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THE IMPROVEMENT OF DECISION-MAKING IN THE LATVIAN TAX SYSTEM: CASES OF IRREDUCIBLE INCOMPATIBILITY TAKING INTO ACCOUNT RELIABILITY, EQUITY AND EFFICIENCY CRITERIA

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Abstract: *The rational functioning of the tax system is a significant problem for any state. The evaluation of the performance of the tax system is usually carried out considering only one component: government, business, or specific narrow parts of the tax system, such as an analysis of a particular tax, thus preventing a fully fledged assessment. One of problem that is crucial for the vitality of the tax system is its reliability.*

The purpose *of this article is to develop an approach to estimating and assessing the reliability of the tax system. Two major criteria of the functioning of the tax system are equity and efficiency, which form the basis of the optimization of the tax system by finding their optimal combination. The process of such multi-criteria optimization is usually associated with the irreducible incomparability of criteria.*

Methodology**:** *As tools, the proposed Weibull distribution, S-shaped curve, as well as a three-tiered scale for determining the level of reliability of the tax system are used. Applying experts' evaluation ranking and using Kendall's Concordance Coefficient for processing the resulting data, taxes and criteria on which concessions could be made are determined.*

Findings**:** *The analysis shows that the difference between the opinions of experts regarding the ranking of taxation criteria is related to their affiliation – state or business. To find a solution in this case, the method of successive concessions is applied, which requires ranking relative single indexes of taxation criteria, as well as taxes that are associated with them.*

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***Originality*:** *For the formalization of the process of dealing with the incomparability of criteria, a concept of business-oriented aspects of tax optimization is proposed, which is aimed at both business entities as well as individuals and state-oriented aspects of tax optimization.*

Keywords: *tax system, reliability of the tax system, tax system optimization, equity, efficiency, expert ranking*

JEL Classification Codes: *H20, H21, H29*

1. Introduction

The role of taxes in modern economic systems is exceptional. They are not only the main channel of budget revenues, but are also included in all the main links of the financial system, as well as forming and mediating the main financial relations in society. The efficiency of the main parts of the economy, the development of entrepreneurial initiative and the satisfaction of the basic needs of the state depend on the thoughtfulness and adequacy of the tax system to the existing economic conditions.

Modern states face many challenges related to the functioning of taxation policies and tax systems. It is supposed that the capacities of tax systems' tax rates could be at their upper limit; at the same time, progressive taxation may largely have exhausted its capabilities (Kiser & Karceski, 2017). In some cases, due to the different structures of taxpayers and their actions aimed at tax avoidance, presumptive taxation is a possible method of additional tax compliance enforcement (Bucci, 2019), which becomes another option for creating a stable, functioning fiscal system. Within the context of tax evasion, transparency is viewed as a possible measure of the tax system, including its reliability (Schoueri & Barbosa, 2013). Inter-organisational relationships and inter-organisational cooperation as a part of inter-governmental cooperation form one way of enhancing tax administration efficiency in the US (Birškytė, 2012). The regional aspects of taxation in the form of local taxes (Davulis, 2009) are also often looked at as a possibility for additional tax income for municipalities, with the possibility of reducing administrative costs as well as providing the means for a more optimal and targeted taxation approach.

The problem of optimal taxation is also related to the very specific problem of the trade-off between equity and efficiency (Mirrlees, 2017). Obtaining values for the application of this in practice has not yet been resolved with existing methodologies, and remains a theoretical issue in the sphere of taxation policy and optimal taxation. It is considered that in some cases the redistribution process could be very costly and have a negative impact on economic efficiency due to the fact that taxation has a disincentive impact on people's will to work. Nevertheless, it is argued that optimal taxation in the scope of the taxation pressure concept can influence economic activity at a 38.2% rate (Abuselidze, 2012). Besides the fulfilment of a purely fiscal function, specific taxes are also viewed as a potential

source of financing specific public goods and services: e.g., it is considered that there is a trend of financing health systems and social health insurance via labour taxes in low- and low-middle-income countries, which in practice may lead to even further inequality and fragmentation of healthcare (Karnītis et al., 2021).

The tax burden is often considered as a representative characteristic of the tax system, determining, among other things, the level of responsiveness of the taxpayer. Most approaches to assessing the tax burden are based on measuring the amount of taxes paid by taxpayers and their financial capabilities (through the indicators of income, revenue, profits, etc.).

Measuring the tax burden has its own purposes at the level of taxpayers and at the level of the state.

Enterprises are interested in determining the level of tax burden for tax planning and financial optimization purposes. The size of the tax burden can have a significant weight in the costs of a company, and forecasting the tax burden for the future is a necessary component of financial management. The process of preparing investment projects in certain areas of companies also includes the consideration of the values of the tax burden for each activity. The comparison of the tax burden of a particular company with the average tax burden of the industry or region helps companies navigate the tax landscape and look for ways to optimize taxes by applying all available tax incentives or by reorganizing the company (Bastani & Waldenström, 2020).

However, there are many questions that are still open: What should an optimal tax system look like (Kaplow, 2011)? How should it be constructed? What part of revenues should be exempted from tax so as for it not to be too burdensome, not to ruin the incentive to work for both businesses and employees, and at the same time for it to provide sufficient flow of revenue to the state budget? There is no single recipe for how to do this; moreover, there are no real guidelines for state authorities to follow. Instead, the tax policy of almost any state now follows almost a trial-and-error method, which can be neither optimal nor acceptable for society, as it shifts to an unreliable tax system. This leads to the important problem of the creation of an optimal tax system.

