

SUMMARY OF THE DOCTORAL THESIS

Doctoral thesis title : *Analysis and forecast of the underground economy in a regional profile*

The content of the work :

INTRODUCTION

CHAPTER I. THE UNDERGROUND ECONOMY. GENERAL CONSIDERATIONS

1.1. Introduction

1.2. Conceptual boundaries of the underground economy

1.3. The main causes of the growth of the underground economy

1.4. The effects of the underground economy on the official economy

1.5. Methods of estimating the size of the underground economy

1.5.1. Direct methods

1.5.2. Indirect methods

1.5.3. Statistical and econometric methods

CHAPTER II. ANALYSIS OF THE EVOLUTION OF THE MAIN MEASUREMENT INDICATORS OF THE UNDERGROUND ECONOMY IN A REGIONAL PROFILE

2.1. Introduction

2.2. Regional gross domestic product

2.3. Gross fixed capital formation

2.4. Discrepancies between income and expenses

2.5. Gaps between employment and economic output

2.6. Energy consumption indicators

2.7. Indicators of tax evasion

2.8. Analysis of the informal labor market

2.9. Discrepancies in companies' financial reporting

CHAPTER III. A STATISTICAL ANALYSIS OF UNEMPLOYMENT ON THE DIMENSION OF THE UNDERGROUND ECONOMY

- 3.1. Introduction
- 3.2. Global unemployment analysis
- 3.3. Analysis of unemployment by sex
- 3.4. Analysis of unemployment by residence
- 3.5. Analysis of unemployment by education levels
- 3.6. Analysis of unemployment by age groups
- 3.7. Analysis of youth unemployment
- 3.8. Analysis of unemployment by life expectancy
- 3.9. Analysis of long-term unemployment
- 3.10. Analysis of unemployment at the regional level

CHAPTER IV. ANALYSIS AND FORECAST OF THE UNDERGROUND ECONOMY IN A REGIONAL PROFILE. EMPIRICAL EVIDENCE AT THE LEVEL OF ROMANIA

- 4.1. Introduction
- 4.2. Evaluation of the underground economy and identification of the main growth centers in the regions of Romania
 - 4.2.1. Research data and methodology
 - 4.2.2. Empirical results
 - 4.2.3. Evaluation of the main poles of the underground economy at the level of regions in Romania in the period 2011-2022

ConCluSIonS

BIBLIOGRAPHY

ANNEXES

LIST OF ABBREVIATIONS AND ACRONYMS

LIST OF TABLES

LIST OF FIGURES OR GRAPHS

LIST OF APPENDICES

Keywords:

underground economy informal economy, hidden economy, sustainability, decentralization, statistical methods, statistical indicators. the informal sector

Synthesis of the work :

The underground economy is a controversial subject, which has aroused the interest of specialists since the 60s, when the phenomenon took on a particularly large scale. The first work in which the problem related to the underground economy is addressed and made public, at the level of specialists, belongs to the American P. Gutmann (1977) who appreciates that the economic activity not registered statistically can no longer be considered a negligible entity. Hart (1976) first introduced the terms formal and informal in his study of employment in Accra, Ghana. Local economic development is a local activity designed and implemented by agencies in the public and private sectors of the community through a set of programs and projects (Profiroiu , A., Racoviceanu, S., Țărălungă, N., 1998).

The doctoral thesis is structured in four chapters. The first chapter is entitled *The Underground Economy. General considerations* is intended for the detailed presentation of the phenomenon of the underground economy. The starting point of the first chapter represents it defining the theoretical concept and presenting the main causes of the increase in the size of the informal economy over time.

Thus, according to studies in the specialized literature, the reasons that led to the expansion of the underground economy were mainly the increase in the tax burden, excessive government regulation and the role of the public sector that provides incentives to participate in the informal economy. In many of the empirical and theoretical studies, it was found that the increase in the tax burden and contributions to the social insurance system is one of the main causes of the increase in the size of the informal economy. Increasing taxes affect work-leisure choices and stimulate the supply of labor in the informal economy, increasing the difference between the cost of labor and the income obtained after tax reduction, so that the greater this difference will be, the more significant it will be and the incentive to work in the informal economy.

Excessive government regulation can lead to a significant increase in the cost of labor in the underground economy. These costs fall on employees causing them to participate in informal economic activities.

An increase in the underground economy can lead to a reduction in government revenues, which has the direct consequence of increasing the fiscal burden associated with a decrease in the quality of public goods, constituting a strong incentive to enter the informal labor market.

According to Schneider and Enste (2000, 2002) there is no universally accepted best method for estimating the size of the underground economy. Each approach has its strengths and weaknesses, its own information and results, but none is close to perfect. Precisely because of the respective strong and weak points, it makes sense to apply as many of them as possible, because in this way they complement each other and produce better and better results.

The main section of the chapter is dedicated to the inventory of the main methods for evaluating and quantifying the size of the underground economy existing in the specialized literature, grouped into four categories: direct methods, indirect methods, statistical and econometric methods and innovative and modern methods (Schneider and Enste, 2000, 2002).

