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KEY MICROECONOMICS NOTES: "STEPS FOR GEVGELIJA AERODROME INFRASTRUCTURE DEVELOPMENT INVESTMENT"

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ABSTRACT

As in life, so in the traffic system, it revolves around balance. The growth of the economy as a result of the balanced development of the transport system, which analyzes the concept, importance, strategy, and, the meaning of inflation as one of the elements for entry into the European Union, requires an explanation of the environmental, economic and social impact. In order to explain the impact of inflation on the transport system in the Republic of Macedonia, we start from the cost benefit analise, as well as its elaboration in connection with the concept of economic growth. The dominant explanation for this trend is the continuous upward trend in economic growth necessary for implementation and entry into the European Union. The purpose of balancing in this essay is to determine the potential of aerodrome infrastructure transformation, that is, to determine which sectors and what economic growth means at the national level with the goal of building the traffic aerodrome infrastructure. To explain the necessary evolution to sustainable growth, the theory of equilibrium or balance will be used to explain the necessary progress at the national level. The significance of this research is the improvement of the co-operational aerodrome infrastructure in the country as a need for the development of the country in the process of implementation of the reforms of the European Union. Together with related strategies and initiatives that affect Macedonia, the aim of this thesis is to determine how and in what way Macedonia participates in the transformation of its economy and contributes to the common European economy.

KEYWORDS: microeconomics, equilibrium system, supply/demand, costs/benefits

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1. INTRODUCTION

Economics is a social science that studies how society chooses to use scarce resources that can be used differently because of their limited quantity, in order to produce, distribute, and consume goods that are needed for the development of the transportation system as a whole. The central problem of the economy is the lack of resources, which raises the issue of sustainable development of the traffic airport infrastructure. In view of this fact, the aspiration of society as a whole is that in addition to the stated constraints that organize the optimal allocation of resources in order to derive the greatest social benefit, in this essay justified by cost-benefit analysis, ie. offer and demand. Economics is a science that studies the laws according to which the social distribution of scarce resources occurs, according to the principles of optimization, taking into account the selected objective function, which we try to optimize (that is, to maximize it if the higher value of the function is more favorable, and minimize if less favorable) with given constraints. Microeconomics in airport traffic finds the central question of the most efficient allocation of resources with given constraints. The word economizing means exactly that: to achieve the greatest effect using the available resources and at the same time to maximize the profit of the given project for the development of the new infrastructure of the airport in Gevgelija. The objective functions can be different with a difference between the use value and the cost of production of the goods... with which we can also describe the economy as a science that gives us answers to three basic questions: WHAT, HOW and FOR WHOM? So: - What types and quantities of products, in this case airport infrastructure, should be produced in the air traffic system? - How to use the deficit infrastructure in an optimal way in the traffic system? - How to make an optimal distribution of the produced infrastructure in the traffic system? These are the questions that this article will answer.

The methodology for solving problems in traffic networks intended for Gevgelija aerodrome infrastructure uses a four-step method:

A. collection of data for the construction and upgrading of traffic aerodrome infrastructure in the vincinity of Gevgelija city,
B. analysis of traffic aerodrome infrastructure data in the country,
C. concrete and detailed proposal of solutions for the traffic infrastructure at national level,
D. study of the achieved effects in the air traffic.

In that way, with a gradual approach, it is possible to reach a logical and practical solution.
In the first step, it is necessary to gather all the necessary information about the air traffic problem. This data collection requires statistics, official information, and effective operation with existing aerodrome infrastructure. The analysis of these data requires a certain number of professionally qualified persons who can give their realistic interpretation. From these analyses, the most important

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part of the solutions stands out crucial for aerodrome infrastructure. After this analysis, the one who is in charge of solving the problem should present a project solution intended for Gevgelija aerodrome that includes the three basic elements:

- Inclusion of a physical aspect in the adjustment of elements of the air traffic network with the characteristics of aircrafts and users
- Includes necessary modalities in air traffic education
- Includes legal and police system reforms as needed necessary for air traffic development.

Finally, it is useful to observe the results during the advanced period in which the applied solution exists. The results can be seen directly through the statistical efficiency of the movement of aircraft through the drop in the number of accidents. It is possible that many solutions require revision and improvement, so this is the last step of particular importance for country air traffic system development.

2. General Equilibrium – Balance of Supply/Demand with Result in Cost / Benefit

The two-factor commodity parameters of neoclassical allocation theory are consumer preferences and factor ownership to provide the data needed for the role of demand in determining general equilibrium prices and quantities. This solution has one essential feature, which is the unsatisfied demand for production and consumption for input services of factors or for outputs of goods.

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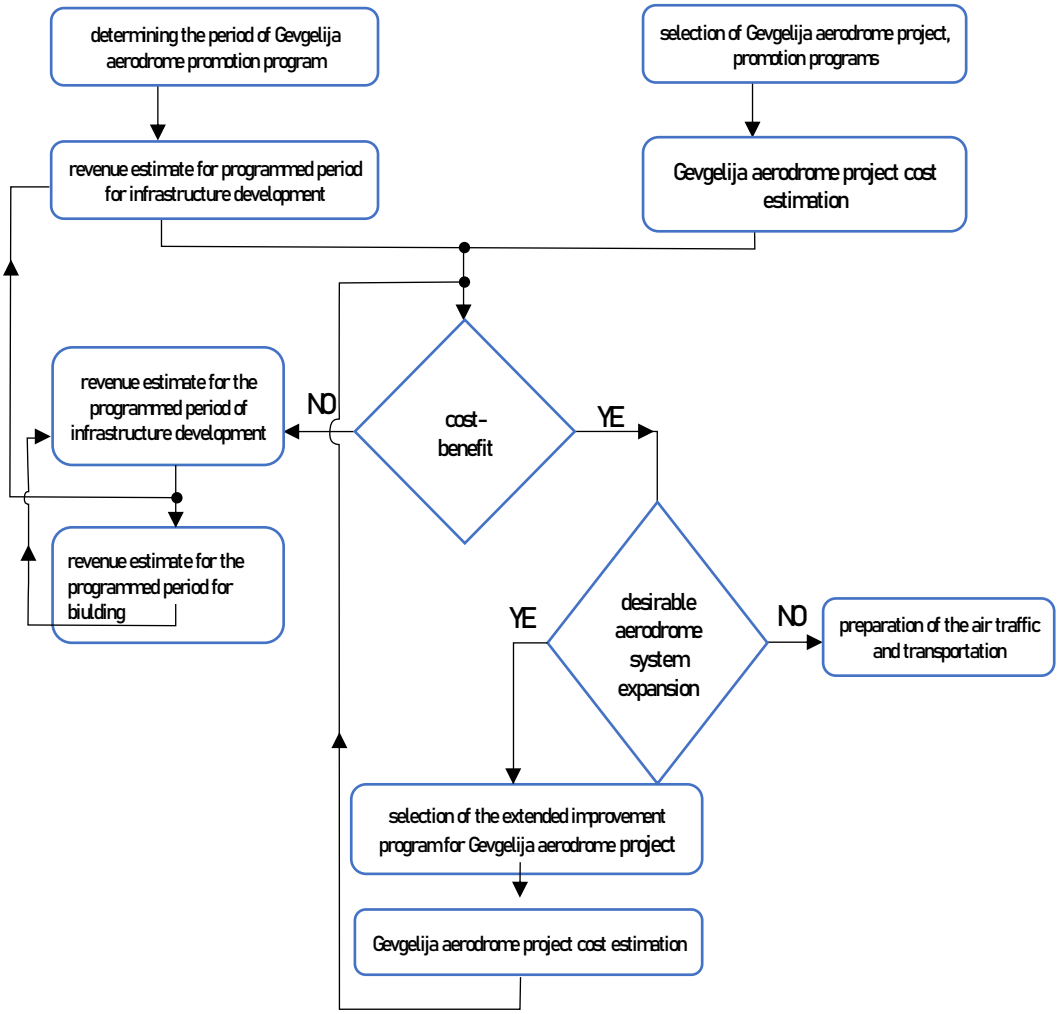

