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LARGE PRIVATE COMPANIES: A STIMULUS FOR THE MARRIAGE RATE UNDER THE PREMISES OF JOB SECURITY – THE CASE OF THE ROMANIAN COUNTIES

***Abstract.** Large corporations are part of the global economy, specific to today's globalized world. With more than socio-economic implications, large companies have the ability to deliver a better degree of remuneration, incentives, and even a better quality of life to employees, compared to small companies, which lack the financial possibility to massively invest in the human resource or make investments in a foreign economy via establishing subsidiaries in emerging countries. Taking into account the impact on the economy and on individuals of large businesses, the main purpose of the paper was to determine and assess, at county level and, considering other specific indicators to the economic well-being and job security, the impact these have on the marriage rate in Romania. Being given the strong positive correlation discovered between the marriage rate and the total number of active enterprises with more than 250 employees in the 42 analyzed Romanian counties, an econometric model was designed and built, also in relation with the monthly average nominal net earnings.*

***Keywords:** large companies, marriage rate, counties, Romania, cross-sectional linear regression*

JEL Classification: C31, J12, J13, J31

1. Introduction

The well-being of each individual differs from one person to another and it is not easy to define or measure. Many can mention factors that contribute to well-being: good health, financial security, good relationships with family and friends, personal security, living in a pleasant and healthy environment, job satisfaction or an income that ensures fulfilling eccentric desires. All this is reflected in most

cases, especially in urban areas, through the development of the business environment and large national and international corporations.

The 21st century has brought with it not only an era of technology, but also new procedures from an organizational point of view, at the level of department, entity or field. All these led to the development of social welfare and the creation of financial possibilities for each individual to start a family, and in the short and medium term to be able to have children. In general, decisions regarding the conception of a child are made in close connection with the welfare of the family members, regardless of whether or not they are legally married.

Large corporations are an inescapable economic, political, environmental, and cultural force in the globalized world we live in today. They impact each day billions of people's lives, often in complex and imperceptible ways. The theory of the firm is an obvious starting point in thinking about the economic role of small and large firms. In the economic literature, two disparate views on the impact of small and large firms on economic efficiency have emerged (Zoltan, 2012): (1) static theory which suggests that large firms are efficient because they focus on the status quo, and (2) dynamic theory suggests that small firms are efficient because they focus on change and the dynamics that comes with it. Large companies and highly developed countries have a strong advantage in this respect, owing to their ability to deliver a degree of remuneration, incentives for employment, further growth, and quality of life to employees that cannot equal small firms and developing nations (Panic, 2005). Therefore, a tradeoff between these would be that large corporations invest and innovate in developing economies as a mean to enhance the wellbeing of the local communities of people, this being the core of our analysis conducted in this paper at county level, in Romania.

Consequently, the main objective pursued in this research was to quantify the impact of the active large private companies on the marriage rate in Romania, at a county level, taking into consideration another indicator relevant to this study: the average monthly net earnings, under the hypothesis that the marriage rate is strongly influenced, at a county level, by the number of active large private companies and by the average monthly net earnings. To be more specific, the hypothesis is that Romanian counties where high values are associated to indicators such as "the number of active large private companies" and "the average monthly net earnings" imply high values of the marriage rate, reported to the rest of the counties, where job security could represent a major issue or where the average monthly net earnings are small, reported to the national mean. Moreover, another aim undertook in this paper was to determine whether the birth rate for live-borns is correlated with the previously mentioned indicators, "the number of active large private companies" and "the average monthly net earnings", under the hypothesis that the birth rate for live-borns is not directly impacted by the socio-economic context, judging from the perspective of each Romanian county.

Both mainstream opinion and academic literature typically believe there is a significant relationship between economic cycles and critical/vital events. Despite

widespread interest in the subject, relatively few efforts have been made to quantify this relation and make it more accurate. Early investigative attempts were seriously hindered by faults in the base data. While these have significantly improved, conceptual and analytical problems remain very difficult, particularly in the calculation of the degree of covariance between economic data and vital statistics (Kirk, 1960).

