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THE MEASUREMENT OF QUALITY OF INCOME TAX ASSESSMENT IN BUILDING CONTRACTORS

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Abstract. *In modern scientific research, income is considered exclusively in the context of the problems of levying income tax. Fuller use of such elements as rates and incentives can seriously affect tax regulation in the economy, the rate of economic growth, investment attractiveness for potential investors, and an increase in GDP. The purpose of this study is to develop practical recommendations on the use of the quality of the calculation of income tax by building contractors in the Republic of Kazakhstan. The object of the study is the system of tax relations arising between contractors of the building industry in the Republic of Kazakhstan and the state upon taxing income. The subject of the study is a set of theoretical aspects and practical problems existing within the framework of the current mechanism of income taxation for building contractors in the Republic of Kazakhstan. The authors used the following methods of scientific cognition: the dialectical method; the method of historical and logical analysis; the method of system approach and synthesis; the comparative method; and the economic and statistical method. Analysis of the influence of various factors on tax payments for the corporate income tax of the BI Group building company was considered with the use of correlation and regression analysis. The study of various theories*

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of profit allowed the authors to conclude that income is the final result and the main goal of entrepreneurial activity, which allows for the active use of the regulatory mechanism of tax.

Keywords: *financial reporting, estimation error, entrepreneurial activity, income taxation, leading companies.*

JEL Codes: *KH25, K34, H71*

1. Introduction

One of the most important aspects of the functioning of the tax system is the assessment of the tax burden and its impact on business. Income tax occupies an important place in the activities of business entities, and constitutes one of the economic instruments through which the state influences the market economy (Yatsenko 2020; Prokopenko 2019). In any organisation, special attention is paid to such an important part of the accounting system as income tax, where income is a part of the net income created by the enterprise during production. In Kazakhstan, as in many other countries, companies maintain accounting and tax records. Accounting and financial reporting are carried out in accordance with international financial reporting standards and the Law of Kazakhstan "On accounting and financial reporting". The tax accounting of Kazakhstani companies is based on international financial reporting standards, the above-mentioned Law "On accounting and financial reporting", and the provisions of the Tax Code of the Republic of Kazakhstan No. 120-VI "On taxes and other obligatory payments to the budget" (2017).

Due to the different requirements of legislative acts underlying these types of accounting, discrepancies arise between accounting and taxation management. These discrepancies arise due to the difference in approaches regulating these two types of accounting, as well as due to the different approaches to accounting stipulated in accounting and taxation management policies. The differences between accounting and taxation management are reflected in accounting, which allows for the comparison between the conditional income tax expense accrued on the amount of accounting profit and the current income tax calculated according to taxation management rules (Ivanyshyna and Panura 2018; Sidorova 2015).

Accounting income is income or loss for the period before the deduction of income tax expenses. Taxable income/tax loss represents income or loss for a period determined in accordance with the rules established by tax legislation. The main issue in income tax accounting is the question of how to take current and future tax consequences into consideration (Kusmanova 2015; Shevchuk 2020). Current income tax is the amount of income tax that must be paid to the budget, assessed in relation to taxable income for the current period. Deferred income tax is an accounting indicator used to compare the tax effect of transactions with their effect on accounting, which yields a less distorted financial result (Sidorova and Goncharenko 2020).

Since income tax affects cash outflow and the size of the financial result, it must be accurately and correctly calculated and reflected in financial statements in accordance

with the Tax Code. For users of financial information, not only the current, but also the future tax consequences of transactions which the company performed during the reporting period are important, as well as the impact that the repayment of obligations and recovery of the value of assets will have on income tax in future periods. Therefore, this task is consistent with the general goals of International Financial Reporting Standards (IFRS), one of which is to provide credible information to whom it may concern. The purpose of this research is to develop practical recommendations on the use of the quality of the calculation of income tax in building contractors in the Republic of Kazakhstan.

2. Methods

Before considering the procedure for measuring the quality of calculating the income tax of building companies in the Republic of Kazakhstan, which is carried out with the use of IFRS 12 "Income Taxes", it should be noted that building is an important industry for both the economy and society, and, judging by the activities of businesspersons in this market, is attractive for entrepreneurship. However, new construction projects are often launched by market participants without an actual forecast of future demand. Profit growth creates a financial basis for the implementation of the expanded reproduction of the enterprise and the satisfaction of the social and material needs of the founders and employees.

The basis for the procedure for forming the profit of an economic entity serves as a single model adopted for all enterprises, regardless of ownership (Figure 1). Corporate income tax directly affects the amount of net profit, since this indicator is determined by the difference between the amount of profit received from the implementation of activities and the amount of tax calculated at the corresponding rate (Koshkarbaev and Abdiraimov 2012). Income is the final financial result that describes the production and economic activities of the entire enterprise – that is, it forms the basis of the economic development of the enterprise. According to K.Y. Tsygankov (2015), profit is one of the key concepts in the system of accounting and taxation management of an enterprise. In accordance with the Tax Code of the Republic of Kazakhstan No. 120-VI "On taxes and other obligatory payments to the budget" (2017), corporate income tax can be divided into two components: current taxes and deferred taxes.

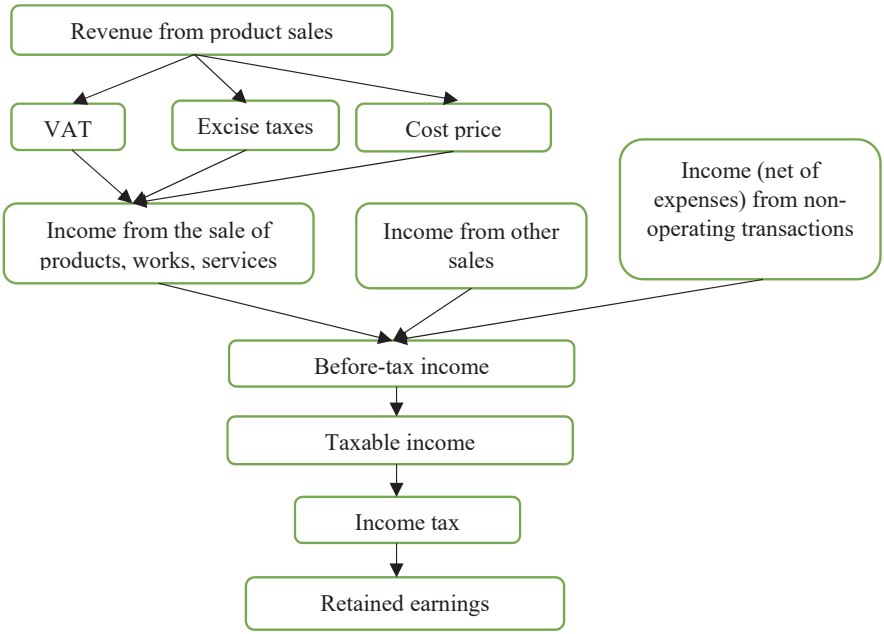

Figure 1. *The generation of the income of an economic entity*

Objective 12 of the IFRS (IAS), "Income Taxes", involves the accounting treatment of income taxes (Figure 2) (Kusmanova 2015). The corporate income tax payable by most legal entities amounts to 20% of the net taxable income. Some small companies may qualify for a special tax regime with lower tax rates. Net taxable income is the difference between total income and the expenses incurred to generate income. Remuneration, representation expenses, and some other types of expenses are deductible only within the established limits. Apart from deducting expenses, legal entities can defer operating losses for up to ten years to reduce deferred income (Sadykov and Alkhimova 2019).

