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# ANALYSIS OF RISK AVOIDANCE THROUGH DIVERSIFICATION, WITH REFERENCE TO AGRICULTURAL FARMS

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## ABSTRACT

In this paper, the authors analyze the advantages of business diversification as a concept of a stable investment strategy, by investing capital in several different types of investments with the aim of avoiding or reducing risk. In agriculture, diversification is an agrarian policy embodied in increasing the diversity of economic activities in the rural economy. The social and economic development of rural areas is based on the creation of conditions in which the income of economic entities becomes more stable than in the case when they are engaged exclusively in agriculture, which all contributes to strengthening the social economic position of economic entities in agriculture and slowing down depopulation. The paper, using descriptive and comparative methods, analyzed the successful diversification of agricultural holdings in the territory of Srem. The aim of the research is to look at all the benefits that diversification brings to economic, ecological and social rural development.

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## Introduction

Investing means investing capital with the aim of satisfying the investor's goal, which is the return of invested funds and the acquisition of profit. The main element that brings uncertainty into the investment process is risk. Risk is actually a measurable possibility of losing invested capital or gaining profit. Risk is different from uncertainty, which is not measurable (Downes, J., et al., 2010; Tešić, R, et al, 2021). Returns on invested

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capital and risks are inseparable. If the level of accepted risk during some investment activity is higher, it is therefore possible to expect a higher level of income. Completely excluding risk from investing is almost impossible. Therefore, in practice, the question is always present - what level of risk in business is acceptable for an investor (Brigham, E. F. 1989). Accordingly, each investor, based on his own risk appetite, will create an optimal portfolio that in the future will bring him the highest possible return for a given level of accepted risk (Fisher, L., et al., 1970).

Diversification represents the concept of a stable investment strategy. It implies the investment of capital in several different types of investments with the aim of avoiding or reducing the investor's risk (Grubel, H. G., 1968). In other words, instead of the investor investing all his capital in one financial venture, diversification implies the distribution of funds over several financial ventures: sectors, financial instruments, assets, investment in several geographical areas, and the like (Brigham, E. F. 1989).

The advantages of diversification are as follows:

- avoiding or reducing risk for the investor - in the event that one investment faces negative trends in the activity, returns from other investments will mitigate that loss,
- higher returns - it is known that some economic activities progress better than others because they adapt better to changes in the market. Through diversification, the investor increases the opportunity to gain profit from investments that achieve positive results (Fisher, L., et al., 1970),
- protection from market volatility - it is the reduction of risk that protects the investor from market volatility. This is especially important if diversification is carried out across several geographical regions, where the weakness of one country's economy is mitigated by the invested funds through the strengthening or stability of another country and/or region. (Divecha, A.B., et al., 1968).

The question is how to diversify your capital? There are several ways to diversify an investment, which can be done in the following ways:

- investing in different types of assets, such as bonds, real estate and raw materials. The advantage of this approach is a significant reduction in risk due to the diversity of investments. However, managing such a portfolio can be very complex precisely because of its diversity and requires regular and proper monitoring and rebalancing (Markowitz, H. M., 1959),
- geographic diversification includes investing in different economic regions or countries. The advantage of geographic diversification is precisely its disadvantage - it largely depends on economies and their political (in)stability, as well as exposure to various currency changes,
- diversification within the same type of asset: this way involves investing in different companies and instruments within the same category, such as investing in stocks or shares within the same sector. The advantage of diversification

within the same class is its simplicity. However, unlike diversification across different classes, the risk is relatively higher because changes within the same sector can affect all of its relevant instruments,

- diversification through passive investment strategies includes investing in index funds and Exchange Trade Fund (ETF). This approach significantly reduces risk because investors are exposed to the entire portfolio that tracks a specific index. In doing so, index funds and ETFs contain a wide range of different companies or property instruments that make up the index (Markowitz, H. M., 1959). Its disadvantage is that the results match the performance of the index itself and therefore cannot outperform the market.

