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## EVALUATION OF THE SYNERGETIC EFFECT FROM IMPLEMENTATION OF ECONOMIC ACTIVITY BY SMALL BUSINESS ENTITIES

Об'єктом дослідження є синергетичний ефект від здійснення господарської діяльності суб'єктами малого підприємництва та процес його формування. Одним з найбільш проблемних місць є кількісна оцінка синергетичного ефекту. Усунути даний недолік дозволяє застосування переліку методів, що використовуються для визначення синергетичного ефекту, зокрема, методу регресійного аналізу.

В ході даного дослідження автором здійснено класифікацію видів синергізму за основними класифікаційними ознаками, такими як складові прибутку, різновиди активів, сфери людської діяльності, джерела походження, масштаб прояву, тривалість наслідків прояву синергетичного ефекту. Застосована методика дозволила автору обґрунтувати наявність залежності між основними параметрами, що призводять до виникнення синергетичного ефекту від здійснення господарської діяльності суб'єктами малого підприємництва. В якості взаємозалежних параметрів розглядаються кількість видів економічної діяльності суб'єктів малого підприємництва фізичних осіб-підприємців, їх доходи та податкове навантаження.

З'ясовано, що синергетичний ефект проявляється у випадку помірної та спорідненої диверсифікації, що відповідає здійсненню суб'єктами малого підприємництва 2–5 видів економічної діяльності. Залежність охарактеризовано як поліноміальну третього ступеня. Наявність синергетичного ефекту засвідчують зростання обсягів доходів при зниженні рівня податкового навантаження та переважання темпів росту доходів над темпами росту податкового навантаження за групами.

Завдяки проведеному дослідженню стало можливим визначення граничного значення кількості видів економічної діяльності суб'єктів малого підприємництва фізичних осіб-підприємців, що забезпечують прояв синергетичного ефекту. Значення даного показника дорівнює 5. Автором доведено, що при зростанні кількості видів економічної діяльності та підвищенні рівня диверсифікації господарської діяльності суб'єктів малого підприємництва спостерігається поступове зниження синергетичного ефекту. Правомірність отриманих результатів підтверджено високими коефіцієнтами достовірності апроксимації  $R^2$ , які дорівнюють 0,98 (щодо рівня податкового навантаження) та 0,99 (щодо розміру доходів).

**Ключові слова:** синергетичний ефект, суб'єкти малого підприємництва, фізичні особи-підприємці, податкове навантаження, джерела синергізму.

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### 1. Introduction

The term «synergism» comes from the Greek from synergos (syn) – together and ergos – action. It was introduced into circulation by Haken G. to designate a new scientific direction. In his work [1], he noted that synergetics studies systems consisting of a large number of interacting subsystems. Today, the concept of synergy is multidisciplinary. If earlier synergies were studied only by mathematicians, physicists or philosophers, recently the concept of synergism has been considered by specialists in economics, management, and marketing for the development of economic systems. Most often, the concept of a synergistic effect is associated with the concept of Ansoff I. [2, 3]. Some authors consider the synergistic effect as a factor in the innovative development of the economy [4, 5]. Most scientists agree that the synergistic

effect is a key aspect of the activities of any business entity [6].

The relevance of the research topic is due to the importance of small entrepreneurship and their predominance in number compared with other business entities in the structure of the national economy.