Currently, the role of taxes and the tax system is increasing due to the fact that it is one of the few real levers of regulation of economic and social processes that the state has in the context of the global economic crisis, which was exacerbated by the COVID-19 pandemic (Collier et al., 2020; Li et al., 2020).

The assessment of the level of the tax burden and the adequacy of the tax system, despite the fact that this topic has always been in the focus and attention of researchers, continues to be relevant (Celikay, 2020). There are several reasons for this. First, there is no unanimity in views as to which approach to tax burden assessment is the best in methodological terms. Second, tax burden assessment, by and large, has not yet become the most important mechanism for ensuring the effectiveness of tax policy through the establishment of the optimal tax burden.

Based on the aforementioned, the objective need for introducing a method to assess all

parts of the functioning of the tax system and their mutual vitality is arising. This need can be represented holistically as the reliability of the tax system. Reliability is considered the opposite category of risk, and is a systemic characteristic of decision-making and management. Mathematically, it is defined by an exponential formula (Ļeontjevs, 2023). Thus, the aim of this research is to develop an approach to estimating and assessing the reliability of the tax system, providing a framework for the extensive analysis of the tax system from a different viewpoint compared to the classical approach based only on its fiscal function. This research uses the following structure. The second part provides an analysis of theoretical findings related to the analysis of the problems of the tax system and its rational improvement, as well as the analysis of the development of the modern tax system in Latvia and its shortcomings. The third part substantiates the application of the methodology, including: the Weibull curve and the distribution used for reliability analysis; the S-shaped growth curve for continuous analysis and the prognosis of the changes in the reliability of the tax system over time; experts' evaluation ranking; and Kendall's coefficient W for determining taxation criteria, on which concessions could be made. The third part also justifies the sources of the statistical data used for the analysis. In the fourth part, the application of the reliability assessment shows that the tax system of Latvia has not reached the state of normal (reliable) operation, and would need further reforming. For this purpose, an expert evaluation ranking is carried out, determining the main direction for developing a rational tax system. In the final part, the conclusions are formulated, and recommendations are given related to the application of the developed approach and directions of further research.

2. Literature review

In Latvia, during the preparation and implementation of measures to reform the tax system, a set of problems of a financial and economic nature has arisen related to the formation of the budget of the country, taking into account efficiency and economic reliability.

The tax reform enacted in 2018 did not achieve one of the main goals of increasing tax revenues relative to GDP, nor did it grow the tax base rapidly enough. To reduce inequality, the tax burden for low-wage workers was reduced, but it is still significant and higher than in Lithuania and Estonia. The reform improved the capitalization and profitability of companies, but did not lead to a significant increase in fixed-capital accumulation and the corresponding expected economic breakthrough (Fiscal Discipline Council of Latvia, 2021). At the time of the introduction of the tax reform, the Lithuanian experience was studied and proposed, including a broader tax base for corporate income tax (Ščeglova & Mietule, 2018).

Independent preliminary analysis using the EUROMOD (Pluta & Zasova, 2017) tax–benefit microsimulation model, carried out at the time when the 2018 tax reform was announced, has already shown that it leads to only a small and temporary Gini coefficient decrement, which is not due to the introduction of income brackets. In this analysis, it was

shown that these changes are intensifying social inequality, and the progressivity of the tax reform was evaluated as sceptical. Prior studies on the fairness of the tax reforms in Latvia (Vanags, 2010) based on the Kakwani index indicated that progressivity in many of the considered forms has a negligible impact on social fairness in Latvia, yet could lead to a decline in revenues. Income inequality was considered to be a combination of unfair tax policy and an inefficient system of revenue redistribution (Jurušs, 2018; Vitols & Jekabsone, 2020).

According to the opinion of the Council of the European Union on the 2019 National Reform Program of Latvia and the delivering Council opinion on the 2019 Stability Program of Latvia, Latvia's tax revenue share of GDP is low compared to the European Union average and to some extent limits the provision of public services, particularly health care and social integration. Capital and property taxes are relatively low, and freezing the value used to calculate land and property taxes will further reduce tax revenues. At the same time, the tax burden on low-wage workers remains high compared to the Union average, despite the decline. According to various estimates, the share of the informal economy has declined in recent years. However, the share of undeclared economic activity in Latvia is still higher than in the other Baltic countries. In particular, the failure to declare full wages (i.e., a portion of wages paid in cash to avoid paying tax), especially in the construction sector, constitutes a significant part of the shadow economy.

The Council also noted that Latvia faces difficulties in implementing a number of social protection and integration principles contained in the European Pillar of Social Rights. There is high income inequality in Latvia because the level of redistribution using the tax and benefit system is low. Social benefits are still insufficient, and the impact of social transfers on reducing poverty and inequality is limited. Poverty risk among the elderly and people with disabilities is relatively high, and is increasing as the increase in benefits does not match the increase in wages. The poverty risk rate for seniors was 49.0% in 2018 (EU average 18.2% in 2018), while for people with disabilities it was 40.7% in 2017 (EU average 29.3% in 2017). State social benefits for the disabled and the minimum old-age pension have not been revised since 2006. The minimum income reform announced in 2014 has not been implemented and is negatively affecting the poorest households. Access to long-term care also remains insufficient.

