

Malanga is questioning the evidence of Florida, by investigating the domestic migration of New York, one of so called "Talent magnets". He claims that New York is losing its citizens who migrate to other places in the US, but "the only thing that keeps some of Mr. Florida's "ideal" cities from population loss is that they attract large numbers of foreign immigrants, who replace fleeing U.S. citizens" (Malanga, 2004). Furthermore, "cities that operate this way can hardly be called talent magnets or economic engines, because the U.S. residents they lose are, by and large, better educated and wealthier than the immigrants they attract" (Malanga, 2004).

Malanga also illustrates a contradiction between the Creative Class Theory and a magazine Money poll, where the main factors affecting people's choice of a place "fell into two broad categories: low costs (including low property and sales taxes) and basic quality-of-life issues (good schools, low crime, clean air and water)" (Malanga, 2004). Moreover, as the underlying problem with Florida's theory, Malanga considers that Florida not only suggests that "marginal attractions like an idiosyncratic arts scene can build economic power, but he thinks that government officials and policy makers like himself can figure out how to produce those things artificially" (Malanga, 2004).

McCann points to the issue of inequality that is not properly addressed in the proposed theory and policy plans by Florida. Although Florida acknowledges that the creative economy broadens inequality where the Creative Class is the ones who are gaining, "he offers no policy prescriptions on how to achieve wage equality in the creative economy" (McCann, 2007, p.193) suggesting that "sooner or later some place will figure out how to more fully tap the creative talents of much broader segments of its people — and it will get a huge competitive edge as a result" (Florida, 2002, p.xvii). Therefore, McCann claims that "Florida downplays the role of the national state in shaping future social and economic policy and echoes some new regionalists' argument that city-regions are now central to the formation of post-national economies" and puts liveability "as primarily an element of city regions' economic competitiveness rather than being tied up with a much wider range of issues of social reproduction" (McCann, 2007, p.193).

Furthermore, Peck suggests that the Creative Class neglects the issues of "intra urban inequality and working poverty" (Peck, 2005, p.758). Peck quotes Shaw (2003) to show that "the politics of the creative class stem from their self-image as an unruly tribe of independent consultants — the élan vital of the Creative Class is "take me as I am and facilitate the use of my unique skills, but don't expect me to buy into some corporate culture that requires me to change who I am"" (Peck, 2005, p.759).

Thomas and Darnton support the role of diversity in economic development; however argues that the Creative Class Theory does not explain it fully by focusing just on several dimensions (2006). Due to the relatively small number of gays and differences in their lifestyle, Thomas and Darnton see the need for further studies to investigate the association with the economic growth. Moreover, also the presence of bohemians is not fully studied. Even though, some studies suggest that bohemians are able to attract the Creative Class, Thomas and Darnton indicate a potential threat that "once such places become popular as urban places, the artists themselves may not be able to afford to live in such districts" (2006, p.166). Furthermore, they acknowledge the importance of migration in economic productivity and bringing energy and enthusiasm; however, Thomas and Darnton state that "the challenge in coming years will be to promote economic development in a way that recognizes the importance of diversity but also recognizes the limitations of simple reliance on a few specific kinds of diversity" (2006, p.166).

Scott sees the main flaw in Florida's idea "that once a creative class has been brought together in any particular place, its innate entrepreneurial and cultural energies will automatically be activated in the construction of a vibrant local economy" (Scott, 2006, p.11). Thus, it neglects "the complex synchronic and diachronic interrelationships that must be present before a dynamic creative environment is likely to emerge" (Scott, 2006, p.11).

Hansen, Vang, and Asheim analyse the Creative Capital Theory from knowledge perspective, differentiating industries according to three different types of knowledge bases - the synthetic, the analytical, and the symbolic- and illustrating that each type requires different policies as "the nature of the knowledge bases determines the importance of attracting and retaining talents; subsequently, the need for and content of a people's climate" (2005, p.2). First, industries based on the synthetic knowledge are "industrial settings where the innovation mainly comes from new combinations of partly tacit and partly codified but existing knowledge" (Hansen, Vang, & Asheim, 2005, p.8). Consequently, these industries "tend to rely on learning by doing, experimentation and a high degree of tacit knowledge" (Hansen, Vang, & Asheim, 2005, p.9).

The synthetic knowledge based industries "are seen in clusters and industrial districts, which implies that these industries gain from relational propinquity and geographical proximity rather than multi culturalism and urban dynamics" (Hansen, Vang, & Asheim, 2005, p.9). Therefore, Hansen, Vang, and Asheim claim that the people's climate is not necessarily the main driving factor, but rather creating the "business climate based on skilling and up-skilling of the labour force as well as building other institutions and organisations that can facilitate e.g. adoption and adaptation of new technology in the production process might have more powerful influence" (2005, p.10).

The analytical knowledge based industries "are much more dependent upon abstract formal codified knowledge than tacit knowledge" (Hansen, Vang, & Asheim, 2005, p.10). These industries can gain advantage from engaging "talents from multiple locations"; thus "high degree of transnational arrangements can be seen in the industries through transnational organisation and project based cooperation" (Hansen, Vang, & Asheim, 2005, p.10). The analytical knowledge based industries gain from both the people's climate and the business climate, as "though location in cities may not be the single most important factor in attracting talents for the analytical knowledge based industries, it might very well be the reason why talents choose to stay within an industrial setting for a longer period" (Hansen, Vang, & Asheim, 2005, p.12).

The symbolic knowledge based industries "tend to be the so-called creative industries" (Hansen, Vang, & Asheim, 2005, p.13). Hansen, Vang, and Asheim state that the "most creative industries are deeply rooted in and constrained by cultural institutions and locate in urban areas which tend to be rather heterogeneous, it is debatable to what degree newcomers can contribute to increased innovation and competitiveness" (2005, p.16). Therefore, taking into account that some of these industries are associated with a higher degree of risk, "business climate policies might prove to be highly important for creative industries; especially in capital-intensive creative industries" (Hansen, Vang, & Asheim, 2005, p.17).

Finally, Hansen, Vang, and Asheim question the applicability of the Creative Class Theory to the other countries besides the US as this approach "might represent the dominating values within the US, but this is not necessarily shared by members of the creative class in other countries" (2005, p.19). Thus such issues as "language as a barrier for international allocation of talents" are overlooked (Hansen, Vang, & Asheim, 2005, p.21). Consequently, Hansen, Vang, and Asheim call for additional analysis before applying the Creative Class Theory in other countries (2005).

# 3. METHODOLOGY

The creative city assessment is based on the Creative Class Theory by Florida (see *Section 2.1.*). The authors use the 3Ts model suggesting that Talent, Technology, and Tolerance are three necessary components for economic growth (see *Section 2.1.2.*). Taking into account that Florida claims that there is a shift from the business climate perspective to the people's climate; the authors consider that a brief look at the existing development strategies from the perspective of the Creative Class Theory will contribute to the conclusions and implications.

As already discussed before (see *Section 1.*), the situation at national level has an impact on the capitals and vice versa. Thus, taking into account that the Baltic States are trying to converge the development level of the other European countries, as well as open boarders of the European Union (EU) brings new working and living opportunities in other countries for the citizens of the Baltic States, the authors find it useful to look at the three countries considering the EU context. Florida and Tinagli (2004), and Florida (2005) have done the evaluation of the EU-15, as well as world wide ranking. The later also includes Latvia and Estonia, however Lithuania is not included as well as several other EU countries. Thus, the authors, using the same approach as Florida and Tinagli, recalculate the measures of Talent, Tolerance, as well as update the measure of Technology, for all EU countries, except recently accepted Bulgaria and Romania[2]. The latest available data is used, updating the previous studies.

When determining the current status of the capitals, the authors use both data, the country level and the city level. The main reason for looking also at the country level data is that not all data is available for the city-level; thus country level data should be used to estimate the status of the city.

Considering the experience of other countries, people, living in close proximity to the capitals, might still be closely related to the cities and add to their development, i.e., working or owning a company there, spending leisure and recreation time etc. Thus, there are two possible units of analysis when analysing the capitals – the city level and the city-region level, which would include larger territory around the city. The authors choose to use the city level as the main unit of analysis due to two reasons. First, although the distances are relatively small in the Baltic States, taking into account their development level, majority of people living only 50 km from the capital will not be closely connected with the city due to lack of

[2] Exclusion of Bulgaria and Romania is mainly due to unavailability of comparative data. Furthermore, the authors consider that it does not affect the total result, as these countries have been accepted in the EU just in the beginning of 2007. Furthermore, other Central Eastern European countries that are members of the EU are better comparison for the Baltic States.

infrastructure and costs. Thus, although there are people who are living outside of the capitals, but working in these cities, they are exception. Second, as the size of administrative units differ among the countries, it is not possible to find comparable statistical data for the city-regions.

## 3.1. Talent

It is difficult to measure precisely the amount or contribution of knowledge or creativity that employees use in their daily tasks, thus measuring Talent is a challenging task. The same job title or educational attainments per se does not ensure the same job tasks, knowledge involvement, and new form creation. However, exactly the characteristic of the job, intensity of human knowledge, and creativity involvement distinguishes Talent. The previous studies use several ways to measure Talent – the Creative Class, the Human Capital, and the Scientific Talent. Although, each of these measures has drawbacks, they might still be the best available estimates for a city or country level comparison, as the more qualitative and precise approach by investigating each employees' job characteristic is more appropriate for a smaller scale study, like a company case study.

Taking into account the complexity, the authors also use all three measures as each of them measures different aspects of Talent.

### *3.1.1. Creative Class*

The first measure, the Creative Class is the attempt to measure the size of the Creative Class by occupations. The idea of this measure is the most precise reflection of the idea of Florida for a measure of Talent, i.e., contribution of human creativity. However, occupational statistics cannot include all the aspects of particular professions, and differences of each individual case. Therefore, some individuals who actually belong to the Creative Class may be left out due to such discrepancies and some might be included although their daily routine is even not close to what Florida considers the Creative Class. The authors acknowledge the existing drawbacks, but as the issue of measuring the Creative Class is the same for the all countries; thus, the Creative Class measure is still a good indicator for comparison.

The Creative Class measure is based on ISCO[3]-88 classification of occupations. Two categories of occupations are included – (1) legislators, managers and senior state officials; and (2) professionals (See *Appendix 1* for detailed list of occupations). Similar to the studies of Florida and Tinagli, the authors use the latest available statistics from the database of International Labour Organization (ILO) for the EU comparison.

[3] International Standard Classification of Occupations.

For the comparison of the three capitals, official national statistic sources, Central Statistical Bureau of Latvia, Statistics Estonia, and Statistics Lithuania, are used. Unfortunately, data about occupations is not available for all the three cities. To estimate the Creative Class in Tallinn and Vilnius, the authors use data of the proportion of the Creative Class for urban areas. Such proxy can be a closer estimation than the total country level, due to the differences between urban and rural areas. Furthermore, around 46 % of employed of urban area of Estonia lives in Tallinn (calculated, based on data from Statistics Estonia, 2007, February 23c; Statistics Estonia, 2007, February 23d), and more than 26% of employed of urban area of Lithuania lives in Vilnius (Statistics Lithuania, 2006c).

### *3.1.2. Human Capital*

The measure of the Human Capital is based on educational attainments; thus linking Talent with education. The reason behind using this measure is the assumption that more educated people tend to use more their knowledge and creativity and work in the creative occupations. However, it is not always the case; therefore, such a measure can be only as an estimation, as there are educated people who still perform routine tasks at work with no creativity involved, and some uneducated people are being top performers in different art sectors, entrepreneurship etc. If this drawback does not affect the comparability between the countries, then the education system differences among countries can be a serious threat to the validity of this index. However, the authors still use the indicator as they believe that statistical offices across the EU do their best to reconcile the data.

The Human Capital Index is calculated as the proportion of economically active population with bachelor degree or higher. For the EU comparison, the Human Capital Index is based on the latest available data from ILO, because the source used by Florida and Tinagli (2004), statistics from the Organization for Economic Cooperation and Development (OECD), does not include all EU countries. For the capitals of the Baltic States, the authors use official statistic sources of Latvia, Estonia and Lithuania.

### *3.1.3. Scientific Talent*

The measure of the Scientific Talent attempts to compare the important part of the Creative Class, because scientists belong to the Super-Creative Core. The authors use the Scientific Talent Index, suggested by Florida and Tinagli (2004). This index is based on the number of researcher scientists and engineers on thousand workers.

First, the total number of scientists is used for the EU countries by using the same source as Florida and Tinagli (2004) – the report from the European Commission, but the latest available version.

As the data is available only for the country level, the authors estimate the Scientific Talent for the capitals. It is possible to divide research scientists according to different sectors – the business enterprise sector, the government sector, the higher education sector, and the private non-profit sector. Significant proportion of the Scientific Talent in the Baltic States comes from the higher education sector (see *Appendix 2, Table 12*). Thus, to estimate the city level data, the authors calculate the proportion of the universities in the capitals. List of universities is obtained from the appropriate ministries and national statistic offices. Next, the authors calculate the share of the researchers in the higher educational sector in the capitals per thousand of work force by using the proportion of the higher educational institutions in the capitals. The share of the economic entities in the capitals is used to estimate the number of researchers in the business enterprise and government sector. The total estimation of the Scientific Talent in the capitals is derived by the sum of the two calculated estimations.

## 3.2. Technology

Florida and Tinagli (2004), and Florida (2005) use three indexes to measure Technology, the Index of High Tech Innovation, the Innovation Index, measured as the number of patent applications per million of inhabitants, and the R&D Index. However, these measures mainly focus on High-technologies, neglecting that technological development and innovation take place also in other industries. Furthermore, the technological development can occur not only as a radical change or innovation, but also as an incremental, step-by-step improvement.

First, the used Innovation index as the amount of patents does not measure innovation in all industries, but only the ones that use patents. Second, R&D spending might neglect smaller improvements in technology taking place in day-to-day activities.