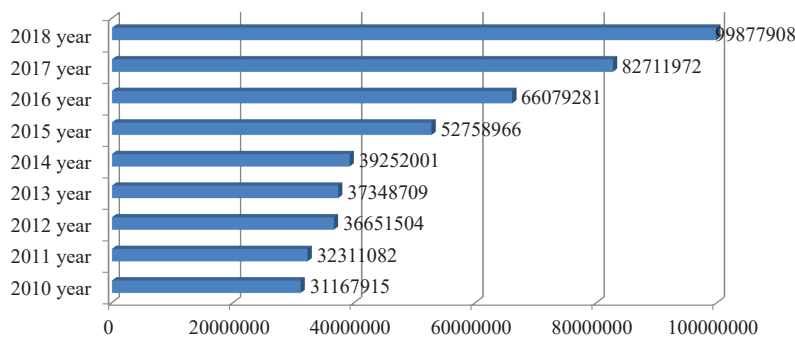
Given the above, the problem of assessing the synergistic effect of the implementation of economic activity by small entrepreneurship seems extremely urgent. The presence of a synergistic effect, its calculation and dynamic accounting allow small entrepreneurship (SE) to save on investments due to the additional income received. At the same time, the assessment of the synergistic effect is the key to increasing the efficiency of the economic activities of the ES subject to minimizing their capital investments and lowering the level of gross expenditures.

## 2. The object of research and its technological audit

*The object of research* is the synergistic effect of economic activity by small business entities and the process of its formation.

Small entrepreneurship constitutes the most massive stratum of national business entities. As of the end of 2018, their number totals 1822671 units, corresponding to 99.1 % of all business entities in Ukraine, and the volumes of products sold by them exceed 71 % of the total volume of products sold by businesses (Fig. 1) [7].

At the same time, the level of production costs of small enterprises in 2012–2018. It fluctuates between 30.6–36.1 %, and the level of gross expenditures for the same period is in the range of 40.6–47.4 %. And although there is a positive tendency to reduce the level of costs of small enterprises, this indicator remains extremely high and requires the search for reserves to reduce it.



**Fig. 1.** Volumes of products sold by small entrepreneurship in Ukraine in 2010–2018, c. u. (developed by the author based on data [7])

Given the importance of a group of small entrepreneurship in the structure of the national economy, one of the priority tasks is to increase the efficiency and effectiveness of their economic activities, including through the use of internal reserves. Achieving a positive economic effect is possible not only by increasing the volume of capital investments, expanding production capacities, increasing the level of mechanization and automation of production processes, the level of innovativeness of economic activity, and improving the quality and competitiveness of products (services). A positive economic effect can also be achieved through cooperation, pooling efforts and a successful combination of resources, capabilities, business processes, individual business entities.

## 3. The aim and objectives of research

*The aim of research* is to justify the presence and further assessment of the synergistic effect of the implementation of economic activity by small entrepreneurship.

To achieve this aim, it is necessary to complete the following tasks:

1. Classify the types of synergism inherent in small entrepreneurship, and find out the type of synergy by which the synergy effect will be evaluated.

2. Determine the nature and sources of the synergistic effect of small entrepreneurship, justify the priority source.

3. Justify the methodology for assessing the synergistic effect.

4. Calculate the quantitative parameters of the synergistic effect.

5. Draw conclusions about the existence of a relationship between a number of parameters of the economic activity of small entrepreneurship, the presence of a synergistic effect and its size.

## 4. Research of existing solutions of the problem

Among the main directions of solving the synergistic effect problem identified in the resources of the world scientific periodicals, one can single out studies of cause and effect relationships in the process of entrepreneurial activity and synergetic potential [8, 9]. Also, the synergistic effect is considered as a real source for obtaining a «non-traditional» competitive advantage, it can change the rules of competitive game in the market [10]. But in these works, the process of assessing the synergistic effect of business entities is not directly considered. For example, in [11], a synergistic effect is estimated based on information synthesis technology from the point of view of sustainable development of enterprises.

Special attention should be paid to the works devoted to the study of the synergistic effect in various fields of human activity. In particular, scientific works [12, 13] consider synergistic effects in pharmacology and chemistry. Works [14, 15] reveal the essence and features of the formation of a synergistic effect in management and marketing. Scientists propose to use slightly different approaches to assess the synergistic effect in learning [16].

However, the problem of determining the synergistic effect in relation to small entrepreneurship regardless of the field of activity remains unresolved. The latter can't be combined with large and medium enterprises. Small entrepreneurs are characterized by unique features that determine the specifics of their management.

