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Dataset Modelling of the Financial Risk Management of Social Entrepreneurship in Emerging Economies

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Abstract: The relevance of this study lies in the fact that financial risk is a serious obstacle to the development of social entrepreneurship, preventing the implementation of potential support for sustainable development goals in business. The purpose of this article is to clarify specific aspects of financing factors and financial risk related to social entrepreneurship in developing countries (in comparison with the standard financial risk related to commercial entrepreneurship) in order to analyze the influence of the financing factors of social entrepreneurship on sustainable development, as well as to determine the potential for the development of social entrepreneurship through financial risk management. To achieve this goal, this article uses the methodology of econometrics—dataset modelling of financial risk management in social entrepreneurship to achieve sustainable development in emerging economies. On the basis of the results of this study, firstly, it is substantiated that the financial risks entailed by social entrepreneurship differ from the standard financial risk present in commercial entrepreneurship. Specific factors of the financing of sustainable development in emerging economies are determined and, on the basis of this, financial risks specific to social entrepreneurship in emerging economies are identified as follows: (1) reduced stimulus to use financial resources in long-term investments, which disrupts the stability and decreases inclusion; (2) joint public–private investments and decreased investment in R&D; and (3) expanded investment in the skills required for jobs and "markets of tomorrow". Secondly, a contradictory influence of financing factors on sustainable development is demonstrated. Thirdly, a large potential for the development of social entrepreneurship by means of financial risk management (maximum reduction) was identified. With the minimization of financial risk, social entrepreneurship would demonstrate substantial progress, with an increase of 99.61% (more than 50%) from 45.18 points to 90.18 points. A novel contribution of this paper to the extant literature consists of the specification of the essence and specifics of social entrepreneurship in emerging economies through the identification of financial risks and the provision of recommendations for their management.

Keywords: financial risk; risk management; dataset modelling; social entrepreneurship; sustainable development; emerging economies

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1. Introduction

Social entrepreneurship is a special type of business that incorporates the individual or simultaneous implementation of the following directions of activity: (1) corporate social responsibility; (2) corporate ecological responsibility; (3) non-commercial activities (including charity) towards the provision of public and socially important benefits. Financial risks are a serious obstacle to the development of social entrepreneurship, preventing the implementation of potential support for sustainable development goals in business. This is the problem addressed by this research. The following issues hinder the development of solutions to this problem.

The first issue is that the way in which social entrepreneurship is financed is quite different from the manner in which commercial business is. The investment climate is heterogeneous, and there could be a situation in practice in which, in case of a favourable—on the whole—climate, there could be high investment attractiveness for commercial projects but low investment attractiveness and investment defecits for sustainable development. There are no special statistics on the investment attractiveness of social entrepreneurship, resulting in uncertainty with respect to specific financial risks related to it. The orientation of the general investment climate in an investment system can lead to imprecise and distorted evaluations of the financial risks entailed by social entrepreneurship.

The second issue is that, unlike commercial entrepreneurship, where financial risk management constitutes one of its main activities, financial risk management takes a background role in social entrepreneurship activities. Social entrepreneurship has limited capabilities in the sphere of financial risk management, requiring the implementation of risk management at the level of state regulators. However, despite the active development of social entrepreneurship around the world and the adoption of the SDGs in national strategies, not enough attention has been paid to financial risk management in social entrepreneurship at the national level due to the inflexibility of institutions.

The third issue is global inequality, due to which the financial risks entailed by social entrepreneurship in emerging economies are large and cannot be easily overcome. This is because emerging economies are peculiar in that they posses the largest and most chronic financial resource deficits and less favourable—on the whole—investment climates (as compared to advanced economies). In addition to this, the effectiveness of institutions in emerging economies is also low, making them less flexible and hindering government support in managing the financial risks entailed by social entrepreneurship (Kliestik et al. 2018; Kovacova et al. 2019).

The purpose of this article is to clarify specific financing factors and financial risks related to social entrepreneurship in developing countries (in comparison with the standard financial risks entailed by commercial entrepreneurship), to analyze the influence of the financing factors related to social entrepreneurship on sustainable development, and to determine the potential for social entrepreneurship development through financial risk management.

To achieve this goal, the article performs dataset modelling of financial risk management in social entrepreneurship for sustainable development in emerging economies. The subject of this research is the social entrepreneurship index, standard financial factors related to commercial entrepreneurship, and those specific factors of financing sustainable development in developing countries, for which statistics of specific factors of financing sustainable development are available. The study is based on data for 2021 (at the end of 2020).

This paper's originality consists of implementing not traditional but dataset modelling of financial risk management in social entrepreneurship. This allows (not due to the use of the report but the use of the dataset on social entrepreneurship) for the systemic (comprehensive and complex) consideration of all manifestations of social entrepreneurship—corporate responsibility (social and ecological) and non-commercial activities. This allows us to fill the gap in the statistical data, which are given fragmentarily (only in one of three directions) in the existing reports.

The novelty of this paper consists of considering the specifics of social entrepreneurship during the identification of its special financial risks. This allows us to avoid the association of social entrepreneurship with commercial entrepreneurship during the study of financial risks and incorrect results. Instead, we obtain precise results that are correct for social entrepreneurship. This paper's uniqueness consists of the consideration of the emerging economies' experience and the specifics of the manifestation of financial risks of social entrepreneurship in them.

This introduction is followed by the materials (literature review and gap analysis) and methods (methodology and logic of testing the offered hypotheses, the empirical basis of

the research). Then, the research results are given, which are followed by the conclusions of our research.

2. Materials and Methods

2.1. Theoretical Basis, Literature Review and Gap Analysis

The theoretical basis of this research is the concept of financial risk and risk management, sustainable development, and social entrepreneurship (in which it is opposed to commercial entrepreneurship). The concept of categorising countries by the criterion of the level of income and level of markets' development, according to which emerging and advanced economies are distinguished.

This research is based on the following work in the sphere of financial risk management in entrepreneurship: Bakos and Dumitrașcu (2021), Bouri et al. (2021), Dalwai and Salehi (2021), Duygun et al. (2020), Elkhal (2019), Lasloom (2021), Locurcio et al. (2021), Sabău et al. (2021), and Syed and Bawazir (2021).

We also use the materials of the following works on the topic of the contribution of social entrepreneurship to sustainable development: Al-Omoush et al. (2021), Cardella et al. (2021), Chandra et al. (2021), Fhiri et al. (2021), Fridhi (2021), Méndez-Picazo et al. (2021), Popkova et al. (2020), Sahrakorpi and Bandi (2021), Setiawan et al. (2021), Suseno and Abbott (2021), and Thörnqvist and Kilstam (2021).

We also use the published materials on the topic of sustainable development and implementation of the SDGs in emerging economies of such researchers as Alam et al. (2021), Galindo-Martín et al. (2021), Hassani et al. (2021), Sebestyén and Abonyi (2021), Tabares (2021), Tang et al. (2021), and Ullah et al. (2021).

The literature review on this research problem has shown a high level of elaboration and a lack of solutions due to specific research gaps. The first gap is the incompleteness of the current statistics in social entrepreneurship, which does not allow for its precise and correct measurement. The second gap is the uncertainty surrounding the specifics of social entrepreneurship's financial risks. The third gap is the poor elaboration of the experience and insufficient information on the specifics of social entrepreneurship and its financial risks in emerging economies. These gaps predetermine the three following research questions (RQ).

RQ1: What (exactly) are the financial risks of social entrepreneurship?

Based on the specifics of investments in sustainable development, which is noted and emphasised in the works (Azmat et al. 2021; Chen 2021; Staszkiewicz and Werner 2021), we offer Hypothesis 1:

Hypothesis 1 (H1). *The financial risks of social entrepreneurship differ from the standard financial risks of commercial entrepreneurship (receipt of credits, protection of minority investors, taxation, and solution to non-solvency).*

RQ2: What is the correct way of managing the financial risks of social entrepreneurship?

Based on the existing publications (He and Yan 2020; Lee 2020; Zhang and Wang 2021), which note the contradictory impact of the factors of financing on sustainable development, we offer Hypothesis 2:

Hypothesis 2 (H2). *The financial risk management of social entrepreneurship should be flexible and take into account the multidirectional impact of the factors of financing on it (stimulating some factors and restraining other factors).*

RQ3: What is the potential of social entrepreneurship's development by means of management (maximum reduction) of financial risks?

