Professor Dr. Cezar MEREUŢĂ

Some microeconomic landmarks
of the transition process in Romania

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Cezar MEREUŢĂ

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To my wife, Carmen,
without whose commitment
my research would not have been achieved

Foreword

On June 21st, 2016, following the proposal of the Romanian Academy, the Great National Lodge of Romania granted the "Eugeniu Carada" Prize in Economics to the study "Unele repere microeconomice în procesul de tranziţie din România", author Prof. Dr. Cezar Mereuţă.

As President of the Evaluation Commission, I was asked to present a characterization of the research activity of Prof. Dr. Cezar Mereuţă.

My speech is presented below it its original form:

The "Eugeniu Carada" Prize is granted for outstanding scientific contributions (works), based on advanced research and modeling in the economic and finance and banking areas. The Commission has analyzed a large number of works published in 2015, and from among the three nominated studies it has chosen that the prize to be granted to the study "Unele repere microeconomice în procesul de tranziţie din România" – author Cezar Mereuţă.

This study and the author are worth to be granted the prize for the endeavor to formulate and test different theories and to seek for and suggest solutions to be applied in the real economy, especially in the companies residing in Romania.

Graduate of the Polytechnic Institute of Bucharest, Ph.D. in economics and engineering and with close scientific relationships with research institutions from Italy, United Kingdom, Germany, France and other countries, Cezar Mereuţă has held different executive and managerial positions at large industrial companies, as well as different positions in education: lecturer, professor at the Polytechnic Institute of Bucharest, Academy of Economic Studies, National School of Political and Administrative Studies and Technical University of Piteşti, scientific director and general director of consultancy companies from Bucharest, director of the single microeconomic journal: Microeconomia Aplicată, known in Romania and abroad, President of the Romanian Center for Economic Modeling and associated researcher at the Macroeconomic Modeling Center of the Romanian Academy.

Author of 16 books and over 150 research papers and publications in microeconomics, Cezar Mereuţă has built up a comprehensive data base on the non-financial companies, has developed and tested the theory of economic concentration, has approached and developed the nodal theory of systems of companies from Romania.

In fact, Cezar Mereuţă has set the foundations of scientific research in applied microeconomics.

Cezar Mereuţă has drawn up for 18 consecutive years the ranking of the Romanian companies by descending order of turnover, developing the well-known Top 100 companies, which provides a qualitative picture of the real Romanian economy.

His paper is a synthesis of results of his researches performed over decades, through which he demonstrates that the empirical laws identified in order to assess by international standards the turnover degree of concentration stay valid also for the main economic indicators of the companies operating in Romania, while the nodal analysis becomes a general theory of the systems of companies.

In the end, the Commission warmly congratulates Cezar Mereuţă for his scientific performance and wishes him Happy Birthday and many more successes to come.

Thank you,

Academician Aurel Iancu

5.11.2018

Milestones of author's scientific activity

Prof. Dr. Cezar Mereuţă
Honorary Member of the Romanian Academy of Technical Sciences
Associated Researcher at the Center of Macroeconomic Modeling
of the Romanian Academy

Relevant books

1. *Analiza diagnostic a societăţilor comerciale în economia de tranziţie (Diagnosis analysis of companies in the transition economy),* Editura Tehnică, 1994 – coordinator and co-author

2. *Tranziţia managementului societăţilor comerciale româneşti. Perioada 1990-2000 (Transition of management of the Romanian companies. Period 1990-2000)*, Editura Tehnică, 1995 – coordinator and co-author

3. *Analiza nodală a sistemului industrial românesc (Nodal analysis of the Romanian industrial system)*, Editura Tehnică, 1995 – author

4. *Culturi organizaţionale în spaţiul românesc. Valori şi profiluri dominante (Organizational cultures on the Romanian territory. Dominant values and profiles)*, Editura Expert, 1998 – coordinator

5. *Analiza de competitivitate a economiei româneşti. Orizont 2000-2005-2010. Soluţii strategice alternative (Competitiveness analysis of the Romanian economy. Horizon 2000-2005-2010. Alternative strategic solutions)*, Editura Academiei Române, 1998 – coordinator and co-author

6. *Industria prelucrătoare românească 1990-1998. Diagnostic structural. Opţiuni de politici industriale (The Romanian manufacturing industry from 1990 to 1998. Structural diagnosis. Industrial policy options)*, Editura Fundaţiei PRO, 2000 – coordinator and co-author

7. *Economia României. 1990-2000. Compendiu, 2001 (The Romanian economy. Compendium)*, Editura Economică – co-author

8. *Economia României. Sistemul de companii. Diagnostic structural (The Romanian economy. System of companies. Structural diagnosis)*, Editura Economică, 2001 – co-author

9. *Analiza nodală a sistemelor de companii (Nodal analysis of systems of companies)*, Editura Economică, 2004 – author

10. *România 2007. Industria prelucrătoare. Pieţe şi potenţial (Romania in 2007. The manufacturing industry. Markets and potential)*, Editura Finmedia, 2004 – co-author

11. *România 2007. Serviciile: convergenţă şi dezvoltare (Romania in 2007. Services: Convergence and development)*, Editura Finmedia, 2005 – co-author

12. *Avantaje competitive ale industriei prelucrătoare din România în Uniunea Europeană – (Competitive advantages of the manufacturing industry of Romania in the European Union)*, Editura ASPES, 2007 – coordinator and co-author

13. *Clasele concentrării economice şi factorul 80% (Classes of economic concentration and the 80% factor)*, Editura Economică, 2012 – author

14. *Repartiţia teritorială a companiilor-noduri pe principalele activităţi ale economiei naţionale. Compendiu (The territorial distribution of node companies by main activities of the national economy. Compendium)*, Editura Economică, 2013 – co-author

15. *Capitalul majoritar străin în companiile-noduri de pe principalele pieţe din România. Compendiu (Majority foreign capital in node companies on the main markets of Romania. Compendium)*, Editura Economică, 2013 – co-author

16. *Unele repere microeconomice in procesul de tranzitie din România (Some microeconomic benchmarks in the transition process of Romania),* Editura Economică, 2015 – author

17. *Prioritati strategice ale dezvoltării României la orizont 2025 (Strategic priorities of development of Romania at horizon 2025)*, Editura Economică, 2017 – author

Relevant distinctions

The "Virgil Madgearu" Prize of the Romanian Academy in 1996 for the book *Analiza diagnostic a societăţilor comerciale în perioada de tranziţie (Diagnosis analysis of companies in the transition economy)*

The "Virgil Madgearu" Prize of the Romanian Academy in 2000 for the book *Analiza de competitivitate a economiei româneşti. Orizont 2000-2005-2010. Soluţii strategice alternative (Competitiveness analysis of the Romanian economy. Horizon 2000-2005-2010. Alternative strategic solutions)*

The Prize of the General Association of Economists in Romania in 2004 for the book *Analiza nodală a sistemului de companii (Nodal analysis of system of companies)*

The Gold Medal of ABI (American Biographical Institute) for research on economic concentration, 2007

Award of Excellence given by the National Institute of Economic Research for outstanding achievements in the development of Romanian economic research, 2010

Award of Excellence given by the General Association of Economists in Romania for outstanding professional performance in studying the dynamics of economic structure, 2011

Award of the General Association of Economists in Romania for two decades of contributions to the topic of concentration and interdisciplinary research in Romania, reflected in the book *Clasele concentrării economice şi factorul 80 % (Classes of economic concentration and factor 80%)*, 2012

Award of the General Association of Engineers in Romania for the book *Clasele concentrării economice şi factorul 80% (Classes of economic concentration and factor 80%)*, 2012

Nominated among the Top 100 persons from Romania who set the country in motion through the power of ideas or deeds, by the *Foreign Policy Journal*, January-February 2014, leader of Section 9 "Ideas and projects" for the book *Capitalul majoritar străin în companiile noduri de pe principalele pieţe din România (Majority foreign capital in node companies on the main markets of Romania)*, Editura Economică, 2013

Award of Excellence given by the General Association of Economists in Romania, the Romanian Statistical Society and Romanian Association of Professors of Economics for original scientific research regarding the fundamentals of economic and social development strategies of Romania, 2014

Nominated among the Top 100 persons from Romania who set the country in motion through the power of ideas or deeds, by the *Foreign Policy Journal*, Jan.-Feb. 2015, in Section 9 "Ideas and projects", for the profound understanding of the mechanisms of the real economy of Romania, 2015

The "Eugen Carada" Prize in Economics, awarded by the Great National Lodge of Romania, on the proposal of the Romanian Academy, for the book *Unele repere microeconomice in procesul de tranzitie din Romania (Some microeconomic benchmarks in the transition process of Romania)*, 2016

The Academic Merit Diploma awarded by the Romanian Academy for contributions to the development of the theoretical and applied Romanian scientific research in microeconomics, December 2016

The "Centennial Pierre Verner Prize" Medal awarded by the "Costin C. Kiritescu" National Institute of Economic Research of the Romanian Academy as appreciation of the contributions to the Romanian applied research in microeconomics, 2018

Relevant entries

Who's who, Edition 2003, Cambridge Biographic Institute

Who is who (annual editions 2007-2011) Encyclopedia of Romanian Personalities – Hübner Who is who

Who's who in the World (2010) Maquis Who's who

Who's who in the World (2015) Maquis Who's who

Elected in 2016 Honorary Member of the Romanian Academy of Technical Sciences

The main ideas of original scientific investigations

The basic research carried out over a period of twenty years refers to the economic concentration theory. In order to develop and verify the results we have assembled a database of non-financial companies, structured by classified markets covering the period **1995-2012**.

Original research has resulted in the development of:

- **Nodal analysis of systems of companies** – extension of nodal analysis of energy systems of the Romanian academician Paul Dimo. Were defined the node – companies of the national system of a classified market, namely the companies that cover in decreasing order 80% of the total turnover of the analyzed market. Analysis of the informational energy of the 1093 markets analyzed during 1995-2012 showed that in all cases its value exceeded 97% of the total.

Consequently, the node companies of a market define its economic performance.

Turnover is the **power indicator** of companies because on its value depend:

– the market position;
– the bargaining power with customers and suppliers;
– the innovation capacity;
– withstanding the negative shocks to markets.

The nodal analysis applied to the 1009 non-financial markets overturned **the 20/80 paradigm** (20% of causes resulting in 80% of the effect). The mean value of the mega-experiment was about **10%**.

In other words, in the systems of companies the structures of power have a very high concentration. For example, for the national companies of Romania in the period 1995-2012 the share of node companies ranged between 3.5 and 4.9%!

Using nodal analysis, the evolution and structural changes of the national companies during 1995-2012 could be consistently diagnosed.

Analysis of informational energy distributions has consistently demonstrated that in the analyzed period around 100 companies, in order of decreasing turnover, covered 90% of the total value of the indicator.

Consequently, it resulted that the Top 100 Romania could provide a crucial qualitative picture of the real Romanian economy. The development for 10 consecutive years of Romania Top 100 showed that Top 100 has consistently estimated:

- Gross profit for the year obtained in the whole national system.
- Type of growth over the period 2005-2008.
- Changes in the ownership structure of companies during the analyzed period.
- Changes in the international market through the conduct of subsidiaries of multinational companies present in the Top 100.
- Internal markets most affected by the crisis in the period 2009-2011.

- **A new approach to economic concentration**

In the study of economic concentration, we introduced two new indicators:

- The M index $= \dfrac{\ln(H) + \ln(n)}{\ln(n)}$, namely the normalized Renyi entropy, which reduces the large variations in the Herfindahl and Gini values and has the property that the average value for all types of analyzed markets is **0.5**, which allowed the construction of a scale of concentration in the 0-1 domain.

- The structural dominance of the leader $Gdl = \dfrac{\dfrac{Cl^2}{H} - \dfrac{1}{n}}{1 - \dfrac{1}{n}}$.

The indicator is essential for measuring the influence of market leaders and, together with the M indicator, can define the type of barriers to entry.

The simultaneous use of the two indicators gave us the possibility to develop the **universal matrix of concentration distortion,** of great importance in assessing the market competition.

For the original elements, the works Nodal analysis of systems of companies and Classes of economic concentration and the 80% factor were awarded by the General Association of Economists in Romania, and the latter was also awarded by General Association of Engineers in Romania.

Evolution of system of companies resident in Romania, as well as of the sectoral structure of the real economy has enabled us to elaborate at the end of 2014 the study "Strategic Priorities of Romania's Development on Horizon 2025", awarded in 2014 the Diploma of Excellence by the General Association of Economists in Romania, Romanian Statistical Society and the Romanian Association of Professors of Economics for original scientific research on fundamentals of economic and social development strategies of Romania.

The word of translator

Over more than a decade, I had the chance to collaborate with Prof. Cezar Mereuţă as translator of some of his studies, and also as a collaborator in joint research projects. This paper presents, as the author himself states, his most important original research results over the last two decades. Throughout a prestigious career in the field of scientific research, Prof. Cezar Mereuţă has conducted studies and researches which we consider to be opening roads for Romania:

- has established the domestic scientific research in applied microeconomics;
- has consistently followed the transition of the Romanian system of companies from the centrally-planned to the market economy, as well as its evolution in the context of the European single market and the world economy in general;
- has achieved the ranking of Romanian companies according to the turnover indicator in the well-known Top 100 (which recently reached a quarter of a century), which is both proof that high performance can be achieved in the Romanian economy, but also an incentive for businesses to self-improve, and for the political and administrative decision-makers to engage more actively in supporting the healthy and sustainable development of the business activity;
- has contributed to the first comprehensive domestic analysis of competitiveness of the Romanian economy and to the outlining of the strategic directions of action relevant to the period, as well as to the development of national and regional competitiveness assessment models that remain valid;
- has analyzed objectively and in detail the system of companies residing in Romania, insisting on its distortions and malfunctions and on the present and potential negative impacts of both their perpetuation and of the lack of action of the actors involved in their correction, from the economic agents themselves to the political and administrative decision-makers;
- has highlighted a number of strategic priorities that have been, are and will continue to be critical to Romania's development in the near future.

The style of Prof. Cezar Mereuţă's work has always been a very clear one (which for a translator is a real blessing), objective and intelligible to a wide range of readers and beneficiaries of his works, from students to businessmen, from researchers to policy makers. The studies and books of Prof. Cezar Mereuţă are thus able not only to disseminate efficiently the scientific and strategic information but, above all, to create platforms for discussion and pooling of the actors concerned, precisely in order to jointly pursue real actions to correct the distortions and dysfunctionalities in the Romanian economy and to evolve on a more complex and turbulent European and global economic arena in the future. It is also worth mentioning the explicit and implicit steadiness with which Prof. Cezar Mereuţă promotes the interests of Romania and not of any partisan group, as well as the imperative of their pursuit and promotion by all the parts involved and at all levels of the entire Romanian society.

In conclusion, I can only say thank you to Professor Cezar Mereuţă for offering me the chance to be the translator of some of his studies and, thus, to have direct access to his vast scientific experience and to learn very much as a scientific researcher.

November 2018

Dr. Mihaela-Nona Chilian

Contents

Argument

The somewhat unusual title of this volume forces me to some clarifications.

The period of the last 23 years was, for my part, intended for the structural research of the real economy, mainly of the subsystems of companies classified as according to NACE Rev. 1 and/or Rev. 2 and of sectors of the economy.

At the beginning of the period (1992-1997) I had the privilege that, together with my eminent colleagues from the Centre for Management and Technology Transfer (CEMATT SA) to know, through the PHARE Program and the assessment of candidates for the post of manager of state-owned companies, a large number of companies in terms of management and employees' reactions to the fundamental change in the economy. Knowledge of the diversity of management behaviors and organizational culture were an essential witness of the unusual amplitude of change and, at the same time, a challenge to analyze the complex phenomena of transition of companies and sectors of the real economy to the competitive economy

A key support for accepting this challenge was provided by Academician Emilian Dobrescu, who advised me to start and deepen such research, following that the main results to be presented and validated in the Macroeconomic Modeling Seminar, the current Centre of Macroeconomic Modeling of the Romanian Academy, which he initiated and leads since 1990.

Over the last 20 years, I have presented 14 times the total and partial results of nodal analysis of systems of companies, as well as those related to the diagnosis of Romanian manufacturing industry, to the researchers of the Centre of Macroeconomic Modeling of the Romanian Academy.

I have presented to the collective three complex works, as follows:

- *Industria prelucrătoare românească 1990-1998. Diagnostic structural. Opţiuni de politici industriale,* Editura PRO, 1999.
- *Analiza nodală a sistemelor de companii,* Editura Economică, 2004.
- *Clasele concentrării economice şi factorul 80%,* Editura Economică, 2012.

Over the 14 presentations of my research in various stages of development, I have received substantial support in the observations of colleagues: Dr. Cornelia Scutaru, Prof. Dr. Corneliu Russu, Acad. Aurel Iancu, Prof. Dr. Moise Altăr,

Dr. Mioara Iordan, Dr. Nona Chilian, Acad. Lucian Albu, Conf. Dr. Daniel Ciuiu, Dr. Viorel Gaftea, Prof. Dr. Elena Pelinescu. Especially helpful to me was the professionalism of the organization of presentations and elaboration of materials in the documents of the Centre of Macroeconomic Modeling of the Romanian Academy by Mrs. Dr. Bianca Păuna and Dr. Corina Saman.

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The volume presents the most important original results of my research in the period 1993-2014.

A brief presentation of the logic of topics selection seems necessary:

- In chapter 1 I publish a representative selection from the two studies of the collective from CEMATT SA: Tranziţia managementului societăţilor comerciale româneşti. Perioada 1990-2000 şi Culturi organizaţionale. Profiluri şi valori dominante în spaţiul românesc. I considered that the scale and complexity of the processes that took place in the Romanian management was a key witness with subsequently reevaluated benefits that fully justified such a selection.

- Chapters 2-9 present the most important theoretical and practical results of the concept of nodal analysis, insisting on the behavioral analysis of companies that define the economic performance of companies' subsystems, on the practical ways of assessment of their economic performance and on the decisive importance of operating results. The multi-annual analyses of the mentioned companies allowed the development of a function for identifying the companies' major economic risks.

An important part of research was reserved for an analysis model of the classified markets in terms of competition, resulted in proposal of two new indicators of economic concentration (M and Gdl) and in the matrix representation of distortion of competition. One of the main conclusions of this work was the identification of areas of great opportunity for the development of SMEs in Romania, able to withstand on the external market.

- One of the most important topics retained in this volume refers to the relevance of Romania Tops 100, developed for 15 years together with the company Finmedia SRL, which allowed for vital conclusions from the strategic perspective of Romania.

- In Chapter 10, I present the model of assessment of competitiveness of the manufacturing industries in terms of economic growth. The model is widely used because of very consistent results obtainable from the perspective of developing the competitiveness of manufacturing industry.

- The analysis of the 1009 subsystems of NACE classified companies, the sectoral developments of the real economy, the Tops 100 Romania allowed to me a clear picture of the desirable structure of the Romanian economy on the horizon 2025, presented in chapters 11-15.

Finally, I mention a fundamental result obtained in 2014, namely:
- The empirical laws identified for assessing the degree of concentration of turnover in the NACE classified subsystems of companies are also valid for the main economic indicators of companies: gross profit, before tax, gross loss, operating profit, operating loss, arrears, financial expenditures.

Perhaps the validation of the conclusions of empirical laws in the world economy would lead to essential debate of philosophical nature in economics and beyond.

I trust that selection of topics presented in this volume is synchronous with the main milestones of transition in Romania, offering answers that I considered to be correct to the problems occurred.

Beside the colleagues from the Centre of Macroeconomic Modeling of the Romanian Academy, I express my warm thanks to Dr. Aurelian Dochia, Prof. Dr. Ilie Şerbănescu and Dr. Florin Pogonaru for the way they presented the background of the undertaken research.

Also consider the support given during 1992-1996 by my colleagues from CEMATT SA Dr. Eng. Ulrich Wiener, Eng. Ioan Crişan, Eng. Paul Joiţa, Dr. Mircea Calotă, who contributed through their suggestions to the clarification of concept of node-company of the industrial system of companies.

An important contribution had Professor Dr. Ionuț Pandelică and Lecturer Dr. Amalia Pandelică in the development of works on the role of majority foreign capital in node companies in the Romanian economy and on the territorial distribution of node companies and their specialization.

I warmly thank to the editorial team of the most prestigious financial newspaper in Romania, Ziarul Financiar, and especially to Mr. Editor-in-Chief Sorin Pâslaru and to Mrs. Adelina Mihai for their professionalism and promptness in presenting some results of research in the fields of microeconomics and real economy sectors.

I also express my appreciation for the editorial teams of *Oeconomica* and *Economistul* journals, and I thank especially to Dr. Octavian Jora and Dr. Teodor Brateş for the way they have published, *in extenso,* some representative studies, as well as for the depth of reviews that have targeted major published works.

I express my gratitude to Prof. Dr. Marin Dinu, who has structured and published in excellent conditions the main complex studies, including the current

one, and at the same time I thank to the entire team of Editura Economica, to Mr. Mircea Dinu, to Mr. Bogdan Cojocea and to Mrs. Carmen Ţăranu for their high professionalism.

Not least, my thanks go Mr. Mihai Săndoiu, General Director of SC Finmedia SRL, who trusted the model for identification of the power structure of the national system of companies and organized during the period 2001-2014 the annual Top 100 conferences. I equally reiterate my gratitude to Prof. Dr. Ilie Șerbănescu for the pertinent observations in his annual comments on Top 100 Romania.

My thanks also go to the Editor-in-Chief of the *Piaţa Financiară* journal, Mr. Norel Moise, who has reported accurately the appearance of my research, especially during the period 2011-2014, and to Mrs. Georgeta Clinca for the excellent coordination of the annual Top 100 Romania journals.

* * *

The book addresses equally to the policy makers, employers' unions, trade unions and business in general.

For researchers and students, the book offers a way to deepen the exciting topic of economic concentration in the systems of companies and not only.

Author

July 2015

Chapter 1

Transition of management, organizational culture and its prevailing values in the Romanian enterprises[*]

The main objective of our approach was the presentation of the great challenges to the Romanian management, determined by the deep system crisis that led to the revolution of December 1989. We have especially insisted on the new features of the external environment from the 1990-1995 period, which were highly radical changes, not actually encountered in the contemporary world in the second half of the 20th century.

At the same time, we presented the main managerial behaviors of the period of major changes (1990-1995), identifying at the same time the peculiarities of the organizational culture in the Romanian space (1997), highlighting the trailing aspects of employees' mentality, capable of hindering a rapid change.

As a consequence, the two parts of the chapter represent an objective reflection of a reality specific to the period of maximum effervescence generated by the sudden system change.

The approach is intended to be a testimony of a unique experience about changing the management and the organizational culture.

We must point out that the "knowledge stage" in our research refers, on the one hand, to the organizational models found in the functional market economies and, on the other hand, to the classical approaches to organizational culture (Scott, Meyer, Rowan and, more recently, Hofstede). The main papers examined in the two areas are presented in the reference section.

1.1. Synthesis of the main issues posed by the change in management

Following a behavioral model and of compared management, the analysis is limited to two stages of the managerial activity in Romania, which can be considered as representative for the framework in which the main changes that are characteristic for transition from the centrally-planned economy to the free market

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[*] The chapter presents a representative selection from the reference works: *Tranziţia managementului societăţilor comerciale româneşti. Perioada 1990-2000,* coord. C. Mereuţă, Editura Tehnică, 1995 and *Cultura organizaţională în spaţiul românesc. Valori şi profiluri dominante*, coord. C. Mereuţă, Editura Expert, 1998. The text was selected and published in 2014 in the treaty *Contribuţii la conturarea unui model românesc de management*, coord. Ion Petrescu, Editura Expert.

economy are concentrated. These stages refer to the moment when the mainly state-driven economic system was emphasized in December 1989 and to the one when Romania was defined as a functioning market economy (1998).

Table 1.1 presents managerial concepts and behaviors at the end of the state-driven economic system and in the advanced phase of the transition to a functioning market economy.

Table 1.1

Managerial concepts and behaviors

At the end of the centrally-planned economic system	In the advanced phase of the transition to the market economy
The vision of the future	
- Establishment of developmental pathways and objectives by organizations outside the enterprise leads to a reduction in the responsibility of management to achieve them. Management calls on the authorities when malfunctions occur.	- Strategy design and definition in the medium and long term is a key task for management, which bears all the responsibility for their preparation and deployment.
- Obedience to the plan and lack of accountability to the future of the enterprise determines the rejection of risk and change.	- Change is perceived as a win-win opportunity, and risk as an inevitable success factor.
- The market is represented by "quotas". The customer is obliged to buy what he has been assigned.	- *The market is at the center of the business. Customer* is the ultimate authority in a transaction.
Managerial policies	
- *Fixed* assets of the enterprise represent a static structure for a fixed, well-defined profile.	- Fixed assets of the enterprise are dynamically valued; the ability to adapt to the market is an essential feature.
- Any change causes the demand for new, more generous investment resources. Investments are valued by the amount of money spent.	- *Investments* are funded by self-financing and bank loans. Investments are rigorously evaluated through the possibilities of recovering the funds and through the predicted profit.
- The organizational structures are of "pyramid" type and rigid.	- The organizational structures are of "network" type. They are dynamic, adapting to the strategic requirements.
- The technical and quality policy is dictated by subjective considerations, aiming at formal alignment with the conditions of performance and quality on the world market.	- The policy of technical and quality development is determined by the requirements of market adaptation and differentiation from competition.
- The financial policy is based on obtaining state allowances.	- Financial policy is based on the increase in turnover and profit, as well as on the provision of liquidity.
- The assessment of *human resources* is based on quantitative factors.	- The human resources policy aims to increase the training of employees, as complete as possible identification between the objectives of the enterprise and their individual ones and the promotion of the sense of belonging to the enterprise.
Managerial techniques	
- Management is seen as a "transmission belt" of orders from the higher hierarchy.	- Management is seen as an entrepreneur and *leader*.
- The manager is placed downstream the process. He/she is in charge of tracking achievements and recovering arrears.	- The manager climbs upstream the process, where he can spot threats and prevent malfunctions.
- Leadership communications are based on provisions when the need arises.	- Communications between management and employees are systematic. They are based on debate and consensus.
- The industrial process is largely opaque. The monitored indicators are not preventive and do not timely reflect the deviations from provisions.	- The process is tracked in *real-time* by multi-criteria status indicators (dashboards).
- Programs are tracked through meetings and commands.	- Project management organizations.

1.2. External environment constraints the five myths of management before 1989

The entire period of dominance of the centralized political and economic system was marked by drastic differentiations from the previous situation in our country, as well as from the leading concepts and practices in the market economy countries. The constraints exerted by the external environment that have had a crucial influence on the managerial behaviors can be synthesized as follows:

- **Introduction of plans as major leadership tools** and for exerting the state control over the enterprise management.
- **Isolation of the business leaders from the concerns for the future,** mainly by taking care of the portfolio of orders and, at the same time, by isolating them from the user requirements in relation to the produced goods.
- **A drastic reduction in the responsibilities of business executives** in terms of *return and profitability*.

Over the last 15 years of this period (1976-1989), when the chronic chaos of the Soviet-style economies has advanced rapidly, reaching a deep state of crisis in all components of society, the effects of these constraints have been accentuated by the intensification of the exercise of party power over the leadership of the industry at all levels of authority, from the lowest to the highest. It is important to remember that the exercise of this power in the microeconomic leadership was done in an authoritarian and exclusive manner, characteristic of party's concentration of the administrative, legislative and legal powers, which in this period annihilated any reaction of the steered systems and, eventually, caused a true gap between the rulers and the ruled.

We plan to continue to present the most significant aspects of these constraints, as they have been practiced on business management. In addition to the brief outlines of the different types of conditioning, we shall make some comments intended to give examples and deepen the meanings.

- **The managerial duties are limited to the irreproachable achievement of the production plan received from the higher forums and to the current running of the production process.**

It should be borne in mind that this "limitation" has been largely influenced by the *tightening up and detailing of the planning and distribution system*, which thus greatly determined the activity of the enterprises and completely replaced the commercial relations between the partners; over the 1981-1989 period, the number of centrally-managed material balances amounted to 2370, detailing them up to about 4000 (Ionete, 1993).

At the same time, the lack of correlations between the different sectors of the economy was emphasized and became chronic, causing large supply difficulties in enterprises. The failure to achieve the targets of the plan and the so-called "arrears" required to be "recovered" have become current phenomena, with direct consequences on deteriorating the technological discipline and product quality, in the persistence of prolonged production gaps and of the end-of-month assaults.

All of these have directly contributed to a *limited focus* of the managerial activity at the top of enterprises towards the *present,* as well as to its total disengagement from a stimulating vision of the future. In fact, a negative motivation of managers to change was incurred, the changes coming from the "top" being generally the source of even greater difficulties. When responding to such requests, the reaction consisted of listing the causes for which "the task could not be achieved". There was also a widespread expansion of the search for *justifications* and explanations for non-realizations outside the limited scope of managers' competence: deficiencies deemed as incurred by suppliers or technological difficulties outside the enterprise were highlighted. The process of "pushing the problems upwards", in particular the shortages of supply and those caused by the collaborating enterprises, was widely used. But the subjects of "calls for help" from higher forums were also other situations, such as the refusal of foreign beneficiaries to overlook repeated quality deficiencies or the lack of means of transport.

From the top leadership, such practices have expanded towards the lower management levels, severely damaging the individual sense of responsibility and the communication capabilities of the enterprise staff.

- **Managers have limited responsibilities for business development**

The effects of exclusive power concentration at senior management level have fully manifested in the field of *investments*, with the maintenance of their system of financing from the centralized funds and the accelerated growth of their accumulations: the practice of allocating these funds without considering the possibilities to achieve the recovery of the invested values has expanded. A single idea was pursued, that of forcing the growth pace of production, with an emphasis on the heavy industry. Comparative analyses of development solutions have been abandoned, moving to a system of uni-personalized, improvised decisions. Instead of the gradual allocation of capital investments corresponding to realistic growth in economic terms and the formation of a solid human resources fund, brutal start-ups have expanded, with large initial investments, impossible to dampen. A huge volume of "unfinished investments" has always been maintained, with many enterprises attacking new development stages before the previous ones actually becoming operational and before going beyond the "learning" phase of operation

under the new conditions, far away from the recovery of the invested values. These long-lasting challenges, caused by the galloping developmental planning, have greatly hampered the conditions for carrying out a performance management. This system has, in fact, led to a prolongation of the start-up deadlines and determines even to date the large volume of the so-called "bad loans", which seriously affect the financial equilibrium of many enterprises. The regime of financing the investments from state resources, coupled with the concentration of decision-making power on the allocation of investment funds to the state and to the higher management level, has led to the *progressive limitation of managerial accountability for the economy of the adopted solutions.*

- **The objectives of upgrading the products and manufacturing processes are chosen without market research and without resorting to cost/performance, cost-effectiveness analyses**

The research and development programs, well-defined through the "technical plans", have been subject to multiple constraints. They were mainly due to the inefficient use of the existing potential.

Unfavorable effects on the managerial activity had the potential of product research and product design concentrated into research institutes at departmental level. Under the conditions of centralized planning and inefficient coordination, this isolation of the enterprise from the product and process conception has led to the lack of interest of managers in the development and follow-up of their own development programs, involving market research, economic analysis, design of new products, processes engineering and preparation of sale.

The efficiency of companies' own engineering potential has been heavily influenced by the quasi-total closure of relations with the advanced Western industry as a result of stopping any foreign exchange expenditure. It went so far that the enterprises and the R & D institutes did not receive any cents for purchasing books and technical magazines, or for paying contributions to some international specialist associations.

Another source of constraints was the excessive amplification of the R & D programs targeted on the "reduction of imports" objective. As part of this action, a large number of materials, machines and appliances that were subject to small quantities of imports, but which, from a technological point of view, posed particular problems, were introduced indiscriminately into the plans. At no time did the economic opportunity of these actions be the subject of objective evaluations, as the low probability of technological success in short time was not taken into account. The consequence was a huge waste of the R & D potential, as well as the engagement of enterprises, especially in the metallurgical, chemical, machine building, electro-technical, electronics, fine mechanics industries, in large manufacturing preparation efforts that remained useless.

Effects have been felt in both the involved business segments. Research institutes have been forced to address simultaneously a large number of topics for which they were not prepared enough. Thus, in many of them, the *minimum investment level in research* from above which any process begins to become effective has not been achieved. In other words, *a lot of work has been done, but with no real effects*; the enterprises which were forced to take over the production also encountered major technological difficulties and impossible profitability conditions because of the small quantities required, totally inappropriate to the profile for which they were designed. Such phenomena have been common in the metallurgical and chemical industries, forced to produce "particular tonnage" special products in "gigantic units", or in the mechanical, electrical and electronic industries faced with the production of unique or special high technology components.

In strict managerial terms, these phenomena have contributed to the widening of the gap between the general management in enterprises and the research apparatus in the institutes. The lack of trust between the engineering conception and the pragmatic activity, leading the production processes, has increased. There were serious shortcomings in the collaboration between these two activities, which affected, on the one hand, the involvement of managers in the issues raised by the promotion of innovation in technology, and on the other hand, the ability of these managers to figure out a correct view on the forward course of the enterprise.

- **The manager uses strictly the material and energy resources allocated through the plan. Compliance with the established consumption standards is mandatory, both overall and by structure**

An important instrument of the centralized management of microeconomic activity consisted of the *complex system of raw materials and energy consumption norms.* Plan-directed, this system aimed to bring the Romanian industry closer to the global indicators registered by the world's advanced industry.

Unfortunately, the consumption norms plan was not assisted by an information system able to ensure their correlation with the actual structure of production programs and the characteristics of the technological endowments, thus allowing for a significant highlighting of the *real* possibilities of reducing the consumptions. Most of the planned norms were arbitrarily established, without being correlated with concrete programs to diminish product manufacturing, leading to energy-intensive, low-tech and low-value added processes.

Some of the planned reductions in consumption were contradictory in nature, such as those relating to the overall consumption of metals, which were opposed to prohibitions on the use of light alloys and plastics as well as alloyed steels. Reducing the energy consumption was in contradiction with the need to use the oversized existing technological equipment.

Under these circumstances, the reaction to the normative system consisted of transforming it into a *set of formally pursued indicators*, subject to endless attempts to justify and "sweeten" the recorded results.

It is worth noticing that the practice of this complex system of rules has not been able to prevent the occurrence in enterprises of numerous supply shortages, contract delays, work gaps, etc. The manufacturer has always remained tied to "the hand" of the supplier, in all aspects: quantities, terms, quality conditions.

Another source of supply shortage was caused by the *drastic reduction in the "additional" imports*. The real effects consisted not only in blocking the above-mentioned technological engineering potential, but also in quality compromises and long delays in the completion of important contracts.

The contradictory effects of simultaneous pursuit of import reduction and increase in exports have caused enormous difficulties within the economic organizations. On the one hand, the tasks related to the excessive diversification of the manufactured products have intensified, on the other hand, the obligations to give up some imports of materials and components not produced in the country were tightened. These shocks were felt in the economy as a whole, but especially in the metallurgical, chemical and machine building, electro-technical and electronics industries. Effects at the enterprise level have been felt by accentuating the supply imbalances in the manufacturing processes and by declining quality. In fact, the results have led to a decline in product competitiveness and to the loss of some of the export markets gained in the previous stage.

- **The financial indicators of enterprises are set through plan, by the higher forums**

The above-mentioned constraints were the main factors that have led to the isolation of management from concepts, practices and responsibilities related to the financial aspects of business activity. The fact that the main decisions regarding the financial indicators came from outside was suited to the majority of management, who, as a rule, graduated technical faculties, and lacked "financial culture" and, as a result, the interest and skill in the use of financial information to assess the state of the company and to prevent imbalances over time. This has limited the understanding of balance sheet data and the familiarization of managers with the financial analysis based on indicators as a current working tool. The analysis of production prices and the coverage margin for each product was not practiced. The system of financial and accounting records applied in the past, which was poorly transparent, and which used a sum of irrelevant indicators, to the detriment of much more expressive others, used in Western Europe and the US, contributed to this mentality.

It is regrettable that this attitude of ignoring the concrete activity of financial-accounting analysis has also expanded to the economic aspects of some important *engineering activities* generating large expenditures of resources. We have referred above to the superficial analysis of the economic efficiency indicators related to development solutions and investment projects or even to their ignoring, as well as to the fact that in the outlining of plans and the decision to upgrade the products and the technological processes, the economic factors were not carefully researched and taken into account in their endorsement.

- **In the absence of competition, the concern for quality passes to a secondary level and preserves a formal character**

The requirement of rigorous compliance with quality standards has only partially succeeded in the exported production. The authority of classical quality control structures has gradually deteriorated and managers have completely lost the perspective on the real quality deficiencies that have affected product performance and their capability to meet the demands of users to whom they were addressed.

- **Export is largely based on market research of contracts negotiated by specialized organizations outside the enterprise**

The involvement of managers in the foreign market research and customer negotiations was mainly confined to etiquette relationships. In this situation, managers have largely remained "beyond" the possibilities of knowing the foreign market, of learning and practicing multilateral agreements, involving, for example, collaboration for the joint preparation of new products, product acquisitions for some product groups, production and sales collaboration, combined product and service benefits, and the possibility of settling joint venture contracts.

Although some favorable results have been obtained in the production of products for export under special quality conditions, the overall problem of the quality of products for export remained open, as a result of the harmful influence of a general climate of lack of demand for quality, prevailing in many enterprises.

- **The organizational structures are set by the higher forums in relation to the "category" of the enterprise**

Restrictive regulations of this kind had the effect of *stiffening the organizational structures*. In this way, managers were obliged to observe classical "pyramid" structures and, at the same time, unique structures for all types of enterprises, which determined formalism in the distribution of tasks, obliged to long problem-solving itineraries and promoted internal bureaucracy.

This concept of organization was generalized at the level of all economic activities, with the same negative consequences. There had been *a strong concentration at the highest level of the relations among businesses,* which would normally have to collaborate at all levels of management of the specialist compartments. This *stiffening* of the within-business and business-to-business relations has led to an excessive reduction in the ability to adapt the industrial system to the changes that have inevitably interfered in the relationship of this system with the external environment at national and international level.

The system of informing managers on the main functions of the enterprise, especially on the real advancement of production processes and preparations for the near future, was based mainly on direct information, carried out by numerous "dispatchers" of different categories, which had the consequence that, when the information reached the decision-making body, the real state it reflected had changed greatly. Arrears to the various programs exceeded the extent of the normal course of production, which in fact caused a continuous activity in a mode similar to that of *crash. This has gradually led to the proliferation of intentional misinformation.*

- **Salary levels, promotion intervals, number of advances, and salary and prize funds were set by the senior forums**

The above-mentioned constraints led to a human resource management characterized by *poor motivation* of staff as a result of an equally-valued appreciation of individual contributions to the company's well-being. Practically, a manager only had *few possibilities to stimulate top competencies and individual capacity to solve difficult problems*, as well as to provide motivation conditions and *intensive mobilization of the intellectual capabilities of the most valuable collaborators*.

The trend towards *egalitarian valuation of staff* was largely due to the fact that salary levels, promotion intervals, and the shares of staff to be promoted were set by statutory regulations. The prize-awarding opportunities for outstanding achievements were limited and subject to the approval of party committees, which generally avoided highlighting the personal values, emphasizing the collective rewards.

The five myths of management before 1989

The manager of the analyzed period acted in a strongly deformed "real economy", in which he had to ensure the fulfillment of two opposite conditions:

a) on the one hand, respecting as many as possible of the constraints of the external environment, for ensuring survival on the job:

b) on the other hand, to ensure a minimal rational functioning of the enterprise and, thus, of certain criteria of real efficiency of the activity.

This contradiction of real management has led to a "paradox of survival by function".

Managers who were successful before 1990 were not those who scrupulously complied with the presented constraints, but those who knew to "circumvent" these restrictions through an apt "manipulation of information", or by gaining high personal political support, on the path of relations with the political and administrative factors.

The set of behavioral models of "success on the job", which resumed to keeping the leadership position as long as possible, under the circumstances of the external environment described above, created some "widespread and widely accepted" managerial myths, almost unanimously accepted before 1990:

1) *All critical or difficult issues can be solved by calling to superior hierarchical organs.*

As a result, management is relieved from the responsibility of a strategic leadership, from the thought of future thinking: when crises occur they are solved by appealing to external resources and solutions, many of which can be "moved away" towards centralized resolution.

2) *Everything we produce is sold. It is important to produce*!

This was the consequence of a centralized economy in which almost everything was distributed through "plan allocations", foreign competition was blocked by "import endorsement", and domestic competition was considered a "harmful parallel".

3) *Employees are docile executives, as job security is ensured.*

The corollary of the hyper-centralized economy system has, in most cases, led to the disappearance of serious managerial concerns for a genuine social partnership, for stimulating motivation or for creating a climate for innovation facilitation.

4) *Political support is essential to survive on the job*

This also meant for the competent people the compromise between the requirements, often contrary, of the political factor and the demands of efficiency, the technocratic opportunism with respect to the power.

5) *The art of manipulating information is vital to solve the conflicting demands of political and economic pressures.*

The overpowering intervention of the political factor produced the managers' "reactionary defense": the manipulation of information, their smart interpretation, so that the economic activity was as protected as much it could have been possible. The art of manipulating information has become a criterion of competence and for survival on the job.

1.3. The new features of external environment during the period 1990-1995

If we accept the behavioral model of the transition management analysis, it is necessary to conceptualize as much as possible the change in the external environment over the period after 1989, in order to understand the behaviors (responses) of the managers incurred by this change. *This is the key to understanding the phenomena that characterized the first stage of the management transition during the 1990-1995 period.*

In the following, we analyze the main features and constraints that have decisively influenced the behavior of managers during this stage.

The structural economic crisis

The most important feature of the external environment during the 1990-1995 period was the beginning of a large structural crisis, manifested in all sectors of activity, due to the following causes:

a) a structural crisis "masked" since 1975, which has caused the gradual accumulation of the sources of an acute crisis;

b) loss of traditional Romanian export markets (CAER, Iraq, Libya, Yugoslavia);

c) global economic recession from 1990-1993;

d) the almost total cessation of investments in the first years after 1989;

e) disruption caused by the phenomenon of macroeconomic reform and microeconomic restructuring, an almost inevitable effect of the first stage of an ultra-radical transformation of enterprises.

The magnitude of this crisis was very high. Probably, in the history of world economy and management, there is only one comparable situation, that of the US economic crisis, between 1929 and 1937.

It is almost obvious that the operation of a company in a *generalized crisis* (the crisis of the sale markets and the traditional clients, the crisis of the business partners, the financial crisis, etc.) is a completely different situation from the one in which the external environment is constituted of a stabilized economy, which records only some limited disturbances (recessions, whether they are relatively generalized as areas, sectoral crises, punctual bankruptcies, etc.).

Throughout the period of a structural economic crisis, the management of the companies founds itself in the *crisis management situation,* with the following characteristics:

- the company's crisis has a permanent character over the entire period;
- the company's inadequacy to the new conditions is of extreme character, managers being permanently under the pressure of the time crisis and the risk of bankruptcy.

The shock of legal and organizational change

The first stage of the transition also represented a "shock" transformation of the legislation regulating relations with suppliers, internal and external customers, business partners.

The most shocking phenomenon for managers was the *massive and total deregulation*: almost all the laws, departmental rules and instructions that made the operational management and internal life of the company very rigid ceased to be valid in 1990 and 1991.

Instead, *new types of macroeconomic regulations* of external environment have been issued "in avalanche", all of which had an absolute novelty: a new tax system, especially the introduction of VAT, new foreign exchange and foreign trade regulations - a new accounting system, a completely different view on the role and functions of the patrimony, completely different relationships with the banking system, the new system of labor relations, etc.

No less spectacular was the transformation in the organizational field: the drastic reduction in the role of the ministries, the abolition "without notice" of the industrial centrals, the *de facto* autonomy of the state-owned companies, the disappearance of some control bodies specific to the centrally-planned economy and the relatively late arrival of the new types of state control (Financial Administration, Financial Guard, Court of Accounts, Consumer Protection Inspection, etc.).

Let us admit that the subjection of trading companies to this massive change in only a few years has been a harsh, risk-bearing test.

In the field of management, this was reflected by the fact that *promotion of radical innovation has become a problem of survival*. Businesses that have not adapted quickly to these changes have gone bankrupt or crossed acute periods of crisis.

In other words, between 1993 and 1998, the *problems of management of change and the realization of an "innovative enterprise" have become central problems of the Romanian companies*. It is here to say that the issue of management of change was systematically approached only relatively recently in the theory of management.

Autonomy of enterprises

In 1990-1991, while the economic crisis was increasingly obvious, businesses have reorganized into trading companies. Although, still and temporarily, the state remained the sole owner, this reorganization was not only "cosmetic".

Managers quickly realized that a phenomenon with particular implications for business leadership has occurred: the state, the government and the ministries "lifted their hands from the companies" that were "thrown into the troubled water" of the market economy "to learn to swim!"

Minimization of controls of ministries and of the possibilities to subsidize the firms in difficulty, the rapidly increasing commercial banks' lending requirements and other similar measures were a "cold shower" for the managers hoping for a smooth transition, in which some leadership methods that have been successful in the past were still valid.

The real autonomy of the commercial companies was received by managers with a mixed feeling: on the one hand, the freedom of movement, amazing in relation to the past, was appreciated, on the other hand, it was an unpleasant surprise that in the crisis situations, there was no "safety net", so a risk totally unknown before has emerged, namely the risk of bankruptcy (be it masked).

However, competent managers have understood that business autonomy raises the importance of *strategic management methods*, which in the past was ensured, even distorted, by the ultra-central leadership of the national economy.

Ownership crisis

The fact that the state, the sole owner until 1991 and then the majority owner (70%), "lifted its hand from" the commercial companies, as well as the firm government announcements of an upcoming privatization, have created an ownership crisis. Paradoxically, an unsettling question has been created, with major implications for the management methods: who is the real owner of the state-owned trading companies?

To this uncertainty contributed not only the extended period of 4-5 years of state ownership, but also the fact that the transition solution to the new form of ownership consisted in the creation of a "synthetic owner", whose economic and managerial behavior had very little to do with that of an authentic owner.

The inefficiency of the "synthetic owner" was also felt by the government (the "true owner"), which changed the organizational formula very often: the State Employers' Council (CIS) constituted by ministries; The Council of Mandates of the State (CIMS), constituted by the State Ownership Fund, the Private Property Fund and ministries; The General Meeting of Shareholders (GMS), constituted by FPS and FPP (with a vote of 70-30%), a formula valid at present.

These changes in ownership representations have also often been accompanied by a change in the composition of the Board of Directors, which has created an *instability in the business management*.

The most negative consequence of the creation of a "synthetic owner" was its apathetic behavior, not specific to that of a true owner: the normal objective function of a commercial company (maximizing profit) was not imposed, the function of controlling the activity of the Administration Council was exercised at minimum rates, the moderator role in the company's "power triangle"

(shareholders-managers-trade unions) was not exercised, so that relations became bipolar (managers-trade unions), etc.

This "owner eclipse" had major effects in distorting management in the first phase of transition (1990-1995). The action to conclude management contracts in 1994 has partially mitigated this negative effect.

Liberalization of labor relations and the trade union pressure

An absolute novelty for managers was also the liberalization of labor relations: negotiation, practically without legal restrictions, of employment, salary, working conditions and staff layoffs.

Moreover, very early after the 1989 revolution, stronger trade unions were formed in all enterprises, which in 1992-1995 aggregated into several influential trade union confederations.

Due to the ownership crisis described above, *the trade union pressure was much stronger than in the stabilized Western economies*, as managers were deprived of the moderation factor exerted by shareholders.

The bipolar distorted relationship between managers and trade unions led to three types of situations:

– enterprises in which the managers - and especially the leader - knew how to promote the *social partnership* and, thereby, to "channel" the trade union pressure towards a direction beneficial to the company's fate and to employees;

– enterprises in which, under the trade union pressure, the managers adopted a *populist leadership style*, which only coincided with the crisis that re-emerged in a more acute form after 1-2 years, with the effect of changing managers, as a result of a "bottom-up" pressure;

– enterprises in which the trade union pressure led to a *strong management instability* (the rapid change of several management teams), which resulted in the impossibility of a coherent strategy, triggering an acute crisis and the risk of near bankruptcy.

Price liberalization and inflation

The market economy cannot be conceived without massive liberalization of prices. This radical transformation of the economic environment occurred in successive stages, between 1991 and 1993. At the same time, the state subsidies specific to the centrally-planned economy, which was a "safety net" for some commercial companies or industrial sectors, but distorted the external environment and prevented the criterion of comparative economic profitability of each company, were canceled.

Price liberalization was the most shocking measure for the managers, em-ployees, the population, and even the economists. It has been the subject of fervent appeals in the press (including the specialized press), in the positioning of trade union

actions, etc. Even now, the echoes of this challenge have not disappeared, although no one can provide an alternative to the market economy principles.

The effects of this measure, such as a "necessary evil", were very severe at the microeconomic level of commercial companies. The most important managerial effects were:

- triggering a major "correction" inflation in 1992-1993, which deeply disrupted the activity of commercial companies, even those that were cost-effective in principle;
- "correction" inflation is a "push forward", in which prices of products and services start from an initial gap and reach a new balance closer to real competition: in this competition, firms that thought they could solve all issues raising the price of products, companies that have not adopted a strategic management tailored to this transition period and those who have used onerous bank loans have quickly reached bankruptcy situations;
- although inflation was reduced in 1994 (70%) and in 1995 (30%), as compared to the stabilized economies these levels are still considered as "galloping", with a major distortion effect on the economic developments, management and decision-making at microeconomic level;
- the functioning of a trading company under major inflation conditions has a distinct specific kind of "inflation management": the cost and price system is subject to permanent oscillations, which makes it difficult to make soundly-based management decisions; capital accumulation and investment are made more difficult if marketing and customer contracts can only be conceived over short term due to uncertainties about the prices of products and services; making long-cycle manufacturing products is much more difficult due to the blocking of major rolling stock, etc.
- almost immediately after the liberalization of prices, the financial lock-out has also manifested itself: this seemingly paradox that has been widely discussed has very simple explanations, consisting in violating the principles of a market economy: either a mismanagement policy in a period of transition and inflation or product delivery and services to firms whose creditworthiness is not verified, or "inventory" production, with no insured outlets, etc.; ultimately, in a correct interpretation, the financial lock-up must be considered as a severe signal which, in the absence of adequate managerial measures, implies major difficulties for the firm.

Decapitalization and increase in the role of commercial banks
Prior to 1990, businesses were dependent on the numerous restrictions imposed by the guardian ministries and were "capitalized" through the State

Planning Council (SPC). The role of commercial banks was reduced to that of a mere executor of financial decisions adopted at other levels of governance.

After 1989, a transitional state of former relations between banks and commercial companies was established, but since 1992 the situation has been radically changed: the role of ministries in the capitalization of enterprises has been reduced to cancellation and *the fate of enterprises in the short term has begun to depend on their relations with the commercial banks*.

The process was amplified by the phenomenon of *decapitalization of commercial companies*: as a result of inflation and its corollary - the extreme difficulty of accumulation - the liquid capital of enterprises was severely reduced, so that the financing of the working capital needed to carry on the current activity became increasingly dependent on obtaining bank loans.

But, after a period of "inertial behavior", since 1992 the commercial banks have rapidly changed their way of working: interest rates have risen to the level of real positive interest rates relative to inflation (for a certain period, annual interest rates have exceeded a record-level - 100%!); governmental, ministerial and, rarely, trade union pressures for lending to distressed trading companies have been less effective in determining the banking system to deviate from the tough market economy laws; the waiver of the "debt clearing" system and the Ministry of Finance's regulations for the introduction of a financial and banking discipline and the modernization of the banking system have brought us closer to a normal relationship between commercial banks and commercial companies.

