An analysis of the construction industry and the impact of taxation on its development in the Baltic and Scandinavian countries

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Abstract: This article provides a comparative analysis of the construction industry and the impact of taxation in the Baltic and Scandinavian countries. The issues of granting permission for the construction of residential buildings and cost growth rates for a new housing stock are analyzed. The analysis revealed the annual rate of changes in the construction sector, the rate of construction of residential buildings. The paper compares the annual rate of changes in employment and the size of taxation to identify the relationship between the rate of growth or decline. The analysis made it possible to determine the main indicators that affect the rate of changes in the construction sector. Construction costs are calculated to determine the amount of project costs and client's expenses (architect's fee, website, VAT, production prices, household expenses, etc.). The key indicators affecting the construction sector are compared. These are the number of enterprises, the number of employees, turnover, value added, personnel costs, investment in material goods. A summary table of corporate taxation in the Scandinavian and Baltic countries is presented. The table reflects types of taxes and key interest rates. The dynamics of sales of new housing is analyzed for each country. The conclusion about the largest volume of construction in the countries under study is drawn.

Housing is one of the most important social priorities that affects the urban development and has a significant impact on the sustainable development. A housing project can be considered sustainable when all economic aspects of sustainability are considered. The purpose of this article is to carry out a comparative analysis of the impact of the taxation system in the Baltic and Scandinavian countries [1].

The taxation system of the Baltic countries is based on the principle of fairness. The principle of fairness is fundamental in the taxation of the Baltic States. The result is collection of the income tax that depends on taxpayers. Some exemptions and tax breaks contribute to fairness of the taxation system, while others violate this principle. However, they complicate the taxation system and increase the costs of real estate construction [7].

The general principles of taxation are competitive [2], and their simultaneous application in the construction industry is impossible even in an ideal taxation system.
In the Baltic and Scandinavian countries, there are special conditions of the taxation system which affect the construction of residential buildings. These are the taxation base, interest rates and grace periods. Therefore, the authors aim to analyze conditions of taxation affecting the construction industry, permits for the construction of residential buildings, annual rates of growth and decline in the construction of residential buildings and key indicators affecting the construction sector [3].

Table shows the number of permits for the construction of residential buildings, except for residential buildings for rural settlements in 2010-2018. This table shows two types of indexes for building permits. The first indicator shows the evolution of the number of residential premises. The second indicator reflects the amount of usable area.

| Countries | Number of apartments | m² useful area |
|-----------|----------------------|----------------|
| Estonia   | 2010 2011 2012 2013 2014 2015 2016 2017 2018 | 2010 2011 2012 2013 2014 2015 2016 2017 2018 |
| Latvia    | -5.3 22.9 29.6 -33.2 -10.8 22.0 17.3 17.1 -14.2 12.3 -1.4 41.1 -33.2 -22.4 11.5 46.6 13.3 |
| Lithuania | 10.2 -12.4 38.1 18.6 -5.9 20.6 22.2 -2.4 3.0 2.8 -14.5 23.9 18.8 -10.5 15.6 25.0 -12.2 -0.3 |
| Sweden    | 28.7 1.6 -12.6 -25.7 19.7 31.6 23.9 8.1 -17.6 28.2 -1.7 -16.1 18.6 20.8 27.6 21.6 5.3 -20.0 |
| Norway    | -2.2 37.2 -0.1 0.7 -6.0 4.0 17.7 3.1 -2.9 6.1 19.4 7.1 1.4 -7.9 3.8 12.1 3.7 -5.7 |
| Denmark   | 94.7 11.4 -27.6 -4.5 38.8 40.4 31.9 -6.7 13.6 57.7 -3.8 -23.9 -3.9 27.0 38.9 22.4 -2.0 15.9 |

Table 1 shows that both indicators of permits for the construction of a residential building (excluding residential buildings for villages) in the period from 2010 to 2018. develop in a similar way. The index of the number of apartments increased in Estonia in 2015 and in Latvia and Lithuania in 2012. In Denmark, the apartment number index peaked at 94.7 permits.