It should be noted that some authors in their scientific works partially cover the synergetic approach to small entrepreneurship. In particular, in [17] a process model for determining the determinants of the effectiveness of entrepreneurial activity in small entrepreneurship is presented. The author provides key variables and establishes causal relationships. However, this model provides only an understanding of the managerial consequences of entrepreneurial activity of small entrepreneurship and does not investigate and does not take into account the whole range of causal relationships.

Thus, the results of literary analysis allow to conclude that there is an urgent need to conduct research in the direction of assessing the synergistic effect of the implementation of economic activity by small entrepreneurship.

## 5. Methods of research

To quantify the synergistic effect, scientists use a wide range of methods, such as:

- methods of statistical analysis;
- methods of correlation and regression analysis;
- method of analysis of hierarchies [18];

- method of simple additive waiting;
- DEMATEL method (Decision Making Trial And Evaluation Laboratory) [19] – for calculating the integral synergetic effect as a result of the interaction of individual strategic areas of management and the like.

In this case, the author uses the method of regression analysis, with the help of which it is established the presence of a stable relationship between the three main parameters:

- the number of types of economic activity committed by a small entrepreneurship;
- income and tax burden in its absolute and relative sense.

The calculations are carried out by group average indicators in accordance with the structure according to the number of types of economic activity. The limit indicator of the number of types of economic activity is determined, at which a synergistic effect and the nature of the relationship between the above parameters are observed. Within 6 groups, the dependence of the size of the synergetic effect is determined in the form of a decrease in the level of tax burden amid rising profitability.

## 6. Research results

As a rule, synergy in entrepreneurial activity is understood to mean the benefit obtained from combining two or more elements (or types of entrepreneurial activity) in such a way that the productivity of the resulting combination is higher than the sum of its individual elements. It is worth noting that most of the concepts of synergy can't be applied to small entrepreneurship, given the specifics of the latter. SE has a significant number of advantages compared with large businesses, in particular, they have the ability to quickly make decisions due to the simplicity of the structure. However, they can't take full advantage of the synergistic effect, since in most cases they do not seek cooperation.

Some types of synergism are considered by most modern scientists. In the Table 1, the authors propose a version of the classification of synergies, which corresponds to the aim of this research.

The author agrees with the interpretation of the synergistic effect as an additional result obtained by close and coordinated interaction of individual elements of the system [25]. The synergistic effect can be both positive (satisfies the inequality  $\langle 2+2>4 \rangle$ ) and negative (satisfies the inequality  $\langle 2+2<4 \rangle$ ). A manifestation of a positive synergistic effect can be considered a decrease in the level of costs against a background of stable (predetermined) income or an increase in income under the condition of a stable (predetermined) level of costs. A manifestation of the negative synergistic effect is an increase in the level of expenses against a background of stable income or a decrease in income with a stable level of costs. Sometimes scientists identify a synergistic effect of zero, which is understood as the absence of expected benefits [26]. It is possible to say that the universal aspect of calculating the synergetic effect is the financial aspect of Kovach M. I., in which the following types of synergistic effect are distinguished, as natural, economic, social, environmental, artistic aesthetic [4]. According to the author, not all types of synergistic effect are equally significant and significant from the point of view of business entities. The greatest

attention of business entities is traditionally paid to the economic synergetic effect as a result of the fact that it takes into account organizational, managerial and financial aspects. From the point of view of consumers of products and services, the most significant is the social synergistic effect from the implementation of economic activity by business entities.