Thus, over the 1992-1993 period, the *most important way of disguising subsidies to the non-profitable enterprises was "strangled": obtaining bank loans without verifying the real creditworthiness of borrowers*. This was, for the commercial companies, one of the "most shocking changes in the external economic environment". Managers who did not understand the meaning of these changes and continued their old strategies or turned to high-interest bank loans brought their businesses to critical situations or bankruptcy. What alternative to the market economy principles existed, other than promoting positive real interest rates?

Critics of this tough, but necessary measure, believe that commercial banks "went rich to the detriment of commercial companies", but they cannot provide any alternative worth taking into consideration.

In fact, two truths are almost obvious:
- a capitalist system can only be built starting with the "capitalization" of banks and only afterwards with the capitalization of commercial companies; bankruptcy of banks would lead to the total collapse of national economies (see the US crisis, 1933);
- the change in the relations between banks and commercial companies had to generate a change in the strategy of the companies (and not vice versa, the change in the banks' strategy); managers who have understood

this change in the external environment have used, in a positive way, the introduction of real positive interest rates, by promoting a regime of severe savings and accumulations. These companies, which are not a handful, are currently placed in a favorable condition at the start of the new "threat" of the second phase of transition (1995-1998).

1.4. Managerial behaviors during the period 1990-1995

The decompression effect

After 1989, all the constraints of the external environment on the macroeconomic, political, social and legal levels of the companies described in paragraph 1.2 ceased to act almost instantaneously.

The behaviorist approach to the phenomenon of the Romanian management transition forces us to answer an essential question: what was the managers' reaction to this violent change in the characteristics of the external environment?

Over the period 1990-1995, the Romanian managers have obviously suffered a "decompression effect", so a behavior of adaptation to a lasting "psychological shock" change that can be characterized by five stages.

- *Management paralysis*. The sudden disappearance of the old constraints (total deregulation) produced a "vacuum": managers were completely confused by the new situation, evolving in a very unpredictable direction. Driving to an unknown direction with respect to the previous experience is, of course, very difficult. The first reaction of the managers was, not by accident, *a state of apathy*. This state, which was manifested in the course of 1990, was aggravated by the fact that during this period, the "democratic elections" of the managers occurred.

Essentially, this first stage was characterized by the fact that managers adopted an *expectant attitude*.

- *Inertial management*. The second reaction of most of the old or "newly elected" managers was the attempt to return to the *old methods of leadership* that were successful in the past. This inertial tendency, however, faced a twofold opposition: that of the rapidly changing external environment, promoted "from top to bottom" (through deregulation and the issuance of new laws and regulations) and the one coming "from bottom to top", from the employees who have guessed that a change is necessary, even if they have not been able to figure out towards which direction.

Managers who have persisted in this kind of inertia have been replaced, most often as a result of trade union pressure.

- *Awareness of change*. Gradually, especially in 1991, as a result of the first signs of structural economic crisis, managers became aware of the need for ultra-transparent transformations without, however, being able

to set the objectives and strategy of change. The result was an abundance of proposals, many of which were unrealistic, inapplicable, strange, ultra-optimistic.

Some of these "ultra-innovative ideas" have even been applied, with the results of bringing some companies into a state of masked bankruptcy.

One of the biggest mistakes was the belief that we can act "as in the West" with methods and strategies specific to a stabilized economy. At this stage, the behavior of some managers was characterized by the adoption of *abnormal strategies*.

- *Return to pragmatic management*. As the economic crisis deepened and as the failures of commercial companies became public, managers began to understand the specificity of transition, thus becoming aware of the new types of constraints and features of the firm's external environment. Under-standing the transition as a kind of "intermediate state of the economy", with its own specific laws, meant a return to the *realistic management*. This has been the main criterion for success and maintaining on the job over the last five years.

For the vast majority of companies in difficulty, pragmatic management implied the temporary adoption by managers of *survival strategies*.

- *Adaptation behaviors*. As survival strategies have made it possible to avoid bankruptcy and buy time, the most capable managers have begun to resort to adaptation strategies.

In fact, the most capable managers have understood that transition is a very complex game (in the sense of game theory), in which the very rules of the game change rapidly. Hence, the need for strategies of ultra-modern transformation of commercial societies to adapt them to a rapidly changing external environment arises.

It is worth noticing that the situation of managers in a transition economy is much more difficult than that of managers in a stabilized economy that crosses a crisis of the company, because in transition things are happening in such a way that "the players" (the manager and the external environment) start to play one kind of game and, without any clear notice, the rules of the game are increasingly inspired by another type of game.

Let's admit that such a game is not only strange, but also very difficult.

Abnormal behaviors

It is surprising to notice the rather high frequency of one of the paradoxes of the transition, which manifested itself particularly over the 1990-1993 period: enterprises in a critical situation reacted totally inadequately, increasing the risk of bankruptcy, reaching a desperate situation, often without any chance of further recovery.

These abnormal management behaviors and their consequences have been a severe warning to all the economic agents, so that in 1994-1995 a reduction in their frequency was noticed, although they did not disappear altogether.

What were the most "abnormal" managerial behaviors, a clear indication of the serious failure to adapt to the changing the external environment?

- **Misrepresentation of the enterprise's objective function**

Quite many trading companies, under the trade union pressure, and as a result of managers adopting a "populist" leadership, have replaced a normal business objective (profit maximization and/or stabilization and business development) with another objective-function: *protection against unemployment* and, to this end, *maximizing the salary fund*. This involved a distortion of the company's economic and management strategies and decisions, which, in the medium term, led to the cancellation of accumulations and investments, to decapitalization and financial blockage.

- **Striking the company's near future**

The immediate consequence of distorting the enterprise's objective function was the adoption of abnormal economic behaviors aimed at *securing at any cost short-term wages*: the call for high-interest bank loans without the conditions for returning the loan; the delivery of goods to companies in difficulty, without checking their creditworthiness; spending of investment funds and depreciation for salaries, which condemned the firm's patrimony to a gradual decrease in real value, etc. This "strategy" has only postponed the crisis and the moment of truth by about 1-2 years, a period in which the factors for an even stronger crisis have accumulated, until bankruptcy has become inevitable.

- **Managerial blocking through trade union pressure**

During 1990, in almost all enterprises, "democratic" elections of managers occurred. How can we interpret this phenomenon, which, in the *history of management, has a single precedent with unhappy results*, the choices of enterprise soviets during the Russian revolution of 1917? On the one hand, it is obvious that the radical transformations after 1989 had to lead to the change of many teams of managers with others to demonstrate initiative and a new style of leadership. On the other hand, these changes cannot be promoted from bottom to top without affecting the very foundations of business organization, the balance and the division of attributions in the "power triangle" (owners-managers-unions). This is precisely what happened: in the first years after the 1989 Revolution, in many enterprises, in the context of the "employers' eclipse", the trade unions took over some of the employers' functions, imposing "the choice" of some managers expecting job stability and getting the enterprise out of crisis. The result of this "permanent micro-revolution" was often catastrophic: managers lost the

legitimacy of employers' representatives, they were often replaced by employees looking forward to quick successes; often changes in management prevented enforcement of recovery strategies, so that the enterprise disorganization and chaos, the risk of bankruptcy has increased. Unfortunately, this negative phenomenon has not ceased completely at present either.

- **Proliferation of thefts and corruption**

In enterprises in which organizational chaos was installed and in which managers themselves were rogue, *theft and corruption have reached such an extent that they have become one of the major risk factors for bankruptcy*. It is a matter of transition management history to synthesize and classify the vast factual material that has been published in the press about the methods to steal from a state-owned enterprise, some of which are very ingenious. The magnitude, diversity and persistence of this aberrant phenomenon of transition are evidence that state ownership is poorly administered and that the only *remedy of substance is privatization.*

- **Passivity to the changing external environment**

In many cases, the *"decompression effect"* in relation to the rapid changes in the external environment has generated a category of abnormal behaviors: the blockage of innovation capacity, passivity, inertial representation of future evolution, the erroneous belief that the managerial methods that have been successful in the past guarantee the crossing of a period of crisis and structural transformations, the mistaken belief that a "modern" endowment or certain "strategic" sectors will be supported by the state through subsidies, etc. Obviously, these hopes were not confirmed by the progress of events; the awakening to reality of these managers was painful.

- **Adoption of risky strategies**

Often, managers who initially adopted passive behavior later shifted from one extreme to another, adopting hasty, inadequately considered, adventurous solutions. Here is an inventory of the most damaging hazardous strategies: the unjustified split of vertically-integrated trading companies, which has jeopardized the entire manufacturing chain, re-profiling of manufacturing for new products that, in the absence of marketing studies, proved to be unsalable, the launch of the company in areas for which it had no experience, leading to unpleasant failures, association with foreign partners or private entrepreneurs whose creditworthiness, reliability and experience have not been verified, leading to unrecoverable damage and so on.

Survival strategies

The call to survival strategies has been a signal that many managers have become aware of the specificity of transition and the dangers induced by the economic crisis. This was, of course, a *realistic behavior*, because in many major

crisis situations, the only short-term strategy is a "resuscitation strategy" that aims only at survival. Of course, such a managerial behavior lies on the brink of the defensive strategy concept, it is not centered on making radical and necessary changes within the firm, and the persistence in this stance for several years is a safe way to failure.

The objectives of survival strategies, although they are modest and fragile, are small managerial successes of crisis management:

– *the necessary time is bought*, either to implement a radical internal transformation strategy or an offensive strategy or to overcome the acute phase of the macroeconomic crisis in the hope of a national and global economic recovery that will also affect the business (phenomenon occurred in 1994-1995):

– *avoiding bankruptcy*, keeping the enterprise in its market segment, avoiding striking the company's future by indebtedness, even if a "zero profit" strategy is adopted for a few years;

– "step-by-step" *withdrawal*.

During 1990-1993, almost all state-owned companies were forced to reduce their activity, but for nearly half of them, this cut was dramatic (40-60%). To carry out such a radical transformation in a negative way, without causing bankruptcy, is, by itself, a *managerial performance*. If we call upon a military strategy and tactics analogy, this kind of management strategy corresponds to the situation of the flexible withdrawal in a war on new positions, after the opponent's offensive, the front break and the fight in encirclement. These situations are fundamentally different in relation to attack (practicing an *offensive strategy*) or position war and partial withdrawals (*defensive strategies*). Although our managers did not experience such situations, and although this strategy has an extreme difficulty, it has been well-applied in many situations. There are also many cases that can be considered as real managerial records: enterprises that have reduced their turnover and staff by 75%, have stabilized the situation at this level, avoided organizational disintegration, and then started a development phase, with chances of survival. In fact, in this way, it is right, painful, gigantic or large enterprises have been transformed into medium or small size companies. Managers who have successfully practiced this survival strategy have applied the following set of measures:

– reducing the activity in stages over several years, permanently eliminating non-profitable products;

– permanent reduction of staff with sufficient firmness, but also with flexibility in moments of aggravation of the social conflict;

– an ultra-severe saving regime and limiting investment to those with fast depreciation;

- the transition to an organizational structure and managerial methods specific to the medium enterprises;
- concurrent application of other survival strategies described below.

- **Vertical profile extension**

A natural reaction to the narrowing of the outlets was the *vertical integration tendency*, accessible to end-user integration companies. Of course, this was done to the detriment of parts and components suppliers who had to resort to other survival strategies to save themselves. Finding that, in the transition stage, profits are gaining faster in trade than in the production phase, many companies have expanded their activity profile towards the end of the production and consumption cycle in the direction of direct marketing of their own products, avoiding the chain of intermediaries to consumers and direct beneficiaries.

The emergence of producer-owned outlets (a phenomenon almost non-existent in 1989) was one of the major trends of managerial restructuring in the transition phase. In many cases, businesses have also begun to carry out foreign trade directly by abandoning the intermediation of organizations that prior to 1989 held the absolute monopoly.

- **Changing the activity profile**

A natural and mandatory reaction to the crisis of the market segment in which a firm is operating is the partial change in the activity profile. This requires time (1-3 years), investment or a particular mobilization of internal resources and, above all, a change in mentality to overcome the barriers to innovation. Even companies that have retained their manufacturing profile have had to flexibly supply, diversifying products to meet particular requirements. All of these changes required the shift from *big businesses with few customers to small businesses with numerous clients*. This implied a radical change in the marketing and business management methods. In fact, those businesses that were able to give up the "industrial giant mentality" and act with a management specific to the medium-sized businesses have benefited in the new economic context.

- **Utilization of unused patrimony**

The severe reduction in demand has led to an under-utilization of industrial capacities. Some endowments have become useless, and many production and administrative spaces have become surplus. On the other hand, for some facilities and especially for the available spaces, there has been an important demand from the private sector. In relation to this situation, several managers successfully applied a patrimony management strategy, differentiated into three categories:

- the *active patrimony*, consisting of spaces and facilities which have a normal use corresponding to existing orders;

– *'freeze-preserved' patrimony*, consisting of the facilities and premises for which there are no orders at present, but for which there is a hope of a revival of production, which justifies the costs of temporary preservation;
– the *available patrimony*, which has been capitalized through the sale/lease/location of assets or through associations with private or foreign entrepreneurs.

This strategy, although it is very defensive and reveals that the company has lost hope in re-using assets in the near future, has allowed for the creation of sources of income that represented the difference between survival and bankruptcy.

- **Managerial decentralization**

Since the early years of transition, it has become obvious that industrial gigantism and inherited organizational structures are an important obstacle to restructuring and adapting the enterprise to the demands of the market economy. Managerial decentralization has become an urgent and successful criterion for all the enterprises with more than 1,000 employees (also very numerous).

Three *decentralization solutions* have been applied:
– Most enterprises have retained their integrity by adopting a modern organizational structure inside (cost centers and profit centers and a central module with a "headquarter" structure); this flexibility of structure allowed for a better adaptation to the crisis and changed situation, with the effect of "segmentation of social conflicts".
– In some cases, a step has been taken with the adoption of the holding structure (a central company holding the "portfolio" of shares and having group strategy responsibilities and associated companies); unfortunately, the lack of adequate legislation and the necessary governmental impetus has made this modern form of organization not to receive the spread it deserves.
– In many cases, industrial giants have been split into several commercial companies. This solution was justified in two situations:
  a) where there was no intensive cooperation relationship between the split companies, so that they could function independently;
  b) when obviously unprofitable segments of the enterprise endangered the functioning of the whole ("amputation of gang members").

Adaptation strategies

After the survival of the enterprise was assured or when there were favorable conditions since 1991 (stable market segment, "strategic" products for the national economy, insured export, modern endowment, etc.), it was possible to appeal to the category of *adaptation strategies* to a rapidly changing external environment and to the specificity of transition to a market economy.

These management strategies are clearly more offensive than the survival ones, as well as having an important strategic component. Essentially, these strategies concern not only the immediate reality to which the company's inadequacy is obvious, but also the future of the coming years, with its transformations, to which the current functioning of society is even more inadequate. The most knowledgeable and capable managers have also understood that the company must overcome the dangerous competition resulting from the European integration of our economy in the coming years. In other words, managers who have gone through adaptation strategies have understood that they need to build a trade company that overcomes not only the difficulties of the present (in essence a transitional phase) but also the "challenge" of the next five years that will be characterized by massive transformations of the national economy and by integration into the Western European economy.

Adaptation strategies are part of the ultra-adventurous strategies of companies and aim to achieve the following three main objectives:

a) *promoting strategic management*, on the basis of which restructuring and privatization to be made, adequate to the requirements of the market economy foreseeable for the year 2000;

b) *modifying the organizational culture* so as to achieve a social partnership for restructuring, avoiding the dangers of acute social conflicts, one of the major risks of the transition phase;

c) overcoming the resistance to change and achieving an *"innovative enterprise"*.

These adaptation strategies have been applied in the first stage of transition (1990-1995) by only a relatively small segment of capable managers (about 30%). *We also owe them the termination of the economic crisis in 1994-1995 and the companies they led were the performers of the next period in the market segment in which they acted.*

1.5. Some conclusions resulted from the administration of tests for the conclusion of management contracts under Law No. 66/1993

A brief reference to the concept of decisional aptitude test

Based on a bidding competition organized by SPF, the CEMATT SA Center for Management and Transfer of Technology (CEMATT SA) was entrusted with the elaboration of tests for assessing the decision-making skills of the candidates for the position of manager, their management and the management of the entire system related to these activities.

The testing process took into account the requirement to meet three main objectives:

– the test and the measurement procedure associated with them to ensure a more objective ranking of candidates in terms of decision-making skills;
– the test and the measurement of the candidates' skills to carry out managerial activities under the conditions specific to the transition to the market economy (strategic vision, high risk decisions, restructuring/ refurbishment, communication, participatory management, etc.)
– the measurement scale in order to show the results of the candidates as corresponding to a measurement range of 1 to 10. In order to ensure that the results of the evaluations for the whole population (about 12,000 candidates) are comparable, different versions of the test have the same difficulty, the test is conducted under rigorously identical conditions for the entire population and, on the other hand, the evaluation operation should be carried out with the utmost objectivity and reliability.

Taking into account the international practice and the specific Romanian conditions, the elaborated test included a section of intellectual abilities, aiming at evaluating the performances related to inductive practical mathematical thinking; linguistic abstraction ability, verbal-logical thinking, holistic intuitive representation capacity, and a section consisting of a number of micro-cases (situational test) relevant to the decision-making skills of the candidates.

In the evaluation of results, the most important share (80%) was that of the situational component of the test.

By the mode of testing procedure and performance evaluation, the effects of the main types of error specific to psychometric investigations were reduced. It can be appreciated that the halo errors, proximity, possible disagreements between evaluators have been eliminated.

The validation procedures applied have been reduced to reasonable limits by the construction of the statements, and the errors of contrast and similarity, respectively. During the testing process, the normality corrector for the distribution of results, including the standard deviation, was retained.

In metrological terms, it can be appreciated that the elaborated and used measurement procedures, including the data processing sequences, ensure a good repeatability and reproducibility of the evaluations, a fair hierarchy of the tested subjects.

The market for "Romanian" managers is still under construction

The conclusion of the management contracts in 1994-1995, based on competition, was a good opportunity to see to what extent a competitive market of the "labor force" was created in a very important field, that of the Romanian managers.

Table 1.2

Competition on the Romanian managerial "market"

No.	Competitors/trading company	No./% trading companies							
		Total		Industry		Agriculture		Other domains*	
		No.	%	No.	%	No.	%	No.	%
1	One candidate for the position of general manager	3145	60.8	883	55.3	1316	63.6	946*	62.9
2	A managerial team without competitors	973	18.8	309	19.3	349	16.7	315	21.0
3	Two competitors/position	345	6.7	105	6.6	141	6.8	97	6.5
4	Over two competitors/position	706	13.7	300	18.8	263	12.9	145	9.6
5	Overall total	5169	100.0	1597	100.0	2069	100.0	1503	100.0

* Transports, education, labor and social welfare, public works, etc.

The conclusions of these results for concluding the management contracts are as follows:

a) The competition for managerial positions is still underway: only about 20% of cases have registered more than one candidate/position;

b) In a proportion of 18.8% (about one in five companies) peer managers were chosen to lead, in management team: an option significantly reduced for peer leading had candidates from agriculture - 16.7%, as compared to 19.3% in industry and 21% in other fields;

c) Previous to Law on the contract management, the specialists of Management and Technology Transfer Center (CEMATT SA) organized as consultants over 150 contests for the filling of positions of managers (mostly positions of general manager); in these contests, the average participation rate was 2.7 candidates/position, indicating a potential competition much higher than that recorded at the conclusion of the management contracts;

d) Law of contract management has the great merit of advocating competition for the managerial jobs: We could expect that in 1996-2000, this procedure will generalize.

Where do Romanian managers come from?

The statistical data of the 9817 candidates for the position of manager indicates a strong statistical correlation (0.75) between the county of birth and the county where the company for which they participated in the contest was located. This indicates an important characteristic of the "market" of Romanian managers: they are mostly from the same county, the cases when the managers come from another geographical area are relatively rare. Like the regular labor market, the Romanian "market" of managers is still characterized by a *reduced socio-geographical mobility*, contrary to the phenomena registered in the industrially developed countries. But this also has an advantage: the Romanian managers are

generally people that have formed and advanced on the hierarchical ranking within the company, having a good knowledge of its specificity. Of course, the reverse of the problem is a disadvantage: many managers do not have a wide horizon, formed by activity in different companies and domains of activity.

The Romanian managers are predominantly engineers

Table 1.3

Distribution of Romanian managers by profession

	Total	Of which:		
		engineers	economists	other professions*
Number	9817	6698	2102	1017
Percentage	100	68.2	21.4	10.4

*Jurists, geologists, physicians, graduates of humanities faculties

This statistical result of the competitions for the position of manager is surprising and requires some comments:

a) The proportion of 68.2% of engineers in the Romanian general managers is actually much higher.

If we refer to the professions of candidates who did not had competitors, the situation is as follows:

Profession	Population		Industry		Agriculture		Other domains	
	No.	%	No.	%	No.	%	No.	%
Engineers	2334	74.2	707	81.0	1082	82.0	545	57.2
Economists	468	14.9	110	12.6	83	6.3	275	28.9
Other	343	10.9	56	6.4	155	11.7	132	13.9
Total	3145	100	873	100	1320	100	952	100

In industry and agriculture, the proportion of engineer general managers appointed in the absence of other candidates is overwhelming (81% - industry, 82% - agriculture), while economists account for only 12.6% in industry and 6.3% in agriculture. The presence of economists is mainly found in the managerial teams, where they usually hold the positions of economic director or commercial director.

b) This proportion of engineer-managers is completely different from the situation registered in the commercial companies in a stabilized economy (Western Europe), where managers come in balanced proportions from among engineers, economists and lawyers.

c) A first explanation of this situation is, of course, the way in which promotion to director positions was made before 1990 as a logical result of the influences of external environment on management. The lack of strategic vision and, implicitly, of financial perspective, makes the objective function in the Romanian companies to be the management of production. As a result, people

who had experience of designer and/or leader of production sub-units were favored and, consequently, those who were related to the economic, commercial and legal areas of activity were less preferred.

d) A second explanation of this situation has to be sought in the orientation of the higher education process before 1990: for decades, young people have been oriented and motivated towards the technical higher education, which ensured the greatest chances of success in their professional career.

e) Taking into account the trends in the higher education over the last years (when the technical education has lost its "aura" of supremacy), the re-balance of the Romanian managers' professions is expected over the next five years.

The age of the Romanian managers indicates a normal distribution

What is the optimal age of managers? This issue is still controversial in the literature. Interesting is the experiment that happened in the 1970s in the Western economy, when a real trend of "young managers' fashion" (the promotion to the highest positions of managers below the age of 40) was experienced.

The experiment ended with a relative failure, so that since then it has returned to a "normal" conception: no age is important, but the *real competent work capacity*. This implies the preference for the formation of "mixed" teams as regards age, in which work capability and affirmation are complemented by experience.

Table 1.4

Age distribution of the Romanian managers

No.	Age group (years)	Category	Number	%
1	21-25	Very young managers	2	1.3
2	26-30	(131)	129	
3	31-35	Perspective managers	590	23.4
4	36-40	(2298)	1708	
5	41-45	Mature managers	2394	62.5
6	46-50	(6133)	2193	
7	51-55		1546	
8	56-60	Highly experienced managers	991	
9	61-65	(1255)	245	12.8
10	Over 65 years		19	
TOTAL			9817	100

The average age of the candidates for the position of manager is 46 years old, with a standard deviation of s = 6.8 years. There are some significant variations that need to be emphasized. The average age of candidates with no competitors is 46.87 years and of management teams 45.8 years, while, if we refer to the major business companies in the industry (487 firms), the average age of no-competition candidates is 49.34 years.

As one may see, the age distribution of the Romanian managers has the following characteristics:

a) *the age distribution is normal for a transition economy*, with the largest share (62.5%) of the "mature managers", aged between 41 and 55, who bring together experience with the ability to adapt to the new conditions;

b) *Romanian managers are obviously younger than the chairmen of the board of directors of the Western European countries* who have the following age distribution:

– 6% below 40 years of age;
– 74% between 41 and 65 years of age;
– 20% over 65 years old;

c) the category of very young and prospective managers (21-40 years) is twice as high as the category of highly experienced managers (over 56), which will ensure a *natural change of generations*;

d) After 1990, there was an obvious process of *rejuvenation of the Romanian management* (assessed on the basis of relatively uncertain statistical data, existing before 1990).

Women-managers represent a significant proportion of total managers

Table 1.5

Gender distribution of candidates for the management contract

	Total	Men	Women
Number	9817	8558	1259
Percentage	100	87.2	12.8

As compared to the situation before 1990, when "women's promotion" was a bureaucratic task, obviously the number of women-managers has diminished.

Obviously, in relation to the situation in the stabilized Western economies, in Romania the women managers are still an important segment (12.8%) of the total managers. However, it is important to point out that women most often hold positions as commercial, economic director or chief accountant, accounting for only 7.3% of the no-competition candidates.

The intellectual abilities of Romanian managers are comparable to those of technical intelligence

Over the 1991-1995 period, the specialists of the Center for Management and Technology Transfer (CEMATT SA) made the selection of over 1500 candidates for the positions of designers and researchers in the fields of technical sciences. One of the selection criteria was the administration of an intellectual skills test, which had the same logical structure as the test used for the selection of candidates for the position of manager.

The results obtained by the two categories of people tested (technical science specialists and candidate managers for concluding management contracts) provide a *useful comparison*. The result of the comparison is positive for the Romanian managers: their performances are no less than those of specialists in technical intelligence (researchers, designers, etc.).

This result should not surprise us, if we remind ourselves that a specificity of the Romanian managers is that their *promotion was made in the past, as a rule, from among the specialists in technical sciences*.

The "robot-portrait" of the attitudes of the Romanian managers towards the main managerial problems

The use of the decisional skills test, with various types of alternative situational problems, administered to 9817 candidates, allowed us a broad *socio-managerial survey on the attitudes adopted against many of the critical management issues during the transition period.*

The overall conclusion is positive: most managers adhere to the principles of performance management, and of course there are also areas where an organized training and self-improvement training effort is required. Thus, in the most important issue of transition, and especially in the 1996-2000 phase, the adoption of a strategic management vision, 77.1% of the managers have chosen the right solution. A good score, 57.6%, was also recorded when the development of a medium-term strategy was proposed as a solution to substantiate major, commercial decisions.

Managers' insecurity has begun to grow progressively when:
– a diagnostic analysis was proposed prior to the development of a strategy (42.7% of the totally correct decisions);
– when making major decisions or setting firm deadlines was preferred to prior information analysis (33.0% and 18.9% fully correct decisions);
– when cases of companies in crisis were proposed and, instead of a strategic approach, "immediate" solutions (49.6% of cases) were preferred, the call for the easy solution of layoffs (53.4%) or the appeal to the guardian ministry, a solution that was valid in the past (52.4% of the cases).

Positive trends are also affirmed in the general position of Romanian managers regarding the central issue of *promoting the transformation of organization through restructuring*. In this regard, it should be noticed that the Romanian managers understood that the market requirements (77.5% correct answers in one case and 71.5% correct answers in another case) should be placed at the center of strategy and change.

However, Romanian managers are more reluctant in relation to organizational restructurings that aim at promoting emphasized decentralization:
– the *organization of profit centers* is preferred by 43.7% of managers;

– the *project-based management method*, in a case where is the right solution, it is chosen by 38.6% of the managers;
– only 13.0% of managers accept a *delegation of authority* according to the modern management methods.

As a conclusion, Romanian managers seem to be divided in relation to the issue of promoting ultra-disturbing methods or fearful of changes in relation to their consequences (in a significant case of the test, 40.2% of the managers showed openness to change and 39.4% have shown an obvious restraint).

Somewhat less convinced are the Romanian managers as regards the need to promote a true social partnership. However, the adoption of a participative leadership style complies with most of the options (57.4% of the options):
– communication with close subordinates is considered to be very important by 52.0% of managers, but 40% of managers are deemed to be flexible in dealing with them, while 46% consider it to be of little value for teamwork;
– the same division of opinion persists regarding the communication with employees (38.5% consider it essential, while 40.7% do not consider it a major option);
– 44.6% of managers are receptive to direct collaborators' comments in making a major decision and only 16.0% are obviously non-receptive;
– in the case of mistakes of the subordinates, there is tendency towards an authoritarian style of leadership, 66.8% of the managers being willing to apply immediate sanctions, and 44.8% to make an expeditious decision without analyzing the causes and finding solutions as according to a participatory leadership.

Testing started at the beginning of April 1994. Until May 1995, a total of 9817 candidates for the position of manager were tested for a total of 5,139 state-owned companies. This collectivity represents about 80% of the total number of state-owned companies of the SOF (6477 on July 10, 1995), so that the results obtained can be considered as meaningful for the entire socio-professional category of the Romanian managers.

1.6. General data regarding the approach of identifying the particularities of the Romanian organizational culture

Organizational change is not just a simple effect of the desire and intention to restructure and reform the Romanian enterprises. It cannot be effective and efficient as long as it is limited to strictly structural factors such as ownership shifting, technology change, enterprise organization and management strategies. A change that ignores the organizational culture can quickly prove to be just a change of form, often blocked and obstructed by a series of factors related to the

type and way of structuring and of understanding the formal and informal relationships within organization. Structured behaviors and attitudes within an organization are not only more difficult to change because of their inertia, but they are virtually the most important "resilient to change structures".

In September 1997, the Center for Management and Transfer of Technology (CEMATT SA) initiated the first research after 1989 on the organizational culture in the Romanian space. It included 25 companies and autonomous regies, sufficiently representative of the objectives pursued. A total of 1574 employees and 467 executives were interviewed. Each unit's sample ranged from 70 to 100 subjects, depending on the size of the unit. Compilation of the sample at the employee level was done through a "statistical step" in each enterprise. As regards the choice of management staff, we have a sample of availability. Funding for this research was obtained from the PHARE funds, CEMATT being the winner of the national tender.

The main objective of the paper was the attempt to identify the dominant aspects at the level of the Romanian organizational space, in relation to the structural economic changes facing the Romanian reality. We have tried to distinguish between values and general attitudes at the level of the employees' population and the specific behavioral practices at the level of the Romanian enterprises. We highlighted key issues at the employees' and organizational cultures mentality, capable of hindering a rapid change.

The purpose of our approach was to signal the opportunity to shape the organizational culture, having the role of a strategic tool in accelerating the processes of structural change of the Romanian economy.

1.7. Specific research objectives

Organizational management through organizational culture is a task of senior business leadership, because successful organizational renewal requires the force of a power-owner. It also requires a second factor: expertise. That is why we felt right to try to probe the Romanian organizational space from this perspective and to answer some of the possible questions.

When I opted for a "culturological" approach of the Romanian enterprises, I had a few reasons: the expertise needed to develop management strategies to reform enterprises and, as a consequence, the Romanian economy, to capture the cultural specificity of transition, and comparability with other organizational culture research. The expertise and the surprising cultural specificity of the moment traversed by the Romanian society are aspects of research that are separated only by the level at which they must be investigated.

Our research is based on the assumption of the need for organizational change as a requirement and prerequisite for other types of changes in the

regulatory and infrastructural components. Organizational change is not just a simple effect of the desire and intention to restructure and reform the Romanian enterprises. It cannot be effective and efficient as long as it is limited to strictly structural factors, such as ownership shifting, technology change, enterprise organization, and management strategies. A change that does not take into account organizational culture can quickly prove to be just a form change, often blocked and obstructed by a series of factors that relate to the type and way of structuring and of understanding the formal and informal relationships within the organization. Behavioral and attitudinal patterns structured over time within an organization are not only much more difficult to change because of their inertia but represent practically the most important „resilient to change structures." In short, in order to induce an effective change, it is necessary to understand both the organizational culture and the significant factors that determine or influence this organizational culture.

In the research of organizational culture, we started from Hofstede's approach, for the major advantage it presents, namely the *action-strategic nature*. Hofstede's approach allows not only for the systematic analysis of an organizational culture and the factors that influence its profile, but also for its use as a strategic tool of organizational change. Organizational culture is an important resource of an organization that can act in its economic interest or detriment. In short, an organizational culture is a reality that interferes with members of an organization and any attempt at change, restructuring, whatever its rationale. As a result, it can "block" or "catalyze" changes. And the only way to defeat this resistance is to convert an organizational culture into an instrument. Like any tool, if we manage to know how to use it, it can be useful; otherwise it may be a hindrance rather than a help. In this sense, the proposed organizational analysis is also justified.

Another advantage of Hofstede's approach to this research is mainly due to the *specific social context of the analysis* - the Romanian space in the early 1990s.

In this case, we mainly deal with the criteria of suitability of the theoretical framework proposed for the analyzed reality, because Hofstede's approach allows for testing the existence of a (quasi) homogeneous culture along the Romanian organizational space, as well as the significant differences between the different organizational cultures and the factors that led to their differentiation. In short, in order to be able to develop a managerial strategy to make the Romanian enterprises more efficient, it is first of all necessary to answer the question: there is still a homogeneous culture at the level of the Romanian enterprises, determined by the previous socio-economic context of 1989 and, if so, to what extent does this signify a real resistance to the restructuring and reform of the Romanian economic space?

The problems faced by the organizational change attempts by Romanian companies can be based on this "behavioral and attitude endowment" structured over several decades of centrally-planned economic experience. We can assume that the centrally-planned economy of Romania before 1989, as well as political and ideological factors, have, over time, led to the homogenization of forms of manifestation and organizational behavior. We can assume the existence – before 1989 – of a "culture of the socialist (centrally-planned) enterprise". This assumption is based on a number of undisputed facts:

a) the existence of some form of homogeneous remuneration at national level;

b) the unitary social protection functions of the Romanian enterprises - the enterprises as main ones, if not as sole providers of social services and benefits;

c) the unitary mode of "charging" the economic activities in a political-ideological framework, by substituting some economic and production activities for political organization structures.

To respond to these assumptions, three were the levels at which we questioned the subject of our research:

– The *Romanian general value space*. The analysis of the general value space is primarily aimed at identifying those general value patterns that structure the attitudes and general perceptions of the population in relation to the significant economic and social events and realities for Romania at the moment. This analysis is intended to answer the following question: Is there a homogeneous cultural-value space that could significantly influence the attitudes of the population towards the processes of economic reformation and restructuring? And if so, what is the "character" of this space: is it specific to a "socialist bloc" culture or is it characterized by values of either modern or traditional or national specific?

– The *space of contextual values*. Contextual values represent that space of *de facto* desirability, that is, those preferences and desires of the population that are designed and structured around concrete situations. This so-called "transition" value space - from the general cultural-value level to the organizational culture itself - is particularly important for understanding and explaining organizational cultures as a set of concrete behavioral practices. And this, first of all, because the "contextual" values better describe the real attitudinal-value projections of individuals, due to the concrete situations that they relate to when expressing their preferences and evaluating alternatives.

– *Dominant organizational cultures*. The analysis of organizational cultures aims to differentiate the Romanian enterprises' space according to certain well-structured patterns, practices and organizational behaviors within the enterprises. These organizational "specificities" are due either

to business-type structural factors or to the unique "history" of each enterprise. In the present Romanian space, it can be assumed that because of the structural instability of the enterprises, as well as because of the turbulent economic, political and social environment in which these enterprises operate, the Romanian organizations will have - to a lesser or greater extent - a common history and experience - that of reforming the Romanian space - whose impact will significantly influence the concrete organizational attitudes and practices.

What we have wanted is a "decantation" of the reminiscent culture of the "socialist" type of both specific modern values and specific forms of organizational manifestation due either to a more recent organizational history or to changes in the macroeconomic space, with the aim to convert these significant differences, as far as they exist, into instruments of a change in economic efficiency.

For this, a cultural approach is essential, as we have already argued, both because of the methodological tools and the ability to capture different aspects of the dynamics of organizational transformation. Because the general value space cannot be regarded as a potential "modeling subject", organizational culture can become the strategic tool for organizational change.

By addressing research on the three levels, we tried to respond to the proposed desiderata; the cultural specificity of transition is defined by the general and contextual Romanian value space, and surprising some dominant organizational cultures is the attempt to diagnose (without being exhaustive) the Romanian organizational culture.

1.8. The questionnaire: its way of structuring and the questions that can be answered

The questionnaire used has a total of 69 questions, other than the identification questions. Its structure starts from the premise of the analytical framework provided by the theory of Geert Hofstede. Although the dimensions indicated by him cannot be considered as universally valid (because their validation is based on the results obtained from the statistical analysis of the survey data by questionnaire), they can still be used as starting points in the questionnaire. Analyzing the six dimensions through which Hofstede describes distinct organizational cultures, we considered relevant and interesting to our study three of them, namely: focus on results-versus-process (operationalized with five questions), focus on employee-versus-work (six questions) and weak control vs. strict control (nine questions). In addition to these dimensions, the study's goal of capturing the cultural specificity of transition has led us to questions that test openness to change as well as trust in the different components of the change process.

Of course, at the level of questions in the questionnaire, for each of the dimensions stated, both facts, opinions and desirability, projections, were tested. We are convinced that, from this point of view, we have managed to control the results, always having in mind the level at which we tested that dimension. As a result, the items submitted in the questionnaire propose the following:

– to capture the *more general value endowment at the level of a community*, in terms of Hofstede, of a nation; this category therefore includes rather general attitudes and judgments, related not so much to a specific reality, but to "facts of life". Such attitudes fall into the desirable category of normative value judgments;

– to *capture a wide range of organizational practices and the ways in which employees perceive these practices* (perception refers in particular to a certain type of positioning of individuals in relation to current practices within that organization, such as and in relation to their own practices in the context of their workplace activity);

– to capture the *normative elements* designed by employees on their organization and on the various aspects of organizational behaviors. These fall into what Hofstede calls the category of "desires in fact", as distinct from the "desirable" category. If the latter category appeals to the value-based foundation of a collectivity, in fact expressing standards of value and absolute ethical norms, the category of "desires in fact" reflects rather the behavioral options made by a majority, thus making reference to norm, as a statistical fact. In this sense, knowing this last category, which mainly refers to projections on situations rather concrete than abstract, becomes indispensable for diagnosing an organizational culture.

What are the specific aspects of organization, behavior and organizational practices captured by the questionnaire?

1) *Aspects related to the organizational environment:* the type of market of products or services offered by the organization, the type of relations with other enterprises of the same profile, the perception of the competitive environment, the efficiency and the way to achieve the organizational efficiency, etc.

2) Aspects related to the *organization of the enterprise in general*: type of ownership, type of capital, solutions and strategies for efficiency, perceptions of global management strategies, attitudes related to work in relation to foreign investments, etc.

3) Aspects related to the *perception of working conditions*, the attitude of the enterprise and its management in relation to its employees, the criteria that should be compared to the ones underlying the differentiation of the salary incomes, the perceived and accepted wage differences, the labor-benefit ratio and so on.

4) Aspects related to the *socio-economic climate of the enterprise*, perceptions on the communication climate, its degree of formalization, the way of interactive reporting to problems and problematic situations of work, etc.

5) Relationship with *management*:
 – communication channels;
 – types of decision-making and strategic options in relation to decision-making;
 – systems of decision-making, control and leadership styles of leadership, ways of approaching links between different hierarchical levels;
 – the type of control exercised in that organization.

6) Issues related to *processing and addressing conflict situations*.

7) *Organizational change issues*: Types of legitimate changes, criteria and types of motivation in accepting, and resistance to change, respectively.

8) Reporting on the issue of *unemployment*: the perception of its sources, the mechanisms of attributing responsibility to its emergence, the conditions of acceptance, respectively the rejection of unemployment, as an organizational restructuring strategy.

9) Aspects related to the *relationship with the unions*, the perception of the role of the unions and their activity.

10) *Fundamental values and attitudes towards work*.

Such structure of the questionnaire allowed to highlight both more general values, common to the Romanian space, as well as the types and profiles of the different organizational cultures. The questionnaire also captures a number of additional dimensions related to the structural characteristics of the organization: the method of production, the degree of efficiency and competitiveness, the degree of formalization, but also the perception and positioning of employees towards these more general organizational realities.

The questionnaire was applied to both ordinary employees and managers. We recall that through senior management we understood the upper and middle leadership of the second line. The questionnaire addressed to the employees is identical to the one addressed to the management, with only one change: the questions concerning the relations of power and communication "from top to bottom" were extracted. Such an option is based on the intention to test the existence or the absence of distinct or divergent organizational cultures at these two levels. If the assumption of the persistence of a homogenous organizational culture of the "socialist" type is true, can a significant difference be observed between the dynamics of organizational culture at the level of the enterprise as a whole and the dynamics of the organizational culture of the managerial teams?

1.9. General conclusions - Key issues

What are the most important issues or the most dominant aspects identified at the level of the Romanian organizational space in relation to the structural economic changes facing the Romanian reality?

First of all, we have to distinguish between values and general attitudes at the level of employees' population and values and specific behavioral practices at the level of the Romanian enterprises. The former characterizes the total of employees, the latter the population of enterprises; the former abstracted from the "enterprise" grouping factor, the latter refers to classes or types of enterprises.

1) As regards the value and attitudinal space of employees, we can identify aspects related to the degree of modernity of the population of employees, on the one hand, which strongly associate with reformist attitudes and support of the structural changes, and aspects of a reminiscent mentalities, braking or slowing down the reforming processes.

a) What are the attitudes and dominant values - of the "modern" type - of the employees' population in relation to the current economic and organizational realities?

- *The attitude towards foreign investments is positive*. The perception of a potential "danger" that they could represent for the Romanian economy, of passing it under foreign control, seems to have been dimmed.
- The preference for *private property* is dominant. State ownership options, or a form of collective ownership (employee property), seem to be rather marginal.
- Preference for *certain strategies for efficiency* rather than radical-constructivist: restructuring, refurbishment, total privatization, to the detriment of enterprise closure (a radical, less constructive strategy) or strategy of changing leadership (rather palliative than a real solution).
- The *dominant option for meritocracy based on professional competence and work performance*, against an autocracy based on seniority or hierarchy, and an undifferentiated egalitarianism. This is obvious in terms of defining social equity, wage differentiation criteria, job choices, superiors' appreciation, and motivation for unemployment.

1) Preference for *wage differentiation* according to criteria of professional competence and work performance, at the expense of egalitarianism, hierarchical position and seniority in the work, and in the enterprise, respectively.

2) The importance of an activity that offers professional satisfaction in comparison with the opportunities for promotion or a pleasant environment in choosing a job.

3) Preference for the *professional competence of superiors* over apparent issues, such as their courtesy or ability to sanction and even reward.

4) Identification of the causes of the unemployment phenomenon not only in the current economic crisis, but also at the level of individual: the lack of capacity and the lack of competence.

5) *Attitudes towards work* consistent with the principles and values underpinning a market economy and meritocracy based on competence and professionalism.

- With regard *to job protection* - a matter of particular concern just a few years ago, but equally sensitive in its actuality - the dominant option is not to artificially maintain jobs. Such an option is largely justified by the relatively recent experiences that have demonstrated the medium-term inefficiency of such a solution. For example, job security, although considered by most employees to be important and despite the large percentage of individuals who feel more or less threatened with their loss, is not even a sufficiently important reason for employees to be willing to accept an increase in the working week.

b) What are the reminiscent aspects in the employees' mentality, capable of hindering a rapid change?

- A *preference of the majority* of the wage-paid surveyed population for direct involvement of employees in choosing the company's management, regardless of the type of ownership. This need for control at the level not of the management of the enterprise, but of the choice of the leadership seems to represent a reminiscence of a rather collectivist than participatory-democratic mentality.

- *Employee perception* of a high competitiveness of their own enterprise, both on domestic and external markets, a perception that is not at all in line with reality, at least for the time being, acts as a braking factor for the change processes at enterprise level.

- *Business leadership* continues to be a significant factor that can lead to success or failure. If employee engagement and participation is a dominant preference, their involvement and participation in business leadership is a preferred option for a minority. Depending on the way in which the business is run, the preference for a strong hand dominates. The strong hand seems to be the guarantor of strategic coherence in a highly unstable economic environment. The preference for such leadership is rather a consequence of the public's mistrust in the effective and efficient functioning of democratic-participatory mechanisms, due to the perception of a high degree of instability and even economic chaos, obvious corruption and lack of transparency and even coherence at the level of business leadership, rather than an option for an authoritarian style, based on respect for the hierarchy and a great distance from

authority. This argument seems to be supported by the dominant option for a democratic-participative framework at the immediately higher levels of hierarchy, so where these mechanisms can be "controlled" through interactions and direct relationships.

- Although most of the respondents opt for privatization, encouraging foreign investment and despite the fact that most of them consider that the enterprises they work in (mostly state-owned enterprises) face both local competition and competition from foreign enterprises, they consider necessary *to protect the Romanian enterprises through preferential taxes* and duties.

- An expression of the perception of ambiguity and a lack of clear distinction between political and economic is also the belief in the fact that the *relationships of management of the enterprise with the different media and political groups can be important for its proper functioning.* Mistrust in the formal-legislative framework leads to the consideration of relational privileges as being, under certain circumstances, particularly important. Such perception is also the consequence of relatively recent experiences, which attest to the power of pressures and political privileges that are not fundamentally grounded on the fate of the enterprise.

- We showed earlier the importance of values based on *professionalism and competence*. Such values underlie the majority of modern European cultures if they cannot even be considered as specific to a global culture of modernity. In the Romanian cultural-value context, however, they are "deprived of" some fundamental dimensions. If at the level of modern European cultures, they are associated with a high degree of indivi-dualism and with a preference for a highly competitive environment, the analysis of the Romanian value space attests to their decoupling from these values specific to the Western European modernity. Individualism and preference for a competitional-competitive environment appear to be lacking a clear contour. From this point of view, there is a lack of interest in the possibilities of promotion within companies, the lack of importance attached to the prestige of the company in choosing a job. Promotion seems to have negative connotations, and the company's prestige and name seem to be a matter of no pragmatic importance. Such a positioning does not necessarily mean the existence of a collectivist mentality or undifferentiated social solidarity. The need for social solidarity, expressed by giving a relatively high importance to trade unionism, despite a high degree of mistrust in the current activity of trade unions and their leaders, seems to be a consequence of a social context of

crisis. We can only assert that the population's options for these values are, at least currently, less differentiated and structured than in case of other types of value options.

At enterprise level, we may distinguish:

a) Five dominant organizational cultures, obtained through the intersection of contextual value profiles (at the organizational level) with the profiles defining the organizational practices and behaviors:
   – paternalist-collectivist culture;
   – professional-individualistic culture;
   – modern-participative culture;
   – collectivist/laissez-faire culture;
   – the "reaction" culture.

b) A heterogeneous group of organizations characterized by a variety of organizational practices, but with the same value profile, a group that is defined by a "passive expectation" attitude towards change, as well as more specific cases of the autonomous regies characterized by a significant "public worker consciousness".

b) Significant determinants in three of the mentioned cultures (paternalist-collectivist, professional-individualist and laissez-faire type) are found especially at the level of practices (influenced by structural factors), but also at the level of value profiles (influenced more rather than perceptions and representations). In the case of the other two cultures, the discriminatory variable is the value profile, strongly determined not by the structural factors, but by the perception of the organizational environment and the representation on its own enterprise. The major differentiation between these cultures is the adequacy of perceptions and representations to reality and, consequently, the reaction to the major economic changes of transition.

c) In general, with regard to the attitude towards change, of the five dominating cultures, two are more strongly oriented towards change, namely the modern-participative and the professional-individualistic one. The collectivist/ laissez-faire culture is rather a little open-minded culture, which focuses rather on protectionist measures, and in the case of the "reaction" culture, the attitude is rather passive, characterized by ambivalence, but this kind of culture presents a high risk of resistance to change due to vulnerability to the pressures of the economic environment.

Both levels of analysis are significant for describing what we called the soft component of change. Both spaces express practically the availability and acceptability of the population both for certain types of changes at the level of enterprise and for certain strategies at macroeconomic level. The difference

between the two spaces is at the strategic level: if the overall value space cannot be regarded as a potential "modeling subject", organizational culture can become both a strategic instrument at the level of organizational intervention and a raw material of a more complex managerial approach of economic reality. The cultural-value endowment undergoes a rather incremental change process, while the organizational culture is more appropriate to intentional modeling, having the role of a strategic tool in organizational change. In the context of the Romanian economy undergoing reform and restructuring, the organizational culture gains a more general connotation, thus increasing its strategic potential: it becomes not only a useful instrument in favor of organizational changes, but also a possible strategic tool to accelerate the processes of reform and economic change.

1.10. Opportunities

During the period since this research, with the entry of Romania into the European Union, a large number of majority foreign-owned companies - subsidiaries of the large multinational companies - are active in the country.

According to the latest researches (Mereuță, 2013), the majority foreign-owned capital accounts for 52.47% of the turnover of important Romanian companies responsible for 80% of the national companies' turnover. Exports of goods of Romania are made by companies with majority foreign capital in proportion of 70-75%. As a consequence, the management of these companies has significantly influenced the organizational culture of employees.

Therefore, we consider that a resumption of research with the same structure of the questionnaires, which would highlight specific results, would be very useful at present:
– for the majority foreign-owned companies;
– for the majority Romanian privately-owned companies;
– for the majority state-owned companies.

The existence of the referential in 1997 (one year far from the definition of Romania as a functioning market economy country - 1998) would surely allow for conclusions of great relevance to the organizational culture in the Romanian space after 6-7 years after the accession to the European Union.

It should be emphasized that an attempt at this level in the Argeș County was made by Prof. Dr. Ionuț Pandelică in 2005. According to the analysis (Pandelică, 2007), a series of recommendations were made for organizing training sessions and/or conferences on:
1) The concept of competitiveness of firms in the market economy. Commercial policies and competition policy in the European Union;
2) Characteristics of privately-owned companies. Rights and obligations of major shareholders. Eligibility of business management;

3) Romanian legislation on bankruptcy/insolvency and its application from the perspective of Romania's accession to the European Union;
4) The importance of market research and advertising for Romanian companies, in view of the need to increase economic performance.

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The multi-criteria nodal analysis of system of companies[*]

2.1. Methodological benchmarks

The research was performed by two stages. The first stage comprised the 1995-2002 period, in which were analyzed:

- 392 subsystems at NACE division level;
- 56 sectoral subsystems;
- 8 national systems.

The selected subsystems comprised during the 8 years period a number of 573,418 companies.

The annual stability rates ranged between 0.83 and 0.87, only 45% of the companies that were active in 2002 being also active in 1995.

All the researched systems of companies had N ≥ 100, the conclusions of this research stage pertaining to large systems of companies.

The second stage of research included analyses performed for 2004 and 2008 and for the following subsystems:

- in 2004:
- 174 subsystems classified at group level as according to NACE Rev. 1 (three digits);
- 47 subsystems classified at division level as according to NACE Rev. 1 (two digits);
- 13 subsystems classified at section level as according to NACE Rev. 1 (one character);
- a national system.
- in 2008:
- 218 subsystems classified at group level as according to NACE Rev. 2 (three digits);
- 80 subsystems classified at division level as according to NACE Rev. 2 (two digits);

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[*] The chapter presentes a representative selection from the studies: *Analiza nodală a sistemelor de companii*, author Cezar Mereuţă, Editura Economică, 2004, partea I - „Bazele experimentale ale analizei nodale a sistemelor de companii" and *Clasele concentrării economice şi factorul 80%*, author Cezar Mereuţă, Editura Economică, 2012.

– 19 subsystems classified at section level as according to NACE Rev. 2 (one character);

– a national system.

Overall, 551 systems of companies and two national systems were investigated.

