DISSOLVED AND NEWLY ESTABLISHED ENTERPRISES IN THE LAST THREE YEARS THAT SURVIVED UNTIL 2018 IN THE ROMANIAN MOUNTAIN SECTOR

Alexandru Mafteiu, Centre for Risk Studies in Economic and Social Sciences, Vienna, Austria

The paper realized statistics for the dissolved enterprises and newly established enterprises, the degree of entropy being considerable in the Romanian mountain area. Entropy opposed negentropy and it is a better modality of activities development. This type of entropy could be resolved through negentropy, as explained in ”Negentropy: a sustainable culture of educational leadership. An OCAI model analysis”: ”when we tend to organize a system which, in this case is an overlap with negentropy through various activities” (Covaci Mihai & Covaci Brîndușa, 2023).

The related descriptive analysis S1 presents statistical values for Mean, Std Error. to Mean, Median, Std. Deviation, Variance, Skewness, Std. Error. to Skewness, Kurtosis, Std Error. In Kurtosis, distance, minimum, maximum, 25, 50, 75, so 24347.56, 2998.399, 21223.00, 8995.196, 80913544.278,

.912, .717, -.544, 1.400, 25258, 14128, 39386, 17925.00, 21223.00, 33323.00 .

The models used for forecasting analysis are S1 - Model_1 ARIMA(0,0,0); S2 - Model_2 ARIMA(0,0,0); S3 - Model_3 ARIMA(0,0,0); S4 - Model_4 ARIMA(0,0,0); S5 - Model_5 ARIMA(0,0,0); S6 - Model_6 ARIMA(0,0,0); S7 - Model_7 ARIMA(0,0,0); S8 - Model_8 ARIMA(0,0,0); S9 - Model_9 ARIMA(0,0,0); S10 - Model_10 ARIMA(0,0,0); S11 - Model_11 ARIMA(0,0,0).

Statistical prediction smoothing (repeated in this order each time – Mean, Std. Error, Minimum, Maximum, 5th and 10th Percentiles) is performed as follows for static R-squared -5.046E-17, 4.506E-16, -1.110 E-15, 7,772E-16, -1,110E-15, -9,326E-16; R-square -5.046E-17, 4.506E-16, -1.110E-15, 7.772E-16, -1.110E-15, -9.326E-16; RMSE 2074,103, 2644,193, 132,879, 8995,196, 132,879, 167,591; MAPS 62,206, 90,648, 18,470, 330,454, 18,470, 18,701; MaxAPE 162,131, 229,226, 40,617, 833,682, 40,617, 41,104; MAE 1515.042, 2102.601, 103.185, 7331.185, 103.185, 129.244; MaxAE 4319,677, 4919,051, 218,889, 15038,444, 218,889, 296,289; Normalized BIC 14.199, 2.460, 10.023, 18.453, 10.023, 10.357.

The resulting statistical forecasting models show the following general picture for I3 (values presented in the following order - static R-squared, R-squared, RMSE, MAPE, MAE) S1-Model_1: 2.220E-16, 2.220E-16,