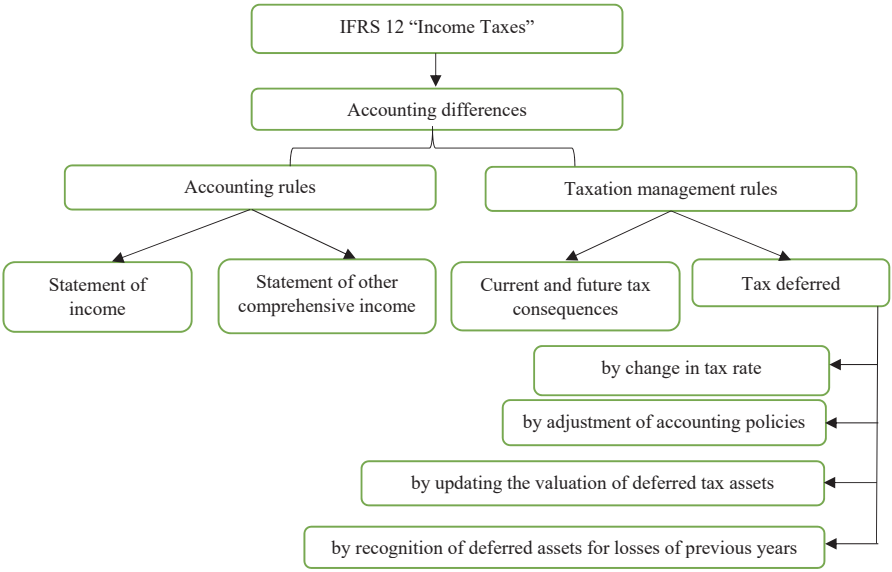

Figure 2. *IFRS Objective 12, “Income Taxes”*

Source: *compiled by the authors based on the materials from Kusmanova (2015)*

Income tax is one of the main taxes in the taxation system of any state, which constitutes the main source of income for the budgets of different levels, and a significant tool for regulating and stimulating the activities of economic entities (enterprises), directly and indirectly influencing the process of redistribution of surplus product by means of withdrawal of part of the net income of the enterprise (Mitrofanova 2013). Income tax (corporate income tax; hereinafter – CIT) is one of the most significant types of taxes paid by an enterprise (Figure 3), the rates of which may vary depending on the type of activity, according to the tax legislation of the Republic of Kazakhstan (Table 1).

Table 1. *Corporate income tax rates*

No	CIT	Rate	Basis
1	CIT withheld from taxable income	20%	Clause 1 Article 313 of the Tax Code
2	CIT withheld from the taxable income of legal entities producing agricultural products, aquaculture (fish farming), products from the implementation of activities for the production of agricultural products, aquaculture products (fish farming), processing, and sale of the specified products of in-house production, as well as the products of such processing	10%	Clause 2 Article 313 of the Tax Code
3	CIT withheld from income taxed at source of payment, excluding income of non-residents from sources in Kazakhstan	15%	Clause 3 Article 313 of the Tax Code
4	CIT withheld from the income of non-residents from sources in the Republic of Kazakhstan, defined by Sub-clauses 1) – 9), 11) – 34) of Clause 1 Article 644 of the Tax Code, not associated with the permanent establishment of such non-residents, as well as from the income specified in Sub-clause 10) Clause 1 Article 644 of the Tax Code, with the exception of income specified in Sub-clauses 2) – 5) Paragraph 1 Article 646	20%	Clause 4 Article 313 of the Tax Code Sub-clauses 1) of Clause 1 Article 646 of the Tax Code
5	CIT withheld at the source of payment from non-resident income, in terms of income in the form of insurance premiums under risk insurance contracts, value gains, dividends, remunerations, royalties	15%	Clause 4 Article 313 of the Tax Code Sub-clauses 2), 5) of Clause 1 Article 646 of the Tax Code
6	CIT withheld at the source of payment from non-resident income, in the form of insurance premiums under risk reinsurance contracts and from the provision of international transportation services	5%	Clause 4 Article 313 of the Tax Code Sub-clauses 3), 4) of Clause 1 Article 646 of the Tax Code
7	CIT from the net income of a non-resident legal entity operating in the Republic of Kazakhstan through a permanent establishment	15%	Clause 5 Article 313 of the Tax Code Clause 1 Article 652 of the Tax Code
8	CIT from the income of a person registered in a state with preferential taxation included in the list defined by Article 644 of the Tax Code	20%	Clause 4 Article 313 of the Tax Code Clause 2 Article 646 of the Tax Code
9	CIT withheld at the source of payment from income from value gains upon the sale of shares issued by legal entities specified in Sub-clause 6) Clause 1 Article 293 of the Tax Code, interests in legal entities specified in Sub-clause 6) Clause 1 Article 293 of the Tax Code, and dividends received from legal entities specified in Sub-clause 6) Clause 1 Article 293 of the Tax Code	5%	Clause 3 Article 646 of the Tax Code

Source: *compiled by the authors based on the materials from Shakhvorostova (2020)*

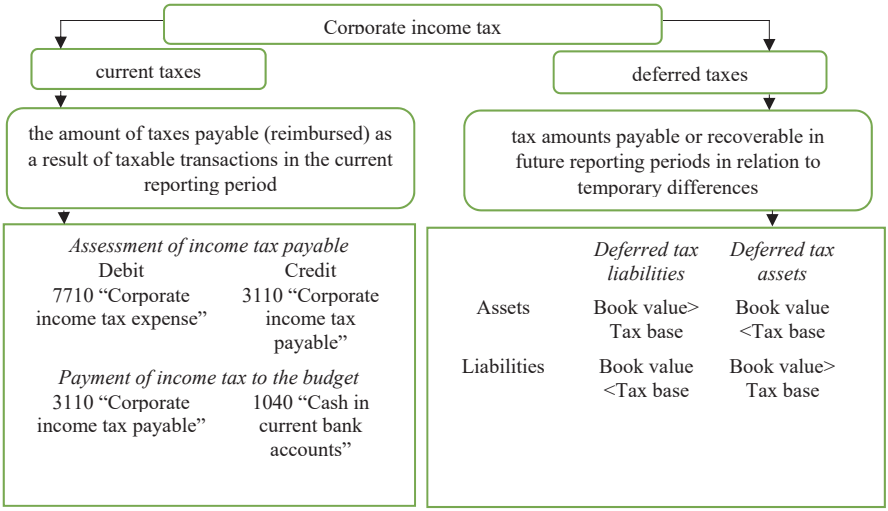

Figure 3. *The components of corporate income tax*

Source: *compiled by the authors based on the materials from Kusmanova (2015)*

N.N. Tyutyuryukov et al. (2019) highlight the following income taxation systems (Figure 4):