Figure 1, The role of cost-benefit in improving the air traffic system with new aerodrome infrastructure
Source: author`s picture, reference 4

Going deeper in the evaluation of the equilibrium system, the absence of excess demand defines the equilibrium in all neoclassical models, in the analysis of supply correspondence, by requiring that the relative price does not exceed opportunity costs in order to ensure zero excess demand for the factor's services. If the prices exceed opportunity costs, there was excess demand for at least one factor. Price constraints characterize the absence of excess demand for factors by excluding the situation in which producing agents receive a profit. It is symbolic of situations in which by limiting the price to be less than or equal to the cost of the unit factor without implying equality between supply and demand. The excess supply of any given factor requires a zero price for its services on the grounds that before the

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allocation problem is solved, it is not known which factor will be scarce, i.e. which will have a positive value. All resources in the neoclassical allocation model are in fixed supply, but this does not mean that an additional or marginal unit of any given factor will necessarily add to the value of production. Equilibrium analysis of supply and demand requires the specification of the behavior of resource owners as consumers in a budget set concept that defines alternative consumption bundles for each owner that depend on individual factors and input and output prices to determine the particular choices made. Aggregate demand depends on consumer tastes, factor prices, and the given allocation of resources among consumers where the general equilibrium for factors requires them to be such that aggregate demand does not exceed its aggregate supply. Supply depends on the condition that relative price ratios do not exceed the corresponding opportunity cost ratios, which leads to the fact that the equilibrium allocation of resources depends on the simultaneous solution of a whole set of relations: resource constraints, price constraints, and equilibrium conditions in supply and demand.[1]

[1] Classical and neoclassical theories of general equilibrium, Vivan Walsh, Harvey Gram, New York, Oxford University, press 1980, page 245- 246

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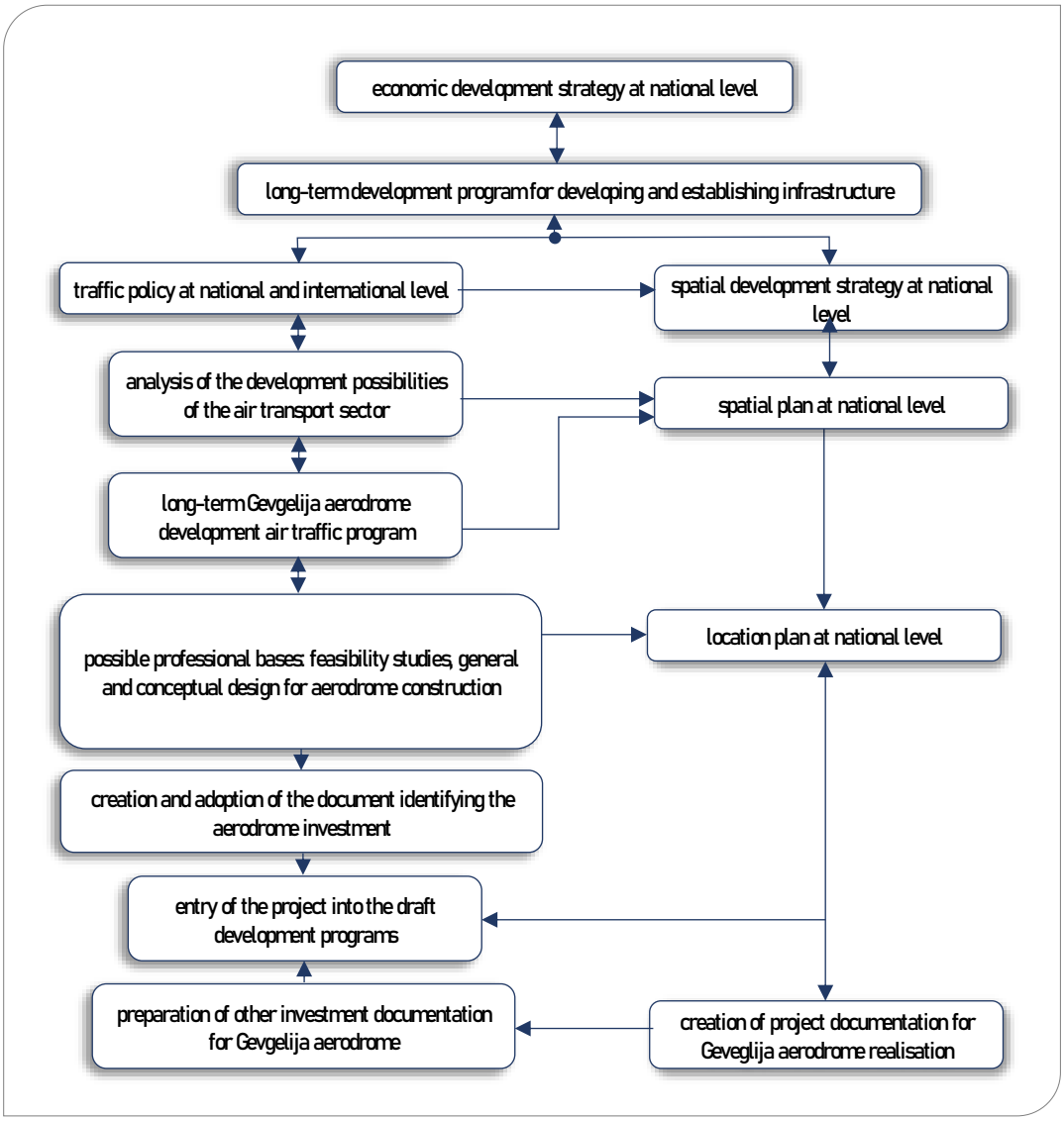

Figure 1, The course of preparation of planning documents intended for new aerodrome infrastructure
Source: author`s picture, reference 4

3. Principles of Evaluation of Transport Investments in the Field of Transport Economy

3.1 Overview of investment valuation

Access to investments in air traffic can be considered from the perspective of transport operators and managers of transport aerodrome infrastructure, such as transport companies on the one hand, or from the perspective of society on the other. This makes a difference in the following:

- which items will be included in the aerodrome investment valuation balance, and

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- which criteria will be used to evaluate, that is, to choose different alternatives and to rank the investment into final realisation for Gevgelija aerodrome.

The authority dealing with air traffic exploitation can be defined as the owner and/or operator of the transport infrastructure. Only those elements that are shown through the statements of the accounts of the companies are included in the economic assessment of investments in relation to the enterprise, in the form of performance within a specific calculation. The aerodrome as a company tries to achieve the highest possible profit but is limited by the costs that balance the company's budget. The sum of the company's total costs must at least be covered by the sum of the revenues from the services sold to the users. The economic criterion, which is used in the selection and classification of the aerodrome investment from the point of view of the company, is profitability.

Profitability is measured based on the resulting difference between revenues and expenses. A certain activity is considered profitable if the income exceeds the cost. Otherwise, the data activity is considered unprofitable or deficient.

If the transport market is perfect, i.e. there is competition and there are no air transport companies that develop much more than other transport companies, then the transport market can be considered as an instrument for optimal allocation of social resources. In reality, the situation is completely different, i.e:

- There is no single air transport market, but many different markets that differ geographically, time, according to the mode of transport, etc.
- Certain companies, modes of transport, and public services have significantly increased productivity compared to others.
- Certain investments in the transport sector are particularly large and unequivocal.
- The state of assembly with local authorities owns and manages most of the air transport infrastructure. Therefore, payment for the use of this aerodrome infrastructure is usually in the form of fixed fees and pricing mechanism markets are generally not properly forged in a given context.
- For social and political reasons, state and local governments establish public air transportation services and prescribe anti-economic obligations that govern the provision of these services. This is manifested through the obligation to perform services at prices that are previously subject to approval by public authorities, providing services for a certain period of time and for standard relationships, defining prices by political factors that do not take costs into account, etc. In turn, the state and local authorities sooner or later face unprofitable provision of such services as a result of fulfilling the above obligations.
- Air transport activity causes a number of important external effects for the "third party"[2].