Table 2 shows the annual rate of construction changes since 2005.

| Countries | 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 |
|-----------|----------------------|----------------------|
| Estonia   | 22.3 26.9 13.6 -13.1 -29.9 -8.6 27.3 16.6 -0.1 -2.1 -3.5 4.6 21.5 17.4 |
| Latvia    | 14.3 14.0 12.3 -2.8 -44.4 -15.7 12.2 14.9 7.3 10.5 -0.6 -16.6 18.7 21.8 |
| Lithuania | 10.0 21.8 22.3 4.0 -48.2 -7.9 22.5 -7.0 11.4 16.8 -3.5 -9.5 9.4 13.7 |
| Sweden    | 0.3 11.1 11.2 -2.1 -1.5 3.6 7.6 -0.7 -3.1 1.8 8.8 1.8 8.2 -2.4 |
| Norway    | 8.5 6.0 6.1 1.4 -8.8 0.1 3.0 7.5 6.3 4.7 1.4 3.7 4.3 3.0 |
| Denmark   | 5.3 6.1 2.6 -0.1 -11.6 -6.3 3.2 0.9 -0.5 4.2 4.4 4.5 4.5 3.3 |

Analyzing the data on the annual rates of changes in construction, it becomes evident that the crisis phenomena of 2008-2009 negatively affected the construction sector only in the Baltic countries. According to the annual rates of changes in construction in 2018, the Baltic countries (Estonia, Latvia, Lithuania) showed a positive dynamics of rates. However, in the Scandinavian countries (Sweden, Norway and Denmark), fluctuations between a decline and a slight increase in the rate were observed. This fluctuation suggests that the developed countries lack mechanisms that allow them to increase the construction rates.

Table 3 presents a comparative analysis of the taxation of companies in the Scandinavian and Baltic countries.

| Name of countries | Tax | Rate | Comment |
|-------------------|-----|------|---------|
| **Taxation of companies in the Scandinavian countries** |
| Denmark           |     |      |         |
| 1.1. Corporate Income | $T_{\text{tax}}$ | 22% | Except for companies in the oil and gas sector. |
| 1.2. VAT          |     | 25%  | The minimum size of the annual turnover at which a resident enterprise must register as a VAT payer. This |
The amount is 6,720 euros.
The Danish law establishes a list of goods and services to which a zero VAT rate is applied. This concerns the supply of goods within the European Union. Many types of services are not subject to value added tax: medical, insurance, postal, transport, educational.

| 1.3. Real estate tax | 1 % | The tax is calculated depending on the building cost. |
|---------------------|-----|-----------------------------------------------------|

| 1.4. Social Security Contribution | 10,000 – 12,000 Danish kroner per year per employee. |
|----------------------------------|-----------------------------------------------------|

| 1.5. Income tax | 21.4 % | 19.7 % | The effective rate for redistributing profits to the profit periodization fund. |
|-----------------|-------|-------|-----------------------------------------------|

| Sweden | 1.6. VAT | 25 % | 12 and 6 % |
|--------|---------|------|-------------|
|        |         | - 25% - basic rate, applied to most goods and services; - 12% - reduced rate, applied to food products, hotel services, artists' sales of their own works of art, cultural and sports events, restaurants and catering services (except for alcoholic and alcohol-containing products, beer and beer drinks - basic VAT rate applies); - 6% - reduced rate, applied to newspapers, magazines, books, public transport, etc. VAT is not applied to the sale of real estate; medical services; social services; educational services; banking and financial services. |

| 1.7. Real estate tax | 0.2-2.8 % | Depends on the appraised value of an object. |
|---------------------|-----------|-----------------------------------------------|