Recommendations include the need for investment to address social exclusion, including nutrition and material assistance for the most disadvantaged. Investments are also needed, including in infrastructure, to improve access to childcare, long-term care, employment and other social services, and to ensure the integration of health and social services, including the transition from institutional to community-based care. The proportion of people with very serious housing problems is one of the highest in Europe (15.2% compared to the EU average of 4.0% in 2017), and there is a shortage of social housing. Investment is needed to improve the supply of affordable housing (Council Recommendation of 9 July 2019).

At the same time, public materials concerning the budget process and the modernization

of the tax system lack a description of the specific economic and mathematical mechanisms and models used in the preparation of the tax system reform that began in 2018 and its subsequent adjustments.

It should be noted that there exist international methods for evaluating tax systems, including rating methods.

Thus, the International Country Rating of Doing Business has been conducted since 2004 by the World Bank and the PricewaterhouseCoopers (PwC) consulting company (until 2021). It assesses the impact of government policies on business development. The Paying Taxes report is part of the rating used for comparative analysis of the advantages and disadvantages of tax systems of individual states. The number of countries participating in this rating is 190. The basis of this rating is the expert method, which provides for the construction of the taxation process of a small or medium-sized business within 1 year under different scenarios. The rating is supplemented by the results of surveys of experts who analyse the normative legislative regulation.

The tax systems of countries are based on various combinations of direct and indirect taxes, taxes on individuals and legal entities, and resident and territorial taxes, and the treatment of some of them has its own specifics. Such a variety of taxes and fees in different countries predetermines the use of classifiers.

The Paying Taxes study is based on the tax classification of international financial organizations such as the International Monetary Fund and the World Bank (The World Bank, 2021), according to which certain groups of taxes are identified.

This rating assesses the current tax system of the country, depending on the policy of the government at the moment, the state of tax legislation, tax administration management, the activity of tax audit, the size of tax rates and the number of taxes, methods and procedures for payment, etc.

However, the calculation methodology of the rating has a number of drawbacks and limitations. First, it does not take into account the taxation of individuals and enterprises – large taxpayers; instead, the model used is that of small or medium-sized businesses. Second, the developed scenarios do not assume international trade and, accordingly, do not take into account taxes on international trade. Moreover, environmental taxes are not singled out separately, despite the fact that the ecologization of the tax system is one of the most rational ways in which to develop economic regulation.

According to the International Tax Competitiveness Index (ITCI) – which ranks OECD member countries and their tax systems according to two main criteria: competitiveness, where a competitive tax code is one that keeps marginal tax rates low as the main incentive for development; and neutrality, where a neutral tax code is one that allows for the greatest profits with the least economic distortions – the more complex the law, the less neutral it is (Bunn & Asen, 2022). The index considers Corporate Tax Rank, Individual Taxes Rank, Consumption Taxes Rank, Property Taxes Rank, and Cross-Border Tax Rules Rank, from which an overall score is generated. It mentions the separate importance of corporate tax. Latvia is in second place out of 38 OECD countries in the Index, while Germany, France

and Italy are in 15th, 37th and 38th places, respectively.

These rankings aim to assess the current tax system as one of the conditions for successful business in the country, rather than to assess the effectiveness of the tax system as a source of budget revenue from the point of view of the state. To determine the average values within the rating, the geographical division is used, which does not always determine the economic specifics of the nearby countries. The methodology used by the World Bank continues to evolve, with the introduction of an additional indicator from the 2017 report, which should lead to greater objectivity in the assessment of tax systems. Participation in the ranking encourages governments to adopt and implement tax reforms that help improve the business climate in countries.

Scientific approaches to measuring and comparing tax systems sometimes involve the Laffer curve (Ferreira-Lopes et al., 2020), yet its practical usage and related concepts are often criticized (Fuller, 2020; Morgan, 2021). Most of the approaches based on the application of the Laffer curve are either heavily modernized and overcomplicated by the introduction of additional parameters or do not yield reliable results that can be practically applied for a precise course of action to improve the tax system. Moreover, this leads to situations where it is not possible to recognise and predict the full impact on all sides related to the process of taxation – government and taxpayers – leading to the process of the introduction and implementation of taxation changes via the trial-and-error method, which is generally undesirable due to the high rate of solutions that function at the desired level only in the short term.

However, the aforementioned ratings and approaches do not allow the reliability of tax reforms and the tax system of the country as a whole to be assessed. Thus, the aforementioned leads to the necessity of introducing a different approach and additional criteria for tax system assessment and comparison, which could also be used as the target indicator for the improvement of the tax system: reliability.

3. Methodology, data collection tools and techniques

As the research methods for the study, the analysis of primary and secondary data and the method of expert assessment were applied. Kendall's W coefficient of concordance was applied for analysing the consistency of opinions in groups and subgroups if, in the general case, the opinions of experts were inconsistent.

The Weibull curve, as a part of the Weibull distribution, was applied for the analytical and visual approach to the reliability analysis of the tax system of Latvia. An S-shaped growth curve was applied to demonstrate the required reliability development and growth of the tax system over time to maintain its functionality to the necessary extent. Methods of mathematical modelling, scenario analysis, determining reliability and operations research were applied for the in-depth assessment of processes within the scope of the reliability of the tax system, including additional criteria of the equity and efficiency of the tax system.

The statistical data on the basis of which the analysis and processing were performed was attained from the Central Statistical Bureau of Latvia, the State Revenue Service of Latvia, the Ministry of Finance of Latvia, the Fiscal Discipline Council of Latvia, as well as from European Union open sources. National tax legislation and important changes and amendments to the tax system were also analysed, and official and expert opinions and conclusions served as the basis for partial analysis of the reliability of the tax system in relation to the necessity of urgent and upcoming changes that would need to be made in the short and medium term.