In any case, regardless of the type of diversification, the investor also has obligations:

- to regularly monitor the investment - portfolio performance, to analyze how the investments behave and, based on that, to make an adequate decision on the need for possible changes,
- Also, rebalancing is an important segment of diversification, because every market changes periodically, caused by various factors. Therefore, in order to protect the investment from losses, but also to maximize profits, there is a need for regular rebalancing of the portfolio through the sale and reinvestment of specific parts of the property (Jorion, P., 1985),
- regardless of the above, the investor should always keep in mind the level of his risk tolerance because every investment implies a certain level of risk.

So, it is true that diversification represents the concept of a stable investment policy, but diversification cannot eliminate the total risk. For example, the total risk of investing in securities on the capital market (total risk) consists of:

- systematic risk (market risk, systematic risk, nondiversifiable risk) i
- unsystematic risk (unique risk, firm-specific risk, nonsystematic risk, diversifiable risk).

Systematic (market) risk is related to the functioning of the capital market and affects all types of assets equally. It includes total market risks, i.e. risks affecting all securities: interest rate risk, inflation risk, exchange rate risk, etc. This type of risk cannot be eliminated through diversification.

The part of risk that represents the difference between total and systematic risk is called unsystematic or specific risk. This risk is related to individual securities, i.e. individual companies that issue them. This type of risk can be influenced by diversification, which is why it is called diversifiable. This risk mainly refers to business risk, insolvency risk, non-payment risk, strikes, changes in management, etc. Based on this, it can be concluded that even the portfolio with the largest number of securities in its composition does not reduce the risk below the level of market risk, so diversification can eliminate

only part of the risk, but systematic risk, i.e. market risk as a whole remains (Radović, et al, 2012).

### **Diversification of agricultural activities**

Diversification on the agricultural farm is the performance of activities that bring income on the farm and/or outside the farm, that is, any additional activity other than the basic one. It includes all types of activities aimed at increasing farm income. There are many examples of diversification on agricultural farms, for example rural tourism on the farm, then the transition to organic production, handicrafts, drying and packaging of fruits and vegetables, packaging of honey and other agricultural products (Katarina, Đ., et al, 2021).

The diversification of agricultural holdings is influenced by several factors, such as: human potential (years of life, practical knowledge, education, participation of female labor on the farm, etc.), characteristics and structure of the holding (size of the holding, distance, communication, organizational factors and business network), external environment (location of the holding, transport communication, development of the business network).

The essence of diversification is achieving positive results and is reflected in three development dimensions:

- economic sustainability,
- environmental sustainability,
- socio-demographic sustainability.

In the European Union (EU), agriculture is characterized by great internal diversification. It is the result of natural conditions, the level of social and economic development of the countries and the time period when they became EU members. The differences relate to production and economic results, to the agrarian structure, the level of employment in this sector and the importance of agriculture for the country's economy. In the countries that have been members of the community for the longest time, thanks to the implementation of the Common Agricultural Policy, the agricultural sector has achieved significant progress in the field of technology and mechanization, which is a consequence of a large increase in production and labor productivity in agriculture (Chmielewska, B., 2008). In countries that became EU members in 2004 or later, the situation in agriculture and rural areas is completely different than in other EU countries (Kijek et al., 2015), where the level of development and diversification of activities is lower. Research has shown that after each EU enlargement, the regional diversification of basic production and social indicators in the agricultural sector and in rural areas deepens (Chmielewska, B., 2008).

## Material and working methods

One of the mechanisms within the rural development policy is research into the possibility of applying diversification in the Republic of Serbia, because the diversification of the rural economy, in addition to economic and social, has a significant environmental component. The importance of the research is further confirmed by the fact that the ownership structure of agricultural farms in Serbia is unfavorable, that small agricultural farms derive their income from primary agricultural production and have an unenviable economic position. The survival and development of agricultural farms could be significantly improved through the diversification of their economic activity.

In accordance with the subject and goal of the research, the method of analysis and synthesis, induction and deduction, historical, descriptive method, as well as the method of comparative analysis were applied in the work.