2. Literature review

The empirical foundations and the calculation of living conditions have been researched by several generations of economists and other social scientists. Attempts to describe and measure national income, which began over five centuries ago, gradually contributed to currently used system of national accounts. While economists recognize the achievements of the national accounts, the momentum of research has shifted to alternatives or supplements that address shortcomings in Gross National Product as a welfare measure or indicate for the living standards over time periods or groups for which conventional measures cannot be calculated (Steckel, 1995).

Galbraith and Thomas (1941) found a relationship between the employee levels of the workforce and total births in the 1919-1937 period, with births lagging one year on the basis of deviations from the trends. Increased analysis of the relationship between employment level and successive birth ratings revealed that the impact of working conditions on marriages and first births was indirect and with direct influence on the second and higher number of births. Other scholars (Galbraith and Thomas, 1941; Hexter, 1925; Yule, 1906) argue that marriages respond more sensitively to economic changes than births, with Thomas reporting in 1925 that the connection between birth rates and business cycles grew stronger while the connection between marriage rates and business cycle was getting weaker.

The recently received considerable attention in econometric literature for the quantitative analysis of population changed due to the increase in utilizing socioeconomic as well as demographic data is still not enough. One main goal is to examine the damping impact of economic development on population growth. Other attempts focus on the determination of forces that affect birth rates, because the death rate is strongly affected by specific medical factors, although not independent of economic variables. Two statistical approaches are taken usually into consideration when investigating the main explanatory factors for birth rates: first, by analyzing the birth rate function in a country using time series data covered by a relatively long period of time and, second, by simultaneously testing hypotheses against observations on various countries. In general, the two methods could not provide adequate evidence for a solid and well-developed theory of a birth rate & marriage rate and economic development relationship. Therefore, more research is required to explain contested issues and provide more details, as our paper will provide on the specific case of Romania.

3. Research methodology and materials

The multiple cross-sectional linear regression method offers ways to establish the existence or inexistence of correlations between two types of variables: a dependent variable (the endogenous variable) and multiple independent variables (exogenous variables), as well as quantifying the proportion of the variance in the endogenous variable that is predictable from the exogenous variables (Gheorghiu and Pătărlăgeanu, 2006).

This type of linear regression is meant to quantify and explain the relationship between the variables incorporated in the model. More specifically, what is particular about this method is that the variables are studied at the same specific period in time (that specific period in time was year 2018 in this study). Moreover, with this kind of quantitative method, the analysis is focused more towards each particular subject observed via the values associated to the variables included in the econometric model, rather than focusing on how the bonds between the variables evolve during a longer period of time (Krueger et al., 2010).

Consistently with previously mentioned objectives undertaken in this research, the methodology involved resorting to building an econometric model using the multiple cross-sectional linear regression method (least-squares), in order to meet the following objectives:

- Objective 1: determine the impact of the number of active large private companies and of the average monthly net earnings on the marriage rate in Romania (cross-sectional analysis: the 42 Romanian counties, year 2018);
- Objective 2: examine if the birth rate for live-borns is directly correlated with the previously mentioned indicators, “the number of active large private companies” and “the average monthly net earnings” (cross-sectional analysis, at the level of the 42 Romanian counties, year of reference: 2018).

The values of the indicators (variables) included in this research were downloaded on 29 May 2020 from the TEMPO Online database (The National Institute for Statistics – Romania). These indicators are defined as it follows:

- **POP221A_18:** *The marriage rate* (unit of measurement: marriages per 1,000 inhabitants). According to The National Institute of Statistics Romania, the marriage rate is computed by dividing the number of marriages concluded in 2018 to the permanent residence population at 1 July 2018;
- **POP202B_18:** *The birth rate for live-borns* (unit of measurement: live births per 1,000 inhabitants). According to The National Institute of Statistics Romania, this indicator represents the ratio between the number of live births having their usual residence in Romania in 2018 to the resident population at 1 July 2018 and multiplied by 1,000. In the calculation of this indicator are included only those live-births whose mothers had their usual residence in Romania and whose birth was registered at Civil Status Offices within Romania;