4. Results and discussion

To assess the results of assessing reliability, it is necessary to construct a failure rate curve λ as a function of the operation time T of a particular tax system for a fixed number of taxes in force in Latvia, based on experimental data. The Weibull distribution will allow the reliability (Scholz, 2015) of the tax system to be assessed, for example, after a major tax overhaul. The Weibull distribution was chosen as it is closely related to the reliability of tax systems, and distribution allows the dynamics of changes in the reliability of tax systems to be graphically tracked.

When tax reform is introduced, a period of uninterrupted operation of the tax system should be projected (T_1–T_2). Since external conditions are constantly changing, after some time the tax system will no longer meet the objective realities, and another tax reform will be required (section T_2–T_3 in Figure 1).

In the preparation of the tax reform and its subsequent implementation, it is necessary to strive for the horizontal section of the Weibull curve to be as close to the abscissa axis as possible.

This is symbolized by the blue arrow in Figure 1. In this case, the failure rate λ will be minimal, which will allow the tax system to be considered reliable. Naturally, the length of the horizontal section (between points T_1 and T_2) should be long enough for the implemented tax measures to operate efficiently and reliably for a long time. This is shown by the red, double-edged arrow.

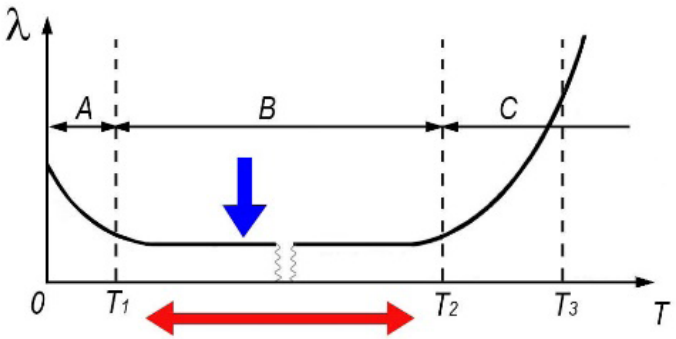

Figure 1. The minimization of failures and increasing the life cycle of the tax system's stable operation

Source: created by the authors.

When the tax system is in the T_2–T_3 area of the Weibull curve and, as mentioned above, it no longer fits the current situation, tax reform is necessary, which is always associated with significant costs. However, in certain cases, it is possible that this can be achieved with less costly measures.

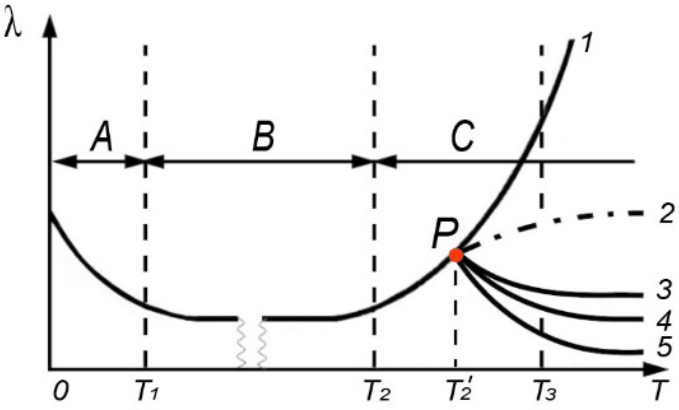

Figure 2. Decision options when the tax system is no longer appropriate for the current situation

Source: created by the authors.

The sign that a particular tax system has become obsolete, and at least requires modernization, is its transition of the horizontal part of the Weibull curve into a hyperbola (Figures 2 and 3). In this case, during the time period T_2' (which corresponds to the point *P* on the Weibull curve) there is the possibility of several scenarios (indicated in Figure 2

by numbers 1–5):

1 – the creation of a new tax system to replace the current one;

2–5 – taking measures to upgrade the existing system and return it to normal operation.

Scenarios 2 and 3 imply some deterioration in the functioning of the tax system within the limits acceptable to the state and taxpayers.

Scenarios 4 and 5 lead to improvements in the characteristics of the tax system.

Point *P* depicted in Figure 2 is a bifurcation point, where the process defining the critical changes in the tax system and its functional performance occur. The course of action upon reaching the T_2–T_3 section of the curve depends on multiple factors, such as the internal and external economic situation in the state, the degree of obsoleteness of the tax system, planned preparatory measures by the state bodies (if any), etc. However, the most important factor in such a situation is the time period in which the upcoming stage of obsoleteness is discerned and the preparation of corrective measures begins. If the approach to bifurcation point *P* occurs when the tax system is still in section T_1–T_2, then it is possible to thoroughly assess the advantages and disadvantages of two major directions of improvements (upgrading the existing tax system to prolong its functional period and lifecycle, or creating a new tax system if comprehensive changes are required and upgrading and minor reform will not yield a desired result for long enough, forcing another bifurcation point in the short term after point *P*).

If the bifurcation point *P* is determined when the tax system has already moved to section T_2–T_2' but is still close to T_2, then the number of options to choose from becomes limited. The time period before the tax system will reach the bifurcation point is becoming smaller than in the previous case, thus scenario *1* is becoming practically unavailable as the preparation of well-crafted major changes and their adoption would take more time than the T_2–T_2' period can provide.