The data on the realized degree of diversification of agricultural holdings in the Republic of Serbia are based on publications and studies in the Republic of Serbia and case analysis of an agricultural holding that successfully applied diversification methods, the Republic Institute of Statistics, i.e. the 2023 Census of Agriculture. The experiences of EU countries were analyzed based on EU regulations and scientific publications and studies published in international scientific journals.

## Research results and discussions

In order to research this topic, the authors analyzed the case of an agricultural farm in the territory of Srem, which over time diversified its activity and achieved the economic and socio-demographic goal of its business.

**Table 1.** Presentation of the effects of agricultural diversification.

| Diversification of agricultural activities           |   |                              |   |  |
|--|---|------------------------------|---|--|
|  | Activity                                | Year of observation/activity | Net profit  | Number of employees                                |
| 1  | Agriculture - rearing<br>Sports fishing | 2010-2014                    | Sufficient to cover life's needs and investment in the business | 2 family members                                   |
| 2  |   | 2014-2020                    | About 10% profit per year                                       | 2 family members                                   |
| Diversification introducing the following activities |   |                              |   |  |
| 3  | Organic food production                 | 2020 – 2022                  | About 10% profit per year                                       | 3 family members                                   |
| 4  | Eco-tourism                             | 2022 -                       | About 20% profit per year                                       | 3 family members and 1 employee outside the family |

*Source:* Author's research.

The analysis of the agricultural business found that the farm was engaged in vegetable growing and sport fishing. The work was performed with 2 members of the family household. For years, earnings from the activity covered labor costs and necessary living expenses. Then the farm started producing organic food, which made it possible to earn additional income, before the food was placed in larger cities about 50-60 kilometers away, which entailed higher transport costs. From its own products, the farm had fish and all organic products of plant origin for human consumption. In 2022, the farm started to deal with eco-tourism. It used all its products for eco-tourism, reduced transport costs, and sold surplus goods. The number of employees has increased. The net profit made it possible to acquire cash that the farm can use for new potential projects. Poznati ekonomski teoretičar Adam Smit naglašavao je da je bogatstvo naroda rezultat ljudskog rada. Međutim, u ovoj hipotezi izostavljen je jedan veoma značajan činilac, a to su prirodni resursi i njihova uloga u razvoju zemlje i vlasnika prirodnih resursa.

Serbian agriculture is characterized by the great diversification of agricultural holdings and their large fragmentation (average size below 3 ha), insufficient equipment with agricultural machinery, which is still technologically outmoded and outdated, insufficient use of mineral fertilizers and extremely low productivity in all areas of production (average yields are below the EU level). In order to quickly change the current situation in agriculture, it is necessary to provide an adequate agricultural policy, as an integral part of the overall development policy of Serbia, in order to successfully face the increasingly strong competition, to reach a level of productivity that can guarantee decent incomes for the population engaged in agriculture and to achieve competitiveness in the sectors of the economy that rely on agriculture.

Changes in agricultural policy are reflected in the redirection of funds, from direct market support with subsidies to investment support and support for rural development. There are also changes in the orientation of budget funds from large agricultural entities (enterprises, cooperatives and agrocombinates) with different ownership structures, to family commercial farms.

One of the solutions that can influence the elimination and/or mitigation of negative restrictions on the development of agricultural farms is the diversification of the rural economy, which implies the introduction of non-agricultural activities, which contribute to a more rational use of existing capacities on the agricultural farm, and thus acts as a stimulus for the achievement of sustainable development in rural areas (Thomson, K., J., 2019).

Diversification abandons the traditional model of agricultural development. Monofunctional economy gives way to polyfunctional economic activity in which, in addition to food production, the rural population also engages in other activities that are related to agriculture and/or rely on agriculture (Yoshida, et al., 2019). In this way, in addition to more stable incomes, opportunities are created to increase the competitiveness of rural areas.