Noteworthy is the conclusion of the author of [24], who believes that different types of synergism affect each other and produce a mutual synergistic effect or «synergistic effect of synergy». However, it should be noted that the bottleneck of this theory is its practical implementation and measurements of the overall synergetic effect. In practice, entrepreneurs are not always clearly aware of the process of conducting research on one type of synergistic effect. In the case of measuring the overall synergistic effect, the situation is complicated by the imposition of one synergistic effect on another. The measurement of the overall synergistic effect is possible only if there is a highly qualified management and high-quality information support. Small entrepreneurship, as a rule, does not have the ability to attract highly qualified management personnel. Usually, the functions of top managers are performed by the owners. Also, small entrepreneurship does not have high-quality information support and adequate resources for outsourcing. SE does not always get the desired synergistic effect, because they can't conduct an objective assessment of the situation and calculate the real effect of the implementation of certain measures and managerial decisions.

Author's research has shown that small synergies are more inherent in internal synergies and the desire to obtain a synergistic effect from the cooperation of their own resources and capabilities. Small entrepreneurship is not characterized by interaction and cooperation of entrepreneurial activities with other SEs. Although, there are examples of cooperation and joint efforts of small entrepreneurship that have led to a positive synergistic effect, in particular, one of these options is described in [27], which investigated the activities of small entrepreneurship united in networks.

Sources of the synergistic effect in entrepreneurship are: cost savings, financial savings (by reducing transaction costs for operations), increased management performance, strengthened market position by weakening competitors [28]. Sources of the synergistic effect of small entrepreneurship are somewhat different from business entities in general. This is primarily due to the SE simplified accounting. The costs of everything, production and other types of expenses can be determined only in relation to the SE, which are on the general system of taxation, accounting and reporting. The remaining SEs, in particular those that do not have the status of a legal entity and keep simplified reporting, do not always calculate expenses even within the framework of operational accounting. In the course of research, it was found that as a source of the SE synergistic effect, it is possible to consider savings due to a reduction in the tax burden amid rising profitability.

The author considers synergy to be one of the priority areas for improving the efficiency of economic activity of small entrepreneurship. Its low cost also testifies to its benefit, that is, synergism in most cases does not require attracting significant additional funds by a business entity.

Table 1

## Synergy classification\*

No.	Classification attribute	Synergies	Characteristic
1		–	–
1.1	Profit components [20]	Trade	The increase in income occurs with fixed investments, the use of the same distribution channels, management, spatial resources, methods of sales promotion, etc.
1.2		Operating	The result of a higher level of utilization of production capacities and personnel, cost allocation, the benefits of vocational training, the purchase of significant volumes of raw materials and components
1.3		Investment	The consequence of the sharing of resources: fixed assets, raw materials, R&D results (research and development), etc.
1.4		Managerial	Represents implicit profits for a number of components
2		–	–
2.1	Varieties of assets [21]	Complementary	Coexistence of two unrelated elements of a strategy through the use of the same tangible or financial asset
2.2		Synergy of invisible assets	Allows a business entity to strengthen its competitive position with less than usual costs. Can't be copied. Has a long-term nature
3		–	–
3.1.1	Areas of human activity [22, 23]**	Synergy of management	Synergy, which is manifested in the process of diversification and cooperation of the activities of business entities
3.1.1.1		Market	Additional sales of one or more types of products in one or several markets
3.1.1.2		Economic (costly)	It is associated with a reduction in the cost of production and sale of products by using the same production facilities, structural units of distribution channels, etc.
3.1.1.3		Technological	Technology transfer from one area to another, which creates the opportunity to capture profitable markets without the valuable introduction of new types of products to these markets
3.1.1.4		Managerial	Based on the transfer of managerial knowledge, skills and experience
3.1.2		Synergy of management	–
3.1.2.1		Systemic synergism	Achieved by centralizing business processes and integrating business entities along the value chain
3.1.2.2		Synergies from the transfer of competencies	Achieved through the use of unique competency business units
3.2		Synergies in economics	It is associated with the fact that the combination of using several mutually agreed strategies is more useful than the isolated introduction of one strategy
3.3		Synergism in ecology	The phenomenon of enhancing the action of one catalyst by adding others
3.4	Synergies in tax regulation	Based on the use of tax instruments in several areas of tax regulation, which leads to a synergistic effect	
4		–	–
4.1	Source of origin	Internal	The result of interaction, cooperation and integration of structural units of diversified business entities
4.2		External	The result of interaction, cooperation and integration of separate independent business entities
5		–	–
5.1	Scale of manifestation [24]	Local	Manifested with the cooperation of a separate business entity of a vertically integrated structure with its partner, does not apply to this structure
5.2		Segmented	Manifested with the cooperation of individual business entities within a vertically integrated structure
5.3		General	Manifested as a whole throughout the vertically integrated structure
6	The duration of the effects of a synergistic effect	–	–
6.1		Static	Short-term economic effects of a synergistic effect
6.2		Dynamic	Long-term economic effects of synergies