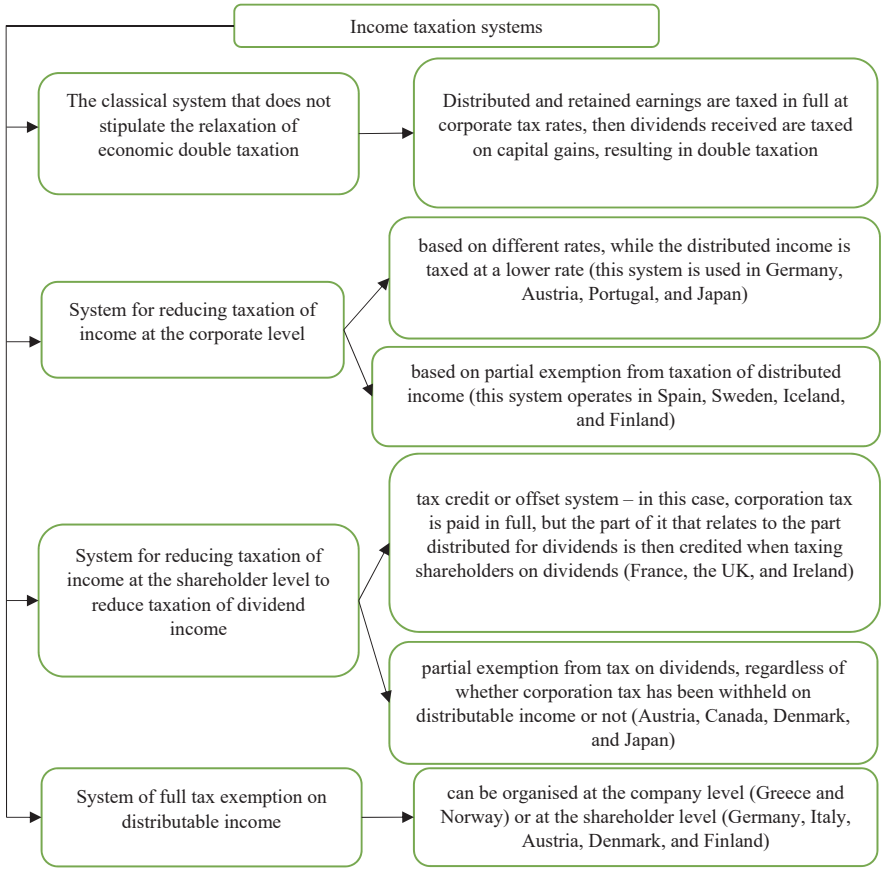

Figure 4. *Systems of income taxation*

Source: *compiled by the authors based on the materials from Tyutyuryukov et al. (2019)*

In the generation of income tax, not only is its taxable base is important, but also the rate and tax benefits (Kulyagina and Bedulina 2016). When summarising the international experience of taxation of income, certain conclusions were made in applying the reform of income tax: it is necessary to estimate the possibility of a differentiated approach to setting rates and to consider options for the use of income tax incentives aimed at stimulating investment activities (Table 2).

Table 2. *Foreign experience in the taxation of income*

Country	Developed countries	Central and Eastern European countries
USA, France, Germany, etc.	Almost all costs may be excluded from gross profit, with minor restrictions	
Poland, Bulgaria, Hungary, etc.		The solution to the problem of combining the fiscal and regulatory functions of income tax in different countries varies from setting high tax rates and maintaining incentives for organisations to adopting lower rates and reducing the bulk of benefits

Source: *compiled by the authors based on the materials from Lykova (2017)*

The legislation of European states enshrines various approaches to taxing the profits of legal entities, but this diversity can be reduced to several basic schemes. The results of monitoring the tax rates and benefits of several developed countries (USA, Great Britain, Germany, France, and Russia) are presented in Table 3.

Table 3. *Tax rates in developed countries*

Indicator	Personal income tax rates	Income tax rates	VAT rates (basic)
USA	Differentiation 10–39.6%	Differentiation 15–35%	-
Great Britain	Differentiation 10–50%	20% and 23%	17.5%
Germany	Differentiation 0–45%	15% + 5.5% + (7–17.5% trade tax)	19%
France	Differentiation 0–41%	33.33%	19.6%
Russia	13%	20%	18%

Source: *compiled by the authors based on the materials from Saez and Gruber (2002)*

In the "Paying Taxes 2019" report, Kazakhstan ranked 56th ("Taxation in 2019"), with an analysis of the CIT reporting process provided. According to the results of said research, the total tax rate in Kazakhstan is 29.4%, which represents the share of taxes and contributions in the company's income. This indicator remains at the level of the previous year. Comparing this indicator of Kazakhstan (29.4%) with other jurisdictions, it is below the average for Central Asia and Eastern Europe (32.8%), and significantly below the average of the countries of the Organisation for Economic Cooperation and Development (OECD; 40.2%), as displayed in Figure 5.

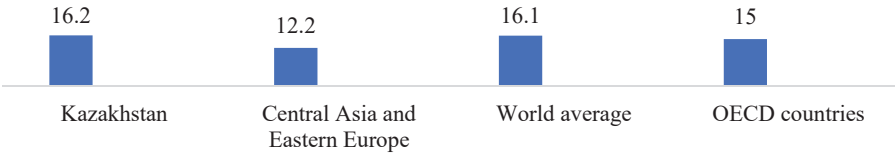

Figure 5. *The average CIT rate in 2019 in Kazakhstan*
Source: *compiled by the authors from World Bank Group and PwC (2018)*

In accordance with the Order of the Minister of Finance of the Republic of Kazakhstan No. 422, "Expenses for current income tax, as well as expenses (income) for reflecting deferred tax assets and liabilities" (2010) are accounted for in the Statement of Income in line 101 – "Income tax expenses". When explaining the correlation between income tax expense (income) and accounting profit, an organisation uses the applicable tax rate that provides the most significant information for users of financial statements, in accordance with the Tax Code of the Republic of Kazakhstan (Table 4).

Table 4. *The alignment of income tax in the statement of income and financial statements*

Statement of Income	Income tax expense	Financial statements
Tax expense.	Current tax expense.	Change in tax rates of the reporting period compared to the previous period.
Total current and deferred tax related to items that are debited or credited to equity.	Adjustments recognised in the period for current tax in prior periods.	The amount and expiry date (if any) of the period of validity of deductible differences, unused tax losses and tax credits for which a deferred tax claim is not recognised on the balance sheet.
Tax expense related to profit or loss from discontinued operations and the results of ordinary operations on discontinued operations for each reporting year.	Deferred tax expense related to the creation or reversal of temporary differences and changes in tax rates or the introduction of new taxes.	The aggregate amount of temporary differences associated with investments in subsidiaries, branches, associates, and joint ventures for which deferred tax liabilities are not recognised.
Tax expense or income related to changes in accounting policies and errors that are included in profit or loss because they cannot be accounted for retrospectively.	Reduction of expenses, for both current and deferred tax, by means of a previously unrecognised tax loss, tax credit, or temporary difference from a prior period.	The amount of a deferred tax asset and the nature of the evidence in favour of its recognition if disposal of such an asset depends on future taxable income in excess of the income arising from the reversal of existing taxable temporary differences, and if the organisation has a taxable loss in the current or prior period in the relevant tax jurisdiction.
	Allowance (or recovery) of a deferred tax asset.	The nature of the potential tax consequences that could arise from the payment of dividends to shareholders.