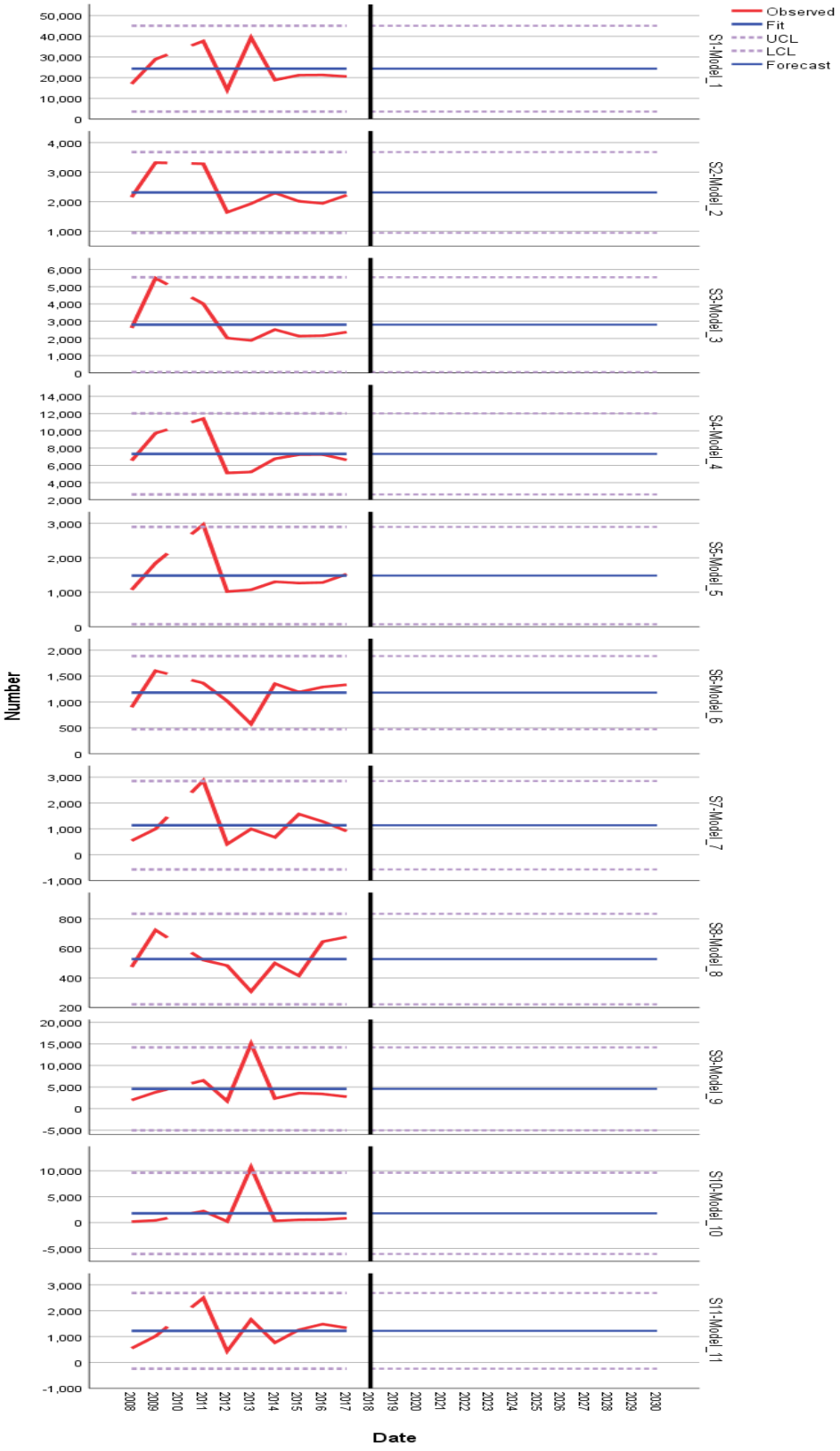
8995.196, 31.278 , 7331.185; S2-Model_2: 1.110E-16, 1.110E-16, 592.426, 18.470, 439.852; S3-Model_3: -2,220E-16, -2,220E-16, 1191,489, 29,359, 868,815; S4-Model_4: .000, .000, 2037,186, 19,625, 1444,148; S5-Model_5: .000, .000, 611,761, 26,798, 418,667; S6-Model_6: -1,110E-15, -1,110E-15, 306,437, 25,154, 233,481; S7-Model_7: .000, .000, 741,010, 56,537, 512,296; S8-Model_8: 7.772E-16, 7.772E-16, 132.879, 21.432, 103.185; S9-Model_9: -2.220E-16, -2.220E-16, 4170.083, 70.677, 2759.679; S10-Model_10: 1.110E-16, 1.110E-16, 3402.596, 330.454, 2082.519; S11-Model_11: -2.220E-16, -2.220E-16, 634.075, 54.486, 471.630.

Table 20. Prediction analysis for I3

Model		2018	2019	2020	2021	2022	2023	2024	2025
S1-Model_1:	Forecast	24348	24348	24348	24348	24348	24348	24348	24348
	UCL	45091	45091	45091	45091	45091	45091	45091	45091
	LCL	3605	3605	3605	3605	3605	3605	3605	3605
S2-Model_2:	Forecast	2310	2310	2310	2310	2310	2310	2310	2310
	UCL	3676	3676	3676	3676	3676	3676	3676	3676
	LCL	944	944	944	944	944	944	944	944
S3-Model_3:	Forecast	2799	2799	2799	2799	2799	2799	2799	2799
	UCL	5546	5546	5546	5546	5546	5546	5546	5546
	LCL	51	51	51	51	51	51	51	51
S4-Model_4:	Forecast	7326	7326	7326	7326	7326	7326	7326	7326
	UCL	12023	12023	12023	12023	12023	12023	12023	12023
	LCL	2628	2628	2628	2628	2628	2628	2628	2628