**Notes:** \* – the author's vision of the classification of synergism, which is consistent with the objectives of this research. This classification can be expanded due to such classification features as the degree of complementarity of opportunities, the type of relationship between the structural units of a business entity, the mechanism of formation of a synergistic effect, etc.;

\*\* – the classification of types of synergism by areas of human activity can be significantly expanded due to other areas in which synergism can manifest itself, in particular, scientists distinguish synergism in pharmacology, medicine, biology, religion, etc.

The author's assessment of the synergistic effect of economic activity by small entrepreneurship was carried out as part of a study in which 250 individuals-entrepreneurs (IEs) took part in Kyiv (Ukraine), who are on the simplified tax system of 1–3 groups (STS). In the structure of the studied SEs:

- 48 % chose group 3 of the single tax (that is, they pay 5 % of income if they are not VAT payers and 3 % of income if they have VAT status);
- 49.6 % chose group 2 of the single tax (they pay 20 % of the minimum wage);
- 2.4 % – 1 group (pay 10 % of the cost of living).

Representatives of the 1st STS group are less numerous due to a number of restrictions on entrepreneurial activities while in this group. SE IEs have from 1 to 28 registered types of economic activity in their arsenal. The author put forward a hypothesis about the existence of a relationship between the number of declared SE types of economic activity, income and taxes paid. Typically, small entrepreneurship carry out economic activities in one direction (which is the main one and is indicated in the reporting forms), less often in 2–5 related directions, speaks of diversification of their economic activities. The presence of a significant number of registered types of economic activity

does not indicate their SE simultaneous implementation. Entrepreneurs try to minimize their own labor costs by registering the maximum number of types of economic activity under the CEA (Classification of Economic Activities) and avoiding the need for an additional visit to the state registration service. A study conducted by the author makes it possible to distribute all small SE IEs into several groups according to the number of declared types of economic activity.

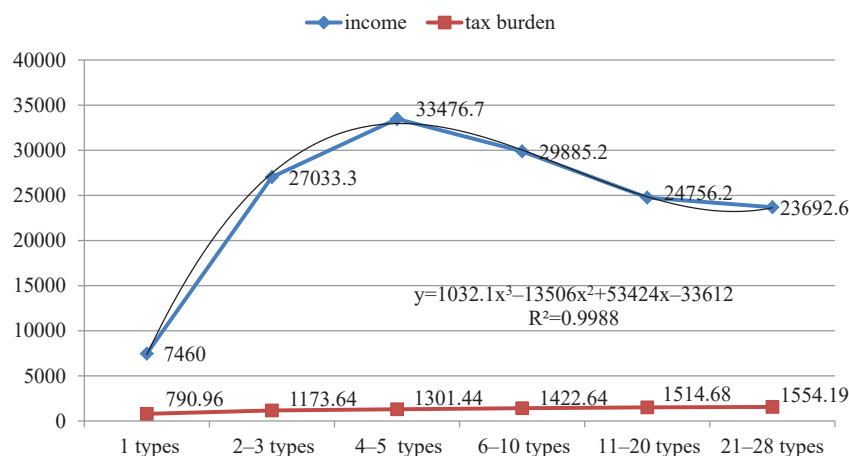
The first group includes IEs, declared and carries out only 1 type of activity on CEA. Their share in the total structure is 13.2 %.