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- **FOM106E_18:** *The average monthly nominal net earnings* (unit of measurement: lei). According to The National Institute of Statistics Romania, this indicator is obtained by subtracting from the gross nominal earnings the following: tax, the social security contribution paid by the employees and the social health insurance paid by the employees. The average monthly net earnings represent the ratio between the net amounts paid to the employees by economic units in the reference month, no matter of the period and the average number of employees. The average number of employees represents a simple arithmetic mean calculated based on daily numbers of employees in the respective month. Reference year: 2018
 - **INT101O_18:** *The number of active large enterprises with more than 250 employees* (unit of measurement: number). The National Institute of Statistics Romania defines an active enterprise as the entity which, from economic viewpoint is active (during the observation period, reference year: 2018), namely it produces goods or provides services.

Since ignoring cross-sectional correlations can have serious consequences (Baltagi, Kao and Peng, 2016), this research is firstly centered on analyzing the distribution of the previously mentioned indicators and then on elaborating the correlation matrix. Based on that, an econometric model has been designed using the multiple cross-sectional linear regression method (least-squares) in a software program, EViews. This product is specifically designed to help carrying out studies in the field of econometrics, ideal for modern approaches (Bhaumik, 2015).

4. Results and discussions

As previously stated, the analysis of the distributions of the indicators represented the first step made towards building the econometric model.

Regarding the birth rate (indicator code: POP202B_18), similarly, this data series is not normally distributed in the case of the 42 Romanian counties analyzed (year of reference: 2018). The national mean is 5.94% with a standard deviation of 1.17%, which represents almost 20% out of the mean. The highest marriage rate is registered in Bucharest (11.5%), the capital of Romania, and the lowest is registered in Vâlcea (3.4%). Skewness is a relevant indicator in this context since it reflects the asymmetry of data distribution around the mean. A normal distribution is as close as possible to zero (Startz, 2019). The distribution of the marriage rate is not normal, since one can notice the strong positive asymmetry, taking into account that the Skewness value is above zero (2.4039). This indicates that not many Romanian counties have associated marriage rate above the value of the nation mean, compared to those situated around mean or below it. Moreover, Kurtosis is another relevant indicator in this research because it reflects the flatness or curving of a distribution as compared to a normal distribution. In the case of a normally distributed series, the Kurtosis value is three (Startz, 2019). Considering this, the distribution of the marriage rate in the 42 analyzed Romanian counties is far from

normal, since the Kurtosis value of 13.69 validates the leptokurtic characteristic. This high Kurtosis value proves that a vast majority of the Romanian counties converge towards similar marriage rates.