S5-Model_5:	Forecast	1484	1484	1484	1484	1484	1484	1484	1484
	UCL	2894	2894	2894	2894	2894	2894	2894	2894
	LCL	73	73	73	73	73	73	73	73
S6-Model_6:	Forecast	1180	1180	1180	1180	1180	1180	1180	1180
	UCL	1887	1887	1887	1887	1887	1887	1887	1887
	LCL	473	473	473	473	473	473	473	473
S7-Model_7:	Forecast	1140	1140	1140	1140	1140	1140	1140	1140
	UCL	2848	2848	2848	2848	2848	2848	2848	2848
	LCL	-569	-569	-569	-569	-569	-569	-569	-569
S8-Model_8:	Forecast	528	528	528	528	528	528	528	528
	UCL	834	834	834	834	834	834	834	834
	LCL	221	221	221	221	221	221	221	221
S9-Model_9:	Forecast	4577	4577	4577	4577	4577	4577	4577	4577
	UCL	14193	14193	14193	14193	14193	14193	14193	14193
	LCL	-5039	-5039	-5039	-5039	-5039	-5039	-5039	-5039
S10-Model_10:	Forecast	1783	1783	1783	1783	1783	1783	1783	1783
	UCL	9630	9630	9630	9630	9630	9630	9630	9630
	LCL	-6063	-6063	-6063	-6063	-6063	-6063	-6063	-6063
S11-Model_11:	Forecast	1221	1221	1221	1221	1221	1221	1221	1221
	UCL	2684	2684	2684	2684	2684	2684	2684	2684
	LCL	-241	-241	-241	-241	-241	-241	-241	-241

Figure 3.11. Graphical forecasting analysis for I3


Observed
Fit
UCL
LCL
Forecast
S1-Model_1
S2-Model_2
S3-Model_3
S4-Model_4
S5-Model_5
S6-Model_6
S7-Model_7
S8-Model_8
S9-Model_9
S10-Model_10
S11-Model_11
Number
Date
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030

Regarding newly established enterprises in the last three years that survived, the related descriptive analysis S1 (see the related table and figure, respectively the appendix of chapter 3) presents statistical values for Mean, Std Error. to Mean, Median, Std. Deviation, Variance, Skewness, Std. Error. to Skewness, Kurtosis, Std Error. In Kurtosis, distance, minimum, maximum, 25, 50, 75, thus 16094.36, 1111.198, 15179.00, 3685.428, 13582380.655, 2.149, .661, 5,384, 1,279, 12744, 13181, 25925, 13256.00, 15179.00, 16757.00.

The models used for forecasting analysis are S1 - Model_1 ARIMA(0,0,0); S2 - Model_2 ARIMA(0,0,0); S3 - Model_3 ARIMA(0,1,0); S4 - Model_4 Holt; S5 - Model_5 ARIMA(0,0,0); S6 - Model_6 ARIMA(0,0,0); S7 - Model_7 ARIMA(1,0,0); S8 - Model_8 ARIMA(0,0,0); S9 - Model_9 ARIMA(0,0,0); S10 - Model_10 ARIMA(0,0,0); S11 - Model_11 ARIMA(0,0,0).

Statistical prediction smoothing (repeated in this order each time – Mean, Std. Error, Minimum, Maximum, 5th and 10th Percentiles) is performed as follows for static R-squared .112, .267, -6.661E-16, . 832, -6.661E-16, -6.217E-16; R-squared -.080, .877, -2.695, 1.000, -2.695, -1.887; RMSE 45,886, 78,491, .000, 277,870, .000, 1,085; MAPS 51,131, 35,053, .000, 125,989, .000, 5,353; MaxAPE 229,221, 212,031, .000, 745,455, .000, 17,476; MAE 31,479, 52,681, .000, 185,488, .000, .853; MaxAE 109,458,

202,905, .000, 721,727, .000, 1,773; Normalized BIC 6.218, 2.838, 2.790, 11.472, 2.790, 2.856.