Below is an example of the effect of the applicable tax rate on the presentation of the numerical reconciliation, considering that the initial cost of the building is 100,000 tenge and the asset has been in operation for 5 years (Table 5) (Kusmanova 2015). The results of the analysis of the application of the reconciliation of the income tax rate are reflected in Figure 6, which shows savings in the form of an increasing trend up to the 10th year. A decreasing effect is observed in the last 2 years.

Table 5. *An analysis of the application of the reconciliation of the income tax rate*

Tax reporting	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year	10th year	11th year	12th year	13th year
Deductions	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000	4.000
Tax base	92.000	84.000	76.000	68.000	60.000	52.000	44.000	36.000	28.000	20.000	12.000	4.000	-
Depreciation expense	100.00	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000			
Book value	90.000	80.000	70.000	60.000	50.000	40.000	30.000	20.000	10.000	-			
Difference in expenses and deductions (1–3)	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	8.000	8.000	4.000
Differences in present value (2–4)	2.000	4.000	6.000	8.000	10.000	12.000	14.000	16.000	18.000	20.000	12.000	4.000	-
Deferred tax expense (savings) (5*7)	400	400	400	400	400	400	400	400	400	400	1.600	1.600	800

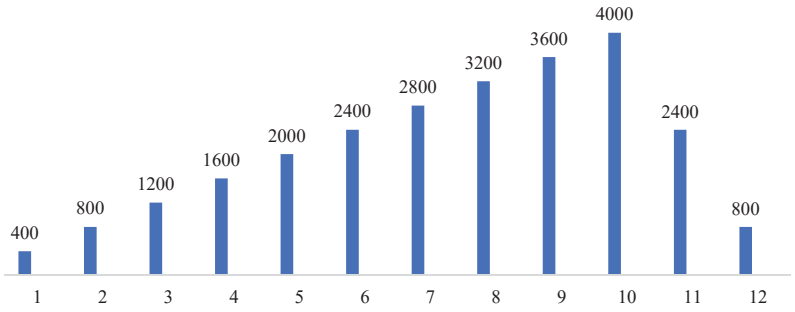

Figure 6. *The dynamics of changes in income tax from the 1st to the 13th year*
Source: *compiled by the authors based on the materials from Kusmanova (2015)*

As a result of the understating and subsequent overstating of depreciation deductions in tax accounting, the amount of income tax liabilities will be incomplete. For a more accurate presentation of income tax expenses in financial statements, an entity must recognise a deferred tax asset in the financial statements due to temporary differences. As

Table 4 shows, the effect of the amount of the depreciation deduction in tax accounting on the final amount of the current income tax expense will be offset by the corresponding posting of deferred tax recognition in the financial statements.

3. Results

When assessing income tax, it is necessary to understand that construction, as an important industry for the economy, has ambiguous trends, as this industry depends on many factors. Nevertheless, there are leading companies in Kazakhstan and, according to the latest data, 57 large enterprises engaged in the building of residential and commercial buildings are registered in Kazakhstan (Figure 7).

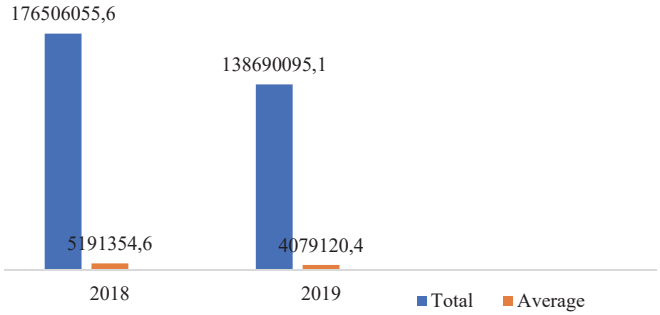

Figure 7. *The total and average amount of taxes of the largest taxpayers in the construction industry*

Source: *compiled by the authors based on the materials from Tukesheva et al. (2019)*

Among these building companies, the following companies of the Republic of Kazakhstan were included in the top 10 largest taxpayers for 2018–2019, the income of which provides the following insight (Tables 6 and 7).

Table 6. *The income of the largest taxpayers engaged in construction in the Republic of Kazakhstan for 2014–2019*

Company	Income, billion tenge					
	2014	2015	2016	2017	2018	2019
BI Group government corporation	241.69	249.64	263.49	315.16	376	365
Bazis Construction LLP	53.42	54.5	55.63	61.22	72.25	27.87
Alina Group LLP	37	37.45	42.6	43.12	45.41	46.1
Standart Tsement LLP	18.01	18.44	19.74	20.21	22.88	44.79
ASPMK-519 LLP	22.97	23.01	23.94	24.30	25.89	25.99
Montazhspetsstroi JSC	21.89	22.02	23.97	24.56	25.04	26.02
Trest Sredazenergomontazh JSC	41.94	42.14	42.6	43.12	43.72	36.25
Almatyinzhstroi JSC	44.01	44.17	44.89	45.12	47.47	40.11

Table 7. *An analysis of the tax payments for corporate income tax of the largest taxpayers of the Republic of Kazakhstan (thousand tenge)*

Company	2014	2015	2016	2017	2018	2019
BI Group government corporation	14,629,821	15,906,163	16,456,750	17,920,575	20,591,173	8,500,616
Bazis Construction LLP	2,049,050.2	2,691,439.3	3,041,295.3	3,528,888.4	4,118,234.6	1,700,123.2
Alina Group LLP	1,388,328.1	1,573,541.1	1,772,413.1	1,929,307.2	2,134,275.2	2,165,386.3
Standart Tsement LLP	916,762.1	945,725.2	980,248.2	1,029,811.2	1,132,167.2	2,016,424.3
ASPMK-519 LLP	969,258	994,688.1	1,049,511.1	1,238,858.1	1,364,021.1	1,387,129.2
Montazhspetsstroi JSC	1,735,864.4	1,888,228.4	2,030,361.8	2,076,006.8	2,150,038.8	2,265,204.2
Trest Sredazenergomontazh JSC	1,685,192.1	180,985.1	1,835,823.2	1,881,801.2	2,014,213.3	1,923,145.1
Almatyinzhstroi JSC	1,740,727.1	1,927,963.3	1,967,808.4	2,013,420.4	2,115,765.4	1,942,164.2

Source: *compiled by the authors based on the materials from Forbes Kazakhstan (2018)*

According to Tables 6 and 7, the BI Group is a large building holding, a leader in the real estate market of Kazakhstan which has been operating since 1995, during which time it has earned a reputation as a professional and reliable partner. At present, the BI Group is a diversified holding, the structure of which is made up of divisions and directorates in various areas of building, development, and engineering (Table 8).