Diversification can be carried out by performing several additional activities (Patrachanova, 2019): production of organic food, creation of local brands whose

competitiveness in the market is based on high quality, improvement of models for the rational use of renewable energy sources/natural resources, production of biological products, work on infrastructure development, establishment of small and medium-sized enterprises in the service sector, development of rural, village and eco-tourism, production of raw materials for industry, etc.

Analyzing the effects of diversification in the rural sector in the countries (EU) in recent decades, several regularities can be observed. Agriculture is still the dominant sector in rural areas, but the importance of non-agricultural activities is growing. In the case of employment in rural areas, there was a decrease in employment in agriculture and an increase in employment in the service sector (Patrachanova, E., 2019).

As an effect of this, there is a tendency to reduce the differences in the economic structure between urban and rural areas. In rural areas that chose to employ the population in the service sector, there was an increase in the number of inhabitants, which represents one of the essential advantages brought by the diversification of the rural economy, but also a confirmation that the return of the population to the countryside does not necessarily have to be linked to the practice of agriculture, but the population of the village can also engage in non-agricultural activities (Mitrović, et al., 2020).

### **Models of diversification of the rural economy - experiences of the countries of the European Union**

Diversification of the rural economy was introduced as one of the measures of the rural development policy in the EU starting in 2000, which was implemented in several stages of the development of alternative jobs, in the secondary and tertiary sectors that provide employment with the aim of slowing down the depopulation process and strengthening the socio-economic position of the rural population, preserving biodiversity and rational use of natural resources (EC, 1999).

The plan for the diversification of the rural economy envisaged: the development of alternative models of agricultural production, the development of rural tourism, the strengthening of activities for the protection of natural resources and the environment, the preservation of cultural heritage and the authentic rural environment, the establishment of small businesses in agribusiness, especially in the field of processing of primary agricultural products (EC, 1999). 10% of the total EU agricultural fund was earmarked for the achievement of these goals. During the implementation of the planned plans, the funds for these purposes increased.

Technological progress and productivity growth in agricultural production have led to a decrease in the need for labor over time. One of the ways to absorb the surplus workforce in rural areas from the primary sector is the diversification of economic activities. Research related to the achieved degree of diversification of the rural economy in EU countries shows certain laws (Thomson, 2019) regarding the achievement of a greater degree of diversification that is present:



- on farms that have larger production capacities,
- on agricultural farms that are oriented towards livestock production in relation to farms dominated by plant production;
- was realized in the so-called peri-urban regions, i.e. rural areas located near cities;
- a greater degree of diversification was achieved in rural regions that have potential for tourism development. A significant model of diversification of the rural economy in EU countries is the development of eco-tourism, which contributes to the protection of nature and the rational use of natural resources, the reduction of unemployment and poverty (Jovanović et al., 2019). One of the good examples is the diversification of farms engaged in livestock production through the development of tourism (Panduru et al., 2021). The construction of hospitality and accommodation facilities, which would enable tourists to stay on the farm or organize summer camps for children and youth, contributes to the economic sustainability of agricultural farms through the marketing of their products. In order to be economically sustainable, tourism must be a function of a sustainable environment, either cultural or natural (Vujović et al., 2020).

The organization of this type of tourism must be in accordance with ecological principles and environmental protection. The basic preconditions of this model of diversification of the rural economy is the control of resource management, while avoiding physical, chemical and biological pollution.

This is supported by the experiences of agricultural farms in Italy (Giaccio et al., 2018), which in the case of diversification through agritourism are primarily guided by the principles of rational use and preservation of natural resources, as well as the preservation of an authentic rural environment. This is also contributed to by the subsidy system, which conditions the approval of financial support on compliance with the so-called ecological principles.

Diversification has been shown to produce significant positive effects on sustainable rural development:

- ecological, on the rational use of natural resources,
- economic,
- social/societal,
- growth in employment and competitiveness of agricultural farms,
- improving the position of marginalized social groups (youth, women),
- preservation of the rural environment,
- growth in household income stability,
- improving the demographic structure (age and education),



- improving the quality of natural resources,
- more rational use of available production resources,
- reduction of regional differences in the degree of development of rural areas.