The objective of the second stage was to expand the analysis to systems of companies with $N \geq 30$ and to identify the occurring significant differences as against the systems of companies with $N \geq 100$.

The results, which covered 16 years (including the processing periods) clearly show that from a qualitative point of view there is no difference between the subsystems of companies with $N \geq 100$ and those with $N \geq 30$.

In other words, the nodal analysis and its concept apply to all the subsystems of companies with $N \geq 30$.

2.2. Structural distributions

By definition, the market share of a company is:

$$Cp_i = \frac{Ca_i}{CA_T}, \qquad (2.1)$$

where:

Cp_i – the market share of the "i" company;

Ca_i – the turnover of the "i" company on the classified market;

CA_T – the total turnover of the companies that are active in the classified market.

The distribution of market shares falls within the structural distributions class, of p_1, p_2, …, p_n weights, characterized by $p_i \geq 0$, $\sum_{i=1}^{n} p_i = 1$. (2.2)

The indicators that characterize the structural distributions are presented in the following table.

Name	Symbol	Value	Observations
Average	$\bar{p}$	$\dfrac{1}{n}$	
Median	p_{med}		The market share pertaining to 50% of the number of companies
Leader's share	P_1		
Standard deviation	S_p	$\dfrac{1}{\sqrt{n}} \cdot \sqrt{\dfrac{n\sum_{1}^{n} p_i^2 - 1}{n-1}}$	
Variation coefficient ($\dfrac{S_P}{\bar{p}}$)	V_p	$\sqrt{n} \cdot \sqrt{\dfrac{n\sum_{1}^{n} p_i^2 - 1}{n-1}}$	

Name	Symbol	Value	Observations
Maximum variation coefficient	Vp_{max}	$\sqrt{n}$	
Minimum variation coefficient	Vp_{min}	0	
Normalized variation coefficient $Vn = \dfrac{V - V\min}{V\max - V\min}$	Vn	$\sqrt{\dfrac{n\sum\limits_{1}^{n} pi^2 - 1}{n-1}}$	G - concentration coefficient
The Herfindahl index (informational energy)	H	$\sum\limits_{i=1}^{n} p_i^2$	
Maximum Herfindahl index	$Hmax$	1	
Minimum Herfindahl index	$Hmin$	$\dfrac{1}{n}$	
Normalized Herfindahl index $H_N = \dfrac{H - H\min}{H\max - H\min}$	H_n	$\dfrac{n\sum\limits_{i=1}^{n} p_i^2 - 1}{n-1}$	$H_N = G^2$
Square average	$\overline{p^2}$	$\sqrt{\dfrac{1}{n}H}$	
Ratio of square average to arithmetic average	m^*	$\sqrt{n} \cdot \sqrt{H}$	
Maximum value of the ratio of square average to arithmetic average	m^*_{max}	$\sqrt{n}$	
Minimum value of the ratio of square average to arithmetic average	m^*_{min}	1	
Normalized value of the ratio of square average to arithmetic average $m^*_n = \dfrac{m^* - m^*_{min}}{m^*_{max} - m^*_{min}}$	M'_n	$\dfrac{\sqrt{H} - \dfrac{1}{\sqrt{n}}}{1 - \dfrac{1}{\sqrt{n}}}$	The normalized Hirschman index

We have to mention that the expression $\sum\limits_{i=1}^{n} p_i^2$ was first used by the Italian statistician Corrado Gini in 1918. Later, the same expression was applied in 1952 by O.C. Herfindahl, at the University of Chicago, with precise reference to the market shares distribution. The Herfindahl index is widely used when assessing the concentration degree of market shares distributions.

In 1996, the Academician Octav Onicescu has defined for the same expression the concept of informational energy, emphasizing its structural significance and developing the "Informational Statistics", whose main application was the informational correlation - key methodological instrument in order to analyze the structural variability.

Because a significant part of the study refers to the structural variability of the systems of companies, we use in the following the concept of informational energy.

2.3. The fundamental statistical feature of market shares distributions

Our research identified the fact that all the market shares distributions of the large systems of companies are characterized by the above unit value of the variation coefficient:

$$V = \frac{S}{m} = \frac{Sp}{\underline{p}} \geq 1.$$
(2.3)

Table 2.1 presents the synthesis by types of subsystems of the variation coefficients values, V, over the 1995 – 2002 period.

Table 2.1

Name	Significance of indicators	1995	1996	1997	1998	1999	2000	2001	2002
Subsystems at NACE division level (two digits)	Average value $\overline{V}$	6.891	6.562	6.882	6.140	6.686	6.751	6.577	6.840
	Standard deviation, Sv	5.525	5.225	6.225	3.462	4.584	4.868	4.517	3.924
	Maximum value, Vmax	34.089	33.472	39.214	14.878	26.679	26.226	25.922	24.893
	Minimum value, Vmin	1.966	1.783	2.060	1.817	2.047	1.890	2.158	1.940
Main systems	Average value $\overline{V}$	15.173	13.999	16.178	12.544	13.618	14.074	14.322	13.753
	Standard deviation, Sv	9.787	8.514	9.499	7.560	9.393	8.729	8.870	9.878
	Maximum value, Vmax	30.384	29.278	29.930	28.300	34.203	32.577	33.415	33.225
	Minimum value, Vmin	6.071	6.330	7.073	5.901	5.903	6.391	6.436	5.118
National systems		31.393	28.870	45.019	29.242	31.679	28.138	27.523	28.816

The minimum value of variation coefficients of **1.783** was reached in 1996 in one of the NACE division level (two digits) subsystem.

As expected, according to the definition relationship of the variation coefficient its average value increases with the aggregation level of classification, because the average number of companies rises.

The research performed in 2002 for the subsystems of companies with N ≥ 30 have demonstrated the compliance with no exception to the rule of above unit variation coefficient!

Because we did not possess the full series of the data base at group and class levels for the 1995-2002 period, we have revealed the key statistical feature of market shares distributions by referring to the subsystems of companies with N ≥ 100.

The key feature of market shares distributions ($V \geq 1$) determines values of the informational energy and the Gini coefficient of remarkable significance:

- The informational energy is determined by starting from the relationship

$V = \sqrt{n} \cdot \sqrt{\dfrac{n\sum p_i^2 - 1}{n-1}} \geq 1$, which immediately leads to the relationship Ei

$= \sum\limits_{i=1}^{n} p_i^2 \geq \dfrac{2n-1}{n^2}$ and for n > 100 to $Ei \geq \dfrac{2}{n}$.

(2.4)

For the large systems of companies, the informational energy of the market shares is approximately equal to or higher than the double of the minimum informational energy, which corresponds to the uniform distribution.

- The Gini concentration coefficient is determined similarly to informational energy: $V = \sqrt{n} \cdot G \geq 1$ from where: $G \geq \dfrac{1}{\sqrt{n}}$ (2.5)

2.4. Significance of feature of market shares distributions in terms of competition among the companies

In terms of competition, a high importance is attached to the computation of the number of standard deviation intervals below and above average, respectively.

We denote by $V = \dfrac{s}{m}$

$p_{min} = m - K''S \quad K'' > 0$ \hfill (2.6)

By replacing m and s in relation to the number of companies (N) and the variation coefficient, V, it immediately results that:

$K'' = \dfrac{1 - Np_{min}}{V}$ and for V = 1   it results K'' < 1 \hfill (2.7)

Concluding, all the market shares distributions of the large systems of companies are characterized by the fact that the group of companies with market shares below the average is concentrated in a single interval of standard deviation.

Similar to the previous reasoning, we determine the number of intervals of standard deviation for the companies with market shares above the average, K'.

$p_{max} = m + K'S \quad K' > 0$ \hfill (2.8)

By replacing m and s in relation to the number of companies (N) and the variation coefficient, V, it immediately results that:

$$K' = \frac{Np_{max} - 1}{V}.$$ (2.9)

The number of intervals, K', reveals a statistically significant trend to increase with the rise in the number of companies composing the system and the leader's market share.

Very relevant in terms of competition is the size structure of the companies with market shares below the average. Thus, for the national system, more than 93% of such companies are represented by the **micro-companies**, usually covering 95-96% of the total active micro-companies, as shown in Table 2.2.

Table 2.2

Year	Share of micro-companies in total companies with market shares below the average, %	Share of micro-companies with market share below the average in total micro-companies of the national system of companies, %
1995	95.34	95.74
1996	95.82	95.48
1997	95.00	96.14
1998	94.93	95.61
1999	94.42	96.04
2000	93.28	96.18
2001	92.84	96.16
2002	92.98	96.39

In general, the micro-companies form a "world apart", and are not interested in the market leader's positioning. Their bargaining power and development investments are relatively low, and their strategic objective is most of the time survival in the market with the aim to get a profit level able to ensure a decent living standard.

Non-involvement of most of the micro-companies in the competition on raising the market share does not diminish their importance in terms of ensuring the macroeconomic equilibriums. The micro-companies are, on the one side, significant employment sources and, on another side, they are the pool from which the future small, medium and large companies are selected.

Over the 1995-2000 period (the last year with available data), Romania has recorded a positive dynamic of the share of micro-companies' employees in total employees, as Table 2.3 shows.

Table 2.3

Year	Share of micro-companies' employees in total employees, %
1995	6.50
1996	8.01
1997	9.37
1998	9.85
1999	11.98
2000	12.25

Despite such increases, the gap against the European Union countries still stays high.

Table 2.4 shows the shares of employees of all micro-companies in total employees the European Union countries.

Table 2.4

Country	Share of micro-companies' employees in total employees, %
Belgium	42.6
Denmark	27.7
Germany	28.0
Greece	55.6
Spain	47.3
France	34.0
Ireland	23.4
Italy	48.0
Luxembourg	22.9
Netherlands	25.7
Austria	24.4
Portugal	38.3
Finland	25.9
Sweden	26.7
United Kingdom	28.5
European Union	34.4

Source: Entreprises en Europe (2001), Eurostat.

The ratio of average share of the European Union to that of Romania was **2.81** in 2000 and was one of the main explanations of the lagging behind of the Romanian middle-class development.

The companies with above-average market share make up what is known as **"significant"** competitors in the national system of companies. Usually, in these cases the profit maximization is associated at least in terms of strategic objectives with the development of and, implicitly, with the increase in the market share.

For each company as single entity there are significant differences due to the capability of management to ensure development in circumstances of raising the profit.

The structure of the significant competitors of Romania over the analyzed period sums up most of the middle-sized, large and very large companies, as shown in Table 2.5.

Share of number of companies with above-average market share in total number
of companies of the national system, %

Number of employees					
Year	0 - 9	10 - 49	50 - 249	250 - 499	Over 500
1995	4.26	37.63	80.46	90.47	86.35
1996	4.52	43.86	83.91	99.22	98.27
1997	3.86	40.70	83.07	97.83	98.54
1998	4.39	44.96	85.43	98.69	97.50
1999	3.96	43.80	83.53	98.07	99.09
2000	3.82	41.54	82.85	98.60	99.02
2001	3.84	39.57	82.20	97.44	98.85
2002	3.61	39.72	81.74	98.38	99.03

In 2002, the "significant" competitors included around 98.50% of the large and very large companies and 81.74% of the medium-sized companies.

The market leaders in each area of activity at NACE division level may be found among the medium-sized, large and very large companies of Romania. To a great extent, this conclusion stays also valid at group level (NACE code with 3 digits).

2.5. The above-unit value of coefficient of variation, feature of distribution of the main economic indicators of companies

The important implications of the fundamental feature of market shares distributions have led us to investigate the distributions of the main economic indicators of companies.

There were researched:
– the pre-tax gross profit (1995-2002);
– the losses (1995-2002);
– the number of employees (1995-2002)
and for 1999 (the single year with full available data):
– the social capital;
– the outstanding payments;
– the receivables;
– the financial expenditures.

Since the values of variation coefficient increase significantly with the number of companies, it was enough to analyze the subsystems of companies at NACE division level (2 digits).

The minimum values of the variation coefficients are presented in Table 2.6.

Table 2.6

The minimum values of variation coefficients

Name of indicator	1995	1996	1997	1998	1999	2000	2001	2002
Pre-tax gross profit	1.614	1.579	1.824	1.756	2.265	1.806	2.078	2.453
Losses	1.318	1.586	1.501	1.240	1.354	2.226	1.770	1.676
Number of employees	1.775	1.278	1.163	1.472	1.538	1.583	1.741	1.811
Social capital	-	-	-	-	2.459	-	-	-
Outstanding payments	-	-	-	-	2.936	-	-	-
Receivables	-	-	-	-	2.248	-	-	-
Financial expenditures	-	-	-	-	3.231	-	-	-

The analysis of data reveal that in all the analyzed subsystems the distributions of the weights structures of the main economic indicators of companies exhibit an above-unit value of the variation coefficient.

Our conclusion is that the distributions with **V ≥ 1 constitute themselves into a distinct class, which opens up a new area of micro and macroeconomic research, with important impacts on the assessment of certain general features of competition within the large systems.**

2.6. General reflection on the 20/80 principle

In the 20th century, many researchers have found that in numerous areas of human activity 20% of causes determined 80% of effects. Because of its generality, this finding led to the establishment of the 20/80 principle.

An important contribution to the establishment of this principle was that of the famous quality researcher of Romanian origins J.M. Juran, who has experimentally demonstrated that in most cases 20% of the types of defects had covered 80% of the complaints about product quality.

In management terms, the application of the 20/80 principle led to the creation of a major management method focused on identifying priorities, known as the ABC method [37].

Essentially, the ABC method allows for relative ranking of the components of an analyzed set by ordering them according to classes of importance.
– very important components;
– important components;
– low importance components.

According to the 20/80 principle, the ABC method states that from the total components downward ordered as according to the analyzed dimension:
- the first 20% are very important and cover 80% of the dimensions that are analyzed;
- the next 20% are important and cover an additional 10% of the analyzed dimensions;

- the other components are less important and correspond to the last 10% of the analyzed dimensions.

The graphical illustration used in the ABC method, of cumulative type, is shown in Figure 2.1
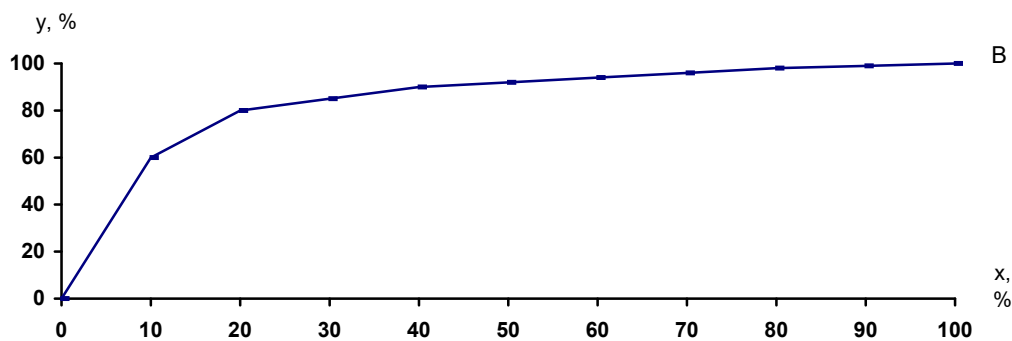
Figure 2.1

Ox – the axis on which the shares of components in the total system are represented in descending order of the analyzed dimension

Oy – the axis on which the shares of analyzed dimension in its total value are represented

In the standard ABC method, the reference values of the M curve in Figure 2.1 are those presented in Table 2.7:

Table 2.7

X, %	Y, %
10	60
20	80
40	90
100	100

In the following, we detail the cumulative distributions of market shares by the number of companies on the basis of experimental evidence from the analysis of the 553 classified markets.

2.7 Identification of weights and cumulated market shares of the significant competitors

From competition perspective, we are interested in **how many significant competitors populate, on average, the classified markets, and to what extent they control the markets where they operate?**

a) **The degree of uniformity Gu** $= \dfrac{\overline{p}}{\overline{p}_s}$,

where:

$\bar{p}$ = the average market share of the companies of a classified market;

$\bar{p}_s$ = the average market share of the companies with above-average market shares.

This indicator is widely used in the geological research, and was firstly introduced in 1962 by the Russian geologist Mogarovski [40].

The limit values of degree of uniformity are:

$Gu_{max} = 1$ - for the uniform distribution;

$Gu_{min} = 1/n$ for the totally uneven distribution.

Research showed that values of $Gu \leq 0.5$ correspond to highly asymmetrical distributions.

In many cases, the degree of uniformity is used in statistics to assess the asymmetry of certain distributions.

Table 2.8 presents the summary Gu values of the classified markets for the aggregate of the 553 subsystems of companies.

Table 2.8

Values of degree of uniformity for 533 classified markets

Name of classified markets	M	S	V	Maximum	Minimum
Groups (three digits)	0.17740	0.06613	0.37279	0.47750	0.03360
Divisions (two digits)	0.15444	0.06229	0.40335	0.38660	0.02980
Sections (one character)	0.13726	0.06933	0.50512	0.35290	0.02980
System	0.10010	0.00382	0.03815	0.10280	0.09740
Aggregate	0.16952	0.06654	0.39253	0.47750	0.02980

Data analysis gives us the opportunity to check the existence of a significant logarithmic correlation between the degree of uniformity and the coefficient of variation.

The regression equation between the two indicators is:

$$\log (Gu) = -0.483408 \log (V) - 0.460085 \qquad (2.10)$$

$$[0.025837] \qquad [0.019701]$$

$$R^2 = 0.3884935$$

Estimated standard deviation: 0.15108.

Since the coefficient of variation increases with the number of companies, it results the very important conclusion according to which the value of degree of uniformity decreases with the increase in the number of companies.

In other words, the cumulative asymmetry of market shares distributions increases with the number of active companies in a classified market.

The values of degree of uniformity of the aggregate of 553 subsystems range between **0.02980** and **0.47750**.

A total of 531 subsystems, *i.e.* 96.02%, have degrees of uniformity ranging between **0.02980** and **0.3000**.

b) **The share of companies with above-average market share**, defined by the relation:

$$\rho = \frac{n}{N},$$

where:

n = the number of companies with above-average market shares;

N = the number of companies of the analyzed subsystem.

Table 2.9 presents the summary ρ values in classified markets for the aggregate of the 553 systems.

Table 2.9

Name of classified markets	M	S	V	Maximum	Minimum
Groups (three digits)	0.15018	0.05193	0.34576	0.36210	0.03190
Divisions (two digits)	0.13103	0.04819	0.36778	0.30300	0.02730
Sections (one character)	0.11445	0.05094	0.44510	0.26830	0.02730
System	0.08855	0.00375	0.04232	0.09120	0.08590
Aggregate	0.14349	0.05209	0.36300	0.36210	0.02730

Careful analysis of the results obtained for Gu and ρ allowed us to develop a logarithmic regression equation, with 97.3% significance.

Gu = 1.260257 ρ –0.011315 [0.008915] [0.001361] R^2 0.97317 Estimated standard deviation: 0.01091	(2.11)

Out of the 553 subsystems of companies, in 478, *i.e.* 86.4%, the share of companies with above-average market shares is lower than 20%.

The degree of uniformity (Gu) and the share of companies with above-average market share (ρ) allow us to determine the cumulative percentage of market shares (equal to turnover) of the companies with above-average market shares, according to the relation

$$\rho_{cpn} = \frac{n}{N} \cdot \frac{\overline{p_s}}{\overline{p}} = \frac{\rho}{Gu},$$

where:

ρ_{cpn} = cumulative percentage of the market shares of companies with above-average market shares.

Of the 553 sub-systems, in 484, *i.e.* 87.5%, the cumulative percentage of the market shares of companies with above-average market shares was higher than 80%.

2.8. The 80% factor and the concept of node company on a NACE classified market

The results obtained by this research lead us to conclude that the **80%** factor of turnover of an analyzed market is considered the optimal choice of a referential to answer the fundamental question of a competitive process: **how many companies cover a turnover that, practically, determines the economic performance of that market**.

In terms of assessing the economic performance in a multiple-meaning or fuzzy environment, the truth level represents a number between 0 and 1, including 0 and 1.

If we limit to integer decompositions or equivalent to [0,1], the binary, hexenar and endecadenar scales may be used. [22]

In this study, we chose the hexenar scale, turning it into a five steps interval scale for all applications (see Table 2.10).

Table 2.10

Confidence level to assess the economic performance	Significance
0	False
0.2	As good as false
0.4	More false than true
0.6	More true than false
0.8	As good as true
1	True

Another important consideration is that, on average, in the 553 analyzed subsystems the Herfindahl index or the informational energy in its structural interpretation is **98.35%** covered by the companies that, in descending order, cumulate 80% of turnover. Consequently, the structural information, the overall profitability rates, the outstanding payments, the receivables and other economic indicators are defined by the companies concerned.

The percentages of companies covering 80% of turnover, $\dfrac{n_{80}}{N} = \rho_{80}$, have in about 89% of the studied cases lower values than the percentages of companies with above-average market shares, $\rho = \dfrac{n}{N}$.

The n_{80} companies are called "**vital competitors**" of each classified market and are known as "**node companies**".

The node companies characterize the power structure of any classified market. The economic performances, managerial behaviors, structural variability of the node companies have a major influence on the dynamics of the macroeconomic system. The objective function of maximizing profit at the microeconomic level is associated in the node companies, stronger than in the case of the "significant competitors", with the trend towards turnover maximization, in terms

of market competition. Hence, it results the diversity of the market strategies that, in principle, have mainly an offensive component, characterized by the efforts to prevail in new markets.

It is obvious that in the very complex process of competition in a given market the winning node companies that increase their turnover are accompanied by node companies that seek to survive in the market by obtaining maximum profit through increased efficiency of activities within the same turnover, and by node companies "in crisis", which register dramatic reductions in turnover and, therefore, in case the revival measures are lacking, exit the market.

We must also emphasize the importance of node companies in the case of interdependent networks of companies.

Generally, the node companies attract a lot of micro-companies and/or good quality small businesses as suppliers whose existence is directly determined by the "economic health" of their node company customers.

Table 2.11 presents the summary of the average shares of node companies ($\frac{n_{80}}{N} = \rho_{80}$) for the 553 subsystems structured by classified markets.

Table 2.11

Name of classified markets	M	S	V	Maximum	Minimum
Groups (three digits)	0.11393	0.06744	0.59194	0.39660	0.00240
Divisions (two digits)	0.09559	0.06426	0.67229	0.35120	0.00220
Sections (one character)	0.08801	0.07349	0.83501	0.29270	0.00260
System	0.03650	0.00368	0.10074	0.03910	0.03390
Aggregate	0.10793	0.06760	0.62628	0.39660	0.00220

As in the case of Gu and ρ, with increasing coefficients of variation, the ρ_{80} values tend to decrease.

The average share of node companies, $\overline{\rho}_{80}$, may be found with a 0.95 probability within the range:

$$\overline{\rho}_{80} - 1.96 \frac{0.06760}{\sqrt{553}} < \overline{\rho}_{80} < \overline{\rho}_{80} + 1.96 \frac{0.06760}{\sqrt{553}} \text{, namely } 0.10230 < \overline{\rho}_{80} < 0.11353.$$

On the other hand, the coefficient of variation of shares of node companies, ρ_{80}, is V = 0.62628, reflecting the structural diversity of the classified markets in terms of "vital competitors".

The research results are conclusive, showing clearly that the asymmetry of classified markets is much higher than that resulting from the 20/80 paradigm. On average, 80% of turnover is covered by about 10% of the companies that are active in the classified markets. In 53.0% of cases, the number of node companies that cover 80% of turnover is lower than 10% of the total number of companies.

It is also important to know the size structure of the node companies in 2004 and 2008, shown in Table 2.12.

<div align="right">**Table 2.12**</div>

Share of the number of node companies in total number of companies of the national system, % by number of employees

Year	0 - 9	10 - 49	50 - 249	250 - 499	Over 500
2004	0.77	17.55	56.33	91.24	99.55
2008	0.67	16.14	64.75	93.70	96.93

One may notice the increasing share of the medium-sized companies, along with decreases in the shares of small and micro-companies.

The power structure of the national system of companies in 2004 and 2008 as according to the size of companies is that presented in Table 2.12. These companies define the multi-criteria economic performance of the national system (overall profitability, ownership structure, leaders of component markets, outstanding payments, etc.).

2.9. The concept of nodal analysis of the system of companies

The essential feature of the node companies at the level of the national system of companies is their representativeness in terms of the main economic indicators.

Table 2.13 and Figure 2.2 show the degrees of coverage of the node companies over the 1995-2002 period of:

- social capital;
- pre-tax gross profit;
- operating profit;
- losses;
- operating losses;
- number of employees;
- outstanding payments;
- receivables;
- financial expenditures;
- total assets;
- total debts.

<div align="right">**Table 2.13**</div>

Name	Average degree of coverage, %	Standard deviation of degree of coverage, %	Variation coefficient of degree of coverage, %
Social capital[b]	90.685	3.865	4.262
Pre-tax gross profit[a]	75.628	3.788	5.008
Loss[a]	79.498	3.111	3.913
Operating profit[c]	76.250	6.144	8.057

Name	Average degree of coverage, %	Standard deviation of degree of coverage, %	Variation coefficient of degree of coverage, %
Operating losses[c]	78.640	1.768	2.248
Number of employees[b]	70.949	5.150	7.259
Financial expenditures[c]	89.497	1.279	1.429
Outstanding payments[c]	77.300	2.589	3.349
Receivables[c]	83.373	2.072	2.431
Total assets	86.967	0.270	0.310
Total debts[c]	80.620	1.778	2.205

[a] the 1995-2002 period.
[b] the 1995-2000 period.
[c] the 1999-2001 period.
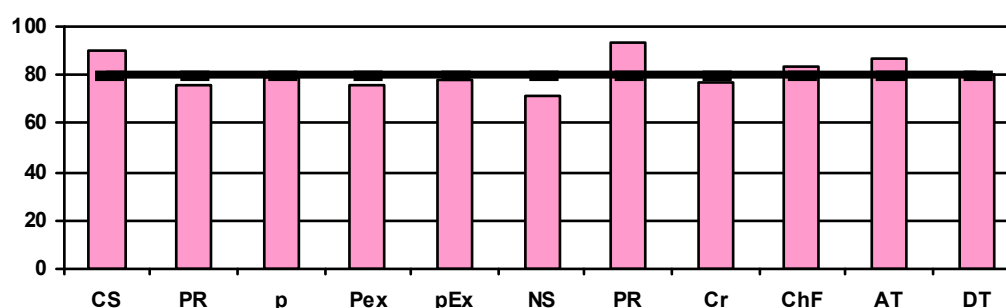
Figure 2.2

The degree of representativeness of the node companies, which cover 80% of turnover of the national system of companies, is relevant both in terms of values of degrees of coverage and of stability of such values over time. In all the cases, the value of variation coefficient is lower than 10%, indicating a very low annual variability of degrees of coverage.

On average, the 11 economic indicators have an **80.86%** degree of coverage, with a 6.71% standard deviation (V = 7.63%). The representativeness of the node companies of the national system of companies provides to them the capability to characterize the real economic performance of the system of which they belong, and the significant managerial behaviors.

We may also conclude without fear of making a mistake that a company's turnover is an indicator that defines its "**power**" in the sense of the influence it has on the system to which it belongs.

These are only a few arguments in favor of establishing a permanent framework for the analysis of the node companies of Romania, through what we call the nodal analysis of the systems of companies (Annex 2.1).

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Annex 2.1

Note on the concepts of node company and nodal analysis

The concepts of node and nodal analysis were firstly used in Romania by the Academician Paul Dimo in his work *Analiza nodală a sistemelor energetice* published by Editura Academiei Române in 1968, followed by the study *Modele REI şi indicatorii de stare. Sisteme energetice interconectate*, "where the author states that (p. 48):

    i)   the nodes have to be firstly considered by their importance (the values of the nominal injected powers to which they belong to);

    ii)   secondly, the assessment of the sub-nodal network resulting from one option or another has to be considered;

    iii) the choice of such nodes obviously decides the configuration of the linear network…".

Referring to the safety of functioning of the inter-connected systems, the author states that (p. 225):

"Starting from the estimate of the state that requires to be investigated, certain perturbations are assumed:

1) The loss of the most powerful power station.

2) The loss of all the transport lines of the same stem".

In our research, we identified as nodes the very important companies, namely those that cover in descending order 80% of turnover. We have defined the "80%" factor as the first methodological indicator of the nodal analysis.

Further, considering the influence of the leader on the economic performance of the entire analyzed system, we have defined the "degree of structural dominance of the leader" as the second methodological indicator of the nodal analysis.

The analysis of the classified markets as according to the NACE classification corresponds to the necessity to examine the nodal sub-networks within a given system.

The score function for assessing the economic performance of node companies[*]

3.1. The economic performance of node companies

In order to evaluate the economic performance of the node companies, we have built a score function using performance rates specific to the Romanian transition economy.
- operating result in relation to turnover - Rex/CA;
- outstanding payments related to turnover - PR/CA;
- financial expenses related to turnover - ChF/CA;
- wage costs related to value added - CHS/VA;
- the ratio of outstanding payments to receivables - PR/CR.

The choice of performance rates has taken into account the need to evaluate the main signals of microeconomic managerial policy risks identified in Romania between 1993 and 2000, such as operation, financial blockages, relations with the financial and banking institutions, wage policies and customer solvency.

Based on multiannual statistical analyses, scales with 11 value ranges were developed for each rate in the ascending order of positive significance. Interval grades received ratings from 0 (most non-performing) to 100 (highest performing). The resulting score function is as follows:

$$N = K_1N_1 + K_2N_2 + K_3N_3 + K_4N_4 + K_5N_5 \qquad (3.1)$$

where:

K_i – coefficients of weight resulting from regression equations that meet the condition $\sum_1^5 K_i = 1$. The weighting coefficients are updated annually.

N_i – the evaluation resulting from the grading of each rate in the 11-steps scales.

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[*] The chapter presents a represenattive selection from the study *Analiza nodală a sistemelor de companii*, author Cezar Mereuţă, Editura Economică, 2004, partea a II-a - „Analiza nodală a sistemului naţional de companii în perioada 1995-2002".

The function assigns to each company a score that may range from 0 to 100 and places the company into the five categories of economic performance presented in Table 3.1.

<div align="right">**Table 3.1**</div>

Class	Score	Significance of performance	Significance of the risk of adapting to the competitive environment
A⁺	$80 < M \leq 100$	Very good	Very low
A	$60 < M \leq 80$	Good	Low
B	$40 < M \leq 60$	Average	Medium
C	$20 < M \leq 40$	Weak	High
C⁻	$0 \leq M \leq 20$	Very weak	Very high

3.2. The economic performance of ensemble of node companies

The weights of the number of node companies ranked according to the score function in the five categories are presented in Table 3.2.

<div align="right">**Table 3.2**</div>

Share of the number of node companies, %

Category	1995	1996	1997	1998	1999	2000	2001	2002
A⁺	38.54	36.51	35.57	29.19	25.85	29.03	31.28	32.27
A	40.55	39.18	39.60	43.80	43.69	43.40	42.65	43.33
B	10.59	11.13	11.79	12.66	15.17	14.12	13.79	12.58
C	4.88	5.82	5.37	6.40	6.79	6.24	6.47	5.56
C⁻	5.43	7.36	7.67	7.95	8.50	7.21	5.81	6.26

The overall assessment of the economic performance of the node companies in each year of the 1995-2002 period was made by using, based on a scoring scale from 1 (class C-) to 5 (class A +), the relationship:

$$Eg = \sum_{i=1}^{5} p_i N_i, \tag{3.2}$$

where:

p_i – share of "i" category;

N_i – assessment of "i" category.

Obviously, $\sum_{i=1}^{5} p_i = 1$ (3.3)

The results are presented in Figure 3.1.
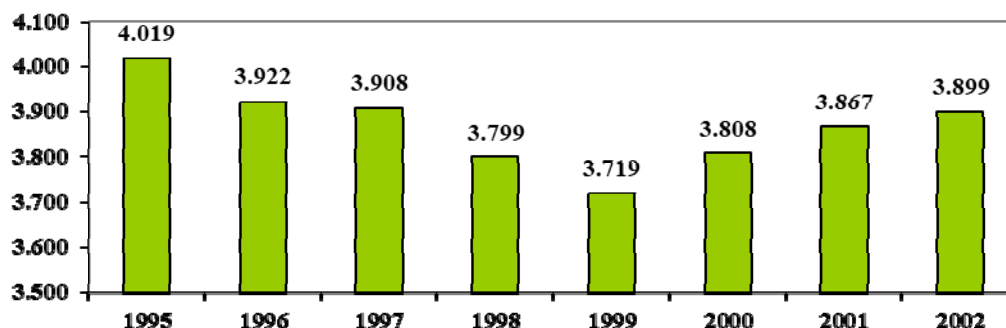
Figure 3.1

As expected, the 1997-1999 recession led to a worsening of the overall economic performance of all the node companies. The performance deficit, which began in 1996, increased, in 1999 the value of the Eg indicator declining by around 7.5%. Since 2000, the economic performance has improved significantly.

From the point of view of the efficiency of the national system of companies, the most unfortunate node companies classified in the C⁻class are of particular importance, the indicators of which are presented in Table 3.3

Table 3.3

Name	1995	1996	1997	1998	1999	2000	2001	2002
Rex/CA, %	-10.50	-10.22	-5.70	-11.35	-6.85	-11.50	-14.93	-19.30
PR/CA, %	67.21	63.89	87.10	126.90	137.58	120.23	99.21	104.39
ChF/CA, %	18.35	16.57	30.59	22.64	29.81	22.66	21.22	14.88
ChST/VA, %	102.14	106.55	88.51	111.50	86.01	103.24	112.14	119.41
PR/CR	1.56	1.56	2.39	1.92	2.38	1.80	2.29	1.84

During the analyzed period, the group of node companies in this category had, on average, the following characteristics:
- negative operating result rate of about -10%;
- the amount of outstanding payments equal to turnover;
- financial expenditures covered about 22% of turnover;
- total wage spending exceeded the value added;
- outstanding payments were about twice as high as receivables.

With such economic performance rates, there is no coincidence that the **877** node companies classified in 2002 in the C⁻ class accumulated **56.6**% of the losses of the national system of companies!

The shares in turnover and in the number of employees of the C⁻ category node companies are presented in Table 3.4.

Table 3.4

Name	1995	1996	1997	1998	1999	2000	2001	2002
Turnover	6.89	13.44	9.28	8.62	9.77	9.72	9.64	11.41
Number of employees	9.56	18.29	15.47	16.45	15.43	13.47	16.15	18.77

On average, the worst-performing node companies account for about 8-9% of turnover and 15-16% of the total number of employees of the nationwide node companies.

3.3. The economic performance of the very large node companies (over 499 employees)

The share of the very large node companies in the node companies of Romania for the period 1995-2002 is presented in Table 3.5.

Table 3.5

Share of very large node companies, %

Name	1995	1996	1997	1998	1999	2000	2001	2002
Turnover	57.83	56.03	58.69	46.24	47.98	44.32	44.37	44.60
Number of employees	79.48	76.00	75.60	69.05	66.40	63.23	62.19	61.19
Profit	46.18	40.93	45.74	35.28	42.38	43.96	41.18	37.35
Loss	72.54	73.36	64.13	65.52	65.67	66.25	67.36	70.52
Outstanding payments	63.95	62.39	65.33	58.40	63.37	66.52	63.29	66.34
Financial expenditures	65.16	64.41	59.55	56.76	57.63	58.22	51.92	53.31
Export	72.46	72.04	71.10	66.17	58.80	67.47	-	-
Number of node companies	10697	13091	11480	15321	14118	14755	15033	14012
Of which ≥ 500	1516	1528	1411	1279	1078	996	937	906
% of total number of node companies	14.17	11.67	12.29	8.35	7.64	6.75	6.23	6.46
Profitable companies (number)	1301	1272	1132	885	775	737	697	616
% of total number of node companies	85.82	83.25	80.23	69.19	71.89	74.00	74.39	67.99

From the data presented, it follows that:
- the share of very large node companies has declined from:
  – 14.17% of the total number of node companies in 1995 to 6.46% in 2002;
  – 57.83% of turnover in 1995 to 44.60% in 2002;
  – 79.48% of the number of employees in 1995 to 61.19% in 2002.

The process of continuously diminishing the share of very large node companies is explained by the restructuring processes that such companies have experienced. The dynamics of the number of employees of the node companies presented in Table 3.6 is relevant.

Table 3.6

Category	Number of employees		Volume index
	2002	1995	2002/1995
Very large node companies	1.509.260	3.169.732	0.476
Small, medium and large node companies (less than 500 employees)	957.353	818.188	1.170
Total node companies	2.466.613	3.987.920	0.619

The very large node companies have cut their workforce by more than half, while other node companies registered a nearly 20% increase in the number of employees.

The influence of the very large node companies on the profitability of all the node companies, and as a consequence of the national system of companies, is demonstrated by the values of the consolidated rates of the structured overall profitability according to the size of the node companies, presented in Table 3.7.

Table 3.7

Consolidated rate of overall profitability Rb/CA, %

Number of employees	1995	1996	1997	1998	1999	2000	2001	2002
0 – 9	7.53	7.45	4.51	1.85	2.86	3.54	3.35	3.54
10 – 49	6.98	5.49	4.43	3.78	2.61	3.16	4.58	4.01
50 – 249	5.66	7.42	6.33	1.79	-0.19	1.86	3.73	3.85
250 – 499	6.85	5.58	1.39	3.75	0.44	-0.01	1.80	2.22
Over 500	2.23	-0.58	0.12	-3.48	-4.61	-3.28	-1.36	-3.06
Total node companies	4.09	2.25	1.90	-0.13	-1.57	-0.24	1.42	0.62

Throughout the analyzed period, the very large node companies recorded the lowest value of the consolidated profitability rate. Moreover, between 1996 and 2002, this rate was negative.

In order to have an overview of the economic performance of the very large node companies, we applied the score function over the period 1995-2002.

The weights of the very large number of node companies, ranked according to the score function in the five categories, are presented in Table 3.8.

Table 3.8

Share of number of very large node companies, %

Category	1995	1996	1997	1998	1999	2000	2001	2002
A$^+$	38.85	35.08	33.81	30.18	27.46	30.84	30.84	32.56
A	31.99	29.52	30.47	27.29	29.96	26.00	28.60	24.83
B	14.45	15.38	15.73	16.18	15.12	16.37	14.94	13.58
C	6.20	8.25	8.72	10.95	10.95	13.25	9.82	9.05
C$^-$	8.51	11.78	11.27	15.40	16.51	13.55	15.80	19.98

In Figure 3.2, are presented the global ratings Eg for all the node companies and the very large node companies.
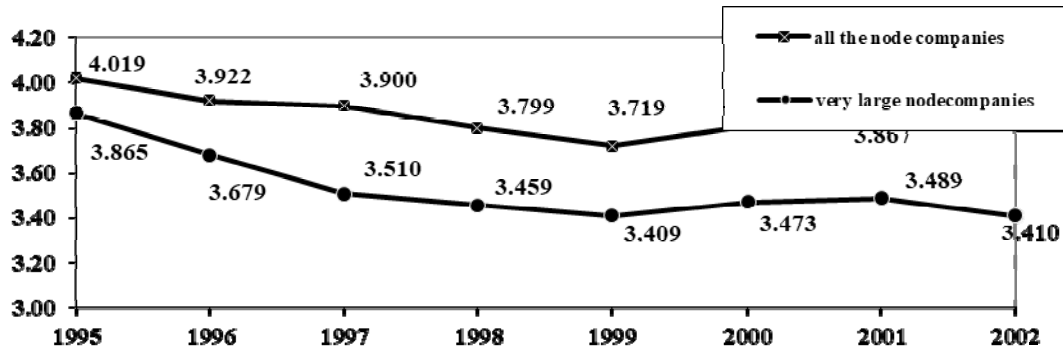
Figure 3.2

The value of the Eg indicator of the very large companies' economic performance was every year lower than that of the whole node companies.

In conclusion, the analysis reveals that, from a microeconomic perspective, the weak point of the economic performance is located in the area of very large node companies. The negative overall consolidated profit rates of this category of companies are not found (with rare sectoral exceptions) in any of the other countries of the European Union [7].

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Chapter 4

Influence of operating results on the economic performance of node companies[*]

      As it is known, the operating result has a significant weight in the value-added structure. In managerial interpretation, the operating result is the key to a company's economic performance. The operating result focuses on the efficiency of managerial efforts in vital areas of the company's activity, such as:

- labor productivity;
- wage policies;
- reduction in energy intensity;
- reduction in material expenses;
- inventory policies;
- the level of transaction costs;
- harmonization of investment policies with the company's real resources.

      Under the conditions of transition, the operating result determines, as we shall see below, the level of financial blockage of the node company. In the following, we try to demonstrate the consistency of the above assertions, adapted to the Romanian reality, by analyzing a representative sample of node companies in the Romanian economy for a period of 5 consecutive years, 1996-2000.

      The research was focused on a number of 5497 node companies, in each year covering about 50% of the national business system's turnover. Table 4.1 shows the structure of the number of companies in the sample, by sections and subsections of the NACE classification.

Table 4.1

No.	NACE code	Name	Number of companies
1	A	Agriculture and auxiliary services	251
2	B	Forestry, logging and hunting	12
3	C	Fishing and aquaculture	3
4	DA	Mining and quarrying industry of energy products	26
5	DB	Mining and quarrying industry of non-energy products	26

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[*] Paper published in *Romanian Journal of Economic Forecasting*, No. 3-4/2002, author Cezar Mereuţă.

No.	NACE code	Name	Number of companies
6	EA	Food, beverages and tobacco industry	432
7	EB	Textiles and textile products industry	273
8	EC	Leather and footwear industry	67
9	ED	Wood processing industry	72
10	EE	Paper, pulp and paper and products thereof	85
11	EF	Crude oil processing, coal coking and treatment f nuclear fuels	9
12	EG	Chemical and synthetic and man-made fibers	95
13	EH	Rubber and plastic processing	58
14	EI	Products of other non-metallic minerals	116
15	EJ	Metallurgical industry	65
16	EK	Metallic constructions and metal products	156
17	EL	Machinery and equipment	122
18	EM	Electrical and optical equipment	102
19	EN	Transport means industry	82
20	EO	Other industrial activities	131
21	F	Electric and thermal power, gas and water	90
22	G	Construction	540
23	H	Wholesale and retail trade, repair and maintenance of motor vehicles and of household and personal goods	2059
24	I	Hotels and restaurants	71
25	J	Transport and storage	226
26	K	Post and telecommunications	28
27	L	Financial, banking and insurance activities	5
28	M	Real estate, renting and services activities mainly to companies	203
29	N	Public administration and defense, compulsory social welfare	1
30	P	Health and social assistance	4
31	R	Other activities of collective, social and personal services	86
32	T	Activities of extra-territorial bodies and organizations	1
33		TOTAL	5497

From the point of view of structural representativeness, the correlation coefficient between the structure of the national company system in 2000 and the selected sample is 0.955.

4.1. Influence of operating result on the gross result of the year

The method used to identify the influence of the operating result on the gross result of the year is that of qualitative characteristics statistics. In this method, we analyze the division by dichotomy (splitting up into two), in which we indicate the presence or absence of qualitative characteristics corresponding to the variations of some quantitative characteristics that can take only two values as according to a predetermined threshold.

We recall that the intensity of link between two qualitative characteristics is estimated by the C_{AS} association coefficient that can take values between +1 and -1.

The +1 or -1 values indicate a perfectly positive or negative correlation between the two characteristics, while the value 0 indicates the total independence of the studied features.

The coefficient of association is determined by constructing the matrix shown in Table 4.2.

Table 4.2

X	Y		Total
	Y > Yp	Y < Yp	
X > Xp	n_{11}^{*}	n_{12}^{*}	1
X < Xp	n_{21}^{**}	n_{22}^{**}	1

* n_{11}, n_{12} weights of Y feature with X > Xp.
** n_{21}, n_{22} weights of Y feature with X < Xp.

The association coefficient $C_{AS} = \dfrac{n_{11}n_{22} - n_{12}n_{21}}{n_{11}n_{22} + n_{12}n_{21}}$.

In Tables 4.3 to 4.7 we present the matrices and coefficients of association between the operating result (Rex) and the gross result of the year (Rb), calculated for each year of the analyzed period.

Table 4.3

1996

Rex	Rb		Total
	Rb > 0	Rb < 0	
Rex > 0	0.953	0.047	1
Rex < 0	0.394	0.606	1

$C_{AS} = 0.936$

Table 4.4

1997

Rex	Rb		Total
	Rb > 0	Rb < 0	
Rex > 0	0.935	0.065	1
Rex < 0	0.370	0.630	1

$C_{AS} = 0.922$

Table 4.5

1998

Rex	Rb		Total
	Rb > 0	Rb < 0	
Rex > 0	0.891	0.109	1
Rex < 0	0.315	0.685	1

$C_{AS} = 0.894$

Table 4.6

1999

Rex	Rb		Total
	Rb > 0	Rb < 0	
Rex > 0	0.891	0.109	1
Rex < 0	0.326	0.674	1

$C_{AS} = 0.886$

<div align="right">**Table 4.7**</div>

<div align="center">**2000**</div>

Rex	Rb		Total
	Rb > 0	Rb < 0	
Rex > 0	0.907	0.093	1
Rex < 0	0.366	0.634	1

$$C_{AS} = 0.890$$

The conclusion drawn from the presented qualitative analysis is that between 1996 and 2000 **a percentage between 89% and 95% of the companies with positive operating result recorded a positive gross result of the year. From the point of view of the management diagnosis, the decisive role of operation in the final profitability of the companies clearly appears.**

Our research has been extended to the two other structural results of the profit and loss account. The association coefficients obtained for the financial result are presented in Table 4.8.

<div align="right">**Table 4.8**</div>

<div align="center">**Coefficient of association between the financial result and the result of the year**</div>

	1996	1997	1998	1999	2000
C_{AS}	0.507	0.575	0.446	0.281	0.226

There is a positive association between the financial result and the gross result of the year, but significantly lower than in the case of the operating result. Relevant is the continuous decrease in the positive coefficient of association during the analyzed period.

Table 4.9 shows the share of companies with a positive financial result in the total number of companies in the sample.

<div align="right">**Table 4.9**</div>

	1996	1997	1998	1999	2000
Share, %	34.5	32.0	31.0	31.2	32.1

It is noticed that most of the companies had negative financial results throughout the analyzed period.

For the exceptional result, the coefficients of association are shown in Table 4.10.

<div align="right">**Table 4.10**</div>

	1996	1997	1998	1999	2000
C_{AS}	0.230	0.204	0.350	0.280	0.370

The annual values of the association coefficients are, on average, lower than in the case of financial result. Table 4.11 shows the share of companies with exceptionally positive result in the total number of companies in the sample.

Table 4.11

	1996	1997	1998	1999	2000
Share, %	32.5	27.4	21.7	33.0	32.1

As in the previous case, most companies in the sample have negative exceptional results.

In comparison, we present in Table 4.12 the share of companies in the sample with positive gross result of the year and operating result during the analyzed period.

Table 4.12

Share, %	1996	1997	1998	1999	2000
The gross result of the year	91.4	89.4	82.1	78.7	80.2
The operating result	93.1	92.8	87.6	81.6	80.6

The data on the structural, qualitative analysis of the profit and loss account unmistakably show that:

- the operating result is the main explanatory component of the overall profitability of the Romanian companies;
- the Romanian business environment contributes to a great extent, through the high inflation rate and the financial blockage, to the worsening of the general profitability of the companies via the components with mostly negative values of the financial and exceptional result.

The data presented in Table 4.13 for the sample of 5497 companies regarding the consolidated profit/loss account rates are enlightening.

Table 4.13

Name	1996	1997	1998	1999	2000
Gross result of the year/CA, %	4.65	3.44	0.58	-1.29	-0.39
Operating result/CA, %	8.77	9.51	6.41	6.58	6.82
Financial result/CA, %	-3.42	-3.70	-3.67	-4.87	-4.21
Exceptional result/CA, %	-0.70	-2.37	-2.18	-3.00	-3.10

The gross result of the year gives a clear picture of the macroeconomic dynamics. Indeed, the 1997-1999 recession period had as its main consequences:

- the continuous reduction of the gross result of the year, reaching in 1999 a negative value;
- due to the fall in production, a significant deterioration in the operating result rate;
- the liquidity crisis as a result of the growing financial blockage and inflation, which brought about a sharp worsening of the rates of financial and exceptional results.

The slight recovery in the economic situation since 2000 is reflected by relative improvements in the structural results of the profit and loss account, but insufficient to ensure a positive overall profitability.

From an overall perspective, it results that a positive operating result rate of less than 5% is not sufficient to ensure a positive overall profitability of the Romanian companies in the current business environment.

4.2. Dynamic analysis of companies in the sample in relation to variations in the operating result

The influence of the operating result on the economic performances of the companies cannot omit the dynamic analysis for the period 1996-2000.

The 5497 node companies were grouped into 6 categories according to the qualitative variations in the operating result, as follows:

a) Companies that had a positive operating result in each year of the analyzed period.
b) Companies that had a positive operating result in 1996 and 2000, but showed an oscillating evolution (Rex<0 in one, two or three years).
c) Companies that had a negative operating result in 1996, but positive in 2000.
d) Companies that had a positive operating result in 1996 but in 2000 had a negative operating result.
e) Companies that had a negative operating result in 1996 and 2000, but also had positive operating results in one, two or three years of the period under review.
f) Companies that had negative operating result in each year of the analyzed period.

The logical diagram of the dynamic analysis is presented in Table 4.14.

Table 4.14

Category	1996	1997 - 1999	2000
a	+	+ + +	+
b	+	+/–	+
c	-	+/–	+
d	+	+/–	-
e	-	+/–	-
f	-	- - -	-

The "+" sign indicates positive operating result.

The " $+/-$ " indicates positive or negative operating result – oscillatory dynamics.

The "$-$" indicates negative operating result.

The classification of the 5497 companies according to the dynamic analysis scheme is presented in Table 4.15.

Table 4.15

Category	Number of companies	Share in total companies, %	Rex/CA, %		Rb/CA, %	
			1996	2000	1996	2000
a	3636	66.1	13.3	11.3	9.6	4.6
b	577	10.5	7.2	6.7	4.4	0.8
c	220	4.0	-17.2	7.7	-16.2	1.4
d	906	16.5	9.5	-11.5	3.5	-16.7
e	108	2.0	-10.8	-7.6	-24.7	-16.1
f	50	0.9	-26.0	-22.4	-28.8	-86.2

- The performing core of the sample consists of 3636 companies (66.1%), which have consistently recorded a positive operating result in all the years under review. This group of companies is characterized by an operating result rate of more than 10%. Due to the characteristics of the Romanian business environment, it is revealed that a 15% reduction in the operating result rate led to a 52% reduction in the gross result of the year!

- 577 companies with a positive operating result in 1996 and 2000, but with an oscillating evolution, show that a 6-7% operating result rate barely covers the financial and exceptional results, resulting in a gross result of the year rate close to balance. This confirms our previous assertion that a less than + 5% operating result rate does not generally provide a positive overall profitability in the Romanian business environment.

- 220 companies that managed to move from a negative operating result in 1996 to a positive one in 2000 focused their efforts on achieving a positive level of the operating result that would ensure a positive, even modest, profitability.

- 906 companies have seriously damaged the operating result rate, reaching in 2000 a very dangerous negative rate of the gross result of the year (less than -15%), with relatively low chances of improving performance.

- 108 companies maintained their negative operating result, but made efforts to improve performance, even if they failed. However, the results are not significant, with the group still registering a dangerous rate of the gross result of the year (less than -15%).

- 50 companies form the core of the "chronic losers" of the sample. It is likely that the "loser" state has its origins before 1996. Only in this way it can it be explained that in 1996 this group of companies recorded a negative rate of operating result of -26%!
  Maintaining this group of companies on the market represents a real counter-performance, reaching a negative rate of the gross result of the year of -86.2% in 2000!