If bifurcation point *P* occurs spontaneously or no measures have been taken beforehand and it is discovered when the tax system is already almost in time period T_2', then the number of options once more decreases. Scenarios *3*–*5*, aimed at improving the tax system for long-term functioning, are unlikely to be developed and implemented on time, thus only emergency treatment scenarios will be available for immediate implementation. They will perform akin to scenario *2* or worse in terms of the failure rate of the tax system, and even in case of the successful stabilisation of the tax system the general failure rate of the tax system will be higher compared to the other options and scenarios.

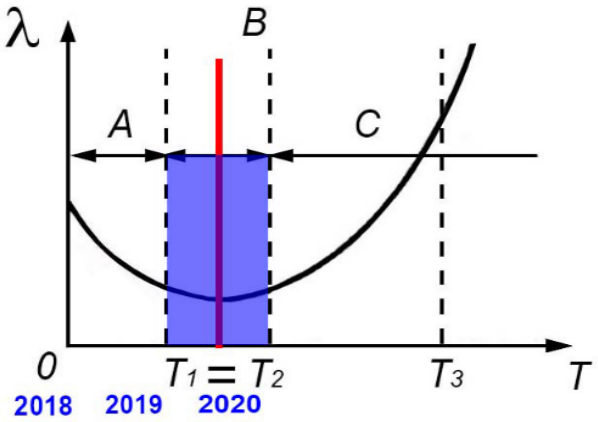

Figure 3. The reliability of the tax system in Latvia after the tax reforms of 2018 and the 2020s – an empirical analysis

Source: created by the authors.

In reality, in Latvia, the Weibull curve, also called the Weibull bathtub (or bathtub curve), has degenerated into a parabola in the period since the beginning of 2018 (Figure 3). It was never possible to reach the horizontal section, and it was not possible to create a stably operating fiscal system that would effectively perform its functions for a long time.

The tax reform was introduced on January 1, 2018, and at the end of February 2019, the European Commission concluded that, on the one hand, Latvia was among the countries whose economy was fastest approaching the EU average. On the other hand, the problem of population reduction and the distribution of the benefits of economic growth to all segments of the population had not been solved. In the conclusion of the European Commission, the tax reform that has been carried out has not made it possible to do this. As a result, new measures began to be developed, and the next significant changes in the tax legislation came into effect on January 1, 2021.

Then, on July 1, 2021, the next tax changes came into effect. They concern employers and affect micro-enterprises (both business owners and employees), persons conducting business activities, recipients and payers of royalties, and excise duty taxpayers.

Taxpayers of Latvia had a very negative reaction to these innovations. Public organizations, representatives of various unions and associations, as well as the president of Latvia called for the adjustment of tax changes for self-employed and part-time employees.

A petition to revise the changes enacted on July 1, 2021, gained 10,000 signatures in a short period of time and was forwarded to the Saeima. Most likely, in the near future, it will be necessary to adjust the tax laws again, because the innovations do not correlate well with the current economic and epidemiological situation in the world.

This situation is costly for the state because the funds spent on the development and

implementation of the 2018 reform did not pay for themselves (they could not even reach the horizontal part of the Weibull curve, Figure 3). The second negative aspect of the lack of reliability of the tax reform is the discrediting of the fiscal system in the view of taxpayers. Concerns about the economic efficiency, fairness, and increasing complexity of the tax system cast doubt on its reliability. Taxpayers may doubt the fairness of the tax system because they do not know whether those who have the same ability to pay actually pay the same amount of tax.

Even under conditions of economic stability, the requirement to estimate one's own revenues is an extremely ambiguous practice, and in fact is an attempt to estimate "tax capacity" (Meade 1978) as an ability to generate income. This approach makes it extremely difficult (if not utopian) to actually assess "tax capacity" in order to determine the value of tax (Banks & Diamond, 2010). In times of pandemic/crisis, this approach, in the author's opinion, is not acceptable.

Public confidence in national tax laws and tax administration is crucial because any state relies to some extent on a system of voluntary compliance with tax laws. The more time corresponds to the T_1–T_2 interval on the Weibull curve, the more taxpayers trust the current system, and the more understandable it is to them.

If taxpayers do not believe that the tax system is trustworthy, easy to understand, and fair to all, then the degree of voluntary tax compliance will obviously decrease. This is characterized by a higher failure rate λ on the T_1–T_2 section of the Weibull curve, compared to a tax system that has more trust from taxpayers. A higher failure rate, for example, may be reflected in a decline in the aggregate tax base (leaving for other jurisdictions, growth of the shadow economy, tax evasion, etc.).

Elīna Egle, chairman of the board of the Latvian Business Union and the Latvian Federation of Security and Defence Industries, in assessing the tax changes that came into force on July 1, 2021, said that the state administration is most concerned about the shadow economy (Press.lv, 2021).

The degree of interest in paying taxes and trust in the current tax legislation can also be assessed by the attitude of the population towards changes in the tax legislation. A survey conducted at the beginning of 2021 regarding the level of Latvian residents' awareness of the tax changes introduced on January 1, 2021, revealed that: only 14% of the respondents aged from 18 to 60 were well aware of the changes affecting them personally; 54% of respondents said they had heard something about the changes; 25% said they were not aware of them; 3% of residents believed that the tax changes will not affect them personally; and 4% of the population did not know whether they would or would not be affected by these changes (Tv.3lv, 2021). However, such a survey would give more complete information if it was conducted at the end of the deadline for submission of annual declarations.