[2] "Third-party" in a given context, a non-direct party and/or provider of certain transport services.

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As a result of these statements, it is clear that the aerodrome as a company is not able to base it on the choice of investments in the air transport sector from the perspective of the company. More specifically, there is a need to introduce additional criteria, including the calculation of those factors that do not appear in the accounting and financial system of the air transport company. On the other hand, it is possible to examine the consequences of investments on the overall situation in society through appropriate analysis. Such analyzes include other elements in addition to the criteria of profitability in relation to the company, such as:

- the use and psychological value attributed to users of air transport services,
- positive and negative influence of external factors that produce companies and users of air transport services in relation to a "third party".

For undertaking such an analysis in terms of comparing the impact of the costs and benefits of an activity on society as a whole society. The analysis is based on the fact that the total sum of benefits exceeds the sum of the total expenses of the activity or investments by society. At the same time, criteria for acceptance or rejection, the choice between alternative and ranking activities, depends on the goals set by the company.

3.2 Methods for evaluating investments

The purpose of the economic evaluation of investments in air transport is to show whether the proposed investment solutions are justified and feasible. Therefore, the proposed solutions are evaluated depending on the relationship between the expected expenses and benefits, as well as the relationship between the necessary and available material resources. In order to make an economic evaluation of investments, certain methods should be used. Methods for evaluating investments in air transport are usually divided into three basic groups:

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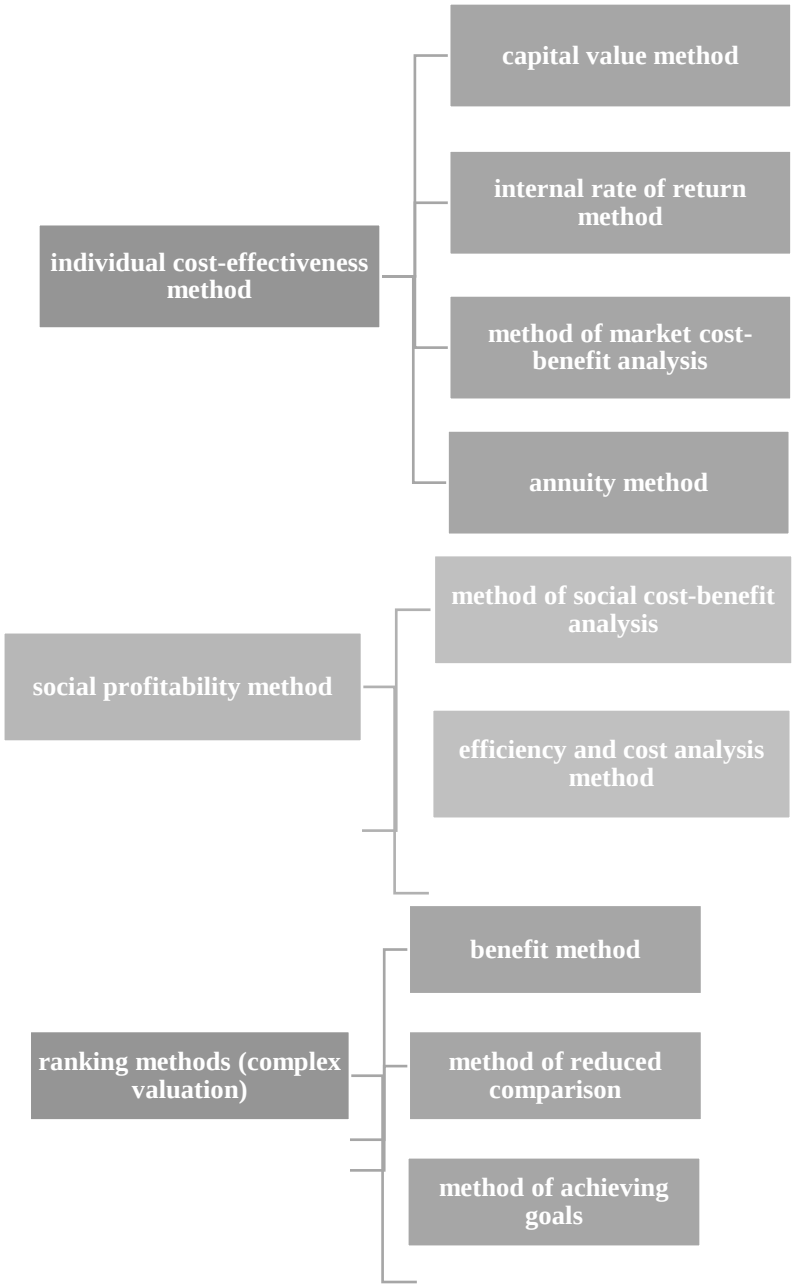

Figure 2, The most common methods for evaluating air traffic investments
Source: author`s picture, reference 2

The following figure provides an overview of the methodological instruments that can be commonly used to evaluate air transport investments with aerodrome infrastructure point of view.

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Individual methods of economic efficiency are commonly used in current business practice. Conceptually, they are clear, easy to understand and simple to use. The main feature of this method is that the value of aerodrome investments seen from an individual point of view (company, aerodrome, etc.) with a monetary expression of value. In this case, preference is given to short-term aerodrome investments with high cash receipts, which are less typical for investing in the field of transport. In addition, these methods take into account only the direct effects of the air investment, but their amounts are calculated in accordance with market prices. Considering the above facts, the methods of individual profitability are applied in aerodrome investment projects with the following characteristics:

- relatively small total amount of required resources (material, money, labor for this STOL aerodrome, etc.),
- simplicity in terms of aerodrome technical feasibility,
- shorter aerodrome life span and,
- provided a form of direct charge for the use of funds or aerodrome infrastructure.

The main reason for avoiding the use of these methods for more complex aerodrome investments is the inability to include the many and varied effects that occur in the operation of an even more complex air transportation system. The reason for this is the fact that very often certain effects cannot be expressed in monetary values. Social profitability methods include broader and long-term social interests. These methods take into account all favorable and unfavorable effects resulting from the realization of the aerodrome investment in air transport. It is necessary to emphasize two key features of these methods:

- all effects are measured and displayed regardless of their ability to be expressed in monetary values,
- it becomes irrelevant who bears the costs and enjoys the benefits of the aerodrome investment: the investor, the user or the company.

Social profitability methods are mainly considered from two aspects:

- aspect of efficiency and
- aspect of effectiveness.

In the case of efficiency methods, one variant is always advantageous over the other if its net gain exceeds the net gain of the other variant. This approach involves maximizing total net benefits, i.e. minimizing total net costs and achieving the highest possible benefit/cost ratio. In the case of effectiveness methods, variants that:

a) it achieves the goals of the plan more fully if the amount of available funds is determined,
b) minimizing the costs of implementing the plan, if the goals to be achieved are set.

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Cost-benefit analysis[3] is the core of the group of social efficiency methods. An important feature of this method is that it is the basis for assessing the social costs and benefits of the aerodrome investments made. Furthermore, this method includes direct and indirect costs and benefits. If it is a question of investing in the construction of new plants on the line, the effect of which is not only measured by differences in the size of the costs of construction, maintenance and operation in relation to the same costs for the previous state of the line, but also on the impact of new drive lanes to reduce travel time, reduce the number of traffic accidents, improve the quality of the environment, etc.

It should be noted that this approach to the valuation of aerodrome investments in transport does not strictly apply to investments in infrastructure, but also to means of transport. It is often present to a lesser or greater degree of interactivity between infrastructure and vehicles.

By balancing the total benefits and costs, the total return on investment can be calculated in terms of social profitability. The components ("g", "j" and "n") are on the usage side, and the cost component is the component ("d"). The basic principle of this method is that the benefits exceed for each investment option, ie:

$$B - C \geq 0 \ \ or \ \ \ B/C \geq 1 \, , where:$$

- (B) - the sum of the total investment benefits for a particular variant,
- (C) - sum of the total investment costs for a certain variant.