4.3. The influence of variations in turnover on the operating results

In order to identify the dependence of the operating result on the turnover variations, we use a qualitative analysis whose results require caution in selecting the conclusions.

We present in Table 4.16 the turnover, denominated in nominal dollars, for the years 1996 and 2000 for the 6 groups of companies that were the subject of the dynamic analysis.

Table 4.16

Category of groups of companies	No. companies	Turnover, bill. USD[*]		CA2000 CA1996, %	Average annual rate of turnover variation, %
		1996	2000		
a	3636	19.3	17.0	88.1	-3.1
b	577	4.9	5.0	102.0	+0.5
c	220	1.6	1.6	100.0	0.0
d	906	6.1	2.9	47.5	-17.0
e	108	1.3	0.9	69.2	-8.8
f	50	0.5	0.4	80.0	-5.4
Total	5497	33.7	27.8	82.5	-4.7

[*] Average annual exchange rates were used for 1996 = 3083.2 lei / USD, and 2000 = 21692.74 lei / USD.

The main qualitative conclusions that come out of the analysis of the above data are as follows:

- The groups of companies with a positive operating result in 2000 (a, b, c) were subject to the smallest variations in turnover, registering higher annual average rates in relation to that of the analyzed sample.
- Groups of companies with negative operating results (d, e, f) have suffered significant negative market shocks. In particular, the group of 906 companies in the "d" category, which significantly worsened their operating result (from + 9.5% in 1996 to -16.7% in 2000), is particularly noteworthy. The turnover of this group of companies decreased during the analyzed period with an average annual rate of -17%!

The qualitative analysis clearly identifies the link between the market-driven variations and the operating result.

4.4. The influence of operating result on outstanding payments

The operating result represents, together with depreciation, the main source of liquidity of the company. Table 4.17 positions the groups of companies with positive and negative operating results in relation to the consolidated average of the outstanding payments rate in relation to turnover.

Table 4.17

No.	Name	Value of rate of outstanding payments PR/CA, %				
		1996	1997	1998	1999	2000
1	Companies with Rex > 0	12.5	14.3	15.3	19.3	19.9
2	Companies with Rex < 0	47.7	51.6	42.3	49.6	60.7
3	Consolidated average of rate of outstanding payments	16.0	17.7	21.0	24.6	26.0

It is revealed that the group of companies with positive operating result constantly has the rate of outstanding payments reduced by about 19-27% as compared to the consolidated average, while the group of companies with negative operating result has the rate of outstanding payments of about two to three times higher than the consolidated average.

Expanding the analysis at individual company level, it was found that, in each year of the analyzed period, **78.4%** to **85.5%** of the companies with positive operating result showed a rate of outstanding payments lower than the consolidated average of the sample.

Dependence of outstanding payments on the operating result is also confirmed by the way in which the outstanding payment rates have evolved in the 6 groups of companies that were the subject of dynamic analysis. The situation is presented in Table 4.18.

Table 4.18

Category of groups of companies	No. of companies	Value of rate of outstanding payments PR/CA, %	
		1996	2000
a	3636	10.4	15.7
b	577	12.0	33.7
c	220	40.0	21.2
d	906	19.5	50.7
e	108	39.4	63.7
f	50	94.5	128.4

- The "a" group of companies with a positive operating result in each of the analyzed years records the lowest rate of outstanding payments, accounting for about 60% of the consolidated average rate of the sample.
- The "b" group of companies, with a positive operating result in 1996 and 2000 but with oscillating evolution, recorded in 2000 an increase in the outstanding payments rate by about 30% as compared to the consolidated average of the sample. The group of companies incurred the result of negative operating result, which, on a case-by-case basis, led to outstanding payments that were difficult to recover.
- The "c" group of companies, with a negative operating result in 1996 and with a positive operation result in 2000, recorded the most spectacular reduction in the outstanding payments rate, reaching, from a value

exceeding by 2.5 times the consolidated average of the sample in 1996 to 81.5% of the same value in the year 2000. This group of companies is characterized by a management clearly geared towards restructuring and efficiency of the overall activity.

- The "d", "e" and "f" groups of companies, all with negative operating results in 2000, have severely worsened their outstanding payments rates, which in 2000 amounted to 2 to 5 times the consolidated average of the sample!

4.5. Conclusions

Our research highlights the following peculiarities regarding the influence of the operating result on the economic performances of the Romanian companies.

- **The necessary condition for the survival of companies in the Romanian business environment is constancy in every financial year of a positive operating result.**

The oscillating developments, characterized by alternations of positive and negative operating results, can lead, in the short run, to a liquidity crisis and a significant increase in the outstanding payments.

- **The ensuring values of the operating result rate in relation to turnover, in terms of significant reduction of financial blockage, are those higher than 10%.**

- The relatively high probability of occurrence of negative market shocks of high amplitude (more than -10% per year) requires the operationalization of the structural condition to increase the operation flexibility:

$$\frac{ChF}{(1 - Rv) \cdot c \cdot CA \max} \to \min im,$$

where:

ChF – fixed costs;

Rv – rate of variable costs;

c – the degree of use of maximum turnover.

The efforts to increase operation flexibility require simultaneous programs to:

- diminish the fixed expenditures;
- reduce variable costs;
- reduce the negative market shocks.

Analyses performed on the chosen sample have unambiguously demonstrated that the major economic risks of a company are determined by the operating result, outstanding payments and financial expenditures.

A decision-score function was developed to assess the company's major risk levels.

The multi-annual analyses of the Romanian companies showed that the economic stability of a company depends on three major risk factors, in a proportion of 60-70%:

– Value of operating result in relation to turnover, Rex/CA turnover, %;
– Amount of financial expenditures in relation to turnover, ChF/CA turnover, %;
– Amount of outstanding payments related to turnover, PR/CA turnover, %.

Based on these analyses, three risk scales were established for the Romanian companies, with scores ranging from 0 to 100 points, presented in Table 4.19.

Table 4.19

Class	Number of points	Rex/CA, %	ChF/CA, %	PR/CA, %
C	0	> -20	> 20	> 20
	10	-10 ÷ -15	18 ÷ 20	18 ÷ 20
	20	-15 ÷ -10	16 ÷ 18	16 ÷ 18
	30	-10 ÷ -5	14 ÷ 16	14 ÷ 16
	40	-5 ÷ -0,5	12 ÷ 14	12 ÷ 14
B	50	-0,5 ÷ 0,5	10 ÷ 12	10 ÷ 12
A	60	0,5 ÷ 5	8 ÷ 10	8 ÷ 10
	70	5 ÷ 10	6 ÷ 8	6 ÷ 8
	80	10 ÷ 15	4 ÷ 6	4 ÷ 6
	90	15 ÷ 20	2 ÷ 4	2 ÷ 4
	100	> 20	0 ÷ 2	0 ÷ 2

From the perspective of each major risk, companies are classified in three classes:

Class A - good adaptation to the competitive environment (> 50 and ≤ 100 points);

Class B - balance, with uncertainties about future developments (50 points);

Class C - difficulty in adapting to competitive environment (≥ 0 and < 50 points).

The company's classification in the three major risk classes requires specific decisions. Typical decisions are as follows:

1. Operating result in relation to turnover Rex/CA, %

Class	Decision
A	Consolidate the obtained results
B	Identify sources of fixed cost savings and productivity growth
C	Review all operation by the structure, to minimize expenses

2. Financial expenditures in relation to turnover CHF/CA, %

Class	Decision
A	Consolidate the obtained results
B	Keep the loan-engaging policy under control. Do not ask for new credits unless based on very rigorous analysis
C	Stop any extra credit at banks

3. Outstanding payments in relation to turnover PR/CA, %

Class	Decision
A	Consolidate your results
B	Initiate concerted actions to recover debts
C	Analyze the solvability of your customers. Resize your turnover, correlated with the level of liquidity, under the condition of ensuring a positive operating result

Depending on the real situation of each company, the decisions of the nearby classes may interfere.

Major risks are analyzed for each quarter, with a high efficiency for SMEs.

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Analysis by deciles of distribution of turnover in the NACE classified markets (N ≥30)[*]

The result obtained in Chapter 2.8 on the average number of nodes ρ_{80} ranging from **10.23%** to **11.35%** led us to the need to analyze the top **10%** of companies in an attempt to identify some specific features. As a result, all the classified investigated markets were grouped into 10% fractions in descending order of turnover, with the observation that the first decimal is defined as D_0, while the others are numbered $D_1,…, D_9$. We mention that the decile analysis is widely used in the research on income inequality distribution.

The correlation analysis presented in Table 5.1 allowed for the construction of regression equations D_i in relation to D_0.

Table 5.1

Name	R
D_0 with D_1	-0.8968
D_0 with D_2	-0.9799
D_0 with D_3	-0.9404
D_0 with D_4	-0.8848
D_0 with D_5	-0.8226
D_0 with D_6	-0.7697
D_0 with D_7	-0.7331
D_0 with D_8	-0.6876
D_0 with D_9	-0.5561

The regression equations are:
D_1 in relation to D_0

$D_1 =$ -0.38852 D_0 +   0.40706

      [0.00816]   [0.00662]

R^2 0.80434

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[*] The chapter presents a representative selection from the papers *Analiza nodală a sistemelor de companii*, author Cezar Mereuţă, Editura Economică, 2004, partea I – "Bazele experimentale ale analizei nodale a sistemelor de companii" and *Clasele concentrării economice şi factorul 80%*, author Cezar Mereuţă, Editura Economică, 2012.

Estimated standard deviation 0.02079

D_2 in relation to D_0

$D_2 =$ -0.23146 D_0 +   0.22929
         [0.00201]   [0.00160]

R^2 0.96014

Estimated standard deviation 0.00512

D_3 in relation to D_0

$D_3 =$ -0.14678 D_0 +   0.14213
         [0.00226]   [0.00181]

R^2 0.88443

Estimated standard deviation 0.00576

D_4 in relation to D_0

$D_4 =$ -0.09424 D_0 +   0.09029
         [0.00211]   [0.00169]

R^2 0.78289

Estimated standard deviation 0.00538

D_5 in relation to D_0

$D_5 =$ -0.06099 D_0 +   0.05805
         [0.00180]   [0.00143]

R^2 0.67674

Estimated standard deviation 0.00457

D_6 in relation to D_0

$D_6 =$ -0.03922 D_0 +   0.03704
         [0.00139]   [0.00111]

R^2 0.59245

Estimated standard deviation 0.00353

D_7 in relation to D_0

$D_7 =$ -0.02335 D_0 +   0.02189
         [0.00092]   [0.00074]

R^2 0.53743

Estimated standard deviation 0.00235

D_8 in relation to D_0

$D_8 =$ -0.01170 D_0 +   0.01087
         [0.00053]   [0.00042]

R^2 0.47274

Estimated standard deviation 0.00134

D_9 in relation to D_0

$D_9 =$ -0.00373 D_0 +   0.00338
          [0.00024]   [0.00019]
R^2 0.30920
Estimated standard deviation 0.00060

From the point of view of the practical application, our approach offers the possibility to define the cumulated distribution by deciles of turnover of the classified markets, knowing the total turnover and the share of the D_0 decile.

The analysis of the distribution of turnover by decile in the classified markets with $N \geq 30$ has validated the overwhelming importance of the D_0 decile, called by us the "power decile" of the structural distributions of turnover.

The average values of the D_0 power deciles in 2004, 2008 and for the total of the 553 classified markets are presented in Table 5.2.

Table 5.2

	2004	2008	The ensemble of the 553 classified markets
M	79.2271	79.0822	79.1438
S	10.2101	11.2950	10.8380
V	0.1289	0.1428	0.1369
Maximum	98.4045	99.6249	99.6249
Minimum	37.8666	42.1472	37.8686

The average of the D_0 decile ranges as follows: $D_0 - 1.96\dfrac{s}{\sqrt{n}} < D_0 < D_0 +$

$1.96\dfrac{s}{\sqrt{n}}$, *i.e.* between **78.2408** and **80.0468**.

Between the shares of the node companies ρ_{80} of the power structures of the classified markets and the value of the D_0 deciles there is the consistent regression equation:

$\rho_{80} =$ -0.6013D_0 +   0.5838   (5.1)
          [0.0071]   [0.0056]
R^2 0.9293
Estimated standard deviation **0.018**

The values resulting from the application of regression equation to the D_0 averages in the years 2004, 2008 and to the whole of the 553 markets recorded errors of ± 2% as compared to the real values of ρ_{80}.

The analysis of the share of the D_0 deciles for the classified markets resulted in a tendency to increase the weight of their averages by the number of companies, as shown in Table 5.3.

Table 5.3

2004 - 3 digits	
M	77.7524
S	10.2379
V	0.1317
Max	98.4045
Min	37.8666

2008 - 3 digits	
M	78.2163
S	11.2652
V	0.1440
Max	99.6249
Min	42.1472

2004 - 2 digits	
M	82.8720
S	8.6852
V	0.1048
Max	97.5257
Min	60.1659

2008 - 2 digits	
M	80.6699
S	11.1087
V	0.1377
Max	98.4572
Min	42.1472

2004 - 1 character	
M	85.0152
S	10.2141
V	0.1201
Max	97.5257
Min	64.3561

2008 - 1 character	
M	81.7739
S	11.8777
V	0.1453
Max	96.6505
Min	48.9198

2004 – national system	
M	89.2567
S	
V	
Max	89.2567
Min	89.2567

2008 – national system	
M	89.7047
S	
V	
Max	89.7047
Min	89.7047

2004 - total	
M	79.2271
S	10.2101
V	0.1289
Max	98.4045
Min	37.8666

2008 - total	
M	79.0822
S	11.2950
V	0.1428
Max	99.6249
Min	42.1472

Overall total	
M	79.1438
S	10.8380
V	0.1369
Max	99.6249
Min	37.8666

On the other hand, the detailed analysis of the D_0 decile values for the classified markets in 2004 and 2008 showed that their minimum value was 37.8666.

Under the given conditions, we could define an experimental distribution law of the D_0 decile, of the form:

$$D_0 = e^{-\lambda} \qquad \text{where } 0 \leq \lambda \leq 1. \tag{5.2}$$

The λ coefficient could be a measure of asymmetry of the cumulative distributions of turnover of the classified markets ($N \geq 30$). In this situation, the following experiments should verify whether the D_0 power deciles in various economic domains range between 36.79% and 100%.

It is obvious that a probabilistic definition is also possible.

Table 5.4 presents the λ coefficient for the decile values ranging between 0.4 and 1.0.

Table 5.4

D_0	λ
0.4	0.916
0.5	0.693
0.6	0.511
0.7	0.357
0.8	0.223
0.9	0.105
1.0	0.000

It is interesting to see that the 0.5 value of the λ coefficient corresponds to the 0.6 value of the D_0 decile, according to the 20/80 principle.

The λ coefficient correlates with a determination of more than 95% with:

- the degree of uniformity, Gu;
- the share of node companies, ρ_{80}.

Until the validation of this coefficient, we can elaborate a hierarchy of cumulated asymmetry according to the values of the power decile, D_0, as follows:

Table 5.5

Value of D_0 decile, %	Significance of cumulated asymmetry	Observations
$0 < D_0 \leq 20$	Very low	Corresponds to normal structural distributions
$20 < D_0 \leq 40$	Low	
$40 < D_0 \leq 60$	Average	The upper limit corresponds to the 20/80 principle
$60 < D_0 \leq 80$	High	
$80 < D_0 \leq 100$	Very high	Values higher than 95% are practically those of markets characterized by monopolies

Validation of conclusions on the cumulative share of turnover of the first decile in the national systems of companies in the countries of the European Union

One of the main findings of our research is that for large companies ($N \geq 100$), the average of turnover rates of the first 10% of the companies ranked by decreasing order of turnover is higher than 80%.

Data available for the EU countries, grouped by the number of employees, fully confirms this result.

The estimation model is based on the data available according to the example in Table 5.6.

Table 5.6

	0	1 - 9	10 - 49	50 - 249	Over 250
Share of number of companies, %	71.0	23.9	4.3	0.6	0.2
Share of turnover, %	12.5	16.6	22.1	15.4	33.4

Source: Entreprises en Europe (2001), Eurostat.

Estimates of the coverage rate of the first 10% of companies are made according to the relationship:

$$33.4 + 15.4 + 22.1 + \frac{10 - (0.2 + 0.6 + 4.3)}{23.9} x16.6 = 74.3\%.$$

The estimation model **systematically underestimates the coverage rate** for the following reason:

- The asymmetry of turnover distributions in the company systems makes that in the entirely unselected groups the linearization significantly affects the estimate.

For the investigated Romanian systems, the systematic error over the period 1995-2002 ranged between -8 and -14%.

With these explanations, Table 5.7 presents the estimation of the coverage levels of the first 10% companies from the European Union countries.

Table 5.7

Country	Estimate of the degree of coverage of the D_0 decile, %
Belgium	74.3
Denmark	77.8
Germany	84.9
Greece	67.3
Spain	74.5
France	81.9
Ireland	89.2
Luxembourg	81.3
Netherlands	81.1
Portugal	76.2
Finland	85.5
Sweden	82.3
United Kingdom	88.9
Average	79.7
Standard deviation	6.2

Source: Entreprises en Europe (2001), Eurostat and author's computations.

Under the circumstances of the above-mentioned systematic underestimation, the average and the median of the coverage ratio of the top 10% of companies is virtually equal to 80%.

We have the foundation, based on the undertaken research, to say that in the European Union countries the average of the coverage rates of the first 10% of companies exceeds 80%. A similar result was obtained in the case of the United States of America (1997).

It follows that, on average, for the national company systems the value of the asymmetry coefficient λ is lower than 0.22.

Model of analysis of NACE classified markets in terms of competition[*]

6.1. Gala launch in academia of "Clasele concentrării economice şi factorul 80%", praised at the Romanian Academy, author Norel Moise

***Clasele concentrării economice şi factorul 80%*, praised at the Romanian Academy, author Norel Moise**

We wrote in the previous issue of our magazine about an interesting title published by the Economica Publishing House, namely the book *Clasele concentrării economice şi factorul 80%*, written by the famous researcher Professor Cezar Mereuţă. I had the privilege to see this work that synthesizes the microeconomic research work of the reputed professor over the last 18 years. We also witnessed the launching ceremony hosted by the Romanian Academy at the Macromodelling Center of the Romanian Academy, where reputed researchers, university professors and young people have attended. In this serious academic environment, it was fully confirmed what has been previously written about Professor Mereuţă's book, that the theory of concentration is being demonstrated at all levels - non-financial companies, financial institutions, national economies.

The host of the launching event, Academician Emilian Dobrescu, was the one who pointed out from the beginning "the truly invaluable merit that Professor Cezar Mereuţă has had in setting up the first microeconomic data bank in Romania". This database included primary, trustworthy, orderly, and ranked primary documents using management software. And it should not be forgotten that his endeavoring approach began in the 1990s, when the Ministry of Finance could not boast of anything better. "A lot of microeconomic researches have been grasped on this unanimously accepted information thesaurus", the academician added. Also, on this database was also built the *Microeconomia Aplicată* journal, but also the better known and already famous Top 100 companies in Romania, which we had the privilege to publish for over a decade in an annual magazine that is part of the Tops of FinMedia.

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[*] The chapter presents a representative selection from the study *Clasele concentrării economice şi factorul 80%*, author Cezar Mereuţă, Editura Economică, 2012.

Returning to the published work, Emilian Dobrescu considers that "the results of research on the degree of dominance of the leader in such a large number of markets are spectacular, to the extent of the expectations of such an arduous labor". In a nutshell, the academician characterized Professor Mereuţă using an inspired quote from Edison: "Most people miss an opportunity because it wears an overall and smells of labor", the famous inventor said. And the database and researches of Professor Cezar Mereuţă are parts of the list of such opportunities that could be missed if the author would have gotten away from work. But he did not, and the remarkable results shine like gems today.

One of the helpers on which the professor has relied in recent years was the economic analyst Ilie Şerbănescu. Attending the event, he noted that "although the research results are based on data from two years ago, it tells us very clearly what will be in two years. And this by only analyzing 100 subjects! The predictive capacity of research is fabulous".

The motivation of the approach and its purpose was pointed out by Professor Cezar Mereuţă as follows: "through our research we have developed a model for assessing the level of distortion of competition and for identification of the power structures of the active companies in the classified markets".

Was also attending in the hall of the Romanian Academy the person who managed to demonstrate the applicability of the concentration theory on banks, the young doctoral lecturer at AI.I. Cuza University from Iaşi, Bogdan Căpraru. His name is linked to Professor Mereuţă's hopes of continuing the research and "closing the circle". "It is the young generation's task to check the universality of our conclusions about the structural allocations of economic indicators", said the reputed professor. Closing the circle means expanding the study on the degree of concentration. "For example, have to be checked on representative samples the structural distributions of the profits and the losses of companies, of the main products of the countries of the world, of the structure of added value of the world GDP by the main sectors of the economy, etc."

In order that the effort made in a man's life not to remain untapped by a society that sometimes seems unable to find its path and compass, I quote in this end a fragment of the foreword of the study *Clasele concentrării economice şi factorul 80%*: the study equally speaks to the political decision-makers, employers' unions, trade unions and the business community in general. To scholars and students, the work provides a way towards an exciting deepening of the disturbing themes of economic concentration in company systems, and not only. So, whoever has eyes to see and who has ears to hear, should do this. And, above all, to put it into practice, because, most of the time, implementation is the one that makes many brilliant ideas fail. (NM)

<div align="right">

Norel Moise

Editor-in-Chief of *Piaţa Financiară* Journal

</div>

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6.2. Values of the main indicators of market shares distributions

Tables 6.1, 6.2 and 6.3 summarize the values obtained for the Herfindahl (H), Gini-Struck, Hirschmann and the p_{li} leader shares for the classified markets.

Table 6.1

2004
Classified markets – groups (three digits)

	Average number of companies	H	Gini-Strück	Hirschman	P_1
M	2183	0.08643	0.24545	0.20948	0.18898
S	6542	0.09983	0.14760	0.13804	0.14816
V	2.9968	1.15502	0.60135	0.65896	0.78393

Classified markets – divisions (two digits)

	Average number of companies	H	Gini-Strück	Hirschman	P_1
M	8087	0.06303	0.19230	0.17211	0.14344
S	19689	0.11812	0.15886	0.15267	0.15938
V	2.4346	1.87419	0.82612	0.88700	1.11113

Classified markets – sections (one character)

	Average number of companies	H	Gini-Strück	Hirschman	P_1
M	29212	0.05398	0.16997	0.15744	0.12741
S	50457	0.10187	0.17271	0.16561	0.16511
V	1.7273	1.88710	1.01613	1.05191	1.29594

Classified markets – national system

Average number of companies	H	Gini-Strück	Hirschman	p_1
394519	0.001583	0.0398	0.0388	0.01900

Table 6.2

2008
Classified markets – groups (three digits)

	Average number of companies	H	Gini-Strück	Hirschman	P_1
M	2281	0.09035	0.24858	0.21425	0.19401
S	5888	0.11656	0.15607	0.14862	0.15769
V	2.5813	1.29009	0.62785	0.69367	0.81276

Classified markets – divisions (two digits)

	Average number of companies	H	Gini-Strück	Hirschman	P_1
M	6161	0.06650	0.19746	0.17390	0.14755
S	15271	0.12143	0.15915	0.15208	0.15660
V	2.4787	1.82604	0.80590	0.87454	1.06162

Classified markets – sections (one character)

	Average number of companies	H	Gini-Strück	Hirschman	P_1
M	25968	0.07620	0.16995	0.15609	0.13371
S	43901	0.19417	0.21982	0.21813	0.22768
V	1.6906	2.54808	1.29345	1.39750	1.70282

Classified markets – national system

Average number of companies	H	Gini-Strück	Hirschman	p_1
534525	0.001109	0.03360	0.03230	0.01800

Ensemble of classified markets NACE Rev. 1 – 2004 and NACE Rev. 2 - 2008

	Average number of companies	H	Gini-Strück	Hirschman	P₁
M	6416	0.08168	0.23010	0.19935	0.17714
S	32049	0.11547	0.15870	0.15012	0.15862
V	4.9952	1.41347	0.68970	0.75304	0.89544

The next step of research was to identify the existence of significant differences between the averages of the main classical concentration parameters: H, Gini-Strück, Hirschman and the share of the leader in the years 2004 and 2008 in the analyzed markets.

The hypothesis m1 = m2 was tested by using the known relationship:

$$t = \frac{|m_1 - m_2|}{\sqrt{\dfrac{(n_1 - 1) \cdot s_1^2 + (n_2 - 1) \cdot s_2^2}{n_1 + n_2 - 2}} \cdot \sqrt{\dfrac{n_1 + n_2}{n_1 \cdot n_2}}} \, .$$

The results are presented in Table 6.4.

Name of classified market	The t value				Accepting of hypothesis
	H	Gini-Strück	Hirschman	p₁	
Groups (three digits)	0.352	0.2020	0.326	0.322	Yes
Divisions (two digits)	0.157	0.1760	0.064	0.142	Yes
Sections (one character)	0.377	0.0003	0.019	0.085	Yes

In conclusion, the averages of the four analyzed indicators do not significantly statistically differ and are not influenced by the NACE review (Rev. 1 versus Rev. 2).

Regardless of the results of the comparative statistical analyses on the differences between the averages, a careful inspection of the obtained results reveals that with the increase in the aggregation of the markets, the values of the Herfindahl indices, the Gini-Strück coefficient and the Hirschman coefficient tend to decrease.

On the other hand, with the increase in the number of companies, there is a decrease in the share of the leader.

6.3. A new concentration coefficient of ungrouped market shares, the degree of structural dominance of the leader and the general classification of degrees of concentration of ungrouped market shares

a) A new concentration coefficient of ungrouped market shares

The synthesis of the values presented in Table 6.3 for the Herfindahl indices, the Gini-Strück and Hirschman coefficients for all the markets classified in 2004 and 2008, presented again in Table 6.5, leads to the conclusion that these

coefficients are highly variable and that they especially have a multiple of max/min values with very high values. Also, the average values do not allow for a symmetric classification within the 0-1 range, using the Gini-Strück and Hirschman coefficients, in order to develop concentration classes of the ungrouped market shares.

<div align="right">**Table 6.5**</div>

	H	Gini-Strück	Hirschmann
M	0.08168	0.23010	0.19935
S	0.11547	0.15870	0.15012
V	1.41374	0.68970	0.75304
Max	0.92382	0.95980	0.95260
Min	0.00111	0.03360	0.03010
Max/min	832.2702	28.5650	31.6478

We recall that the US Justice Department is currently using an asymmetric scale to assess concentration:

$0 < Hn \leq 1000$ - relatively non-concentrated systems

$1000 < Hn \leq 1800$ - moderately concentrated systems

$1800 < Hn$ - highly concentrated systems

According to the American scale, the average values of the Gini-Strück and Hirschman coefficients were determined, as shown in Table 6.6.

<div align="right">**Table 6.6**</div>

System name	Average value of	concentration	coefficients	Number of systems
	USA Justice Department	Gini-Strück	Hirschman	
1. Relatively non-concentrated	305.94	0.15775	0.13147	421
2. Moderately concentrated	1340.59	0.36479	0.31543	66
3. Highly concentrated	32250.55	0.55690	0.51627	66

In the literature on concentration of economic indicators, it was found that the high concentration systems have the Gini-Strück coefficients higher than 0.6.

To remedy these shortcomings, we propose a new concentration index, defined by the natural logarithm of each term of the standard definition of the normalized Herfindahl indicator.

$$Hn = \frac{H - \dfrac{1}{n}}{1 - \dfrac{1}{n}}, \text{ becoming } \boxed{M = \frac{\ln(H) + \ln(N)}{\ln(N)}}$$

This method was used over the last decade also in the assessment of the human development index for determining the Gross Domestic Product per Capita (PPC) component, where the relationship

$\dfrac{PIB/loc - PIB/loc_{min}}{PIB/loc_{max} - PIB/loc_{min}}$ has been replaced for mitigating the high values of

the max/min ratio by the relationship:

$$\dfrac{\ln(PIB/loc) - \ln(PIB/loc_{min})}{\ln(PIB/loc_{max}) - \ln(PIB/loc_{min})}.$$

The proposed indicator has a deep meaning, namely that it corresponds to the normalized Rényi square entropy. We recall that the Rényi square entropy is defined by the relation: R = -ln (H) [52].

Normalizing this relationship leads to the coefficient $M = \dfrac{\ln(H) + \ln(N)}{\ln(N)}$.

The values obtained by using this new concentration coefficient for the 553 systems are shown in Table 6.7.

Table 6.7

M	0.51181
S	0.13223
V	0.25836
Max	0.97690
Min	0.19540
Max/Min	4.99940

Significantly, for each market type, the average values of the M coefficient are close to 0.50, as shown in Table 6.8.

Table 6.8

Type of classified market	M	S	V	Max	Min	Max/Min
Group (3 digits)	0.51294	0.13094	0.25836	0.97690	0.19540	4.9994
Division (2 digits)	0.50831	0.13070	0.25712	0.95240	0.26750	3.5604
Sections (1 character)	0.49260	0.00990	0.02010	0.49960	0.48560	1.0288

It is revealed that:
- In all the analyzed markets, the average value of the M coefficient is positioned at the half of the 0-1 scale;
- The variation coefficient of the values of the new indicator has a lower than 30% value, which provides great consistency to the obtained results;
- The multiple of the max/min values is lower than 5, by about 6 times lower than in the case of the Gini-Strück and Hirschman coefficients.

In relation to the US Department of Justice scale, the M coefficient has the values presented in Table 6.9.

<div align="right">Table 6.9</div>

Scale	Average values of the M coefficient
1. Non-concentrated	0.46023
2. Relatively concentrated	0.60409
3. Concentrated	0.74858

The results of our research on 553 company systems allow for the conclusion that the average value of the coefficient $M = \dfrac{\ln(H) + \ln(n)}{\ln(n)}$ **, the normalized Rényi square entropy on a 0 to 1 scale for classified markets, is 0.5.**

This allows for a general classification of concentration in 5 classes, as follows:

Class A^{+}	- systems with very low concentration, with $0 < M \le 0.2$
Class A	- systems with low concentration, with $0.2 < M \le 0.4$
Class B	- systems with average concentration, with $0.4 < M \le 0.6$
Class C	- systems with high concentration, with $0.6 < M \le 0.8$
Class C^{-}	- systems with very high concentration, with $0.8 < M \le 1$

b) The degree of structural dominance of the leader

The results of the Herfindahl index for the 553 classified markets indicate the significant influence of the leader. On the other hand, the importance of the leader in the classified markets is critical, because:

- it decisively influences the competition, having the highest market share;
- as a rule, greatly influence the launch of new products;
- has the highest bargain power with suppliers;
- has the most important comparative advantage of the brand.

The degree of structural dominance of the leader is defined as according to the relationship:

$$Gdl = \frac{\dfrac{p_1^2}{H} - \dfrac{p_{min}^2}{H_{min}}}{\dfrac{p_{max}^2}{H_{max}} - \dfrac{p_{min}^2}{H_{min}}} = \frac{\dfrac{p_1^2}{H} - \dfrac{1}{n}}{1 - \dfrac{1}{n}} \qquad 0 \le Gdl \le 1$$

Along with the concentration coefficient, M, the leader's structural dominance is the second parameter proposed to assess the concentration of market shares. This option is also motivated by the fact that between M and Gdl the determination coefficient is about 50%. There are cases in which high values of the concentration coefficient, M, are accompanied by reduced Gdl values and vice versa.

The synthesis of the values of the leader's structural dominance over all the 553 systems is presented in Table 6.10.

Table 6.10
The Gdl values
for the ensemble of the 553 systems

M	0.47432
S	0.24107
V	0.50825
Max	0.99970
Min	0.07400

The average value of the indicator on the 0-1 scale is around 0.50, with variability and a max/min multiple, having values higher than M, but significantly lower than the Gini-Strück and Hirschman coefficients. Thus, we can define a symmetrical scale for assessing the influence of the leader on competition, presented below:

The Gdl value	Influence on competition	Class
$0 < Gdl \leq 0.2$	Very low	A$^+$
$0.2 < Gdl \leq 0.4$	Low	A
$0.4 < Gdl \leq 0.6$	Medium	B
$0.6 < Gdl \leq 0.8$	High	C
$0.8 < Gdl \leq 1$	Very high	C$^-$

Finally, we have to mention that with the increase in the classification aggregation, which corresponds to the growth in the number of companies, the Gdl tends to decrease.

6.4. The matrix of degree of competition distortion

The two M and Gdl indicators previously analyzed allow for development of a universal matrix of distortion of competition. The concept of distortion of competition signifies the stages in the competitive processes from perfect competition to pure monopoly.

One of the most valuable summaries of the types of competition and market structures of the contemporary economies was elaborated by the Academician Aurel Iancu on the basis of the most representative works in the field and is presented in Table 6.11 [19].

Table 6.11

Market type	The number of producers and the degree of product differentiation	Entry (entry barriers)	Price control group	Marketing methods and use of commercial advertising	Examples of sectors in the economy where the respective type predominates
Pure monopoly					
	A manufacturer; products without close substitutes	Impossible or very difficult	Total control: price maker - that is, monopoly fixes the price; often with state control	Commercial advertising only to increase market demand, to promote products	Utilities or public services, natural resources, military issues
Monopolistic competition					
Homogeneous oligopolies	Small number of producers with homogeneous (undifferentiated) products without close substitutes	Difficult	Partial control with consideration of competing firms' response (price searcher)	Commercial advertising for removing rival competitors, attracting customers by highlighting advantages	Steel, aluminum, some homogeneous chemical products with the advantage of economies of scale
Differentiated (non-homogeneous) oligopolies	Small number of producers with differentiated products (non-homogeneous)	Difficult	Partial lower control by taking into account competitors' reaction to substitute products (price searcher)	Commercial advertising to attract customers through the quality and novelty of products and to eliminate rivals	Automobiles, cars, computers, cigarettes, etc. (branches with diversified production and economies of scale)
Differentiated Multi-firms	Large number of producers (sellers) with differentiated products and services	Relatively easy	Low and very low	Commercial advertising to attract customers through product quality, novelty and the creation of economic and technological advantages	Different industries with diversified production, services, trade
Perfect competition					
	Many manufacturers with undifferentiated or homogeneous products	Easy	Inexistent (price taker)	Market exchange or non-advertisement bidding, except through a collective association	Especially in agriculture, services to the population, etc.

Source: The following works were used to compile this table: Paul Samuelson, *Economics*, McGraw-Hill Book Co, New York, 1967, p. 470 and 486; Paul Wannacott and Ronald Wannacott, Economics, McGraw-Hill Book Co, New York, 1979, p. 552; Gilbert Abraham-Frois, *Economie politique*, Economica, Paris, 1988; Edward Chamberlin, *The Theory of Monopolistic Competition*, Harward University Press, Cambridge-Mass, 1988, Raymond Barre, *Economie politique*, Presses Universitaires de France, 1985.

The matrix of distortions of competition is shown in Figure 6.1.
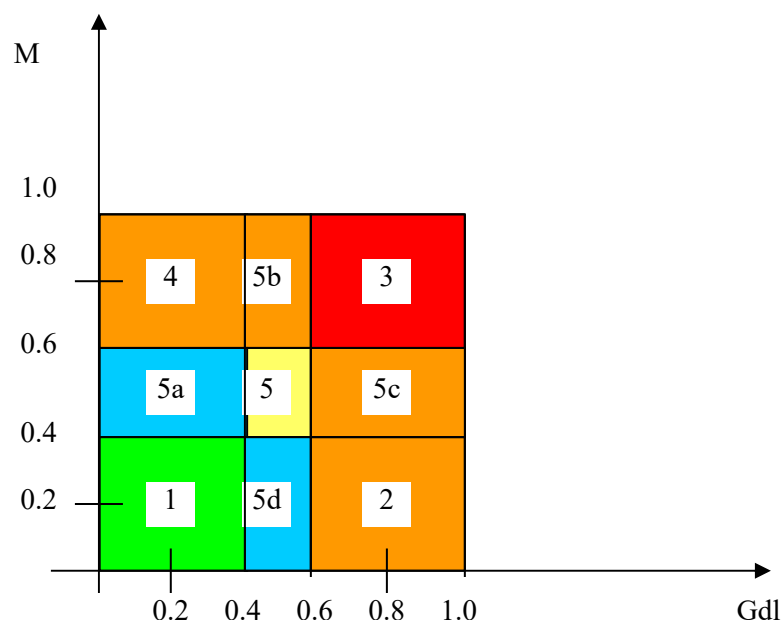
Figure 6.1

The significance of the five zones is as follows:
- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.
  - Zone 5d has the M coefficient with low and very low values and the Gdl coefficient with average values.

From a strategic point of view, the meaning of the matrix areas is as follows:
- Zone 1 corresponds to quasi-perfect competition, not subject to special supervision clauses.

- Zone 3 corresponds to serious distortions of competition, requiring continuous surveillance.
- Zones 2 and 4 show major discrepancies between the M and Gdl coefficients, and it is necessary to analyze the causes that generated these situations.
- Zone 5 is that of the average values, requiring to be kept in focus.
- Zones 5a and 5d show discrepancies between the M and Gdl coefficients in zones 1 and 5, which correspond to competition without significant distortion.
- Zones 5b and 5c show discrepancies between the values of the M and Gdl coefficients located in zones 5 and 3 and require a careful analysis of the causes that generated these situations.

The distribution of the 553 systems in the 5 zones is shown in Figure 6.2.
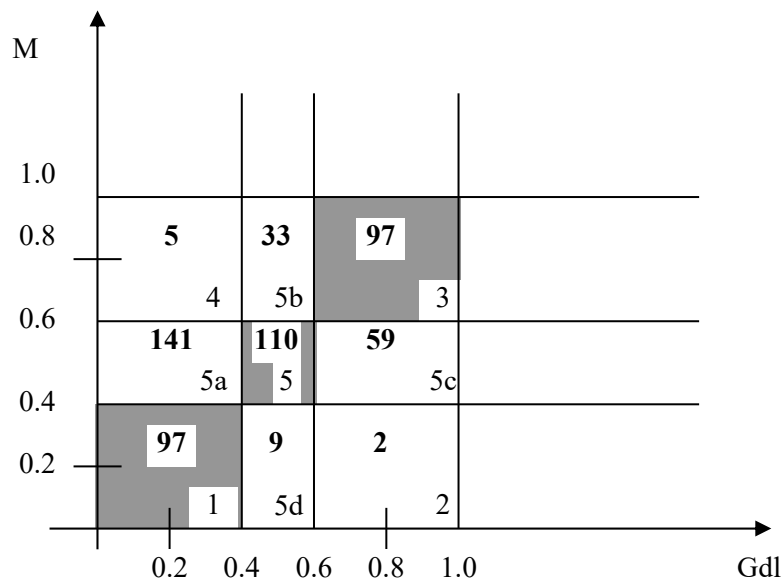
Figure 6.2

Only 304 subsystems of companies, *i.e.* 54.97%, have the M and Gdl coefficients in the same intensity range (1, 3 and 5). This situation fully justifies our option to use two concentration factors simultaneously: M and Gdl. The equal number of markets classified in zones 1 and 3 may be considered as a random case.

6.5. Typologies of competition

The market shares of companies with higher than average values are distributed over a large number of standard deviation intervals, according to the K' relationship described above.

In this area of standard deviation intervals, which adds to the average, the competition between companies is actually taking place.

Our research has identified 3 typical cases of competition based on the company positions within the standard deviation intervals higher than the average market share.

Case A – competition clearly dominated by the leader

0 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 - 6	6 – 7	12 – 13
8	0	0	0	0	0	0	1

NACE Code 271 - Production of ferrous metals in primary and semi-finished forms – 2004

Total number of companies: 64

Number of significant competitors: 9 – 14.06%

Market share of the leader Arcelor Mittal Galaţi = 0.6963

Standard deviation of market share distribution = 0.0867

Average market share = 0.0156.

In this case, the market shares of the 8 significant competitors outside the leader have values between 0.0156 and 0.1023!

Typical for this type of competition is that the leader, which is always found in the last interval of standard deviation, is followed by a group of competitors in the first standard deviation interval. All the other standard deviation intervals are not populated by any competitor.

The market with code 271 has coefficients M = 0.8316 and Gdl = 0.9763, and is located in the 3rd zone of the distortion matrix. This is a typical case of market that needs to be constantly monitored from the competition point of view.

Case B – distributed competition

0 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 – 6
22	1	1	2	2	4

NACE Code 291 - Manufacture of machinery for the production and use of mechanical energy (except for aircraft, vehicles and motorcycles engines) – 2004

Total number of companies: 211

Number of significant competitors: 32-15.17%

Market share of the leader Rulmenţi Bârlad = 0.09294

Standard deviation of market share distribution = 0.0150

Average market share = 0.0047.

Typical for this type of competition is that all the intervals of standard deviation are populated by one or more competitors. This case corresponds

to a fierce competition, any competitor in the vicinity of the leader being able to hold this position in the future.

In this case, 4 competitors are located in the last interval of standard deviation, with the market shares:

Rulmenţi Bârlad 0.09294
Koyo România   0.08756
Timken România 0.08606
General Turbo   0.08344.

The market with code 291 has coefficients M = 0.4478 and Gdl = 0.1619, located in zone 5a with average values for M and very low for Gdl.

Case C – intermediate competition

0 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 - 6	6 – 7	7 – 8	8 - 9	9 – 10	10 - 11
5	1	1	0	0	0	0	0	0	1	1

NACE Code 612 - Telecommunication activities by wireless networks – 2008

Total number of companies: 217
Number of significant competitors: 9 - 4.15%
Market share of the leader Orange Romania = 0.3958
Standard deviation of market share distribution = 0.0372
Average market share = 0.0046.

In this type of competition, the intervals between the one of the leader and the first interval of the standard deviation are partially populated. The positions of the unpopulated intervals are in practice very diversified (concentrated towards the last interval, relatively symmetrical alternations, concentration towards the first interval). In this case, the leader is followed at about a standard deviation by the challenger, the Vodafone Company, with a market share of 0.3675.

Code market 612 is located in the matrix distribution area 5b with an M coefficient of 0.7997 - high concentration and a Gdl of 0.5102 - average value.

The diversity of competition determines a specific situation closer or farther than the three cases outlined above.

Chapter 7
SMEs development opportunity in terms of competition and economic performance in the manufacturing industry in 2008[*]

Taking into account the stage of SMEs development in Romania, increasing their competitiveness also translates into identifying opportunities for their extensive development in classified markets in order to ensure sustainable growth of the gross domestic product.

Pragmatically, our approach aims at an analysis of opportunity for SMEs development through new investments, structured by two coordinates:

- First, market accessibility.
- Second, economic performance.

For the first coordinate, we use the competition distortion matrix with its known meanings (Figure 7.1).
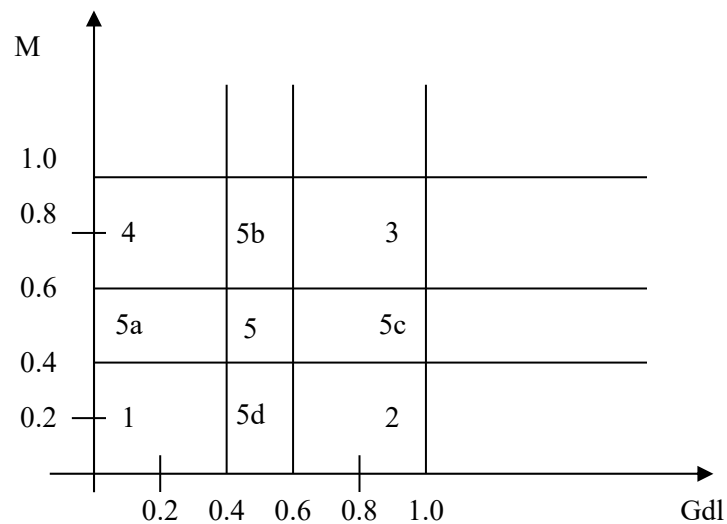
Figure 7.1

Zone 1   very low distortion;
Zones 5a, 5d   low distortion;
Zone 5   moderate distortion;
Zones 5b, 5c, 2, 4   high distortion;
Zone 3   very high distortion.

From the point of view of the accessibility of markets, the significance of the matrix areas is the following:
- Zone 1 corresponds to quasi-perfect competition with minimal entry barriers and reduced leader influence, being a clear opportunity for SMEs;
- Zone 3 corresponds to a competition with high entry barriers and high leader influence, which it is not an opportunity for SMEs;
- Zones 2, 4, 5a, 5b, 4c, 5d are areas with opportunities and risks (5a and 5d opportunities higher than risks, 2, 4, 5b and 5c with higher risks than opportunities);
- Zone 5 corresponds to a competition with average entry barriers.

For the second coordinate, we use the quantification of the overall profitability of the active companies, estimated by the gross operating profit/loss in relation to turnover (Rb/CA, %).

For the classification of consolidated profitability levels, a 5-stage scale was used, as shown in Table 7.1.

Table 7.1

Interval of Rb/CA values, %	Significance of zone – evaluation stage
Over 5	Favorable (stage 1 – clear opportunity)
0.5 – 5	Relatively favorable (stage 2 – clear opportunity)
-0.5 – 0.5	Balance (stage 3 – opportunity with risks)
-0.5 – -5	Relatively unfavorable (stage 4 – low opportunity)
Below –5	Unfavorable (stage 5 – low opportunity)

- The two co-ordinates allow for the SMEs to be classified into classes from the perspective of the extensive competitive development:
- Class A – clear opportunity;
- Class A^- – clear opportunity with the possibility of falling into the lower class;
- Class B^+ – moderate opportunity, enhanced with the possibility of climbing to the upper class;
- Class B – moderate opportunity;
- Class B^- – moderate opportunity, with the possibility of falling into the lower class;
- C^+ class – low opportunity, with the possibility of climbing to the upper class;
- Class C – low opportunity.

7.1. Identification of classes of SMEs development opportunity for 24 sectors of the manufacturing industry

NACE CODE 10 – Food industry

Reference values in 2008
M = 0.4006
Gdl = 0.0836
Zone 5a
Rb/CA = 0.83%
Stage two
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  – Zone 5a has the M coefficient with average values and very low Gdl values.
  – Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  – Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.
  – Zone 5d has the M coefficient with low and very low values and the Gdl coefficient with average values.

The "Food Industry" sector has moderate entry barriers and a very low degree of structural dominance of the leader. The economic performance is relatively favorable.
The sector may be classified in the "A⁻" class.

NACE CODE 11 - Manufacture of beverages

Reference values in 2008
M = 0.6344
Gdl = 0.5218
Zone 5b
Rb/CA = 5.57%
Stage one
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Manufacture of beverages" sector has high entrance barriers and an average degree of structural dominance of the leader. Economic performance is favorable.
The sector may be classified in the "B" class.

NACE CODE 12 - Manufacture of tobacco products

Reference values in 2008
M = 0.6964
Gdl = 0.6881
Zone 3
Rb/CA = 3.17%
Stage two
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  – Zone 5a has the M coefficient with average values and very low Gdl values.
  – Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  – Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Manufacture of tobacco products" sector reveals high entry barriers and a very high degree of structural dominance of the leader. Economic performance is relatively favorable.
The sector may be classified in the "C⁺" class.

NACE CODE 13 - Manufacture of textiles

Reference values in 2008
M = 0.4236
Gdl = 0.2870
Zone 5a
Rb/CA = 8.92%
Stage one
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Manufacture of textiles" sector has moderate entry barriers and a low degree of structural dominance of the leader. Economic performance is favorable.
The sector may be classified in the "A⁻" class.

NACE CODE 14 - Manufacture of wearing apparel

Reference values in 2008
M = 0.4144
Gdl = 0.4452
Zone 5
Rb/CA = 1.54%
Stage two
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Manufacture of wearing apparels" sector has moderate entry barriers and an average degree of structural dominance of the leader. Economic performance is relatively favorable.
The sector may be classified in the "B⁺" class.

NACE CODE 15 - Tanning and finishing of hides; manufacture of travel and leather products, harness and footwear, preparation and dyeing of fur

Reference values in 2008
M = 0.4015
Gdl = 0.3505
Zone 5a
Rb/CA = 1.23%
Stage two
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The sector "Tanning and finishing of hides; manufacture of travel and leather products, harness and footwear; preparation and dyeing of fur" shows moderate entry barriers and low degree of structural dominance of the leader. Economic performance is relatively favorable.
The sector can be classified in the "A⁻" class.

NACE CODE 16 - Woodworking, manufacture of wood and cork products, except furniture; manufacture of articles of straw and plaiting materials

Reference values in 2008
M = 0.5254
Gdl = 0.5163
Zone 5
Rb/CA = 13.01%
Stage one
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Wood processing, wood and cork products manufacturing, except furniture; manufacture of articles of straw and other plaiting materials" sector shows moderate entry barriers and average degree of structural dominance of the leader. Economic performance is favorable.
The sector may be classified in the "B⁺" class.

NACE CODE 17 – Manufacture of paper and paper products

Reference values in 2008
M = 0.4222
Gdl = 0.1458
Zone 5a
Rb/CA = -0.07%
Third stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Manufacture of paper and paper products" sector reveals moderate entry barriers and a very low degree of structural dominance of the leader. Economic performance is balanced.
The sector may be classified in the "<u>B</u>" class.

NACE CODE 18 – Printing and reproduction on supports of recordings

Reference values in 2008
M = 0.4763
Gdl = 0.4108
Zone 5
Rb/CA = 9.60%
First stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
    - Zone 5a has the M coefficient with average values and very low Gdl values.
    - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
    - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Printing and reproduction on supports of recordings" sector shows moderate entry barriers and average leadership structural dominance. Economic performance is favorable.
The sector may be classified in the "B⁺" class.

NACE CODE 19 – Manufacture of coke products and products resulting from the processing of crude oil

Reference value in 2008
M = 0.8043
Gdl = 0.7586
Zone 3
Rb/CA = -7.60%
Fifth stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Manufacture of coke products and products resulting from the processing of crude oil" sector reveals very high barriers to entry and a very high degree of structural dominance of the leader. Economic performance is unfavorable.
The sector may be classified in the "C" class.

NACE CODE 20 – Manufacture of chemicals and chemical products

Reference values in 2008
M = 0.5928
Gdl = 0.5187
Zone 5
Rb/CA = -2.3%
Fourth stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Manufacture of chemicals and chemical products" sector shows moderate entry barriers and average degree of structural dominance of the leader. Economic performance is relatively unfavorable.
The sector may be classified in the "B⁻" class.

NACE CODE 21 – Manufacture of basic pharmaceutical products and of pharmaceutical preparations

Reference values in 2008
M = 0.4517
Gdl = 0.2840
Zone 5a
Rb/CA = 9.54%
First stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Manufacture of basic pharmaceutical products and of pharmaceutical preparations" sector reveals moderate barriers to entry and low degree of structural dominance of the leader.
Economic performance is favorable.
The sector can be classified in the "A⁻" class.

NACE CODE 22 – Manufacture of rubber and plastic products

Reference values in 2008
M = 0.5612
Gdl = 0.4580
Zone 5
Rb/CA = -6.98%
Fifth stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Manufacture of rubber and plastic products" sector reveals moderate entry barriers and average degree of structural dominance of the leader. Economic performance is unfavorable.
The sector may be classified in the "B⁻" class.

NACE CODE 23 – Manufacture of other products of non-metallic minerals

Reference values in 2008
M = 0.5571
Gdl = 0.3076
Zone 5a
Rb/CA = 12.19%
First stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  – Zone 5a has the M coefficient with average values and very low Gdl values.
  – Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  – Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Manufacture of other non-metallic mineral products" sector shows moderate entry barriers and low degree of structural dominance of the leader. Economic performance is favorable.
The sector can be classified in the "<u>A</u>⁻" class.