Through its lifetime, the tax system passes several stages of development. These stages can be graphically represented as a curve (Figure 4), which can be considered as a counterpart of the Weibull curve.

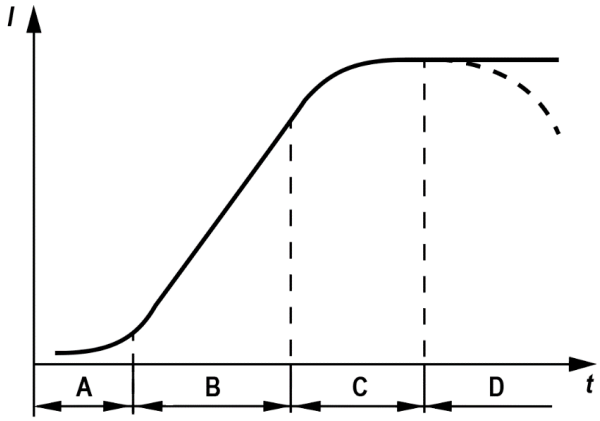

Figure 4. The S-shaped growth curve representing the stages of development of the tax system (*I* – target indicator(s) of the tax system, *t* – time)

Source: created by the authors.

As the target indicator(s), *I* can be taken from the main criteria of the tax system, such as efficiency and equity (Bejakovic, 2020). Reliability derived from the Weibull curve can be taken as a target parameter.

At stage *A* (which can be associated with the after-reform period where the failure rate of run-in processes is still very high), the tax system is developing slowly, and after reaching a certain level, development intensifies (stage *B*, where some major adjustments to the tax system may still happen if the goal of the implemented reform on the target parameter is not fully met). Then, after reaching a higher level, the growth rate slows down, until eventually the growth of the target parameter of the tax system stops (stage *C*). Stage *C* can be very lengthy (and it is necessary to ensure that it would be as long as possible). However, the parameters may start to decline (stage *D*), indicating that the tax system has started to wear down and no longer complies with current conditions and needs. The resultant curve is usually referred to as the S-shaped curve or logistic curve.

The cessation of the growth of the tax system does not mean that it will become obsolete and cease to exist. Instead, elements of the tax system that are newer, more advanced and better-adapted to the current conditions are introduced, which should lead to a qualitative and quantitative leap in the functioning of the tax system. This process is shown in Figure 5.

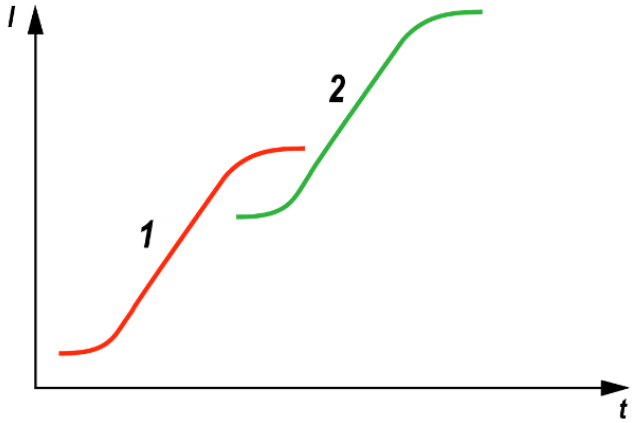

Figure 5. Desired improvement of the tax system over time
Source: created by the authors.

The system of rationing the level of reliability of the tax system (reforms, adjustments, changes) is designed to inform those involved in the development of tax reforms (adjustments, changes), as well as those who decide on the introduction of these developments, about the reliability of the tax system in previous periods. It can also forecast the reliability of the system when introducing specific changes.

It is advisable to use a three-tiered scale to classify the reliability of the tax system (reform, adjustments, changes) as follows: high degree of reliability, medium degree of reliability, and low degree of reliability.

Factors affecting the reliability of the tax system can be divided into several groups: the reaction of taxpayers; additional changes in tax legislation; recommendations, reports, and requirements of EU structures; as well as the impact of changes on budget revenues.

It is advisable to divide the criteria for qualitative assessment of the reliability of the tax system into the following categories: taxpayer reaction; additional changes in the tax law; recommendations, reports, and requirements of EU structures; requirements (recommendations) of the country's leadership for change; and impact on budget revenues. Points are awarded both cumulatively and separately in each category. Based on this, it is possible to distinguish two types of reliability: local, when the tax system is reliable in any group of criteria; and global, showing the aggregate reliability of the tax system. Local reliability does not mean the stability of the tax system in the long term. Depending on the reliability group, the tax system may lose local reliability over time, or vice-versa.

It should be noted that it is necessary to assess the frequency of changes in tax legislation. The improper design of the tax system and frequent changes in tax legislation have a negative effect on the relationship between the tax administration (government) and taxpayers, leading to the worse economic development of the state (Dimitrios et al., 2020).

Points are not accrued for the introduction of changes envisaged by the main reform (adjustment) in case of their gradual introduction as implemented in the initially planned terms under the condition of the aging process and the failure of the tax system.

Points are also not accrued when introducing changes caused by force majeure circumstances if they are aimed at reducing their negative impact.

In this case, it is possible to comment on the insufficient readiness (adaptability) of the tax system for such situations. However, it should be taken into account that with a reliable tax system the probability of its critical failure under force majeure circumstances will be lower than with an unreliable tax system. A comprehensive assessment of reliability according to the proposed criteria can be carried out using a three-tiered scale.