As a result, the authors introduce two other measures of technology – the Innovation Activity Index and the E-commerce Index.

### *3.2.1. Innovation Activity*

In order to measure the innovative activities, the authors use the study which is initiated by the European Commission, the Fourth Community Innovation Survey. Results of the survey give an overview of the innovation activities in enterprises, covering both product innovation and process innovation (Allen, 2007, February 22). The Innovation Activity Indicator is expressed as a proportion of enterprises with the innovation activities. Unfortunately, data on

the city level is available only for Riga. Therefore, the authors compare the share of the different activities between the country and city levels to estimate the situation in the capitals.

#### *3.2.2. E-commerce*

This index is based on the share of the enterprises which have ordered via Internet during the year; thus indicating the usage of E-commerce. The authors believe that this index points out the incremental technological improvements that the Innovation Index does not show, because using the E-commerce in the daily activities might rather indicate incremental improvements. The index is measured as a percentage of the enterprises that have used Internet for ordering, except manually typed e-mails. The source of the data is the European Commission, and the data is available only for the country level. However, similar to the case of the Innovation Activity Index, the authors use country level data to estimate the usage of the E-commerce in the capitals.

### 3.3. Tolerance

The third component, Tolerance, appears to be even more challenging to measure than the first two, because it is difficult to find a precise measure of Tolerance. Previous studies have used variety of indicators. The first Tolerance indicator that has been used in the study of Florida (2002) is the Gay Index. Florida assumes that the number of gays indicate Tolerance of the place. However, applying this index in the EU context is difficult due to two reasons. First, there are some countries where high acceptance towards homosexual minorities already exists, like the case of Denmark (see *Section 2.2.7.*). Second, there is a lack of comparable data that would measure the number of gays.

As a result, to measure Tolerance for the EU countries, the authors use the Values Index, and the Self-Expression Index, suggested in the studies of Florida and Tinagli (2004), and Florida (2005). These indexes are based on the World Values Survey, conducted by social scientists in more than 80 countries (Allen, 2007, February 22). The data is gathered from the interviews with selected samples, there are approximately 1,400 respondents per country (Florida, 2005). Although these data covers the period between 1995 and 1998, the authors believe that they are still a good indicator, because it takes longer time for values to change.

Furthermore, important measure of Tolerance can be also the attitudes towards minorities (see *Section 2.2.*). Florida and Tinagli (2004) use the Attitude Index to measure attitudes towards minorities; however, the Attitude Index is not available for all EU countries. As a relevant substitute, the authors consider the Immigration Scale, a measure of attitude towards immigration from the recent study of European Social Reality (European Commission, 2007,

February). Thus, three measures are used – the Values Index, the Self-Expression Index, and the Immigration Scale.

### *3.3.1. The Values Index*

The Value Index measures "the degree to which a country espouses traditional as opposed to modern or secular values" (Florida, 2005, p.274). Thus, the two opposite sides of the Value Index scale is the traditional values versus the secular-rational values. According to Inglehart and Baker, the traditional values have "low levels of tolerance for abortion, divorce, and homosexuality; tend to emphasize male dominance in economic and political life"; and have "deference to parental authority" and consider important family life, as well as religion (2000, p.23). On contrary, the secular or modern values are opposite to the traditional values.

The authors determine this index as an appropriate measure of Tolerance, because Tolerance depends on the values. People who espouse the modern values tend to be more tolerant, because the values underline acceptance to diversity, tolerance to abortions, divorces and homosexuality.

For the comparison of the EU countries, the authors use data from the World Values Survey, presented in the study of Florida (2005) and Inglehart-Welzel Cultural Map of the World (Inglehart, n.d.). The Value Index is calculated for each country according to the sample responses. The highest positive index is for the most supportive nation of the modern values, while the highest negative index shows the most supportive nation of the traditional values.

Unfortunately, the Value Index is available only for countries, and is not available for the cities. In order to estimate the position of the capitals, the authors use the Value Index for each of the Baltic States as the major indicator, because the capitals as a part of their nations should still, to some extent, reflect the same values. However, the authors assume that people in the cities tend to be more modern, thus the support for the modern values ought to be higher in the capitals than countries' average.

Furthermore, taking into account that the tolerance for abortion, divorce, and homosexuality are among the indicators of the values, as well as tolerance in general, the authors consider that attitude towards homosexuality, number of abortions and divorces might be the estimation of the values and tolerance in the capitals. It is difficult to measure attitudes; therefore the authors use several estimations in order to have a broader indication.

The number of abortions and divorces are complicated measures, because they include not only the acceptance of abortion and divorce, but also other issues. The number of abortions might not only be dependent on the tolerance for abortion, but also on the general cases of

pregnancy. Smaller amount of abortions may indicate that there is simply less pregnancy cases. Thus, to eliminate this uncertainty, it is possible to measure the number of induced abortions per 100 live births. To continue, the number of abortions is also related with the education level of the society about sexual life and contraception, because more educated and aware people are more likely to protect themselves from the situations that may lead to the need of an abortion. Next, the number of abortions is also dependent on the abortion laws; however, in the case of the Baltic States, these laws are similar. Unfortunately, the authors consider that it is not possible to use this measure to compare the capitals, because the capitals in the Baltic States have the most hospitals and higher quality of healthcare. Hence, the higher number of abortions in the capitals might be also related with the concentration of healthcare institutions instead of differences in the values. Thus, other measures are considered.

Similar to the abortion, it is difficult to measure the attitude towards divorce. The only available data for estimation of these attitudes is the number of divorces; and also this measure includes other aspects. To illustrate, the high rate of divorces may indicate that there is simply higher number of marriages, i.e., the more marriages, the more likely that also the divorce rate will be higher. Thus, to exclude this aspect, the authors use the number of divorces per 100 marriages. Furthermore, the tendency for couples to live together without getting married may also affect the number of divorces, because couples actually live as married and may separate; however, cases without an official marriage or divorce are not included in the statistics. Unfortunately, it is complicated to measure such processes, thus the authors use the number of divorces per 100 marriages for estimation of the values, acknowledging that the indicator may be affected by other issues as well not only the attitude towards divorce. To measure both the number of abortions per 100 live births and the number of divorces per 100 marriages, the authors use official statistic sources of Latvia, Estonia and Lithuania.

All in all, there is no available statistics about the number of homosexuals or attitudes towards homosexuals in the capitals. Thus, the authors use a discussion about an event of gays and lesbians in the capitals of the Baltic States. In many capitals of the Europe, there is a special street event – a parade/march of gay, lesbian, bisexual and transgender people. It is not the only event taking place, but this is the most obvious for the majority of the society. There have been such events or attempts to organize them in Riga, Tallinn and Vilnius. However, in each of the city, there has been different reaction from the society; thus the authors consider such investigation as useful to give an insight about the attitude towards homosexuals in the capitals. The discussion is based on the information available from the International Lesbian

and Gay Association in Europe (ILGA Europe). Although, the information sources might be biased, by reflecting the point of view of the members of the ILGA Europe, it is still comparable among the cities, because the same source is used.

### *3.3.2. The Self-Expression Index*

The Self-Expression Index measures "the degree to which a nation values individual rights and self-expression" (Florida, 2005, p.274). This index is measured with a scale of self-expression values versus survival values. Following statements are considered as indicating the survival values:

- "Respondent gives priority to economic and physical security over self-expression and quality-of-life";
- "Respondent describes self as not very happy";
- "Respondent has not signed and would not sign a petition";
- "Homosexuality is never justifiable";
- "You have to be very careful about trusting people" (Inglehart & Baker, 2000, p.24).

However, the support for opposite statements expresses the self-expression values. The highest positive value indicates the most supportive nation of the self-expression values, while the highest negative index shows the nation with the most dominant survival values. As the source of the Self-Expression Index, the authors use the study of Florida (2005) and Inglehart-Welzel Cultural Map of the World (Inglehart, n.d.).

The authors find this indicator relevant measure of Tolerance, because people who support the self-expression values tend to be more tolerant. Inglehart and Baker claim that "people in societies shaped by insecurity and low levels of well-being, tend to emphasize economic and physical security above all other goals and feel threatened by foreigners, by ethnic diversity and by cultural change" (2000, p.26). As a result, the authors see a link between the wealth and the self-expression values, because poor people cannot afford to spend time by thinking about the self-expression, but have to struggle for survival. On contrary, richer people tend to be more tolerant, because they can easily find solutions for different problems due to their wealth. This assumption that the richer people tend to support the self-expression values holds when the authors test the correlation between the Self-Expression Index and GDP per capita, and find that rather strong relation exists.

Because the data is available only for the country level, the authors use the GDP per capita for the capitals as an estimation of the support to the self-expression values. Due to the data unavailability, instead of using the GDP per capita in the capitals, the authors use the GDP per capita in the county/region, where the capitals are located.

### *3.3.3. The Immigration Scale*

Diversity can be considered as a sign of tolerance. Thus, immigration can be used to measure Tolerance. In fact, several previous studies used immigration for the estimation. However, comparing the size of immigration is difficult, because there may be several reasons why people immigrate to the particular country. Besides the tolerance, the place can attract immigrants due to economic, legal or historic reasons. In addition, the immigrants may still represent a culture and values that are close to the existing values in the country, thus not adding to the diversity and tolerance. Finally, some countries cannot precisely measure the immigration level, like Estonia; thus the data is simply not available.

As an alternative, the authors use the Immigration Scale from the European Social Reality study of Eurobarometer. The higher score indicates more positive attitude towards immigrants. The study measures attitudes towards the immigrants based on the answers to the following questions:

- "Are people from other ethnic groups enriching the cultural life of the country?"
- "Do we need immigrants to work in certain sectors of our economy?"
- "Does the presence of people from other ethnic groups increase unemployment?
- "Is the presence of people from other ethnic groups a cause of insecurity?"
- "Can the arrival of immigrants in Europe efficiently solve the problem of Europe's aging population?" (European Commission, 2007, February).

Although using this index, the authors acknowledge that this measure also has a drawback. Countries differ from one to another according to their experience with the immigrants and issues due to them. For people who have not faced the issue of immigration, it is easier to express the positive attitude; however, when they face the issue, it might appear that they are not as tolerant as they thought. However, there are always problems with measuring the attitudes, because they are subjective and difficult to test.

The Immigration Scale indicates the attitude towards immigrants for the EU countries; therefore is used for the comparison of the countries. However, for comparing the three capitals, the authors consider other estimations. Several possible ways to measure diversity of people are identified, like, immigration, ethnicities or citizenship. Unfortunately, the data about immigration is not available for Tallinn; thus the authors must consider the other possible indicators.

Diversity of ethnicities as an estimation of Tolerance is also problematic in the case of the Baltic State. Due to historical reasons, particularly Latvia and Estonia have a rather high proportion of Russian minority. Actually, in Riga and Tallinn we can talk of two major

ethnicities, Latvians or Estonians and Russians. Additionally, other ethnicities, like Polish, German, Belorussians, have long historic presence in the Baltic States; thus it might not indicate Tolerance per se. Furthermore, it is not a secret that there exists tension between ethnic Russian and the local nationalities. However, the authors do not consider it as an indicator of Tolerance, because these both groups might have clashes and lack of tolerance between each other, but still be tolerance to some third party. When it comes to the citizenship measure, it is not comparable among the countries, because of different legal issues when the citizenship is granted.

As there are no comparable and reliable immigration data for the capitals of the Baltic States, the authors compare the attitudes towards immigrants only on the country level and assume that the data about the countries reflects also the situation in the capitals.

### 3.4. Development Strategies

Despite the fact that business enterprises play the primary role in the economic development; the local authorities, i.e., the city councils, still has its role (Vanags, Chandler, Leduskrasta, & Padam, 2006). Vanags, Chandler, Leduskrasta, and Padam distinguish several direct ways how the city council affects the economy of the city:

- "The owner/instigator of investment projects";
- "Provider of land for private projects";
- "Employer";
- "Provider of services and infrastructure" (2006, p.8).

However, the most important role of the city councils is to plan the direction of the development, i.e., support particular activities that would help to the long term development. According to the Creative Class Theory, Florida suggests that it is the people's climate that is needed for the economic growth. Therefore, the cities must ensure the particular quality of place to attract the Creative Class (see *Section 2*). Florida's ideas have been becoming popular among the policy planners. In order to add to the conclusions and implications of the study, the authors investigate the long term development strategies of the three cities to see how much they have been influenced by the ideas of the Creative Class Theory, and what is the current emphasis.

The authors use long term development plans for the policy study: "Long-Term Development Strategy of Riga City till 2025", "Tallinn Development Plan 2006-2021", and "Vilnius City Strategic Plan 2002-2011".

# 4. TALENT

As already stated (see *Section 3.1.*), three measures of Talent are used. This section of the paper presents the empirical data for all three measures. At the end of the section, the authors summarize the findings of the three measures.

## 4.1. Creative Class

The measures are investigated in two levels. First, the EU countries are compared. Second, the capitals of the Baltic States are compared.

### *4.1.1. The EU Countries*

The highest proportion of the Creative Class is in Ireland and Belgium, where more than 30% of employed work in the Creative occupations (see *Appendix 2, Figure 3*). In the Netherlands, UK, Finland, Estonia and Lithuania, the proportion of the Creative Class is between 25% and 30%. Portugal, Slovakia, Austria, the Czech Republic, Cyprus and Italy have the lowest share of the Creative Class.

The Baltic States are in the first half of the ranking. Even more, Estonia and Lithuania are among the countries with the highest scores. Latvia ranks as eleventh, with similar proportion of the Creative Class as in Sweden and Denmark, between 21% and 24%.

To summarize, the Baltic countries have similar proportion of the Creative Class to the proportion of the Creative Class in the more developed EU countries. Particularly, Estonia and Lithuania can be viewed as competitive in this component.

### *4.1.2. The Capitals of the Baltic States*

Estonia has the highest share of the Creative Class, measured according to occupations (see *Table 1*).