NACE CODE 24 – Metallurgical industry

Reference values in 2008
M = 0.6781
Gdl = 0.8412
Zone 3
Rb/CA = 4.07%
Second stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Metallurgical industry" sector reveals large entry barriers and a very high degree of structural dominance of the leader. Economic performance is relatively favorable.
The sector may be classified in the "C⁺" class.

NACE CODE 25 – Metallic constructions and metal products, excluding machinery and equipment
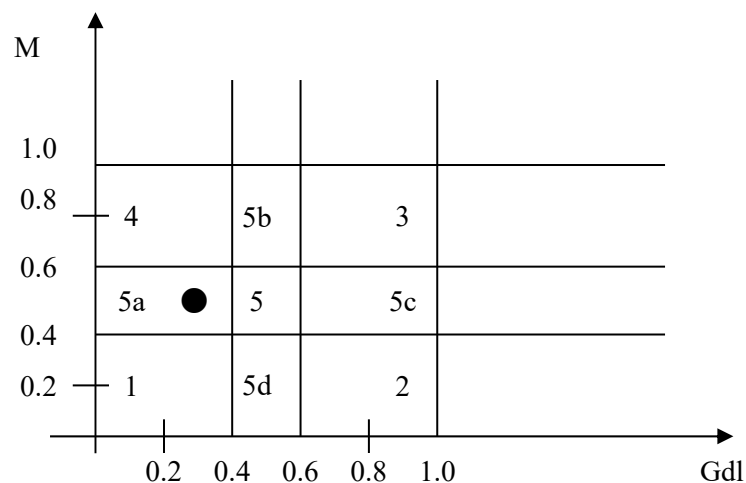
Reference values in 2008

M = 0.3686

Gdl = 0.2225

Zone 1

Rb/CA = 3.68%

Second stage

Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Metallic constructions and metal products, excluding machinery and equipment" sector has low entry barriers and a low degree of structural dominance of the leader. Economic performance is relatively favorable.
The sector can be classified in the "<u>A</u>" class.

NACE CODE 26 – Manufacture of computers and electronic and optical products
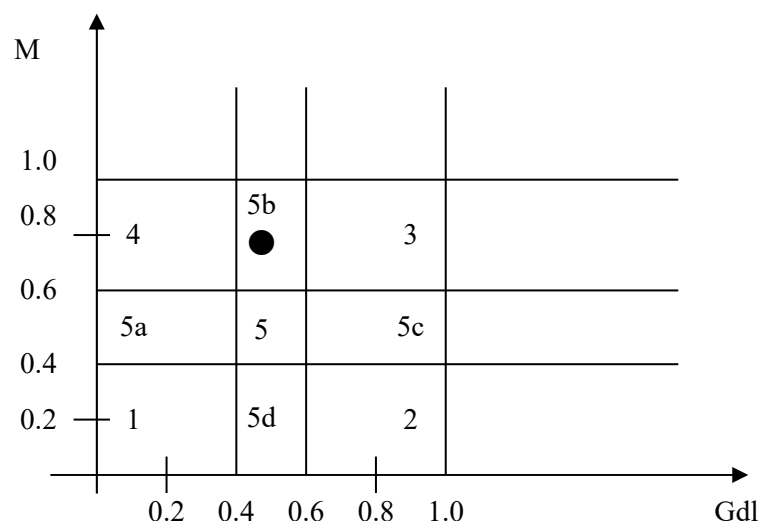
Reference values in 2008

M = 0.6502

Gdl = 0.7924

Zone 3

Rb/CA = 2.99%

Second stage

Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  – Zone 5a has the M coefficient with average values and very low Gdl values.
  – Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  – Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Manufacture of computer and electronic and optical products" sector reveals high entry barriers and a high degree of structural dominance of the leader. Economic performance is relatively favorable.
The sector may be classified in the "C⁺" class.

NACE CODE 27 – Manufacture of electrical equipment

Reference values in 2008
M = 0.4806
Gdl = 0.2902
Zone 5a
Rb/CA = 2.43%
Second stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  – Zone 5a has the M coefficient with average values and very low Gdl values.
  – Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  – Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Manufacture of electrical equipment" sector shows moderate entry barriers and a low degree of structural dominance of the leader. Economic performance is relatively favorable.
The sector can be classified in the "A⁻" class.

NACE CODE 28 – Manufacture of machinery and equipment, n.e.c.
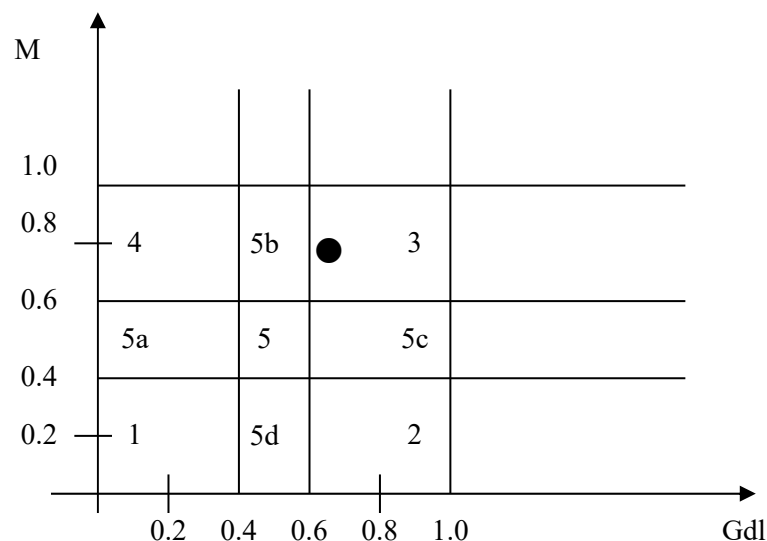
Reference values in 2008
M = 0.4840
Gdl = 0.5025
Zone 5
Rb/CA = 2.81%
Second stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  – Zone 5a has the M coefficient with average values and very low Gdl values.
  – Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  – Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The sector "Manufacture of machinery, equipment and equipment n.e.c." reveals moderate entry barriers and average degree of structural dominance of the leader. Economic performance is relatively favorable. The sector may be classified in the "B⁺" class.

NACE CODE 29 – Manufacture of road vehicles, of trailers and semi-trailers
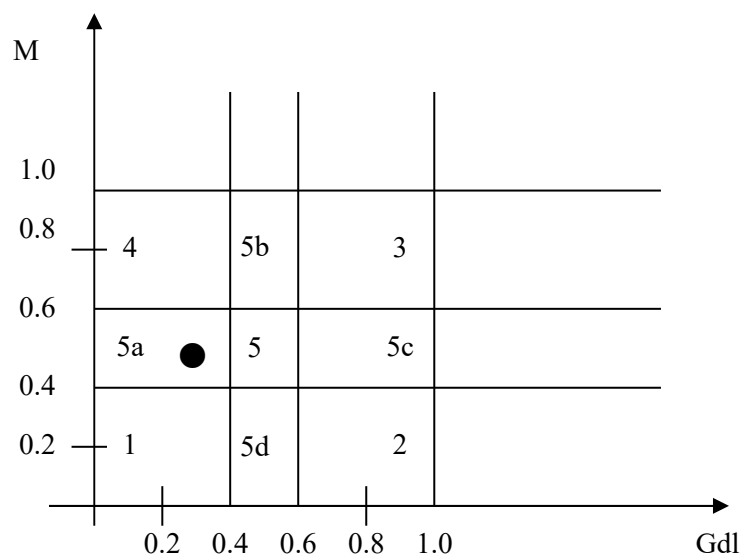
Reference values in 2008
M = 0.6885
Gdl = 0.9254
Zone 3
Rb/CA = 0.13%
Third stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Manufacture of road vehicles, trailers and semi-trailers" sector reveals high entry barriers and a high degree of structural dominance of the leader. Economic performance is balanced.
The sector may be classified in the "C" class.

NACE CODE 30 – Manufacture of other transport means
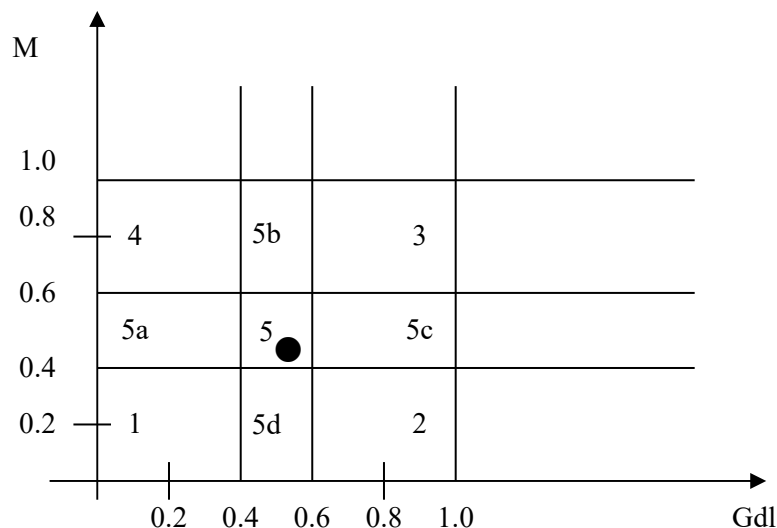
Reference values in 2008
M = 0.5549
Gdl = 0.5116
Zone 5
Rb/CA = 3.96%
Second stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The sector "Manufacture of other means of transport" shows moderate entry barriers and average degree of structural dominance of the leader. Economic performance is relatively favorable.
The sector may be classified in the "B" class.

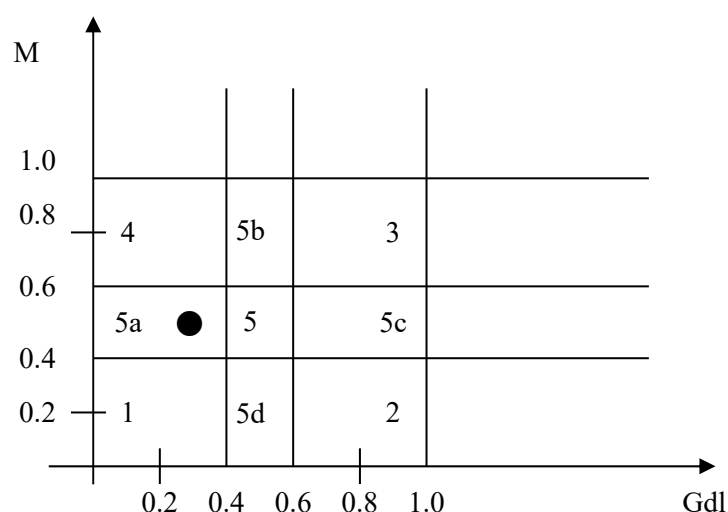## NACE CODE 31 – Manufacture of furniture

Reference values in 2008
M = 0.4722
Gdl = 0.5297
Zone 5
Rb/CA = 11.10%
First stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The "Furniture manufacturing" sector reveals moderate entry barriers and an average degree of structural dominance of the leader. Economic performance is favorable.
The sector may be classified in the "B⁺" class.

NACE CODE 32 – Other industrial activities, n.e.c.

Reference values in 2008
M = 0.4480
Gdl = 0.3563
Zone 5a
Rb/CA = 3.48%
Second stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The sector "Other industrial activities n.e.c." shows moderate barriers to entry and low degree of structural dominance of the leader. Economic performance is relatively favorable.
The sector can be classified in the "A⁻" class.

NACE CODE 33 – Repair, maintenance and installation of machinery and equipment
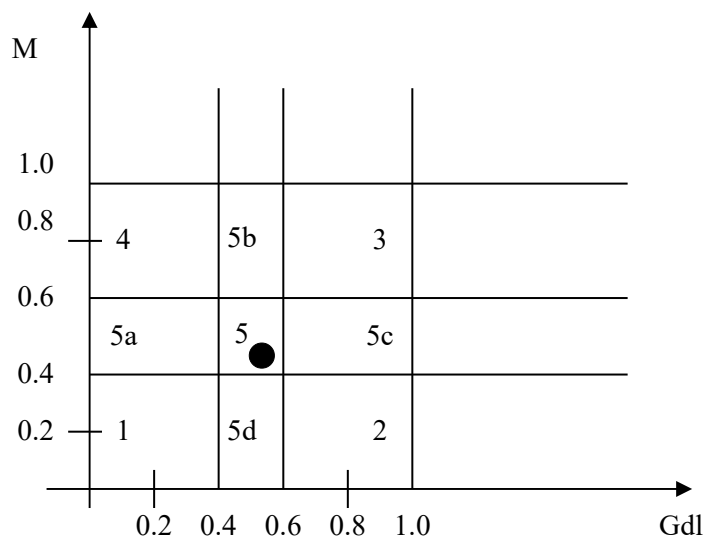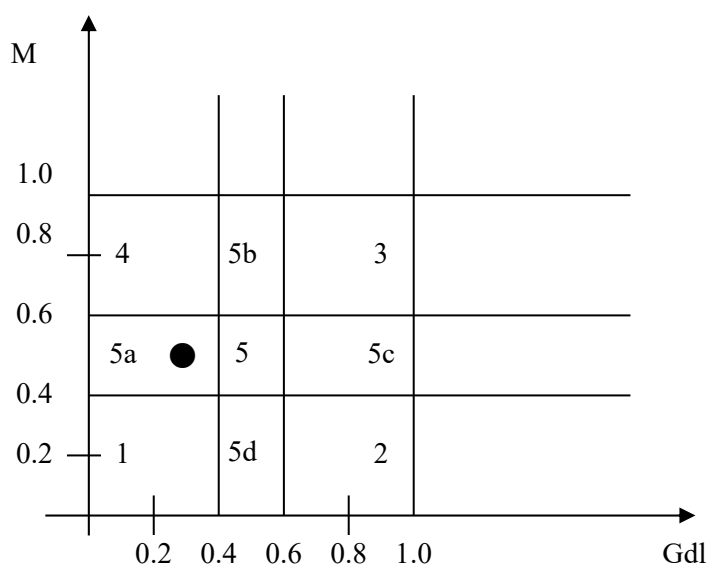
Reference values in 2008
M = 0.5829
Gdl = 0.6133
Zone 5c
Rb/CA = 7.27%
First stage
Source: Rezultatele şi performanţele întreprinderilor version 2010, NIS, economic and financial balance sheets of enterprises, Ministry of Finance, author's work.

- Zone 1 has the M and Gdl coefficients with very low and low values.
- Zone 2 has the M coefficient with low and very low values and the Gdl coefficient with high and very high values.
- Zone 3 has the M and Gdl coefficients with high and very high values.
- Zone 4 has the M coefficient with high and very high values and the Gdl coefficient with low and very low values.
- Zone 5 has the M and Gdl coefficients with average values:
  - Zone 5a has the M coefficient with average values and very low Gdl values.
  - Zone 5b has the M coefficient with high and very high values and the Gdl coefficient with average values.
  - Zone 5c has the M coefficients with average values and the Gdl coefficient with high and very high values.

The sector "Repair, maintenance and installation of machinery and equipment" shows moderate entry barriers and a high degree of structural dominance of the leader. Economic performance is favorable. The sector may be classified in the "B" class.

7.2. Conclusions

The conclusions of synthesis of results obtained from the analysis of opportunity for the extensive competitive development of the SMEs are presented in Table 7.2.

Table 7.2

No.	NACE Code	NACE name	Opportunity class	Zone of accessibility matrix	Stage of economic performance
1	25	Metallic constructions and metal products, excluding machinery and equipment	A	1	2
2	10	Food industry	A-	5a	2
3	13	Manufacture of textile products	A-	5a	1
4	15	Tanning and finishing of furs, manufacturing of travel and leather products, harness and footwear, preparing and dyeing of furs	A-	5a	2
5	21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	A-	5a	1
6	23	Manufacture of other non-metallic mineral products	A-	5a	1
7	27	Manufacture of electrical equipment	A-	5a	1
8	32	Other industrial activities, n.e.c.	A-	5a	2
9	14	Manufacturing of wearing apparel	B+	5	2
10	16	Wood processing, manufacturing of wood and cork products, except for furniture, manufacture of straw products and from other vegetal plaiting materials	B+	5	1
11	18	Printing and reproduction on support of recordings	B+	5	1
12	28	Manufacturing of machinery and equipment, n.e.c.	B+	5	2
13	31	Manufacturing of furniture	B+	5	1
14	33	Repair, maintenance and installation of machinery and equipment	B	5c	1
15	11	Manufacturing of beverages	B	5b	1
16	17	Manufacturing of paper and paper products	B	5a	3
17	30	Manufacture of other transport means	B	5	2
18	20	Manufacture of chemicals and chemical products	B-	5	4
19	22	Manufacture of rubber and plastic products	B-	5	5
20	12	Manufacture of tobacco products	C+	3	2
21	24	Metallurgical industry	C+	3	2
22	26	Manufacture of computer and electrical and optical products	C+	3	2
23	19	Manufacture of coke products and products obtained by refining crude oil	C	3	5
24	29	Manufacturing of road vehicles, of trailers and semi-trailers	C	3	3

Out of the 24 manufacturing markets, eight are classified in the A and A⁻ classes, with clear opportunities for extensive development. Five markets correspond to low opportunities, and the other 11 to some moderate opportunities.

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Chapter 8
Informational relevance of Top 100 Romania, ranked by turnover[*]

From an informational point of view, one of the arguments for the definition of node companies as power structure of the classified markets was that for the 553 markets the average value of the Herfindahl indicator covered 98.35% of the total value of the H indicators of the analyzed markets. The distribution of informational energy values during the period 1998-2010 showed that for the first 100 companies the relation $\mathbf{H_{100} \geq 0.9\ H_s}$ is valid.

For this reason, Top 100 Romania offers, from the point of view of the relevance of information, a first static and dynamic evaluation of the Romanian real economy. Top 100 concentrates the market leaders of the main sectors of the economy: agriculture, forestry, manufacturing, electricity, heating, gas and water, construction, trade and market services. Equally, the top picks up the share of profitable and loss-making companies, with the resulting positive and negative implications for the real economy.

The consolidated profitability rates of Top 100 signify the stage of efficiency of large Romanian companies, with corresponding social implications. The top also highlights the structure of ownership and the degree of involvement of the major transnational companies in the Romanian economy.

However, a clarification is needed: to obtain information that provides a consistent picture of the national system of companies, the share of informational energy should exceed 97% of the total. Without the significance of confidence levels as in classical statistics, increasing the degree of coverage of the informational energy share in total significantly enriches the available "informational endowment".

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[*] The chapter presents a representative selection from the studies *Analiza nodală a sistemelor de companii*, author Cezar Mereuţă, Editura Economică, 2004 and *Clasele concentrării economice şi factorul 80%*, author Cezar Mereuţă, Editura Economică, 2012.

8.1. "Top 100" - Exceptional forecasting potential

The economic model of Romania is one of consumption-based economic growth. And what is worse – more precisely, import-based consumption!

Professor Cezar Mereuță completes a research of great depth; carried out under the aegis of the Romanian Modeling Center, and ending with exceptional results. The results that he has been looking for a long time, but which, with the scientist's probity, he did not show until after they had been checked and re-checked at the end of some analyses during 15 years of the post-December 1989 history of Romania!

Over the first three years only in the lab and over the next 12 years in public, the research product - simply called "Top 100" - has ranked by turnover the top 100 companies in Romania in the entire national corporate system. The exceptional result is that, as the professor probably guessed from the beginning but waited 15 years to say, "Top 100" is a status indicator for the whole economy. In other words, the developments in "Top 100" are relevant to the developments in the whole economy, which they actually determine. Moreover, conclusions regarding "Top 100" can be extrapolated with reference to the whole economy. And, remarkably, Professor Mereuță's research has, over the years under discussion, checked the predictive potential of the "Top 100" for the whole economy. It was proved that, based on last year's accounting data, it is now possible, during the current year, to foresee, with a solid approximation, what will happen next year in "Top 100" and, implicitly, in the economy.

On this basis, Professor Mereuță could systematically anticipate all the major changes in the economy, accurately predicting the breaks that occurred during the course.

Since 2003-2004, Professor Mereuță's research on "Top 100 Romania" has highlighted the link, both at micro and macroeconomic level, between the increase in the general profitability in the economy and the involvement of the foreign capital, stronger and more efficient, but also the other side of the coin, which was the irreparable removal of the domestic capital from the business game.

Also based on the trends that have been revealed by "Top 100 Romania", Prof. Mereuta has projected, since 2005, the accelerated economic growth that will come in the next years, but also all its hurdles, from structural precariousness to its unsustainability. These flaws were relevant, directly or indirectly, to the structural composition of "Top 100 Romania": modest growth in the local capital area; the increased presence of importers and the decrease in that of producers and exporters; a sharp increase in the number of significant "multinationals" in "Top 100 Romania", and even more substantial in their total turnover and profits in the top, such increases being due not to new "Greenfield" implants, but to some

takeovers from the public capital in the real economy and, especially, due to the expansion of foreign capital mainly in the retail and financial sectors.

The main conclusion was formulated bluntly based on "Top 100 Romania" communication in 2007: the economic model of Romania is one of consumption-based economic growth. And - more serious, but more precisely - on import-based consumption! A model that is disarticulated in itself and does not lead to development! It contains the germs of an inevitable economic collapse. The imminent disaster in the economy, announced by the 2007 Top 100 Romania imbalances and disarticulations, was fully confirmed by the top of 2008. The unsustainable economic growth could not but stop. After nine years of economic growth, deindustrialization of the country brought the bill. A heavy and long-term bill to be paid. "Top 100 Romania" in 2009 could no longer show any surprise, noting the failure of the economy based on imported consumption and, therefore, the external indebtedness for nothing.

The fact that "Top 100" was able to predict all the major breaks in the economy over a whole economic cycle – because it has included a 12-year period with two major recessions separated by a growth gap - confers not only scientific value to this research, but also a practical one. It is invaluable to have at your disposal a tool to anticipate what will happen in the economy.

However, obviously, this practical value starts from the premise that someone at the official level is interested in the problem. In Romania, there seems to be no official concern at this level, preferring to take into account forecasts - either from the IMF or from Romanian ghost structures - that are not substantiated and, even worse, they are maneuverable for political purposes and are virtually invariably contradicted by the real movements of the economy.

Prof. Mereuţă has the obligation to capitalize on the predictive potential - which he has highlighted - of "Top 100" to governments or statistical institutions abroad, which I am convinced that will immediately notice the practical value of the possibility of anticipating trends in the economy based on tracking a limited number of subjects from the top 100 players in the market. All the more so as the research has proven that, based on "Top 100" statistical observations by September, it is possible to get the results for the whole year throughout the economy.

It is more than certain that abroad the Romanian scholar will find the appropriate echo, because if the research model proves its relevance on "Top 100 Romania" - a completely banana and disarticulated system - the stronger will be its relevance to the articulation of a national system of companies in the area of normality, functionality and predictability.

<div style="text-align:right">Prof. Ph.D. Ilie Şerbănescu</div>

April 2011

8.2. The excess of foreign capital in some sectors exposes national security problems

Professor Mereuţă's analyses highlight the fact that the Romanian economy has internalized strong imbalances between the small and medium-sized companies' sector and the very large companies.

The performance of the economy, in the sense of the aggressiveness component of competitiveness, is given by the very large companies. They are, as Professor Mereuţă said, those who provide Romanian investments abroad, penetrate the foreign markets, can launch a strong brand - "Romania" - and a new type of attitude that will pull us out of the receiving party condition, only concerned by the attractiveness of our economy. Only the very large companies can satisfy the condition of Romania's economic performance, bargaining power and aggressiveness on the foreign markets.

The existence of large companies is, however, conditioned by the value-creating chains, formed by small and medium-sized companies, stable and functioning within a balanced ecosystem of small, medium and large companies.

Professor Mereuţă's analysis highlights the fact that *the Romanian economy has internalized strong imbalances between the small and medium-sized companies and the very large companies*.

They consist, first of all, in the lack of viability of the small and medium-sized companies and in the unbalanced distribution of their turnover in relation to the large companies.

The 20/80 principle says that 20% of the causes create 80% of the effects. This does not seem to apply in the Romanian business environment, where 3.75% of the active companies covered about 80% of the system's turnover in 2008. The minimum business figure for a company in this group was 1.48 million euro.

We mention on the occasion of emergence of the 2008 top that in the Romanian business environment a reversed principle, 75/3.75, is about to be stated, in the sense that around 75% of the active companies generate about 3.75% of the system's turnover.

The large number of micro-companies reflects not only the explosion of entrepreneurial spirit in the Romanians, but also their use to reduce the excessive taxation (for the Romanian environment) of personal income. Instead of a public debate on the SWC level that would ensure optimal budgeting (see the Laffer's curve), we were persuaded at the level of society by a solution that, before serving the middle class, was used in big real estate speculation, reducing the budget revenues by billions of euro.

It is necessary to restore the balance in the Romanian legislation between the ease of entry (registration of a new company) and the bureaucratic difficulties

of leaving the market (bankruptcy or voluntary liquidation). We have become, it seems, the fifth country in Europe with regard to the ease with which a firm can be registered, but we are at the rear front of the liquidation proceedings. The hundreds of thousands of *de facto* inactive firms create a business environment favorable to various scams, from VAT non-payment to stolen car registrations, and make the tax authorities inoperable.

If during the 1995-2002 period we had lower economic concentration subsystems and where there were no authoritative leaders - the trade and construction case, which is the closest to perfect competition - over the 2005-2008 period also in these areas large capital concentrations and market leaders appeared. This was a normal phenomenon for the development of the Romanian economy in a context of explosive growth in credit and living standards. Firms belonging to these "Top 100" sectors will only maintain if they have franchises adaptable to the crisis (like discount-retailers) and access to capital.

The other obvious conclusion is that there is a clear *imbalance between the foreign capital and the Romanian capital among the top 100 companies and especially among the 30 companies that have been present at all times in the ten years analyzed in Top 100.*

"The representativeness of the 30 companies is remarkable. They cumulate 50.3% of turnover and 73.1% of the 10 Top 100's profits in 2000-2009!"

Significant multinational companies account for 93.19% of gross profit and 70.46% of turnover.

As we mentioned during the period when the 10 tops were published, a debate is needed in the Romanian society on how the state-owned companies were prepared for privatization, including the way they were "sliced" and the more cost-effective part linked to distribution put on sale leaving the unviable parts to the state.

As far as privatization is again concerned, it is necessary in the Romanian business environment to have a debate, based on the results of privatization processes so far, on the proportion of the foreign capital in certain economic branches. The current crisis has highlighted that the excess foreign capital in some sectors may pose national security concerns. An example is, for all the European economies in transition, the proportion of foreign capital in the banking sector. In the case of Romania, about 89% of the bank assets are foreign-owned.

At the same time, there were and will be subsystems of the Romanian economy with a high degree of concentration and authoritarian leaders, thus with a high degree of monopolization - the case of the mining and quarrying industry and of the electric and thermal power industry. Before moving on to the

privatization of the remaining leaders, a national strategy on the role of Romanian capital in these sectors should be defined, given that the proportion of foreign capital already exceeds the European average.

On a legal level, this must be supported by the immediate adoption of the law of the holding and the creation of investment funds, in a public-private partnership, to co-finance Romanian investments outside the European Union space (models are created and operate in countries like Hungary and Greece).

The third conclusion concerns the *need to treat the very large companies in the light of the "too big to fail" principle.*

In other words, it should be borne in mind that such companies will always have to be saved by the state intervention. From them depend on the lives of entire communities, and their collapse would spread downstream and upstream on the value chain, triggering the bankruptcy of many sub-supplier businesses or of the banks involved in financing.

We have here two categories of situations, that of the large state-owned companies, which produce losses (and for which there is no interest of the private investors in taking over in the current form), and that of the foreign-owned companies. The first category includes: Societatea Naţională de Transport Marfă, Societatea Naţională de Transport Călători, Compania Naţională de Căi Ferate, SCCNTAR TAROM SA, Oltchim Rm. Vâlcea, Regia Autonomă de Distribuţie a Energiei Termice RADET, etc. Regarding these companies, the slogan phases of privatization have to be overcome and the definition of their restructuring be pursued, starting from the fact that their vast majority are providers of public utilities.

Concerning the second category, the large foreign companies with losses (such as Rompetrol Rafinare or Daewoo Mangalia), there must be clear principles in which the Romanian State can intervene through state aid. Otherwise, we will be in the situation when, after we have privatized the profits, we can also socialize the losses of the foreign capital.

Ph.D. Florin Pogonaru,
President of the Businessmen Association of Romania

April 2011

8.3. Conclusions of Top 100 Romania over the period 2000-2009[*]

a) Turnover and representativeness

Table 8.1 presents the annual turnover figures for Romania tops 100 as well as their shares in the national system of companies and value in the GDP.

Table 8.1

Year	Top 100 turnover, mill. euros	Share of Top 100 turnover share in the turnover of the national system of companies, %	Value share of Top 100 turnover in the GDP, %
2000	17688.7	25.8	0.44
2001	21089.4	27.1	0.47
2002	23609.8	27.6	0.49
2003	24656.1	26.0	0.47
2004	29373.0	25.6	0.48
2005	38286.0	26.5	0.48
2006	45095.0	25.3	0.46
2007	53033.6	22.7	0.43
2008	58054.3	22.2	0.42
2009	46266.2	23.5	0.40
Average		25.23	0.45
Standard deviation		1.84	0.03
Variation coefficient s/m, %		7.29	6.67

Source: CERME – The 2000-2009 collection of Top 100, NIS yearbooks, NBR annual reports.

The top 100 turnover increased continuously over the 2000-2008 period, as a cumulative effect of the annual economic growth and appreciation of the leu. The value of the top was reduced in 2009 as a result of crisis and the depreciation of the leu.

It is worth noticing the very stable values of the **representativeness indicators**. Both sets of values have a **normal distribution** with reduced variation coefficients, which makes the "Top100" turnover share account with a **probability of 0.95 for 25.23% ± 3.6% of turnover of the national system** and in **value terms for 0.45% ± 0.06% of the GDP**.

b) Profitability

Figure 8.1 shows the curves of gross results in relation to turnover of the "Top 100" and the national system of companies for the 2000-2009 period.

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[*] Work developed with the collaboration of Ph.D. Ec. Clementina Ivan Ungureanu and Ec. Carmen Mereuţă.
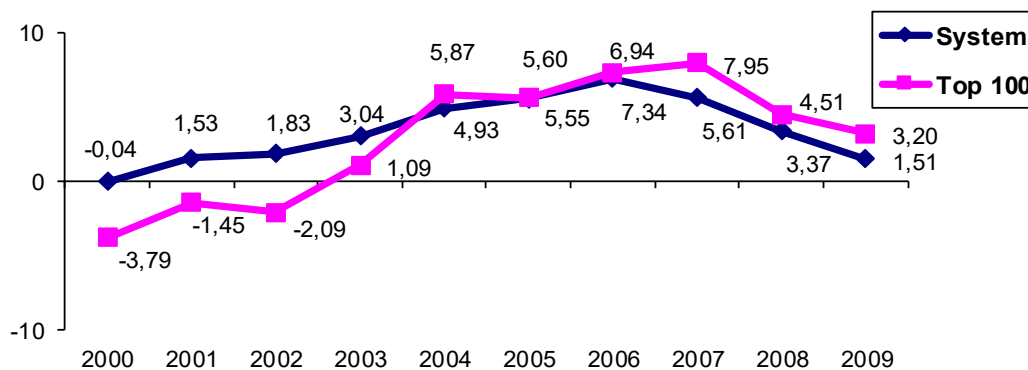
Source: CERME – The 2000-2009 Top 100 collection and NIS Statistical Yearbooks.

Figure 8.1

We easily distinguish among five periods of profitability of the 100 tops correlated with that of the national system.

- The first period of the years 2000-2001-2002 when the profitability of the tops was negative and the national system was either loss-making in 2000 or slightly profitable in the years 2001 and 2002. The company system still wore the burden of lack of profitability of the large companies (over 500 employees).
- The second period is in 2003, when the top 100 achieved near-balance profitability, basically out of the chronic inefficiency of very large companies.
- Two years follow: 2004 and 2005, where profitability is boosted at both the top 100 and system levels, up to about 5%.
- 2006 and 2007 are years of profitability "outburst", which marked the exceptional economic boom.
- 2008 marks the beginning of the crisis, which is confirmed in 2009, the top 100 and national system profitability dropping below the 2004 levels.

There is a correlation coefficient of 0.90 between the two profitability curves, with Top 100 rates explaining about 80% of the variation in the profitability rates of the national corporate system.

Depending on the ownership structure, the profitability rates are presented in Figure 8.2.
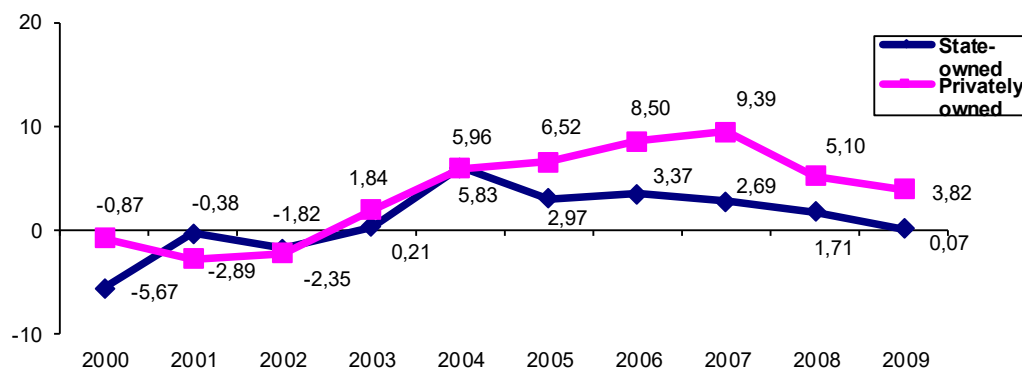
Source: CERME – The 2000-2009 Top 100 collection.

Figure 8.2

In 2001 and 2002, some recently privatized companies recorded losses, taking into account the specific development strategies (Automobile Dacia, Arcelor Mittal Galati), which led to a more advantageous situation in terms of losses for the state-owned companies. Since 2005, the private companies' profitability rates were well-above the state-owned ones.

The major role in increasing profitability rates was played by the significant multinational companies[*], which will be analyzed in the ownership structure section.

Figure 8.3 shows the number of Top 100 profitable companies in each year of the 2000-2009 period.
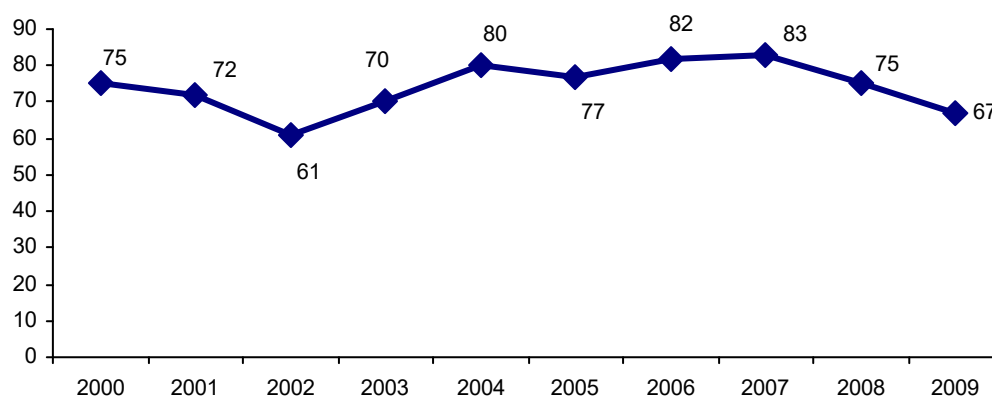
Source: CERME – The 2000-2009 Top 100 collection.

Figure 8.3

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[*] Significant multinational company "cms" has a home country turnover of more than 1 billion USD and a transnationality index of more than 20%.

The largest number of profitable companies was registered in 2006 and 2007, the decrease in the 2009 crisis year being significant.

c) The ownership structure

In 2000, Top 100 had **40** majority state-owned companies with a **60.8%** share in the top's turnover. In 2003, for the first time a major share of the private capital - **61** companies, with **50.5**% of turnover, was recorded.

In 2009, the top ranked 77 companies with majority private equity, accounting for **83.6%** of the turnover of the top.

Very relevant for the size of Romania's integration into the global economy is the dynamics of the significant multinational companies' presence in the 2000-2009 period, presented in Figure 8.4.
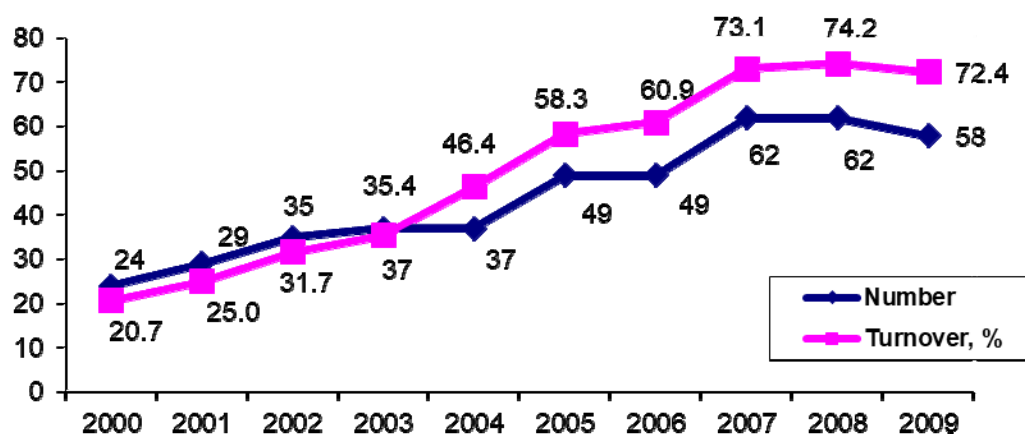
Source: CERME – The 2000-2009 Top 100 collection.

Figure 8.4

Data analysis results in three significant growth periods in the number and share in turnover of the significant multinational companies in Top 100.

- The period 2001 - 2004, with an increase by 13 occurrences and of the share in turnover from 20.7% to 46.4%.
- 2005, with an increase by 12 occurrences and in turnover share from 46.4% to 58.3%.
- 2007, with an increase by 13 occurrences and in turnover share from 60.9% to 73.1%.

We may say that at present Top 100 Romania is clearly dominated by the significant multinational companies, both numerically and as share in the turnover of the top.

The consolidated overall profitability rates of the significant multinational companies are shown in the following figure:
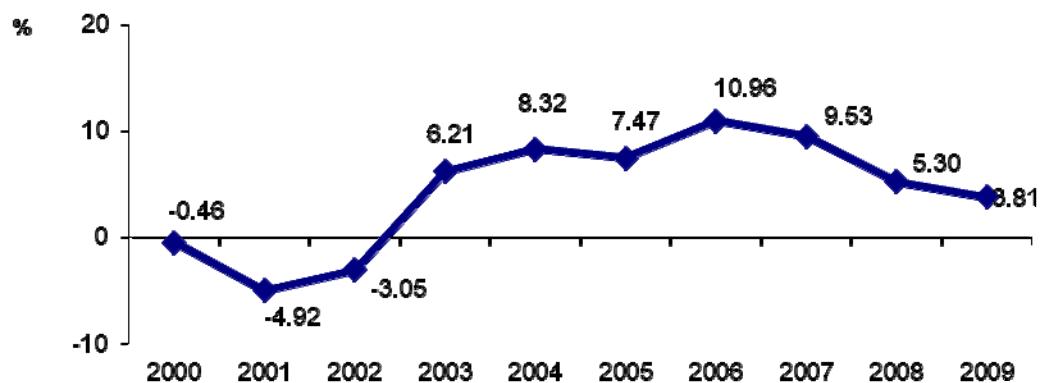
Source: CERME – The 2000-2009 Top 100 collection.

Figure 8.5

The 2000-2002 period can be considered as a strategic start, either for the significant multinational companies recently privatized (Automobile Dacia, Arcelor Mittal Galati), or for the significant multinational companies of "greenfield" type (Vodafone).

From 2003 to 2009, the significant multinational companies had, overall, the highest overall profitability rate, exceeding 10% in 2006.

d) Sectoral structure and the model of Romania's economic development

Probably the most relevant information that Top 100 Romania has provided over the 10 analyzed years concerns the reflection of Romania's economic development model.

Tables 8.2 and 8.3 show the shares of turnover (%) of the main seven sectors of the economy and the number of companies represented by them in each year of the 2000-2009 period.

Table 8.2

Turnover, %

Sector	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Agriculture, forestry, fishing	1.5	1.7	1.6	0.9	1.2	1.3	1.1	1.4	1.5	1.2
Mining and quarrying industry	19.3	13.0	13.8	11.9	10.9	11.3	12.0	10.5	10.6	9.1
Manufacturing industry	28.0	28.4	28.3	27.5	29.7	30.1	27.8	25.0	25.0	23.5
Electricity, heat, gas and water	12.5	22.8	23.4	25.0	22.6	19.9	18.8	15.9	15.0	16.7
Construction	2.3	1.8	1.5	0.8	0.7	1.0	1.0	0.4	0.9	1.6
Trade, hotels and restaurants	16.7	14.0	15.2	19.1	20.6	23.7	26.4	34.5	35.6	35.5
Market services	19.7	18.3	16.2	14.8	14.3	12.7	12.9	12.3	11.4	12.4

Source: CERME – The 2000-2009 Top 100 collection.

Number of companies

Sector	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Agriculture, forestry, fishing	2	3	3	1	2	2	2	2	2	2
Mining and quarrying industry	6	4	5	5	5	5	5	5	4	4
Manufacturing industry	41	42	37	33	31	33	29	23	22	22
Electricity, heat, gas and water	9	10	17	20	22	21	22	22	19	21
Construction	6	4	3	2	2	2	2	1	2	3
Trade, hotels and restaurants	21	21	22	26	25	25	28	35	39	36
Market services	15	16	13	13	13	12	12	12	12	12

Source: CERME – The 2000-2009 Top 100 collection.

The fundamental observation refers to the comparative analysis of the share of turnover and the number of companies in the manufacturing industry and trade, hotels and restaurants in Top 100 during 2000-2009 (Figures 8.6 and 8.7).
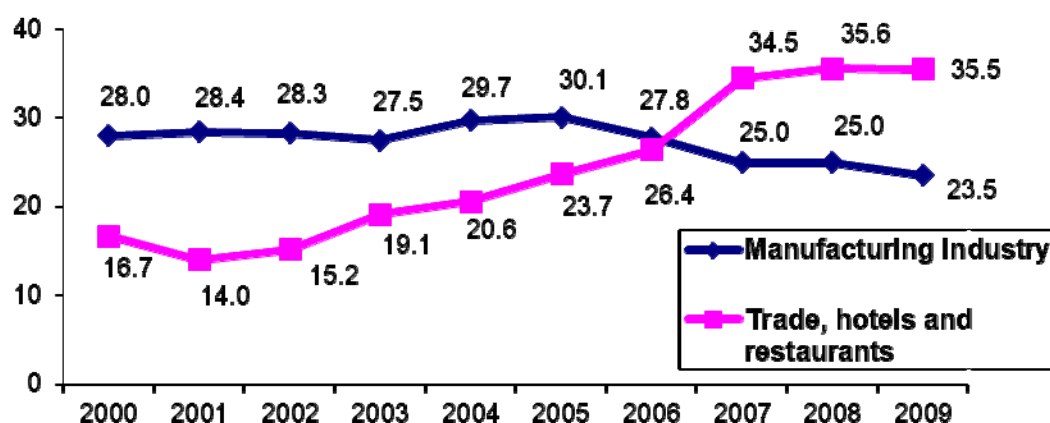
Source: CERME – The 2000-2009 Top 100 collection.

Figure 8.6
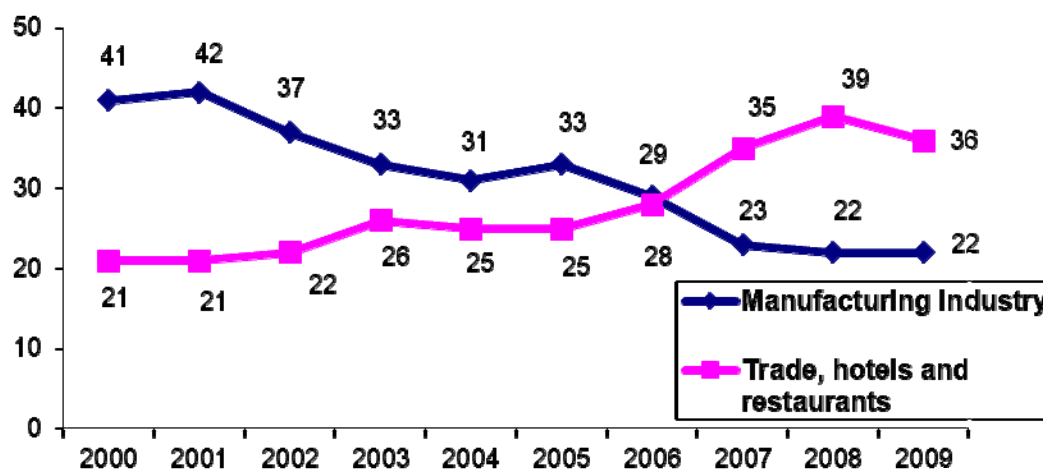
Source: CERME – The 2000-2009 Top 100 collection.

Figure 8.7

As it is known, Romania's development model for the period 2000-2009 was consumer-based, mostly supported by imports, leading to major annual trade deficits, ultimately unsustainable, and creating additional difficulties for Romania, apart from the effects of the global economic crisis.

Considering that the major companies in the trade sector represented in Top 100 are the main import vectors in the Romanian economy, it results that the comparative analysis with the manufacturing industry of their presence as a share in turnover and in numerical value offers qualitative indexes, with a high level of confidence regarding the model of economic development.

It is revealed that in the period 2000-2008 (the economic growth cycle) the share of the manufacturing turnover decreased from 28% to 25% and the number of top occurrences decreased by 46.3%, from 41 to 22! During the same period, the share of turnover of the trade companies increased from 16.7% to 35.6% and the number of occurrences increased by 85.7%, from 21 to 39!

The year 2007 saw for the first time the positioning of the trade sector as the leader of Romania's top 100, both in terms of turnover (34.5%) and number of occurrences (39).

There is a very interesting statistical link between reducing the coverage of imports through exports at macroeconomic level, as a key qualitative indicator of the trade deficit, and the share of trade turnover in Top 100 (Figure 8.8).
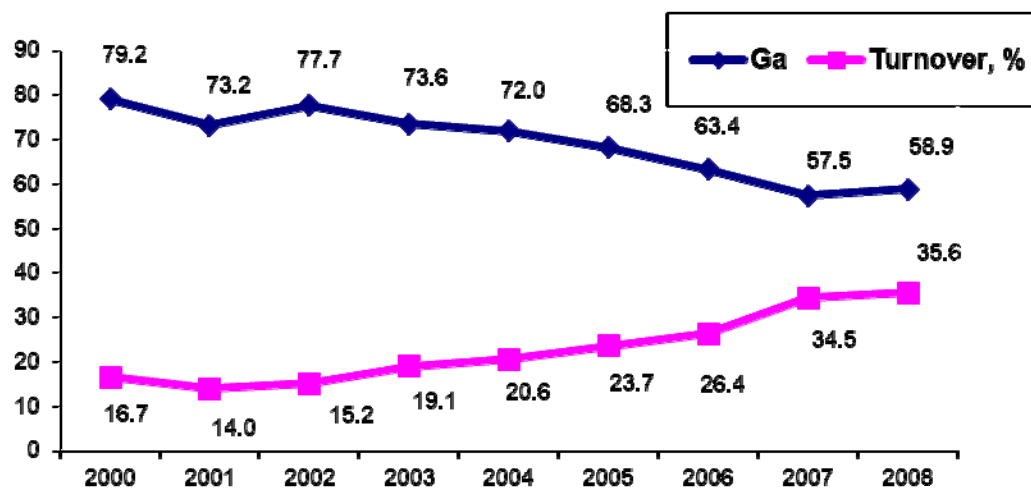
Source: CERME – The 2000-2009 Top 100 collection.

Figure 8.8

The lower the coverage of imports through exports, the higher the share of trade in the turnover of Top 100. **The correlation coefficient is -0.95!!!** Along with profitability, the sectoral structure fully confirms the statement that Top 100 is an indicator of the state of the real economy.

The analysis of the sectoral structure dynamics also reveals:

- Changes, especially at the beginning of the period, in the shares of the mining and quarrying and the electric and thermal power industries as a result of organizational transformations. Since 2004, the values have relatively stabilized.
- Paradoxically, there is a reduction in the share of turnover and in the number of companies in the service sector. The explanation consists, on the one hand, of the exit from the top of the Romanian Television Society, the Romanian Transport Company SA, Romtrans SA and COMPET Ploieşti, at the beginning of the period, and, on the other hand, of the low value of turnover volume index of Romtelecom SA, CFR Marfă and CFR Company.
- In construction, Romania does not have, apart from Hidroconstructia SA, strong capacities, involved in the construction of road infrastructure with high turnover figures.
- In agriculture, forestry and fish farming, apart from Romsilva Regia Naţionala a Pădurilor and, in the last years, Interagro, Romania does not have significant capital and labor concentrations.

e) The size structure

In 2000-2009, the average number of Top 100 employees dropped from 6377 to 3750, or by 42.2%, as shown in Figure 8.9.
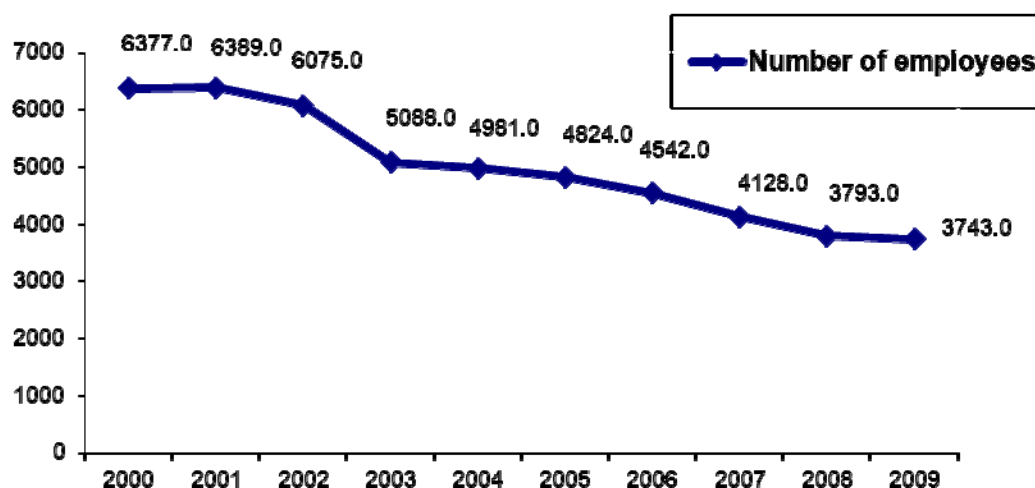
Source: CERME – The 2000-2009 Top 100 collection.

Figure 8.9

Significant reductions in the number of employees through service outsourcing or layoffs were made at:

- Romtelecom SA;
- OMV Petrom SA;
- Rompetrol Rafinare SA;
- Arcelor Mittal Galați SA.