Table 8. *The main indicators of the BI Group's building activities for 2014–2019*

Year	CIT tax payments, million tenge	Income, million tenge	The volume of completed construction and installation works, million tenge	Investments in house-building, million tenge	Number of building contractors, units	The volume of building works performed on "green construction", million tenge
2010	11,879.286	209,320	1,367,238	291,476	8,787	297,385
2011	12,016.298	217,650	1,397,589	297,835	7,798	305,937
2012	12,208.476	227,450	1,425,174	305,092	7,052	327,164
2013	12,478.093	236,980	1,606,647	335,655	8,024	375,375
2014	14,629.821	241,690	1,744,914	421,013	7,103	132,313
2015	15,906.163	249,640	1,870,682	428,241	7,896	396,923
2016	16,456.751	263,490	2,055,924	497,861	8,376	427,105
2017	17,920.575	315,160	2,270,729	613,487	8,597	479,264
2018	20,591.173	376,000	2,670,256	687,092	9,634	507,688

Source: *compiled by the authors based on the materials from Deloitte. Kazakhstan Highlights (2018)*

Of great interest is the analysis of the influence of various factors on tax payments for the corporate income tax of the BI Group (Figure 8).

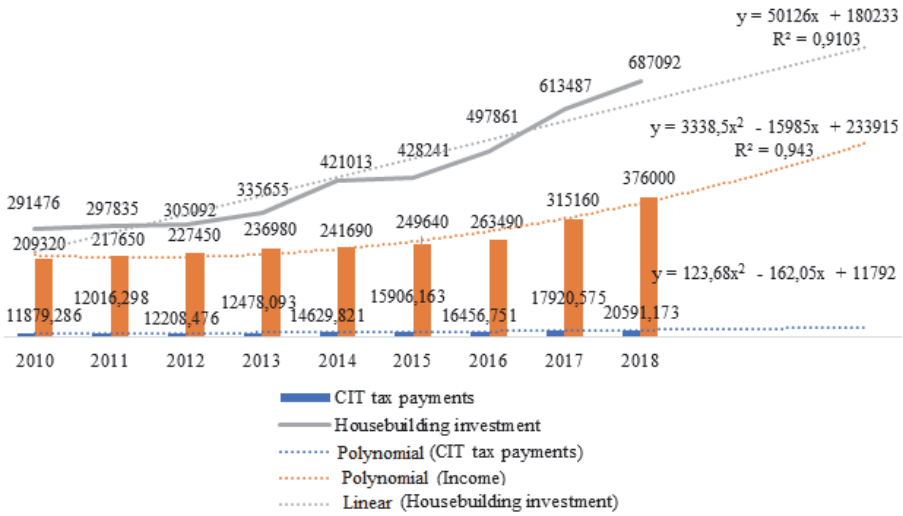

Figure 8. *The dynamics of the building works of the BI Group for 2014–2018, million tenge*

Such research can be performed with the use of correlation–regression analysis. The following notation will be used for analysis of the performance indicators of the BI Group company:

y – tax payments for corporate income tax (million tenge).

x_1 – income (million tenge);

x_2 – volume of completed construction and installation works (million tenge);

x_3 – volume of investments in housebuilding (million tenge);

x_4 – number of building contractors (units);

x_5 – volume of building works performed on «green construction» (million tenge).

To select the factors that should be included in the multiple linear regression equations, the statistical data of these indicators for 2010–2018 will be used (Table 9).

Table 9. *The matrix of matching correlation parameters*

	y	x_1	x_2	x_3	$x_{4...}$	$x_{5...}$
y	1					
x_1	0.9904	1				
x_2	0.9859	0.8906	1			
x_3	0.9465	0.6677	0.6616	1		
x_4	0.6221	0.6549	0.6325	0.68650	1	
x_5	0.6487	0.6865	0.6532	0.70197	0.7169	1

Upon estimating multiple linear regression, in order to ensure the statistical reliability of the results, it is required that the number of observations be at least 3 times greater than the number estimated by the parameter. Because of this, only three factors can be included in the model sought in this study. The results of the correlation analysis (Table 9) indicate that the following factors have the greatest influence on tax payments for corporate income tax (y): "income" (x_1), "volume of completed construction and installation works" (x_2), and "volume of investments in housebuilding" (x_3). Therefore, it is necessary to include the above three factors in the multiple regression model – x_1, x_2, and x_3. As a result of approximating the initial statistical data, the following multiple linear regression equation was obtained (Eq. 1):

$$y = 3{,}891.709 + 0.054x_1 + 0.007x_2 + 0.021x_3, R^2 = 0.985,$$
$$(2.421) \quad (7.764)\ (18.956)\ (15.612) \tag{1}$$

The multiple correlation coefficient equates to $R = 0.992$, which indicates a close correlation of the resulting parameter with two factorial traits simultaneously. Furthermore, the data of the regression analysis protocol indicates that the observed value of the Fisher criterion is $F_{obs.} = 107.100$. The critical value of the Fisher criterion at the significance level $\alpha = 0.05$ and the number of degrees of freedom $k_1 = m = 3$, $k_2 = n - m - 1 = 3$ (where n is the number of observations, m is the number of factors) equates to $F_{crit.}(0.05; 3; 5) = 5.409$. Because $F_{obs.} > F_{crit.}(107.100 > 5.409)$, the resulting regression equation is statistically significant and reliable.

The significance of the parameters of the obtained regression equation can be verified with the use of the Student's t-test. In the regression model, the t-statistics for the corresponding coefficients are indicated in parentheses. Comparing the values of the observed t-statistics values with the critical value $t_{crit.} = 2.571$ (at a significance level $\alpha = 0.05$ and the number of degrees of freedom $k = n - m - 1 = 5$), it can be concluded that the regression coefficients are statistically significant and reliable, and that the intercept is not.

Next is the analysis of the parameters of the obtained multiple regression equation: with a 1 million tenge increase in the company's income, its CIT payments should increase by 0.054 million tenge; with a 1 million tenge increase in the volume of completed construction and installation works, CIT payments should increase by 0.007 million tenge; with a 1 million tenge increase in investment in housebuilding, CIT payments should increase by 0.021 million tenge. One of the indicators that can be used to estimate the measure of the response of one variable to a change in another is the coefficient of elasticity. In the case under study, this will indicate the ability of CIT payments to change depending on changes in income, the volume of completed construction and installation works, and the volume of investments in housebuilding. Using (Eq. 2):

$$\bar{E}_{yx_i} = b_i \cdot \frac{\bar{x}_i}{\bar{y}}, \tag{2}$$

the following values of the aggregate average elasticity coefficients were obtained (Eq. 3):

$$\overline{E}_{yx_1} = 0.948\%, \quad \overline{E}_{yx_2} = 0.840\%, \quad \overline{E}_{yx_3} = 0.609\% \tag{3}$$

Having analysed these coefficients of elasticity, it is established that:

1. with a 1% average increase in the company's income, CIT payments will increase by 0.948% of their average amount, with the average values of the remaining variables unchanged;
2. with a 1% average increase in the volume of completed construction and installation works, CIT payments will increase by 0.840% of their average amount, with the average values of the remaining variables unchanged;
3. with a 1% average increase in investment in housebuilding, CIT payments will increase by 0.609% of their average amount, with the average values of the remaining variables unchanged.