**Table 1: Creative Class in the Baltic States and Capitals, 2000 - 2006**

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|
| Latvia[1] | 20.4[8] | - | 21.0 | 19.9 | 22.0 | 21.4 | 21.7 |
| Riga[2] | - | 31.1 | - | - | - | 26.7 | 29.4 |
| Estonia[3] | 25.3 | 24.7 | 26.1 | 26.3 | 25.6 | 26.8 | 27.5 |
| Tallinn[4] | - | - | - | - | 28.8 | - | - |
| Urban area of Estonia[5] | 28.0 | 25.6 | 27.8 | 26.5 | 27.2 | 28.2 | 29.4 |
| Lithuania[6] | - | 23.1[7] | 22.1 | 22.8 | 24.2 | 25.3 | 25.5 |
| Vilnius[7] | - | 33.8 | - | - | - | - | - |
| Urban area of Lithuania[6] | - | - | 27.3 | 27.9 | 28.8 | 30.9 | 30.7 |

*Note:* the percentage of creative occupations out of total employed population.
*Source:* 1 - Central Statistical Bureau of Latvia, 2007, March 27b; 2 – Rudite, personal communication, 2007, May 9; 3 – Statistics Estonia, 2007, February 23a; 4 - Tallinn City Government. 2005a; 5 - Statistics Estonia, 2007, February 23a; 6 - calculated, using data from Statistics Lithuania, 2007, April 19; 7 - calculated, using data from Statistics Lithuania, 2004, December 31.

Lithuania has nearly 8% smaller share of the Creative Class, being in the second position among the Baltic countries. Lastly, Latvia has the lowest share of the Creative Class, more than 20% lower than in Estonia.

The size of the Creative Class in the capitals, as expected, is higher than in the country-level. The share of the Creative Class in Riga is similar to the share of the Creative Class in the urban area of Estonia and lower than the Creative Class in the urban area of Lithuania. When comparing the year 2001, where data is available for Riga and Vilnius, it is visible that the Creative Class is higher in Vilnius. Furthermore, the data for Tallinn in 2004 indicates that the difference between the Creative Class in Tallinn and the urban area of Estonia is not significant. As the data for Vilnius and Tallinn are not available for the same years, the authors use the data for the urban areas to compare these two cities. The urban area of Lithuania has the higher share of the Creative Class in comparison with Estonia, thus the authors estimate that the share of the Creative Class is higher in Vilnius.

Although on country level the highest share of the Creative Class is in Estonia, Vilnius is the leading city among the capitals of the Baltic States. Tallinn has the second position, and Riga has the lowest share of the Creative Class.

As a result, Vilnius and Tallinn seem to be more competitive in this component than Riga, because not only these two cities have the higher share of the Creative Class, but also Estonia and Lithuania are among the top countries according to the Creative Class measure.

## 4.2. Human Capital

The measures are investigated in two levels. First, the EU countries are compared. Second, the capitals of the Baltic States are compared.

### *4.2.1. The EU Countries*

The proportion of economically active population with the higher education, bachelor degree and higher, varies from country to country. Ireland, the Netherlands, and Denmark are the leading countries in the Human capital measure by having from 25 to 30% economically active population with the highest education (see *Appendix 2, Figure 4*). The Baltic States are the next in the ranking with 22% to 25%. Estonia again has the highest score among these three countries, and Lithuania and Latvia have very similar indicators. Belgium, Austria and Malta have the lowest share of high educated out of the total economically active population. As a result, in the Human Capital indicator, the Baltic countries are rather competitive among the EU countries.

### *4.2.2. The Capitals of the Baltic States*

Estonia has the highest Human capital rate; Latvia and Lithuania has approximately the same share of the Human Capital (see *Table 2*). All three countries have a positive growth trend for the Human Capital during the last seven years. However, Estonia has the highest growth rate, 30%; Lithuania has 20% growth rate; and Latvia has 16% growth rate.

**Table 2: Human Capital in the Baltic States and Capitals, 2000-2006**

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|
| Latvia[1] | 19.5 | 19.7 | 20.3 | 19.0 | 21.3 | 22.3 | 22.6 |
| Latvia[1] (employed) | 21.3 | 21.4 | 21.8 | 20.2 | 22.7 | 23.4 | 23.3 |
| Riga[2] (employed) | - | 30.4 | 30.2 | 28.7 | 32.0 | - | - |
| Estonia[3] | 18.5 | 19.2 | 20.5 | 20.3 | 21.3 | 24.2 | 24.0 |
| Tallinn[4] | 28.7 | 28.2 | 28.6 | 25.8 | 28.1 | 32.8 | 32.8 |
| Urban Area of Estonia[3] | 21.2 | 22.0 | 22.9 | 22.1 | 23.4 | 27.1 | 27.2 |
| Lithuania[5] | 18.7 | 17.6 | 17.9 | 19.0 | 20.5 | 22.5 | - |
| Vilnius | - | - | - | - | - | - | - |
| Urban Area of Lithuania[5] | 22.9 | 21.6 | 21.9 | 23.2 | 24.5 | 27.4 | - |

*Note:* percentage of economically active population with bachelor degree and higher out of total economically active population; for Riga – percentage of employed with bachelor degree and higher out of total employed population.
*Source:* 1 - Central Statistical Bureau of Latvia, 2007, March 27a; 2 – Central Statistical Bureau of Latvia, 2006b; 3 – Statistics Estonia, 2007, March 16a; 4 - Statistics Estonia, 2007, March 16b; 5 - calculated, using data from Statistics Lithuania, 2006a.

The precise comparison of the Human Capital on the city level is difficult due to lack of data. Instead of the economically active population, the data for Riga reflects the Human Capital level for the employed population. The authors acknowledge that the level of the economically active population with higher education tend to be a bit lower than the level of employed. Therefore, it is assumed that the Human Capital is similar in Riga and Tallinn. Furthermore, in order to estimate the level of the Human Capital in Lithuania, the data for urban area is used. The level of the urban population with bachelor degree or higher is similar to Vilnius and Tallinn. Therefore, the authors estimate that the Human Capital is almost equal in the capitals.

In conclusion, although Estonia has the highest share of the Human Capital, all the capitals have rather equal share of the Human Capital. Taking into account the positions of the Baltic States among the other EU countries, the Baltic Capitals can be seen as competitive according to the Human Capital indicator.

## 4.3. Scientific Talent

The measures are investigated in two levels. First, the EU countries are compared. Second, the capitals of the Baltic States are compared.

### *4.3.1. The EU Countries*

According to the number of scientists, Finland is the leading country with around 16 scientists per 1000 economically active people (see *Appendix 2, Figure 5*). Sweden has the second place by having about 10 scientists; Luxembourg and Denmark are the following countries with almost 9 scientists per 1000 economically active people.

Latvia is among the countries with the least number of scientists, only Italy and Cyprus have less. Estonia ranks as fourteenth and Lithuania as fifteenth. Thus, Latvia is among the least competitive countries in the EU according to the Scientific Talent; and Lithuania and Estonia are also below average.

### *4.3.2. The Capitals of the Baltic States*

As already observed in the EU comparison, Latvia has the lowest share of the Scientific Talent among the Baltic States. Interestingly, there is a declining tendency of the number of researchers per thousand of labour force in Latvia, approaching to 16% between the years 2000 and 2005 (see *Table 3*). The leading country among the Baltic States is Estonia with the highest number of researchers per thousand of labour force and increasing trend in the last six years.

The difference between Estonia and Lithuania is not significant, approximately 6%. However, Latvia has almost two times less researchers per thousand of labour force than Estonia.

The most part of the researchers in the Baltic countries belong to the higher education sector (see *Table 3*), about 67% in Latvia and Lithuania, and 57% in Estonia.

**Table 3: Scientific Talent in the Baltic States, 2000 - 2005**

| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|
| **Latvia**[1] | Researchers per thousand labour force | 3.47 | 3.16 | 3.07 | 2.84 | 2.93 | 2.89 |
| | Per cent in higher education sector | 56.53 | 64.11 | 64.50 | 69.37 | 71.75 | 67.76 |
| **Estonia**[2] | Researchers per thousand labour force | 4.02 | 4.06 | 4.69 | 4.57 | 5.11 | 5.05 |
| | Per cent in higher education sector | 67.74 | 65.80 | 68.32 | 65.43 | 64.17 | 57.19 |
| **Lithuania**[3] | Researchers per thousand labour force | 4.65 | 4.94 | 3.88 | 4.02 | 4.54 | 4.75 |
| | Per cent in higher education sector | 63.42 | 64.72 | 66.23 | 67.79 | 70.64 | 66.99 |

*Source:* calculated, using data from European Commission, 2007, January 9; and 1 – Central Statistical Bureau of Latvia, 2007, February 23e; 2 – Statistics Estonia, 2007, March 27a; 3 – Statistics Lithuania, 2006,December 29.

The second largest sector according to the Scientific Talent in Estonia is the business enterprise sector; while in Latvia and Lithuania it is the government sector (see *Appendix 2, Table 12*).

The authors assume that the Scientific Talent in the capitals ought to be higher than the average of the countries, due to larger concentration of enterprises, government institutions and higher educational institutions. As the highest share of the researchers come from the higher education sector, the number of the higher educational institutions located in the capitals as the proportion from the total number of the higher educational institutions is used as a way to estimate the Scientific Talent in the capitals. In Estonia and Latvia, about 82% of the higher educational institutions are located in Tallinn and Riga (Statistics Estonia, 2007, March 5; Higher Education Quality Evaluation Centre, n.d.), while 50% of Lithuanian higher educational institutions are located in Vilnius (Ministry of Education and Science of the Republic of Lithuania, 2007). Thus, the authors assume that 82% of the researchers in the highest education sector of Latvia and Estonia are located in Riga and Tallinn; and 50% of the researchers in the highest education sector of Lithuania are located in Vilnius. Furthermore, the number of researchers in business enterprise and government sector is estimated according to the proportion of the economic entities located in the capitals.

**Table 4: Estimated Scientific Talent in the Baltic Capitals, 2005**

| | Higher education sector | Business enterprise and government sector | Total |
|---|---|---|---|
| Riga | 4.57 | 1.55 | 6.12 |
| Tallinn | 7.04 | 3.26 | 10.31 |
| Vilnius | 9.06 | 5.58 | 14.64 |

*Note:* As the estimate of Vilnius labour force for 2005, data for 2003 is used.
*Source:* calculated, using data from European Commission, 2007, January 9; and 1 – Central Statistical Bureau of Latvia, 2007, February 23e; 2 – Statistics Estonia, 2007, March 27a; 3 – Statistics Lithuania, 2006,December 29.

According to the estimated Scientific Talent in the Baltic Capitals, Vilnius is the leading city with almost 50% more researchers per thousand of labour force in comparison with Tallinn (see *Table 4*). Likewise Latvia, Riga has the lowest number of the Scientific Talent. Thus, taking into account the ranking of the Baltic States among the other EU countries, Riga can be considered as uncompetitive in the Scientific Talent indicator.

## 4.4. Conclusions

Ireland is the leading country according to the two measures, the Creative Class and the Human Capital in the EU, however ranks as eleventh in the Scientific Talent (see *Appendix 2, Table 13*). Similarly, the Netherlands has the top positions in the Creative Class and the

Human Capital measures, but the tenth position in the Scientific Talent. On the contrary, Finland, Sweden and Denmark are the leading countries according to the Scientific Talent indicator, and ranks among the top ten countries in the two other measures, except Finland in the Human Capital ranking. Furthermore, also the study by Florida (2005) concludes that Finland, Sweden, the Netherlands, Denmark and Ireland are the leading countries according to Talent.

The Baltic States, particularly Estonia, rank high in the Creative Capital and Human Capital indicators; however all three countries are having week positions in the Scientific Talent measure. Thus, it is indicating that the Baltic States have lower share of the Super Creative Core, involved in sciences. The authors believe that the contribution of Super Creative Core, particularly these involved in sciences, to the economic development is higher than the contribution of the Creative Professionals. Therefore, although having higher share of the Creative Class, the Baltic States may be still less competitive in comparison with the countries with lower share of the Creative Class, but higher share of the Scientific Talent, like Sweden, Denmark, Germany etc.

Although Estonia is the leading country among the Baltic States, Vilnius has the highest results among the three cities. Tallinn ranks in the second position, and Riga has the third place as in all the measures Riga has the lowest position (see *Table 5*).

**Table 5: Talent Ranking for the Baltic States and Capitals**

| | Creative Class Rank | Human Capital Rank | Scientific Talent Rank |
|---|---|---|---|
| Latvia | 3 | 2 | 3 |
| Riga | 3 | 1 | 3 |
| Estonia | 1 | 1 | 1 |
| Tallinn | 2 | 1 | 2 |
| Lithuania | 2 | 2 | 2 |
| Vilnius | 1 | 1 | 1 |

*Note:* Ranking in each of the measures is assigned according to the results from the Creative Class (see *Table 1*), Human Capital (see *Table 2*), and Scientific Talent (see *Table 4*) measures. 1 means the highest rank, 3 – the lowest.

Due to the considerably lower share of the Scientific Talent, Riga can be considered even less competitive than the difference of the Creative Class measure indicates. As already discussed, the contribution of the Super Creative Core should be higher to the economic development that the contribution of the Creative Professionals.

# 5. TECHNOLOGY

As already stated (see *Section 3.2.*), two measures of Technology are used. This section of the paper presents the empirical data for both measures. At the end of the section, the authors summarize the findings of the two measures.

## 5.1. Innovation Activity

The measures are investigated in two levels. First, the EU countries are compared. Second, the capitals of the Baltic States are compared.

### *5.1.1. The EU Countries*

According to the Innovation Activity measure, Germany is the leading country, where around 65% of enterprises had the innovation activities in 2004 (see *Appendix 3, Figure 6*). Following countries are Austria, Luxembourg, Ireland, Denmark, Belgium and Sweden, where approximately 50% of enterprises had the innovation activities. Estonia also ranks among the top countries, where almost 50% of enterprises had the innovation activities.