Correspondingly to the reduction in the number of employees and the structural changes, the representation of the very large companies (over 500 employees) and their share in the turnover of Top 100 have relatively declined, as shown by the data in Figures 8.10 and 8.11.
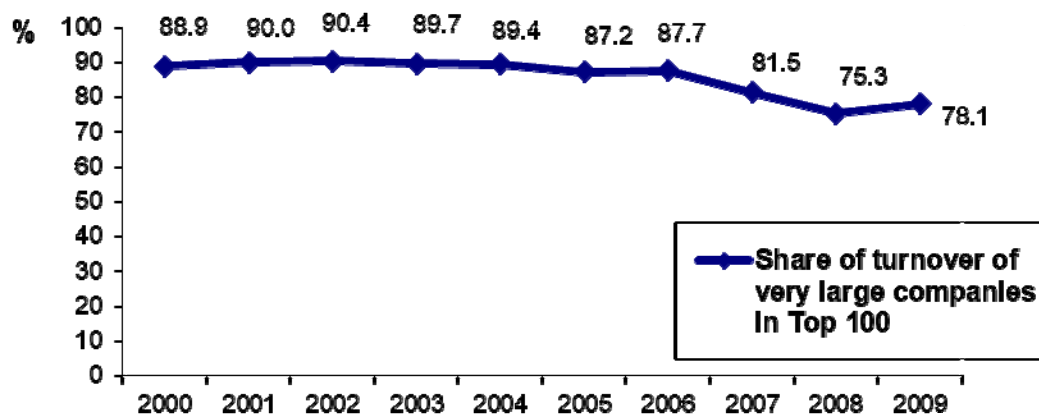
Source: CERME – The 2000-2009 Top 100 collection.

Figure 8.10
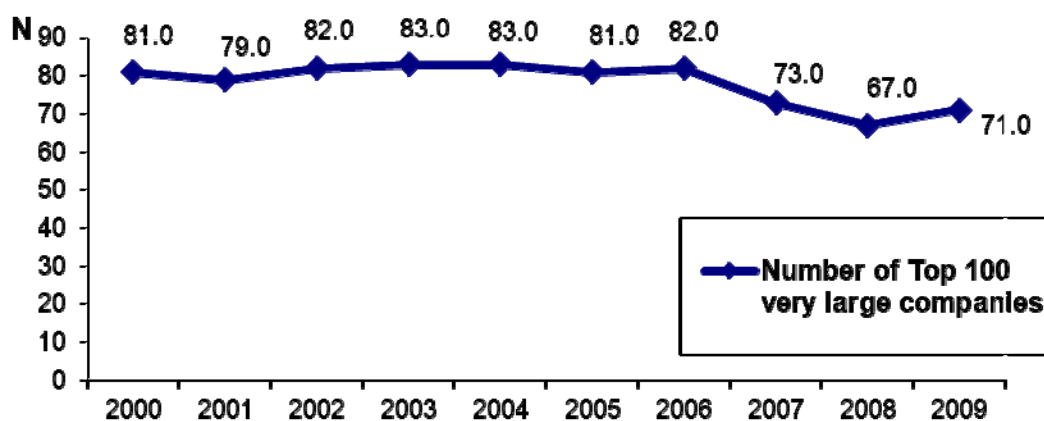
Source: CERME – The 2000-2009 Top 100 collection.

Figure 8.11

The decline was more visible in 2007-2009 and corresponds to a significant extent to the entry in Top 100 of a relatively high number of transport companies with a relatively small number of employees.

f) Top's stability and company occurrences in the 2000-2009 tops

The annual stability chart of Top 100 is shown in Figure 8.12.
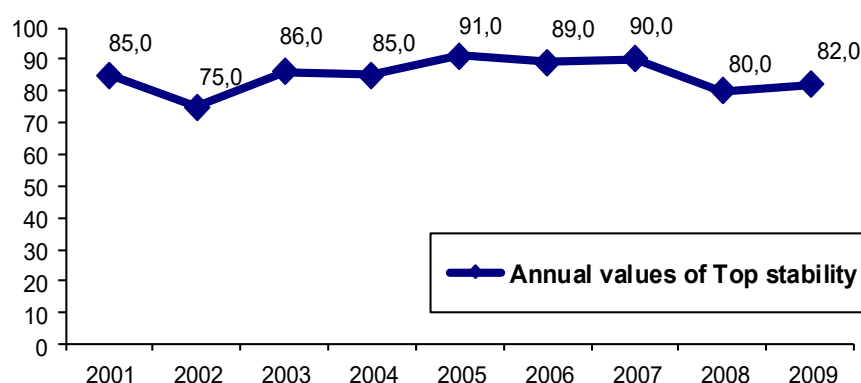
Source: CERME – The 2000-2009 Top 100 collection.

Figure 8.12

The year 2002, with the lowest stability, coincides with the entry in Top 100 of the companies from the power industry, resulting from the organizational restructuring of the energy system in a spirit closer to the market economy. The years 2008 and 2009 resulted in the change of some companies from trade with others, such as the car importing companies in 2009, which were replaced in the Top 100 by the pharmaceuticals importing companies.

Between 2000 and 2009, Romania's top 100 ranked 220 companies with different legal status. The breakdown of these companies by the main sectors of the economy is given in Table 8.4.

Table 8.4

No.	Sector	Number of companies
1	Agriculture, forestry, fishing	4
2	Mining and quarrying industry	8
3	Manufacturing industry	68
4	Electricity, heat, gas and water	36
5	Construction	10
6	Trade, hotels and restaurants	72
7	Market services	22

Source: CERME – The 2000-2009 Top 100 collection and author's computations.

It is revealed that the top two sectors of top representativeness (around 60%), trade and manufacturing, ran 130 companies, *i.e.* 59.1% of the total!

Out of the 220 companies that were present in the 10 annual tops, 30 were found each year in Top 100.

The chart of companies' occurrence frequency in Top 100 is shown in Figure 8.13.
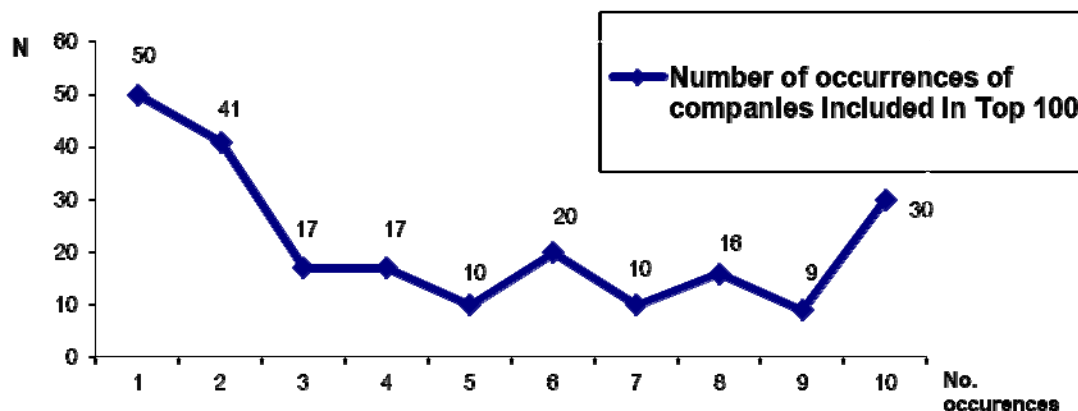
Source: CERME – The 2000-2009 Top 100 collection.

Figure 8.13

It is found that 91 companies, *i.e.* 41.4% out of 220 were present once or at most twice in Top 100.

We must mention here that:

- The company for exploitation, production and storage of gas present in the top in 2000 was transformed, through reorganization, into SNGN Romgaz.
- The final exit from Top 100 Romania after two occurrences, in 2001 and 2002, of the manufacturing companies:
  - UTB Tractor SA;
  - Alprom SA;
  - RIFIL;
  - Ductil Steel;
  - Sofert Bacău;
  - Roman Braşov;
  - Electroputere Craiova.
- Out of the 10 companies in construction, in 5 years there were one or two occurrences in Top 100. From this sector, companies of tradition and really strong are only two: Hidroconstrucţia SA, with 9 top occurrences and Energomontaj, with 4 occurrences.
- A total of 11 companies in trade had only one occurrence in Top 100.

The 220 companies present in the tops 100 of the 2000-2009 period showing the number of occurrences and the corresponding years are given in Table 8.5.

Table 8.5

Sector	Company name	Location	County	CITI	A2000	A2001	A2002	A2003	A2004	A2005	A2006	A2007	A2008	A2009
1	REGIA NATIONALA A PADURILOR ROMSILVA RA	București	București	10	X	X	X	X	X	X	X	X	X	X
1	INTERAGRO SA	București	București	8	X	X			X	X	X	X	X	X
1	AGRICOLA INTERNATIONAL SA	Bacău	Bacău	3	X	X	X							
1	SOCIETATEA NATIONALA "IMBUNATATIRI FUNCIARE" SA	București	București	1			X							
2	OMV PETROM SA	București	București	10	X	X	X	X	X	X	X	X	X	X
2	S.N.G.N ROMGAZ SA	Mediaș	Sibiu	9		X	X	X	X	X	X	X	X	X
2	COMPANIA NATIONALA A HUILEI SA	Petroșani	Hunedoara	8	X	X	X	X	X	X	X	X		
2	PETROMSERVICE SA	București	București	7			X	X	X	X	X	X	X	
2	SOCIETATEA NATIONALA A LIGNITULUI OLTENIA	Târgu Jiu	Gorj	6					X	X	X	X	X	X
2	COMPANIA NATIONALA A LIGNITULUI OLTENIA SA	Târgu Jiu	Gorj	4	X	X	X	X						
2	GRUP SERVICII PETROLIERE S.A.	Constanța	Constanța	1										X
2	SOC.COM.DE EXPLORARE,PROD.SI INMAG.SUBTER.A GAZELOR	Mediaș	Sibiu	1	X									
3	AUTOMOBILE DACIA SA	Mioveni	Argeș	10	X	X	X	X	X	X	X	X	X	X
3	LAFARGE CIMENT (ROMANIA)SA	București	București	10	X	X	X	X	X	X	X	X	X	X
3	COCA COLA HBC ROMANIA SRL	București	București	10	X	X	X	X	X	X	X	X	X	X
3	OLTCHIM SA	Râmnicu Vâlcea	Vâlcea	10	X	X	X	X	X	X	X	X	X	X
3	ALRO SA SLATINA	Slatina	Olt	10	X	X	X	X	X	X	X	X	X	X
3	Arcelor Mittal Galați SA	Galați	Galați	10	X	X	X	X	X	X	X	X	X	X
3	ROMPETROL RAFINARE S.A.	Constanța	Constanța	10	X	X	X	X	X	X	X	X	X	X
3	DAEWOO-MANGALIA HEAVY INDUSTRIES SA	Mangalia	Constanța	10	X	X	X	X	X	X	X	X	X	X
3	JTI MANUFACTURING SA	București	București	9		X	X	X	X	X	X	X	X	X
3	MECHEL TARGOVISTE SA	Târgoviște	Dâmbovița	9	X	X	X	X	X	X	X	X	X	
3	AZOMUREȘ SA	Târgu Mureș	Mureș	9	X	X	X	X	X	X	X	X	X	
3	PHILIP MORRIS ROMANIA SRL	Otopeni	Ilfov	9	X	X	X	X	X	X	X	X	X	
3	CONTINENTAL AUTOMOTIVE PRODUCTS SRL	Timișoara	Timiș	8			X	X	X	X	X	X	X	X
3	Holcim (Romania) SA	București	București	8			X	X	X	X	X	X	X	X
3	SILCOTUB SA	Zalău	Sălaj	8	X	X	X	X	X	X	X	X		
3	FORD ROMANIA SA	Craiova	Dolj	8	X	X	X	X	X	X	X	X		

Sector	Company name	Location	County	CITI	A2000	A2001	A2002	A2003	A2004	A2005	A2006	A2007	A2008	A2009
3	DELPHI PACKARD ROMANIA SRL	Sânnicolau Mare	Timiș	8	X	X	X	X	X	X	X		X	
3	MICHELIN ROMANIA SA	București	București	7					X	X	X	X	X	X
3	HEINEKEN ROMANIA SA	București	București	7		X	X	X	X	X	X			X
3	MITTAL STEEL ROMAN (PETROTUB) SA	Roman	Neamț	7	X	X	X		X	X	X	X		
3	ARCTIC SA	Găești	Dâmbovița	6				X	X	X	X	X		X
3	RAFO SA	Onești	Bacău	6		X	X	X	X	X	X			
3	PETROTEL LUKOIL SA	Ploiești	Prahova	6	X					X	X	X	X	X
3	ARCELOR MITTAL SA	Hunedoara	Hunedoara	6	X	X	X		X	X	X			
3	ELECTROLUX ROMANIA SA	Satu Mare	Satu Mare	6	X	X	X	X	X	X				
3	REGIA AUTONOMA PENTRU ACTIVITATI NUCLEARE RA	Drobeta-T. Severin	Mehedinți	6	X	X	X	X	X	X				
3	URSUS BREWERIES S A	București	București	5						X	X	X	X	X
3	CARPATCEMENT HOLDING SA	București	București	5						X	X	X	X	X
3	ROSKO TEXTIL SRL	Curtici	Arad	5		X	X	X	X	X				
3	EUROPEAN DRINKS S.A	Rieni	Bihor	5	X	X	X	X	X					
3	TAKATA-PETRI ROMANIA	Arad	Arad	4					X	X	X			X
3	INDUSTRIA SIRMEI SA	Câmpia Turzii	Cluj	4	X	X	X		X					
3	RAFINARIA ASTRA ROMANA SA	Ploiești	Prahova	4	X	X	X	X						
3	ROMPETROL SA	București	București	4	X	X	X	X						
3	LUXTEN LIGHTING COMPANY SA	Timișoara	Timiș	4	X	X	X	X						
3	BRITISH AMERICAN TOBACCO ROMANIA INVESTMENT SRL	Ploiești	Prahova	4	X	X	X	X						
3	CAROM SA	Onești	Bacău	3				X	X	X				
3	SOCIETATEA NATIONALA TUTUNUL ROMANESC SA	București	București	3	X	X	X							
3	SANTIERUL NAVAL DAMEN GALAȚI SA	Galați	Galați	3	X	X	X							
3	ALUM S.A.	Tulcea	Tulcea	3	X	X	X							
3	SCHAEFFLER ROMANIA SRL	Cristian	Brașov	2									X	X
3	CUPROM SA	București	București	2							X	X		
3	NOKIA ROMANIA SRL	Cluj-Napoca	Cluj	2									X	X
3	EUROPEAN FOOD SA	Ștei	Bihor	2					X	X				
3	PROCTER & GAMBLE MATERIALS MANAGEMENT ROMANIA SRL	Timișoara	Timiș	2					X	X				
3	ASTRA VAGOANE ARAD SA	Arad	Arad	2			X	X						

Sector	Company name	Location	County	CITI	A2000	A2001	A2002	A2003	A2004	A2005	A2006	A2007	A2008	A2009
3	V.G.B. IMPEX SRL	București	București	2			X	X						
3	HONEYWELL GARRETT SRL	București	București	2			X	X						
3	KRAFT FOODS ROMANIA SA	Brașov	Brașov	2	X	X								
3	TRACTORUL UTB S.A.	Brașov	Brașov	2	X	X								
3	ALPROM SA	Slatina	Olt	2	X	X								
3	RIFIL	Săvinești	Neamț	2	X	X								
3	INTRAROM SA	București	București	2	X	X								
3	ELITE ROMANIA SRL	București	București	2	X	X								
3	ORIGINAL PROD S.R.L.	Stei	Bihor	2	X	X								
3	TOPWAY INDUSTRIES SA	Craiova	Dolj	2	X	X								
3	DUCTIL STEEL SA	Buzău	Buzău	2	X	X								
3	AGRANA ROMANIA SA	Buzău	Buzău	1							X			
3	AUTOLIV ROMANIA SRL	Brașov	Brașov	1										X
3	HOLZINDUSTRIE SCHWEIGHOFER SRL	Sebeș	Alba	1										X
3	ROMPETROL PETROCHEMICALS SRL	Constanța	Constanța	1									X	
3	LITASCO ROMANIA SRL	București	București	1						X				
3	AMONIL SA	Slobozia	Ialomița	1		X								
3	BRITISH AMERICAN TOBACCO (ROMANIA) SRL	Ploiești	Prahova	1		X								
3	SOFERT SA	Bacău	Bacău	1	X									
3	ROMAN S.A.	Brașov	Brașov	1	X									
3	ELECTROPUTERE SA	Craiova	Dolj	1	X									
3	RIENI DRINKS S.A.	Rieni	Bihor	1	X									
4	REGIA AUTONOMA DE DISTRIBUTIE A ENERGIEI TERMICE R	București	București	10	X	X	X	X	X	X	X	X	X	X
4	SN NUCLEARELECTRICA SA	București	București	10	X	X	X	X	X	X	X	X	X	X
4	GDF SUEZ ENERGY ROMANIA S.A	București	București	10	X	X	X	X	X	X	X	X	X	X
4	HIDROELECTRICA SA	București	București	10	X	X	X	X	X	X	X	X	X	X
4	ELECTRICA SA	București	București	10	X	X	X	X	X	X	X	X	X	X
4	COMPANIA NATIONALA TRANSELECTRICA SA	București	București	10	X	X	X	X	X	X	X	X	X	X
4	ELECTROCENTRALE DEVA S.A.	Mintia Vetel	Hunedoara	8			X	X	X	X	X	X	X	X
4	E. ON GAZ DISTRIBUTIE SA (DISTRIGAZ NORD)	Târgu Mureș	Mureș	8	X	X	X	X	X	X	X	X		
4	ELECTROCENTRALE BUCUREȘTI SA	București	București	7				X	X	X	X	X	X	X
4	CEZ DISTRIBUTIE SA	Craiova	Dolj	7			X	X	X	X	X	X		X

Sector	Company name	Location	County	CITI	A2000	A2001	A2002	A2003	A2004	A2005	A2006	A2007	A2008	A2009
4	ELECTRICA MUNTENIA SUD SA	București	București	7			X	X	X	X	X	X	X	
4	COMPLEXUL ENERGETIC CRAIOVA SA	Craiova	Dolj	6					X	X	X	X	X	X
4	COMPLEXUL ENERGETIC ROVINARI SA	Rovinari	Gorj	6					X	X	X	X	X	X
4	COMPLEXUL ENERGETIC TURCENI S.A.	Turceni	Gorj	6					X	X	X	X	X	X
4	ELECTRICA DISTRIBUTIE TRANSILVANIA NORD SA	Cluj-Napoca	Cluj	6			X	X	X	X	X	X		
4	ENEL DISTRIBUTIE BANAT SA	Timișoara	Timiș	6			X	X	X	X	X	X		
4	ELECTRICA DISTRIBUTIE TRANSILVANIA SUD SA	Brașov	Brașov	6			X	X	X	X	X	X		
4	ELECTRICA DISTRIBUTIE MUNTENIA NORD SA	Ploiești	Prahova	6			X	X	X	X	X	X		
4	TERMOELECTRICA SA	București	București	6	X	X	X	X	X		X			
4	E. ON MOLDOVA DISTRIBUTIE SA	Bacău	Bacău	5			X	X	X	X	X			
4	ENEL DISTRIBUTIE DOBROGEA SA	Constanța	Constanța	5			X	X	X	X	X			
4	ENERGY HOLDING SRL	București	București	4					X	X	X	X		
4	CEZ VANZARE	Craiova	Dolj	3								X	X	X
4	ENEL ENERGIE SA	București	București	3								X	X	X
4	E.ON GAZ ROMANIA S.A.	Târgu Mureș	Mureș	3								X	X	X
4	E.ON MOLDOVA FURNIZARE SA	Bacău	Bacău	2									X	X
4	FFEE ELECTRICA FURNIZARE MUNTENIA NORD SA	Ploiești	Prahova	2									X	X
4	FFEE ELECTRICA FURNIZARE TRANSILVANIA NORD SA	Cluj-Napoca	Cluj	2									X	X
4	FFEE ELECTRICA FURNIZARE TRANSILVANIA SUD SA	Brașov	Brașov	2									X	X
4	C.E.T. GOVORA SA	Râmnicu Vâlcea	Vâlcea	2	X	X								
4	DISTRIGAZ SUD RETELE SRL	București	București	1										X
4	ENEL ENERGIE MUNTENIA S.A.	București	București	1										X
4	SOCIETATEA COMERCIALA ELECTROCENTRALE TURCENI SA	Turceni	Gorj	1				X						
4	SOCIETATEA COMERCIALA ELECTROCENTRALE ROVINARI SA	Rovinari	Gorj	1				X						
4	APA NOVA BUCUREȘTI SA	București	București	1		X								
4	REGIA GENERALA DE APA	București	București	1	X									
5	HIDROCONSTRUCTIA SA	București	București	9	X	X	X	X	X	X	X		X	X
5	ENERGOMONTAJ SA	București	București	4	X	X	X	X						

Sector	Company name	Location	County	CITI	A2000	A2001	A2002	A2003	A2004	A2005	A2006	A2007	A2008	A2009
5	TIMBER GROUP SA	București	București	3							X	X	X	
5	FIL.INTRET.SI SERV.ENERGETICE ELECTRICA SERV SA	București	București	3						X	X	X		
5	SOCIETATEA DE CONSTRUCTII CCCF BUCUREȘTI SA	București	București	3	X	X	X							
5	SPEDITION UMB S.R.L.	Bacău	Bacău	2					X					X
5	ICMRS SA	Galaţi	Galaţi	2	X	X								
5	ROMSTRADE SRL	Adunaţii-Copăceni	Giurgiu	1										X
5	ENERGOCONSTRUCTIA SA	București	București	1	X									
5	ILRO SRL REP.FISCAL DIPL.ING. BRANDSTETTER & CO	București	București	1	X									
6	TRANSILVANIA GENERAL IMPORT-EXPORT SRL *	Oradea	Bihor	10	X	X	X	X	X	X	X	X	X	X
6	MOL ROMANIA PETROLEUM PRODUCTS SRL	Cluj-Napoca	Cluj	10	X	X	X	X	X	X	X	X	X	X
6	METRO CASH & CARRY ROMANIA SRL	Voluntari	Ilfov	10	X	X	X	X	X	X	X	X	X	X
6	BRITISH AMERICAN TOBACCO (ROMANIA) TRADIN	București	București	10	X	X	X	X	X	X	X	X	X	X
6	PORSCHE ROMANIA SRL	Voluntari	Ilfov	10	X	X	X	X	X	X	X	X	X	X
6	JT INTERNATIONAL (ROMANIA) SRL	București	București	9		X	X	X	X	X	X	X	X	X
6	BILLA ROMANIA SRL	București	București	9		X	X	X	X	X	X	X	X	X
6	Lukoil Romania SRL	București	București	8			X	X	X	X	X	X	X	X
6	OMV ROMANIA MINERALOEL SRL	București	București	8			X	X	X	X	X	X	X	X
6	CARREFOUR ROMANIA SA	București	București	8			X	X	X	X	X	X	X	X
6	SELGROS CASH&CARRY SRL	Brașov	Brașov	8			X	X	X	X	X	X	X	X
6	ROMPETROL DOWNSTREAM SRL	București	București	8			X	X	X	X	X	X	X	X
6	PROCTER & GAMBLE MARKETING ROMANIA SRL	București	București	8	X	X	X	X	X	X	X	X		
6	INTERBRANDS MARKETING & DISTRIBUTION SRL	București	București	8	X	X	X	X	X	X	X	X		
6	ARABESQUE SRL	Galaţi	Galaţi	7				X	X	X	X	X	X	X
6	MEDIPLUS EXIM SRL	Mogoșoaia	Ilfov	7				X	X	X	X	X	X	X
6	ROM OIL SA	Brașov	Brașov	7			X	X	X	X	X	X	X	
6	ALTEX IMPEX SRL	Piatra Neamţ	Neamţ	6				X	X	X	X	X	X	
6	RENAULT NISSAN ROMANIA SRL	București	București	6				X	X	X	X	X	X	
6	MOL RO COMERT SRL	București	București	6	X	X	X	X	X	X				

Sector	Company name	Location	County	CITI	A2000	A2001	A2002	A2003	A2004	A2005	A2006	A2007	A2008	A2009
6	UNILEVER SOUTH CENTRAL EUROPE SRL	Ploiești	Prahova	6	X	X	X	X	X	X				
6	TOP BRANDS DISTRIBUTION SRL	Otopeni	Ilfov	5						X	X	X	X	X
6	ROMANIA HYPERMARCHE SA	București	București	5						X	X	X	X	X
6	PETROM GAS SRL	București	București	5	X	X					X	X	X	
6	EUROPHARM HOLDING SA	Brașov	Brașov	5	X	X	X	X	X					
6	REWE ROMANIA SRL	Ștefăneștii de Jos	Ilfov	4							X	X	X	X
6	PRAKTIKER ROMANIA SRL	Voluntari	Ilfov	4							X	X	X	X
6	KAUFLAND ROMANIA SOCIETATE IN COMANDITA SIMPLA	București	București	4							X	X	X	X
6	RENAULT INDUSTRIE ROUMANIE SRL	Mioveni	Argeș	4							X	X	X	X
6	TRUST MOTORS SRL	București	București	4					X	X	X	X		
6	PHILIP MORRIS TRADING S.R.L.	Otopeni	Ilfov	3								X	X	X
6	real,- Hypermarket Romania S.R.L.	București	București	3								X	X	X
6	PROCTER & GAMBLE DISTRIBUTION SRL	București	București	3								X	X	X
6	RELAD INTERNATIONAL SRL	Voluntari	Ilfov	3		X	X							X
6	TOTAL DISTRIBUTION GROUP ROMANIA SRL	București	București	3	X	X	X							
6	ROMCAR SRL	București	București	2								X	X	
6	DEDEMAN S.R.L.	Bacău	Bacău	2									X	X
6	CARGILL AGRICULTURA SRL	București	București	2									X	X
6	OSCAR DOWNSTREAM SRL	Măgurele	Ilfov	2									X	X
6	ALFRED C.TOEPFER INTERNATIONAL (ROMANIA) SRL	București	București	2									X	X
6	AUCHAN ROMANIA SA	București	București	2									X	X
6	IVECO ROMANIA SRL	București	București	2								X	X	
6	DAIMLERCHRYSLER AUTOMOTIVE ROMANIA S.R.L.	București	București	2								X	X	
6	PLUDI MARKET SRL	Nedelea	Prahova	2									X	X
6	TOFAN GRUP INTERNATIONAL SA	București	București	2	X	X								
6	WIROM GAS SA	București	București	2	X	X								
6	COMPANIA DE DISTRIBUTIE NATIONAL SA	București	București	2	X	X								
6	ROMILEXIM TRADING LIMITED SRL	București	București	2	X	X								
6	LUKOIL BLACK SEA ROMANIA SRL	București	București	2	X	X								
6	POLISANO SRL	Sibiu	Sibiu	1										X
6	FILDAS TRADING SRL	Pitești	Argeș	1										X

Sector	Company name	Location	County	CITI	A2000	A2001	A2002	A2003	A2004	A2005	A2006	A2007	A2008	A2009
6	AUTOMOBILE BAVARIA SRL	Brașov	Brașov	1								X		
6	FARMEXPERT DCI SA	București	București	1										X
6	SENSIBLU SRL	Mogoșoaia	Ilfov	1										X
6	FLAMINGO INTERNATIONAL SA	București	București	1									X	
6	TOYOTA ROMANIA SRL	București	Ilfov	1									X	
6	WIEE ROMANIA SRL	București	București	1									X	
6	BRICOSTORE ROMANIA SA	București	București	1									X	
6	MECHEL CASA DE COMERT SRL	București	București	1						X				
6	BUNGE ROMANIA SRL	Iași	Iași	1										X
6	PIRUZE COM SRL	Voluntari	Ilfov	1										X
6	METALROM SRL	București	București	1					X					
6	ROMSTAL IMEX SRL	București	București	1				X						
6	INTEREXPO PRODCOM SRL	Târgu Secuiesc	Covasna	1				X						
6	FLANCO INTERNATIONAL SRL	București	București	1				X						
6	COMAUTOCAR 2002 SRL	București	București	1				X						
6	RAFO IMPERIAL OIL SA	Bacău	Bacău	1			X							
6	RELAD PHARMA SA	București	București	1			X							
6	EDRI TRADING S.R.L.	Vascău	Bihor	1	X									
6	AMPLITECNA ROMANIA SRL	București	București	1	X									
6	EURO HOUSE 2000 SRL	București	București	1	X									
6	PHILIP MORRIS DISTRIBUTION ROMANIA SRL	Otopeni	Ilfov	1	X									
7	ROMTELECOM S.A.	București	București	10	X	X	X	X	X	X	X	X	X	X
7	COMPANIA NATIONALA POSTA ROMANA S.A.	București	București	10	X	X	X	X	X	X	X	X	X	X
7	S.C.C.N.T.A.R.TAROM S.A.	Otopeni	Ilfov	10	X	X	X	X	X	X	X	X	X	X
7	VODAFONE ROMANIA SA	București	București	10	X	X	X	X	X	X	X	X	X	X
7	ORANGE ROMANIA SA	București	București	10	X	X	X	X	X	X	X	X	X	X
7	COMPANIA NATIONALA DE CAI FERATE "CFR" S.A.	București	București	10	X	X	X	X	X	X	X	X	X	X
7	SOCIETATEA NATIONALA DE TRANSPORT FEROVIAR DE MARF	București	București	10	X	X	X	X	X	X	X	X	X	X
7	SOCIETATEA NATIONALA DE TRANSPORT FEROVIAR DE CALA	București	București	10	X	X	X	X	X	X	X	X	X	X
7	S.N.T.G.N. TRANSGAZ S.A.	Mediaș	Sibiu	10	X	X	X	X	X	X	X	X	X	X
7	COMPANIA NATIONALA LOTERIA ROMANA S.A.	București	București	9	X	X		X	X	X	X	X	X	X

Sector	Company name	Location	County	CITI	A2000	A2001	A2002	A2003	A2004	A2005	A2006	A2007	A2008	A2009
7	ADMIN.ROM. A SERVICIILOR DE TRAFIC AERIAN ROMATSA	București	București	6	X	X	X	X	X	X				
7	RCS & RDS SA	București	București	4							X	X	X	X
7	REGIA AUTONOMA DE TRANSPORT BUCUREȘTI RA	București	București	4		X	X	X	X					
7	SOCIETATEA ROMANA DE TELEVIZIUNE	București	București	4	X		X	X	X					
7	ADMINISTRATIA NATIONALA A DRUMURILOR RA	București	București	3	X	X	X							
7	COSMOTE ROMANIAN MOBILE TELECOMMUNICATIONS SA	București	București	2									X	X
7	TIRIAC LEASING IFN SA	București	București	2							X	X		
7	ROMTRANS SA	București	București	2	X	X								
7	COMPANIA NAT. DE AUTOSTRAZI SI DRUMURI NATIONALE	București	București	1						X				
7	CONPET SA PLOIESTI	Ploiești	Prahova	1		X								
7	ERICSSON TELECOMMUNICATIONS ROMANIA SRL	București	București	1		X								
7	BING.ROM.IMPEX.COM.-BINGO EUROPA SRL	București	București	1	X									

Source: CERME – The 2000-2009 Top 100 collection and author's computations.

Legend:

Sector 1 – agriculture, forestry, fishing.

Sector 2 – mining and quarrying industry.

Sector 3 – manufacturing industry.

Sector 4 – electricity, heat, gas and water.

Sector 5 – construction.

Sector 6 – trade, hotels and restaurants.

Sector 7 – market services.

8.4. Top of tops over the 2000-2009 period

Each year, 30 companies were included in the 100 rankings, forming a true "micro-economic power axis". The 30 companies are vital for the functioning of some key sectors of the national economy:

- Agriculture, forestry, fish farming (1).
- Mining and quarrying industry (1).
- Manufacturing industry (8).
- Land and air transport (4).
- Communications (5).
- Electricity, heat, gas and water (6).
- Trade (5).

The social component is particularly important within this top, with companies being national leaders in terms of the number of employees.

Table 8.6 presents the characteristics of these companies ranked on the basis of their cumulative turnover over the 2000-2009 period.

Table 8.6

**Characteristics of the 30 companies permanently included
in Top 100 Romania over the 2000-2009 period**

No.	Sector	Company name	Location	Cumulated turnover, mill. euro	Cumulated profit/loss, mill. euro	Turnover index 2009/2000	Profit/loss rate, %	Ownership structure
1	2	OMV PETROM SA	Bucureşti	29084.174	2975.422	1.154	10.23	CMS
2	3	ARCELOR MITTAL GALAŢI SA	Galaţi	13788.494	-258.154	0.975	-1.87	CMS
3	3	ROMPETROL RAFINARE S.A.	Constanţa	12500.635	-788.944	4.454	-6.31	CMS
4	6	METRO CASH & CARRY ROMANIA SRL	Voluntari	10997.458	448.045	3.837	4.07	CMS
5	3	AUTOMOBILE DACIA SA	Mioveni	10837.304	120.927	9.334	1.12	CMS
6	7	ROMTELECOM S.A.	Bucureşti	8749.998	226.288	0.837	2.59	CMS
7	4	ELECTRICA SA	Bucureşti	8690.774	437.810	0.245	5.04	S
8	7	ORANGE ROMANIA SA	Bucureşti	7606.376	2696.207	3.327	35.45	CMS
9	7	VODAFONE ROMANIA SA	Bucureşti	7284.928	2153.385	2.757	29.56	CMS
10	4	GDF SUEZ ENERGY ROMANIA S.A	Bucureşti	6546.450	356.161	4.711	5.44	CMS
11	6	BRITISH AMERICAN TOBACCO (ROMANIA) TRADING	Bucureşti	5013.441	362.114	5.999	7.22	CMS
12	7	SOCIETATEA NATIONALA DE TRANSPORT FEROVIAR DE MARFA	Bucureşti	4561.913	-56.832	0.533	-1.25	S
13	6	PORSCHE ROMANIA SRL	Voluntari	4539.065	497.867	7.704	10.97	CMS
14	4	HIDROELECTRICA SA	Bucureşti	4453.732	124.813	6.000	2.80	S
15	4	COMPANIA NATIONALA TRANSELECTRICA SA	Bucureşti	4175.267	225.383	6.573	5.40	S
16	3	ALRO SA SLATINA	Slatina	4173.993	682.010	0.942	16.34	P
17	7	SOCIETATEA NATIONALA DE TRANSPORT FEROVIAR DE CALATORI	Bucureşti	3946.803	-216.448	3.212	-5.48	S
18	3	OLTCHIM SA	Râmnicu Vâlcea	3434.281	-221.957	1.096	-6.46	S
19	7	COMPANIA NATIONALA DE CAI FERATE "CFR"	Bucureşti	2996.541	-869.654	0.825	-29.02	S

No.	Sector	Company name	Location	Cumulated turnover, mill. euro	Cumulated profit/loss, mill. euro	Turnover index 2009/2000	Profit/loss rate, %	Ownership structure
		S.A.						
20	6	TRANSILVANIA GENERAL IMPORT-EXPORT SRL	Oradea	2975.612	7.787	1.390	0.26	P
21	3	COCA COLA HBC ROMANIA SRL	București	2966.609	379.037	4.567	12.78	CMS
22	6	MOL ROMANIA PETROLEUM PRODUCTS SRL	Cluj-Napoca	2788.616	59.310	7.223	2.13	CMS
23	1	REGIA NATIONALA A PADURILOR ROMSILVA RA	București	2576.699	220.648	1.235	8.56	S
24	7	S.N.T.G.N. TRANSGAZ S.A.	Mediaș	2392.883	651.255	1.979	27.22	S
25	4	REGIA AUTONOMA DE DISTRIBUTIE A ENERGIEI TERMICE RA	București	2242.503	-308.436	2.222	-13.75	S
26	7	S.C.C.N.T.A.R.TAROM S.A.	Otopeni	2171.998	-136.788	0.954	-6.30	S
27	7	COMPANIA NATIONALA POSTA ROMANA S.A.	București	2159.377	64.262	2.694	2.98	S
28	4	SN NUCLEARELECTRICA SA	București	2030.818	107.620	2.603	5.30	S
29	3	LAFARGE CIMENT (ROMANIA)SA	București	1927.227	755.642	2.075	39.21	CMS
30	3	DAEWOO-MANGALIA HEAVY INDUSTRIES SA	Mangalia	1758.238	-245.225	4.300	-13.95	CMS

Source: CERME – The 2000-2009 Top 100 collection and author's computations.

The representativeness of the 30 companies is remarkable. **They cumulate 50.3% of the turnover and 73.1% of the profits of the 10 tops from the 2000-2009 period!**

From the point of view of the ownership structure, the top of tops is presented in Table 8.7.

Table 8.7

No.	Type of ownership	Share of turnover, %	Share of gross profit, %	Overall profitability rate, %	Number of companies
1	State-owned	25.6	0.21	0.047	13
2	Privately-owned, of which	74.1	99.79	7.809	17
3	Significant multinational companies	70.46	93.19	7.705	15

Source: Table 8.6 and author's computations.

The dependence of the national economy on the significant multinational companies throughout the period 2000-2009 is clear!

According to the cumulative results, out of the 30 companies, nine record losses. Of them, six are majority state-owned; their effectiveness must be a strategic objective of the Romanian Government. These companies are:

- Societatea Națională de Transport Marfă;
- Societatea Națională de Transport Călători;
- Compania națională de căi ferate;
- SCCNTAR TAROM SA;
- Oltchim Rm. Vâlcea;
- Regia Autonomă de Distribuție a Energiei Termice RADET.

The characteristics of the 30 companies presented in Table 8.6 allow for a series of rankings in terms of remarkable results, as follows:

- Top 5 ranked by turnover

No.	Company name	Cumulated turnover, mill. euro
1	OMV PETROM SA	29084.174
2	Arcelor Mittal Galaţi SA	13788.494
3	ROMPETROL RAFINARE S.A.	12500.635
4	METRO CASH & CARRY ROMANIA SRL	10997.458
5	AUTOMOBILE DACIA SA	10837.304

Source: Table 8.6 and author's computations.

- Top 5 ranked by the 2009/2000 turnover index

No.	Company name	Turnover index 2009/2000
1	AUTOMOBILE DACIA SA	9.334
2	PORSCHE ROMANIA SRL	7.704
3	MOL ROMANIA PETROLEUM PRODUCTS SRL	7.223
4	COMPANIA NATIONALA TRANSELECTRICA SA	6.573
5	HIDROELECTRICA SA	6.000

Source: Table 8.6 and author's computations.

- Top 5 ranked by the cumulated gross profit

No.	Company name	Cumulated gross profit, mill. euro
1	OMV PETROM SA	2975.422
2	ORANGE ROMANIA SA	2696.207
3	VODAFONE ROMANIA SA	2153.385
4	LAFARGE CIMENT (ROMANIA)SA	755.642
5	ALRO SA SLATINA	682.010

Source: Table 8.6 and author's computations.

- Top 5 ranked by the ratio of cumulated gross profit rate to cumulated turnover

No.	Company name	Rb/CA, %
1	LAFARGE CIMENT (ROMANIA)SA	39.21
2	ORANGE ROMANIA SA	35.45
3	VODAFONE ROMANIA SA	29.56
4	S.N.T.G.N. TRANSGAZ S.A.	27.22
5	ALRO SA SLATINA	16.34

Source: Table 8.6 and author's computations.

References

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2. Mereuţă C. (2012), *Clasele concentrării economice şi factorul 80%*, Editura Economică, Bucureşti.
3. Centrul Român de Modelare Economică. – The Top 100 Romania collection for 1998-2013.
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Chapter 9
Multi-criteria nodal analysis of the system of companies residing in Romania[*]

9.1. Introduction

Over the 1993-2010 period, researches to identify the structural features of the distributions of market shares of companies were conducted on a number of 1009 of classified markets. The research findings were included into what I called **"the nodal analysis of systems companies"**.

The main results of our approach were:

a) The structural distributions of turnovers of companies of the classified markets (N ≥30) have the property that, in all cases, the s/m variation coefficients are above unit.

Also, in all cases, the asymmetry of these distributions is positive,

$$\overline{p_m} > \overline{p_{mediana}}$$

The result of the above unit value of the coefficient of variation is that all the market shares below the average rate of the distribution are concentrated in *a single standard deviation interval*. Thus, on average, 90.64% of the companies have the market shares concentrated in a single interval of standard deviation and 9.36% are distributed in an irregular number of standard deviation intervals.

The companies with lower than average market shares had, on average, the following structure:

Table 9.1

Company size (number of employees)	Share of companies with lower than average market share in the number of companies in the system, %
0 – 9	97.18
10 – 49	56.35
50 – 249	10.55
250 – 499	0.96
Over 500	2.28

In 2010, the turnover corresponding to the average market share was 0.48 million EUR.

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[*] Study published in *Romanian Journal of Economic Forecasting*, No. 4, 2014.

In Table 9.2 one may see the asymmetry of distribution of the number of companies and of turnover pertaining to the average market shares.

<div align="right">Table 9.2</div>

Indicator	Share of number of companies with lower than average market share, %	Share of turnover of companies with lower than average market share, %	Share of number of companies with higher than average market share, %	Share of turnover of companies with higher than average market share, %
Turnover[*]	90.64	11.70	9.36	88.30

[*] Values represent the averages of the 1995-2008 period.

The significance of this type of asymmetry is that "**many companies sell very little, while very few companies sell very much**".

b. Identification, for a number of 553 classified markets in 2004 and in 2008, of a general logarithmic regression equation of the Herfindahl concentration index (H) in relation to the share of the leader (CL) and the number of companies (N), of the form:

Regression Summary for Dependent Variable H

$R = 0.98515038$ $R^2 = 0.97052126$ Adjusted $R^2 = 0.97041407$

$F_{(2.550)} = 9053.8$ $p < 0.0000$ Std. Error of estimate: $s = 0.10481$

log(H) =	**1.2367 log(Cl)**	**– 0.1641 log(N)**	**+ 0.1641**	(9.1)
St. Err.	[0.0168]	[0.0082]	[0.0166]	
t (550)	[73.7545]	[-20.1142]	[9.8558]	
p-level	[0.00]	[0.00]	[0.00]	

Three regression equations from among the three quantities (H, Cl, N) were also retained, taken by two:

Regression Summary for Dependent Variable H

$R = 0.97408248$ $R^2 = 0.94883668$ Adjusted $R^2 = 0.94874382$

$F_{(1.551)} = 10218.0$ $p < 0.0000$ Std. Error of estimate: $s = 0.13796$

log(H) =	**1.4904 log(Cl)**	**– 0.0835**	(9.2)
St. Err.	[0.0147]	[0.0148]	
t (551)	[101.0863]	[-5.6533]	
p-level	[0.00]	[0.00]	

Regression Summary for Dependent Variable H

$R = -0.82399308$ $R^2 = 0.67896459$ Adjusted $R^2 = 0.67838195$

$F_{(1.551)} = 1165.3$ $p < 0.0000$ Std. Error of estimate: $s = 0.34558$

log(H) =	**-0.6123 log(N)**	**+ 0.3342**	(9.3)
St. Err.	[0.0179]	[0.0054]	
t (551)	[-34.1368]	[6.1469]	
p-level	[0.00]	[0.00]	

Regression Summary for Dependent Variable Cl
R = -0.74508869 R^2 = 0.55515715   Adjusted R^2 = 0.55434982
F(1.551) = 687.6   p < 0.0000   Std. Error of estimate: s = 0.26587

log(Cl) =	**-0.3618 log(N)**	**+ 0.1373**	(9.4)
St. Err.	[0.0138]	[0.0418]	
t (551)	[-26.2229]	[3.2829]	
p-level	[0.00]	[0.00]	

The regression equations confirm the microeconomic theory according to which economic concentration increases with the leader's share, decreases with the increasing number of companies, and the tendency of leader's share is to decline with the increasing number of companies.

Analyzing the determinations of regression equations, the critical influence of the leader's share on the Herfindahl index clearly reveals. An example is conclusive: in the case of the system of companies residing in Romania in 2012, reducing the leader's share by half (from 0.008975 to 0.01795) with the same number of 449,240 active companies it results into 42.2% of the initial value of the H index, while on the other hand, reducing by half the number of companies while maintaining the leader's share increases the H index by only 11.9%!

c) The distribution of the Herfindahl index pertaining to the national system of companies residing in Romania has the values:

H_{100}/H higher than 90%
H_{N80}/H higher than 99%

These results determined the qualitative relevance between 1998 and 2012 of Top 100 Romania in terms of real economy, and the significant characterization of economic performance of the ensemble of companies of the national system taking into account the companies covering 80% of turnover, called node companies.

d) Given the importance of the leader's market share in each classified market and the high variability of the H index, two new indicators were proposed:

$$M = \frac{\ln(H) + \ln(n)}{\ln(n)} - \text{the normalized Rènyi entropy, and}$$

$$Gdl = \frac{\dfrac{Cl^2}{H} - \dfrac{1}{n}}{1 - \dfrac{1}{n}} - \text{the normalized degree of structural dominance of the leader.}$$

The tests on the 1009 classified markets showed that the average values of the two indicators amounted to 0.5, which allowed for the development of symmetrical 0-1 scales and of a universal matrix of competition distortion.

e) In terms of cumulative asymmetry of market shares distributions, the research showed that, on average, 10% of the active companies covered 80% of turnover of a given market.

The first fraction of 10% of companies that we called the power decile (D_0) has an overwhelming significance for the business environment of a given market.

In the system of companies residing in Romania, over the 1995-2012 period the share of companies covering 80% of turnover (ρ_{80}) was lower than 5%.

f) The first cumulative normalized logarithmic regression equation for the node companies was developed, of the form:

$\log (p_{cum\%}) = a \log(p_{rang.cum.\%}) + b$,

where:

$0 \leq a \leq 1$ and $0 \leq b \leq 2$

The values a=0 and b=2 correspond to monopolies and the values a=1 and b=0 correspond to uniform distributions of market shares.

9.2. The system of companies in Romania

Outstanding results of Professor Cezar Mereuță's research

For two decades, Professor Cezar Mereuță, founder and president of the Romanian Modeling Center, has patiently gathered and persistently processed data on the Romanian system of companies. I have no doubt that, at the moment, the databases he owns is the most complete and well-organized source of information on the Romanian economy at micro level, that of the "real economy". But the gathering and organization of information on an essential aspect of the economy is only the first step in a comprehensive and ambitious project of understanding and explaining its structural dimension, materialized in a series of high-value works published since 1994. Starting from the diagnostic analysis of the companies classified by branch, its research focused on various aspects, such as the analysis of transition of company management and, in close connection with this, the evolution of organizational cultures - themes of originality and great interest for understanding the transformations at microeconomic level which occur in the context of crossing from the command economy to the market economy. Among the works coordinated and written by Professor Mereuță, there are also topics of immediate applicability to the economic policies, such as the analysis of competitiveness of the Romanian economy, the analysis of the manufacturing industry, the analysis of the services sector or the competitive advantages of the Romanian manufacturing industry in the context of integration into the European Union. The best known and best-publicized capitalization of Professor Cezar Mereuță's research is undoubtedly TOP 100, the top of the largest Romanian companies, which has already reached ten editions.

Beyond the results of such "primary" analyses, Professor Mereuţă noticed that there are certain regularities and dominant structures in the way the system of companies in the economy is organized, which pave the way for a new meta-analysis with a higher degree of generality and often surprising. This research direction was opened with the nodal analysis of the company system and is completed with the most recent paper, *Clasele concentrării economice şi factorul 80%*, published in 2012 by the Economica Publishing House. Using a rigorous statistical-mathematical apparatus, the author of this paper reaches a conclusion of great practical relevance: in the case of classified markets (with a number of companies over 30) a phenomenon of concentration occurs, which makes that about 10% of the number of companies achieves 80% of the sector's results. In other words, only a relatively small number of companies really matter in the performance of a sector. That is why Professor Mereuţă is entitled to claim that the ranking he makes every year, TOP 100 Romanian Companies, has a predictive value for the entire national economy.

In a mysterious way, Professor Mereuţă's discovery is being verified, again and again, in various areas - in the banking area, but also in the power structures of the world economy. Moreover, the stable relationships among the leader's position, the number of companies and the structures of a market are empirically verified. It should be stressed that there is currently no theory that can explain in a general way the structures of market dominance discovered by Professor Mereuţă - which again emphasizes their originality.

Among the applications of great interest of Professor Mereuţă's discoveries, I would notice those in the field of competition analysis and its degree of distortion in various markets. He proposes two indicators, the combined values of which define a matrix to assess the degree of distortion of competition with five levels, from very low to very high, and verifies within this framework the competitive structures of the main branches of the Romanian economy.

The openings offered by Professor Mereuţă's research are so vast that it will probably be necessary that an entire generation of researchers continue his work to fully capitalize on the results achieved so far.

Ph.D. Aurelian Dochia

March 2014

9.3. The objective of this research is testing, in order to validate the results of research by major economic indicators of companies

Microeconomic analyses performed over more than two decades unequivocally showed that the economic stability of a company depended, besides the turnover, on the overall profitability, the operating profitability, the outstanding payments and the financial expenditures.

Therefore, the following quantities were selected as representative:

- pre-tax gross profit;
- gross loss;
- operating profit;
- operating loss;
- outstanding payments;
- financial expenditures.

The analyzed companies are part of the national system and the results refer to 2012. We must mention that all the conclusions of nodal analysis were made by processing the 1009 markets over the period 1995-2010. Therefore, especially relevant were the results that were obtained for 2012.

All data presented in the tables were processed by the author, on the basis of economic and financial balance sheets of the non-financial companies residing in Romania in 2012.

9.4. The results

a) Table 9.3 shows the average shares, the median shares, the standard deviations and the coefficients of variation for the selected indicators.

Table 9.3

Indicator	Share of average	Share of median	Standard deviation	Variation coefficient, V
Turnover	0.0000022251	0.000000114134	0.0000579352	26.04
Gross profit	0.0000040554	0.000000274905	0.0001691594	41.73
Gross loss	0.0000049426	0.000000422105	0.0001044639	21.14
Operating profit	0.0000040569	0.000000299037	0.0001661049	40.94
Operating loss	0.0000049362	0.000000515993	0.0001076605	21.81
Outstanding payments	0.0000078080	0.000000301963	0.0001976962	25.32
Financial expenditures	0.0000052875	0.000000105014	0.0001231289	23.29

Conclusion: All the economic indicators have structural features similar to the market shares of turnovers:

- **The coefficients of variation are above unit and have the same order of magnitude,**
- **The asymmetry of distributions is positive.**

In 2012, **91.67**% of the total number of companies had lower than the average market shares.

<div align="right">Table 9.4</div>

Company size (number of employees)	Share of companies with lower than the average market share in the number of companies in the system, %
0 – 9	97.21
10 – 49	62.08
50 – 249	12.72
250 – 499	1.20
Over 500	1.15

In 2012, the turnover of the average market share was 0.54 million euro.

The asymmetry of distributions of economic indicators in relation to the average values of their share is shown in Table 9.5.

<div align="right">Table 9.5</div>

Economic indicator	Share of companies with P_i lower than P_{med}, %	Cumulated share of economic indicators values lower than the average, %	Share of companies with P_i higher than P_{med}, %	Cumulated share of economic indicators values higher than the average, %
Turnover	91.67	10.90	8.33	89.10
Gross profit	89.14	13.10	10.86	86.90
Gross loss	92.65	13.61	7.35	86.39
Operating profit	90.49	13.09	9.51	86.91
Operating loss	91.69	15.23	8.31	84.77
Financial expenditures	93.51	7.27	6.49	92.73
Outstanding payments	91.49	10.41	8.51	89.59

The significance of the above data is of paramount importance: **the world of companies is characterized by a *strong asymmetry* of the values of fundamental economic indicators in relation to their average values.**

The principle according to which the system of resident companies in Romania is operating is that in relation to the average values of the fundamental economic indicators there is a contradiction: *many – barely*, versus *very few – greatly*.