Below is a consideration of the receipt of the estimated profit of the BI Group and the risks that may arise during the interaction of the activities of companies in related building industries (Table 10).

Table 10. *The indicators describing the financial activities of enterprises*

No.	Name	Income (USD)	Income from sales (million tenge)
P1	Sheberbuild LLP	not lower than 83	12.630
P2	Concern "Naiza – kurylys"	not lower than 72	11.010
P3	Munaikurylyservis LLP	not lower than 62	9.410

For a more complete understanding of the financial activities of companies that can affect profitability, a consideration of an alternative solution carrying the least risk is required. It is necessary to find the most advantageous solution, P_i. Table 9 indicates, by row:

P_1 – estimated profit from the implementation of the overhaul of the technical equipment of a new building at each enterprise;

P_2 – possible income from the implementation of the current renovation of the housing stock at each enterprise;

P_3 – estimated income from the implementation of the current repair of non-residential premises at each enterprise;

P_4 – possible income from the completion of the construction and installation works of a new building at each enterprise.

In this case, this is a task under conditions of uncertainty, when the probability of possible solutions is unknown. Therefore, approaches must be considered in a situation of uncertainty, where the following criteria are used: the Laplace principle of insufficient reason; maximum Wald criterion (the rule of extreme pessimism); minimal Savage criterion (minimum risk rule); and the Hurwitz criterion of generalised maximin (pessimism–optimism). That is, this problem corresponds to cases where the necessary decision should be made from a number of alternative decisions – $i = 1, \ldots, 4$ – which will correspond to the income q_{ij} ($j = 1, 2, 3$) from the sale of products, P_i. The subsequent matrix $Q = (q_{ij})$ is called the matrix of consequences (possible decisions), and is as follows (Eq. 4):

$$Q(4,\ 3) = \begin{pmatrix} \{76\} & 54 & 32 \\ 46 & 22 & 24 \\ 10 & 12.5 & 11.6 \\ 41 & \{60\} & \{65\} \end{pmatrix}, \tag{4}$$

In the braces ({}) of the matrix (4), the maximum values of each column are marked. When making decisions under conditions of uncertainty (the probability of the consequences of the decisions made is not indicated), the concept of a risk matrix $R = (r_{ij})$ is also introduced. Let us presume that it is necessary to assess the risk of the i^{th} solution, but we do not know the real-world situation. If this was known, then the best solution that brings the greatest income would be chosen. If the situation was j^{th}, then a decision would be made regarding the greatest income $q_j = \underset{i}{max} q_{ij}$. Hence, in making the i^{th} decision, we risk getting not q_j, income, but only part of it – i.e., making the i^{th} decision carry the risk of not taking part of the income (Eq. 5):

$$r_{ij} = q_j - q_{ij} = \underset{i}{max} q_{ij} - q_{ij}, \tag{5}$$

r_{ij} represents elements of the new risk matrix, R, which for this task will have the form as follows (Eq. 6):

$$R(4,\ 3) = \begin{pmatrix} 76-76 & 60-54 & 65-32 \\ 76-46 & 60-22 & 65-24 \\ 76-10 & 60-12.5 & 65-11.6 \\ 76-41 & 60-60 & 65-65 \end{pmatrix} = \begin{pmatrix} 0 & 6 & 33 \\ 30 & 38 & 31 \\ 66 & 47.5 & 53.4 \\ 35 & 0 & 0 \end{pmatrix} \tag{6}$$

Having the matrices of consequences (4) and risks (6), 4 criteria can be used to choose a solution under conditions of uncertainty.

1. Laplace's principle of insufficient reason is used in cases when it can be assumed that any one of the solutions is no more probable than another. Then, the probabilities of decisions can be considered equal, and the choice of decision can be made as in a risk situation. That is, the advantage is given to the option that provides the minimum average expected risk (Eq. 7):

$$b_i = \underset{i}{min} \sum_{j=1}^{n} r_{ij} \cdot p_{ij}, \tag{7}$$

where p_{ij} is the probability, which is the same for all solutions (in the presence of four solutions).

According to rows from the risk matrix (6), the results are as follows (Eq. 8):

$$\begin{aligned} b_1 &= 0 \cdot \tfrac{1}{4} + 6 \cdot \tfrac{1}{4} + 33 \cdot \tfrac{1}{4} = \tfrac{6+33}{4} = \tfrac{39}{4} = 9\tfrac{3}{4} = 9.75; \\ b_2 &= 30 \cdot \tfrac{1}{4} + 38 \cdot \tfrac{1}{4} + 31 \cdot \tfrac{1}{4} = \tfrac{30+38+31}{4} = \tfrac{99}{4} = 24\tfrac{1}{4} = 24.25; \\ b_3 &= 66 \cdot \tfrac{1}{4} + 47{,}5 \cdot \tfrac{1}{4} + 53{,}4 \cdot \tfrac{1}{4} = \tfrac{66+47,5+53,4}{4} = \tfrac{166,9}{4} = 41\tfrac{29}{40}; \\ b_4 &= 35 \cdot \tfrac{1}{4} + 0 \cdot \tfrac{1}{4} + 0 \cdot \tfrac{1}{4} = \tfrac{35}{4} = 8\tfrac{3}{4} = 8.75, \end{aligned} \tag{8}$$

The smallest value among the four obtained solutions corresponds to the fourth solution, $b_4 = 8.75$ Therefore, according to the Laplace principle of insufficient justification,

preference of the solutions – from the standpoint of the greatest income – is given to the fourth solution, P_4.

2. The maximum Wald criterion is used when a guarantee is required that the rewards in all cases are not less than the largest possible reward in the worst conditions. The best solution will be the one for which the gain will be the largest among the minimums of different options. The criterion used in this approach is called maximin (Eq. 9):

$$a_i = \max_i \left(\min_j q_{ij} \right), \tag{9}$$

where q_{ij} is the gain (results) that corresponds to a pair of connected solutions P_i (I = 1, ..., 4) and circumstances (assumptions) Q_j (j = 1, 2, 3).

Thus, the payoffs, q_{ij}, for each pair of combinations of decisions and assumptions are taken as the initial data when choosing solutions according to the Wald criterion. This criterion is simple and clear, but conservative in the sense that it orientates the person who makes the decision to too limited a line of behaviour. Therefore, the Wald criterion is used in cases where it is necessary to ensure success under any possible conditions. Then, proceeding from the consequences matrix (4), the row-by-row minimal numbers are as follows: a_1 = 32; a_2 = 22; a_3 = 10; a_4 = 41. Of these numbers, the largest value corresponds to the fourth line, . Hence, Wald's criterion recommends making the fourth decision, P_4.

The minimum Savage criterion is used in cases where it is necessary under any conditions to prevent a large risk. In accordance with this criterion, the advantage is given to the solution for which the maximum losses for different options are minimal (Eq. 10):

$$b_i = \min_i \left(\max_j r_{ij} \right), \tag{10}$$

where r_{ij} are losses that correspond to the i^{th} decision under the j^{th} variant of the circumstance.