According to the accumulated scientific knowledge in the sphere of market economies, given in the works (Graafland and Wells 2021; Shao et al. 2021; Wut et al. 2021), we also offer Hypothesis 3:

Hypothesis 3 (H3). *Despite its non-commercial nature, social entrepreneurship faces large financial risks and largely depends on their overcoming—that's why social entrepreneurship would demonstrate significant progress with minimal financial risks.*

This paper aims to perform the dataset modelling of the financial risk management in social entrepreneurship for sustainable development in emerging economies.

2.2. Methodology and Empirical Basis of the Research

To check Hypothesis 1, we use the method of regression analysis. We determine the regression dependence of the social entrepreneurship index on the standard financial factors of commercial entrepreneurship (receipt of credits, protection of minority investors, taxation, and solution to non-solvency—given in Table 1) and on the specific factors of financing sustainable development (given in Table 2).

Table 1. Standard financial factors of commercial entrepreneurship in emerging economies of the sample in 2021 (as a result of 2020), position (the higher, the better). Source: Compiled by the authors based on the World Bank (2021).

Country Category	Country	Receipt of Credits	Protection of Minority Investors	Taxation	Solution to Non-Solvency
		Fr_1	Fr_2	Fr_3	Fr_4
Developing countries	Argentina	104	61	170	111
	Brazil	104	61	184	77
	Chile	94	51	86	53
	China	80	28	105	51
	India	25	13	115	52
	Indonesia	48	37	81	38
	Mexico	11	61	120	33
	Russia	25	72	58	57
	Slovakia	48	88	55	46
	South Africa	80	13	54	68
	Turkey	37	21	26	120
Developed countries	Finland	132	72	95	65
	New Zealand	1	3	9	36
	Sweden	80	28	31	17
	Austria	94	37	44	22
	Japan	94	57	51	3
	Denmark	48	28	8	6
	France	104	45	61	26
	Ireland	48	13	4	19
	Israel	48	18	13	29
	Belgium	67	45	63	9
	Australia	4	57	28	20
	Estonia	48	79	12	54
	Netherlands	119	79	22	7

Table 1. *Cont.*

Country Category	Country	Receipt of Credits	Protection of Minority Investors	Taxation	Solution to Non-Solvency
		Fr_1	Fr_2	Fr_3	Fr_4
	Italy	119	51	128	21
	Germany	48	61	46	4
	Republic of Korea	67	25	21	11
	Canada	15	7	19	13
	UK	37	7	27	14
	Greece	119	37	72	72
	Portugal	119	61	43	15
	Poland	37	51	77	25
	Spain	80	28	35	18
	Switzerland	67	105	20	49
	Czech Republic	48	61	53	16
	Hungary	37	97	56	66
	USA	4	36	25	2

Table 2. Specific factors of financing of sustainable development in emerging economies of the sample in 2021 (as a result of 2020), points 1–100.

Country Category	Country	Increase Incentives to Direct Financial Resources towards Long-Term Investments, Strengthen Stability and Expand Inclusion	Facilitate the Creation of "Markets of Tomorrow", Especially in Areas that Require Public-Private Collaboration	Incentivize and Expand Patient Investments in Research, Innovation and Invention That Can Create the New "Markets of Tomorrow"	Update Education Curricula and Expand Investment in the Skills Needed for Jobs and the "Markets of Tomorrow"
		msr_1	msr_2	msr_3	msr_4
Developing countries	Argentina	32.8	34.3	31.9	46.9
	Brazil	60.3	38.0	36.2	39.5
	Chile	57.5	39.7	31.7	52.1
	China	72.8	49.7	50.0	67.0
	India	54.5	40.2	32.5	43.5
	Indonesia	59.7	45.0	45.6	49.0
	Mexico	49.0	35.7	27.2	43.3
	Russia	55.3	-	35.6	44.9
	Slovakia	54.7	39.3	31.3	46.5
	South Africa	48.6	35.6	31.7	42.6
	Turkey	49.8	38.5	28.9	39.8

Table 2. *Cont.*

Country Category	Country	Increase Incentives to Direct Financial Resources towards Long-Term Investments, Strengthen Stability and Expand Inclusion	Facilitate the Creation of "Markets of Tomorrow", Especially in Areas that Require Public-Private Collaboration	Incentivize and Expand Patient Investments in Research, Innovation and Invention That Can Create the New "Markets of Tomorrow"	Update Education Curricula and Expand Investment in the Skills Needed for Jobs and the "Markets of Tomorrow"
		msr_1	msr_2	msr_3	msr_4
Developed countries	Finland	95.4	59.5	53.4	75.3
	New Zealand	93.2	45.0	45.2	63.4
	Sweden	89.0	52.2	50.8	69.4
	Austria	88.3	47.3	38.8	60.6
	Japan	84.7	53.5	54.7	51.3
	Denmark	84.6	46.7	41.7	71.5
	France	83.0	50.1	50.8	56.8
	Ireland	81.9	46.6	36.1	59.5
	Israel	81.77	51.2	53.1	66.6
	Belgium	81.2	49.3	47.8	65.8
	Australia	81.2	44.0	42.9	63.5
	Estonia	81.1	44.9	43.4	56.8
	Netherlands	79.9	50.4	48.3	71.8
	Italy	79.8	43.0	36.9	40.7
	Germany	79.3	48.1	49.2	61.4
	Republic of Korea	78.3	46.7	53.4	60.0
	Canada	75.1	49.5	42.8	65.3
	UK	72.4	46.1	40.9	59.7
	Greece	68.3	36.0	25.2	38.7
	Portugal	67.1	44.6	42.2	49.8
	Poland	62.7	37.5	32.1	41.9
	Spain	59.7	44.4	40.4	51.4
	Switzerland	59.2	50.8	51.6	70.8
	Czech Republic	58.2	41.9	40.2	48.5
	Hungary	52.0	39.4	36.7	40.8
	USA	47.8	57.7	57.3	68.2

Source: Compiled by the authors based on data from the World Economic Forum (2021).

To check the reliability of the regression models, we perform an F test (by F criterion). The research sample includes all (11) emerging economies for which the statistics on the specific factors of financing sustainable development are available in the materials of the World Economic Forum (2021). To form a sufficient volume of panel data, statistical data on 26 developed countries included in the World Economic Forum (2021) rating are also collected and used in this article.

The logic of testing the offered hypothesis is as follows: the regression dependence of social entrepreneurship on the specific factors of financing sustainable development alone

should be observed, and for the standard financial factors of commercial entrepreneurship, the F test must not be passed (the model has to be insufficiently reliable).

The source of the data on social entrepreneurship is the dataset "Social entrepreneurship in the global economy: from virtual scores to big data". We perform dataset modelling, the advantage of which is the fullest consideration of the manifestations of social entrepreneurship. The relevant statistics are given in the dataset and the calculated integral index is given (Figures 1 and 2).

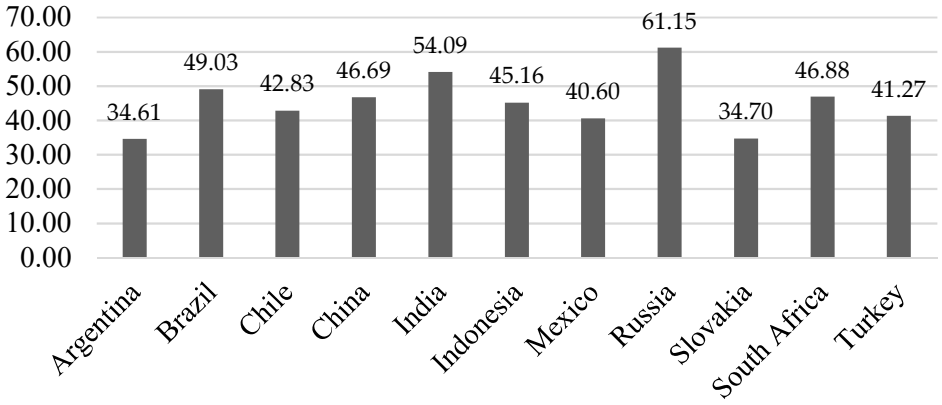

Figure 1. Social entrepreneurship index (SEPR) in emerging economies of the sample in 2021 (as a result of 2020), points 1–100. Source: Compiled by the authors based on data from the Institute of Scientific Communications (2021).