Thus:

- Many companies sell poorly and very few companies sell a lot.
- Many companies accumulate a very low amount of gross profit and very few companies accumulate a large amount of gross profit.

- Many companies accumulate a very low amount of gross loss and very few companies accumulate a large amount of gross loss.
- Many companies accumulate a very low amount of operating profit and very few companies accumulate a large amount of operating profit.
- Many companies accumulate a very low amount of operating loss and very few companies accumulate a large amount of operating loss.
- Many companies accumulate a very low amount of financial expenditures and very few companies accumulate a large amount of financial expenditures.
- Many companies accumulate a very low amount of outstanding payments and very few companies accumulate a large amount of outstanding payments.

b) Tables 9.6 and 9.7 show the real values of the Herfindahl index, those calculated according to equation (1), as well as the verification whether the real values fall within the calculated values, Hc ± 2s.

Table 9.6

Indicator	Number of companies	Leader's share	H real
Turnover	449420	0.01795	0.00151070
Gross profit	246667	0.07285	0.00706241
Gross loss	202321	0.02360	0.00221281
Operating profit	246496	0.07418	0.00680508
Operating loss	202584	0.02943	0.00235305
Outstanding payments	128074	0.04835	0.00501342
Financial expenditures	189127	0.02375	0.00287259

Table 9.7

Indicator	H real	H computed	Hmin	Hmax	Framing
Turnover	0.001511	0.001186	0.000732	0.001921	Yes
Gross profit	0.007062	0.007415	0.004576	0.012015	Yes
Gross loss	0.002213	0.001896	0.001170	0.003073	Yes
Operating profit	0.006805	0.007584	0.004680	0.012289	Yes
Operating loss	0.002353	0.002492	0.001538	0.004038	Yes
Outstanding payments	0.005013	0.004970	0.003067	0.008053	Yes
Financial expenditures	0.002873	0.001932	0.001192	0.003131	Yes

Conclusions: All the values of the Herfindahl index calculated according to the regression equation fall within the Hc ± 2s limits. Thus, the logarithmic regression equation can be applied to other economic indicators beside turnover.

c) Table 9.8 reports the results of calculating the H_{100}/H and H_{nodes}/H ratios for all the selected economic indicators.

Table 9.8

Indicator	H	H_{100}	H_{nodes}	$H_{100}/H,\%$	$H_{nodes}/H,\%$
Turnover	0.001511	0.001417	0.001510	93.128	99.967
Gross profit	0.007062	0.006987	0.007062	98.936	99.990
Gross loss	0.002213	0.002069	0.002212	93.481	99.964
Operating profit	0.006805	0.006727	0.006804	98.854	99.990
Operating loss	0.002353	0.002226	0.002352	94.591	99.973
Outstanding payments	0.005013	0.004887	0.005012	97.470	99.963
Financial expenditures	0.002873	0.002706	0.002870	94.194	99.912

Conclusions: All the H_{100}/H indicators have values exceeding 90%. Under these circumstances, the tops 100 of all the six indicators can provide qualitative pictures of the real economy in particular domains.

All the H_{nodes}/H indicators have values exceeding 99%. In such circumstances, the node companies of each indicator gain maximum economic relevance.

d) Table 9 presents the values of the *M* and *Gdl* coefficients for the six economic indicators.

Table 9.9

Indicator	M	Gdl
Turnover	0.501	0.213
Gross profit	0.601	0.751
Gross loss	0.500	0.252
Operating profit	0.598	0.809
Operating loss	0.505	0.368
Outstanding payments	0.550	0.466
Financial expenditures	0.518	0.196

Conclusions: It appears that gross profit and operating profit have higher values of the M coefficient and, especially, of the degree of structural dominance of the leader. Otherwise, with some observations on the values of degree of structural dominance of the leader, the M indicator values rest around 0.5.

The usefulness of introducing the degree of structural dominance of the leader is obvious.

The rationale for introducing the two coefficients, M and Gdl, is demonstrated.

e) The percentages of companies covering 80% (ρ_{80}) of the value of each selected economic indicator are shown in Table 9.10.

Table 9.10

Indicator	Number of companies	Number of node companies	ρ_{80}, %
Turnover	449420	14227	3.1656
Gross profit	246667	10920	4.4270
Gross loss	202321	6594	3.2592
Operating profit	246496	11725	4.7567
Operating loss	202584	9573	4.7254
Outstanding payments	128074	4046	3.1591
Financial expenditures	189127	3080	1.6285

It is revealed that all the values of the ρ_{80} shares are lower than 5%.

Table 9.11 presents the six distributions by deciles of the selected economic indicators, together with the turnover deciles.

Table 9.11

Indicator	D_0	D_1	D_2	D_3	D_4	D_5	D_6	D_7	D_8	D_9
Turnover	0.90596	0.04710	0.02020	0.01096	0.00655	0.00417	0.00265	0.00154	0.00074	0.00013
Gross profit	0.87863	0.05852	0.02761	0.01540	0.00898	0.00524	0.00302	0.00164	0.00076	0.00020
Gross loss	0.88617	0.04670	0.02481	0.01566	0.01045	0.00703	0.00460	0.00279	0.00141	0.00038
Operating profit	0.87388	0.06001	0.02849	0.01614	0.00961	0.00573	0.00332	0.00180	0.00082	0.00020
Operating loss	0.86301	0.05526	0.02998	0.01907	0.01278	0.00862	0.00565	0.00344	0.00173	0.00046
Outstanding payments	0.90933	0.04890	0.02072	0.01032	0.00542	0.00285	0.00146	0.00068	0.00027	0.00005
Financial expenditures	0.95195	0.02729	0.01022	0.00502	0.00270	0.00150	0.00081	0.00038	0.00011	0.00002

Table 9.12 presents the informational correlations matrix among the seven distributions.

Recall that the informational correlation coefficient is given by $r = \dfrac{\sum p_i q_i}{\sqrt{\sum p_i^2}\sqrt{\sum q_i^2}}$ (8). The informational correlation coefficient measures the closeness of two given distributions.

Table 9.12

Indicator	Turnover	Gross profit	Gross loss	Operating profit	Operating loss	Outstanding payments	Financial expenditures
Turnover		0.99983	0.99995	0.99978	0.99975	0.99999	0.99962
Gross profit	0.99983		0.99989	1.00000	0.99995	0.99985	0.99896
Gross loss	0.99995	0.99989		0.99986	0.99990	0.99993	0.99941
Operating profit	0.99978	1.00000	0.99986		0.99996	0.99980	0.99883
Operating loss	0.99975	0.99995	0.99990	0.99996		0.99974	0.99882
Outstanding payments	0.99999	0.99985	0.99993	0.99980	0.99974		0.99959
Financial expenditures	0.99962	0.99896	0.99941	0.99883	0.99882	0.99959	

Conclusion: It is revealed that all the values of informational correlation coefficients are higher than 0.99. The remarkable similarity of distributions by deciles of the analyzed indicators clearly reveals.

f) Table 9.13 presents the cumulative normalized logarithmic regression equations for the node companies, as well as the validation of correctness of the obtained results.

<div align="right">**Table 9.13**</div>

Turnover
Regression Summary for Dependent Variable Cumulated Share of Turnover
R = 0.97610732 R^2 = 0.95278550 Adjusted R^2 = 0.95278218

$F_{(1.14225)}$ = 2871E^2	$p < 0.0000$	Std. Error of estimate: s = 0.02002
$\log(p_{cum.\%})$ =	0.207496 $\log(p_{rang\ cum.\%})$ +	1.816304
St. Err.	[0.000387]	[0.000170]
t (14225)	[535.78]	[10693.76]
p-level	[0.00]	[0.00]

Gross profit
Regression Summary for Dependent Variable Cumulated Share of Gross Profit
R = 0.99071490 R^2 = 0.98151602 Adjusted R^2 = 0.98151432

$F_{(1.10918)}$ = 5798E^2	$p < 0.0000$	Std. Error of estimate: s = 0.01063
$\log(p_{cum.\%})$ =	0.178815 $\log(p_{rang\ cum.\%})$ +	1.798229
St. Err.	[0.000235]	[0.000113]
t (10918)	[761.42]	[15873.61]
p-level	[0.00]	[0.00]

Gross loss
Regression Summary for Dependent Variable Cumulated Share of Gross Loss
R = 0.95658757 R^2 = 0.91505977 Adjusted R^2 = 0.91504689

$F_{(1.6592)}$ = 71016.0	$p < 0.0000$	Std. Error of estimate: s = 0.02806
$\log(p_{cum.\%})$ =	0.212759 $\log(p_{rang\ cum.\%})$ +	1.819321
St. Err.	[0.000798]	[0.000351]
t (6592)	[266.487]	[5179.578]
p-level	[0.00]	[0.00]

Operating profit
Regression Summary for Dependent Variable Cumulated Share of Operating Profit
R = 0.99185011 R^2 = 0.98376665 Adjusted R^2 = 0.98376526

$F_{(1.11723)}$ = 7104E^2	$p < 0.0000$	Std. Error of estimate: s = 0.01063
$\log(p_{cum.\%})$ =	0.190958 $\log(p_{rang\ cum.\%})$ +	1.785561
St. Err.	[0.000227]	[0.000113]
t (11723)	[842.87]	[15860.29]
p-level	[0.00]	[0.00]

Operating loss
Regression Summary for Dependent Variable Cumulated Share of Operating Loss
R = 0.95725065 R^2 = 0.91632881 Adjusted R^2 = 0.91632007

$F_{(1.9571)}$ = 1048E^2	$p < 0.0000$	Std. Error of estimate: s = 0.02466
$\log(p_{cum.\%})$ =	0.188416 $\log(p_{rang\ cum.\%})$ +	1.796089
St. Err.	[0.000582]	[0.000288]
t (9571)	[323.755]	[6229.744]
p-level	[0.00]	[0.00]

Outstanding payments
Regression Summary for Dependent Variable Cumulated Share of Outstanding Payments
$R = 0.98310113$ $R^2 = 0.966648783$ Adjusted $R^2 = 0.96647954$
$F_{(1.4044)} = 1166E^2$ $p < 0.0000$ Std. Error of estimate: $s = 0.01762$
$\log(p_{cum.\%}) =$ $0.218944 \log(p_{rang\ cum.\%}) +$ 1.812001
St. Err.   [0.000641]   [0.000280]
t (4044)   [341.509]   [6467.070]
p-level   [0.00]   [0.00]

Financial expenditures
Regression Summary for Dependent Variable Cumulated Share of Financial Expenditures
$R = 0.97871970$ $R^2 = 0.95789226$ Adjusted $R^2 = 0.95787858$
$F_{(1.3078)} = 70020.0$ $p < 0.0000$ Std. Error of estimate: $s = 0.02410$
$\log(p_{cum.\%}) =$ $0.266252 \log(p_{rang\ cum.\%}) +$ 1.870906
St. Err.   [0.001006]   [0.000488]
t (3078)   [264.613]   [3832.299]
p-level   [0.00]   [0.00]

All correlation coefficients have values higher than 0.95, which gives a high determination to the calculated values.

Tables 9.14-9.20 show the values of the validation tests. All verifications lead to the conclusion of consistency of results and, consequently, of the cumulative logarithmic regression equations.

Table 9.14

Turnover

Number of companies	Cumulated real value, %	Cumulated computed value, %	Computed/Real
100	26.1318658	29.7475382	1.138363
200	32.9722111	34.3489567	1.041755
400	40.1185264	39.6621334	0.988624
800	47.3948438	45.7971646	0.966290
1600	55.0677701	52.8811767	0.960293
3200	63.0857645	61.0609604	0.967904
6400	71.2106484	70.5060120	0.990105
Nodes	80.0002774	83.2172643	1.040212

Table 9.15

Gross profit

Number of companies	Cumulated real value, %	Cumulated computed value, %	Computed/Real
100	33.9834468	35.4240867	1.042392
200	39.4974069	40.0984274	1.015217
400	45.3875740	45.3895649	1.000044
800	52.2642092	51.3788877	0.983061
1600	59.4781406	58.1585241	0.977813
3200	66.9466929	65.8327589	0.983361
6400	74.4340134	74.5196376	1.001150
Nodes	79.9999980	81.9918253	1.024898

Table 9.16

Gross loss

Number of companies	Cumulated real value, %	Cumulated computed value, %	Computed/Real
100	32.105586	34.789568	1.083599
200	40.406226	40.317711	0.997809
400	49.008742	46.724290	0.953387
800	57.760304	54.148889	0.937476
1600	66.026796	62.753275	0.950421
3200	73.400035	72.724917	0.990802
6400	79.748473	84.281077	1.056836
Nodes	80.000837	84.818256	1.060217

Table 9.17

Operating profit

Number of companies	Cumulated real value, %	Cumulated computed value, %	Computed/Real
100	31.296434	33.096630	1.057521
200	36.785516	37.780513	1.027049
400	42.887455	43.127267	1.005592
800	49.964253	49.230702	0.985318
1600	57.530283	56.197903	0.976840
3200	65.460145	64.151114	0.980003
6400	73.375245	73.229874	0.998019
Nodes	79.999805	82.204846	1.027563

Table 9.18

Operating loss

Number of companies	Cumulated real value, %	Cumulated computed value, %	Computed/Real
100	31.724414	35.473471	1.118176
200	39.723173	40.422443	1.017604
400	47.497018	46.061855	0.969784
800	55.491300	52.488032	0.945879
1600	63.000343	59.810737	0.949372
3200	69.970467	68.155047	0.974054
6400	76.449747	77.663488	1.015876
Nodes	80.000041	83.784723	1.047309

Table 9.19

Outstanding payments

Number of companies	Cumulated real value, %	Cumulated computed value, %	Computed/Real
100	36.516277	37.113257	1.016348
200	43.829223	43.195427	0.985539
400	52.207948	50.274353	0.962964
800	60.736482	58.513382	0.963398
1600	69.399858	68.102634	0.981308
3200	77.455853	79.263386	1.023336
Nodes	80.002126	83.440662	1.042981

Table 9.20

Financial expenditures

Number of companies	Cumulated real value, %	Cumulated computed value, %	Computed/Real
100	33.697019	33.960011	1.007805
200	42.244822	40.843002	0.966817
400	51.674643	49.121033	0.950583
800	61.586298	59.076850	0.959253
1600	71.573100	71.050505	0.992698
Nodes	80.000127	84.585793	1.057321

9.5. Final conclusions

Our research has indisputably shown that all the conclusions drawn from the nodal analysis of systems companies in terms of turnover were verified for the main economic indicators of companies.

We may say that, from a conceptual perspective, the nodal analysis acquires the status of multi-criteria nodal analysis, with all the implied practical consequences.

The research has special practical applicability meanings, being able to select priorities in the microeconomic analysis of each of the selected indicator, on which the economic stability of companies depends.

Behaviors over time of the main economic actors can be identified, with the possibility of achieving a portal with crucial implications in the decision-making processes at the macro and micro levels.

For information, we present the summary data for 2012.

Table 9.21

The values of overall economic indicators of the national system of companies in 2012

Economic indicator	Amount, mill. EUR	Leader company	Amount, mill. EUR
Turnover	243861.93	OMV Petrom	4370.38
Gross profit	14120.27	OMV Petrom	1028.61
Gross loss	9434.85	CFR Călători	222.67
Operating profit	15891.83	OMV Petrom	1178.80
Operating loss	7309.73	CFR Călători	215.11
Outstanding payments	22762.48	C.N. a Huilei	1100.67
Financial expenditures	11965.1	Rompetrol Rafinare	284.16

Table 9.22

Representative values for Tops 100, the number of node companies and values of the last node company

Economic indicator	Total Top, mill. EUR	Share in the system, %	Number of node companies	Indicator value for the last node company, mill. EUR
Turnover	63725.871	26.13	14227	1.788
Gross profit	4798.555	33.98	10920	0.131

Gross loss	3029.112	32.11	6594	0.121
Operating profit	4973.575	31.30	11725	0.142
Operating loss	2318.968	31.72	9573	0.066
Outstanding payments	8312.009	36.52	4046	0.604
Financial expenditures	4031.884	33.70	3080	0.462

Table 9.23

The asymmetry of economic indicators analyzed in relation to their average

No.	Economic indicator	Number of companies with economic indicator value lower than average	Cumulated economic indicator value of the companies with economic indicator values lower than average, mill. EUR	Number of companies with economic indicator value higher than average	Cumulated economic indicator value of the companies with economic indicator values higher than average, mill. EUR	Average economic indicator value, mill. EUR
1	Turnover	412071	26577.13	37349	217284.80	0.543
2	Gross profit	223816	1813.29	22851	12306.98	0.057
3	Gross loss	187460	1283.66	14861	8151.19	0.047
4	Operating profit	223057	2080.12	23439	13811.70	0.064
5	Operating loss	185756	1113.32	16828	6196.40	0.036
6	Outstanding payments	117181	2369.25	10893	20393.23	0.178
7	Financial expenditures	176852	870.24	12275	11094.87	0.063

Note. All primary data presented in this paper are taken from the economic and financial balance sheets of the companies officially registered at the National Trade Register Office and the Ministry of Finance.

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Chapter 10

Model for assessing the competitiveness of manufacturing industries in terms of economic growth[*]

The assessment model uses **six economic indicators**:

1) The share of value added at factor cost of an industry in in the value added at factor cost of the manufacturing industry (VAi/VA).
2) Productivity (VAi/NSi).
3) Gross operating surplus rate, as the difference between value added at factor cost and total expenditures on wages, in relation to turnover (EBE/CA).
4) Overall profitability ratio, as the ratio of gross profit for the year to turnover (Rb/CA).
5) Share of export of an industry in the export of the manufacturing industry (Exi/Ex).
6) Coverage of exports through imports (Ga).

The choice of the six indicators has mainly focused on the following **elements of economic performance**:

- industry's contribution to the value added at factor costs and to exports (indicators 1 and 5);
- internal economic efficiency (indicators 2, 3 and 4);
- external economic efficiency (indicator 6).

In this model, information on some diagnostic variables of the companies' situation is used, namely: variables that assess the industry's contribution to the value-added of the manufacturing industry and individual industry efficiency (productivity, gross operating surplus and overall profitability).

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[*] Model developed by C. Mereuţă within the project of excellence research centers: Economic Growth, Employment and Competitiveness in the Knowledge Economy - 2006, financed by the Ministry of Education and Research. The model has been selected and published in the treaty *Avantaje competitive ale industriei prelucrătoare din România în Uniunea Europeană*, coordinator Ovidiu Nicolescu, Aspres Publishing House, 2007.

The comparability of data between the Romanian statistics and the statistics of the European Union countries is essential for the entire research.

The mentioned variables are methodologically compatible with the data used for Romania, except for the value-added at factor cost, which in the 1998-2002 period included in the calculation of INSSE also the net taxes on product. In order to ensure the full compatibility of this variable, the data for Romania was adjusted accordingly, redefining the value added at the cost of factors as the sum of the gross operating surplus and the personnel costs.

The Competitiveness Assessment Model is centered on the efficiency/growth aspects of the manufacturing sector. This approach takes into account the deep meaning of the concept of competitiveness, which consists in "empowering a country to achieve sustainably high growth rates of the GDP per capita" (World Economic Forum definition, 1996).

Secondly, the research carried out on a number of 150 countries of the world, and in particular on those of the European Union, has unequivocally demonstrated that **there was no "standard target model" of the manufacturing industry** towards which Romania should aspire. Each country of the European Union has a distinct 'systemic personality', defined as the set of developmental particularities and sectoral specializations built over long periods of time. Significant change in the "systemic personalities" takes place over five to ten year horizons.

The Competitiveness Assessment Model aims to identify from the point of view of economic growth the "systemic personality" of the Romanian manufacturing industry and, therefore, the six indicators relate to the national average of the manufacturing industry.

As compared to the benchmarks of the six economic indicators for the national system of companies of the manufacturing industry, each industry at NACE division level (two digits) is characterized by:

- Relatively strong points - indicators with favorable values in relation to the reference system, marked with + 1;
- Relatively weak points – indicators with unfavorable values in relation to the reference system, marked with -1;
- Indifference points – indicators with values within ± 5% in relation to the reference system, marked with 0.

The values of all indicators above the national average are favorable.

The scale used allows for the **ranking of each subsystem of companies of the manufacturing industry into five classes**, as according to Table 10.1.

Table 10.1

No.	Class	Significance	Number of points
1	A⁺	Significantly favorable condition	$4 \div 6$
2	A	Favorable condition	$1 \div 3$
3	B	Neutral condition	0
4	C	Unfavorable condition	$-1 \div -3$
5	C⁻	Significantly unfavorable condition	$-4 \div -6$

The dynamic assessment of the economic condition of the analyzed subsystems of companies is made by using the "**dynamic state diagram**", which positions the subsystem's classification class in each year of the 1998-2004 period. The 1998-2004 analysis period was chosen taking into account the fact that the year 1998 marked the beginning of privatization of the very large companies in the Romanian manufacturing industry. During this period, the role of the large multinational companies has considerably increased, with a decisive influence on the economic performance of the manufacturing subsystems of companies. Suffice to mention that in 17 out of the 23 industries (at NACE division level), the market leaders are multinational companies and nine of them are subsidiaries of companies ranked in the Top 500 companies of the world by turnover. Moreover, of the 230 companies in the Top 10 of each of the 23 manufacturing industries, almost a third (32.4%) of the ranks are held by multinational companies.

The **average of dynamic assessment** is calculated by using a scale from 1 (class C⁻) to 5 (class A⁺), as according to the relationship $Ed = \dfrac{\sum\limits_{1}^{7} N_i}{7}$, for each industry defining **five classes** with the meanings shown in Table 10.2.

Table 10.2

Class	Ed value	Significance for the 1998-2004 period
A⁺$_d$	$4.5 < Ed \le 5.0$	Significantly favorable condition
A$_d$	$3.5 < Ed \le 4.5$	Favorable condition
B$_d$	$2.5 < Ed \le 3.5$	Neutral condition
C$_d$	$1.5 < Ed \le 2.5$	Unfavorable condition
C⁻$_d$	$1.0 < Ed \le 1.5$	Significantly unfavorable condition

The overall assessment, Eg, of the economic condition of the analyzed industry is defined by the dynamical and static fitting into the five classes. The static evaluation, Es, takes into account the 2004 state class of the analyzed industry. The results obtained are synthesized in an **assessment matrix structured into five areas,** as shown in Figure 10.1.
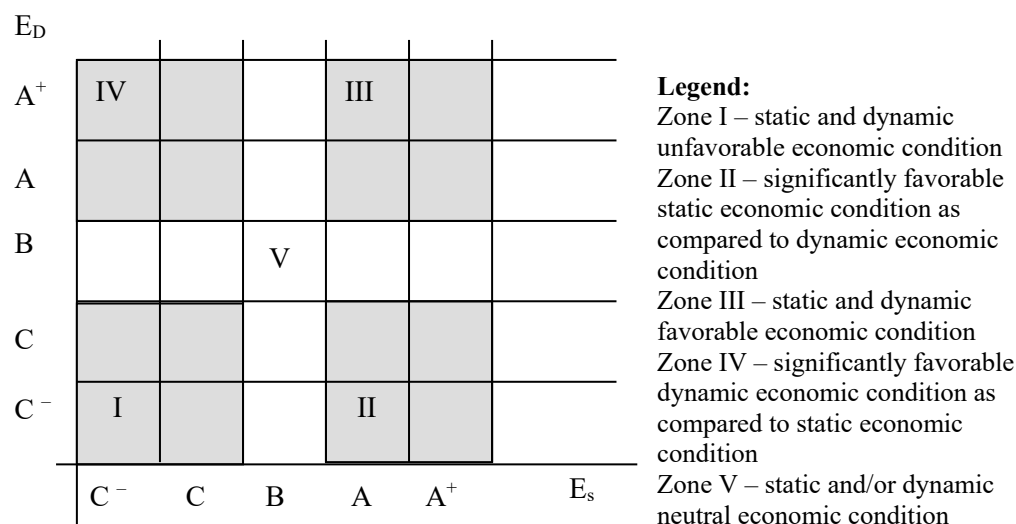
Figure 10.1. *The assessment matrix*

From the perspective of interpreting the model, the areas of maximum interest are I and III, because they clearly differentiate the industries with unfavorable economic condition and the industries with favorable economic condition of the manufacturing industry at NACE division level.

The II and IV areas signal significant "warning" trends that occurred in the last year of the period, characterized by higher class differences between the dynamic and static states. Zone II points to significant improvement, while Zone IV points to a significant worsening of overall economic performance over the last year of the analysis. The industries found in these areas require detailed analyses.

Zone V may signal, as zones II and IV, significant improvements or worsening of the overall economic performance through higher than one class differences between the static and dynamic assessments.

For each of the 23 industries, the model classifies the **degree of import coverage through export into five categories:**

Percentage value of coverage of imports through exports	Significance
> 165	Significant surplus
110 – 165	Surplus
90 – 110	Balance
35 – 90	Deficit
0 – 35	Significant deficit

10.1. Application of competitiveness assessment model in terms of economic growth for 19 manufacturing sectors over the 1998-2004 period

The model, through its components, offers the possibility of summary comparative assessments of the state and competitive potential of the industrial branches and sub-branches of the manufacturing industry from the perspective of economic growth.

Table 10.3

Reference values for the 1998-2004 period

Economic indicator	1998	1999	2000	2001	2002	2003	2004
Share of value added in the value added of the manufacturing industry (VA)	0.0434	0.0434	0.0434	0.0434	0.0434	0.0434	0.0434
Productivity(P), mill. lei/employee	28.16	43.80	65.80	88.83	119.32	150.52	189.64
Overall profitability rate RB/CA (Pg), %	0.017	-4.89	-2.42	-2.04	-0.87	0.87	5.16
Gross operating surplus rate EBE/CA (EBE), %	9.13	10.17	10.05	8.58	9.56	9.91	10.07
Share of exports in manufacturing industry exports (Ex)	0.0455	0.0455	0.0455	0.0455	0.0455	0.0455	0.0455
Coverage of imports through exports of the manufacturing industry (GA)	0.8025	0.8691	0.9020	0.8242	0.8637	0.8222	0.8088

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

The **reference values** were calculated as follows:
- the average share of value added at factor cost was determined for 23 industries of the manufacturing industry (1/23);
- productivity, overall profitability and gross operating surplus are consolidated values, for all the 23 industries of the manufacturing industry;
- the average share of exports in the export of the manufacturing industry was determined for 22 branches (1/22). Industry 37 - Recovery of waste, for which there is no official statistical data, has not been taken into account;
- the coverage of imports through exports of the manufacturing industry refers to the FOB exports and the CIF imports.

The results were synthesized in the form of individual industrial **assessment sheets** for each of the 23 industries, which are presented below. Each industry assessment sheet is structured into four parts:
- values of economic indicators;
- strong, indifference and weak points;
- dynamic state diagram;

   – assessment matrix.

At the end of the sheet, on the basis of all the presented elements, the **diagnosis of the static and dynamic state of the industry** is formulated.

1 = Food and beverage industry – NACE Code 15

<div align="right">**Table 10.4**</div>

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.146	0.112	0.119	0.122	0.139	0.133	0.123
P	33.0	39.8	64.8	95.4	147.3	174.6	194.8
P_g	0.91	-7.39	-0.57	-5.46	-15.15	-2.28	2.67
EBE	9.1	5.1	6.5	6.7	10.0	9.4	8.4
E_x	0.0254	0.0196	0.0147	0.0165	0.0120	0.0132	0.0144
G_A	0.2719	0.3037	0.2464	0.2427	0.2021	0.2296	0.2521

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

<div align="right">**Table 10.5**</div>

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	+1	+1	+1	0	-1	-1	+1	A
1999	+1	-1	-1	-1	-1	-1	-4	C-
2000	+1	0	+1	-1	-1	-1	-1	C
2001	+1	+1	-1	-1	-1	-1	-2	C
2002	+1	+1	-1	0	-1	-1	-1	C
2003	+1	+1	-1	-1	-1	-1	-2	C
2004	+1	0	-1	-1	-1	-1	-3	C

	A+	A	B	C	C-
1998					
1999					
2000					
2001					
2002					
2003					
2004					
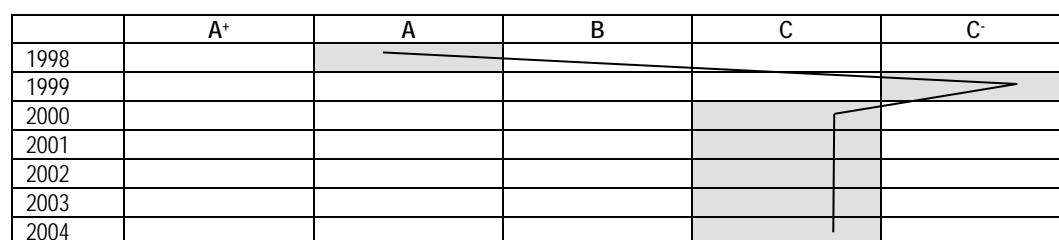
Figure 10.2. *Dynamic status chart*

Dynamic assessment $E_d = 2.143 \Rightarrow C_d$

Static assessment $E_s = \quad \Rightarrow C_s$
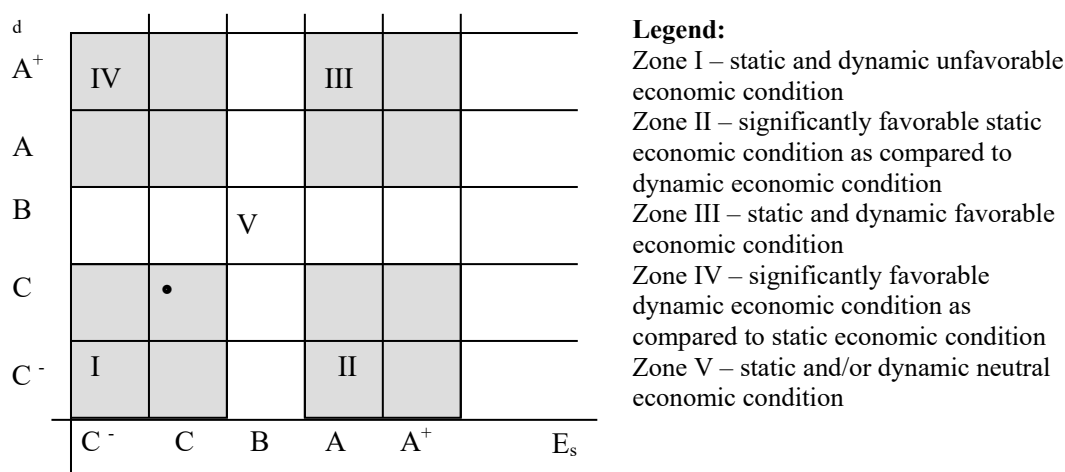
Figure 10.3. *The assessment matrix*

The overall assessment places the **food and beverage industry in Zone I: static economic and dynamic unfavorable condition**[*].

2. Tobacco industry – NACE Code 16

Table 10.6

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.010	0.013	0.012	0.008	0.005	0.007	0.006
P	88.7	176.0	271.9	258.9	198.8	456.9	612.5
P_g	0.81	-2.09	-10.48	-5.46	-15.15	-2.28	2.53
EBE	8.4	10.3	8.3	2.8	0.7	3.6	3.9
E_x	0.0001	0.0000[*]	0.0000[*]	0.0007	0.0010	0.0005	0.0000[*]
G_A	0.0272	0.0031	0.0075	0.0986	0.1647	0.0648	0.0128

[*] Lower than 0.0001.
Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.7

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	-1	+1	+1	-1	-1	-1	-2	C
1999	-1	+1	+1	0	-1	-1	-1	C
2000	-1	+1	-1	-1	-1	-1	-4	C⁻
2001	-1	+1	-1	-1	-1	-1	-4	C⁻
2002	-1	+1	-1	-1	-1	-1	-4	C⁻

---

[*] The food and beverage industry is the branch with the largest share in the value added of the manufacturing industry, being the basic specialization of Romania. Due to its importance, in conjunction with Romania's exceptional agricultural resources, this industry must be one of Romania's main strategic development options.

	VA	P	Pg	EBE	Ex	GA	Total	Class
2003	-1	+1	-1	-1	-1	-1	-4	C⁻
2004	-1	+1	-1	-1	-1	-1	-4	C⁻

	A⁺	A	B	C	C⁻
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.4. *Dynamic status chart*

Dynamic assessment $\quad E_d = \quad 1.286 \Rightarrow \quad C^-_d$

Static assessment $\quad\quad E_s = \quad\quad\quad \Rightarrow \quad C^-_s$
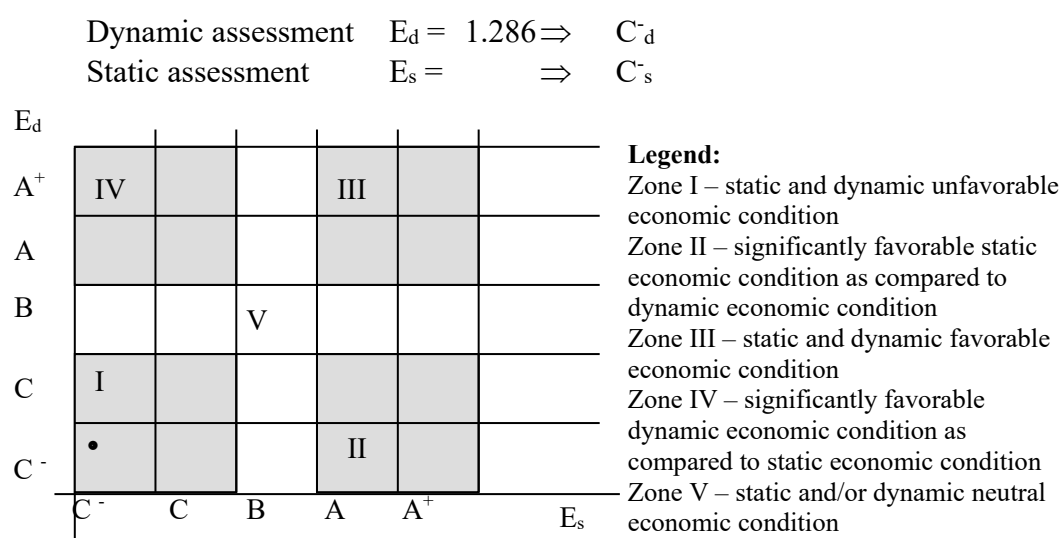
Figure 10.5. *The assessment matrix*

The overall assessment places the **tobacco industry in zone I: static and dynamic economic unfavorable condition**.

3. Textiles and textile products – NACE Code 17

Table 10.8

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.046	0.046	0.044	0.046	0.044	0.043	0.037
P	19.4	32.7	46.5	68.9	94.4	43.5	133.3
Pg	-3.03	-4.59	-1.54	1.86	3.57	3.96	2.01
EBE	11.2	13.7	12.8	13.1	14.1	13.5	11.1
Ex	0.0447	0.0463	0.0424	0.0460	0.0474	0.0507	0.0458
GA	0.2409	0.2291	0.2415	0.2475	0.2638	0.2131	0.3052

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.9

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	+1	-1	-1	+1	0	-1	-1	C
1999	+1	-1	-1	+1	0	-1	-1	C
2000	0	-1	+1	+1	-1	-1	-1	C
2001	+1	-1	+1	+1	0	-1	+1	A
2002	0	-1	+1	+1	0	-1	0	B
2003	0	-1	+1	+1	+1	-1	+1	A
2004	-1	-1	-1	+1	0	-1	-3	C

	A$^+$	A	B	C	C$^-$
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.6. *Dynamic status chart*

Dynamic assessment $E_d = 2.714 \Rightarrow B_d$

Static assessment $E_s = \quad \Rightarrow C_s$

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition
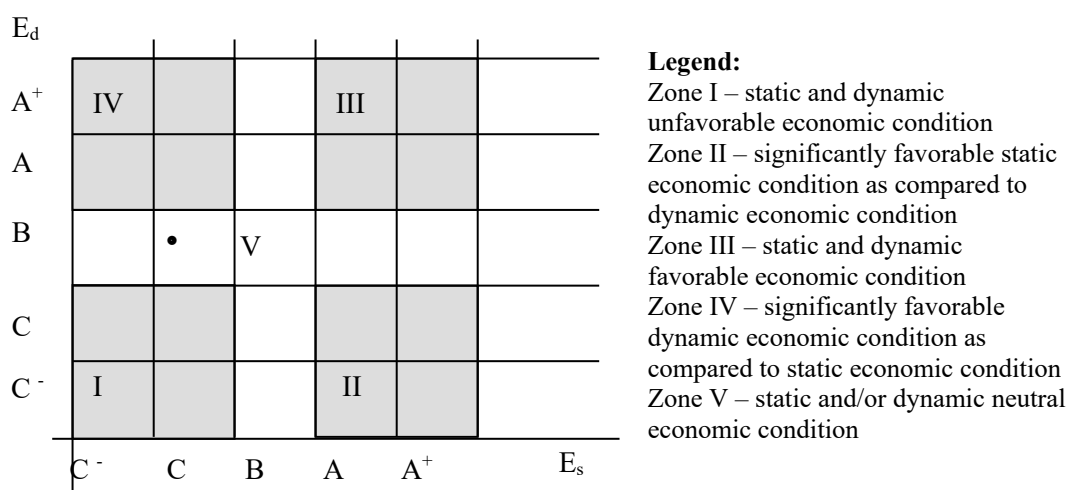
Figure 10.7. *The assessment matrix*

The overall assessment places the **textiles and textile products industry in zone V: neutral dynamic economic condition and unfavorable static condition.**

4. Wearing apparel industry – NACE Code 18

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	4.089	0.103	0.107	0.114	0.114	0.112	0.105
P	20.7	31.3	43.0	57.5	73.8	88.6	104.5
P_g	11.81	11.38	10.77	10.23	8.91	9.80	6.79
EBE	18.1	18.6	17.0	16.2	15.9	14.5	11.9
E_x	0.2230	0.2284	0.2078	0.2269	0.2168	0.2131	0.1850
G_A	6.8415	7.0380	7.1355	7.1281	6.7969	7.8879	7.8730

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.11

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	+1	-1	+1	+1	+1	+1	4	A+
1999	+1	-1	+1	+1	+1	+1	4	A+
2000	+1	-1	+1	+1	+1	+1	4	A+
2001	+1	-1	+1	+1	+1	+1	4	A+
2002	+1	-1	+1	+1	+1	+1	4	A+
2003	+1	-1	+1	+1	+1	+1	4	A+
2004	+1	-1	+1	+1	+1	+1	4	A+

	A+	A	B	C	C-
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.8. *Dynamic status chart*

Dynamic assessment $E_d = 5.000 \Rightarrow A^+_d$
Static assessment $E_s = \quad \Rightarrow A^+_s$
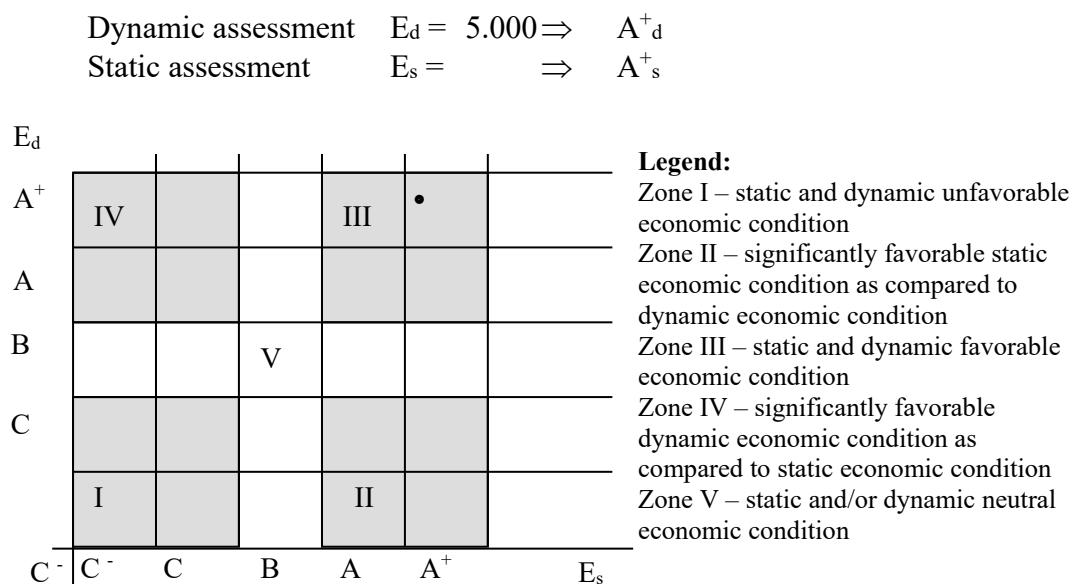
Figure 10.9. *The assessment matrix*

Overall assessment places the **wearing apparel industry in zone III: favorable static and dynamic economic condition.**

5. Leather and footwear industry – NACE Code 19

Table 10.12

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.031	0.033	0.032	0.037	0.040	0.041	0.036
P	19.6	29.3	38.0	53.9	72.2	92.5	103.6
P_g	7.28	5.53	7.05	5.87	7.96	7.60	5.74
EBE	14.8	15.6	11.9	11.0	13.9	12.8	10.2
E_x	0.0794	0.0899	0.0835	0.0957	0.0945	0.0920	0.0742
G_A	1.3250	1.5052	1.4704	1.4158	1.4410	1.4730	1.4553

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.13

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	-1	-1	+1	+1	+1	+1	+2	A
1999	-1	-1	+1	+1	+1	+1	+2	A
2000	-1	-1	+1	+1	+1	+1	+2	A
2001	-1	-1	+1	+1	+1	+1	+2	A
2002	-1	-1	+1	+1	+1	+1	+2	A
2003	-1	-1	+1	+1	+1	+1	+2	A
2004	-1	-1	+1	+1	+1	+1	+2	A

	A⁺	A	B	C	C⁻
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.10. *Dynamic status chart*

Dynamic assessment $E_d = 4.000 \Rightarrow A_d$

Static assessment $E_s = \qquad \Rightarrow A_s$

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition

Figure 10.11. *The assessment matrix*

The overall assessment places the leather and footwear industry in Zone III: **favorable static and dynamic economic condition.**

6. The wood processing industry – NACE Code 20

Table 10.14

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.036	0.041	0.038	0.037	0.039	0.040	0.040
P	22.0	37.8	48.2	67.7	92.9	117.2	141.3
P_g	3.05	3.33	1.93	0.80	-3.23	1.46	4.68
EBE	14.9	15.0	12.4	11.3	12.1	12.22	11.5
E_x	0.0497	0.0584	0.0531	0.0484	0.0474	0.0476	0.0460
G_A	6.6513	6.7943	6.4514	4.9257	4.3766	4.0000	3.6352

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.15

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	-1	-1	+1	+1	+1	+1	+2	A
1999	-1	-1	+1	+1	+1	+1	+2	A
2000	-1	-1	+1	+1	+1	+1	+2	A
2001	-1	-1	+1	+1	+1	+1	+2	A
2002	-1	-1	-1	+1	0	+1	-1	C
2003	-1	-1	+1	+1	0	+1	+1	A
2004	-1	-1	-1	+1	0	+1	-1	C

	A^+	A	B	C	C^-
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.12. *Dynamic status chart*

Dynamic assessment $\quad E_d = \quad 3.429 \Rightarrow \quad B_d$

Static assessment $\qquad E_s = \qquad \Rightarrow \quad C_s$

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition

Figure 10.13. *The assessment matrix*

The overall assessment places the **wood processing industry in zone V: dynamic neutral economic condition and a static unfavorable condition.**

7. The pulp, paper and cardboard industry – NACE Code 21

<div align="right">**Table 10.16**</div>

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.012	0.015	0.018	0.016	0.015	0.014	0.012
P	30.3	62.4	108.4	134.5	177.3	197.9	224.7
P_g	-4.06	-0.68	2.36	1.31	-0.37	-0.91	4.41
EBE	8.4	14.3	14.4	12.0	11.2	9.6	9.2
E_x	0.0054	0.0056	0.0075	0.0080	0.0084	0.0079	0.0070
G_A	0.1707	0.2117	0.3166	0.3011	0.3132	0.2752	0.2688

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

<div align="right">**Table 10.17**</div>

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	-1	+1	-1	-1	-1	-1	-4	C⁻
1999	-1	+1	+1	+1	-1	-1	0	B
2000	-1	+1	+1	+1	-1	-1	0	B
2001	-1	+1	+1	+1	-1	-1	0	B
2002	-1	+1	+1	+1	-1	-1	0	B
2003	-1	+1	-1	0	-1	-1	-3	C
2004	-1	+1	-1	-1	-1	-1	-4	C⁻

	A⁺	A	B	C	C⁻
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.14. *Dynamic status chart*

Dynamic assessment $E_d = 2.286 \Rightarrow C_d$

Static assessment $E_s = \quad \Rightarrow C^-_s$
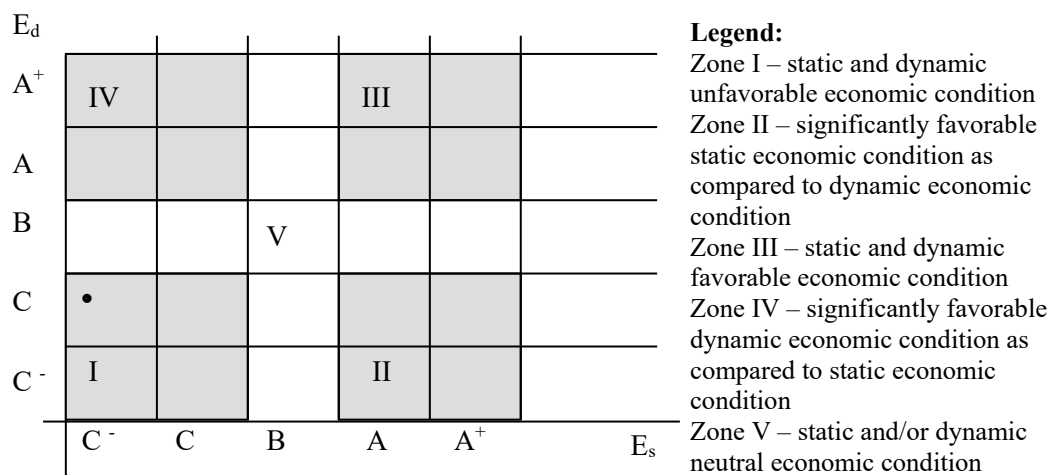
Figure 10.15. *The assessment matrix*

The overall assessment places the **pulp, paper and cardboard industry in zone I: unfavorable static economic and dynamic condition.**

8. Publishing, printing and reproduction of recordings on supports – NACE Code 22

Table 10.18

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.025	0.030	0.029	0.031	0.033	0.031	0.031
P	51.9	88.2	121.0	174.0	235.5	256.0	292.8
P_g	6.67	9.61	10.58	14.88	17.57	12.18	14.33
EBE	20.2	20.9	18.5	19.6	21.9	19.2	18.0
E_x	0.0010	0.0004	0.0006	0.0016	0.0011	0.0010	0.0013
G_A	0.1352	0.0632	0.1014	0.3295	0.2239	0.2239	0.2892

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.19

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	-1	+1	+1	+1	-1	-1	0	B
1999	-1	+1	+1	+1	-1	-1	0	B
2000	-1	+1	+1	+1	-1	-1	0	B
2001	-1	+1	+1	+1	-1	-1	0	B
2002	-1	+1	+1	+1	-1	-1	0	B
2003	-1	+1	+1	+1	-1	-1	0	B
2004	-1	+1	+1	+1	-1	-1	0	B

	A⁺	A	B	C	C⁻
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.16. *Dynamic status chart*

Dynamic assessment $E_d = 3.000 \Rightarrow B_d$
Static assessment $E_s = \quad \Rightarrow B_s$

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition

Figure 10.17. *The assessment matrix*

The overall assessment places the **publishing, printing and reproduction of recordings on supports industry in zone V: neutral static and dynamic economic condition.**

9. Crude oil processing, coal coking and nuclear fuel treatment – NACE Code 23

Table 10.20

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.000	0.007	0.007	-0.005	-0.009	-0.001	0.010
P	1.4	40.5	59.3	-57.6	-164.8	-18.3	353.2
P_g	-11.54	-15.37	-14.51	-14.04	-10.14	-28.03	-4.72
EBE	-7.8	-3.8	-2.9	-8.3	-6.9	-3.6	0.9
E_x	0.0477	0.0427	0.0695	0.0586	0.0739	0.0626	0.0649
G_A	1.3730	1.6512	2.6266	1.4177	3.0702	2.0475	1.8485

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.21

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	-1	-1	-1	-1	0	+1	-3	C
1999	-1	-1	-1	-1	0	+1	-3	C
2000	-1	-1	-1	-1	+1	+1	-2	C
2001	-1	-1	-1	-1	+1	+1	-2	C
2002	-1	-1	-1	-1	+1	+1	-2	C
2003	-1	-1	-1	-1	+1	+1	-2	C
2004	-1	+1	-1	-1	+1	+1	0	B

	A⁺	A	B	C	C⁻
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.18. *Dynamic status chart*

Dynamic assessment $E_d = 2.143 \Rightarrow C_d$

Static assessment $E_s = \qquad \Rightarrow B_s$
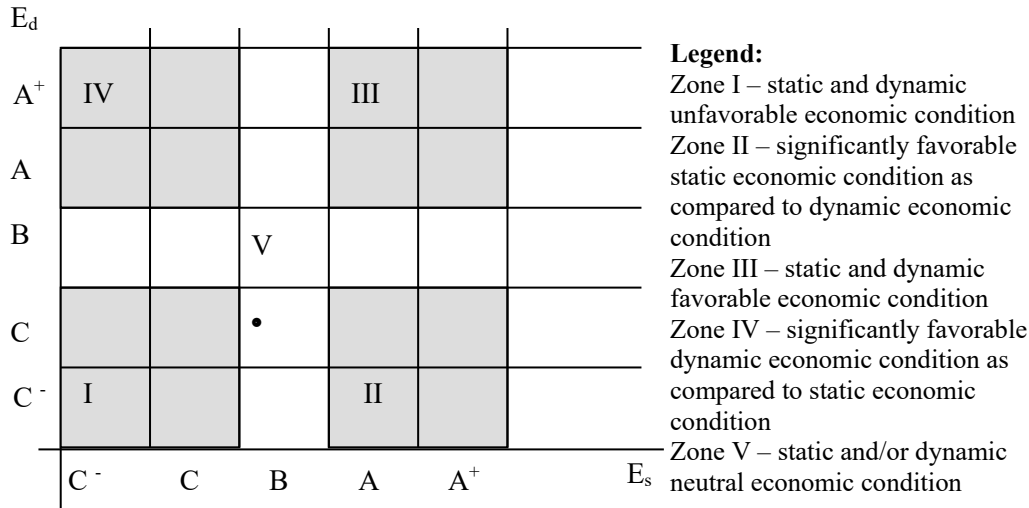
Figure 10.19. *The assessment matrix*

The overall assessment places the **crude oil processing, coal coking and nuclear fuel treatment industry in zone V: neutral static economic condition and unfavorable dynamic condition.**

10. Chemical products and synthetic and man-made fibers industry – NACE Code 24

Table 10.22

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.067	0.076	0.071	0.073	0.063	0.057	0.055
P	39.9	56.8	112.1	163.9	198.7	240.2	313.2
P_g	-0.66	-2.41	-1.28	-3.17	-3.57	0.55	-1.02
EBE	8.7	12.5	10.8	11.2	9.7	8.8	8.1
E_x	0.0600	0.0555	0.0631	0.0557	0.0491	0.0492	0.0559
G_A	0.4115	0.3983	0.4987	0.4126	0.3625	0.3613	0.4037

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.23

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	+1	+1	-1	0	+1	-1	+1	A
1999	+1	+1	+1	+1	+1	-1	+4	A+
2000	+1	+1	+1	+1	+1	-1	+4	A+
2001	+1	+1	-1	+1	+1	-1	+2	A
2002	+1	+1	-1	0	+1	-1	+1	A
2003	+1	+1	-1	-1	+1	-1	0	B
2004	+1	+1	-1	-1	+1	-1	0	B

	A⁺	A	B	C	C⁻
1998					
1999					
2000					
2001					
2002					
2003					
2004					
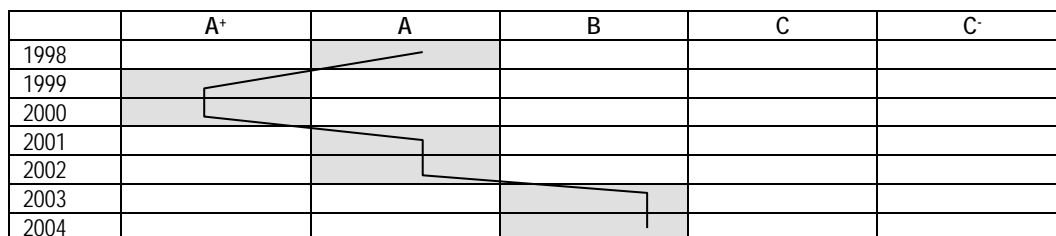
Figure 10.20. *Dynamic status chart*

Dynamic assessment $E_d = 4.000 \Rightarrow A_d$

Static assessment $E_s = \qquad \Rightarrow B_s$

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition

Figure 10.21. *The assessment matrix*

The overall assessment places the **chemical and synthetic and man-made fibers industry in zone V: a neutral static economic condition and favorable dynamic condition.**

11. Rubber and plastics processing industry – NACE Code 25

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.025	0.026	0.023	0.028	0.029	0.037	0.037
P	34.0	56.8	72.0	163.9	154.4	227.2	265.9
P_g	0.52	7.13	-1.56	-0.30	-3.55	4.15	8.51
EBE	12.7	12.5	8.4	11.2	10.5	13.1	13.9
E_x	0.0091	0.0101	0.0090	0.0103	0.0153	0.0225	0.0236
G_A	0.1955	0.2293	0.2185	0.1855	0.2497	0.3266	0.3494

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	-1	+1	+1	+1	-1	-1	0	B
1999	-1	+1	+1	+1	-1	-1	0	B
2000	-1	+1	+1	-1	-1	-1	-2	C
2001	-1	+1	+1	+1	-1	-1	0	B
2002	-1	+1	-1	+1	-1	-1	-2	C
2003	-1	+1	+1	+1	-1	-1	0	B
2004	-1	+1	+1	+1	-1	-1	0	B

	A⁺	A	B	C	C⁻
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.22. *Dynamic status chart*

Dynamic assessment E_d = 2.714   ⇒ B_d

Static assessment E_s =   ⇒ B_s
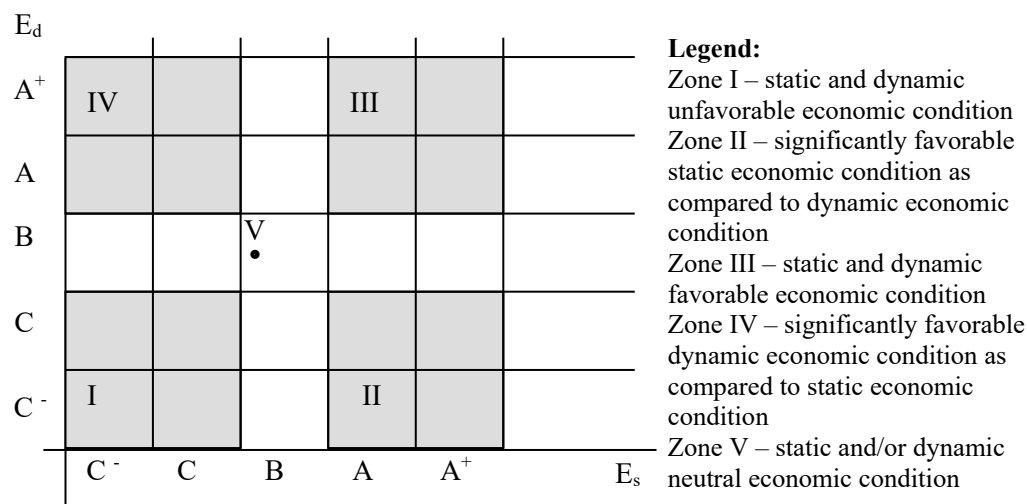
Figure 10.23. *The assessment matrix*

The overall assessment places the **rubber and plastics processing industry in zone V: neutral economic static and dynamic condition**.