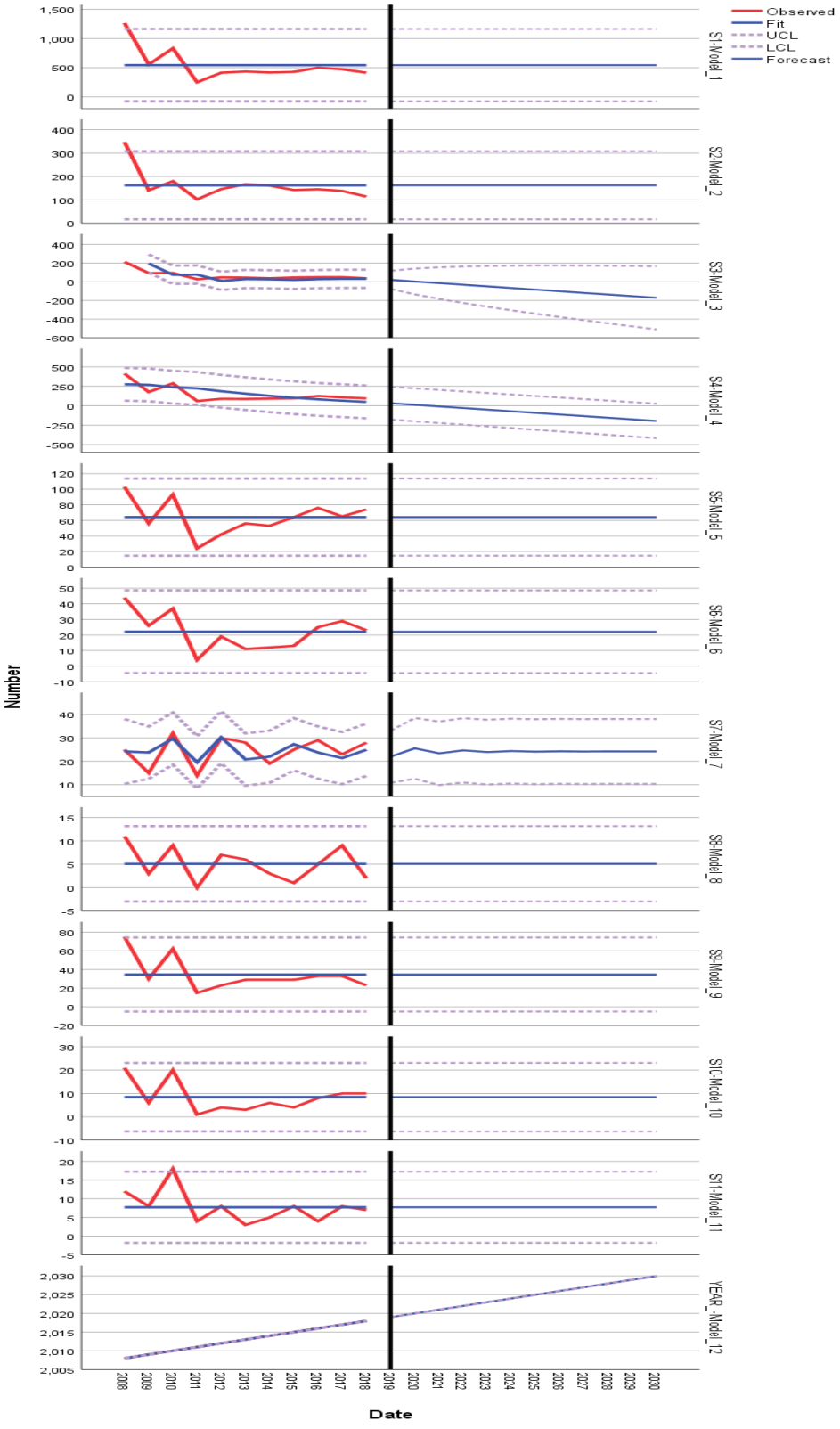
The resulting statistical forecasting models show the following general picture for I4 (values presented in the following order - static R-squared, R-squared, RMSE, MAPE) S1-Model_1: -4.441E-16, -4.441E-16, 277.870, 34.516 ; S2-Model_2: -4.441E-16, -4.441E-16, 65.431, 21.625; S3-Model_3: .000, -2,695, 43,090, 60,967; S4-Model_4: .832, .334, 92.930, 66.903; S5-Model_5: -6.661E-16, -6.661E-16, 22.225, 33.599; S6-Model_6: .000, .000, 11,912, 78,902; S7-Model_7: .397, .397, 4.941, 17.844; S8-Model_8: 4.441E-16, 4.441E-16, 3.618, 88.786; S9-Model_9: -2.220E-16, -2.220E-16, 17.767, 37.612; S10-Model_10: .000, .000, 6,578, 125,989; S11-Model_11: -4.441E-16, -4.441E-16, 4.268, 46.835.