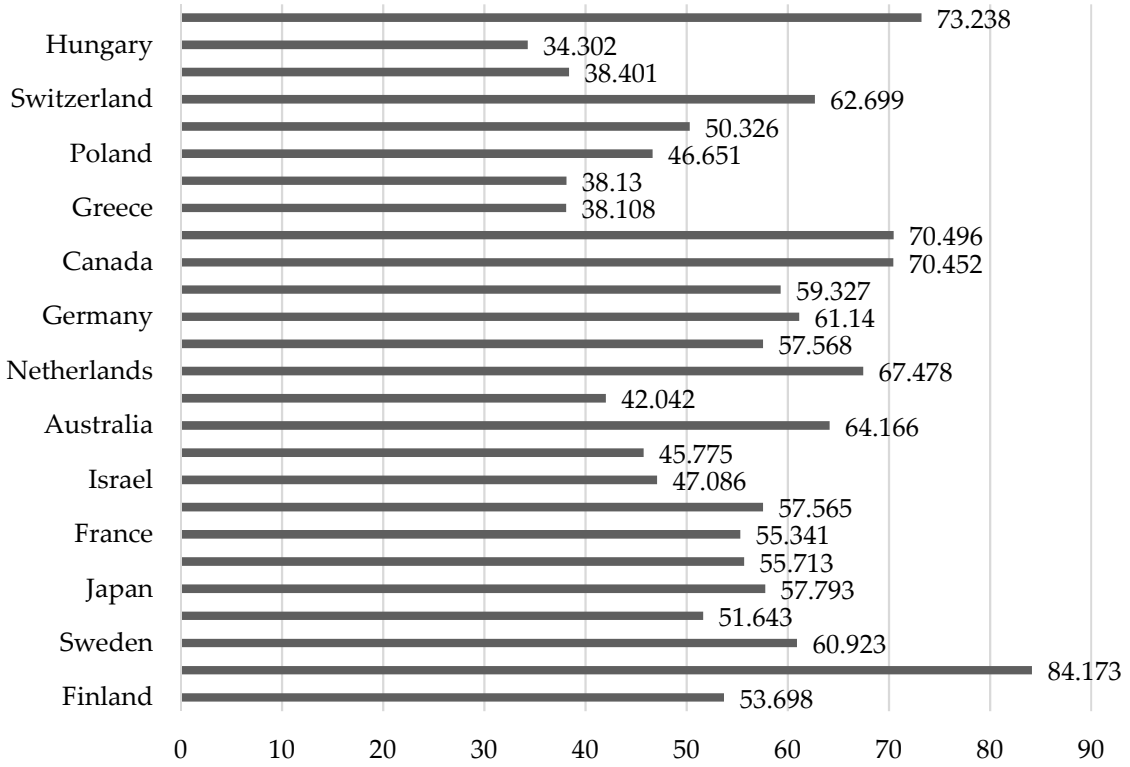

Figure 2. Social entrepreneurship index (SEPR) in developed economies of the sample in 2021 (as a result of 2020), points 1–100. Source: Compiled by the authors based on data from the Institute of Scientific Communications (2021).

As shown in Figure 1, the highest level of development of social entrepreneurship in emerging economies of the sample in 2021 (as a result of 2020) is observed in Russia (61.15 points), and the lowest in Slovakia (34.70 points) and Argentina (34.61 points).

As shown in Figure 2, the highest level of development of social entrepreneurship in developed economies of the sample in 2021 (as a result of 2020) is observed in New Zealand (84.173 points), and the lowest in Hungary (34.302 points).

To test Hypothesis 2, we use comparative and logical methods; we determine and compare the impact of financing factors on social entrepreneurship. The economic and mathematical sense of the offered hypothesis is as follows: the regression coefficients in the model of social entrepreneurship's dependence on the specific factors of sustainable development financing must have positive and negative signs.

To test Hypothesis 3, we use the substitution method. We put the optimal values of the financial factors in the obtained regression models (the reliability of which has been confirmed). We also use the trend analysis method to determine the social entrepreneurship index's growth (dynamics of change) compared to the current level (2021). The hypothesis is deemed proven if financial risk management leads to an increase in the social entrepreneurship index of more than 50%.

Additionally, this article uses the dynamic research method to get more accurate results. Dynamic modelling of the impact of financial risks on social entrepreneurship is carried out using the example of Russia as a vivid example of a developing country (part of BRICS). The Sustainable Development Vector Index (MRSV) calculated by the Moscow Exchange (2021a) is used as an indicator of social entrepreneurship. The Index of the Moscow Exchange (IMOEX), also calculated by the Moscow Exchange (2021b), serves as an indicator of financial risk.

The Sustainable Development Vector Index (MRSV) is relatively new—it has been calculated since 21 September 2020. Therefore, to obtain a large enough sample, this article uses monthly data from both indices. The dynamics of the values of these indices from 21 September 2020 to 11 November 2021 is given in the Supplementary Materials to this article (since the data table contains 292 observations—it is too large to be included in the text of the article). If a negative dependence is revealed in the function IMOEX = F (MRSV), indicating the negative impact of financial risk on social entrepreneurship in Russia, this will provide additional confirmation of the hypothesis put forward.

3. Results

For dataset modelling of the impact of the financial factors on social entrepreneurship in emerging economies, let us consider regression analysis results. Before modelling, we will analyze the multicollinearity of the variables selected for the study. For this, their cross-correlation is calculated in Table 3.

Table 3. Dataset modelling of the impact of the standard financial factors of commercial entrepreneurship on social entrepreneurship.

	SEPR	**Fr_1**	**Fr_2**	**Fr_3**	**Fr_4**	**msr_1**	**msr_2**	**msr_3**	**msr_4**
SEPR	1	-	-	-	-	-	-	-	-
Fr_1	−0.30	1	-	-	-	-	-	-	-
Fr_2	−0.34	0.24	1	-	-	-	-	-	-
Fr_3	−0.42	0.37	0.21	1	-	-	-	-	-
Fr_4	−0.49	0.15	0.15	0.47	1	-	-	-	-
msr_1	0.47	0.18	−0.20	−0.41	−0.53	1	-	-	-
msr_2	0.27	0.18	−0.15	−0.28	−0.43	0.51	1	-	-
msr_3	0.51	0.05	0.00	−0.39	−0.51	0.54	0.67	1	-
msr_4	0.57	−0.03	−0.10	−0.51	−0.49	0.62	0.65	0.76	1

Source: Obtained by the authors automatically with the help of the "Correlation" function in Microsoft Excel.

The results of the correlation analysis from Table 3 indicate the absence of multicollinearity. First, let us consider the dependence of social entrepreneurship on the standard financial factors of commercial entrepreneurship (Table 4).

Table 4. Dataset modelling of the impact of the standard financial factors of commercial entrepreneurship on social entrepreneurship.

Regression Statistics						
Multiple R	0.6029					
R-square	0.3635					
Adjusted R-square	0.2840					
Standard error	10.1788					
Observations	37					
Dispersion analysis						
	df		*SS*	*MS*	***F***	***Significance F***
Regression	4		1893.7802	473.4450	4.5696	0.0049
Residue	32		3315.4357	103.6074		
Total	36		5209.2159			
	Coefficients	*Standard Error*		*t-Statistics*	*p-Value*	*Lower 95%*	*Upper 95%*
Constant	67.9504	4.3443		15.6412	0.0000	59.1013	76.7996
Coefficient at Fr_1	−0.0456	0.0499		−0.9137	0.3677	−0.1472	0.0560
Coefficient at Fr_2	−0.1029	0.0675		−1.5254	0.1370	−0.2403	0.0345
Coefficient at Fr_3	−0.0417	0.0467		−0.8921	0.3790	−0.1368	0.0535
Coefficient at Fr_4	−0.1515	0.0663		−2.2859	0.0290	−0.2865	−0.0165

Source: Obtained by the authors automatically with the help of the "Regression" function in Microsoft Excel.

The correlation of the indicators (60.9%) is moderate. Estimate F equals 4.5696. Table F at 11 observations and 4 factor variables ($k_1 = m = 4$, $k_2 = n - m - 1 = 37 - 4 - 1 = 32$) at the significance level $\alpha = 0.05$ equals 2.14. Since table F exceeds estimate F (4.5696 > 2.14), the F test is not passed, and the regression equation is insufficiently reliable at the set α. The influence of all considered factors on social entrepreneurship turns out to be negative—this is evidenced by the negative values of the coefficients. Let us carry out a correspondence analysis—for this, we estimate the linearity (Figure 3) and diagnose the model assumptions (Figure 4).