This criterion is among the cautious. However, unlike Wald's criterion, which is aimed at obtaining a guaranteed payoff, Savage's criterion minimises possible losses. Here, the initial data upon choosing a solution are losses r_{ij}, which correspond to each pair of combinations of decisions and circumstances – P_i and Q_j. The main initial assumption of this criterion is that the application of variants of the circumstance affects the actions of smart opponents (competitors), whose interests are directly opposite to the interests of the decision-maker. This circumstance compels the person who makes the decision to ensure minimum losses from these actions of opponents. Proceeding from the risk matrix (6), the maximum values for each row are as follows: b_1 = 32; b_2 = 22; b_3 = 10; b_4 = 35. From these numbers, the minimum value, b_{min}, is chosen, which corresponds to the third solution, P_3.

4. The Hurwitz criterion of generalised maximin (pessimism–optimism) is used when it is necessary to fall somewhere between the line of behaviour based on deterioration and the line of behaviour based on improvement. In this case, the advantage is given to the solution variant for which the G_i indicator turns out to be the maximum, which is determined according to (Eq. 11):

$$G_i = \lambda \max_i q_{ij} + (1 - \lambda) \min_j q_{ij}, \quad (11)$$

where λ is a coefficient considered as an indicator of optimism (0≤ λ ≤1). At λ=0, the line of behaviour is based on improvement; at λ=1, the line of behaviour is based on deterioration – therefore, the Hurwitz criterion coincides with the Wald criterion.

In practice, the value of the coefficient λ is in the range from 0 to 1, and is taken depending on the specific circumstances and the risk propensity of the decision maker (the closer to 0, the greater the risk). Below are two cases where the risk is from 30% to 60%:

1. take λ = 0.4 (risk – 60%). Then, from matrix *Q* row-by-row, considering formula (4), we have (Eq. 12):

$$\begin{aligned} G_1 &= 0.4 \cdot 32 + 0.6 \cdot 76 = 12.8 + 45.6 = 58.4; \\ G_2 &= 0.4 \cdot 22 + 0.6 \cdot 46 = 8.8 + 27.6 = 36.4; \\ G_3 &= 0.4 \cdot 10 + 0.6 \cdot 12{,}5 = 4 + 7.5 = 11.5; \\ G_4 &= 0.4 \cdot 41 + 0.6 \cdot 65 = 16.4 + 39 = 54.4, \end{aligned} \quad (12)$$

Based on the data obtained, the Hurwitz criterion recommends making the first decision, P_1, which corresponds to G_{max}.

2. take $\lambda = 0.5$ (risk – 50%). Then, from matrix *Q* row-by-row, we have (Eq. 13):

$$\begin{aligned} G_1 &= 0.5 \cdot 32 + 0.5 \cdot 76 = 16 + 38 = 54; \\ G_2 &= 0.5 \cdot 22 + 0.5 \cdot 46 = 11 + 23 = 34; \\ G_3 &= 0.5 \cdot 10 + 0.5 \cdot 12.5 = 5 + 6.25 = 11.25; \\ G_4 &= 0.5 \cdot 41 + 0.5 \cdot 65 = 20.5 + 32.5 = 53, \end{aligned} \quad (13)$$

Based on the data obtained, the Hurwitz criterion recommends making the first decision, P_1, which corresponds to G_{max}.

3. take λ = 0.6 (risk – 40%). Considering formula (6), from, the matrix *Q* row-by-row, we have (Eq. 14):

$$\begin{aligned} G_1 &= 0.6 \cdot 32 + 0.4 \cdot 76 = 19.2 + 30.4 = 49.6; \\ G_2 &= 0.6 \cdot 22 + 0.4 \cdot 46 = 13.2 + 18.4 = 31.6; \\ G_3 &= 0.6 \cdot 10 + 0.4 \cdot 12.5 = 6 + 5 = 11 \\ G_4 &= 0.6 \cdot 41 + 0.4 \cdot 65 = 24.5 + 26 = 50.6, \end{aligned} \quad (14)$$

Based on the data obtained, the Hurwitz criterion recommends making the fourth decision, P_4, which corresponds to G_{max}.

4. take λ = 0.7 (risk – 30%). Then, from matrix *Q* row-by-row, we have (Eq. 15):

$$\begin{aligned} G_1 &= 0.7 \cdot 32 + 0.3 \cdot 76 = 22.4 + 22.8 = 45.2; \\ G_2 &= 0.7 \cdot 22 + 0.3 \cdot 46 = 15.4 + 13.8 = 29.2; \\ G_3 &= 0.7 \cdot 10 + 0.3 \cdot 12.5 = 7 + 3.75 = 10.75; \\ G_4 &= 0.7 \cdot 41 + 0.3 \cdot 65 = 28.7 + 19.5 = 48.2. \end{aligned} \quad (15)$$

Based on the data obtained, the Hurwitz criterion recommends making the fourth decision, P_4, which corresponds to G_{max}. The results of using the criteria for making a decision are summarised in Table 11 (the "+" sign indicates the decision recommended by the corresponding criterion).

Table 11. *A summary of the results of using different criteria for decision making*

Criterion	Solutions			
	P_1	P_2	P_3	P_4
Laplace				+
Wald				+
Savage			+	
Hurwitz	+ (risk – 60% and 50%)			+ (risk – 40% and 30%)

Opportunities to improve the validity and quality of management decisions

Table 11 indicates that under conditions of uncertainty, the BI Group has the following solutions:

1) the company should not choose the current repair of the housing stock at each enterprise, because the second solution was not selected by any of the criteria;
2) with an attitude of lower risk, the third and fourth options (current repair of non-residential premises or construction and installation works of a new building at each enterprise) should be chosen;
3) with an attitude of higher risk (according to the Hurwitz criterion – 50% and above), the first option (overhaul of the technical equipment of a new building at each enterprise) should be chosen;
4) based on three criteria, it is best to choose the construction and installation work of a new building at each enterprise, because the corresponding risk is lower (according to the Hurwitz criterion – 40% and below).

The analysis of the dependence of investments in the innovative process of the BI Group's building activity shows that investments increase with an increase in the number of construction and installation works. Thereby, of the four solutions in conditions of uncertainty, the optimal choice is selected – the construction and installation work of a new building at each of the three enterprises. This is selected as it poses less risk: firstly, and most importantly, this is associated with innovation in the form of new equipment, which, although it requires investment, also brings the most income with less risk than the other solutions; and secondly, a new building means construction and installation works. The efficient application of the methodological tools proposed in this study can significantly increase the validity and quality of management decisions taken to develop the potential of enterprises in the construction industry. Considering the building industry in general, the situation looks as follows: at the end of 2019, 605.7 billion tenge worth of investments were attracted to housebuilding, which was 15.5% higher than in 2018 (Figure 9).