The figure below shows the relationship between the use of cost-benefit analysis.

[3] The common name in English language literature is "cost-benefit analysis"

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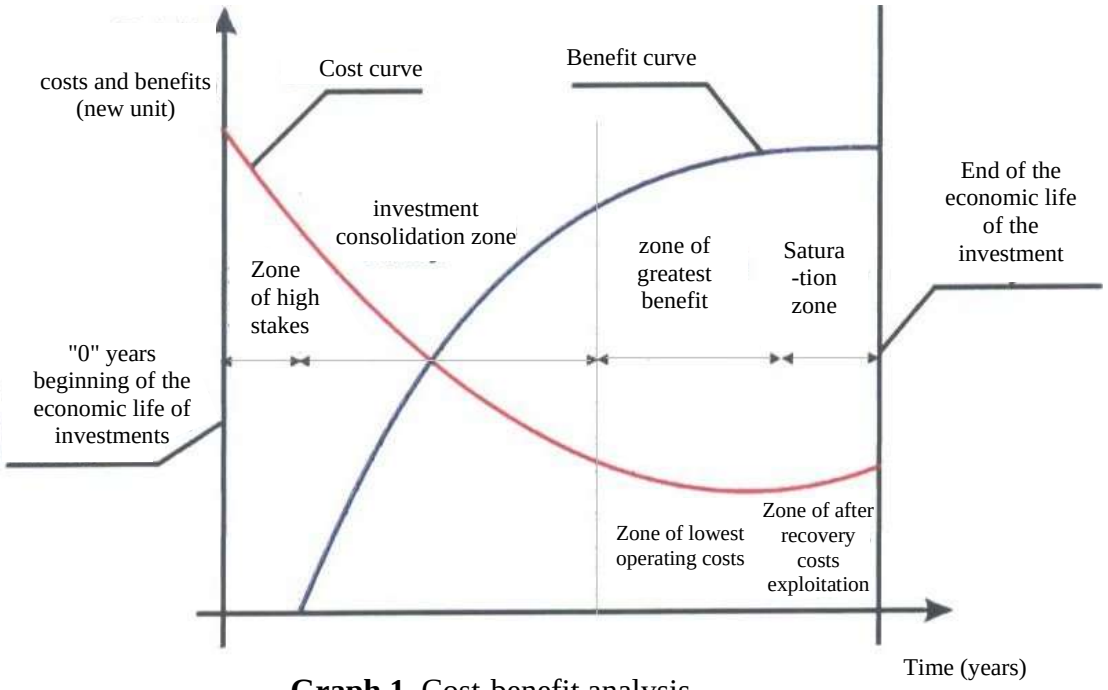

Graph 1, Cost-benefit analysis

Source: author`s graph, references 2

3.3 Presentation of the relationship in the analysis of the efficiency of the investment in transport

At the very beginning of the aerodrome investment, the investment is in the zone of high investment costs and has not yet generated any benefit. It is desirable that the period of positioning and investments in this zone be as short as possible. After the physical implementation of a certain investment, the same benefits begin to be directed. Then the investment is in its consolidation zone, simultaneously increasing benefits and decreasing costs. At the end of the consolidation zone, the investment enters the area of maximizing benefits while minimizing costs. It is desirable that the period of investment positioning in this zone be longer, because in this zone the most significant effects of the investment are achieved. At the very end of the investment's economic life, it enters the saturation zone in terms of benefits and the zone of gradual increase in operating costs in terms of costs. Benefits are stagnant in this area and costs are gradually increasing. The most favorable investment option has the highest benefit/cost ratio, which in any case must be greater than or equal to the value of "l". One of the methods for calculating benefits and costs is the well-known net worth method.

This method basically involves the use of a discount rate, which reduces the future cash flows used and the present value costs. The following form is used:

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$$V_n = C + \frac{B}{1!} + \frac{n(n-1)x^2}{2!} + \cdots$$

$$V_n = C_0 + \frac{B_1 - C_1}{1+r} + \frac{B_2 - C_2}{(1+r)^2_{i=0}} + \cdots = \sum^{n} \frac{B_i - C_i}{(1+r)^i} (2)$$

(Vn) - the net present value of the investment,
(C0) - the costs of investing in the fee-free zone,
(B1...n) - the benefits of investments in several years of life,
(C1...n) - investment costs in several years of life,
(r) - investment discount rate,
(i = 0....n) - the economic life of the investment, expressed in years.

The validity of the economic assessment using the cost-benefit analysis method depends on the extent to which certain effects can be determined, evaluated and compared with measurable indicators. The basic questions that are raised and that need to be resolved in the investment evaluation process are:

a. What costs and benefits should be included in the analysis?
b. How to evaluate them?
c. What rate should be used to discount it to present value?
d. What is the true economic life of a permanent investment?
e. What are the main limitations?

Efficiency and cost analysis[4] separate the most important features of possible solutions into two sets of indicators: cost and effectiveness. In this analysis, the costs are usually defined as the monetary expression of the costs of all those resources that are necessary for the construction, maintenance and exploitation of the proposed investment solution, during the lifetime of the investment, minus the revenues from the provided transport services. Effectiveness is defined as a measure that shows the degree of realization of the goals of the plan with a certain variant. The figure below shows the relationship between these two indicators.

[4] The common name in the English language literature is "cost-effectiveness analysis".

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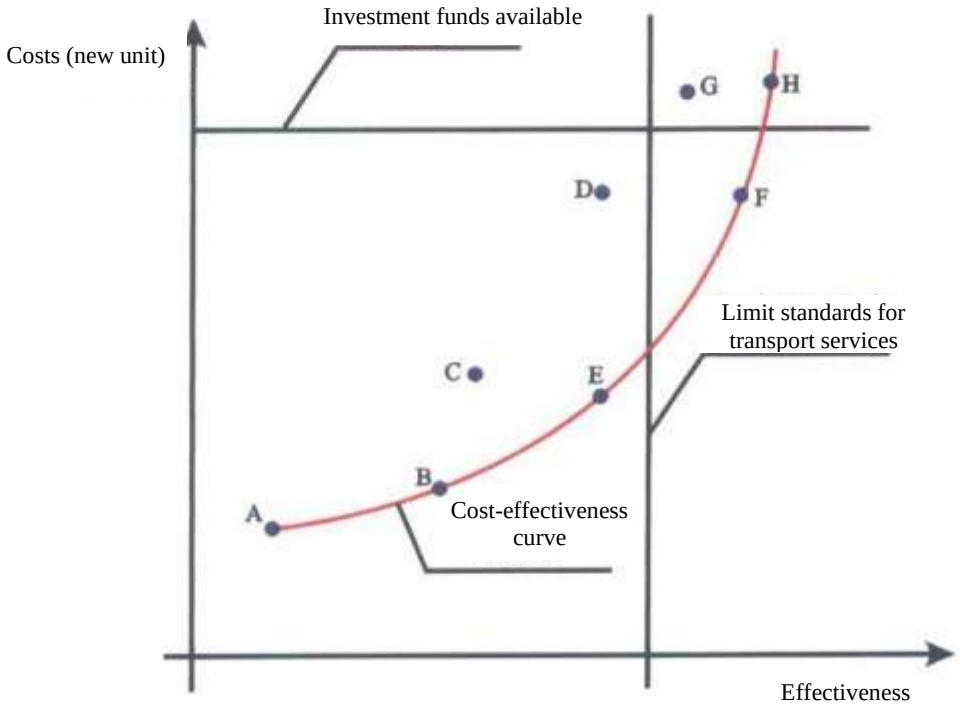

Graph 2, Presentation of the relationship under analysis of the costs
Source: author`s graph, reference 2

Variant slides marked "C", "D", and "G" differ from other solutions that are more expensive than others, although they provide the same level of effectiveness. Ignoring solutions that show an extremely unfavorable relationship between costs and effectiveness, a set of solutions is obtained that is taken into account for further consideration ("A", "B", "E", "F" and "H") - The best solution in this set of solutions is a variant marked with "E", which has the highest level of effectiveness, but at the same time does not exceed the limit of available funds and standard service levels. The process of applying cost-effectiveness analysis consists of the following interrelated stages:

- determining the goals, criteria and standards of the given aerodrome investment project,
- identifying possible solutions for realizing the set goals for the given project,
- Assessment of all the effects of the proposed solutions, including the assessment of direct and indirect costs and the measurement of physical effects,
- Evaluation of the effectiveness of each variant and,
- Comparison and selection of variants.