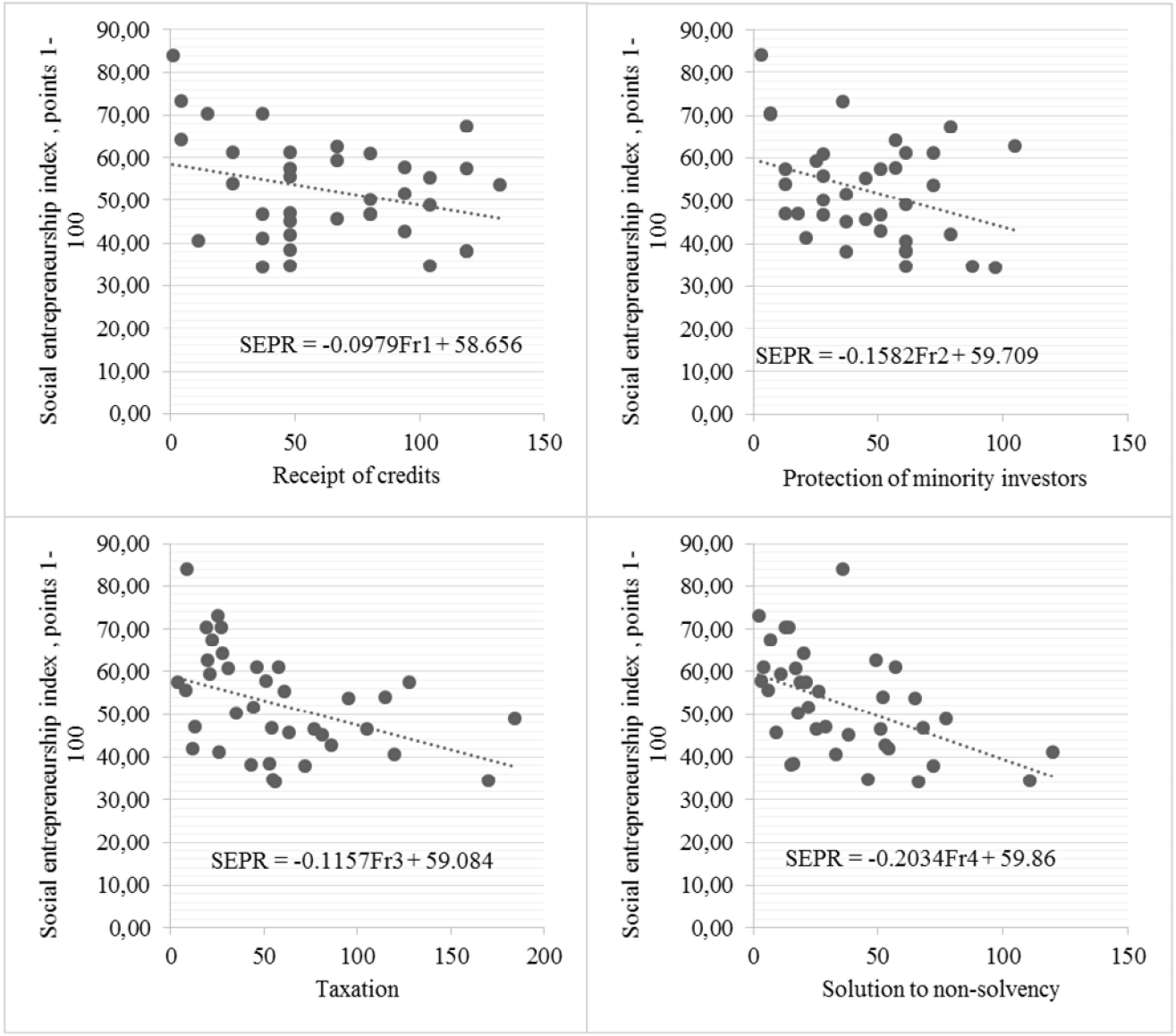

Figure 3. Residual graphs. Source: Obtained by the authors automatically with the help of the "Regression" function in Microsoft Excel.

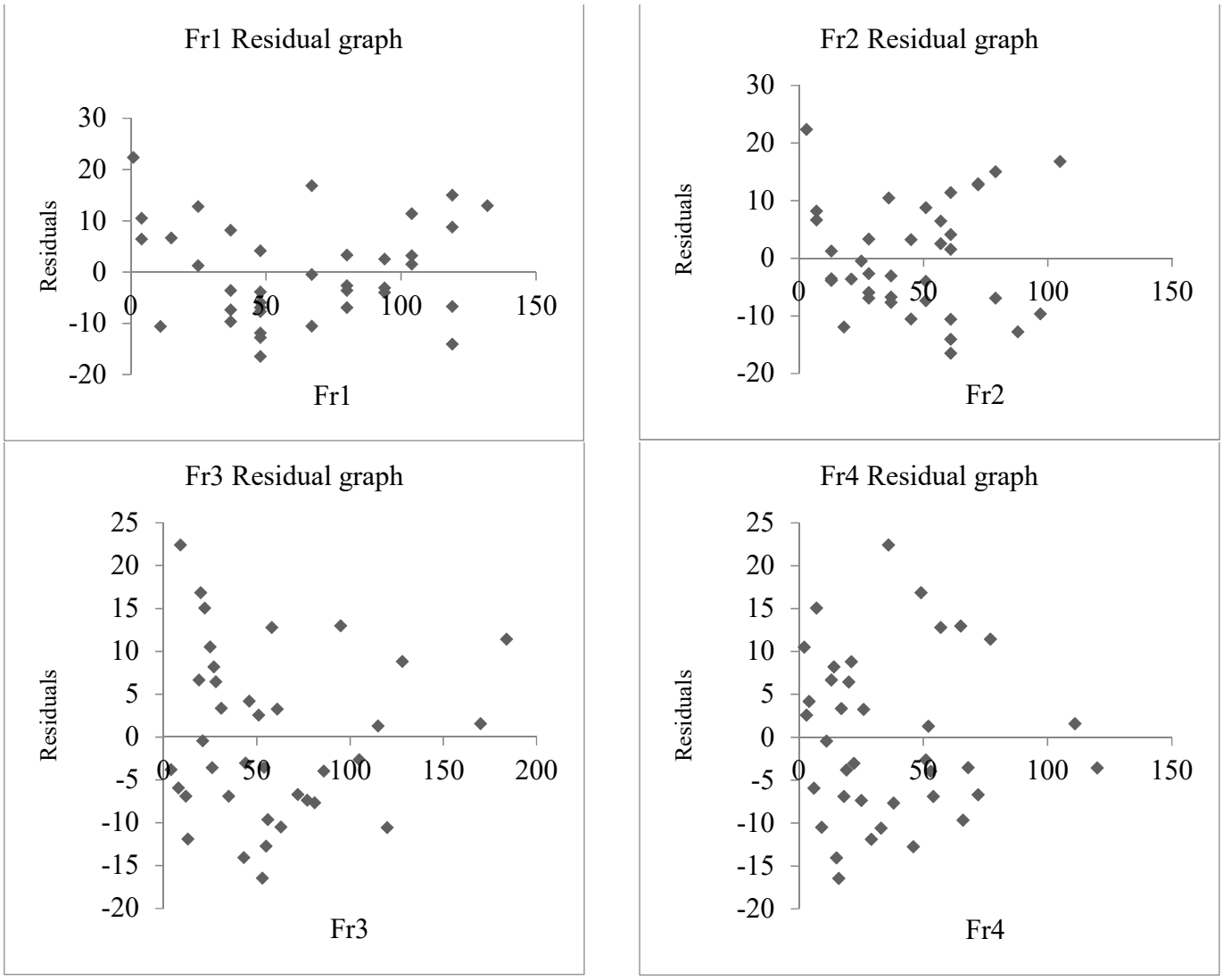

Figure 4. Residual graphs. Source: Obtained by the authors automatically with the help of the "Regression" function in Microsoft Excel.

The graphs in Figure 3 indicate that the relationship of the resulting variable with all factorial variables is quite reliably described by linear regression.

The graphs in Figure 4 indicate the homogeneity of the dispersion of the residues. Now let us consider the dependence of social entrepreneurship on the specific factors of sustainable development financing (Table 5).

Table 5. Dataset modelling the impact of the specific factors of sustainable development financing on social entrepreneurship.