Latvia ranks as the country with the least amount of the innovation activities, because less than 18% of enterprises had the innovation activities. Other EU-10 countries also rank low in the Innovation Activity measure, including Lithuania, which has the seventh position from the bottom. Thus, Estonia is exception among the Baltic States and EU-10 countries, by being among the top ten countries according to the Innovation Activity measure.

### *5.1.2. The Capitals of the Baltic States*

As already observed in the EU context, Estonia is the leading country among the Baltic States according to the share of enterprises with the innovation activities (see *Table 6*). About 49% of enterprises in Estonia had the innovation activities in 2004.

**Table 6: The Innovation Activity in the Baltic States and Capitals, 2000 and 2004**

| | 2000 | 2004 |
|---|---|---|
| Latvia[1] | 19.26 | 17.50 |
| Riga[2] | - | 19.88 |
| Estonia[1] | 35.74 | 48.67 |
| Tallinn | - | - |
| Lithuania[1] | 27.99 | 28.50 |
| Vilnius | - | - |

*Note:* Per cent of enterprises with innovation activities.
*Source:* 1 - European Commission, 2007, February 13; 2 – Central Statistical Bureau of Latvia, 2006a.

Lithuania ranks as the second country in the Baltic States with 29% of enterprises that had the innovation activities. Only less than 18% of the enterprises in Latvia had the innovation

activities in 2004. When it is compared with the results from 2000, the share of enterprises with the innovation activities has increased in both Estonia and Lithuania, but decreased in Latvia.

The level of the innovation activities in Riga is similar to the total level of Latvia. Around 20% of the enterprises in Riga had the innovation activities during 2004, thus almost 14% higher than the rate for Latvia. Although the data for the two other capitals are not available, the authors estimate that the ranking for the capitals would be the same with the ranking of the countries. First of all, the case of Riga indicates that the difference between the country level and the city level does not differ significantly. Second, when comparing the share of the different activities on the country level and the city level (see *Appendix 3, Table 14*), it is obvious that only slight differences in the total composition exist. Real estate, renting and other business activities tend to be in higher proportion in the capitals with higher share of the enterprises with the innovation activities. However, the ranking of this economic activity by the Innovation Activity index is still the same; Estonia is leading, and Latvia is in the last position.

## 5.2. E-commerce

The measures are investigated in two levels. First, the EU countries are compared. Second, the capitals of the Baltic States are compared.

### *5.2.1. The EU Countries*

According to the E-commerce indicator, measured as the percentage of enterprises that have ordered via Internet, Sweden is the leading country (see *Appendix 3, Figure 7*). More than half of the enterprises have ordered via Internet during the year also in the UK, Denmark, Ireland, Finland, Germany, and Austria.

Latvia ranks as the second country from the bottom with only 13% of the enterprises that have ordered via Internet. Although ranking higher, Estonia and Lithuania are also among the bottom ranked countries, being in the eleventh and ninth positions from the bottom.

### *5.2.2. The Capitals of the Baltic States*

Estonia has the highest share of the enterprises ordering via Internet among the Baltic States (see *Table 7*). However, the results of Lithuania have improved during the last 3 years, being 12% below the share in Estonia. Latvia has almost two times lower share of the enterprises which have ordered via Internet during the year than Estonia and Lithuania.

As the data for the capitals is not available, the authors estimate the similar level to the total country-level. Although the share might be higher, there are no other signals that would

indicate the change in the ranking. Thus, the authors estimate that Tallinn has the highest usage of E-commerce, and Riga has the lowest.

**Table 7: The E-commerce in the Baltic States and Capitals, 2004 - 2006**

| | 2004 | 2005 | 2006 |
|---|---|---|---|
| Latvia | | 7 | 13 |
| Riga (estimated) | | 7 | 13 |
| Estonia | 31 | 23 | 25 |
| Tallinn (estimated) | 31 | 23 | 25 |
| Lithuania | 13 | 15 | 22 |
| Vilnius (estimated) | 13 | 15 | 22 |

*Note:* Per cent of enterprises (with 10 employed persons and more) which have ordered via Internet during the year, excluding manually typed e-mails. All sectors included, except financial sector.
*Source:* European Commission, 2007, April 10.

## 5.3. Conclusions

Germany, Sweden, Ireland, Denmark, Austria, UK, Finland and Belgium are among the leading countries in Technology. These countries have not only high Innovation Activity rate, but also high usage of E-commerce.

Among the Baltic States, Estonia is the leading one in Technology. Moreover, Estonia has high Innovation Activity rate in the EU. Latvia is one of the least developed countries according to Technology, and also Lithuania is among the weak performers. As a result, Estonia can be seen as relatively competitive country in the EU according to Technology, although there is still way to go to be among the top countries. Nevertheless, Lithuania and, particularly, Latvia are uncompetitive in this component.

**Table 8: Technology Ranking for the Baltic States and Capitals**

| | Innovation Activity Rank | E-commerce Rank |
|---|---|---|
| Latvia | 3 | 3 |
| Riga | 3 | 3 |
| Estonia | 1 | 1 |
| Tallinn | 1 | 1 |
| Lithuania | 2 | 2 |
| Vilnius | 2 | 2 |

*Note:* Ranking in each of the measures is assigned according to the results from the Innovation Activity (see *Table 6*), and E-commerce (see *Table 7*) measures. 1 means the highest rank, 3 – the lowest.

Consequently, Tallinn is the most advanced according to the Technology measures among the Baltic capitals; whereas, Riga and Vilnius are lagging behind. Particularly, Riga has week performance in the Technology measures. Such results are worrying, because Technology is the component that translates the Creative Class' input into the economic development.

# 6. TOLERANCE

As already stated (see *Section 3.3.*), three measures of Tolerance are used. This section of the paper presents the empirical data for all measures. At the end of the section, the authors summarize the findings of the three measures.

## 6.1. The Values Index

The measures are investigated in two levels. First, the EU countries are compared. Second, the capitals of the Baltic States are compared.

### *6.1.1. The EU Countries*

The modern values are the most espoused in Sweden, as well as Estonia, the Czech Republic, Germany and Denmark (see *Appendix 4, Figure 8*). Lithuania also ranks high in the Value Index, having the sixth position. Latvia ranks as the eleventh. On contrary, in Poland, Portugal, and Ireland, the traditional values are espoused the most.

### *6.1.2. The Capitals of the Baltic States*

To estimate the Value Index for the capitals, two measures are used - the number of divorces per 100 marriages, and the attitude towards homosexuals.

Looking at the number of divorces per 100 marriages (see *Table 9*), the difference between the capitals and the countries is minor. Tallinn has the highest divorce rate, Vilnius has the second highest rate, and Riga has the lowest divorce rate among the capitals. Such a ranking is in line with the results of the Value Index for the countries, where Estonia has the highest support to the modern values, but Latvia has the lowest.

**Table 9: The Number of Divorces per 100 Marriages in the Baltic States and Capitals, 2003 - 2005**

| | 2003 | 2004 | 2005 |
|---|---|---|---|
| Latvia[1] | 48 | 51 | 51 |
| Riga[2] | 45 | 50 | |
| Estonia[3] | 70 | 69 | 66 |
| Tallinn[3] | 71 | 69 | 67 |
| Lithuania[4] | 62 | 57 | 56 |
| Vilnius[4] | 54 | 56 | 46 |

*Source:* 1 – calculated, using data from Central Statistical Bureau of Latvia, 2007, March 9a; 2 – calculated, using data from Central Statistical Bureau of Latvia, 2006b; 3 – calculated, using data from Statistics Estonia, 2007, April 16, and Statistics Estonia, 2007, May 3; 4 - calculated, using data from Statistics Lithuania, 2006b.

In order to consider the values in the capitals from another aspect, the authors investigate happenings around the special event of homosexuals - a street parade or a march generally called Pride or Rainbow days. ILGA Europe in their webpage states that:

> While in some European countries Pride events are festive celebrations of diversity, in other countries (lesbian, gay, bisexual and transgender) people are being prevented by the state to even organize a Pride parade, or when daring to come out to the streets, they are facing fierce opposition, assaults and violence (n.d.).

The activities of the Pride parade have been held also in the capitals of the Baltic States; however, with different results in different cities.

The Pride parade has taken place already three times in Tallinn. According to the participants, the parade in Tallinn has "always been more entertaining" rather than a struggle with opposition (Alekseev, 2006, August 14). However, the last event in 2006 experienced an accident where young skinheads, belonging to Russian minority in Estonia, attacked some of the participants. By knowing that the skinheads have radical views, the authors conclude that it does not reflect the general attitude.

The Pride Parade has been organized the last two years in Riga; however, the organizers have always faced an opposition from the governmental institutions first. In order to held the march, the organizers need to get permission from the local authorities. The authorities of Riga has never allowed the event to take place, claiming that it is a threat for society due to possible violence and suggesting to choose other place for the event instead of the city centre. Furthermore, there have been fierce comments from several politicians, clearly showing their attitude against such events. The organizers of the Riga Pride never gave up and searched their rights in court. In 2005, the court announced that the authorities in Riga do not have sufficient reasons for not allowing the parade, but in 2006 the court accepted the decision not to allow the street march. Besides the legal troubles, the Riga pride has also faced huge opposition from the society, when thousands of people participated in the protest events against the Riga Pride. If in the case of Tallinn, the attackers were radicals; then the opposition activities in Riga involved different representatives of religious organizations, well known people in society, like, artists, politicians etc, and other people. As a result, the opposition activities gathered larger crowds of people than the activities of the organizers of the Riga Pride.

There have been no pride parades in Vilnius so far, because of "lack of resources and very high level of homophobia in Lithuania" (ILGA Europe, 2005, October 3). Instead, in 2005,

there has been a protest against a possible Pride event in Vilnius. The first attempt to make the Pride event in Vilnius will be held in 2007.

As a result, the authors see Tallinn as the most tolerant place to homosexuals among the capitals of the Baltic States. The history of the Pride events shows that Riga and Vilnius expresses intolerance towards homosexuals, because of massive opposition in Riga and no attempt to make such event in Vilnius. Furthermore, it is important to note the expressed idea that the incident in Tallinn in the last Pride Parade has a link with events in Riga. Serious opposition activities in Riga can be seen as an encouragement for some people in Estonia to actively show their attitude (Alekseev, 2006, August 14). As a result, the authors observe that the Baltic States and the capitals can influence each other to some extent.

Taking into account the results of the two estimations, the authors consider Tallinn as the most espoused to the modern values, while Riga and Vilnius are less espoused. The authors estimate that Vilnius is more supportive to the modern values than Riga, because the divorce indicator and the Value Index for the countries indicate that Vilnius has higher results, and from the discussion of the attitude towards homosexuals it is not possible to rank clearly these two cities.

## 6.2. The Self-Expression Index

The measures are investigated in two levels. First, the EU countries are compared. Second, the capitals of the Baltic States are compared.

### *6.2.1. The EU Countries*

The self-expression is the most valued in Sweden, the Netherlands, and Denmark (see *Appendix 4, Figure 10*). Also other EU-15 countries rank high in this component. However, in the EU-10 countries, the survival values are espoused more than the self-expression. It can be observed that the self-expression values tend to be more supported in the richer countries, while the relatively poorer countries, like the EU-10, tend to support the self-expression less and more the survival values. Thus, it is not a surprise that the Baltic States are among the countries who value the survival values rather than the self-expression.

### *6.2.2. The Capitals of the Baltic States*

In Latvia, the self-expression values are valued the least. Lithuania and Estonia also have a similar position, being among the top four bottom-ranked countries. To estimate the possible position among the capitals, the authors use the GDP per capita. The highest GDP per capita is in the Harju County in Estonia (see *Table 10*); thus Tallinn is estimated to have the highest support of the self-expression values among the capitals. However, the difference according

to the GDP per capita in Riga and Vilnius has decreased according to the county estimates. Thus, taking into account that the GDP level is fairly similar, the authors estimate similar level of the acceptance of the survival values in these two cities.

**Table 10: GDP per Capita in the Baltic States and Capitals, Current Prices, Euro, 2000 - 2004**

| | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|
| Latvia[1] | 3580 | 3958 | 4238 | 4291 | 4824 |
| Riga[1] | 6186 | 6752 | 7694 | 7600 | 8841 |
| Riga District[1] | 5446 | 5948 | 6698 | 6653 | 7670 |
| Estonia[2] | 4456 | 5070 | 5709 | 6275 | 6948 |
| Tallinn | - | - | - | - | - |
| Harju County[2] | 6701 | 7665 | 8693 | 9668 | 10864 |
| Lithuania[3] | 3545 | 3908 | 4336 | 4750 | 5271 |
| Vilnius | - | - | - | - | - |
| Vilnius County[3] | 4709 | 5304 | 6215 | 6835 | 7559 |

*Source:* European Commission, 2007, March 29; and 1 - calculated, using data from Central Statistical Bureau of Latvia, 2007, May 11b; 2 – calculated, using data from Statistics Estonia, 2006, October 16; and 3 – Statistics Lithuania, 2006, December 4.

## 6.3. The Immigration Score

According to the Immigration Score (see *Appendix 4, Figure 10*), the most positive attitude towards immigrants are in the Scandinavian countries – Finland, Sweden, and Denmark. Luxembourg, France and Netherlands also rank among the top countries by the Immigration Score.

Interesting is the fact that Poland ranks as the country with the most positive attitude towards the immigrants among the EU-10 countries. Estonia has the tenth position in the Immigration Score, and Latvia and Lithuania have the sixteenth and seventeenth positions.

According to the Immigration Score, Cyprus, Greece, and Malta have the least positive attitude towards the immigrants in the EU.

