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A PREDICTION REGARDING THE CONFESSIONAL STRUCTURE IN ROMANIA IN 2012

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Abstract: *The aim of this research is to show how an exact science, like statistics, confirms the intuitive appreciations of people that are interested in the future evolution of different confessions in Romania. Indeed, the last Census organized in Romania put in evidence a decrease of the Orthodox Christians' weight that is anticipated to be maintained in the next 10 years. On the other hand, the decline of Orthodox and Roman Christians is compensated by the other religious minorities and by the increasing number of atheists. Our prediction based on Markow chain, a quantitative method, emphasizes that the weight of Orthodox Christians will decrease in 2022 compared to the last Census, while the proportion of Roman Catholics will increase slightly, even if in the last 20 years a decline of this category was observed. The overall proportion of the others confessions will remain constant, but changes may be registered inside of each religious minority. It is more likely to have an increase of number of atheists because of the negative influence of the occidental culture and because of the lack of moral models and religious behaviour.*

Key words: *confessional structure, Orthodox Christians, Roman Catholics, predictions, Markow chain.*

1. Introduction

This study is a novelty in literature, because no author has predicted the confessional structure of a region using the Markow chain method. This technique considers that the state of the confessional structure at a certain time is not influenced by the previous state. The results are very interesting, because the anticipated decline of the Orthodox people proportion is confirmed by the mathematical computations. However, new information is provided by the quantitative method: there is a high probability to assist to an increase of the Catholics weight in total Romanian population.

This study is a very good example of cooperation between science and observations regarding the religious life. Even if the confessional problems tend to be subjective and usually treated outside of the mathematical speculations, in this case a quantitative method of forecasting proved to be a very good tool to anticipate the future evolution of the structure of the Romanian population according to confessions.

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2. The confessional structure in Romania over time. Causes of Orthodox Christians decline at the last Census

The Constitution guarantees the freedom of religion, but there is the tradition that acts like a tendency of inertia. Most of the people are not practitioner Christians, but they were baptised and some habits regarding the belief were kept in their families. Therefore, when a Census is organized they declare themselves as Christians, but their model of life is very far from the behaviour required by the Church. Since the Emperor Constantine the Great gave freedom to Christians and also some rights, many pagans passed to Christians not because of the conviction, but of the material and status advantages in society. However, there are events in history that proved the process of de-Christianization. For example, the conviction of Galileo Galilee by fundamental forces in the Roman Catholic Church determined an attitude in chain in the entire Europe, the beginning of the de-Christianization starting. Many intellectuals saw in Galileo process the start of a war between the Christian ideology and the truth.

Nowadays, everybody speaks about secularization as a spiritual crisis that determined in Romania the decrease of the Christians' weight. Actually, a first form of secularization met in Romanian region passed a long time ago when Alexandru Ioan Cuza sequestered the monasteries' fortunes. The secularization is powered now by the negative influences of occidental world. A life based on material consumption is promoted, the too fast development of technology making the people too busy to think of God. Many people think that the human being could afford everything, even to bring a new life on the earth, the discoveries in genetics supporting this idea. This pride to think a "little god" is obviously a proof that the people turned away from religion beliefs. Therefore, the number of atheists and people that are unconcerned about spiritual problems is in growth in Romania. This situation can be proved using statistical data gathered from Census.

After the Revolution from 1989 many changes were made in the religious life of people, many churches were built according to the need of a frame for the belief manifestation. Therefore, in the period from 1992 up to 2002 a slow increase in the weight of Orthodox people was seen, but the mass media campaign against the Church, the occidental influences, the fast technological, economic and social development and other factors determined a diminish of the proportion of people that declare they are Orthodox Christians. According to Rusu and Petraru, the relationship between Christians and the later civilization is a continuous problem to be studied [2]. I could add that more than in other times the sin becomes a mode for most of the people. The fornication, alcoholism, abortion and other big sins are treated by the society as a usual behaviour, which is far from the morality of the Church.