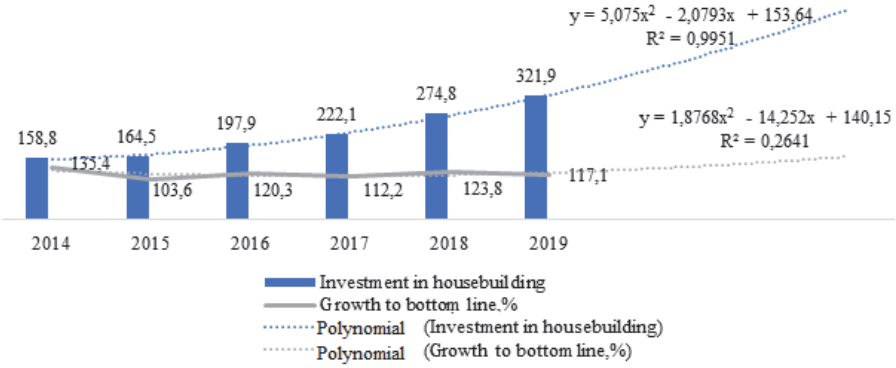

Figure 9. *The dynamics of investments in housebuilding in the Republic of Kazakhstan for 2014–2019, billion tenge*

Source: *compiled by the authors based on the materials from Ministry of National Economy of the Republic of Kazakhstan (2020)*

Overall, 4 tenge worth of private investment was attracted per 1 tenge of public funds. The annual volume of investments in housebuilding in Kazakhstan exceeded one trillion tenge in 2017, when the Nurly Zher program was launched in the republic. It should be remembered that the purpose of Nurly Zher was to increase the affordability of housing for the population. The tools used for this include: subsidising the interest rate on mortgages; subsidising loans to developers; and bringing engineering infrastructure to construction sites, including for individual construction. The last point is important, as apartment construction is predominantly developing in fairly large cities. For four months of 2019, the amount of investment in housebuilding amounted to 321.9 billion tenge – an annual growth of 17.1% delivered at once. It is noteworthy that during 2018, investments in housing construction reached a record amount of 1.2 trillion tenge – 18.6% more than the previous year (979.8 billion tenge) (Figure 10).

At the end of July 2019, 6.5 million square meters of housing were commissioned. Further, according to the press service of the Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan, a total of 55,849 housing units have been commissioned in the republic, including 24,013 individual houses. The increase in the volume of housing commissioned in comparison with the previous year continues in seven regions. The leaders in the commissioning of housing are the Turkestan (130.9%), Kyzylorda (128.7%), and Kostanay (118.6%) regions. A decrease in the rate of housing being commissioned is noted in the Mangistau region (87.7%) and in Nur-Sultan (64.1%). The index of physical volume in the building industry in the January–July 2019 period compared to the same period in the previous year amounted to 111.5%. Positive dynamics were observed in eight regions. The leaders in this regard are the Kyzylorda (275.5%), Karaganda (193.6%), and Atyrau (129%) regions. A decrease in this indicator was noted in three areas: the Mangistau (–30.4%) region and the cities of Nur-Sultan (–12.5%) and Shymkent (–34.4%).

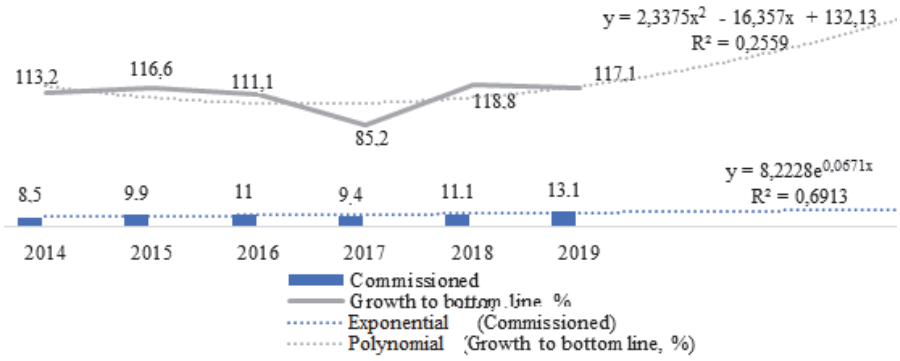

Figure 10. *The dynamics of indicators of new residential buildings commissioned in the Republic of Kazakhstan for the period from 2014–2019, thousand units*

Source: *compiled by the authors based on the materials from Ministry of National Economy of the Republic of Kazakhstan (2020)*

In 2019, the commission of housing in the amount of 13.1 million square meters is planned. In as little as four months of 2019, the total area of new buildings commissioned was 3.5 million sq. m. Ultimately, the more investments that are made in housebuilding, the more income the building company will receive and, accordingly, the CIT payments of the company will be higher. Due to the fact that the possibility of the population to purchase housing has significantly increased, there is an increase in mortgage lending due to the introduction of state programs. At the end of April 2019, mortgage loans increased by 24.8% year-on-year – from 1.1 trillion to 1.4 trillion tenge. The launch of the state program "7-20-25" in 2018 gave a new impetus to the mortgage market. Thus, within the framework of this program, as of 30 May 2019, 7,900 applications for loans in the amount of 91.4 billion tenge had already been approved.

The "7-20-25" program is the first housing program in Kazakhstan designed exclusively for the primary housing market, where the developer is chosen by the program participant. This stimulates the development of the housebuilding sector not only on the part of the population, but also on the part of developers: the effective demand of Kazakhstanis for primary housing is satisfied by increasing the motivation of the housebuilding market to commission new residential buildings (Resolution of the Board… 2018). Stimulating income growth through the taxation system is one of the main tasks of the state. The correct and timely calculation and payment of taxes allows for the minimization of many of a company's risks associated with the accrual of penalties and fines from government agencies. Therefore, the choice of income as an object of taxation allows states to record the appearance of excess profits in individual organisations, determine the reasons for their appearance and, if necessary, use the regulatory mechanism of taxation.

4. Conclusions

The main issue in accounting for income taxes is how to account for current and future tax consequences. According to the balance sheet method, the financial statements of a company should reflect the tax consequences of the reporting period (current income tax) and future tax consequences (deferred taxes). When calculating income tax, it is necessary to understand that construction, as an important industry for the economy, has an ambiguous nature, since this industry depends on many factors. Nevertheless, there are leading companies in Kazakhstan and, according to the latest data, 57 large enterprises engaged in the construction of residential and commercial buildings are registered.

Based on correlation and regression analysis, the authors analysed the influence of various factors on tax payments for the corporate income tax of the BI Group company, as well as the ability of corporate income tax payments to change depending on changes in the volume of construction and installation works and the volume of investments in housebuilding. The more investments are made in housebuilding, the more income the building company will receive and, accordingly, the corporate income tax payments of the company will increase.

Stimulating income growth through the taxation system is one of the main tasks of the state. Therefore, the choice of income as an object of taxation allows states to fix the appearance of excess income in individual organisations, to determine the reasons for its appearance and, if necessary, to use the regulatory mechanism of taxation. Tax liabilities play a significant role in the financial and economic activities of companies, and the correct and timely calculation and payment of taxes allows for the minimization of many of the company's risks that are associated with the accrual of penalties and fines from government agencies.

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