The reliability assessment of the existing tax system, as well as the reliability assessment of tax system reforms and changes and their impact on the tax system itself, is proposed within the integrated approach for governmental bodies for the purpose of taxation optimisation (Ļeontjevs, 2023). The reliability assessment not only allows the existing tax system to be discretely assessed, but also, together with other instruments of the integrated approach designed for taxation optimization, makes it possible to predict general tax system failure in future periods, as well as specific tax failures. This allows pre-emptive measures to be taken to avoid or minimize negative consequences. An integrated approach is deemed to be necessary as decisions aimed at the improvement of the tax system (including by adjusting its fiscal function) which are solely based on the analysis and modification of any discrete parameter (or group of the same type of parameters) often do not lead to the desired result. Such decisions exert a negative impact on other subsequent choices, and can also be a consequence of populist decisions.

Assessing the reliability of the tax system is associated with the application of the equity and efficiency combination (EEC) in tax policy (Leontyev & Reshina, 2020). During this, criteria related to equity and efficiency (as the main characteristics of the tax system) are evaluated in order to obtain possible solutions to the optimization of the tax system. However, in most cases it turns out that such criteria are incompatible due to their antagonistic nature (Plaskova et al., 2019). In this case, the method of optimizing successive concessions is applied for decision-making during irreducible incompatibility of the requirements of the equity–efficiency system, and is inevitably associated with the ranking of relative single indexes (Akhmetshin et al., 2019), as well as the taxes that are associated with them, in descending order of their importance. If accurate statistics are available, a probabilistic approach can also be used for ranking in some cases.

In this study, an expert group was formed from professors, teachers, employees, and master's and PhD students from a number of Latvian universities, as well as from staff who provide accounting services to firms operating in Latvia. The composition of the expert group was determined based on the following criteria: knowledge of the taxation system and tax legislation of Latvia; and practical experience with taxation specifics and procedures (for experts involved in accounting or experts involved in state structures related to taxation), or deep theoretical knowledge thereof (for experts among professors and

teaching staff whose main area of research is related to public finances and taxation).

The total number of experts was 26. In order to avoid conformism in the survey, the interaction of experts with each other was excluded. Only strict ranking was allowed, in which evaluated elements were assigned different ranks.

The purpose of expert evaluation was defined and set as the task of prioritizing (ranking by importance) the relative single indexes that characterize the criteria of tax policy, namely: equity, certainty and accuracy of taxes, ease of collection of taxes for taxpayers, and efficiency and obligation. Besides this, the ranking of taxes stipulated by the legislation of the Republic of Latvia was carried out using this approach. The method of obtaining expert information was a direct interview with a group of experts. The processing method involved decision making by vector criteria. In this case, different possible solutions are directly ranked by preference (indicators are ranked by importance) for the further implementation of the method of successive concessions in cases of incompatibility of requirements.

Then, the quality of the resulting data set was assessed. To concretely determine the necessary combination of equity and efficiency (with irreducible contradictions of these criteria), expert survey data were processed. As a method, Kendall's Concordance Coefficient W was chosen. The experts' opinions should be considered consistent if the value of the concordance coefficient is greater than 0.6. If the target indicator value is less than 0.6, then the opinions are considered non-coherent, and subdivision in subgroups should take place until the opinions of the groups would be coherent.

The group of 26 experts was asked to rank the 14 taxes that are currently imposed in Latvia, namely: Company Car Tax; Corporate Income Tax; Customs Duty; Electricity Tax; Excise Duties; Immovable Property Tax; Lottery and Gambling Tax; Mandatory State Social Insurance Contributions; Microenterprise Tax; Natural Resources Tax; Personal Income Tax; Solidarity Tax; Value-Added Tax; and Vehicle Operation Tax.

For the data from the survey of experts, the coefficient of concordance was $W = 0.84$. This means that the opinions of the experts related to the importance of the separate taxes for the tax system of Latvia are coherent.

Table 1. Distribution of taxes by importance according to the opinions of experts

Rank	Type of tax	Sum of ranks
1.	Value-Added Tax	59
2.	Excise Duties	68
3.	Corporate Income Tax	72
4.	Personal Income Tax	114
5.	Mandatory State Social Insurance Contributions	122
6.	Immovable Property Tax	160

7.	Customs Duty	188
8.	Natural Resources Tax	190
9.	Vehicle Operation Tax	220
10.	Company Car Tax	264
11.	Microenterprise Tax	304
12.	Lottery and Gambling Tax	307
13.	Electricity Tax	328
14.	Solidarity Tax	334

Source: created by the authors.

The results of the ranking of taxes in force in Latvia according to the collective opinion of the expert group are given in Table 1.

It should be noted that in order to obtain more accurate results, the expert group should be enlarged and formed from highly qualified specialists in the field of economics. Nevertheless, even in the current expert group, the results of this ranking for many criteria present a fairly objective picture, especially for those taxes whose sum of rank, x_j, differs significantly from its neighbours in the ranking. However, the taxes with rank sums, x_j, that differ insignificantly from each other could probably swap places with each other with a different selection of experts – for example, the electricity tax has a rank sum of 328, while the solidarity tax has a rank sum of 334.

The same expert group was also asked to rank the five main tax system criteria, namely: equity, certainty and accuracy of taxes, ease of collection of taxes for taxpayers, efficiency, and obligation.

As in the previous survey, it was necessary to rank the criteria of taxation by degree of importance, assigning them numbers from 1 to 5, where 1 is the most important criterion, and 5 the least important criterion. Only a strict ranking was allowed.