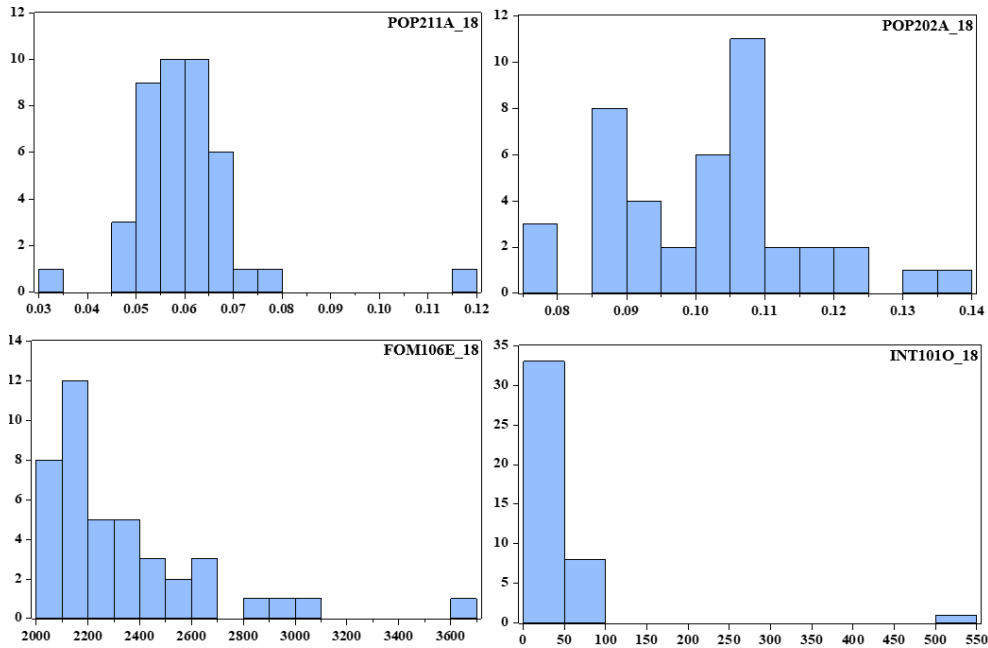


Figure 1. The distribution of the analyzed indicators

Regarding the birth rate for live-borns (indicator code: POP202A_18), the distribution is not normal in the case of the 42 Romanian counties analyzed (year of reference: 2018). The national mean is 10.11% with a standard deviation of 1.37%, which represents almost 14% out of the mean. The highest marriage rate is registered in Suceava (13.5%) and the lowest is registered in Mehedinți (7.7%). It can be accepted that the Skewness value (0.3265) indicates a normal distribution, though it signals a slight tendency towards positive asymmetry. Kurtosis (2.8411) indicates a slight tendency towards a flat distribution (platykurtic), but the distribution can be considered normal from this perspective.

Comparing the distribution of the marriage rate to that of the birth rate for live-borns in the case of the 42 analyzed Romanian counties in 2018, one can notice that the vast majority of those converge towards the national mean in terms of the marriage rate, whereas in the case of the birth rate for live-borns – the distribution indicates more diversity, in the sense that the counties are not all grouped around the nation mean (10.11%).

Table 1. Descriptive Statistics of the Analyzed Indicators

	POP211A_18	POP202B_18	FOM106E_18	INT101O_18
Mean	0.0594	0.10110	2,343.8571	41.85714
Median	0.0585	0.10200	2,223	20
Maximum	0.1150	0.13500	3,666	554
Minimum	0.0340	0.07700	2,044	4
Std. Dev.	0.0117	0.01374	323.4706	82.58907
Std. Dev ÷ Mean	19.66%	13.59%	13.80%	197.31%
Skewness	2.4039	0.32657	2.0610	5.53318
Kurtosis	13.6981	2.84118	8.1053	34.15786
Jarque-Bera	240.7381	0.79067	75.3471	1913.23436
Observations	42	42	42	42

The European Community Household Panel (ECHP) used by Ariza, De la Rica Goiricelaya and UgidosOlazabal (2003) in a country comparison context aimed to analyze the impact on first-born timing in correlation with the part-time work. Ireland, Britain, the Netherlands, and Spain were investigated. The results demonstrated that part-time working accelerates fertility in countries with widespread and voluntary work. Moreover, the latest figures from 2017 from the Organisation for Economic Co-operation and Development (OECD) shows that marriage rates differ considerably across OECD countries as in Chile, Italy, Luxembourg, Portugal, or Slovenia crude marriage rates are very low (3.5 marriages per 1000 people), while in others (e.g.: Lithuania and Turkey) rates are twice as high at around 7 marriages per 1000 or above. In most OECD countries, the crude marriage rate is somewhere between 4 and 5.5 marriages per 1000, with the OECD average standing at 4.8 (OECD Family Database - OECD, 2020).

The distribution of the average monthly nominal net earnings (indicator code: FOM106E_18) is not normal and indicates a tendency at the level of the 42 Romanian counties towards poverty, considering that Skewness (2.8411) proves a strong positive asymmetry and the series is leptokurtic. As it can be noticed in Figure 1, 64.28% of the 42 counties have associated values of the average monthly nominal net earnings around or below the national mean of 2,343.85 lei. Only 35.72% of all the 42 counties registered values above the national mean, with one outlier: the capital of Romania, Bucharest (3,666 lei).

Similarly, the number of active large enterprises with more than 250 employees (indicator code: INT101O_18): the distribution is not normal. This is caused, again, by the one major outlier: Bucharest (where there are 544 active large enterprises with more than 250 employees – which represents 13 times the national mean of 41.85 active large enterprises with more than 250 employees). This leptokurtic series proves a strong positive asymmetry. Only 28.57% of the 42

Romanian counties analyzed have associated values the national mean in terms of the number of active large enterprises with more than 250 employees.

