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ESTIMATION OF THE ENTERPRISES NUMBER IMPACT ON GROSS DOMESTIC PRODUCT IN THE BALTIC STATES AS A FACTOR OF INVESTMENT ATTRACTIVENESS OF THE REGION

Using the research methods of investment attractiveness assessment, the paper investigates the impact of the number of enterprises in the Baltic States on their GDP. The enterprises are classified within the system of the EU regulations.
Keywords: investment attractiveness; small, medium-sized and large enterprises; gross domestic product; Baltic States; correlation analysis.

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ВПЛИВ КІЛЬКОСТІ ПІДПРИЄМСТВ НА ВАЛОВИЙ ВНУТРІШНІЙ ПРОДУКТ КРАЇН БАЛТІЇ ЯК ЧИННИК ІНВЕСТИЦІЙНОЇ ПРИВАБЛИВОСТІ РЕГІОНУ

У статті, використано методи оцінювання інвестиційної привабливості регіонів для виміру впливу кількості підприємств у країнах Балтії на рівень валового внутрішнього продукту. Підприємства класифіковано відповідно до правил ЄС.
Ключові слова: інвестиційна привабливість; малі, середні та великі підприємства; валовий внутрішній продукт; країни Балтії; кореляційний аналіз.
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ВЛИЯНИЕ КОЛИЧЕСТВА ПРЕДПРИЯТИЙ НА ВАЛОВОЙ ВНУТРЕННИЙ ПРОДУКТ СТРАН БАЛТИИ КАК ФАКТОР ИНВЕСТИЦИОННОЙ ПРИВЛЕКАТЕЛЬНОСТИ РЕГИОНА

В статье, используя методы оценки инвестиционной привлекательности регионов, оценено влияние количества предприятий стран Балтии на уровень валового внутреннего продукта. Предприятия классифицированы в соответствии с правилами ЕС.
Ключевые слова: инвестиционная привлекательность; малые, средние и крупные предприятия; валовой внутренний продукт; страны Балтии; корреляционный анализ.

Problem setting. Assessment of investment attractiveness of a region in almost all methods is linked to the social dynamics in a region, specifically, to the employment market, living standards of population, qualifications of employees in all fields of regional economic activities. In this paper, the number of enterprises was used as an indicator of investment activities of a region to show the investment attractiveness. This paper also demonstrates that the size of an enterprise — small, medium or large — has an effect on the investment attractiveness of regions. Thus, when intending to invest financial resources into a region, an investor should consider the size of its enterprises because this has an effect on the economy of the region and the country in general.

Analysis of recent research trends and publications. One of the topical issues for the countries all over the world remains the development of economic regional policies in its close connection to the assessment of investment attractiveness of regions.

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Early stages of the development of investment theory have embraced the contributions of such prominent economists as A. Marshall (2010), F. Najt (1999), V. Repke (1950), J. Hick (1989), M. Freedman (1962), U. Sharp (2001), I. Fisher (1996) etc. However, foreign methodologies that deserve particular attention have been developed by F. Kotler (2010), Cook and Simon J. (2009), the representatives of the Harvard Business School. R. Barrell and N. Pain (1999) presented their research outcomes on the EU FDI in their book "*Foreign Direct Investment, Technological Change, and Economic Growth within Europe*".

These are not the only works reflecting on the indicators that are used to determine the investment attractiveness of regions. In fact, this subject has yielded an impressive selection of literature.

The research objective. Using the econometric methods, the paper aims both to demonstrate the effect of enterprises size on the levels of GDP and to suggest that enterprises size can be used as a factor of investment attractiveness assessment in the Baltic States.

Key research findings. Currently, the issue of attracting investments into a real sector of the economy is becoming topical because many countries need investment inflows to overcome the recession. Investments are acquiring a function of a kind of bail for economic survival. The adequacy of real-life investment decisions, made during different stages of investment, depends on the understanding of the investment processes logic. One of the most important and responsible investment aspects is the choice of a region for financial resources investment.

The interests of regional authorities and external investors are often different. Authorities tend to be interested in attracting as many external, primarily foreign, investments as possible, whereas investors are interested in the significance of investments (their capacities and potentials) and the risks associated with these investments.

When assessing the investment attractiveness, some researchers use the following terms: investment climate, investment intensity and the investment potential of a region. In order to attain the aim of this paper, first, theoretical aspects pertaining to the assessment of investment attractiveness of a country or a region have been reviewed and subsequently summarized as the following definitions:

Investment climate consists of two components — investement attractiveness of a region and investment activities in this region. *Investment attractiveness of a region refers* to the amount of capital investment that can be attracted to the economy of a region upon consideration of investment potential of that region and degrees of investment risks associated with this region (Najt, 1999).