Regression Statistics						
Multiple R	0.6310					
R-square	0.3981					
Adjusted R-square	0.3229					
Standard error	9.8983					
Observations	37					
Dispersion analysis						
	df		*SS*	*MS*	***F***	***Significance F***
Regression	4		2073.9920	518.4980	5.2921	0.0022
Residue	32		3135.2239	97.9757		
Total	36		5209.2159			
	Coefficients	*Standard Error*	*t-Statistics*	*p-Value*	*Lower 95%*	*Upper 95%*
Constant	16.2665	9.3239	1.7446	0.0907	−2.7258	35.2587
Coefficient at msr_1	0.1693	0.1398	1.2112	0.2347	−0.1154	0.4540
Coefficient at msr_2	−0.3647	0.2427	−1.5031	0.1426	−0.8590	0.1295
Coefficient at msr_3	0.3685	0.3192	1.1544	0.2569	−0.2817	1.0187
Coefficient at msr_4	0.4548	0.2528	1.7990	0.0815	−0.0602	0.9698

Source: Obtained by the authors automatically with the help of the "Regression" function in Microsoft Excel.

The correlation of the indicators (63.10%) is moderate. Estimate F equals 5.2921. Table F at 11 observations and 4 factor variables ($k_1 = m = 4$, $k_2 = n - m - 1 = 11 - 4 - 1 = 6$) at the significance level $\alpha = 0.05$ equals 0.14. Since estimate F exceeds the table (5.2921 > 2.14), the F test is passed, and the regression equation is reliable at the set α. Let us carry out a correspondence analysis. For this, we estimate the linearity (Figure 5) and diagnose the model assumptions (Figure 6).

The graphs in Figure 5 indicate that the relationship of the resulting variable with all factorial variables is quite reliably described by linear regression.

The graphs in Figure 6 indicate the homogeneity of the dispersion of the residues. This allows for the compilation of a regression model of social entrepreneurship's dependence on the specific factors of sustainable development financing in emerging economies:

$$SEPR = 1{,}602{,}665 + 0.1693\ msr_1 - 0.3647\ msr_2 + 0.3685\ msr_3 - 0.4548\ msr_1 \quad (1)$$

According to this regression model, social entrepreneurship in emerging economies is peculiar for the following financial risks:

- reduction in stimuli for using financial resources in long-term investments, which disrupts stability and decreases inclusion: an increase in msr1 of 1 point leads to an increase in the social entrepreneurship index of 0.1693 points;
- joint public–private investments; reduction in investments in R&D: an increase in msr_2 of 1 point leads to a decrease in the social entrepreneurship index of 0.3647 points;
- decrease in investment in R&D: increase in msr_3 of 1 point leads to an increase in the social entrepreneurship index of 0.3685 points;
- expand investment in the skills needed for jobs and "markets of tomorrow": increase in msr_1 of 1 point leads to an increase in the social entrepreneurship index of 0.4548 points.

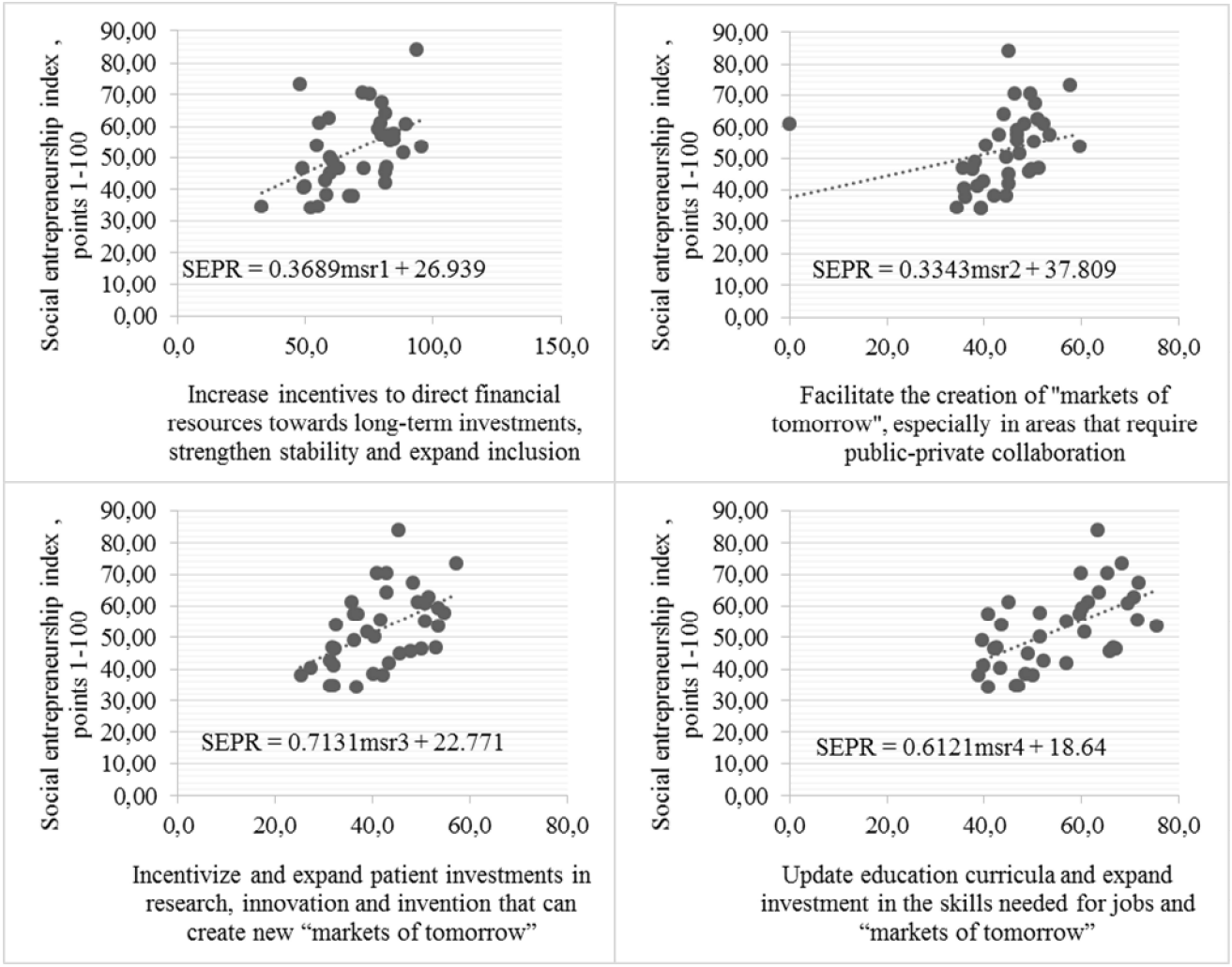

Figure 5. Residual graphs. Source: Obtained by the authors automatically with the help of the "Regression" function in Microsoft Excel.