In terms of cost of living index, Bucharest, Constanța and Cluj counties are best ranked in Romania, according to Numbeo (2020). By attracting the greatest number of immigrants compared to other urban areas, Bucharest imports human capital while Cluj records a small loss in this chapter. The increase in the population of Cluj over the past years is mainly based on positive natural growth.

	POP211A_18	POP202B_18	FOM106E_18	INT101O_18
POP211A_18	1.00000			
<i>p-value</i>	–			
POP202B_18	0.40900	1.00000		
<i>p-value</i>	0.00716	–		
FOM106E_18	0.76038	0.25549	1.00000	
<i>p-value</i>	0.00000	0.10247	–	
INT101O_18	0.81309	0.28335	0.79988	1.00000
<i>p-value</i>	0.00000	0.06901	0.00000	–

Table 2. The Correlation Matrix

Regarding the correlation matrix:

- The marriage rate is positively correlated (81.30%) with the total number of active enterprises with more than 250 employees and with the average monthly nominal net earnings (76.03%); while only partially positively correlated with the birth rate for live-borns (40.90%). Considering that the p-values are below 0.05, the data is statistically significant.
- One can notice a weak positive correlation between the birth rate for live-borns and the total number of active enterprises with 250+ employees (25.54% with a p-value higher than the desirable value of 0.05) and with the average monthly nominal net earnings (28.33% and p-value: 0.069);
- Another positive strong correlation exists between the total number of active enterprises with 250+ employees and the average monthly nominal net earnings (79.98%; statistically significant due to p-value of 0.0000).

When we analyze the literature on the subject of vital related events, there can be easily observed articles (Weintraub, 1962; Brander and Dowrick, 1994; Simou, Stavrou and Koutsogeorgou, 2016) that present correlations between two clusters of indicators: birth-related ones (live-births per 1,000 inhabitants, stillbirths per 1,000 live births, marriage rate, death rate, fertility rate) and socioeconomic ones (GDP, unemployment, at-risk-of-poverty rate).

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Therefore, the second objective undertaken in this paper was achieved and the initial hypothesis was confirmed: in 2018, judging from the perspective of the 42 Romanian counties, the birth rate for live-borns was not correlated with the socio-economic reality, based on the analyzed indicators (FOM106E_18 and INT101O_18). However, the opposite was noticed in the case of the marriage rate.

Considering the results obtained so far, the multiple cross-sectional linear regression method (least-squares) was carried out and an econometric model has been built, considering the birth rate as the endogenous variable, while “the number of active large enterprises with more than 250 employees” and “the average monthly nominal net earnings” were considered exogenous variables.

Table 3. The results of the cross-sectional regression (least-squares method)

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	0.030192	0.011833	2.551541	0.014759
FOM106E_18	0.000011	0.000005	2.071786	0.044945
INT101O_18	0.000080	0.000021	3.858324	0.000417
R ²	0.69471	Mean dependent var		0.05940
Adjusted R ²	0.67906	Akaike info criterion		0.01168
S.E. of regression	0.00662	Schwarz criterion		-7.12984
Sum squared resid	0.00171	Sum squared resid		-7.00572
Log likelihood	152.72656	Hannan–Quinn criter.		-7.08434
F-statistic	44.37437	Durbin–Watson stat		1.90185
Prob (F-statistic)	0.00000			

R², the coefficient of determination, indicates that the multiple linear equation successfully (69.47%) predicts the values of the dependent variable within the sample. Almost 70% of the variance of the marriage rate of the 42 Romanian counties analyzed is successfully explained by the number of active large enterprises with more than 250 employees and by the average monthly nominal net earnings. Adjusted R² penalizes R² for the phenomenon of increasing when extra explanatory variables are added to the model (Miles, 2014). However, in this case, the adjusted R²(67.90%) still validates the model.

The Durbin–Watson statistic measures the serial correlation in the residuals and suggests that successive error terms are positively correlated, considering the value of 1.90185, which is slightly below the desirable value of 2. It can be accepted that there is no autocorrelation detected.