The value and order of each variant is measured by the amount of expenditure required for the expected degree of effectiveness. The degree of effectiveness is defined as the ratio between the expected effectiveness of the system and the expected amount of the total costs of the system.

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$$E(M_1) = \frac{E(E_1)}{E\ (C_1)} < 1\ , where:$$

E (Mi) - the expected ratio of effectiveness and cost for variant (i)
E (Ei) - Expected efficiency for variant (i)
E (Ci) - expected costs for variant (i)

Typically, most variants will satisfy certain objectives well, while other objectives will satisfy these same variations poorly or otherwise. Therefore, each variant can be ranked according to how much it contributes to achieving the goals. For illustration, an example is given below.

A certain company responsible for the delivery of public transport in the city, in its plan, it is planned to improve the service in traffic, through the introduction of the so-called "low-floor". This investment aims to achieve two of the following goals:

- To ensure that employees in the outskirts of the city have fast and convenient transportation to workplaces in the city center and vice versa.
- To enable people with significantly reduced mobility, due to physical disability, to have a higher degree of mobility at least to the appropriate
- health facilities.

Of these two goals, it is determined that the first goal is considered twice as important as the second goal. In order to fulfill these goals, three variants of investments were developed, which have the following characteristics:

- Variant l satisfies the first objective well by about 85%, while the second objective is partially met by about 10%.
- Variant 2 partially fulfills the second objective by about 50%, and the first objective is not satisfied at all.
- Variant 3 partially fulfills both goals, the first with about 70% and the second with about 20%.

Investment and exploitation costs are different for each variant and amount to the result of the evaluation of the listed variants in terms of effectiveness and price can be obtained as follows:

[goal l (% Satisfied. needs.)] • [goal l (weight)] + [goal 2 (% Satisfied. needs.)] • [goal 2 (weight)] = overall goal

This analysis shows that the worst embodiment 2, because less efficient than embodiment 1 and 3. The decision to choose between embodiment 1 and 3 will depend on the rest of the constraint elements, and that the available budgets and the minimum standard level. Unlike the economic assessment, the complex assessment does not show the effects of investing in transport with only one indicator for a

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group and only in monetary values. These methods are equally important for measurable and uncertain effects, which is why these methods are more flexible than economic assessment methods, whether it is about individuals or the social profitability of an investment. Comprehensive valuation methods were created in an attempt to overcome the difficulties in collecting the necessary data and expressing monetary values for those effects that do not have a market price. Complex evaluation methods often boil down to the ranking of variant solutions. The utility method is actually an adapted method of cost-benefit analysis, whereby the utility of certain options is quantified in monetary and non-monetary terms. In this way, this method extends to a cost-benefit analysis framework, providing a full insight into all aspects of individual variants for the community as a whole, for specific groups of people and individual enterprises or organizations within the treated area. The application of this method presupposes the division of the treated surface into more homogeneous groups within two key categories of "producer" and "consumer" effect carriers.

Costs and benefits are assessed separately for each group. Estimated values show the extent to which individual variations directly or indirectly affect companies or individuals, each of which is a producer or consumer with a certain effect. The reduced comparative method also belongs to the complex evaluation methods. This method takes into account direct and indirect effects, as well as measurable and non-measurable effects. When this method is the method for calculating the basic quantitative and supplemented by a system of quality result assessment, provided qualitative indicators for the final result. In addition, non-measurable effects have a corrective character and therefore their participation in the total number of points for a particular variant should be reasonable. This action is considered reasonable if the total amount of points, which are allocated to the measurable and non-measurable effects, measurable effects accounting for the value of (a) are not measurable effects with value (b), so that: a + b = l (4);

where measurable effects (a) are dominant.

The methods for achieving the goals can basically be divided into two groups:

- methods involving simple ranking of variants against predefined objectives and
- methods that use insensitive measures to determine the degree of realization of predetermined goals by individual variants.

The most commonly used methods are from the second group. Their basic characteristic is that investment objectives are recorded in such a way that progress towards them or deviation from them can be measured in an appropriate manner. Furthermore, the objectives are numbered to express the relative importance of each objective or are ranked against each other in order to estimate their importance.

These methods include a way of achieving the goals. This method is known to require the following in application:

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- Formulating goals in advance,
- operationalization of previously formulated goals,
- determining the target groups of people in the treated area, which will reflect the effects of the investment,
- determination of appropriate weights and
- determining the time dimension of costs and benefits for each of the variants.

4. Investment and evaluation aspects

The evaluation of investments from the perspective of the company is often called a financial appraisal. This evaluation aims to compare current income and expenses, during the economic life of investments, the situation "with" and "without" the realization of the investment. In this aspect, the effects of investments in a company that provides transport services are first measured, especially the impact of profit or loss. As a result of this approach to evaluation, flows of income and expenditure measures within the limits of market prices and includes not only the real cost factors, goods and services, but also taxes and subsidies that affect them. Analyzed streams of income and expenses are shown through relevant indicators for the profitability of the transport company, as service providers. Financial costs and benefits arising from the investment project in question are those that appear in the budgets of transport companies or authorities (institutions) to undertake investments. In general, they are:

- Expenses:
  - Investments
  - Operating costs (including maintenance, salaries, social contributions, energy, materials, purchases, etc.).
- Benefits:
  - Income from the sale of transport services to consumers

These are elements of transactions between the company or body and their suppliers and customers. The values presented for them in the relevant financial planning assessments are gross value. The basis for obtaining the revenue benefits of the transportation services provided can be found by analyzing the elasticity of demand for the service with respect to the price of the service. Price elasticity of demand is the degree of sensitivity of the quantity demanded of services to changes in the price of these services. From a business perspective, it represents a functional relationship that indicates the amount of individual services that are purchased at different rates at a specific location at a specific time. Creating a demand curve is necessary for the company to answer the following question: "At what market price can a certain volume of services be realized, which, with other given and even factors, maximizes total revenue?" The form for calculating the price elasticity of demand is as follows:

(E) - price elasticity of demand

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(C_o) - the price of the service before the price change
(C_1) - the price of the service after the price change
(q_o) - quantity of service before price change
(q_1) - quantity of service after price change

$$E=((\square q / q_0):(\square c/c_0)\cdot (c_0 \square q_0 \quad \square q_1 \square : q_0 \square c_0 \quad \square c_1 \square)$$

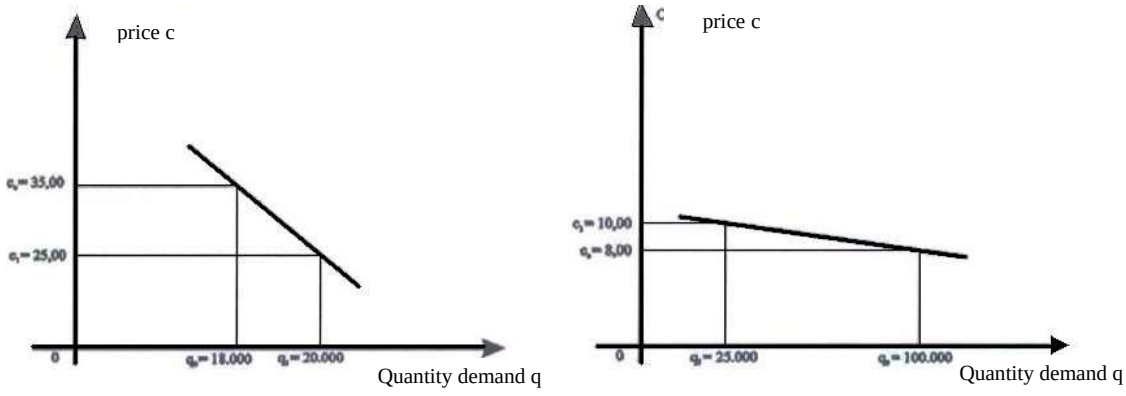
Price elasticity of demand can be elastic and inelastic. Examples of elasticity and inelasticity of demand are given below. Table 2 provides an overview of the elements for calculating the price elasticity of transport on the route of a particular link. The values (Co) and (ci) give the ratio of the prices before and after the change, and the values (qo) and (qi) give the ratio of issued cards before and after the price change.