The category of direct methods includes the statistical survey and survey and the direct monitoring method, which although cannot provide information on the development of the underground economy over a long period of time, has the advantage of providing information on the activities of the underground economy and its structure. The category of indirect methods includes the income difference method, the labor force method, the energy consumption method, and monthly methods. Among these, the monetary approach is the most used methodology for estimating the size of the informal economy and is based on the hypothesis that cash is the main means of exchange for carrying out transactions in the informal sector, because it leaves no identifiable traces, so participants in the underground economy will use the cash to hide the income obtained from the tax authorities. So, an increase in the value of cash, *ceteris paribus*, can represent an increase in informal activity. If the amount of cash used for informal transactions can be estimated, then it can be multiplied by the velocity of money to obtain a measure of the size of the informal economy.

Within the methods of estimating the size of the underground economy, special attention is paid to statistical and econometric methods. This category includes the Social Accounts Matrix Model (SAM), the use of input-output models to identify discrepancies between reported inputs and outputs, which may indicate underground activities, as well as the Multiple Indicators Multiple Causes (MIMIC) Method, which uses econometric models to estimate the underground

economy based on multiple causes and indicators such as tax rates, regulations, informal employment, cash consumption and GDP.

It presents the statistical relationships between the latent variable and the observed variables divided into causes and indicators, using their covariance matrix. Basically, the MIMIC model involves the construction of an empirical covariance matrix (the covariance matrix of the observed variables), which can be compared with the implicit covariance matrix of the model, once the model parameters are estimated (Bollen, 1989; Dell'Anno, 2004; Schneider et al., 2010). If the two matrices are compatible with each other, then the MIMIC model can be considered a good approximation of the relationships between the examined variables.

At the end of the chapter, a synthesis is made of the main estimates of the size of the underground economy at the regional level, the role of regional policies on the underground economy being emphasized

The second chapter entitled *Analysis of the evolution of the main indicators for measuring the underground economy in a regional profile* considers the opportunity to propose a set of important indicators that include outcome indicators (such as discrepancies in GDP and energy consumption) as well as causes (such as tax burden and regulations).

The third chapter entitled *Statistical analysis of unemployment on the dimension of the underground economy* provides a detailed analysis of unemployment from the perspective of both measurement indicators, registered unemployment and BIM (International Labor Office) unemployment. Thus, within the chapter, the main characteristics of unemployment by gender, residential areas, education levels, age groups, among young people, long-term and at the regional level are presented. Analyzing the relationship between the unemployment rate and the underground economy, a first clue could be provided by the relatively low unemployment rates in Romania compared to other EU member states. This downward trend cannot be attributed to a healthy economy but rather to a type of economic structure that allows it. Thus, some of those who declare themselves unemployed participate in economic activities in the sphere of the underground economy. We are referring here to a fraction of the unemployed with benefits who can participate in unofficial activities to supplement their income, to those who leave unemployment without having officially found a job and who are practically expelled from the official statistics after the expiration of the period of granting unemployment benefits to those forced to work in the underground economy temporarily or permanently, but also to those who have declared themselves

unemployed, who are interested in working but cannot find a job. As a result, it is very possible that in certain periods the evolution of the underground economy is directly related to the various changes or evolutions of the institutional framework related to the phenomenon of unemployment.

The fourth chapter entitled *Analysis and forecast of the underground economy in regional profile. Empirical evidence at the level of Romania* aims to analyze the evaluation and promotion of the informal economy in Romania. The study aims to evaluate and analyze the various aspects of the underground economy at the level of the country's regions for the period 2011-2022 based on the construction of a synthetic measure that incorporates the action of local economic and social determinants, using the main statistical indicators. The statistical indicators were collected for the period 2011-2022. The choice of the period 2011-2022 for the collection of statistical indicators is justified by the temporal relevance, the inclusion of major economic events, the availability of high-quality data, the impact of structural reforms and the specific socio-economic and demographic context. The first objective of the research had in mind the identification of the determining factors in the assessment of the size of the underground economy at the level of the regions of Romania by using the multivariate principal components analysis specific to the panel data for the period 2011-2022 and which incorporates a total number of 35 specific indicators in the field the underground economy. The second objective of the research aimed to identify the important synthetic indicators of the size of the underground economy at the level of the regions of the country, using the technique of analysis in main components and highlighting the main poles of the dimension of the underground economy, using comparative analyzes of the years 2022 and 2011 respectively. If we analyze the size of the underground economy at the level of the regions in Romania, the trend diagram is delimited by the horizontal axis marking the average value and the vertical axis showing the trend. The two axes divide the area into four quadrants. Regions in the upper quadrant are *moving forward* , as both their value and trend are above the period average, while regions in the lower left quadrant *are still lagging* , as they are below average for both variables. The paper, by applying the hierarchical grouping method for the 6 main components obtained from the MPCA for the years 2011 and 2022 respectively, identified the main poles of the underground economy. Clusters were based on individual indicators using the hierarchical clustering method based on the Ward method and the squared Euclidean distance.

In conclusion, estimating the size of the informal economy remains a controversial subject, given its clandestine nature. The results should be interpreted with due caution, given the limitations of the estimation methods.