The t-Statistic associated probabilities are less than the 0.05, which proves statistical significance.

Table 4. The estimation command, equation, and substituted coefficients

Estimation Command	
LS POP211A_18 C FOM106E_18 INT101O_18	
Estimation Equation	
POP211A_18 = C(1) + C(2) × 2 + C(3) × INT101O_18	
Substituted Coefficients	
POP211A_18 = 0.030192 + (0.000011 × FOM106E_18) + (0.000080 × INT101O_18)	

According to data in Table 4, should the average monthly nominal net earnings from any Romanian county be 2,344 lei and should that respective county have 42 active enterprises with 250+ employees, then it is estimated that that respective county has a marriage rate of 5.942%. Since it was previously explained how the variables included in the cross-sectional regression model are positively correlated, it is implicit that if any Romanian county has a bigger average monthly nominal net earnings associated and/or a bigger number of active enterprises with 250+ employees, then this determines an bigger marriage rate, as well.

Table 5. The confidence intervals

Variable	Coefficient	90% Confidence		95% Confidence		99% Confidence	
		Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound	Upper Bound
C	0.030192	0.010255	0.050129	0.006258	0.054127	-0.001850	0.062235
FOM106E_18	0.000011	0.000002	0.000020	0.000000	0.000022	-0.000003	0.000025
INT101O_18	0.000080	0.000045	0.000116	0.000038	0.000123	0.000024	0.000137

The confidence intervals for the variables included in the cross-sectional linear regression model confirmed the following:

- With a 90% confidence rate: should the average monthly nominal net earnings from any Romanian county be 2.344 lei and should that respective county have 42 active enterprises with 250+ employees, then it is estimated that that respective county has a marriage rate situated in the following interval: 1.70% lower bound $(0.010255 + (2,344 \times 0.000002) + (42 \times 0.000045))$ and 10.19% upper bound $(0.050129 + (2,344 \times 0.000020) + (42 \times 0.000116))$.
- With a 95% confidence rate: should the average monthly nominal net earnings from any Romanian county be 2.344 lei and should that respective county have 42 active enterprises with 250+ employees, then it is estimated that that respective county has a marriage rate situated in the following

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interval: 0.79% lower bound ($0.006258 + (2,344 \times 0.000000) + (42 \times 0.000038)$) and 11.04% upper bound ($0.054127 + (2,344 \times 0.000022) + (42 \times 0.000123)$).

To have a better understanding of the observations within the model and validate it, the residuals have been studied and the White Test for Heteroskedasticity (H_0 : Homoskedasticity) was carried out.

Table 6. The distribution of the residuals. The White Test

Residuals		Residuals	
Mean	0.0000		
Median	-0.0005		
Maximum	0.0132		
Minimum	-0.0209		
Std. Dev.	0.00645		
Skewness	-0.41495		
Kurtosis	4.15769		
Jarque-Bera	3.55073		
Observations	42		
F-statistic	0.47957	Prob. F(5,36)	0.78910
Obs \times R ²	2.62280	Prob. χ^2 (5)	0.75790
Scaled explained SS	3.57054	Prob. χ^2 (5)	0.61270

The residual distribution can be considered normal, but with some amendments. The mean of the residuals is zero, which is desirable for a valid model. However, there was a very small tendency towards negative asymmetry (Skewness: -0.41495 , slightly below the ideal zero threshold), but we consider it acceptable. Kurtosis (4.15769) indicates a leptokurtic distribution of the residuals, not conventionally specific to a normal distribution. According to the White Test results from Table 6, we reject the null hypothesis and accept homoskedasticity, considering that the p-value is above 0.05 threshold. From this perspective of proved homoskedasticity, we accept that the variance of the residuals is constant and do not vary much as the value of the predictor variable changes. This fact validates that the designed econometric model is well defined.