As for the investment potential of a region, according to J.R. McCown and J. Zimmerman's (2007) paper "*Analysis of the Investment Potential and Inflation-Hedging Ability*", the investment potential is "the ability to gain the maximum possible amount of the investment component of the gross regional product, obtained by using economy-growth-related investment factors in application to a given territory". Based on this methodology, this paper identifies the following 3 key components of investment potential:
- resource potential;
- infrastructure potential;
- institutional potential.

Subsequently, these indicators need to be further divided into the categories, and proper analysis should be conducted on each component. This method, however, seems to be time-consuming and subjective.

The investment potential of a region refers to the amount of investments that can be attracted to the economy of a region by deploying all (internal and external) sources of funding and by considering the availability of existing various economic, social and natural resources, characteristics of geographic location and other objective conditions that are pivotal for shaping investment activities in this region. Some researchers, including R. Barro (2004) and M. Blomstrom and A. Kokko (2003) suggest the following indicators for the assessment of investment potential of a region:
- The volume of industrial manufacturing.
- The level of enterpreneurship development.
- The share of unprofitable enterprises.
- The total amount of domestic investment opportunities of an enterprise.
- Roads in a region.

The methodology in its practical application is simple to use as all the factors mentioned above might be presented as nominal values.

To attain the aim of this research, a new indicator is introduced — the indicator of *the number of small, medium-sized and large enterprises in a region*. Small enterprises reflect the development of enterpreneurship, whereas large enterprises are crucial components of sustainable development of a region and the country on the whole. This paper proposes to take Latvian regions as a sample and to conduct the analysis of the growth in salary levels across different regions considering the number of micro-, small and large enterprises.

European Commission Recommendations (2003/361/EC) of 6 May, 2003 list the following groups representing economically active sectors of the market:
- Large enterprises: the number of employees is 250 and above and/or netto-turnover exceeds 30.2 mln LVL.
- Medium-sized enterprises: the number of employees ranges between 50 and 249 and/or the annual turnover is at least 35.1 mln LVL, or the amount of assets is at least 30.2 mln LVL.
- Small enterprises: the number of employees ranges between 10 and 49 and/or the turnover is at least 7 mln LVL or the balance is at least 7 mln LVL.
- Microenterprises: the number of employees ranges between 1 and 9 and/or the annual turnover is at least 1.4 mln LVL, or the balance is at least 1,4 mln LVL (European Statistical data, 2007—2011).

Having considered the above aspects, the analysis of the number of enterprises in the Baltic States can be conducted according to the recommendations of European Commission (2003/361/EC). The data is presented in Table 1.

As it is evident from Table 1, Latvia has the largest number of micro- and small enterprises. Despite the crisis, the number of such enterprises continued to grow. In Estonia, the number of micro- and small enterprises is twice as low as in Latvia. Similarly to Latvia, in Estonia the number of such enterprises continued to grow in 2007—2011. In Lithuania, the number of such enterprises is almost 20 times lower than in Latvia. However, in 2009—2010 the number of micro- and small enterprises was decreasing. Yet, in 2011, their number increased by 12.2%, as compared to 2007.

Table 1. **The number of micro- and small enterprises in the Baltic States**

	Latvia	Lithuania	Estonia
2007	126033	6378	51481
2008	125490	8102	54117
2009	126193	6799	54746
2010	132939	6386	57148
2011	134040	7162	57148

The Statistical database of Eurostat, Latvia, Lithuania, Estonia, 2007–2011.

Next, Table 2 provides the data on medium-size enterprises in the Baltic States.

Table 2. **The number of medium-sized enterprises in the Baltic States**

	Latvia	Lithuania	Estonia
2007	2546	36	1354
2008	2546	26	1354
2009	2065	24	1186
2010	1956	19	1052
2011	2037	11	No data available

The Statistical database of Eurostat, Latvia, Lithuania, Estonia, 2007–2011.

Table 3 demonstrates that Lithuania has the greatest number of large enterprises in the Baltic States. However, in 2007–2011 their number decreased in Lithuania and Latvia, whereas in Estonia it increased by 64.9%, from 177 in 2007 to 292 in 2011. The sharp increase in the number of enterprises observed in 2011 might possibly be attributed to Estonia's joining the Eurozone, which has offered more stability for foreign investors at Estonian market.

Table 3. **The number of large enterprises in the Baltic States**

	Latvia	Lithuania	Estonia
2007	405	588	177
2008	401	556	182
2009	351	553	163
2010	345	553	137
2011	355	560	292

The Statistical database of Eurostat, Latvia, Lithuania, Estonia, 2007–2011.