Table 21. Prediction analysis for I4

Model		2019	2020	2021	2022	2023	2024	2025
S1-Model_1:	Forecast	543	543	543	543	543	543	543
	UCL	1162	1162	1162	1162	1162	1162	1162
	LCL	-76	-76	-76	-76	-76	-76	-76
S2-Model_2:	Forecast	162	162	162	162	162	162	162
	UCL	308	308	308	308	308	308	308
	LCL	16	16	16	16	16	16	16
S3-Model_3:	Forecast	21	3	-14	-32	-49	-67	-84
	UCL	118	141	154	163	168	172	173

	LCL	-77	-135	-183	-227	-267	-306	-342
S4-Model_4:	Forecast	33	12	-9	-30	-50	-71	-92
	UCL	243	223	203	184	164	144	125
	LCL	-178	-199	-221	-243	-265	-287	-308
S5-Model_5:	Forecast	64	64	64	64	64	64	64
	UCL	114	114	114	114	114	114	114
	LCL	15	15	15	15	15	15	15
S6-Model_6:	Forecast	22	22	22	22	22	22	22
	UCL	49	49	49	49	49	49	49
	LCL	-4	-4	-4	-4	-4	-4	-4
S7-Model_7:	Forecast	22	26	23	25	24	24	24
	UCL	33	39	37	38	38	38	38
	LCL	11	13	10	11	10	10	10
S8-Model_8:	Forecast	5	5	5	5	5	5	5
	UCL	13	13	13	13	13	13	13
	LCL	-3	-3	-3	-3	-3	-3	-3
S9-Model_9:	Forecast	35	35	35	35	35	35	35
	UCL	74	74	74	74	74	74	74
	LCL	-5	-5	-5	-5	-5	-5	-5
S10-Model_10:	Forecast	8	8	8	8	8	8	8
	UCL	23	23	23	23	23	23	23
	LCL	-6	-6	-6	-6	-6	-6	-6
S11-Model_11:	Forecast	8	8	8	8	8	8	8
	UCL	17	17	17	17	17	17	17
	LCL	-2	-2	-2	-2	-2	-2	-2

Figure 3.12. Graphical forecasting analysis for I4


Observed
Fit
UCL
LCL
Forecast
S1-Model_1
S2-Model_2
S3-Model_3
S4-Model_4
S5-Model_5
S6-Model_6
S7-Model_7
S8-Model_8
S9-Model_9
S10-Model_10
S11-Model_11
YEAR_-Model_12
Number
Date

References

Covaci, B./Suciu, M. C./Covaci, M. (2018): Sectoarele secundar și terțiar, suport al dezvoltării montane în regiunea de Nord-Est a României, in: Journal of Montanology, 9, IX, 129-137.

Covaci, B. (2021), PhD (c) Research report 1, Oradea University

Mihai Covaci, Brîndușa Covaci. 2023. Negentropy: a sustainable culture of educational leadership. An OCAI model analysis, 19 January 2023, PREPRINT (Version 1) available at Research Square [https://doi.org/10.21203/rs.3.rs-2487757/v1]

Covaci, M. (2017): Spearman correlations between learning styles from rational level and Gardner intelligence types, in: Romanian Journal of Psychological Studies. Hyperion University, 5, 2, 31-38.

European Commision (2012). Regulation (EU) No 1151/2012 of the European Commission, (2014). Commission Delegated Regulation (EU) No 665/2014 of 11 March 2014 supplementing Regulation (EU) No 1151/2012 of the European Parliament and of the Council with regard to conditions of use of the optional quality term mountain product. Available at https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32014R0665 (Accessed: 14 June 2021)

Eurostat, (2020). Business Demography Statistics. Available at https://goo.gl/fpmXZA (Accessed: 12 January 2020)

Eurostat, (2020). Regional GDP. Available at https://goo.gl/EoyR38. (Accessed: 14 February 2020)

Eurostat (2020). Structural Business Statistics. Available at https://goo.gl/KMtkVV. (Accessed: 2 March 2020)

Institutul Național de Statistică (2021a), Comunicat de presă 102 - Domeniul: Ocuparea şi şomajul, https://insse.ro/cms/sites/default/files/com_presa/com_pdf/somaj_2020r.pdf

Institutul Național de Statistică (2021b), Întreprinderi noi și profilul întreprinzătorilor din România, Seria statistică de întreprinderi, https://insse.ro/cms/sites/default/files/field/publicatii/intreprinderi_noi_si_profilul_intreprinzatorilor_9.pdf