Due to the lack of other comparable and reliable data, the authors assume that the total countries represent the situation in the capitals. Thus, Tallinn is estimated to have the most positive attitude towards the immigration in the Baltic States. Riga is estimated to be the second city, and Vilnius as the third. Due to the fact that the difference between the score of Latvia and Lithuania is rather small, that the difference between Riga and Vilnius is estimated to be rather small.

## 6.4. Conclusions

Considering all the Tolerance indicators Sweden and Denmark are the most tolerant countries (see *Appendix 4, Table 16*). The Netherlands and Finland also rank high in the Tolerance indicators in comparison with the other EU countries.

The position of the Baltic States in the EU context is in the middle. The biggest issue of these countries is the Self-Expression Index, which is lowest in the Baltic States. However, the other Tolerance indicators are among average in the EU. Estonia is assumed to be the most tolerant among the Baltic States; whereas, the position of Latvia and Lithuania is rather similar (see *Table 11*).

Among the capitals of the Baltic States, Tallinn is the most tolerant according to all three indicators. Riga and Vilnius, the same as Latvia and Lithuania, have rather equal position in the Tolerance indicators.

**Table 11: Tolerance Ranking for the Baltic States and Capitals**

| | Value Rank | Self-Expression Rank | Immigration Score Rank |
|---|---|---|---|
| Latvia | 3 | 3 | 2 |
| Riga | 3 | 2 | 2 |
| Estonia | 1 | 2 | 1 |
| Tallinn | 1 | 1 | 1 |
| Lithuania | 2 | 1 | 3 |
| Vilnius | 2 | 2 | 3 |

*Note:* Ranking in each of the measures is assigned according to the results from the Value Index (see *Section 6.1.2.*), the Self-Expression Index (see *Section 6.1.2.*), and the Immigration Scale (see *Section 6.1.3.*) measures. 1 means the highest rank, 3 – the lowest.

# 7. DEVELOPMENT STRATEGIES OF THE CAPITALS

The city councils have prepared the long-term development strategies of the capitals of the Baltic States. Although, often strategies on the paper do not reflect the same than the real life action, the authors think that it is still a good indication of the main directions and intentions of the cities. However, it is crucial to note that a city vision may reveal the possible way how the city will develop in the future and may send very important message to the potential investors as well as citizens.

## 7.1. Riga

"Riga – opportunity for everyone!" That is the vision of Riga (Riga City Council, 2005, p.10). Three main pillars are chosen for the urban development and built around the local inhabitants, Rigans, in the centre – economy, urban environment and society (Riga City Council, 2005). As a result, the following three priority strategic goals are determined:

- (1) "Educated, skilled, culture-respecting society";
- (2) "East-West link based development of economy";
- (3) "Living in high-quality urban neighbourhoods" (Riga City Council, 2005, p.23).

Besides the priority strategic goals, there are several goals for each of the three main pillars. The following strategic goals are determined for the social area: well-provided society, healthy and active society, family-oriented society, socially supported and well-cared society, mentally rich society, and informed society (Riga City Council, 2005).

Although the main emphasis is based on the service sector to become the gateway of the EU to the Eastern market in the Baltic Sea region, other strategic goals are also set (Riga City Council, 2005). One of the goals is to develop high added value economy by facilitating "the development of creative industries", developing "science and technology parks and facilitate communication on intersection level", and facilitating "the cooperation between science-consuming institutions and entrepreneurs" (Riga City Council, 2005, p.39-10).

To address the pillar of urban development, the following strategic goals are set: comfortable and quickly accessible city, clean and green city, safe urban environment, and city with qualitative housing (Riga City Council, 2005).

The current development plan emphasizes the need to improve living condition of the Rigans via educating them, thus ensuring better work opportunities, providing better urban environment and developing economy in order to increase the welfare of the inhabitants.

The current goals are aimed to improve the quality of place; thus contributing to the people's climate. However, the ideas of the Creative Class are rather not included in the

development strategy of Riga. If the economic development via the creative industries is mentioned, then the issue of the Creative Class and how to use it for the economic development is not addressed. There are strong emphasizes on the importance of the geographical location of Riga and its position as a historical gateway to the East.

### 7.2. Tallinn

The development plan of Tallinn sets the following main aims:

- (1) "Economic environment which fosters business, attracts investments and supports modernisation of economic structures";
- (2) "Extensive choice of quality cultural services for the population of Tallinn and tourists";
- (3) "Optimal network of education, quality education and more child and youth-friendly living environment";
- (4) "Opportunities for all citizens of Tallinn to live a life which is worth living and safe"
- (5) "The surrounding environment is acceptable to the citizens, conductive to life and offering positive emotions";
- (6) "Active city institutions offering quality services" (Tallinn City Council, 2005, October 6).

The city strategy explains how to achieve these objectives in details. The first aim of the development plan of Tallinn suggests the need of the business climate for the economic growth. The plan sets to create a favourable environment for business to increase the economic activity by several ways, i.e., small business incubators and business support (Tallinn City Council, 2005, October 6). Furthermore, similar to Riga, Tallinn also aims to exploit the geographic location as a mediator between East and West. The development strategy indicates the need to diversify the business climate by combining the advanced service sector with industry sector, which are based upon the high technology.

Although the other five aims set to improve the quality of the city, there is no reflection of the Creative Class ideas in the development plan of Tallinn. Nevertheless, it is hard to find any related objective in terms of diversity or tolerance; whereas, the main emphasis is to improve the standards of living.

### 7.3. Vilnius

According to its development strategy to the year of 2020, the long term vision of Vilnius is to be "the most modern city in central and Eastern Europe, and international centre of

politics, business, science and culture" (Vilnius City Council, n.d.). The modernity of Vilnius is based on "a new economy, developed by an advanced society that lives in a distinct environment" (Vilnius City Council, n.d.).

Four priorities of the development strategy of Vilnius are following:

- (1) "Increasing the international competitiveness of Vilnius";
- (2) "Developing a new economy";
- (3) "Creating and advanced society";
- (4) "Developing the transportation and engineering infrastructure" (Vilnius City Council, n.d.).

The main goal of the first priority is to build a particular image of Vilnius – a city with knowledge economy, and attractive centre (Vilnius City Council, n.d.). Furthermore, the development plan of Vilnius sets to base the second priority on two objectives: (1) "to create favourable conditions for the development of a knowledge economy" by facilitating the partnership between scientific research institutions and businesses, and developing the IT clusters; (2) "to ensure a favourable environment for business and investments" (Vilnius City Council, n.d.).

In order to create the advanced society, the Vilnius Council plans to stimulate education and training in the IT, "to create a safe social environment", "to improve housing and living environment", and "to develop the social infrastructure" (Vilnius City Council, n.d.).

In conclusion, Vilnius' long term development strategy covers both the business and the people's climate and the basic assumption of the Creative Class Theory in terms of the 3T interrelation. New economy refers to Technology. Advanced society is associated with Talent, and distinct environment with Tolerance.

## 7.4. Conclusions

It is not surprise that all Baltic capitals' long term development strategies mention their geographical and historical importance for the East and West relations; relatively Riga attaches more emphasizing on it. Vilnius regards it as a tremendous advantage for diversity. In other words, in order to stimulate the economic development and growth in long-term, all cities agree upon the importance of their location and willingness to benefit from it by attracting the local and foreigner investors to their cities. Thus, according to the city councils, the business climate is perceived as the most important objective. When it comes to the people's climate once again the development strategies set clearly the objectives for improving the quality of life of the citizens, mostly by increasing the standards of living. Important parts of all strategies are the improvement of the quality of cities and living

conditions and these improvements seem rather an attempt to ensure decent and competitive living conditions according to the Western standards. However, apart from Vilnius, none of the development strategies of the Baltic States are directly addressing the issues that are suggested by the Creative Class Theory.

# 8. CONCLUSIONS

The aim of this study was to assess the current status of the capitals of the Baltic States according to the Creative Class Theory. In order to assess the competitiveness according to the Creative Capital Theory, three components were used – Talent, Technology, and Tolerance. From the study, the authors find that currently Tallinn is the most competitive city among the three capitals, because it has the leading position in two components – Technology and Tolerance. Vilnius is the second most competitive city; and Riga is the least competitive among the capitals of the Baltic States according to the Creative Class Theory.

The Baltic States and their capitals have relatively high proportion of Talent in comparison with the other EU countries, in terms of the Human Capital and the Creative Class measures. Thus, the authors conclude that Riga, Tallinn and Vilnius have competitive proportion of the Creative Class. Vilnius has the largest share of the Creative Class among the capitals; Tallinn is the second, and Riga is the third.

Nevertheless, the level of the Super-Creative Core in the field of science, i.e., the Scientific Talent, is uncompetitive among the other EU countries. This finding implies that despite the fact that the capitals of the Baltic States have the high level of the Creative Class, the contribution of the Creative Class may be still lower than the contribution of the smaller size of the Creative Class with larger proportion of the Super Creative Core. This conclusion is based on the assumption that the Super-Creative Core differs from the Creative Professionals with higher application of the creativity. As a result, the impact of one representative of the Super-Creative Core is higher in terms of the economic development than the impact of one Creative Professional. Vilnius has the highest amount of the Super Creative Professionals. Riga is by far uncompetitive in this measure. Therefore, taking into account both the level of the Scientific Talent and the Creative Class, Vilnius is the most competitive city among the capitals of the Baltic States according to Talent. Tallinn ranks as the second; and Riga has the third position. In order to increase the impact of the Creative Class, the cities need to increase the level of the Super-Creative Core, particularly, in the field of science.

Considering the second component, Technology, the authors conclude that the Baltic countries are rather uncompetitive among the EU countries. Tallinn is the most competitive capital among the Baltic capitals according to Technology, Vilnius is the second, and Riga obviously is the last.

According to Tolerance, the Baltic States are average among the EU countries. The level of Tolerance partly can be explained with the welfare of the country or city, due to the fact that

the people with lower income tend to be less tolerant, while the wealthy people tend to more tolerant. Although it takes long time to change the values and attitudes, some changes to the level of Tolerance can be expected with the increase in the wealth. Tallinn is the most tolerant city among the capitals of the Baltic States; the tolerance level in Riga and Vilnius is fairly similar.

From the case of the capitals of the Baltic States, the authors conclude that the main components that should be improved are Technology and Tolerance. According to Florida, Talent per se is not sufficient factor for economic development, all 3Ts are needed. The authors find two possible explanations of the low level of Technology despite high level of the Creative Class in the capitals of the Baltic States in the critique of the Creative Class Theory (see *Section 2.3*). Scott points out that it is not enough to bring the creative people in one place and assume that the interaction will take place. Thus, the lack of Technology might indicate the missing interrelations among the Creative Class needed to activate "entrepreneurial and cultural energies" (Scott, 2006, p.11). The study of Hansen, Vang, and Asheim indicates that actually the most knowledge based industries need the business climate to develop. Hence, the lack of the business climate may be a reason for the low level of Technology. Both approaches imply the need of the business climate to develop technology. As a result, the authors conclude that, although the Talent has an important role in the development of the Technology, certain level of the starting Technology is a necessity, before the Creative Class can contribute to the technological development. After reaching this certain level, the contribution of the Creative Class translates into the economic growth; thus, the people's climate becomes a tool to boost the economic development. As a result, support from the local authorities to create the attractive business climate could actually be the solution for the development of Technology in the Baltic States.

The relation between Technology and Tolerance is reciprocal. As already mentioned in the presentation of the Creative Class Theory (see *Section 2.1.*), Tolerance contributes to the Technology, because places that are tolerant tend to support entrepreneurship, innovation and creativity. All these processes can contribute to the economic development, but also require experimentation and tolerance to failures. However, this study concludes that a part of the Tolerance is affected by the welfare of the place; thus with increase in income, the level of Tolerance will also increase to some degree. In the case of the capitals of the Baltic States, relatively low income level is the partly explanation of the low level of Tolerance in comparison with the leading EU countries. Thus, increasing income by developing the Technology should lead to increase in Tolerance.

After investigating the long term development strategies of Riga, Tallinn, and Vilnius, the authors conclude that the development strategy of Riga is missing an important part in the business' climate focus. Considering the low level of Technology in Riga in comparison with the other capitals, investments to establish the interrelations among the different parties or the business climate would result in the increase of Technology, which further would contribute to the economic development. On contrary, the development plans of Vilnius and Tallinn set to build the necessary business climate for increasing Technology. What is more, the long term development strategy of Vilnius also sets more concrete objectives for the people's climate. According to the development strategies, all three cities plan to invest in improving the quality of the cities. Such investments can have two positive effects. First, improvement of the quality of place might result in higher Tolerance due to better living conditions. Second, improvement of the quality of place might attract the Creative Class to these cities. However, they might make the mistake by investing city allocations into spectacular buildings, stadiums, sport halls, artificially created public amenities etc. In particular, such tendencies are obvious in the Tallinn's development strategy. Interestingly, the development plan of Riga aims to strengthen the family values in the city; however such values might be opposite to the values of the Creative Class, which espouse more individuality and self-expression. Moreover, the family values belong to the traditional values; thus tend to reflect less tolerance.

The Creative Class Theory is an attempt to look at the factors affecting the economic growth in the New or Knowledge-Based Economy. After using the theory as an underlying model for the study, the authors find the Creative Class Theory both challenging and useful. As most of theories, the Creative Class Theory is a simplified version to explain the reality; however, the reality is more complex than the theory can explain. Finally, the results are highly dependent on the measures; however, to find appropriate measures for all the three components, i.e., 3Ts, is a challenging task.

# 9. IMPLICATIONS

The findings of this study imply that in the current situation, Tallinn should have the highest economic growth, and Riga should have the lowest.

For the city authorities, the study implies that all three cities should increase the level of the Technology. This can be achieved via establishing opportunities for interrelation among the different parties, i.e., developing technology parks, investing in small and medium size enterprises, and business incubators, common projects between enterprises and research institutions. Ensuring the necessary business climate to attract the creative industries might be another way to increase the level of the Technology.