| Norway | 1.11. Real estate tax | 2.5 % |
|--------|----------------------|-------|
|        | All legal entities and individuals must pay the annual property tax based on the actual value of capital assets. However, joint stock companies are exempted from this tax. Resident individuals pay the property tax both in Norway and abroad, while non-residents pay the tax only at Norwegian rates, varying from 0 to 1.5%. If the amount of property tax is more than 65% of the total taxable income, the tax rate may be reduced if the net asset value does not exceed 1 million NOK; the reduced rate of 0.6% is applied only to the amounts exceeding 1 million NOK. |

| 1.12. Social Security Contribution | 14.1 |
|-----------------------------------|------|
|                                   | The employer must pay 10% income tax exceeding NOK 656,000. While encouraging the decentralization of industrial siting and relocation from large cities to northern regions of countries, legislatures have set a varying social security contribution rate (0% in the northern regions and 14.1% in the central regions). |

| Taxation of companies in the Baltic countries [9] |
|-------------------------------------------------|

| Latvia | 1.13. Income tax | 20 % | 9 % | Small business tax rate. The taxpayer is small businesses whose turnover does not exceed 99,600 euros per year and which employ no more than 5 employees. |
|--------|-----------------|------|-----|-----------------------------------------------|

|                       | 21% - basic rate; 12% - reduced rate; 0% - zero rate. |
|-----------------------|------------------------------------------------------|
| VAT                   | Basic rate. It is applied to:                       |
|                       | 1. paid goods, including goods for own use;          |
|                       | 2. paid provision of services, including for own needs; |
|                       | 3. import of goods;                                 |
|                       | 4. purchase of goods in the EU member states;        |
|                       | 5. receiving services provided by EU residents;      |
|                       | 6. purchase of new vehicles by non-taxable persons in the EU; |
|                       | VAT - reduced rate. It is applied to:               |
|                       | 1. medicines, medical equipment, medical products;   |
|                       | 2. special products for babies;                      |
|                       |                                                      |
3. newspapers, magazines and other periodicals from Denmark;
4. educational literature and original literature;
5. public transport services within the countries;
6. delivery of heat, electricity and natural gas to the population;
7. delivery of firewood and wood fuel to the population.
VAT - zero rate. It is applied to 1.export and delivery of goods not released into free circulation, if the goods are delivered to a warehouse or to a free zone;
2. exports, imports, transit transportation of goods and services in the free zone and in the customs warehouse, goods not released in free circulation;
3. refueling of ships and aircraft, delivery of goods intended for the supply and provision of services;
4. international passenger transportation;
5. import of electricity or import of natural gas, if natural gas is delivered using a management or distribution system;
6. delivery of goods in the EU, if the buyer is a taxable person in another member state, and the goods are delivered to another member state;
7. delivery of goods if the goods are sent to a fiscal representative for further export.
Tax-free transactions are 1. social care, rehabilitation and social assistance services;
2. educational services provided by accredited educational institutions;
3. payment for the stay of children in preschool institutions;
4. admission fees to theater, circus, concerts, exhibitions and museums;
5. library services;
6. insurance services;
7. services of latvijas pasts and services to which latvijas pasts has monopoly rights;
8. rent of residential premises