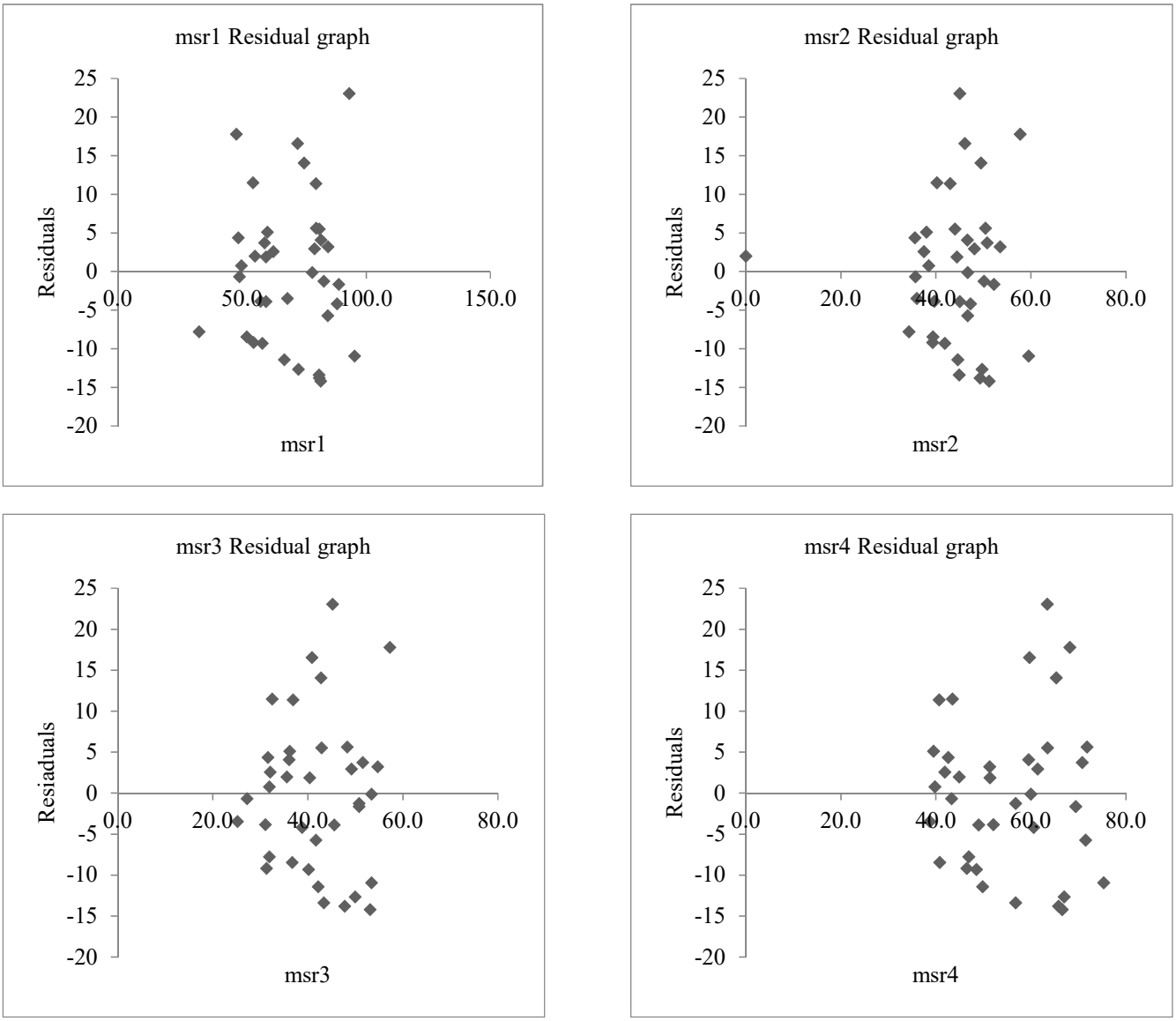

Figure 6. Residual graphs. Source: Obtained by the authors automatically with the help of the "Regression" function in Microsoft Excel.

Let us insert the optimal values of the financial factors into the obtained regression model (1). The method of trend analysis is used to determine the growth (dynamics of change) of the indicators as compared to the current level (2021) (Figure 7).

Figure 3 shows that managing the financial factors that negatively influence social entrepreneurship (facilitate the creation of "markets of tomorrow", especially in areas that require public–private collaboration; expand investment in the skills needed for jobs and "markets of tomorrow") prevented the growth of the impact (to prevent the risk increase). This fact explains that support for social entrepreneurship in sustainable development is not the only priority of emerging economies. Thus, they cannot adapt their financial systems only to this priority at the expense of other preferences.

Increase the stimuli for using financial resources in long-term investments, which disrupts the stability and decreases inclusion by 84.87% (up to the maximum 100 points). An increase in investments in R&D of 187.5% (also to 100 points) leads to a rise in the social entrepreneurship index of 99.61% (up to 90.18 points).

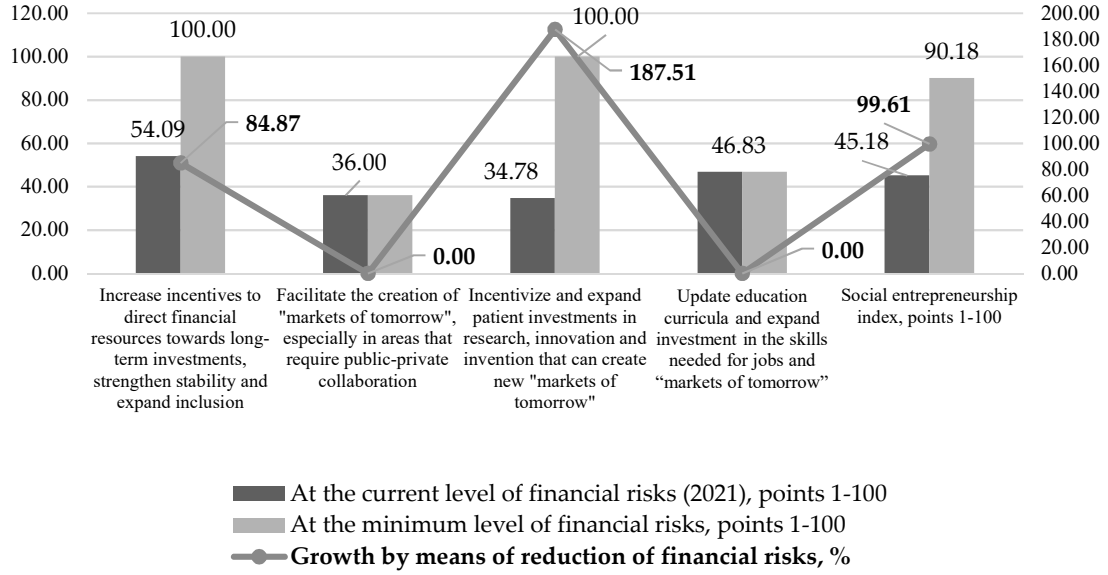

Figure 7. The perspective of social entrepreneurship's development in emerging economies through the reduction of financial risk. Source: Authors.

Additionally, we constructed a dynamic regression model of the impact of financial risks on social entrepreneurship in Russia. The dependence of the Sustainable Development Vector Index (MRSV) on the Index of the Moscow Exchange (IMOEX) is given in Table 6.

Table 6. Dataset modelling of the impact of the Index of the Moscow Exchange (IMOEX) on the Sustainable Development Vector Index (MRSV) in Russia from 21 September 2020 to 11 November 2021.

Regression Statistics						
Multiple R	0.9944					
R-square	0.9888					
Adjusted R-square	0.9887					
Standard error	5.82×10^{11}					
Observations	292					
Dispersion analysis						
	df	*SS*	*MS*	***F***	***Significance F***	
Regression	1	8.64×10^{27}	8.64×10^{27}	25,506.1466	1.1×10^{-284}	
Residue	290	9.83×10^{25}	3.39×10^{23}			
Total	291	8.74×10^{27}				
	Coefficients	*Standard Error*	*t-Statistics*	*P-Value*	*Lower 95%*	*Upper 95%*
Constant	-9.6×10^{11}	2.68×10^{11}	−3.58439	0.0004	-1.5×10^{12}	-4.3×10^{11}
Coefficient at IMOEX	2.3668	0.0148	159.7064	1.11×10^{-284}	2.3377	2.3960

Source: Obtained by the authors automatically with the help of the "Regression" function in Microsoft Excel.

The correlation of the indicators (99.44%) is very high; however, the variables do not duplicate each other (multicollinearity is absent). Estimate F equals 25,506.1466. Table F at 292 observations and 1 factor variable ($k_1 = m = 1$, $k_2 = n - m - 1 = 292 - 1 - 1 = 290$) at the significance level $\alpha = 0.05$ equals 3.92. Since estimate F exceeds the table (25,506.1466 > 3.92), the F test is passed, and the regression equation is reliable at the set α. Let us carry out a correspondence analysis—for this, we estimate the linearity and diagnose the model assumptions (Figure 8).

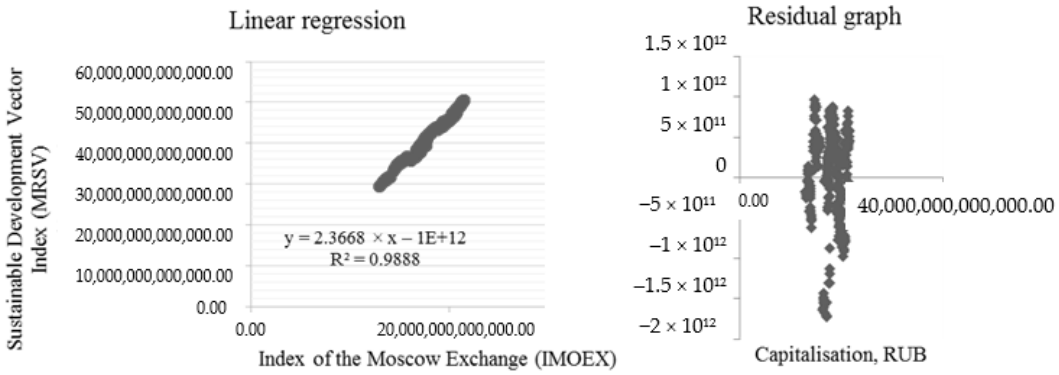

Figure 8. Residual graphs. Source: Obtained by the authors automatically with the help of the "Regression" function in Microsoft Excel.