For the Riga Council, the findings of the study suggest to revise the long term strategy. First, it should consider revising the priority level of the development of high added value economy. Second, the Riga Council should reconsider the strategy to build the family values and take into account its relation to the economic development.

Finally, the findings of the study have following implications for the application of the Creative Class Theory. First, it is difficult to measure the three components of 3Ts – Talent, Technology, and Tolerance. Second, the Creative Class Theory suggests that Talent develops Technology, which further contributes to the economic growth. However, the 3Ts model suggests that Technology is one of the necessary factors that should be present. Thus, it is not clear what the minimal level of Technology is, below which Talent cannot contributed to the economic development. Third, the economic development may increase the level of Tolerance.

# 10. SUGGESTIONS FOR FURTHER RESEARCH

The authors indicate several areas that still need to be researched further. First, the exiting studies use different measures of Talent, Tolerance, and Technology; however, there is no comparative study, except the Human Capital comparison with the Creative Class measure, of different possible indicators.

Second, the Current Creative Class Theory does not suggest what the required minimum level of the three components is. Thus, currently the measures can be used as comparison of different locations; however does not explain how much further development is required. As a result, the Creative Class Theory is rather a tool for comparison than assessment of the clear, measurable current status. Hence, the study of the impact of different levels of 3Ts and their contribution to the economic development would add to the research of the Creative Class.

Third, more research should be done for the Baltic States. In order to obtain more precise idea of the characteristic of the Creative Class and its actual contribution to these countries, a qualitative study should be conducted.

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# APPENDICES

## Appendix 1: ISCO - 88

**ISCO-88 Major Groups 1 and 2**

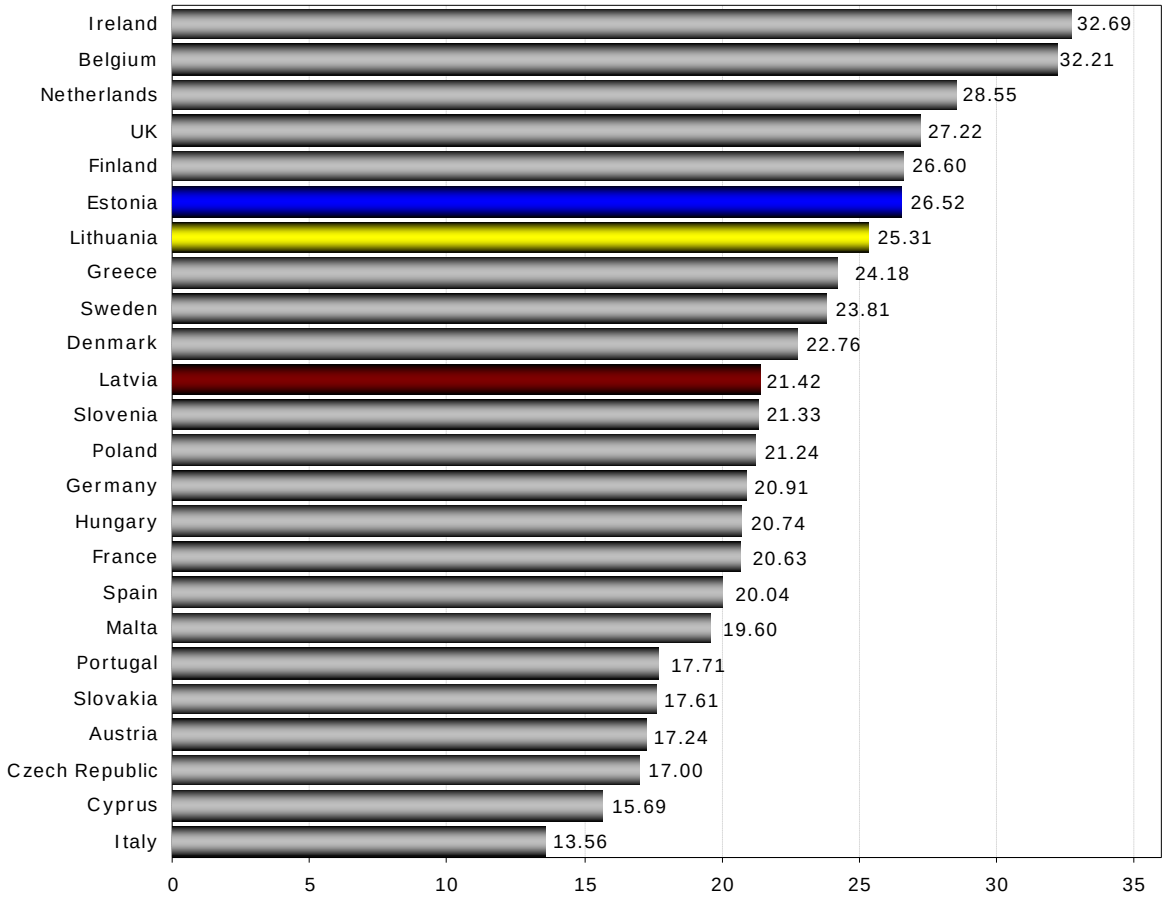
1 Legislators, senior officials and managers
- 11 Legislators and senior officials
  - 111 Legislators
  - 112 Senior government officials
  - 113 Traditional chiefs and heads of villages
  - 114 Senior officials of special-interest organizations
- 12 Corporate managers
  - 121 Directors and chief executives
  - 122 Production and operations department managers
  - 123 Other department managers
- 13 General managers
  - 131 General managers

2 Professionals
- 21 Physical, mathematical and engineering science professionals
  - 211 Physicists, chemists and related professionals
  - 212 Mathematicians, statisticians and related professionals
  - 213 Computing professionals
  - 214 Architects, engineers and related professionals
- 22 Life science and health professionals
  - 221 Life science professionals
  - 222 Health professionals (except nursing)
  - 223 Nursing and midwifery professionals
- 23 Teaching professionals
  - 231 College, university and higher education professionals
  - 232 Secondary education teaching professionals
  - 233 Primary and pre-primary education teaching professionals
  - 234 Special education teaching professionals
  - 235 Other teaching professionals
- 24 Other professionals
  - 241 Business professionals
  - 242 Legal professionals
  - 243 Archivists, librarians and related professionals
  - 244 Social science and related professionals
  - 245 Writers and creative or performing artists
  - 246 Religious professionals

Source: ILO, n.d.a.

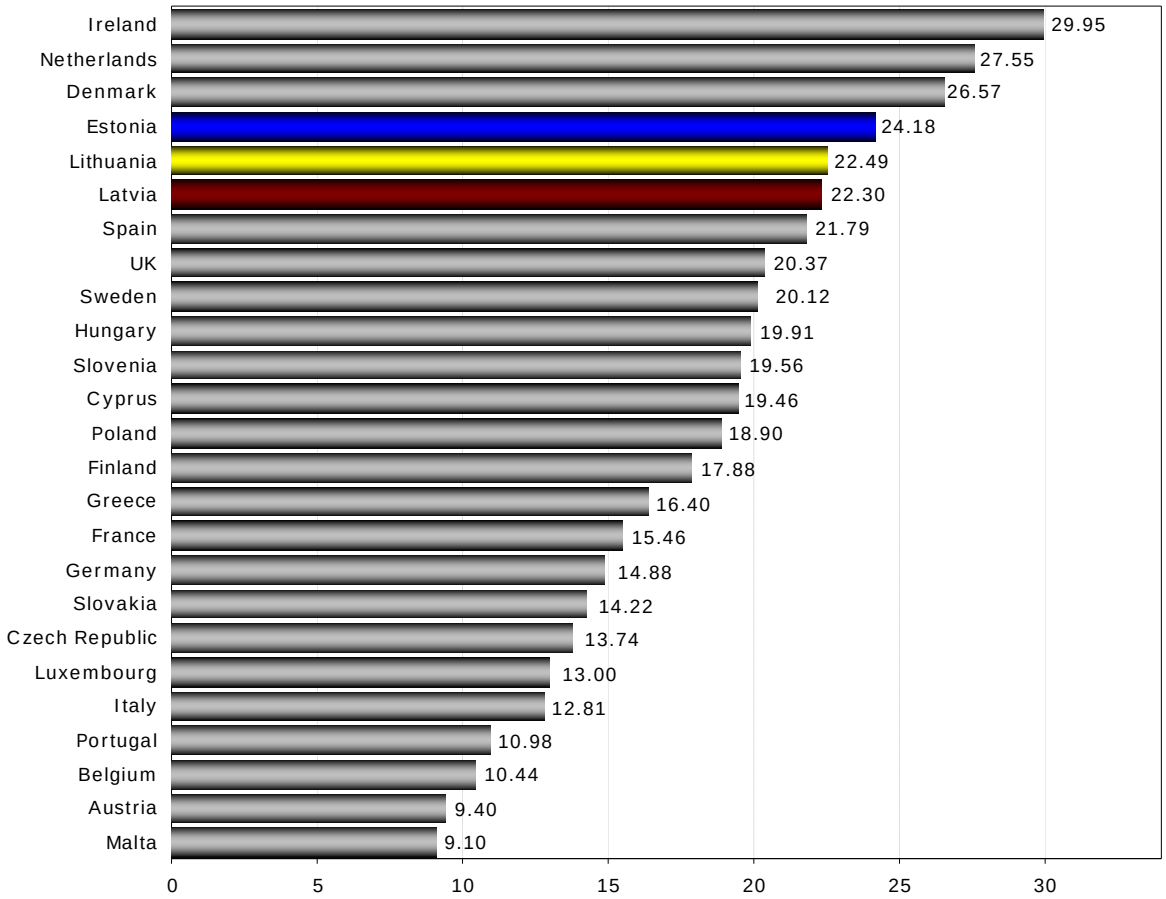
## Appendix 2: Talent

**Figure 3: Creative Class in the EU Countries**



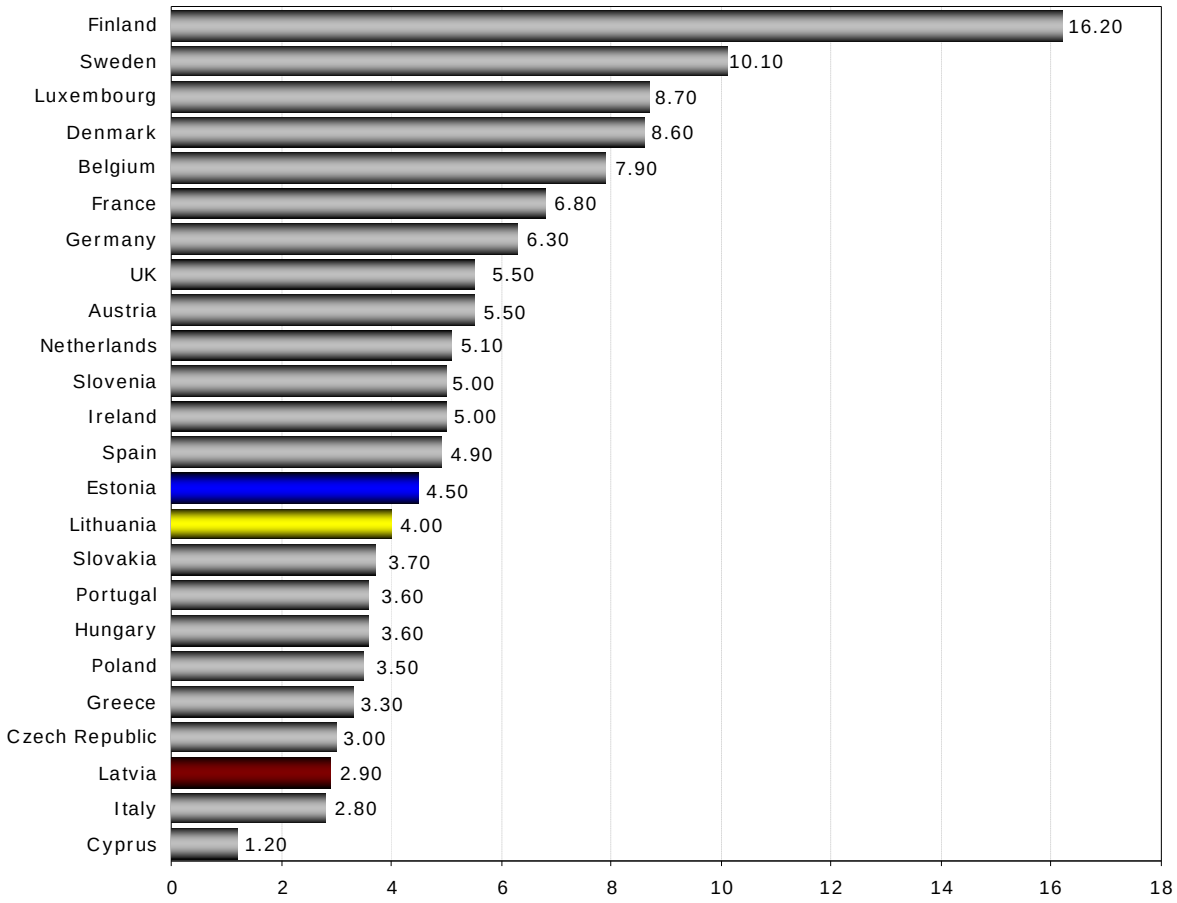

*Note:* Percentage of the Creative occupations from total economically active population. Data refer to 2004 for Germany, Italy, Spain, and Sweden; 2005 for all other countries. No data available for Luxembourg.
*Source:* calculated, using data from ILO, n.d. b.

**Figure 4: Human Capital in the EU Countries**




*Note:* Percentage of the economically active population with bachelor degree and higher. Data refers to 2005 for all countries, except, 2000 for Belgium; 2001 for Luxembourg; 2002 for Denmark and Malta; and 2004 for Germany and Slovenia.
*Source:* calculated, using data from ILO, n.d. c; for Lithuania calculated, using data from Statistics Lithuania, 2006.