The negative values of the calculated price elasticities are confirmed by an inverse relationship between the demand price. The following relationships apply:

- Price elasticity of demand is considered elastic, if E <-1
- Price elasticity of demand is considered inelastic, if -1 <E <0, and
- Price elasticity of demand is considered balanced, if E = -l.

The diagrams below give a picture of the relationship between elastic and inelastic demand.
From the aspect of the realization of the company's income, the price elasticity of demand can be:

- if a reduction in the prices of services results in a lower, and an increase in prices is higher than total revenue, demand is inelastic and
- If a decrease in the price of a service leads to an increase in total revenue or if an increase in the price of a service leads to a decrease in total revenue, demand is elastic.



Graph 3, Diagrams of elastic and inelastic demand
Source: references 2

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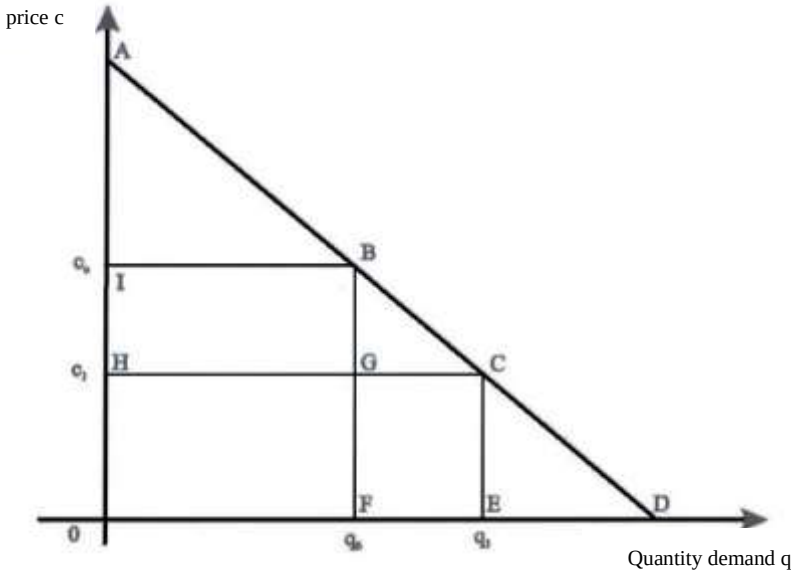
During the introduction of the investment, the price elasticity of demand is manifested through several cases. An overview of these cases is provided below.



Graph 4, Price elasticity of demand function

Source: references 2

The meanings of the individual elements in Figure 5 are as follows:

(c) -price

(q) - quantity

ABCD- demand function

(CO, qo) - price and quantity demanded without investment

(c1, q1) - price and quantity of investment demand.

For a given demand curve, four basic cases can be different if other conditions are the same:

- Case I: If the implementation of the considered investment does not make possible the reduction of the sales price (c1 = co), it is impossible to include any income (P) in favor of the investment.
- Case II: if the implementation of the investment results in a decrease in the selling price (c1 < C0), the difference will be registered as a function of the elasticity of demand between points (B) and (C), that is, income (P) will be registered in favor of the investment in the amount:

$$P_{11} = c_1 q_1 - c_0 q_0$$

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The difference in income is sometimes called producer or seller surplus, as opposed to user surplus [5], on the other hand, evaluating investments from a societal perspective is often called an economic assessment. The purpose of this approach is to evaluate the contribution of the investment in achieving other goals, which is to increase the profit for the users of the services. In order to achieve this, the economic assessment starts from the investment valuation approach in "with" and "without" investments. According to the results obtained from this evaluation, the costs and benefits will be expressed by measures of economic efficiency or as a cost advantage.[6]

An economic assessment has the following important features:

- For factors, goods and services that have a market price, this price will be taken as the basis, without taking into account taxes and subsidies,
- For factors that are not marketable but can be valued, this valuation will be considered as the value for the corresponding costs or benefits. This could be
- refer to the value of the time spent on the road, human injuries or material damage due to traffic accidents, etc.
- for factors that are not sold and for which no economic value has been estimated can be considered real, the effects will be evaluated in the physical units of the trajectory of other indicators and shown separately, outside of the cash flows of costs and benefits.

From these characteristics, the basic difference between the financial and economic valuation of the investment can be noted. The financial assessment starts from market prices, which are actually realized during financial transactions and are registered in the company's accounting system. The economic assessment starts from the so-called "shadow prices", which serve to eliminate all tax elements, including subsidies.

These prices also serve to remove various effects, which are due to market imperfections and create a distorted picture of the profitability of certain investments. When the economic assessment of investments, taxes and contributions (for example VAT, transaction fees, customs duties, special rates, such as fuel taxes, etc.), financial assistance and subsidies must be excluded from the flows of costs and benefits. This approach is given because taxes and subsidies result only in the transfer of part of the income, which essentially has no meaning in relation to society as a whole. Effects that give a distorted picture of the possibilities for certain investments can be seen in the example of the level of employment in the country, which is, in fact, a macro-economic indicator.

Wages and social security contributions, which are the result of unemployed persons admitted to work during the period of economic crisis, at a time when the unemployment rate in the country is at a high level, should not be taken into account for a particular analysis, (or if it is taken, and then only

[5] In the wider literature, these terms are recognizable in English as "Producer's/Seller's Surplusand Consumer Surplus".
[6] In the wider literature this term is recognized in English as "Opportunity costs"

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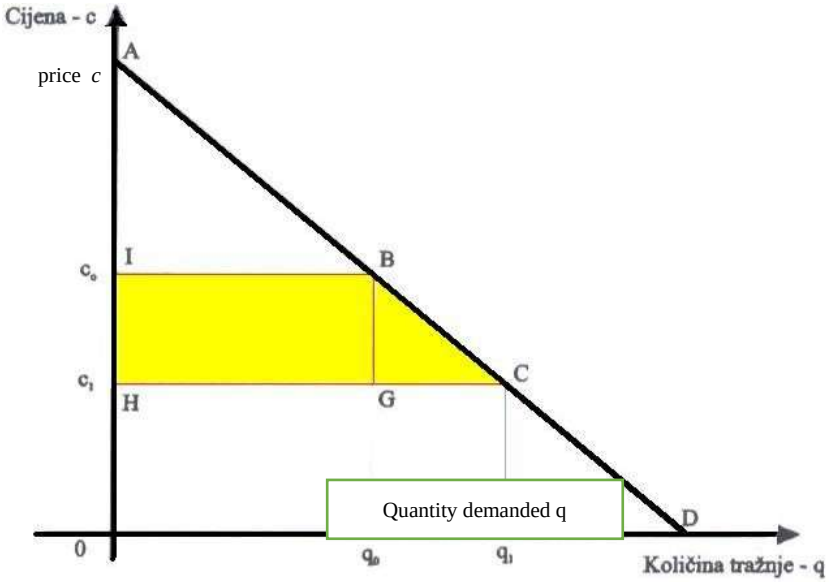
partially), as society strives to reduce unemployment. If the replacement "shadow" salary of the real salary, depending on the current state of the economy (unemployment, full employment, etc.), the results may show strong deviations. Some investment projects that cannot be justified for a period of full employment, may seem worthwhile in a period of economic depression.