Most religious groups in Romania are dispersed throughout the country, although some communities live in some specific parts of the country. For Eastern Christians, truth has to be experienced only in a personal way. What is important is the strengthening on the practical and personal understanding of truth in everyone's life according to Church life. The standard imposed by the Orthodox Church is quite difficult, the laws being rigid and joint as the well-known tenets. Therefore, few people, even if they are Orthodox Christians, want and can go on the narrow path showed by Jesus. For the Catholic Church the rules are quite easy and fast

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adapted to the needs of the members. However, the conservatism of the Eastern Church helps it in keeping the truth in time, but this reality is quite difficult for people who live in a world of a continuous economic, social and technological development. The theological richness and its diversity and significance help the Orthodox Church in keeping its identity and continuity in history. The survival of Christianity during many centuries of Muslims' threats is put on the huge role of the liturgy that combined the religious knowledge with the personal experience.

Saint Andrew was the one that preached the Christian religion in the Romanian area. Christianity first reached Dacia region and even nowadays it is a sign of nationality identity. The Romanians' conservatism helped them in keeping the spiritual heritage, but the many Christian sects succeeded in the last years in gaining ground. The material advantages offered by the members of the new religious movements determined this time the migration to beliefs that are different from the traditional way of thinking.

Knowing the structure of the Romanian population according to religion in 1992, 2002 and 2011, we can make predictions for 2022 when the next Census will be organized. A very high proportion of the Orthodox people was registered in 1866, but during the communist regime, most of the people did not display their religion views. The first Census under democratic regime was organized in 1992 and it reveals a lower proportion. The impact of atheist ideology left a strong imprint in people's belief in God. The invasion of religion sects makes the weight of the people with different religion view to grow very fast. The weight of the other Romanians, excepting those who are Orthodox and Roman Catholic, increased with one percentage point in 2011 compared to 1992, while for Orthodox and Catholics a decrease was obvious.

The confessional structure in Romania according to Census data Table 1

Religion	Weights in 2011	Weights in 2002	Weights in 1992	Weights in 1866
Orthodox Christians	85.9%	86.79%	86.7%	94.9%
Roman Catholic	4.6%	4.73%	4.8%	1.0%
Other religions, undeclared religion or atheists	9.5%	8.48%	8.5%	4.1%

Most of the Romanian people are Orthodox Christian, but the weight decreased in 2011 compared to 2002, 1992 and 1866. Around 95% of the population confessed the Orthodox religion in 1866, but during the last two centuries the proportion decreased. In 2011, the weight diminished with 0.9313% compared to 1992. For the Roman Catholic people, a descendent trend was registered during 1992-2011, the highest decrease being in 2011 with respect to 2002 when the proportion diminished with 0.13 percentage points. The situation in 2011 put in evidence a high increase in the weight of the other categories of people with approximately 12.03%.

3. Prediction of confessional structural in Romania based on Markov chains. Causes of Roman Catholic ascension

The Markov chains method, according to Avery and Henderson, is used in predicting structural changes of macroeconomic indicators (the structure

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of an indicator for financial performance, the structure of a social or demographic indicator, the structure of employed people according to branches, the structure of branches for the GDP formation) [1]. In most cases, this quantitative method is used to make predictions regarding the structure of the analysed variable.

The application of Markov chains is useful when data regarding the causes of the phenomenon are not known. It is considered p_{ij} as the probability of a phenomenon to pass from state *i* to state *j*. The Markov chain is a combination that is composed by the initial state and the stochastic matrix of passing probabilities. After n successive steps we have a probability which is equal with the passing matrix after *n* steps:

$$p_{ij}^{(n+m)} = p_{ik}^{(n)} \cdot p_{kj}^{(m)}$$

If *m*=1, the relationship becomes:

$$p_{ij}^{(n+1)} = p_{ik}^{(n)} \cdot p_{kj}^{(1)}$$

Using Markow chains, a quantitative forecasting method, we will predict the confessional structure of Romania in 2022. The application of this method supposes several steps. Firstly, these will be presented for euro area.

1. The transition matrix presentation (this type of matrix shows the changes in the confessional structure in 2002 in comparison with 1992 and then in 2011 with respect to 2002).

Religion	Orthodox	Catholic	Others	1992	
Orthodox	86.79		-0.09	86.7	
Catholic		4.73	0.07	4.8	
Others			8.5	8.5	
2002	86.79	4.73	8.48	100	

The weight of Orthodox Christians increased in 2002 in comparison with 1992 by 0.09 percentage points while the Roman Catholic proportion diminished by 0.07 percentage points.