Table 7. The Residual Plot

	County	Residual Plot	Actual	Fitted	Residual
1	Bihor		0.0620	0.0571	0.0049
2	Bistrița-Năsăud		0.0640	0.0539	0.0101
3	Cluj		0.0650	0.0705	-0.0055
4	Maramureș		0.0620	0.0555	0.0065
5	Satu Mare		0.0560	0.0558	0.0002
6	Sălaj		0.0580	0.0550	0.0030
7	Alba		0.0570	0.0590	-0.0020
8	Brașov		0.0610	0.0644	-0.0034
9	Covasna		0.0500	0.0542	-0.0042
10	Harghita		0.0480	0.0542	-0.0062
11	Mureș		0.0540	0.0608	-0.0068
12	Sibiu		0.0600	0.0641	-0.0041
13	Bacău		0.0590	0.0574	0.0016
14	Botoșani		0.0590	0.0555	0.0035
15	Iași		0.0700	0.0638	0.0062
16	Neamț		0.0530	0.0545	-0.0015
17	Suceava		0.0680	0.0548	0.0132
18	Vaslui		0.0510	0.0551	-0.0041
19	Brăila		0.0500	0.0546	-0.0046
20	Buzău		0.0490	0.0563	-0.0073
21	Constanța		0.0650	0.0595	0.0055
22	Galați		0.0580	0.0579	0.0001
23	Tulcea		0.0460	0.0562	-0.0102
24	Vrancea		0.0510	0.0545	-0.0035
25	Argeș		0.0620	0.0629	-0.0009
26	Călărași		0.0530	0.0554	-0.0024
27	Dâmbovița		0.0560	0.0564	-0.0004
28	Giurgiu		0.0670	0.0563	0.0107
29	Ialomița		0.0540	0.0546	-0.0006
30	Prahova		0.0570	0.0628	-0.0058
31	Teleorman		0.0500	0.0539	-0.0039
32	Ilfov		0.0770	0.0687	0.0083
33	București		0.1150	0.1144	0.0006
34	Dolj		0.0570	0.0601	-0.0031
35	Gorj		0.0600	0.0574	0.0026
36	Mehedinți		0.0630	0.0548	0.0082
37	Olt		0.0550	0.0574	-0.0024
38	Vâlcea		0.0340	0.0549	-0.0209
39	Arad		0.0670	0.0625	0.0045
40	Caras-Severin		0.0600	0.0544	0.0056
41	Hunedoara		0.0640	0.0551	0.0089
42	Timiș		0.0680	0.0684	-0.0004
Sum and average of the residuals:					0.0000

Note: The counties highlighted in red have the biggest residual value associated, in mudolo

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Table 8. The Residual Plot

County	Cross-sectional Residuals (%)	POP211A_18	FOM106E_18	INT101O_18
1 Vâlcea	10.04%	3.4%	2,104 lei	14
2 Suceava	6.32%	6.8%	2,118 lei	16
3 Giurgiu	5.13%	6.7%	2,340 lei	4
4 Tulcea	4.88%	4.6%	2,298 lei	8
5 Bistrița–Năsăud	4.87%	6.4%	2,044 lei	14
National mean	0.00%	5.94%	2,344 lei	41.86
National maximum	10.04%	11.50%	3,666 lei	554
National minimum	0.18%	3.40%	2,044 lei	4

	Deviation from the national mean (%)	POP211A_18	FOM106E_18	INT101O_18
1	Vâlcea	-42.8%	-10.2%	-66.55%
2	Suceava	14.5%	-9.6%	-61.77%
3	Giurgiu	12.8%	-0.2%	-90.44%
4	Tulcea	-22.6%	-2.0%	-80.89%
5	Bistrița–Năsăud	7.7%	-12.8%	-66.55%