| 1.15. Real estate tax | 0.2% - 1.5% | Depends on the cadastral value. |
|----------------------|-------------|--------------------------------|
| 1.16. Social Security Contribution | 24.09 % |                                |
| 1.17. Corporate Income Tax | 20 % | The standard rate of 20% and the reduced rate of 9% apply to books, newspapers, medicines and lodging. Goods taxed at 0% include exports, goods supplied intra-EU, certain services provided to foreigners, and goods delivered by ships and aircraft. VAT-exempt services are postal, medical, social and insurance services, as well as protection of children and adolescents; delivery and rental of real estate; transportation of sick, wounded and disabled people. |
| 1.18. VAT | 20 % | 9 % | 0 % |
| Estonia | | | |
| 1.19. Real estate tax | - | There is no annual property tax. Instead, owners of private houses, legal entities and owners of several real estate objects pay tax on land plots. The rate is set annually by local authorities. Depending on the region, the tax amounts to 0.1–2.5% of the cadastral value of land; for agricultural plots it is 0.1–2.0% per year. In Tallinn and Pärnu, the tax rate is 1.5%, in Tartu, the tax rate is 1%. |
| 1.20. Social Security Contribution | 33.8 % |                                |
| Lithuania | | | |
| 1.21. Income tax | 15 % | 15% - large firms; 5-13% - small businesses with less than ten employees and a turnover of less than one million litas. |
| 1.22. VAT | 21 % | 18-21% (0%, 5%, 9% rates) |
| 1.23. Real estate tax | 1 % | The annual real estate tax is 1% of the cadastral value. This tax is levied on real estate whose cadastral value exceeds € 290 thousand. The land tax is paid annually at a rate of |
0.01–4% of the value of land.

Table 3 provides an analysis of taxation [4]. It is clear that in the Scandinavian countries the taxation indicators are higher than in the Baltic countries [5]. The income tax, the VAT and the property tax are main factors reducing the pace of construction.

To determine the total costs of construction, it is necessary to calculate the costs based on the following indicators: materials, labor, equipment, and energy consumption. Sources of indicators are producer prices, contracts, labor costs, etc. Material and labor costs are the most important contributors to construction costs. [1]

To improve the efficiency of the project cost management system, it is necessary to choose a policy of payment for works (prepayment, post-payment, etc.); a bills payment policy (on the day of receipt, within a certain period, etc.); cost deduction principles for labor, materials and components; cost accounting principles; the relationship between the work schedule and the cost deduction and payment mechanisms.

Let us calculate construction costs (Figure 1).

The figure reflects output prices, i.e. producer prices that construction contractors must pay during construction. Therefore, the cost index should be different from the producer price index. The Producer Price Index shows the dynamics of prices. These two indices can be different from the
“selling price index,” which measures the changes in costs that the ultimate owner of the product pays to the customer. It includes the cost of land, architect's fees and client's margin [11].

The construction cost index is influenced by the material component of costs (which accounts for about two-thirds of total costs), while the component of labor costs grows even during the crisis. Table 4 shows the annual cost growth rates for a new residential building, 2005-2018.

Table 4. The annual cost growth rates for a new residential building, 2005-2018.

| Countries  | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Baltic countries | | | | | | | | | | | | | | |
| Estonia    | 6.3  | 10.4 | 12.8 | 3.5  | -8.5 | -2.6 | 3.4  | 4.3  | 5.0  | 0.2  | 0.9  | -0.4 | 1.2  | 1.9  |
| Latvia     | 11.9 | 36.6 | 22.4 | 8.7  | -7.7 | -7.5 | 2.6  | 3.0  | 4.1  | 0.7  | 3.3  | 5.7  | 2.5  | 4.5  |
| Lithuania  | 8.3  | 10.7 | 16.1 | 9.6  | -14.5| -4.8 | 3.8  | 3.1  | 4.5  | 3.2  | 2.1  | 2.2  | 4.2  | 3.5  |
| Scandinavian countries | | | | | | | | | | | | | |
| Sweden     | 3.9  | 5.0  | 6.1  | 4.9  | 2.0  | 2.6  | 3.0  | 2.6  | 1.7  | 0.8  | 2.2  | 2.6  | 3.9  |
| Norway     | 3.3  | 3.8  | 7.4  | 5.7  | 2.3  | 3.1  | 3.7  | 3.0  | 2.9  | 3.3  | 2.6  | 2.8  | 2.5  | 3.1  |
| Denmark    | 2.4  | 4.8  | 6.3  | 2.9  | -0.3 | 1.1  | 3.6  | 2.6  | 1.5  | 1.6  | 1.9  | 1.6  | 0.8  | 1.8  |

According to Table 4, the real estate construction cost index began to decline in the Baltic countries (Estonia, Latvia, Lithuania) in 2009 and 2010, while in Sweden, Norway, Denmark, the growth was observed in 2006-2008. In 2015-2018, in the Scandinavian countries, construction costs increased annually by 1.5%. In the Baltic States, the growth of costs has been stable since 2017.