In addition to the positive results it achieved in the sphere of ecological sustainability, the diversification of the rural economy had positive implications for the socioeconomic sustainability of agricultural farms (Salvioni et al., 2020). During 2018, a study of 28 EU countries and in 135 regions, based on FADN information, confirmed the existence of a correlation between the degree of diversification of non-agricultural activities and the socio-economic performance of agricultural farms, which is much more pronounced in the central and northern than in the southern and southeastern regions of the EU (Trnkova, 2021).

### **Diversification of the rural economy in the Republic of Serbia and expected results**

The basic direction of the future development of agriculture and the food industry is the optimal use and preservation of available production capacities, increasing the volume of agricultural production, changing the production structure in favor of intensive types of production intended for export, production of high-end and high-quality products.

For the above reasons, the role of rural development policy in the process of improving the economic position of agricultural holdings by diversifying the rural economy is apostrophized. Diversification on agricultural holdings in the Republic of Serbia is applied throughout the territory, with the fact that the type of additional activities differs between regions. The differences are the result of various factors: needs and aspirations of household members, tradition, availability of labor, available agricultural resources, development of social capital.

According to the data of the agricultural census, which was conducted in 2023, of the total number of agricultural farms in our country, 12.4% are farms that, apart from agriculture, obtained income from non-agricultural activities. At the same time, the highest degree of diversification is present in Šumadija and Western Serbia. In this region, farms with other profitable activities make up 18% of the total number of farms, and there are the most young farm owners up to 40 years of age, i.e. 39%. The lowest level of diversification is present in Vojvodina, where only 5.7% of farms earn income outside of agriculture (<https://publikacije.stat.gov.rs/G2019/Pdf/G201922002.pdf>).

The most common non-agricultural activities in the Republic of Serbia are:

- processing of primary agricultural products, of which the largest number of households, over 50%, is focused on milk processing, followed by a high (about 30%) representation of fruit and vegetable processing, while meat processing is an activity chosen by a smaller number of farms,
- about 20% of farms in the AP Vojvodina provide agricultural mechanization services,

- a significant share of wood processing and other forestry activities is represented,
- in Serbia, rural tourism records a symbolic participation in the structure of other profitable activities on the farm, in contrast to EU countries.

In order to improve the diversification of the rural economy in Serbia, agricultural policy measures are implemented. Regulations on incentives in agriculture and rural development within the framework of incentives for rural development measures also provide support for programs for diversification and improvement of the quality of life in rural areas. Incentives are paid in the form of fees at least in a certain percentage in relation to the total costs, i.e. the value of investments.

Certainly, in the long-term development of agricultural production in Serbia, priority should be given to the production of biologically high-quality food. The demand for these products is constantly increasing on the world market, especially on the markets of developed countries. The organization of production, processing, packaging and marketing create conditions for the full valorization of agricultural resources by exporting biologically highly valuable food to the world market. Serbia should be transformed into an area of traditional conventional agricultural production (Regmi, A., et al, 2009). The largest part of the territory of Serbia is ecologically clean, especially the mountainous area. Agricultural land in Serbia belongs to unpolluted or slightly polluted land in comparison to Europe and is suitable for the production of biologically quality food. This is the comparative advantage of Serbia compared to Europe, where over 95% of agricultural land does not meet the requirements for the production of biologically quality food.

Mountainous and some lowland regions, especially in the territory of central Serbia, fulfill the conditions for the production of biologically quality food. In order for Serbia to take advantage of the advantages in the production of biologically quality food, consistent harmonization of agricultural production standards with the standards of highly developed EU countries is necessary.

For the strategic planning of the development of the production of biologically quality food and the conquest of the market, it is necessary to establish a harmonious relationship between quality and environmental protection, with a clear emphasis on the ecological sign of product quality. Starting from the marketing concept of producing quality food for a well-known customer and the available conditions for that type of production, it is necessary to define the production of biologically valuable food.