From the point of view of the user of the service, his starting point is its redundancy. user surplus is the difference between the maximum price a user is willing to pay for a unit of services and the prices currently paid for a unit of the same services. From this perspective, we can distinguish five different cases for gift order elasticity of demand.

Case I: if the implementation of the investment will not result in a decrease in the selling price (c1 = C0), the users of the services will not benefit, and the User Surplus is equal to "zero".
Case II: if the implementation of the investment results in a reduction in the selling price, users will save (C0-c1) for the service unit. The total number of users who bought the quantity q <j realizes the saving (C0-c1) q0 equal to the area of the rectangle GHIB. At the same time, there is additional consumption, which is equal to the area of the triangle BCG. This area represents the consumption of users who were not willing to pay a price greater than or equal to (c0), but are willing to pay a lower price than (c0), which is greater than or equal to price (c1). Therefore, the total surplus registered in favor of the considered investment, when it is possible to achieve a price reduction with this investment, the area is equal to the polygon BCGHI (Figure 8).



Graph 5, Benefit of investing in case II

Source: references 2

Case III: if for a certain case the investment satisfies the needs of the user for free (ci = 0), the user

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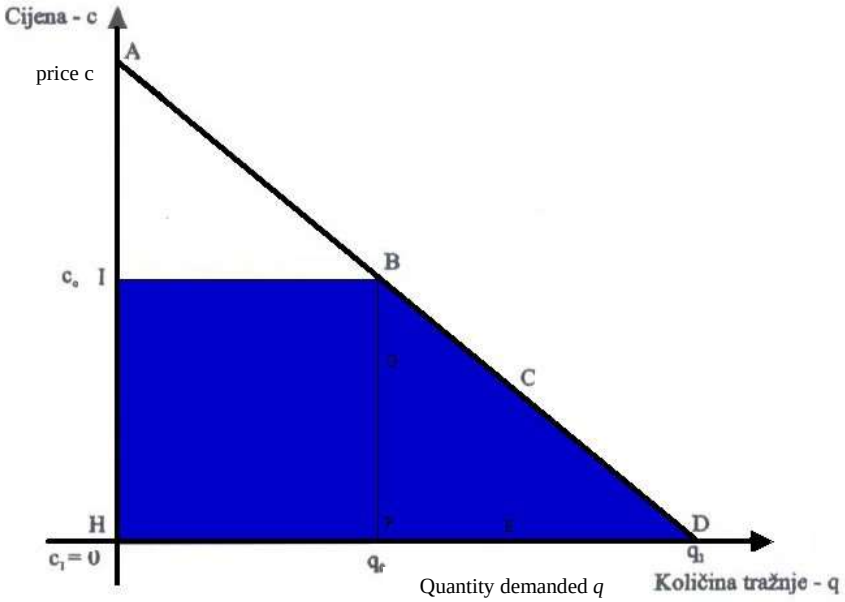
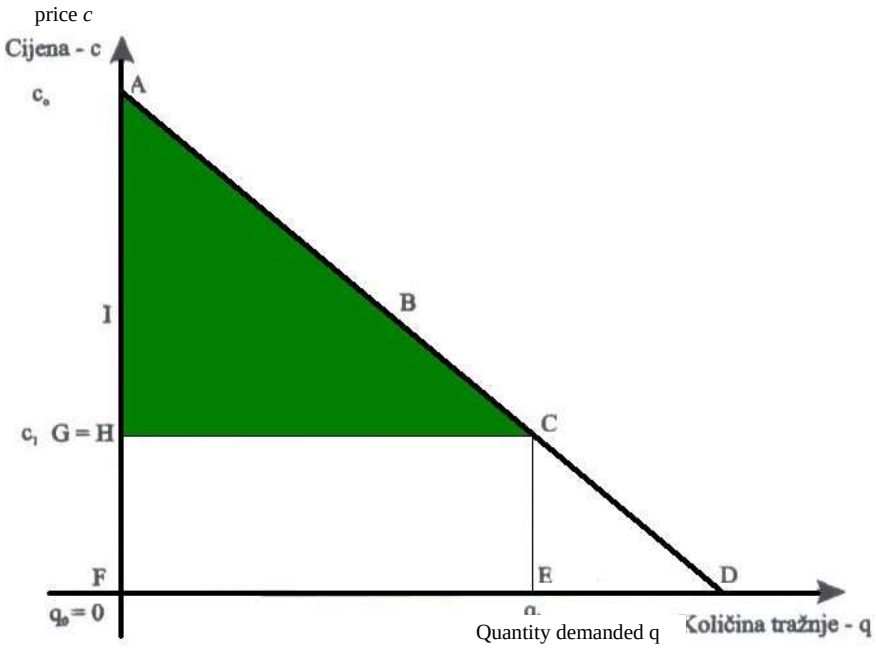
surplus will be equal to the area of the BCDEFHI polygon (Figure 9).



Graph 6, Benefit from investments in case III

Source: references 2

Case IV: if in a certain case when the implementation of the investment should allow the satisfaction of the demand that is not fulfilled (qo = 0) at a price (ci), the user surplus will be equal to the area of the triangle ACG (Figure 10).



Graph 7, Investment benefits in case of IV

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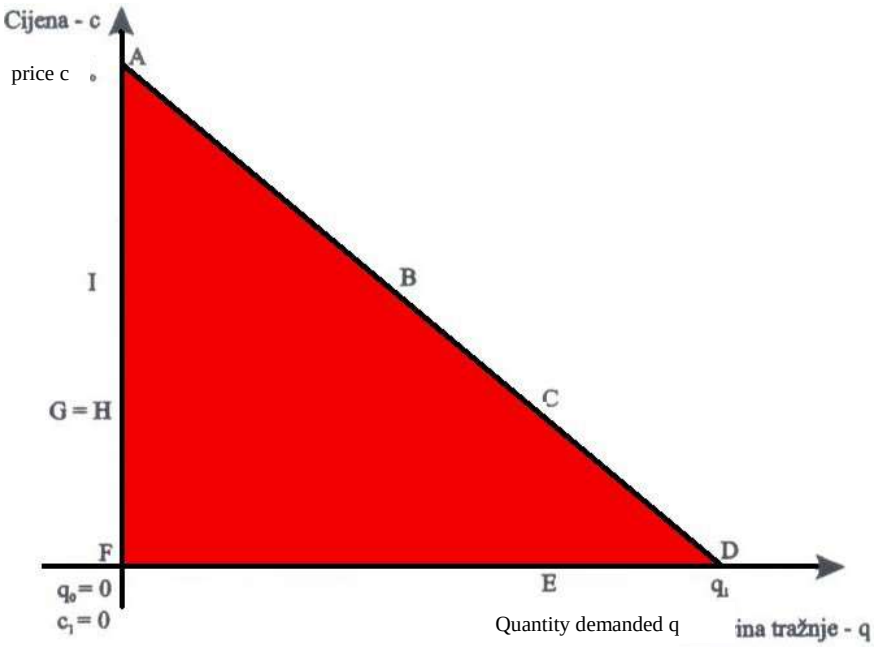
Source: references 2

Case V: in exceptional cases, when the implementation of the investment allows satisfying the demand for free, which was not previously satisfied (qo = 0 and c1 = 0), the user surplus is then equal to the area of the triangle ADF (Figure 11).



Graph 8, Using investments in the case of V
Source: references

It is not necessary to know the trend of the complete demand curve, but in fact it would be sufficient to know the points "B" and "C". When point "B" is known, trick "C" can be generically determined if the elasticity of the demand function between points "B" and "C" is known.

Summarizing the characteristics of investing in the transport sector with aspects of financial and economic valuation, certain similarities and differences can be concluded. The similarities of the financial and economic assessment of the investment are as follows:

- ✓ The most commonly used analysis of one criterion, whose only criterion and goal is profit maximization, i.e. the maximum excessive use in relation to costs,
- ✓ A single common name is used in the form of monetary units and
- ✓ Similar evaluation indicators are used, such as internal rate of return, net present value, etc.