The activities of the construction sector are cyclical, influenced by consumer and business confidence, the taxation and financing systems, and government programs [4]. Let us analyze key indicators of the construction sector (Tables 5 and 6).

Table 5. Key indicators of the construction sector, 2017.

| Countries | Number of enterprises | Number of employed persons | Turnover | Added value | Personnel costs | Investments in material goods |
|-----------|----------------------|----------------------------|----------|-------------|----------------|-----------------------------|
| Estonia   | 3.9                  | 17.3                       | 2226.1   | 451.1       | 271.5          | 79.9                        |
| Latvia    | 3.7                  | 23.3                       | 1739.1   | 290.8       | 196.1          | 121.6                       |
| Lithuania | 4.1                  | 41.7                       | 2345.1   | 604.7       | 423.3          | 165.2                       |
| Scandinavian countries | | | | | | |
| Sweden    | 23.9                 | 113.2                      | 32048.0  | 6679.9      | 5475.9         | 417.6                       |
| Norway    | 24.8                 | 87.1                       | 30828.3  | 7658.0      | 4916.0         | 1464.9                      |
| Denmark   | 3.3                  | 26.1                       | 10500.7  | 2250.7      | 1656.5         | 188.3                       |

Table 6. Key indicators of the construction sector, 2017.

| Countries | Apparent labor productivity | Average personnel costs | Labor productivity adjusted for wages | Gross operating rate | Investment rate |
|-----------|------------------------------|-------------------------|--------------------------------------|----------------------|-----------------|
| Estonia   | 26.1                         | 16.6                    | 156.7                                | 8.1                  | 17.7            |
| Latvia    | 12.5                         | 9.6                     | 130.2                                | 5.4                  | 41.8            |
| Lithuania | 14.5                         | 10.2                    | 142.3                                | 7.7                  | 27.3            |
| Scandinavian countries | | | | | |
| Sweden    | 59.0                         | 57.1                    | 103.3                                | 4.3                  | 6.3             |
| Norway    | 87.9                         | 61.3                    | 143.4                                | 8.9                  | 19.1            |
| Denmark   | 86.3                         | 65.5                    | 131.6                                | 5.7                  | 8.4             |

Tables 5 and 6 show that in 2017, labor productivity adjusted for wages and gross operating indicators was higher for the construction projects presented in Table 5 than for any other group in Table 6.

Based on the above, the building construction sector developed in a cyclical way. The added value in Table 5 shows that the Scandinavian countries were the most specialized members in the building construction sector in 2017.
Wage-adjusted labor productivity was above 100% in both the Baltic and Scandinavian countries. This circumstance indicates that the average added value per employee was higher, which was not typical of average personnel costs. Sweden had a lower wage-adjusted productivity ratio (103.3%) compared to Denmark and Norway [8]. Accordingly, in Sweden, the average value added per worker was lower than in all other countries.

Thus, the real estate tax is characterized by the procedure for determining the cost of residential buildings. The following conclusions can be drawn.

Firstly, all the countries have a property tax which is one of the most significant own source of local budgets.

Secondly, in the Baltic and Scandinavian countries there are special conditions of the taxation system affecting the construction industry.

Thirdly, mass appraisal is applied to determine the value of an object using standard procedures. The taxable base is determined by various authorities and organizations (fiscal authorities, state real estate registry, municipalities and commercial organizations).

In all the countries, it is necessary to develop methods for improving the taxation system affecting the construction of residential buildings on the basis of taxation principles. In turn, the principles of taxation can be both the main part and the criterion of effectiveness of the methods used for improvement.

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