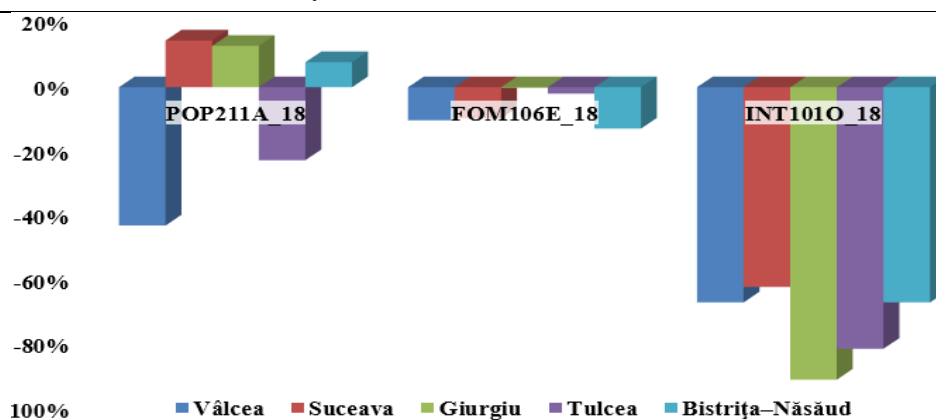


Figure 2. The deviation (%) from the nation mean, per variable, in the case of the counties with the highest associated residuals in the econometric model

According to Table 8 and Figure 2, one can notice that the five counties top five counties that had the biggest percentage associated as residuals within the designed econometric model. In Vâlcea county, the marriage rate is 3.4% (the lowest value among the 42 Romanian counties, while the national average being 5.94%). However, the net earnings are only 10.2% lower than the national average (2,344 lei). It is important to correlate this data with data from Cucu (2019), which states that there are fertility problems in Vâlcea and Tulcea. Regarding Bistrița-Năsăud, Giurgiu and Suceava counties, the marriage rate is higher than the national average. In the second semester of 2018, they registered 968, 900, and respectively 2724 marriage certificates according to the figures provided by data.gov.ro., while “the number of active enterprises with more than 250 employees” and “the average monthly nominal net earnings” register values below the national average in the case of the previously mentioned counties.

5. Conclusions

The employees of the large companies, most of the times, end up getting hired during their university studies or after their graduation in different corporations, depending on the acquired specialization. The positions initially occupied are mostly entry level, an aspect that allows in the medium term to achieve a career in the field and even for professional progress. Most of the time, these opportunities come as a reward for appreciating the work done. At the same time, the job description in a corporation implies a clearly defined program and certain well-defined tasks, an aspect that will discipline any employee. In this sense, the qualities acquired in the job, but also a higher salary level, will allow these types of employees to be included in a category of people who will want to begin a family. The acquired financial and social well-being thus offers them all the possibilities regarding the development as an individual, from a personal point of view, being the premises of future marriage and children.

The main objectives undertaken in this paper were fulfilled and the hypotheses were accepted. In 2018, judging from the perspective of the 42 Romanian counties analyzed, the birth rate for live-borns was not correlated with the socio-economic reality. As opposed, the situation was different in the case of the marriage rate, which is strongly positively correlated (81.30%) with the total number of active enterprises with more than 250 employees and with the average monthly nominal net earnings (76.03%); while only partially positively correlated with the birth rate for live-borns (40.90%).

A multiple cross-sectional linear econometric model (least-squares method) was designed and built, having the birth rate as the endogenous variable and exogenous variables: “the number of active large enterprises with more than 250 employees” and “the average monthly nominal net earnings”.

Almost 70% (69,47%) of the variance of the marriage rate of the 42 Romanian counties analyzed is successfully explained by the number of active large enterprises with more than 250 employees and by the average monthly

nominal net earnings, disagreeing with the conclusions valid and presented by Thomas in 1925. The model indicates that it is more likely for people to get married if the county they live in can provide a better income reported to the national mean or if giant companies (with more than 250 employees) are present in the county and contribute to the job security.

Regarding the limits of this research, one refers to the data used (cross-sectional) and its characteristics: focusing on a single point in time to examine multiple subjects. Even though all the Romanian counties were analyzed and included in a viable econometric model, the reference year was 2018 and the evolution in time of the variables were not part of this research. Another limit of this research refers to the definition of large companies. In this paper, companies were considered large, based on the number of employees, rather than considering its revenue, profit or any other economic financial indicators.

This research could be extended and could include an analysis of the correlation between the marriage rate with the nominal GDP (in case of a cross-sectional analysis between countries), the number of active large companies with more than 250 employees, the average monthly nominal net earnings and even with the birth rate for live-borns or fertility rate. Moreover, further research could be covering how these variable change over time and determine if there exists some cause-effect relationships between the variables.

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