The second group includes IEs that carry out 2–3 types of economic activity and make up 20 % of the total structure. 28.4 % belong to the IEs; they chose 4–5 types of economic activity.

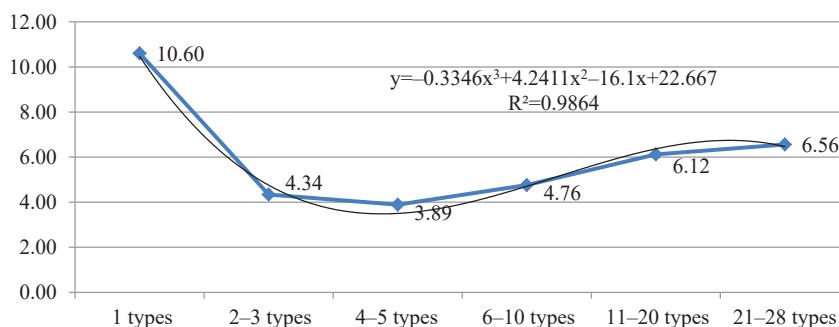
Further, the division of IEs into groups in accordance with the number of types of economic activity chosen by them is more enlarged due to the inability to cover such a number of types of activity by a small entrepreneurship subject, taking into account its limited resources and capabilities: 6–10 (25.6 %), 11–20 (10 %), 21–28 (2.8 %). The study determines the average tax burden (the tax burden for each SE is calculated as the average value of the single tax and the amount of the single insurance premium (SIP) for each group) and the average income as of 2019 (Fig. 2).

The amount of IE income gradually increases from 1 to 3 groups, reaching its maximum value, and decreases in 4–6 groups, which indicates the large volumes of economic activity of business entities engaged in 2–3 and 4–5 types of economic activity. The dependence is presented in the form of a polynomial function with the highest possible approximation coefficient ( $R^2=0.9988$ ). The size of the tax burden increases from 1 to 6 groups in its absolute value (the dependence can be described as linear), however, to substantiate the effectiveness of economic activity, it is advisable to use a derived relative indicator – tax burden level.

It is advisable to note that the level of tax burden for groups ranges from 3.89–10.6 % (Fig. 3).



**Fig. 2.** Income and tax burden on individuals-entrepreneurs in Kyiv (Ukraine) in 2019 by groups of economic activities, c. u.



**Fig. 3.** The level of tax burden on individuals-entrepreneurs in Kyiv (Ukraine) in 2019 by groups of types of economic activity, %

The highest level of tax burden is observed in the 1st group and amounts to 10.6 %, and the lowest – in the 3rd group (4–5 types of activities under the CEA). There is a tendency towards a decrease in the tax burden with an increase in the number of types of economic activity (diversification of economic activity). However, when the threshold value of the number of types of economic activity is exceeded, the level of tax burden gradually increases. Dependence can be characterized as polynomial 3 degrees. The approximation coefficient is close to 1 and confirms the reliability of the description of this dependence by the presented function.

Considering the above, it is possible to conclude that there is an unconditional relationship between the number of types of economic activity of the SE IE, their income, the volume and level of their tax burden. With a good choice and combination of 2–5 types of economic activity, a synergistic effect is manifested, which indicates an increase in revenue with a decrease in the tax burden and the predominance of the growth rate of income of IE over the growth rate of their tax burden. A synergistic effect occurs with moderate related diversification of economic activities. When implementing one type of economic activity, the highest level of tax burden at low incomes is observed, which is associated with limited opportunities and maximizing the risks of a small entrepreneurship entity. An excessive number of types of economic activity do not lead to an increase in the synergistic effect due to the impossibility of IE qualitative coverage of all declared areas and the nominal nature of this indicator. Small entrepreneurship in accordance with