Religion	Orthodox	Catholic	Others	2002	
Orthodox	85.9		0.89	86.79	
Catholic		4.6	0.13	4.73	
Others			8.48	8.48	
2011	85.9	4.6	9.5	100	

The weight of Orthodox Christian decreased in 2010 with respect to 2008 by 0.89 percentage points while the weight of Catholic people decreased less, with only 0.13 percentage points. It is obviously that the traditional religions lose ground in favour of other religions and atheist people. At the last census, the number of atheists significantly increased.

2. The presentation of total transition matrix obtained by summing up the

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values from the two above matrixes.

Religion	Orthodox	Catholic	Others	
Orthodox	172.69	0	0.8	173.49
Catholic	0	9.33	0.2	9.53
Others	0	0	16.98	16.98
	172.69	9.33	17.98	200.00

3. The presentation of matrix of transition probabilities (each value of total transition matrix is divided to total on the corresponding row).

$$\begin{pmatrix} 0.9953 & 0 & 0.0046 \\ 0 & 0.979 & 0.0209 \\ 0 & 0 & 1 \end{pmatrix}$$

4. The computation of predicted weights for 2022 (by multiplying the vector that contains the structure of last known year with the transposed matrix of transition probabilities)

$$\begin{pmatrix} 0.9953 & 0 & 0.0046 \\ 0 & 0.979 & 0.0209 \\ 0 & 0 & 1 \end{pmatrix} \cdot \begin{matrix} 85.9 \\ 4.6 \\ 9.5 \end{matrix} = \begin{matrix} 85.5477 \\ 4.7028 \\ 9.5 \end{matrix}$$

The results put in evidence that for 2022 the same weight for other categories of confessions will be kept, while the weight of Orthodox Christians will decrease in favour of Roman Catholic views. Indeed, the situation in 2013 regarding the religion phenomenon makes us to believe that the number of Orthodox people will diminish. In the research called "Religion and religious behaviour", made by Soros Foundation in 2011, it is clearly stated that the practice of the cult for Orthodox Romanian is rather low, compared to Roman Catholic adepts. For example, less than half of the Orthodox have a spiritual adviser and make periodical confession, while the confession is a frequent behaviour for more than two third of the Catholics. Even if the weight of Catholic people decreased during 1992-2011, their proportion will grow because of the respect for belief. Their pious attitude will attract more people to this confession. In Romania, mass-media fight to prove the problems in Orthodox Church, never being interested to show some deficiencies in Catholics' behaviour. This perpetual war against Church may have effect only after a couple of years. Therefore, for the next Census we may expect more people that will declare that they are atheist or people that will not declare their religion. The changes may take place only in the category 'Others", but the total weight will remain constant.

Analysing the behaviour of Orthodox Christian, two models can be identified: "low practitioner", that is the most spread in Romania, and the "high practitioner", with very low weights that is more internalized. 70 % of the Catholics make daily prayers and more than three quarters of them go to church at least once per month. The Orthodox Romanians have the lowest weight of people that pray to

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God (59%) compared to all confessions, not only to Catholics. Moreover, the Orthodox people go to church less than all the other Romanians (half of them go to church at least once per month, while 40% of them pay a visit to church when an important celebration takes place). These negative aspects regarding the Orthodox people behaviour strengthen our conclusion based on the mathematical method of Markov chains. So, it is very likely to have a decrease in the weight of Orthodox Romanian in 2022 in favour of Catholics.

4. Conclusions

In our study the moral intuition and the science bring us to the same conclusion: it is very likely to have a decline of the proportion of Orthodox Christians in Romania in the next 10 years, because of many social and individual factors. On the other hand, even if it is quite surprising, our prediction based on Markow chain announces us that the weight of Roman Catholics will increase, despite the diminish in the last 20 years. It is expected a stagnation of the weight of people in other categories even if some changes inside the group may be met.

These results based on a scientific support are a novelty in the entire literature, none of the researchers using before this quantitative method to predict the future changes in the structure of the confessions from a region.

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