The differences between the financial and economic valuation of the investment are as follows:

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- Financial valuation is based on real market prices, while economic valuation is based on "shadow prices".
- Includes an economic assessment in analyzes of OTC effects if they can be reduced to a common denominator, while the French assessment does not treat any substantial category at all and
- Economic assessment enables the analysis of the distribution of the flows of benefits and costs between the enterprise and society, while the financial valuation enables a closed analysis of these flows within the enterprise.

5. CONCLUSIONS

The transport economy directs the goals towards the realization of permanent and reliable financing of the sustainable development in air traffic, which would satisfy the principles to get closer to the air traffic system of the developed countries of the European Union. Planning for the development of air traffic, at the national level, is not sufficiently regulated by the existing legal framework. Institutions and organizations (local and regional institutions and agencies, national institutions and bodies and international organizations and donor programs active in the field of transport and communications) that intend to improve air traffic development planning in their territories must first define the basic principles of sustainable development of the traffic infrastructure, goals of strategic planning of a sustainable transport system and the need for a comprehensive strategic framework. The program for supporting municipalities, defined by the European Union in the region and beyond, provides support for the development of programs for strategic planning at the local level.

In this context, the goal is to define the concept of a sustainable transport system and the provisions of the legal, institutional and strategic framework in the field of transport and traffic development planning at the local level. Another important issue is the definition and application of the local strategy for sustainable development, as well as the methodology in the development of local sectoral plans for traffic development, including the description of the strategic planning process and the scope of these plans. The third question is a description of the steps in the analysis of air traffic conditions at the local level as well as an overview of practical advice related to traffic planning at the level of cities and municipalities. At higher institutional levels in a self-government unit, it implies that local governments have the authority to adopt traffic development programs, considering that transport is understood as one of the important factors that enable and monitor local economic development.

For properly structured spatial planning, it is necessary to carry out both vertical and horizontal coordination, as well as coordination along the sector. All new planning should be independent, but in accordance with the state framework and carried out through cooperation, coordination and consensus. However, in the Republic of Macedonia, in the current conditions, such planning encounters great difficulties, which include a new territorial structure and division of responsibilities in the field of spatial planning. Unfortunately, there is a lack of correlation between the needs and

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capacities of the various stakeholders. Newly formed units of local self-government received the right and responsibility for some new areas, including spatial planning. However, many of these newly delegated powers were not supported by adequate funding, so local authorities were unable to finance their own ongoing needs. Therefore, the financing of development plans, spatial plans or development projects of individual sectors for many newly formed small municipalities is a difficult task. Furthermore, there is a lack of competence on these issues at the state level, which has led to the absence of a spatial planning strategy, and therefore planning for the development of the transport system.

One of the key goals of sustainable urban development is the construction and development of the city transport system, which will enable sustainable mobility of the population, support the accelerated development of the city and its competitiveness in the region and beyond. The strategic planning of a sustainable transport system assumes:

1. Careful development of surface uses to reduce journey lengths without affecting mobility;
2. Replacement of movement with passenger cars, bicycles or the introduction of electric vehicles or combinations with the system for public mass transportation of passengers;
3. Modern transport imposes the need for sustainability in the economic, social and ecological population.

The three prerequisites for sustainability in terms of transport are:

→ efficiency - represents the search for traffic solutions in accordance with the needs and possibilities, taking into account the available resources, and achieving the maximum possible quality;

→ equity - prioritizing interventions that promote accessibility for all users of the transport system (in terms of accessibility, time spent in the transport system, costs of using the system);

→ sustainability - taking into account the strong interaction with other policies and seeking the maximum compromise between the social and economic domains of the environment.

Defining a comprehensive strategic framework is necessary given the complexity of transport, the causal links between economic development and transport, as well as transport and the environment. Namely, it is clearly defined what traffic system we want and can have in the next 10 years. Comprehensiveness includes all users, all types of movements, and all participants in the implementation of the accepted action plans. The strategic framework also proposes answers to the challenges of economic development, answers to problems related to the financing of infrastructure development, and sets the framework for stimulating economic development.

We believe that the following measures are needed to improve spatial planning in the Republic of Macedonia:

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1. Creation and strengthening of the capacities and institutions for spatial planning and regulation at the state level,
2. If it is necessary to amend the legal regulation in order to ensure more regular and timely production of spatial planning documentation at all levels,
3. Simplifying the criteria for urban institutions that unjustifiably limit the availability of organizations qualified to develop and update spatial planning documentation,
4. Introducing professional measures for licensing in order to improve the quality of spatial and urban planning;
5. Establishing or better defining existing standards through regulations and legislation for: implementation of zoning planning, measures to support European principles for spatial development, establishment of spatial databases, exchange and distribution of spatial data, reorganization of the way of work of the services and institutions in charge of spatial planning at all levels,
6. Strengthening of institutional capacities by supporting the introduction of spatial information systems and digitization of spatial planning data for monitoring the use of space, that is, implementation of spatial planning plans;
7. Introduction of control mechanisms for the implementation of the set goals of spatial development.

Although these measures do not solve all current problems in the field of spatial planning, they certainly refer to priority issues for planning the cooperation system at the local level in the Republic of Macedonia. From the analysis of the situation in the Republic of Macedonia, the experiences of the surrounding countries and the EU, there is a need to define a process of strategic planning for the development of cooperation at the local level, which will be followed by local governments and agencies, national institutions and bodies and international organizations and donor programs active in the field of transport and communications.

Based on the above research results, the following can be concluded:

- The evaluation of investments in the sector should include the financial aspects of the company and the economic aspects of the company,
- methodology is very important to set the valuation of the investment situations "with the project" and "without the project", whereby the latter case may include less investment procedures that avoid the scenario of a complete stoppage of traffic;
- The two most important indicators for the valuation of investments are the net present value and the internal rate of return;
- When evaluating from a social aspect, it is important to include all monetarily measurable components, which enable a more appropriate presentation of real investment effects;

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- External factors can have a significant impact on the valuation of investments, thus their relative participation in the railway sector is significantly less than in other types of transportation;
- the measures in mainly developed countries internalize the external factors, is an important activity that should enable the definition of an appropriate general policy in the transport sector and especially a policy for certain types of transport;
- The observed levels of participation of certain types of external factors in the EU countries deserve to be taken into account more in the environment, considering the valuable natural and human potentials of Macedonia;
- Monitoring the influence of external factors, it is necessary to establish appropriate instruments, which includes the collection and processing of the necessary data, the appropriate legislation in the transport sector as a whole and the system of implementation of measures to protect against the negative impact of transport on wildlife environment.

REFERENCES

[1] Doctoral dissertation, Ana Lazarovska
[2] Doctoral dissertation, Verica Dancevska
[3] Networks in traffic and communications, dr. Mustafa Mehanović
[4] Planning in traffic, transport and communications, dr. Mustafa Mehanović
[5] The demand for air transportation, chapter 9
[6] Classical and neoclassical theories of general equilibrium, Vivian Walsh, Harvey Gram, New York, Oxford University, press 1980
[7] https://transportgeography.org/contents/chapter3/transportation-and-economic-development/
[8] https://www.britannica.com/topic/transportation-economics/Transportation-regulation-and-deregulation
[9] https://en.wikipedia.org/wiki/Inflation
[10] https://en.wikipedia.org/wiki/General_equilibrium_theory

The article is based on the Ana Lazarovska Phd Notes „Codex on the sustainable aerodrome development “parallel to Leonardo da Vinci`s „Codex on the flight of birds “and represents one kind of future instructions for all aerodrome engineers.

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Ana Lazarovska was born at Gevgelija, Macedonia. She is doing her Ph.D. thesis in Aviation Engineering at the University of St Kliment Ohridski Bitola, Faculty of Technical Sciences. Her first circle of education is finished at the Faculty of Transport and Traffic Sciences in Zagreb, the second circle of education at the Faculty of Traffic and Communications in Sarajevo, and currently, is a student at the Faculty of Technical Sciences in Bitola.

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