In this case, however, the concordance coefficient was equal to $W = 0.39$. As mentioned above, the experts' opinions are consistent if the value of the concordance coefficient is greater than 0.6. Since in this case the value of $W < 0.6$, the experts were divided into two groups (the number of groups may be larger) according to their opinions (according to the degree of agreement).

The first subgroup included 12 experts and the second subgroup included 14. The concordance coefficient for the first subgroup was $W = 0.63$ (i.e., more than 0.6). Consequently, the experts' opinions were agreed upon. Accordingly, the criteria of taxation are ranked by importance in the order shown in Table 2.

Table 2. Distribution of taxation criteria by importance according to the results of processing the opinions of the first subgroup of experts

Rank	Criterion	Sum of ranks
1.	The criterion of obligation	21
2.	The criterion of certainty and accuracy of taxes	25
3.	The criterion of equity	31
4.	The criterion of efficiency	46
5.	The criterion of ease of collection of taxes for taxpayers	57

Source: created by the authors.

For the second subgroup, the concordance coefficient was $W = 0.65$ (i.e., more than 0.6). Consequently, the experts' opinions were agreed upon. Accordingly, the criteria of taxation are ranked by importance in the order shown in Table 3.

Table 3. Distribution of taxation criteria by importance according to the results of processing the opinions of the second subgroup of experts

Rank	Criterion	Sum of ranks
1.	The criterion of efficiency	21
2.	The criterion of certainty and accuracy of taxes	26
3.	The criterion of equity	48
4.	The criterion of obligation	52
5.	The criterion of ease of collection of taxes for taxpayers	63

Source: created by the authors.

This analysis shows that the first subgroup of experts was composed of those who are predominantly associated with business. This is confirmed by the fact that the criterion of equity is seen as more important compared to the criterion of efficiency. The second subgroup of experts, on the contrary, had state-oriented experts, thus the criterion of efficiency was considered most important.

For approaches of this kind, it is proposed by the authors to distinguish two aspects of tax optimization: business oriented and state oriented.

The business-oriented aspect of tax optimization is defined as a set of measures used by the taxpayer (most often by an enterprise or an individual) or by an outsourcing firm serving them in order to reduce the tax burden in the short or long term or to postpone tax payments. The beneficiaries of such actions are taxpayers themselves. These activities can include legal and illegal tax optimization, as well as leaving it to other jurisdictions to reduce the tax burden. In extreme cases, this can lead to the complete cessation of activities due to the high value of the tax burden.

The state-oriented aspect of tax optimization is defined as the actions of authorities

with special powers to regulate the process of taxation. These actions should be aimed at improving the business climate in the country and increasing the competitiveness of national business, as well as stimulating the creation and development of business in general. At the same time, the structure and administration of taxes are being improved, and tax administration is being automated. In the scope of the state-oriented aspect, two main areas of government actions in the field of taxation can be distinguished: the accumulation of tax payments and the formation of the tax part of the budget; and stimulation, through leverage, of certain economic activities or sectors of the economy.

5. Conclusion

The reliability analysis of the Latvian tax system after the tax reforms that began in 2018 was performed using an assessment curve, which showed that in the studied time interval, it was not possible to create a stably operating fiscal system that would effectively perform its functions for a long time. On the one hand, this led to the irrational use of public funds spent on the development and implementation of tax reforms, which did not lead to the full implementation of the tasks set and required the need for additional costs to adjust them. On the other hand, the lack of reliability of tax reform discredits the fiscal system in the eyes of taxpayers and significantly increases the probability of failures.

The suggested model of reliability is recommended for use in assessing the reliability of the existing (operating) tax system to determine its life cycle in order to prepare reforms to minimize possible failures of the tax system in a timely manner.

The choice and prioritization of issues between the conflicting goals of equity and efficiency are still relevant in the sphere of taxation. In order to obtain a definite solution in the equity-efficiency combination, the experts' ranking was carried out. The lack of generally accepted criteria of efficiency and equity is making the situation more difficult to solve (however, the efficiency criterion generally allows for a simpler and more intuitive scheme of mathematical definition, thus it is usually less controversial among experts). The results of the ranking clearly show the difference between the opinions of experts: in one group, the criterion of equity is prevailing over efficiency, while in the other the criterion of efficiency has significantly larger importance. A concordant opinion is only obtainable after the separation of the experts' opinions into subgroups – the overall population is not concordant, meaning the opinions of the experts significantly differ. Thus, the introduction of the business-oriented and state-oriented aspects of tax optimization can provide a more precise framework for determining a rational tax system. This is proven by the fact that the subgroups have different distributions among equity and efficiency criteria. At the same time, in the process of tax creation or reform at different stages, in cases of its incompatibility with requirements, it is advisable to use the method of expert assessment (ranking) by forming an expert group.

Due to the fact that the outcome of the results obtained after processing the expert

survey are heavily impacted by the composition of the expert group, the problem of reducing both the influence of the human factor and the difficulty of balanced composition arises. An advisable approach to this could be an automatic expert system for assessing taxes and tax criteria. The expert system could be developed as an artificial intelligence system (e.g., designed as a neural network). The main purpose of such a system should be the automatic assessment and ranking of the necessary requirements for analytical decision-making in the sphere of taxation. This would provide decision-makers with several beneficial advantages, such as the high speed of data processing and obtained results, more comprehensive possibilities for taking into account additional economic indicators, as well as lowering the time lag of assessment and reducing the possibility of bias and the impact of the human factor.

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