The graphs in Figure 8 indicate that the relationship of the resulting variable with all factorial variables is quite reliably described by linear regression. The graphs also indicate the homogeneity of the dispersion of the residues. This allows us to compile a regression model of social entrepreneurship's dependence on the specific factors of sustainable development financing in emerging economies:

$$\text{MRSV} = -960{,}277{,}188{,}684.289\ \text{IMOEX} + 2.37 \quad (2)$$

According to this regression model (2), with an increase in the Index of the Moscow Exchange (IMOEX) of 1 RUB, the Sustainable Development Vector Index (MRSV) is down 960.28 billion rubles. The considered example of Russia is indicative—it demonstrates that social entrepreneurship is indeed largely determined by financial risks. The Russian experience can be extended to other developing countries.

4. Discussion

Thus, the performed dataset modelling of financial risks management in social entrepreneurship for sustainable development in emerging economies has shown that the financial risks of social entrepreneurship differ from the standard financial risks of commercial entrepreneurship. The standard financial factors of commercial entrepreneurship (receipt of credits, protection of minority investors, taxation, and solution to non-solvency) have not demonstrated either high (correlation equals 43%, which is low) or statistically significant connection with social entrepreneurship in emerging economies (Hypothesis 1 has been proven).

We determined specific factors of sustainable development financing in emerging economies, which have shown a stronger impact (correlation—83%) on social entrepreneurship, and the regression model of their dependence is reliable. This allows us to identify the special financial risks of social entrepreneurship in emerging economies:

- reduction of stimuli for using financial resources in long-term investments, which disrupts the stability and decreases inclusion;
- joint public–private investments; decrease in investments in R&D;
- expand investment in the skills needed for jobs and the "markets of tomorrow".

A contradictory influence of the factors of financing on sustainable development is substantiated. Increased incentives to direct financial resources towards long-term investments strengthen stability, expand inclusion (factor 1), and incentivize and expand patient investments in research, innovation, and invention (factor 3), which have positively impacted social entrepreneurship in emerging economies.

The influence of support for the creation of the "markets of tomorrow", especially in areas that require public–private collaboration (factor 2) and expansion of investments in skills for the "markets of tomorrow" (factor 4), on social entrepreneurship in emerging economies was negative (Hypothesis 2 has been proven). Therefore, the financial risk man-

agement of social entrepreneurship should be flexible in considering the multidirectional financing factors (stimulating some factors and restraining other factors).

Additionally, the large potential of social entrepreneurship's development by means of management (maximum reduction) of financial risks has been determined. Despite its non-commercial nature, social entrepreneurship in emerging economies faces large financial risks and largely depends on their overcoming. That is why with minimum financial risk—in the case of an increase in risks for using financial resources in long-term investments, which disrupts the stability and decreases inclusion by 84.87% and increase of investments in research, innovation, and investments that could create new "markets of tomorrow" by 187.5%—social entrepreneurship will demonstrate large substantial progress: an increase of 99.61% (more than 50%), from 45.18 points to 90.18 points (Hypothesis 3 has been proven).

The results obtained, firstly, clarified the specifics of investments in sustainable development noted in the works (Azmat et al. 2021; Chen 2021; Staszkiewicz and Werner 2021). Our results also identified unique factors in financing social entrepreneurship for (1) increasing incentives for directing the financial resources into long-term investments, strengthening stability and increasing inclusiveness; (2) promoting the creation of "markets of tomorrow", especially in areas where public–private cooperation is required; (3) encouraging and expanding investment in research, innovation and inventions that can create new "markets of tomorrow"; (4) updating curricula and increasing investment in skills for work and the "markets of tomorrow". This showed for the first time that investment in sustainable development needs to take into account both the specifics of social entrepreneurship and developing countries. Unlike in past studies, it has been proven that the standard financial risks of commercial entrepreneurship (obtaining loans, protecting minority investors, taxation, and resolving insolvency) are not universal—they do not apply to social entrepreneurship in developing countries.

Secondly, the article expands on the scientific background of existing work (He and Yan 2020; Lee 2020; Zhang and Wang 2021) on the conflicting influence of financing factors on sustainable development. For the first time, funding factors were shown to have both an enabling and a disincentive effect on social entrepreneurship in developing countries. Based on this, the article proposes flexible management of financial risks of social entrepreneurship (to stimulate some factors and restrain others).

Thirdly, in contrast to existing publications in the field of market economics (Graafland and Wells 2021; Shao et al. 2021; Wut et al. 2021), this article argues that despite the difference in goals (commercial/non-commercial) and funding factors, both commercial and social entrepreneurship face high financial risks and need financial risk management. This conclusion requires a revision of the existing approach to social entrepreneurship management in favour of greater attention to financial risk management.

5. Conclusions

This paper's contribution to the literature consists of specifying the essence and features of social entrepreneurship in emerging economies by determining unique financial risks and developing recommendations for their management. The scientific significance of this paper consists of the substantiation of the fact that commercial factors (in the form of financial risks) have a more critical role in social entrepreneurship's development than was previously (in the existing literature) believed.

The potential of social entrepreneurship's development in emerging economies is implemented (in 2021) only by 50% because of the restraining influence of financial risks. In case of the optimal management of financial risks (their minimisation), the level of social entrepreneurship's development in emerging economies will approach a maximum, which will reduce their underrun from developed countries in the sphere of implementing SDGs and support global sustainable development.

It should be concluded that a specific limitation of this work's results is the study of the experience of only emerging economies. The absence of standard financial risks of

commercial entrepreneurship with social entrepreneurship could be predetermined by the specifics of emerging economies—underdevelopment of market relations and reduced effectiveness of institutions. Future studies should deal with this limitation and pay attention to the experience of advanced economies and compare it to the experience of emerging economies.

It must also be recognized that the sample of developing countries is limited (due to the unavailability of data for many developing countries) and the variables are measured by indices (due to the lack of more accurate statistics on the topic of social entrepreneurship), which can cause bias in empirical results. The inclusion of developed countries in the sample did not allow for the full consideration of the characteristics of developing countries.

To overcome this limitation, further research is recommended to support the development of global statistics on social entrepreneurship with high empirical specifications and full coverage of developing countries. After more accurate statistics become available, it is advisable to continue the dataset modelling and refine the results obtained in this article.

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References

Alam, Shahriar Tanvir, Sayem Ahmed, Syed Mithun Ali, Sudipa Sarker, Golam Kabir, and Asif Ul-Islam. 2021. Challenges to COVID-19 vaccine supply chain: Implications for sustainable development goals. *International Journal of Production Economics* 239: 108193. [CrossRef] [PubMed]

Al-Omoush, Khaled Saleh, VIrginia Simón-Moya, Mohammad Atwah Al-ma'aitah, and Javier Sendra-García. 2021. The determinants of social CRM entrepreneurship: An institutional perspective. *Journal of Business Research* 132: 21–31. [CrossRef]

Azmat, Fara, Ameeta Jain, and Fabienne Michaux. 2021. Strengthening impact integrity in investment decision-making for sustainable development. *Sustainability Accounting, Management and Policy Journal*. [CrossRef]

Bakos, Levente, and Danut Dumitrascu Dumitrașcu. 2021. Decentralized enterprise risk management issues under rapidly changing environments. *Risks* 9: 165. [CrossRef]

Bouri, Elie, Riza Demirer, Rangan Gupta, and Jacobus Nel. 2021. Covid-19 pandemic and investor herding in international stock markets. *Risks* 9: 168. [CrossRef]

Cardella, Giuseppina Maria, Brizeida Raquel Hernández-Sánchez, Alcides Almeida Monteiro, and Jose Carlos Sánchez-García. 2021. Social entrepreneurship research: Intellectual structures and future perspectives. *Sustainability* 13: 7532. [CrossRef]

Chandra, Yanto, Fandy Tjiptono, and Andhy Setyawan. 2021. The promise of entrepreneurial passion to advance social entrepreneurship research. *Journal of Business Venturing Insights* 16: e00270. [CrossRef]

Chen, Bingyao. 2021. Public-private partnership infrastructure investment and sustainable economic development: An empirical study based on efficiency evaluation and spatial spillover in china. *Sustainability* 13: 8146. [CrossRef]

Dalwai, Tamanna, and Mahdi Salehi. 2021. A business strategy, intellectual capital, firm performance, and bankruptcy risk: Evidence from Oman's non-financial sector companies. *Asian Review of Accounting* 29: 474–504. [CrossRef]