**Figure 5: Scientific Talent in the EU Countries**




*Note:* Number of researchers per 1000 labor force. Data refer to 2003 for all countries, except, 1998 for UK; 2000 for Luxembourg; 2001 for Spain and Sweden; 2002 for France, Ireland, Italy, the Netherlands and Austria; and 2004 for Belgium. No data available for Malta.
*Source:* European Commission, 2005.

**Table 12: The Number of Researchers per Thousand of Labour Force by Sectors, per cent**

| | Sector | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|
| **Latvia** | Business enterprise sector | 26.09 | 19.53 | 19.56 | 14.49 | 13.48 | 14.26 |
| | Government sector | 17.36 | 16.33 | 15.91 | 16.14 | 14.74 | 17.95 |
| | Higher education sector | 56.53 | 64.11 | 64.50 | 69.37 | 71.75 | 67.76 |
| | Private non-profit sector | 0.03 | 0.03 | 0.03 | - | 0.03 | 0.03 |
| **Estonia** | Business enterprise sector | 10.28 | 15.33 | 15.17 | 16.74 | 19.62 | 26.51 |
| | Government sector | 20.97 | 17.64 | 15.14 | 15.84 | 14.43 | 14.23 |
| | Higher education sector | 67.74 | 65.80 | 68.32 | 65.43 | 64.17 | 57.19 |
| | Private non-profit sector | 1.01 | 1.23 | 1.37 | 1.99 | 1.78 | 2.07 |
| **Lithuania** | Business enterprise sector | 3.70 | 5.16 | 4.19 | 6.69 | 6.58 | 9.38 |
| | Government sector | 32.88 | 30.12 | 29.58 | 25.52 | 22.78 | 23.63 |
| | Higher education sector | 63.42 | 64.72 | 66.23 | 67.79 | 70.64 | 66.99 |
| | Private non-profit sector | - | - | - | - | - | - |

*Source:* calculated, using data from European Commission, 2007, January 9; and 1 – Central Statistical Bureau of Latvia, 2007, February 23e; 2 – Statistics Estonia, 2007, March 27b; 3 – Statistics Lithuania, 2006,December 29.

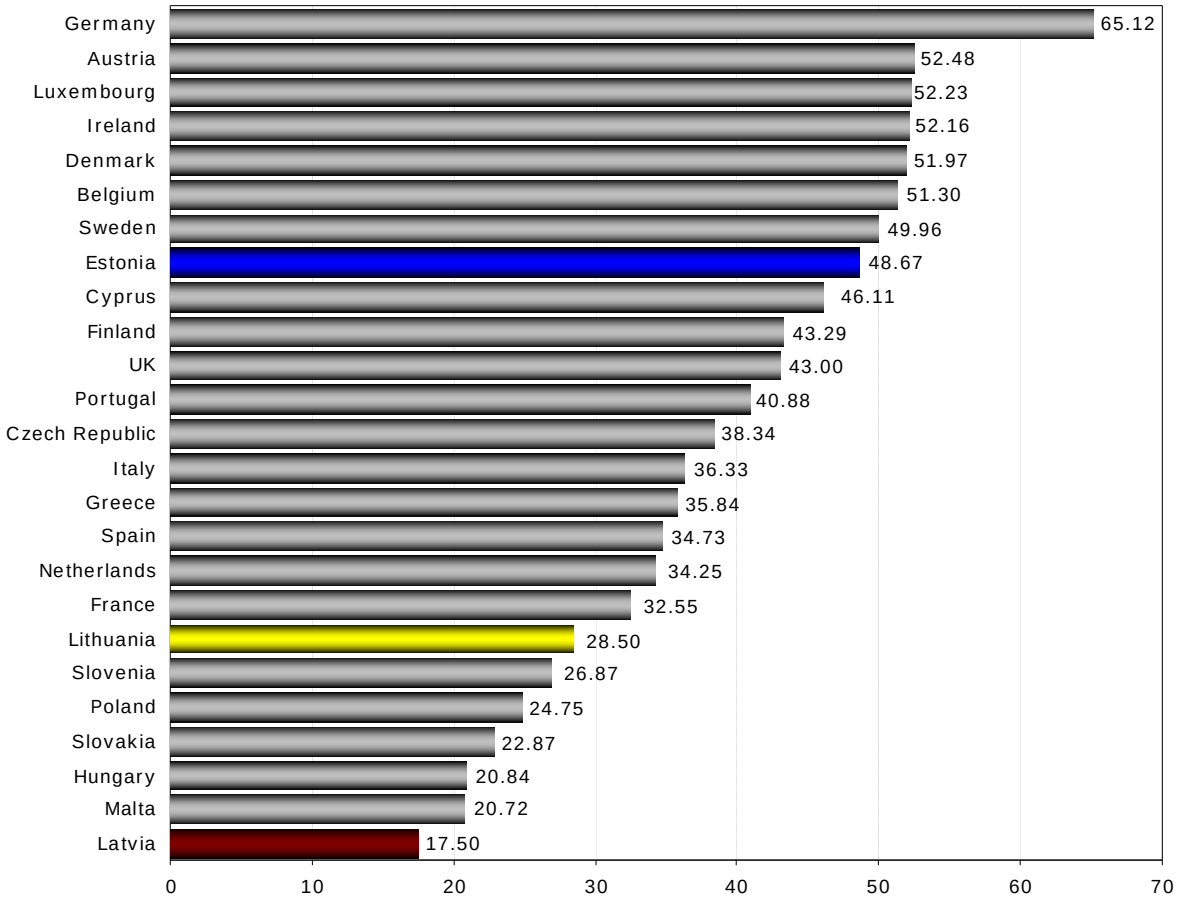
**Table 13: Talent Ranking for the EU Countries**

| | Creative Class Rank | Human Capital Rank | Scientific Talent Rank |
|---|---|---|---|
| Austria | 21 | 24 | 8 |
| Belgium | 2 | 23 | 5 |
| Cyprus | 23 | 12 | 24 |
| Czech Republic | 22 | 19 | 21 |
| Denmark | 10 | 3 | 4 |
| Estonia | 6 | 4 | 14 |
| Finland | 5 | 14 | 1 |
| France | 16 | 16 | 6 |
| Germany | 14 | 17 | 7 |
| Greece | 8 | 15 | 20 |
| Hungary | 15 | 10 | 17 |
| Ireland | 1 | 1 | 11 |
| Italy | 24 | 21 | 23 |
| Latvia | 11 | 6 | 22 |
| Lithuania | 7 | 5 | 15 |
| Luxembourg | n.a. | 20 | 3 |
| Malta | 18 | 25 | n.a. |
| Netherlands | 3 | 2 | 10 |
| Poland | 13 | 13 | 19 |
| Portugal | 19 | 22 | 18 |
| Slovakia | 20 | 18 | 16 |
| Slovenia | 12 | 11 | 12 |
| Spain | 17 | 7 | 13 |
| Sweden | 9 | 9 | 2 |
| UK | 4 | 8 | 9 |

*Note:* Ranking in each of the measures is assigned according to the results from the Creative Class (see *Figure 3*), Human Capital (see *Figure 4*) and Scientific Talent (see *Figure 5*) measures. 1 means the highest rank, 3 – the lowest.

## Appendix 3: Technology

**Figure 6: The Innovation Activities in the EU Countries, 2004**



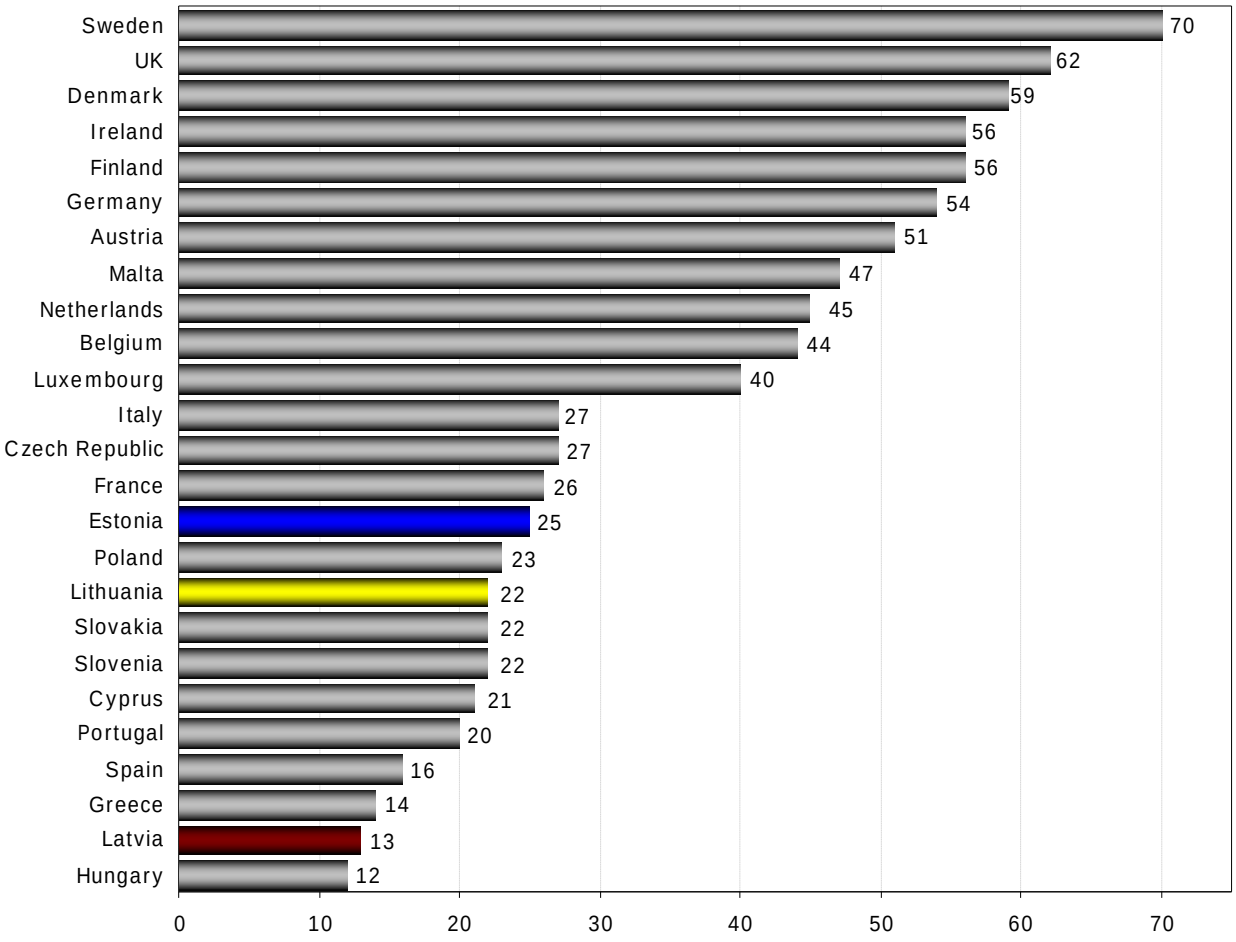

*Note:* Per cent of enterprises with innovation activities
*Source:* European Commission, 2007, February 13.

**Table 14: The Innovation Activities and the Share by Activities in the Baltic Sates and the Capitals, 2004**

| | Latvia | | | | Estonia | | | | Lithuania | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Per cent of enterprises with innovation activities[1] | Per cent of enterprises by activity[2] | | Enterprises in Vilnius, as per cent from total Latvia[2] | Per cent of enterprises with innovation activities[1] | Per cent of enterprises by activity[3] | | Enterprises in Vilnius, as per cent from total Estonia[3] | Per cent of enterprises with innovation activities[1] | Per cent of enterprises by activity[4] | | Enterprises in Vilnius, as per cent from total Lithuania[4] |
| | | Latvia | Riga | | | Estonia | Tallinn | | | Lithuania | Vilnius | |
| Total | 17.50 | 100.00 | 100.00 | 58.26 | 48.67 | 100.00 | 100.00 | 53.54 | 28.50 | 100.00 | 100.00 | 27.02 |
| Industry | 17.43 | 12.53 | 10.34 | 48.11 | 46.94 | 13.81 | 9.96 | 38.61 | 21.15 | 12.04 | 11.18 | 25.09 |
| Construction | - | 6.53 | 6.96 | 62.06 | - | 8.07 | 7.62 | 50.52 | 19.33 | 4.57 | 5.67 | 33.56 |
| Wholesales and retail trade, repair of motor vehicles, motorcycles and personal and household goods | - | 39.51 | 38.64 | 56.97 | - | 36.26 | 37.19 | 54.91 | 17.93 | 29.26 | 29.26 | 27.02 |
| Hotels and restaurants | - | 4.90 | 4.61 | 54.86 | - | 3.83 | 3.24 | 45.27 | - | 3.66 | 3.67 | 27.08 |
| Transport, storage and communication | 12.20 | 7.28 | 7.02 | 56.18 | 32.61 | 7.49 | 6.62 | 47.29 | 16.44 | 8.46 | 7.82 | 24.96 |
| Financial intermediation | 42.25 | - [5] | - [5] | - | 74.72 | 1.15 | 1.62 | 75.47 | 52.25 | 0.76 | 1.39 | 49.64 |
| Real estate, renting and other business activities | 24.77 | 18.23 | 23.31 | 74.46 | 53.53 | 23.24 | 27.68 | 63.79 | 45.52 | 12.16 | 20.34 | 45.19 |
| Other kinds of activities | - | 11.02 | 11.02 | 48.20 | - | 6.14 | 6.07 | 52.95 | - | 29.09 | 20.67 | 19.19 |

*Note:* Classification according to NACE rev. 1.1; 5 – Financial intermediation enterprises included in other kinds of activities.
*Source:* 1- European Commission, 2007, February 13; 2 – calculated, using data from Central Statistical Bureau of Latvia, 2007, March 9b; 3 - calculated, using data from Statistics Estonia, 2007, March 26; 4 – calculated, using data from Statistics Lithuania, 2006, June 27.