Among the products that can be exported immediately are forest fruits: mushrooms, blueberries, snails, medicinal herbs and others. In the case of forest fruits and medicinal plants, it is necessary to define the product in terms of marketing and to solve the problem of purchase, storage and packaging. Certain quality food production programs from Serbia have gained recognition on the world market (in addition to the fact that they are not yet branded and do not carry indications of geographical origin), these are primarily: berry fruits (raspberries, blackberries, strawberries), baby beef and lamb,

prunes (with by-products) and other dried fruits, certain wines and fruit brandies, Užice prosciutto, Pirot cheese, Sjenica and Homolj cheese, cream cheese and others (Rajnović, et al, 2023). At the same time, it is necessary to introduce plantation programs for the production of rare, protected species of medicinal plants in the mountains.

In the development program for the production of biologically quality food, it is necessary to define the basis of the current demand, the production program and define the products in accordance with comparative advantages, potential profit, future market development of this branch of products, production diversification, ecological marketing (with quality standards and an ecological sign prominently displayed), in order to satisfy the needs of increasingly discerning eco-food consumers (Rajnović, et al., 2023).

Around 35-40 industrial activities related to agriculture could be located in rural areas, where new jobs would be opened for a greater number of available labor force from the countryside, and cities would cease to be overpopulated with social problems. It is possible to employ a significant number of the able-bodied population in the export-oriented production of high-value food, beef production, plantation production of medicinal plants, vegetable production in greenhouses, then rural tourism, as well as stock market operations in the sale of flowers and vegetables. At the same time, a part of the active population would be engaged in other parts of industry, healthcare, education and the service sector (trade and rural tourism). In this way, the living conditions would be significantly equalized with the living conditions in the city, and the orientation towards the countryside and agriculture would be more attractive for young, educated experts.

Based on the importance of financing current production and investments in agriculture, it is necessary to solve the long-term agricultural financing system in the Republic of Serbia in accordance with the specifics of this activity. It is of particular importance to provide permanent and realistic sources of funds for financing current agricultural production, as well as necessary investments in agricultural machinery and equipment for processing plants, basic herd and long-term plantings and irrigation.

Going through the process of developing diversification during different periods of time, from its very beginning until today, as well as until the implementation of its various models, it can be concluded that its importance in creating an optimal investment investment is immeasurable and that it represents the basis for a portfolio with the minimum possible risk. This was also the basic hypothesis that had to be proved in this work, and which was successfully confirmed on the example of an agricultural farm in the territory of Srem. A great contribution to the understanding of diversification was undoubtedly given by the theory, primarily through a new approach in which the optimal portfolio is not only viewed from the aspect of realizing high returns, but as a relationship between high returns and low risk.

## Conclusion

There is fierce competition on the market. By creating an optimal portfolio through diversification that investors will succeed in turning things in the market in their favor. The analysis of the experiences of EU countries shows that diversification in agriculture positively contributes to the achievement of sustainable development of rural areas in all three development dimensions. Economic sustainability represent a kind of upgrading of primary agricultural production. In Serbia, this primarily refers to the processing of primary agricultural products, then the placement of food products in the service sector, rural tourism, can significantly contribute to the stability of the income of agricultural farms and thus to the economically sustainable development of the rural environment. The impact of the diversification of economic activities on the ecological sustainability of rural development and the preservation of natural resources is reflected in the organization of organic production, which is based on the principles of sustainable development and eco-tourism, which in addition to economic, brings a number of ecological benefits to rural areas. The development of the tertiary sector affects the growth of employment and the influx of a young population into rural areas, which contributes to the improvement of the demographic structure and social sustainability.

In the territory of the Republic of Serbia, the highest degree of diversification of economic activities was achieved in the rural areas of Šumadija and Western Serbia, and the most represented non-agricultural activity is milk processing. State support for the diversification of the rural economy in Serbia is realized, based on the model applied by the European Union. The largest part of the funds is aimed at improving the quality of life in rural areas through the development of infrastructure, but also for encouraging non-agricultural activities, which significantly affects the ecological, economic and social sustainability of rural areas of the country.

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## Conflict of interests

The authors declare no conflict of interest.

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