Duygun, Meryem, Daniel Ladley, and Mohamed Shaban. 2020. Challenges to global financial stability: Interconnections, credit risk, business cycle and the role of market participants. *Journal of Banking and Finance* 112: 105735. [CrossRef]

Elkhal, Khaled. 2019. Business uncertainty and financial leverage: Should the firm double up on risk? *Managerial Finance* 45: 536–44. [CrossRef]

Fhiri, Nur Suriaty Daud, Shuhairimi Abdullah, Yasmin Ahmad, Noor Salwani Hussin, Jamsari Jamaluddin, and Abdul Jalil Ramli. 2021. Social entrepreneurship: Environmental sustainability. *AIP Conference Proceedings* 2339: 020237. [CrossRef]

Fridhi, Bechir. 2021. Social entrepreneurship and social enterprise phenomenon: Toward a collective approach to social innovation in Tunisia. *Journal of Innovation and Entrepreneurship* 10: 14. [CrossRef]

Galindo-Martín, Miguel-Ángel, Maria-Soledad Castaño-Martínez, and Maria-Teresa Méndez-Picazo. 2021. Effects of the pandemic crisis on entrepreneurship and sustainable development. *Journal of Business Research* 137: 345–53. [CrossRef] [PubMed]

Graafland, Johan, and Thomas R. Wells. 2021. In Adam Smith's Own Words: The Role of Virtues in the Relationship Between Free Market Economies and Societal Flourishing, A Semantic Network Data-Mining Approach. *Journal of Business Ethics* 172: 31–42. [CrossRef]

Hassani, Hossein, Xu Huang, Steve MacFeely, and Mohammad Reza Entezarian. 2021. Big data and the united nations sustainable development goals (UN SDGs) at a glance. *Big Data and Cognitive Computing* 5: 28. [CrossRef]

He, Chen, and Gujun Yan. 2020. Path selections for sustainable development of green finance in developed coastal areas of China. *Journal of Coastal Research* 104 (Suppl. 1): 77–81. [CrossRef]

Institute of Scientific Communications. 2021. Dataset "Social Entrepreneurship in the Global Economy: From Virtual Scores to Big Data". Available online: https://iscvolga.ru/dataset-social-predprinim (accessed on 9 August 2021).

Kliestik, Tomas, Maria Misankova, Katarina Valaskova, and Lucia Svabova. 2018. Bankruptcy prevention: New effort to reflect on legal and social changes. *Science and Engineering Ethics* 24: 791–803. [CrossRef]

Kovacova, Maria, Tomas Kliestik, Katarina Valaskova, Pavol Durana, and Zuzana Juhaszova. 2019. Systematic review of variables applied in bankruptcy prediction models of Visegrad group countries. *Oeconomia Copernicana* 10: 743–72. [CrossRef]

Lasloom, Nasser Mohammed. 2021. The Inevitability of Financial Risks in Businesses and How to Overcome Them: Saudi Arabia in Focus. *Smart Innovation, Systems and Technologies* 227: 815–24. [CrossRef]

Lee, Jung Wan. 2020. Green finance and sustainable development goals: The case of China. *Journal of Asian Finance, Economics and Business* 7: 577–86. [CrossRef]

Locurcio, Marco, Francesco Tajani, Pierluigi Morano, Debora Anelli, and Benedetto Manganelli. 2021. Credit risk management of property investments through multi-criteria indicators. *Risks* 9: 106. [CrossRef]

Méndez-Picazo, Maria-Teresa, Miguel-Angel Galindo-Martín, and Maria-Soledad Castaño-Martínez. 2021. Effects of sociocultural and economic factors on social entrepreneurship and sustainable development. *Journal of Innovation and Knowledge* 6: 69–77. [CrossRef]

Moscow Exchange. 2021a. Sustainable Development Vector Index (MRSV). Available online: https://www.moex.com/ru/index/MRSV/archive/#/from=2019-10-01&till=2021-11-11&sort=TRADEDATE&order=desc (accessed on 9 August 2021).

Moscow Exchange. 2021b. Moscow Exchange Index (IMOEX). Available online: https://www.moex.com/ru/index/IMOEX/archive/#/from=2020-09-21&till=2021-11-11&sort=TRADEDATE&order=desc (accessed on 9 August 2021).

Popkova, Elena, Piper DeLo, and Bruno Sergi. 2020. Corporate Social Responsibility Amid Social Distancing During the COVID-19 Crisis: BRICS vs. OECD Countries. *Research in International Business and Finance* 55: 101315. [CrossRef] [PubMed]

Sabău, Andrada-Ioanna, Codruta Mare, and Ioanna Lavinia Safta. 2021. A statistical model of fraud risk in financial statements. Case for Romania companies. *Risks* 9: 116. [CrossRef]

Sahrakorpi, Tiia, and Venkata Bandi. 2021. Empowerment or employment? Uncovering the paradoxes of social entrepreneurship for women via Husk Power Systems in rural North India. *Energy Research and Social Science* 79: 102153. [CrossRef]

Sebestyén, Viktor, and Janos Abonyi. 2021. Data-driven comparative analysis of national adaptation pathways for Sustainable Development Goals. *Journal of Cleaner Production* 319: 128657. [CrossRef]

Setiawan, Hari Harjanto, Mu'man Nuryana, Badrun Susantyo, Agus Budi Purwanto, and Muhammad Belanawane Sulubere. 2021. Social entrepreneurship for beneficiaries of the Program Keluarga Harapan (PKH) toward sustainable development. *IOP Conference Series: Earth and Environmental Science* 739: 012053. [CrossRef]

Shao, Jinhua, Brayan Tillaguango, Rafael Alvarado, Santiago Ochoa-moreno, and Johanna Alvarado-Espejo. 2021. Environmental impact of the shadow economy, globalisation, trade and market size: Evidence using linear and non-linear methods. *Sustainability* 13: 6539. [CrossRef]

Staszkiewicz, Piotr, and Alaksander Werner. 2021. Reporting and disclosure of investments in sustainable development. *Sustainability* 13: 908. [CrossRef]

Suseno, Yuliani, and Ling Abbott. 2021. Women entrepreneurs' digital social innovation: Linking gender, entrepreneurship, social innovation and information systems. *Information Systems Journal* 31: 717–44. [CrossRef]

Syed, Ali Murad, and Hana Saeed Bawazir. 2021. Recent trends in business financial risk—A bibliometric analysis. *Cogent Economics and Finance* 9: 1913877. [CrossRef]

Tabares, Sabrina. 2021. Certified B corporations: An approach to tensions of sustainable-driven hybrid business models in an emerging economy. *Journal of Cleaner Production* 317: 128380. [CrossRef]

Tang, Min, Peihan Liu, Xiangrui Chao, and Zhenglin Han. 2021. The performativity of city resilience for sustainable development of poor and disaster-prone regions: A case study from China. *Technological Forecasting and Social Change* 173: 121130. [CrossRef]

Thörnqvist, Christer, and Jonna Kilstam. 2021. Aligning Corporate Social Responsibility with the United Nations' Sustainability Goals: Trickier than it Seems? A Study of Social Entrepreneurship in Sweden. *Economics* 9: 161–77. [CrossRef]

Ullah, Hafeez, Zhuquan Wang, Shahid Bashir, Abdul Razzaq Khan, Madiha Riaz, and Nausheen Syed. 2021. Nexus between IT capability and green intellectual capital on sustainable businesses: Evidence from emerging economies. *Environmental Science and Pollution Research* 28: 27825–43. [CrossRef] [PubMed]

World Bank. 2021. Doing Business: Rating of Countries 2020. Available online: https://russian.doingbusiness.org/ru/rankings (accessed on 9 August 2021).

World Economic Forum. 2021. Global Competitiveness Report Special Edition 2020: How Countries are performing on the Road to Recovery. Available online: https://www.weforum.org/reports/the-global-competitiveness-report-2020 (accessed on 9 August 2021).

Wut, Tai-Ming, Wai-Tung Chan, and Stephanie W. Lee. 2021. Unconventional entrepreneurship: Women handicraft entrepreneurs in a market-driven economy. *Sustainability* 13: 7261. [CrossRef]

Zhang, Bufan, and Yifeng Wang. 2021. The Effect of Green Finance on Energy Sustainable Development: A Case Study in China. *Emerging Markets Finance and Trade* 57: 3435–54. [CrossRef]