**Figure 7: E-commerce in the EU Countries**




*Note:* Per cent of enterprises (with 10 employed persons and more) which have ordered via Internet during the year, excluding manually typed e-mails. All sectors included, except financial sector.
*Source:* European Commission, 2007, April 10.

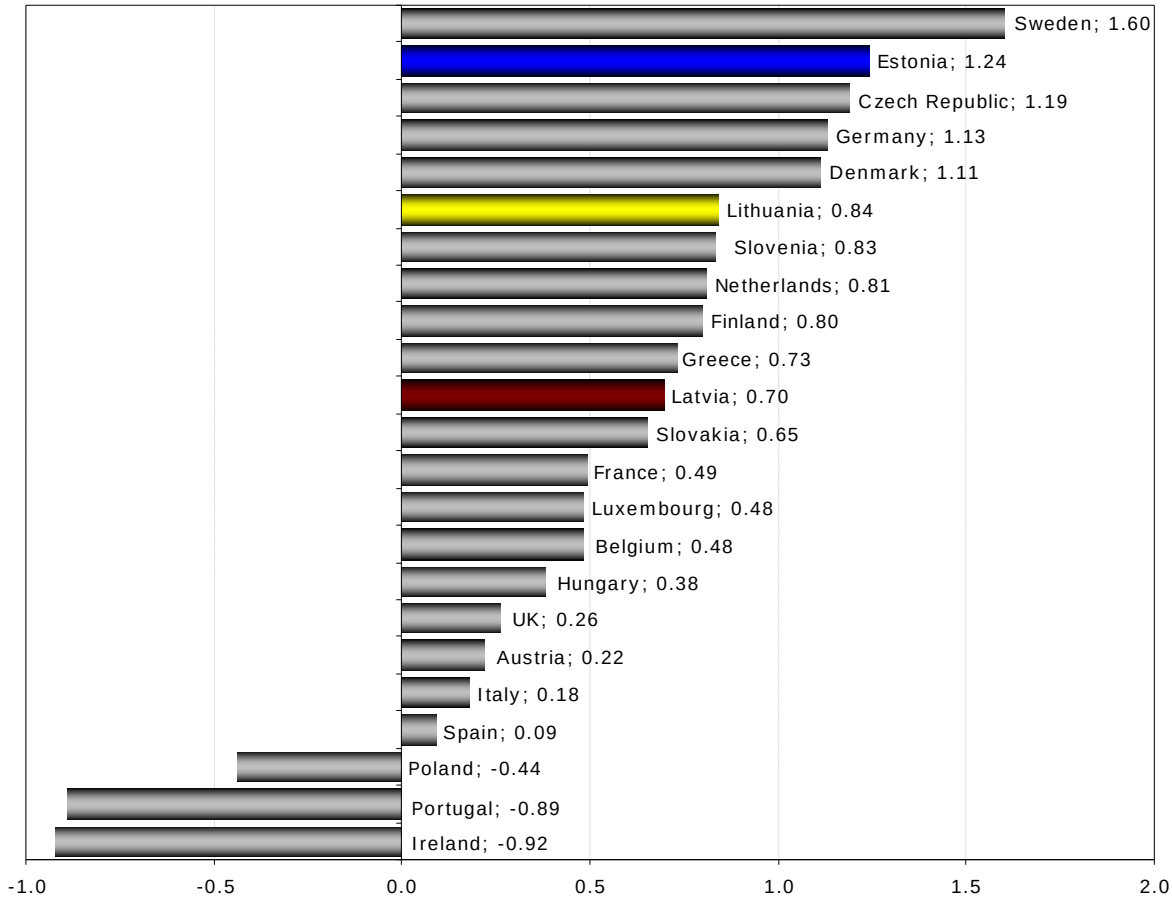
**Table 15: Technology Ranking for the EU Countries**

| | Innovation Activity Rank | E-commerce Rank |
|---|---|---|
| Austria | 2 | 7 |
| Belgium | 6 | 10 |
| Cyprus | 9 | 20 |
| Czech Republic | 13 | 13 |
| Denmark | 5 | 3 |
| Estonia | 8 | 15 |
| Finland | 10 | 5 |
| France | 18 | 14 |
| Germany | 1 | 6 |
| Greece | 15 | 23 |
| Hungary | 23 | 25 |
| Ireland | 4 | 4 |
| Italy | 14 | 12 |
| Latvia | 25 | 24 |
| Lithuania | 19 | 17 |
| Luxembourg | 3 | 11 |
| Malta | 24 | 8 |
| Netherlands | 17 | 9 |
| Poland | 21 | 16 |
| Portugal | 12 | 21 |
| Slovakia | 22 | 18 |
| Slovenia | 20 | 19 |
| Spain | 16 | 22 |
| Sweden | 7 | 1 |
| UK | 11 | 2 |

*Note:* Ranking in each of the measures is assigned according to the results from the Innovation Activity (see *Figure 6*), and E-commerce (see *Figure 7*) measures. 1 means the highest rank, 3 – the lowest.

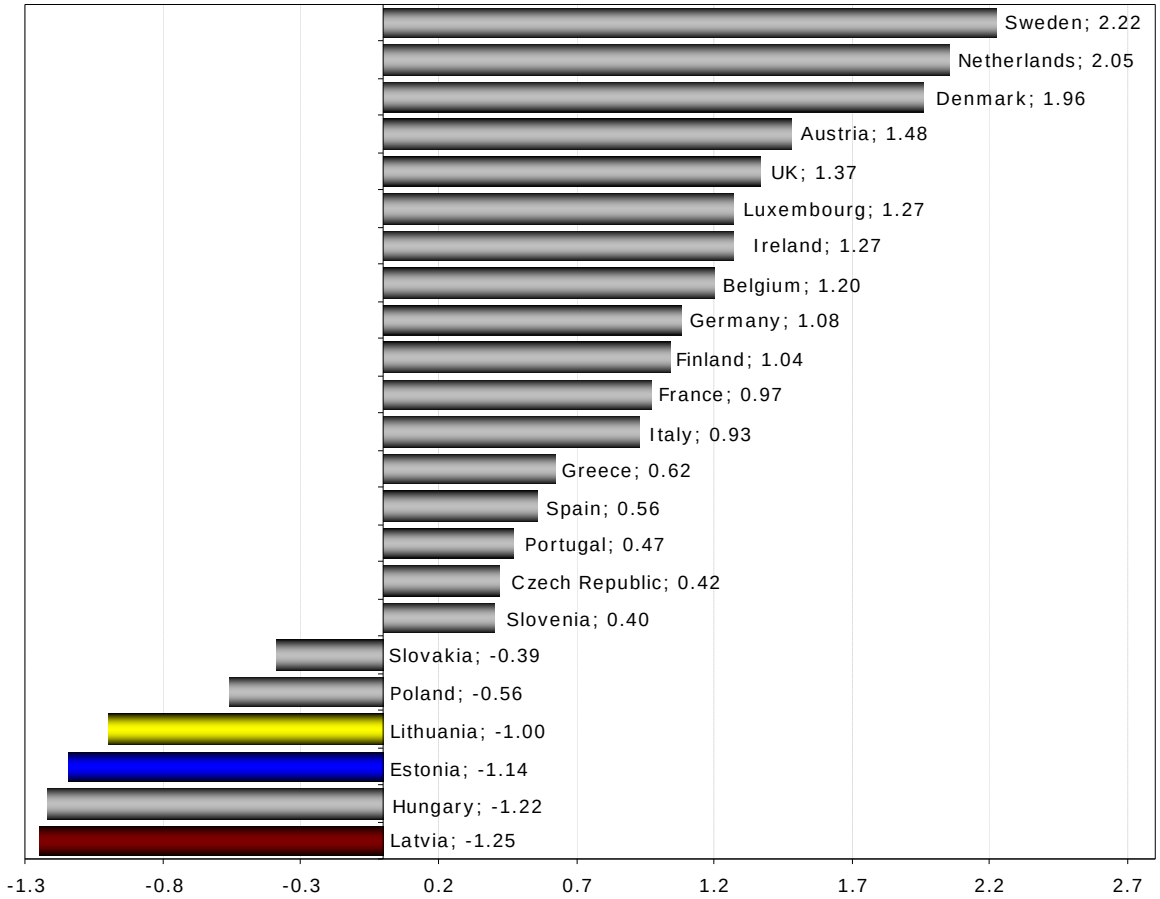
## Appendix 4: Tolerance

**Figure 8: The Value Index for the EU Countries**



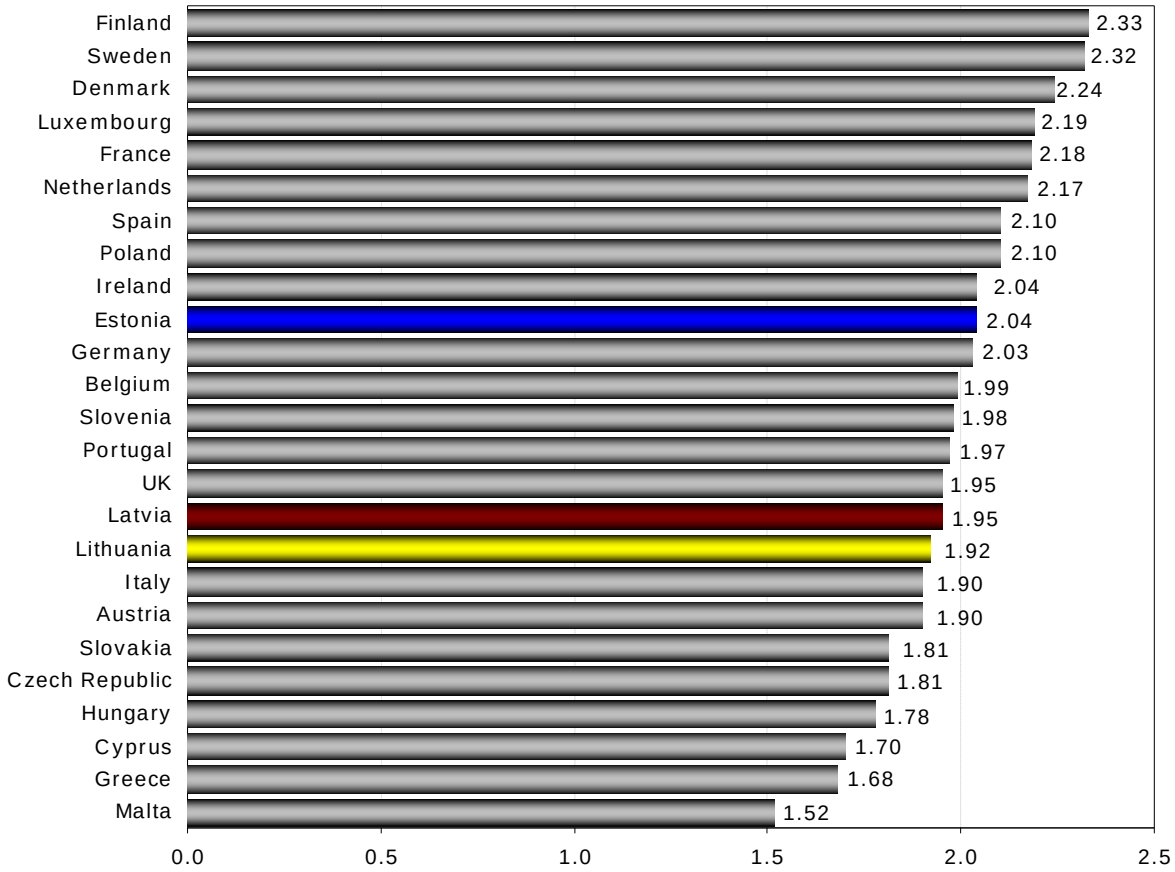

*Note:* The highest positive score means the highest acceptance of modern values; whereas the lowest score means the highest acceptance of traditional values. No data available for Cyprus and Malta.
*Source:* Florida, 2005; Inglehart, n.d.

**Figure 9: The Self-Expression Index for the EU Countries**




*Note:* The highest positive score means the highest acceptance of self-expression values; whereas the lowest score means the highest acceptance of survival values. No data available for Cyprus and Malta.
*Source:* Florida, 2005; Inglehart, n.d.

**Figure 10: The Immigration Scale for the EU Countries**




*Note:* Data refers to 2006.
*Source:* European Commission, 2007, February.

**Table 16: Tolerance Ranking for the EU Countries**

| | Value Rank | Self-Expression Rank | Immigration Score Rank |
|---|---|---|---|
| Austria | 18 | 4 | 19 |
| Belgium | 15 | 8 | 12 |
| Cyprus | n.a. | n.a. | 23 |
| Czech Republic | 3 | 16 | 21 |
| Denmark | 5 | 3 | 3 |
| Estonia | 2 | 21 | 10 |
| Finland | 9 | 10 | 1 |
| France | 13 | 11 | 5 |
| Germany | 4 | 9 | 11 |
| Greece | 10 | 13 | 24 |
| Hungary | 16 | 22 | 22 |
| Ireland | 23 | 7 | 9 |
| Italy | 19 | 12 | 18 |
| Latvia | 11 | 23 | 16 |
| Lithuania | 6 | 20 | 17 |
| Luxembourg | 14 | 6 | 4 |
| Malta | n.a. | n.a. | 25 |
| Netherlands | 8 | 2 | 6 |
| Poland | 21 | 19 | 8 |
| Portugal | 22 | 15 | 14 |
| Slovakia | 12 | 18 | 20 |
| Slovenia | 7 | 17 | 13 |
| Spain | 20 | 14 | 7 |
| Sweden | 1 | 1 | 2 |
| UK | 17 | 5 | 15 |

*Note:* Ranking in each of the measures is assigned according to the results from the Value Index (see *Figure 8*), the Self-Expression Index (see *Figure 9*) and the Immigration Score (see *Figure 10*) measures. 1 means the highest rank, 3 – the lowest.