their status and existing restrictions on income and the number of employees can't carry out economic activities in dozens of areas. Studies have proved that the limiting value of the number of types of economic activity, provided that a synergistic effect is observed, is 5. It should be noted that this conclusion is valid only for a particular category of small entrepreneurship – individuals who are on a simplified taxation system. In this case, the application of the classical calculation scheme, in which the gross expenses of the business entity are used, is not seen as possible as a result of conducting simplified reporting by the majority of SEs, which only include the amount of income and taxes in the reporting period.

## 7. SWOT analysis of research results

*Strengths.* The strengths of the research are based to some extent on the characteristics that are unique to small entrepreneurship. These include:

- specialization of production, which ensures high efficiency of economic activity;
- mobility;
- ability and willingness to innovate;
- availability of relevant organizational skills and the like.

Another strength of the research is the uniqueness of the proposed approach to the formation of a synergistic effect based on a combination of three parameters: profitability, the level of tax burden and the number of types of economic activity of a small entrepreneurship.

The positive effect of the implementation of the research results is to increase the efficiency of the SE business activities while reducing the level of expenses, in particular, the level of tax burden on enterprises. The strengthening of the positive effect is due to the fact that small entrepreneurship does not need to attract additional investments to achieve the planned type of synergistic effect.

*Weaknesses.* The weaknesses of the research in this case is the impossibility of ensuring absolute measurement accuracy and the presence of errors in the process of its implementation as a result of the influence on the formation of the synergistic effect of a wide range of external and internal factors. As well as the difficulties associated with taking into account the degree and direction of influence of each of them.

*Opportunities.* Opportunities for further research are to determine:

- 1) synergistic effect from the implementation of economic activity by small entrepreneurship is formed due to other internal sources (for example, due to the growth of management efficiency);
- 2) external synergistic effect;
- 3) general synergistic effect, is a derivative of all available sources.

*Threats.* Threats to the process of formation and determination of the synergistic effect are:

- 1) low level of awareness of small entrepreneurship on changes in the current legislation, the insolvency of their tracking;
- 2) limited competitive opportunities compared to large market operators;
- 3) high entry barriers when entering international markets;
- 4) changes in the financial and credit policy of the state in relation to small entrepreneurship;
- 5) low resistance to external negative factors due to resource constraints.

Additional costs associated with the introduction of the results of the study are, first of all, expenses for the remuneration of highly qualified management personnel, whose knowledge and skills are sufficient to form and determine the synergistic effect of the implementation of economic activities.

## 8. Conclusions

1. The author has classified synergies according to the main classification criteria: profit components, types of assets, areas of human activity, sources of origin, extent of manifestation, duration of consequences of the manifestation of the synergistic effect.

2. The essence of the synergetic effect is determined, which is considered as an additional result obtained by close and coordinated interaction of individual elements of the system in the process of carrying out economic activities by small entrepreneurship.

3. Reasonable main sources of synergistic effect, namely: cost savings, financial savings, increased management performance, strengthening the position of small entrepreneurship in the market. As a source of the synergistic effect, which is studied in the work, let's consider the savings due to the reduction of the tax burden against the background of increased profitability.

4. Based on the use of regression analysis, the nature of the relationship between the main parameters of the formation of a synergetic effect is determined: the number of types of economic activity, the amount of income and the size of the tax burden. It is established that the dependence describes a polynomial function of the third degree.

5. A certain limit parameter for the number of types of economic activity that provides a synergistic effect in the form of increasing the efficiency of economic activity of small entrepreneurship – individuals – entrepreneurs. It is equal to 5.

The presented study does not cover the problem of assessing the negative synergistic effect, which may also occur in the process of carrying out economic activities by small entrepreneurship. The above aspect will be considered more deeply when the author conducts further research in this direction.

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