This paper proposes to include the indicator of the number of micro- and large enterprises in a region into the set of indicators to identify investment attractiveness of the region. The validity of this hypothesis was tested by using the correlation analysis, comparing GDP per capita in the region with the number of small, medium-sized and large enterprises. GDP per capita reflects the economic activities in a country or a region. Table 4 provides the data on GDP in the Baltic States in 2007–2011.

Table 4. **Changes in GDP in Euros in the Baltic States**

	Latvia	Lithuania	Estonia
2007	7200	7700	9900
2008	7000	8000	9500
2009	5900	6900	8100
2010	5900	7100	8400
2011	6400	7700	9100

The Statistical database of Eurostat, Latvia, Lithuania, Estonia, 2007–2011.

Table 4 demonstrates that despite the fact that Latvia has the greatest number of small and medium-sized enterprises in the Baltic States; Latvia has the lowest GDP per capita. In contrast, Estonia has the highest GDP per capita — in 2011 it was almost by 30% higher than in Latvia and by 20% higher than in Lithuania.

The aim of the correlation analysis is to identify the degree of dependency that exists between the factor-based and the resulting attributes. Evidently, the size of the linear relationship between the two attributes characterizes the linear correlation coefficient, denoted by r. The size of the correlation coefficient can be calculated using the following formula (Pearson correlation coefficient):

$$r = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \bar{x})^2}\sqrt{\sum_{i=1}^{n}(y_i - \bar{y})^2}} = \frac{n\sum_{i=1}^{n}x_i y_i - \left(\sum_{i=1}^{n}x_i\right)\left(\sum_{i=1}^{n}y_i\right)}{\sqrt{n\sum_{i=1}^{n}x_i^2 - \left(\sum_{i=1}^{n}x_i\right)^2}\sqrt{n\sum_{i=1}^{n}y_i^2 - \left(\sum_{i=1}^{n}y_i\right)^2}}, \quad (1)$$

where $\bar{x}$ and $\bar{y}$ — the mean values X and Y:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n}x_i; \bar{y} = \frac{1}{n}\sum_{i=1}^{n}y_i; \quad (2)$$

n — the sample size; i — the number of observation ($i = 1, 2, ..., n$).

Since scientists have controdictory views on this issue, in order to assess the economic growth rates in two states and possible merger of two economies, the effect of investments on the economy of countries is assessed as a % of GDP. In order to varify the hypothesis, the econometric methods, such as correlation analysis, regression analysis and the least square method, have been deployed.

The size of the correlation coefficient ranges between -1 and 1. Table 5 shows the possible correlation coefficient values and the corresponding characteristics of strength and the direction of dependency.

Using the economic calculations, the effect of small, medium-sized and large enterprises on a country's GDP is assessed in order to determine what effect small, medium-sized and large enterprises has on the development of the Baltic States. This data enhances the methodology of investment attractiveness assessment of the region by producing more precise outcomes. Namely, instead of applying the indicator of the enterprises number, it is important to deploy both the indicator of enterprises and the type of enterprises (the number of employees). This data is provided in Table 5.

Table 5. **The coefficient of correlation of the effect of the number of enterprises on GDP per capita in the Baltic States,** *yielded by the authors*

	Latvia	Lithuania	Estonia
Micro- and small enterprises	-0,4948	0,6249	-0.6243
Medium-size enterprises	0.1254	0.1604	0.8571
Large enterprises	0.9648	-0.1262	0.2839

Using this indicator, which assesses the economic potential of a country — GDP per capita, it has been demonstrated that despite a large number of micro- and small enterprises in Latvia, this indicator does not affect GDP per capita — the coefficient of correlation is negative; the same applies to Estonia — the correlation is negative (-0.6243). However, in Estonia medium-sized enterprises have significant effect on GDP per capita — the correlation is 0.8571; whereas in Latvia these are large enterprises that yield such an effect — the correlation is 0.9648, which is almost 1.0. However, in Lithuania, in contrast to other Baltic States, the number of micro- and small enterprises is low, yet their turnover has been significant in the country's economy — the coefficient of correlation is 0.6249.

Conclusions. The calculations, presented in Table 5, conducted using the correlation analysis, suggest that when assessing the investment attractiveness of a region, it is important to consider not only the indicator of a number of enterprises, but also the indicator of the number of small, medium-sized and large enterprises. Undoubtedly, it is vital for investors to consider the type of enterprises that are concentrated in a region and how this type affects the economic potential of a region. In addition, the consideration of this indicator helps to assess future opportunities for business and competitiveness development etc. Using the assessment results for the region under study and having assessed the potential of a region based on the number of small, medium-sized and large enterprises, investors will be able to develop a suitable strategy for their investments.

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