12. Other non-metallic mineral products industry – NACE Code 26

Table 10.26

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.068	0.064	0.060	0.062	0.062	0.064	0.068
P	33.8	51.8	77.5	114.7	165.8	224.0	304.0
P_g	6.86	3.55	3.89	6.93	5.54	9.40	14.69
EBE	12.9	13.4	12.7	14.8	16.4	18.4	20.6
E_x	0.0314	0.0275	0.0206	0.0196	0.0198	0.0165	0.0137
G_A	1.3094	1.2538	1.0261	0.8597	0.8388	0.6345	0.5080

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.27

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	+1	+1	+1	+1	-1	+1	+4	A^+
1999	+1	+1	+1	+1	-1	+1	+4	A^+
2000	+1	+1	+1	+1	-1	+1	+4	A^+
2001	+1	+1	+1	+1	-1	0	+3	A
2002	+1	+1	+1	+1	-1	0	+3	A
2003	+1	+1	+1	+1	-1	-1	+2	A
2004	+1	+1	+1	+1	-1	-1	+2	A

	A⁺	A	B	C	C⁻
1998					
1999					
2000					
2001					
2002					
2003					
2004					
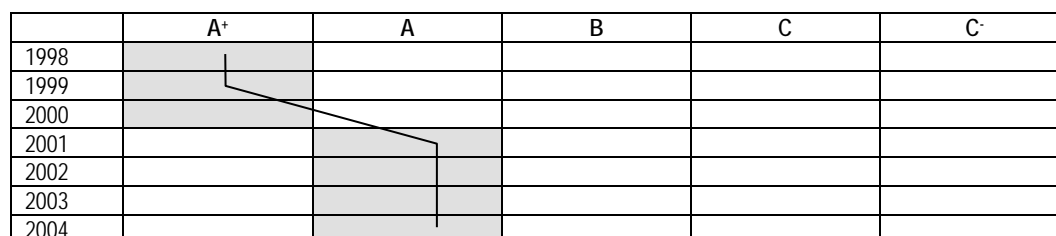
Figure 10.24. *Dynamic status chart*

Dynamic assessment $E_d =$ 4.429 $\Rightarrow$ A_d
Static assessment $E_s =$ $\Rightarrow$ A_s

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition

Figure 10.25. *The assessment matrix*

The overall assessment places the **industry of other non-metallic mineral products in Zone III: favorable static and dynamic economic condition.**

13. Metallurgical industry - NACE Code 27

Table 10.28

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.084	0.081	0.104	0.068	0.082	0.077	0.111
P	33.8	55.1	116.3	103.7	185.2	248.0	511.1
P_g	-5.79	-31.33	-15.94	-20.71	-5.84	-3.26	13.56
EBE	2.6	4.9	9.4	0.2	7.0	9.0	15.0
E_x	0.1780	0.1463	0.1589	0.1272	0.1180	0.1202	0.1439
G_A	2.7082	2.6125	2.5598	1.8671	2.0205	1.9258	1.9992

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.29

Strong, indifference and weakness points

	VA	P	P$_g$	EBE	E$_x$	G$_A$	Total	Class
1998	+1	+1	-1	-1	+1	+1	+2	A
1999	+1	+1	-1	-1	+1	+1	+2	A
2000	+1	+1	-1	-1	+1	+1	+2	A
2001	+1	+1	-1	-1	+1	+1	+2	A
2002	+1	+1	-1	-1	+1	+1	+2	A
2003	+1	+1	-1	-1	+1	+1	+2	A
2004	+1	+1	+1	+1	+1	+1	+6	A$^+$

	A$^+$	A	B	C	C$^-$
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.26. *Dynamic status chart*

Dynamic assessment $\quad$ E$_d$ = $\quad$ 4.143 $\Rightarrow$ $\quad$ A$_d$

Static assessment $\qquad$ E$_s$ = $\qquad \Rightarrow \quad$ A^+_s

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
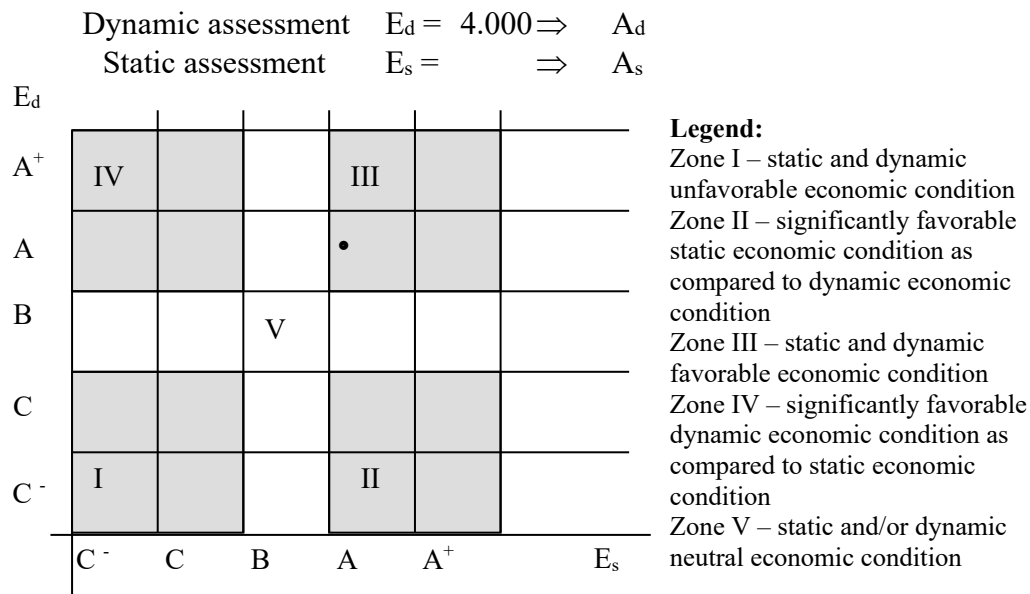Zone V – static and/or dynamic neutral economic condition

Figure 10.27. *The assessment matrix*

The overall assessment places the **metallurgical industry in zone III: favorable static and dynamic economic condition.**

14. Metallic constructions and metal products industry – NACE Code 28

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.048	0.044	0.039	0.042	0.045	0.061	0.053
P	28.8	42.5	57.4	83.8	111.9	145.6	178.6
P_g	3.09	1.94	1.41	1.68	3.28	4.72	6.04
EBE	13.1	12.6	10.8	8.8	11.5	11.2	9.8
E_x	0.0229	0.0218	0.0164	0.0170	0.0172	0.0176	0.0193
G_A	0.5618	0.5761	0.4505	0.3700	0.3567	0.3093	0.3403

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	+1	0	+1	+1	-1	-1	+1	A
1999	0	0	+1	+1	-1	-1	0	B
2000	-1	-1	+1	+1	-1	-1	-2	C
2001	0	-1	+1	0	-1	-1	-2	C
2002	0	-1	+1	+1	-1	-1	-1	C
2003	+1	0	+1	+1	-1	-1	+1	A
2004	+1	-1	+1	0	-1	-1	-1	C

	A+	A	B	C	C-
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.28. *Dynamic status chart*

Dynamic assessment $E_d = 3.143 \Rightarrow B_d$
Static assessment $E_s = \qquad \Rightarrow C_s$

Legend:
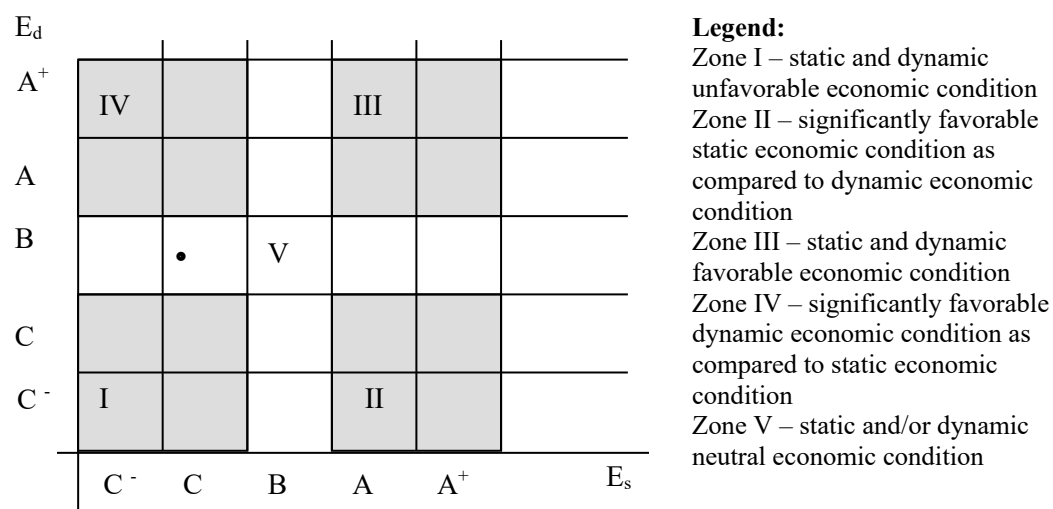Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition

Figure 10.29. *The assessment matrix*

The overall assessment places the **industry of metal construction and metal products in zone V: neutral dynamic economic condition and static unfavorable condition.**

15. Machinery and equipment industry – NACE Code 29

Table 10.32

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.101	0.089	0.082	0.094	0.087	0.072	0.065
P	23.8	34.6	58.1	85.9	111.3	131.9	164.2
P_g	-4.02	-8.61	-6.13	-1.88	-3.35	-6.03	-0.92
EBE	9.4	9.0	8.9	11.2	6.9	3.8	4.8
E_x	0.0638	0.0611	0.0516	0.0610	0.0604	0.0621	0.0735
G_A	0.3778	0.4132	0.4273	0.4300	0.4701	0.4267	0.4942

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.33

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	+1	-1	-1	0	+1	-1	-1	C
1999	+1	-1	-1	-1	+1	-1	-2	C
2000	+1	-1	-1	-1	+1	-1	-2	C
2001	+1	0	+1	+1	+1	-1	+3	A
2002	+1	-1	-1	-1	+1	-1	-2	C
2003	+1	-1	-1	-1	+1	-1	-2	C
2004	+1	-1	-1	-1	+1	-1	-2	C

	A⁺	A	B	C	C⁻
1998					
1999					
2000					
2001					
2002					
2003					
2004					
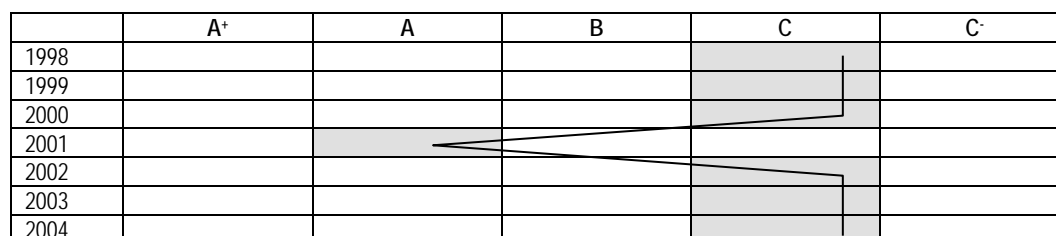
Figure 10.30. *Dynamic status chart*

Dynamic assessment $E_d = 2.286 \Rightarrow C_d$

Static assessment $E_s = \Rightarrow C_s$

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition

Figure 10.31. *The assessment matrix*

The overall assessment places the **industry of machinery and equipment in zone I: unfavorable static and dynamic economic condition.**

16. Industry of office and computing machinery – NACE Code 30

Table 10.34

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.002	0.002	0.002	0.002	0.001	0.001	0.002
P	44.2	95.9	76.3	154.3	150.6	91.7	103.6
P_g	1.74	1.04	-0.70	3.83	0.59	-1.26	2.81
EBE	5.6	6.7	4.4	5.5	3.0	0.0	10.2
E_x	0.0011	0.0131	0.0131	0.0073	0.0015	0.0038	0.0024
G_A	0.0331	0.3871	0.4281	0.2306	0.495	0.1153	0.0756

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	-1	+1	+1	-1	-1	-1	-2	C
1999	-1	+1	+1	-1	-1	-1	-2	C
2000	-1	+1	+1	-1	-1	-1	-2	C
2001	-1	+1	+1	-1	-1	-1	-2	C
2002	-1	+1	+1	-1	-1	-1	-2	C
2003	-1	-1	-1	-1	-1	-1	-6	C^-
2004	-1	-1	-1	0	-1	-1	-5	C^-

	A^+	A	B	C	C^-
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.32. *Dynamic status chart*

Dynamic assessment $\quad E_d = 1.714 \Rightarrow \quad C_d$

Static assessment $\quad\quad E_s = \quad\quad \Rightarrow \quad C^-_s$

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition

Figure 10.33. *The assessment matrix*

The overall assessment places the **computing and office equipment industry in zone I: unfavorable static economic and dynamic condition**.

17. Electrical machinery and equipment industry – NACE Code 31

Table 10.36

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.041	0.038	0.039	0.045	0.047	0.048	0.043
P	38.3	55.4	84.7	123.1	167.1	194.9	207.5
P_g	9.48	8.27	9.25	8.68	9.52	9.42	7.06
EBE	16.2	15.8	14.8	15.1	15.7	15.1	12.3
E_x	0.0362	0.0407	0.0370	0.0469	0.0581	0.0680	0.0741
G_A	0.5929	0.6643	0.6199	0.7788	0.9593	1.0049	1.0639

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.37

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	-1	+1	+1	+1	-1	-1	0	B
1999	-1	+1	+1	+1	-1	-1	0	B
2000	-1	+1	+1	+1	-1	-1	0	B
2001	0	+1	+1	+1	0	-1	+2	A
2002	+1	+1	+1	+1	+1	+1	+6	A+
2003	+1	+1	+1	+1	+1	+1	+6	A+
2004	-1	+1	+1	+1	+1	+1	+4	A+

	A+	A	B	C	C-
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.34. *Dynamic status chart*

Dynamic assessment $E_d = 4.000 \Rightarrow A_d$

Static assessment $E_s = \Rightarrow A^+_s$

Figure 10.35. *The assessment matrix*

The overall assessment places the **industry of machinery and equipment in Zone III: favorable static and dynamic economic condition**.

18. Radio, television and communications equipment industry – NACE Code 32

Table 10.38

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.013	0.015	0.019	0.019	0.014	0.014	0.013
P	52.9	99.4	162.8	249.6	253.4	371.0	438.5
P_g	4.94	7.54	12.52	8.43	0.36	10.51	15.16
EBE	14.4	17.5	24.8	23.3	16.8	19.6	18.2
E_x	0.0037	0.0054	0.0393	0.0364	0.0396	0.0308	0.0278
G_A	0.0530	0.0852	0.3805	0.4789	0.5521	0.4438	0.3974

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.39

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	-1	+1	+1	+1	-1	-1	0	B
1999	-1	+1	+1	+1	-1	-1	0	B
2000	-1	+1	+1	+1	-1	-1	0	B
2001	-1	+1	+1	+1	-1	-1	0	B
2002	-1	+1	+1	+1	-1	-1	0	B
2003	-1	+1	+1	+1	-1	-1	0	B
2004	-1	+1	+1	+1	-1	-1	0	B

	A⁺	A	B	C	C⁻
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.36. *Dynamic status chart*

Dynamic assessment $E_d =$ 3.000 $\Rightarrow$ B_d
Static assessment $E_s =$ $\Rightarrow$ B_s

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition

Figure 10.37. *The assessment matrix*

The overall assessment places the **radio, television and communications equipment industry in zone V: neutral static economic and dynamic condition.**

19. Medical, precision, optical and watch making apparatus and instruments industry – NACE Code 33

Table 10.40

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.008	0.010	0.009	0.010	0.009	0.010	0.010
P	27.9	54.5	86.3	131.4	158.1	209.9	261.1
P_g	2.89	7.87	10.86	12.96	-3.96	14.37	12.18
EBE	15.4	19.3	17.6	18.3	16.2	19.0	18.2
E_x	0.0038	0.0035	0.0034	0.0048	0.0043	0.0042	0.0050
G_A	0.0921	0.1057	0.0973	0.1269	0.1315	0.1326	0.1983

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.41

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	-1	0	+1	+1	-1	-1	-1	C
1999	-1	+1	+1	+1	-1	-1	0	B
2000	-1	+1	+1	+1	-1	-1	0	B
2001	-1	+1	+1	+1	-1	-1	0	B
2002	-1	+1	-1	+1	-1	-1	-2	C
2003	-1	+1	+1	+1	-1	-1	0	B
2004	-1	+1	+1	+1	-1	-1	0	B

	A^+	A	B	C	C^-
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.38 *Dynamic status chart*

Dynamic assessment $\quad E_d = \quad 2.714 \Rightarrow \quad B_d$

Static assessment $\quad\quad E_s = \quad\quad\quad \Rightarrow \quad B_s$

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition
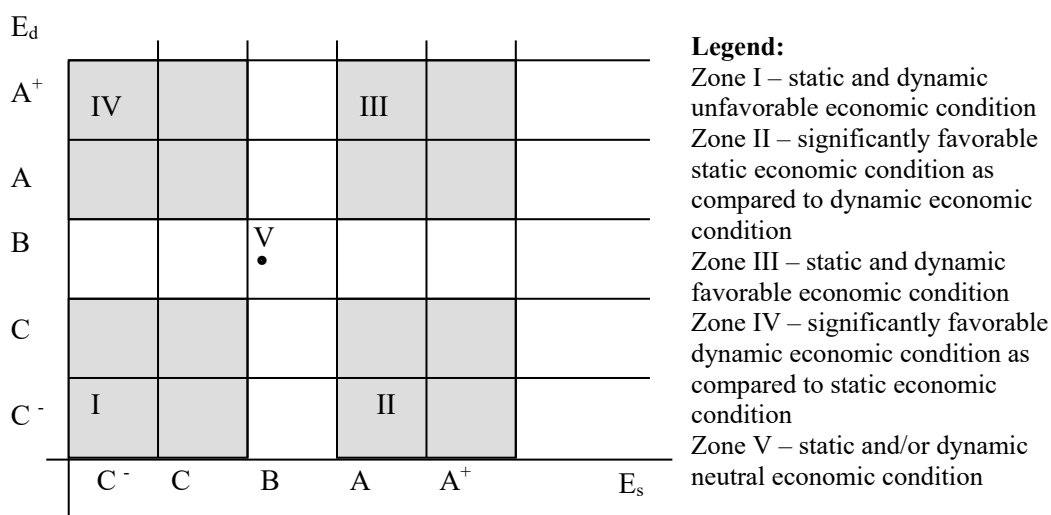
Figure 10.39. *The assessment matrix*

The overall assessment places the **medical, precision, optical and watch making apparatus and instruments industry in zone V: neutral static and dynamic economic condition.**

20. Road transport means industry – NACE Code 34

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.047	0.056	0.045	0.044	0.039	0.044	0.045
P	29.7	40.5	69.0	92.9	117.0	184.7	223.9
P_g	-4.30	-10.76	-24.45	-22.54	-17.65	-2.21	4.87
EBE	5.1	-3.8	7.9	5.7	5.3	8.8	7.6
E_x	0.0175	0.0231	0.0230	0.0240	0.0265	0.0287	0.0349
G_A	0.3065	0.5069	0.4566	0.3604	0.3962	0.3908	0.2966

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	+1	+1	-1	-1	-1	-1	-2	C
1999	+1	-1	-1	-1	-1	-1	-4	C⁻
2000	0	0	-1	-1	-1	-1	-4	C⁻
2001	0	0	-1	-1	-1	-1	-4	C⁻
2002	-1	0	-1	-1	-1	-1	-5	C⁻
2003	0	+1	-1	-1	-1	-1	-3	C
2004	0	+1	-1	-1	-1	-1	-3	C

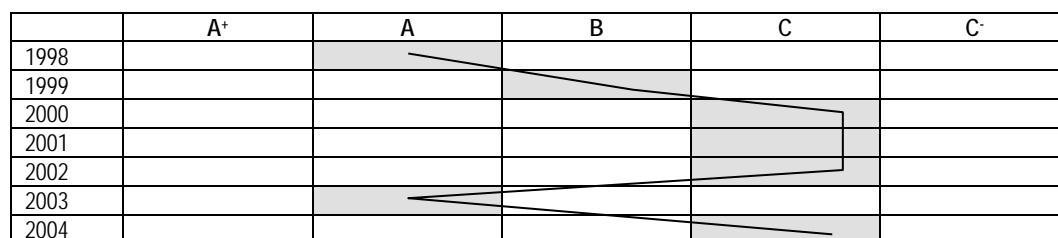|	A⁺	A	B	C	C⁻
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.40. *Dynamic status chart*

Dynamic assessment $E_d = 1.429 \Rightarrow C^-_d$
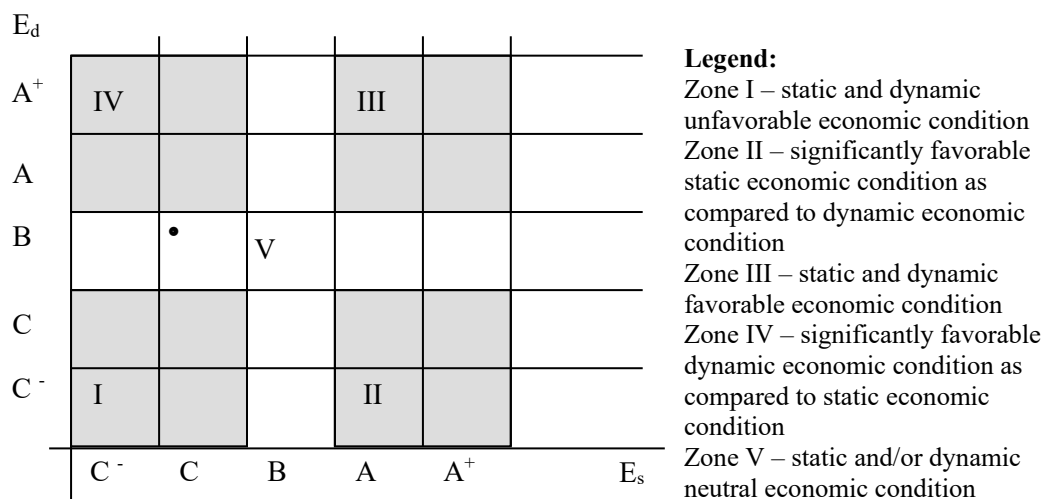
Static assessment $E_s = \qquad \Rightarrow C_s$

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
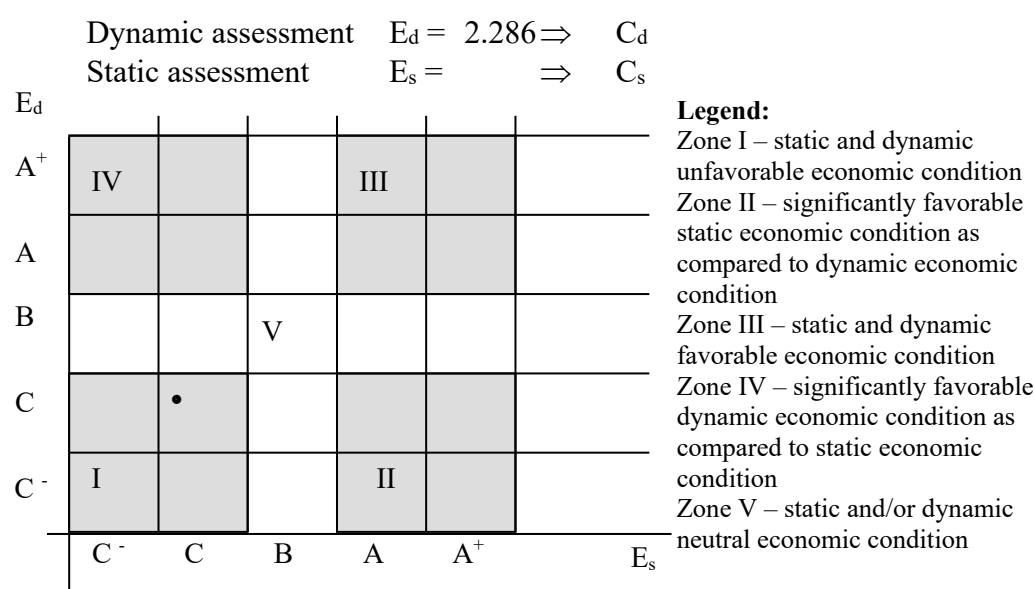Zone V – static and/or dynamic neutral economic condition

Figure 10.41. *The assessment matrix*

The overall assessment places the **road transport means industry in zone I: unfavorable static and dynamic economic condition.**

21. The industry of other transport means – NACE Code 35

Table 10.44

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.050	0.053	0.048	0.052	0.050	0.049	0.042
P	33.8	60.2	82.5	126.5	151.6	187.6	212.6
P_g	-0.37	-0.76	-3.49	6.03	-1.01	7.72	4.70
EBE	16.4	16.6	12.9	15.6	8.8	10.3	9.1
E_x	0.0343	0.0407	0.0339	0.0329	0.0337	0.0322	0.0327
G_A	3.6070	3.2915	3.0855	4.4133	3.3901	1.9213	1.8440

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.45

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	+1	+1	-1	+1	-1	+1	+2	A
1999	+1	+1	+1	+1	-1	+1	+4	A+
2000	+1	+1	-1	+1	-1	+1	+2	A
2001	+1	+1	+1	+1	-1	+1	+4	A+
2002	+1	+1	-1	-1	-1	+1	0	B
2003	+1	+1	+1	0	-1	+1	+3	A
2004	0	+1	-1	-1	-1	+1	-1	C

	A⁺	A	B	C	C⁻
1998					
1999					
2000					
2001					
2002					
2003					
2004					

Figure 10.42. *Dynamic status chart*

Dynamic assessment $E_d = 3.857 \Rightarrow A_d$
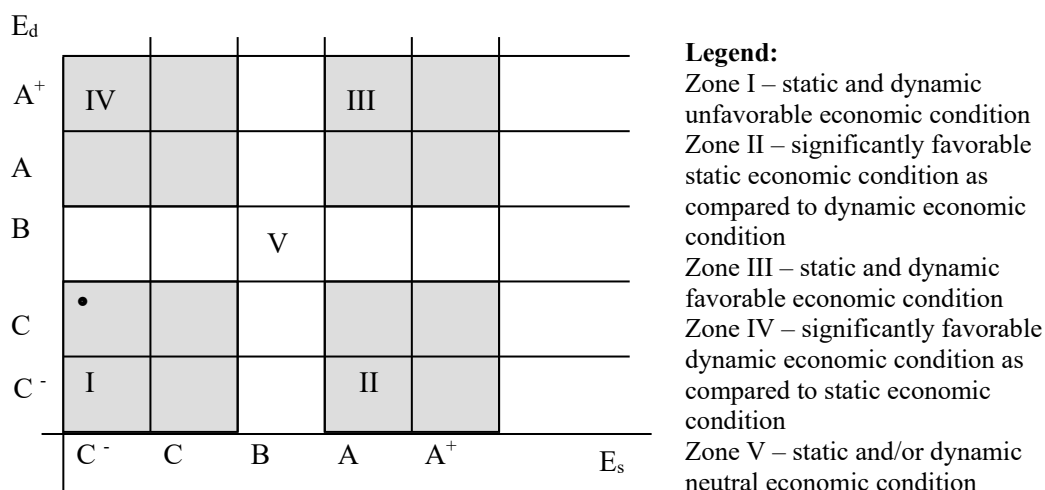
Static assessment $E_s = \Rightarrow C_s$
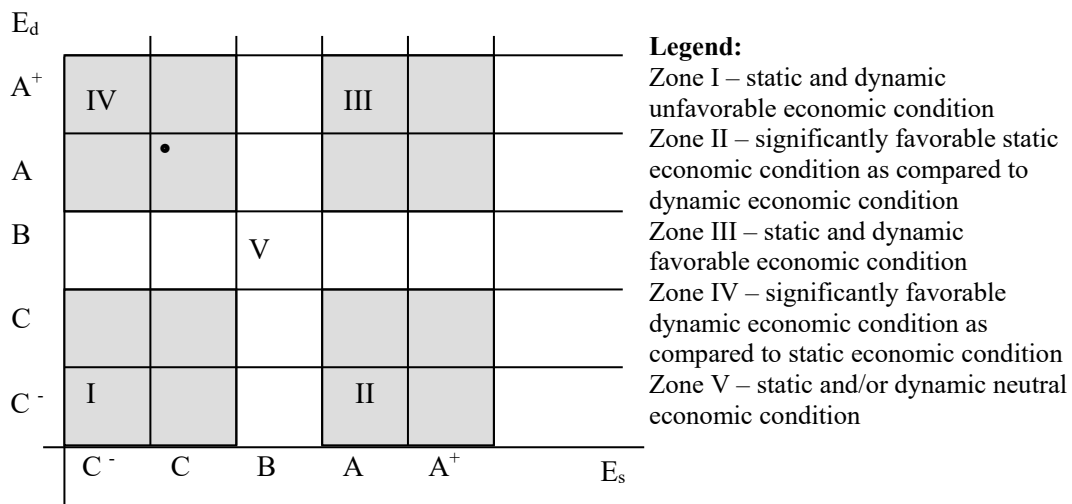
Figure 10.43. *The assessment matrix*

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition

The overall assessment places the **industry of other transport means in Zone IV: significantly favorable dynamic economic condition as compared to the static economic condition.**

22. Production of furniture and other non-classified items – NACE Code 36

<div align="right">Table 10.46</div>

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.045	0.047	0.048	0.049	0.047	0.049	0.046
P	20.2	32.5	47.2	67.2	85.2	110.9	127.3
P_g	1.39	3.20	2.89	4.27	4.61	6.25	5.75
EBE	10.6	12.3	11.9	8.2	12.2	11.7	10.5
E_x	0.0618	0.0599	0.0516	0.0545	0.0540	0.0556	0.0545
G_A	2.4841	2.7061	2.5080	2.4627	2.4662	2.3454	2.3481

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

<div align="right">Table 10.47</div>

Strong, indifference and weakness points

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	0	-1	+1	+1	+1	+1	+3	A
1999	+1	-1	+1	+1	+1	+1	+4	A+
2000	+1	-1	+1	+1	+1	+1	+4	A+
2001	+1	-1	+1	0	+1	+1	+3	A
2002	+1	-1	+1	+1	+1	+1	+4	A+
2003	+1	-1	+1	+1	+1	+1	+4	A+
2004	+1	-1	+1	0	+1	+1	+3	A

	A+	A	B	C	C-
1998					
1999					
2000					
2001					
2002					
2003					
2004					
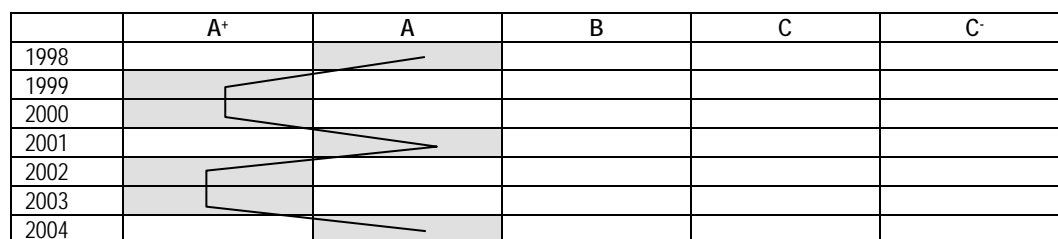
Figure 10.44. *Dynamic status chart*

Dynamic assessment $E_d = 4.571 \Rightarrow A^+_d$

Static assessment $E_s = \Rightarrow A_s$

Legend:
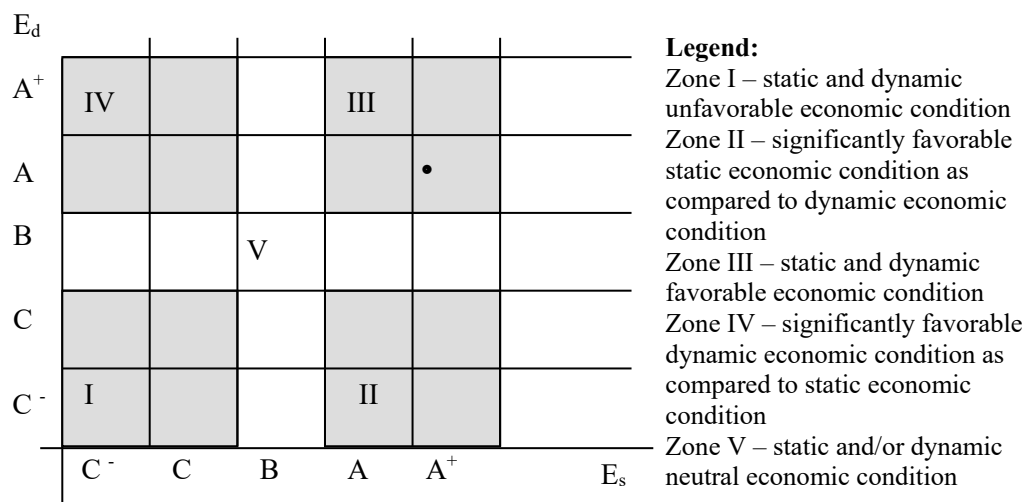Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition

Figure 10.45. *The assessment matrix*

The overall assessment places the **industry of furniture and other non-classified activities in zone III: favorable static and dynamic economic condition.**

23. Recovery of waste and scrap of recyclable materials – NACE Code 37

Table 10.48

Economic indicators

	1998	1999	2000	2001	2002	2003	2004
VA	0.004	0.000	0.006	0.006	0.006	0.007	0.001
P	32.0	5.0	85.0	112.5	151.2	187.8	258.5
P_g	6.59	-8.39	4.73	4.41	3.63	3.19	4.47
EBE	9.9	-5.3	8.2	8.2	7.4	5.8	5.4
E_x	-	-	-	-	-	-	-
G_A	-	-	-	-	-	-	-

Source: Business results and performance, 2000-2006 editions, Romania's Foreign Trade Yearbooks, 2000-2005 editions and author's computations.

Table 10.49

Strong, indifference and weakness points[*]

	VA	P	P_g	EBE	E_x	G_A	Total	Class
1998	-1	+1	+1	+1	-	-	+2	-
1999	-1	-1	-1	-1	-	-	-3	-
2000	-1	+1	+1	-1	-	-	0	-
2001	-1	+1	+1	0	-	-	+1	-
2002	-1	+1	+1	-1	-	-	0	-
2003	-1	+1	+1	-1	-	-	0	-
2004	-1	+1	-1	-1	-	-	-1	-

Since they are not known separately, the exports and import coverage through export, the class framing, the status diagram, and matrix representation are not relevant.

10.2. The overall situation of the manufacturing industry

Synthetically, the positioning of the manufacturing industries in the assessment matrix is shown in Figure 10.46.

Figure 10.46. *The assessment matrix*

Legend:
Zone I – static and dynamic unfavorable economic condition
Zone II – significantly favorable static economic condition as compared to dynamic economic condition
Zone III – static and dynamic favorable economic condition
Zone IV – significantly favorable dynamic economic condition as compared to static economic condition
Zone V – static and/or dynamic neutral economic condition

Legend:
15 – Food and beverage industry
16 – Tobacco industry
17 – Textiles and textile products industry
18 – Wearing apparel industry
19 – Leather and footwear industry
20 – Wood processing industry
21 – Pulp, paper and cardboard and products thereof
22 – Publishing, printing and recording on supports
23 – Crude oil processing, coal coking and treatment of nuclear fuels
24 – Chemicals and synthetic and man-made fibers
25 – Rubber and plastic processing industry
26 – Other products of non-metallic minerals
27 – Metallurgical industry
28 – Metallic constructions and metal products
29 – Machinery and equipment industry
30 – Office and computing equipment
31 – Electrical machinery and equipment
32 – Radio, television and communications equipment
33 – Medical, precision, optical and watch making apparatus and instruments
34 – Road transport means industry
35 – Other transport means
36 – Production of furniture and other non-classified activities.

The analysis of competitiveness potential of the manufacturing industries from the perspective of economic growth allowed for the identification of **five categories of situations**:

A) Industries with a relative competitiveness advantage as compared to the Romanian manufacturing industry. They are located in zone III of the matrix representation - favorable static and dynamic economic condition. This category comprises six branches, namely:

Table 10.50

No.	NACE Code	Name	Observations
1	18	Wearing apparel industry	Declining tendency of the competitive advantage due to short-term Asian competition and potential OPT migration in the medium term
2	19	Leather and footwear industry	
3	26	Other products of non-metallic minerals	
4	27	Metallurgical industry	The volume of production and profitability are strongly influenced by the global steel market
5	31	Electrical machinery and equipment	
6	36	Production of furniture and other non-classified activities	

Overall, the six branches with a relative competitiveness advantage **cumulated in 2004 40.90% of the value added at factor cost and 54.53% of the exports of the manufacturing industry, with a 204.80 % coverage of imports through exports, significantly in surplus.**

Out of the six branches, three registered in 2004 a productivity higher than the national average: the industry of other non-metallic mineral products; the metallurgical industry; the electrical machinery and equipment industry, and three registered a lower than the national average productivity – the wearing apparel industry; the leather and footwear industry; the production of furniture and other non-classified items.

Five out of six sectors recorded in 2004 an import coverage through export in surplus or significantly in surplus: wearing apparel industry; leather and footwear industry; metallurgical industry; electrical machinery and equipment industry; production of furniture and other non-classified items. A single sector, the other non-metallic mineral products industry, had in 2004 a coverage of imports through exports in deficit.

B) Industries with a relative competitiveness deficit

This category includes industries located in zone I of the matrix representation - unfavorable static economic and dynamic condition. They are:

- Food and beverage industry (NACE code 15);
- Tobacco industry (NACE code 16);
- The pulp, paper and cardboard industry and articles thereof (NACE code 21);

- Machinery and equipment industry (NACE code 29);
- Industry of computing and office equipment (NACE code 30);
- Road transport means industry (NACE code 34).

Together, **the six branches cumulated in 2004 28.30% of the value added at factor cost and 13.23% of the manufacturing industry exports, with a 33.91%. coverage of imports through exports, significantly in deficit.**

Out of the six branches, three recorded in 2004 a productivity higher than the national average: the tobacco industry; the pulp, paper and cardboard industry; the road transport means industry; one sector, food and beverage industry, a productivity practically equal to the national one and two sectors, a productivity below the national average: machinery and equipment; industry of office and computing equipment.

All the six sectors registered in 2004 coverage levels of imports through exports in deficit: machinery and equipment industry; food and beverage industry; tobacco industry; pulp, paper and cardboard industry; computing and office equipment industry; road transport means industry.

A special mention is given to the **food and beverage industry** (NACE code 15), which, with the highest share in the value added at the cost of factors of the manufacturing industry has a very low share of exports and a coverage of imports through exports significantly in deficit.

Romania has the lowest coverage of imports through exports of the agricultural and food products and beverages from the 27 countries of the European Union, but it has one of the widest specializations in these branches. We can say without fear of mistaking that this branch presents an increased risk of competition, with the integration of Romania into the European Union.

From the perspective of sustainable economic growth, the continuous decrease in the share in the value added of the manufacturing industry of the machinery and equipment industry is worrisome, characterized by the fact that it produces long-term equipment for raising the comfort level of dwellings and furnishes the other branches of the manufacturing industry. The industry is experiencing the worsening performance of some of the most important companies: SC Tractorul SA Brașov, Rulmentul Brașov, Aversa SA București, Hidromecanica SA Brașov and others.

It is revealed that the road transport means industry, with the most important upstream drive effect, has a relatively low share in the value added. The positive results recently obtained by SC Automobile Dacia Renault SA Pitesti do not compensate for the practical cancellation of production of buses and trolleybuses (SC Rocar SA Bucharest), off-road vehicles (SC ARO Câmpulung SA) and trucks (SC Roman SA Brașov).

C) Industries with neutral static and/or dynamic economic condition

In this category are included nine branches, those placed in zone V of the assessment matrix:

- Textiles and textile products (NACE code 17);
- Wood processing industry (NACE code 20);
- Publishing, printing and reproduction of recordings on supports (NACE code 22);
- Crude oil processing, coal coking and nuclear fuel treatment (NACE code 23);
- Chemical and synthetic and man-made fibers industry (NACE code 24);
- The rubber and plastics processing industry (NACE code 25);
- Metallic constructions and metal products industry (NACE code 28);
- Radio, television and communications equipment industry (NACE Code 32);
- The medical, precision, optical and watch making apparatus and instruments industry (NACE code 33).

Together, **the nine branches cumulated in 2004 28.70% of the value added at factor cost and 28.97% of exports, with a 51.56% coverage of imports through exports, in deficit.**

An important feature of this group is the fact that in 2004, six sectors had a productivity higher than the national average: publishing, printing and reproduction of recordings on supports; crude oil processing, coal coking and nuclear fuel treatment industry; chemical and synthetic and man-made fibers; rubber and plastics processing industry; radio, television and communications equipment industry; medical, precision, optical and watch making apparatus and instruments industry, and only three have a lower value than the national one: textiles and textile products; wood processing industry; metallic constructions and metal products industry.

Two sectors, the wood processing industry and the crude oil processing, coal coking and nuclear fuel treatment industry, recorded in 2004 a degree of import coverage through exports significantly in surplus, the other seven having poor coverage levels in the same year.

Of the nine branches of this group, five carry out **special comments**:

a) Wood processing industry. During the 1998-2001 period, the industry has constantly registered economic performances and shares of exports higher than the national averages, as well as a degree of coverage of imports through exports in significant surplus, being classified in zone III – favorable static and dynamic economic condition. Over the last period, the overall profitability has started to decrease in relation to the national average, as well as the share of exports.

The industry has a competitive advantage determined by the existence of natural resources and by the coverage of imports through exports significantly in surplus.

From the perspective of sustainable economic growth, the industry itself cannot be a significant vector, because of low productivity, low processing of raw material and the governmental forest conservation policies. By prioritizing the raw material to the furniture industry, it can make indirect significant contributions to the growth of the economy.

b) Crude oil processing, coal coking and nuclear fuel treatment. The industry has a significant share of exports, with a degree of import coverage through export significantly in surplus. The potential of this sector in Romania is particular, the problems to be solved pertain to the overall profitability and the gross operating surplus.

To the extent to which the leading companies of the industry: Rompetrol Rafinare; Petromidia, Rafo Onesti and Petrotel Lukoil Ploiesti will be brought to competitive performance parameters, the Romanian crude oil processing industry will contribute significantly to the sustainable economic growth.

c) Equipment, radio, television and communications industry. The industry is characterized throughout the analyzed period by productivity, overall profitability and gross operating surplus significantly higher than the national averages. As a consequence, the industry has an important potential to increase its contribution to the gross domestic product.

d) Medical, precision, optical and watch making apparatus and instruments industry. The industry has significantly strengthened over the past two years, both through the achieved levels of overall profitability and gross operating surplus, as well as through the trends of growth in export and in the coverage of imports through exports.

e) Publishing, printing and reproduction of recordings on supports. The industry is characterized by the constancy of outstanding results, related to productivity, overall profitability and gross operating surplus. The opportunity to develop this industry is obvious, and it also includes important elements of advanced technology related to the recording on supports. This industry can make an important contribution as a vector of development of the information society in Romania.

D) Industries with a dynamic economic condition that is significantly favorable as compared to the static economic condition

This category includes the industry of other means of transport. In 2004, the industry recorded 4.20% a share of the value added at factor cost, 3.27% of the exports of the manufacturing industry, with a 184.18% coverage of imports through exports, significantly in surplus. In 2004, this industry has experienced a

worsening of economic performance, which was below the national averages and a significant reduction in the value added at cost of factors.

The model allows for rapid identification of the static state change in some sectors of high interest for the real economy.

For example, as compared to 2004 and referring to sectors with a significantly favorable static state, we note an important qualitative change. Thus, in 2004, three sectors of the manufacturing industry were classified in the A+ class - significantly favorable sector:

- Wearing apparel – NACE Rev. 1 Code 18;
- Metallurgical industry – NACE Rev. 1 Code 27;
- Production of electrical equipment – NACE Rev. 1 Code 31.

Together, the three sectors covered 25.9% of the gross value added at factor costs and 40.3% of the manufacturing industry exports.

In 2012, also three sectors of the manufacturing industry were classified as A+ - significantly favorable condition:

- Road transport vehicles, trailers and semi-trailers - NACE Rev. 2 Code 29;
- Wearing apparel - NACE Rev. 2 Code 14;
- Rubber and plastics products - NACE Rev. 2 Code 22.

Together, the three sectors accounted for 27.1% of the gross value added at factor cost and 33.1% of the manufacturing industry exports.

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The dynamics of the economy structure.
On what structures do we rely?[*]

11.1. Introduction

The history of economy records the continuous change in its structures, along with the evolution of technology.

"Economic growth is a movement of structural transformation. It is repeatable not only by simple indicators of output and income growth, but also by structural mutations. Growth changes the relative share of different sectors. New sectors emerge, the value added per employee increases" (Francois Perroux).

The image of various structures is obtained by analyzing the structural distributions.

A structural distribution consists of the p_1, p_2, ..., p_n weights of the elements of structure and is characterized by $p_i \geq 0$ and $\sum_1^n p_i = 1$.

Characteristic parameters of structural distributions

Name	Symbol	Value	Observations
Average	$\overline{p}$	$\dfrac{1}{n}$	
Median	p_{med}		The market share corresponding to 50% of the number of companies
Leader's share	P_1		
Standard deviation	S_p	$\dfrac{1}{\sqrt{n}} \cdot \sqrt{\dfrac{n \sum_1^n p_i^2 - 1}{n-1}}$	
Variation coefficient ($\dfrac{S_p}{\overline{p}}$)	Vp	$\sqrt{n} \cdot \sqrt{\dfrac{n \sum_1^n p_i^2 - 1}{n-1}}$	

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[*] Study published in *Oeconomica,* No. 1/2012.

Name	Symbol	Value	Observations
Maximum variation coefficient	Vp_{max}	$\sqrt{n}$	
Minimum variation coefficient	Vp_{min}	0	
Normalized variation coefficient $Vn = \dfrac{V - V\min}{V\max - V\min}$	Vn	$\sqrt{\dfrac{n\sum\limits_{1}^{n} pi^2 - 1}{n-1}}$	G – the Gini-Strück concentration coefficient
Herfindahl index (informational energy)	H	$\sum\limits_{i=1}^{n} p_i^2$	
Maximum Herfindahl index	$Hmax$	1	
Minimum Herfindahl index	$Hmin$	$\dfrac{1}{n}$	
Normalized Herfindahl index $H_N = \dfrac{H - H\min}{H\max - H\min}$	H_n	$\dfrac{n\sum\limits_{i=1}^{n} p_i^2 - 1}{n-1}$	$H_N = G^2$
Square average	$\overline{p^2}$	$\sqrt{\dfrac{1}{n}H}$	
Ratio of square average to arithmetic average	m^*	$\sqrt{n} \cdot \sqrt{H}$	
Maximum value of ratio of square average to arithmetic average	m^*_{max}	$\sqrt{n}$	
Minimum value of ratio of square average to arithmetic average	m^*_{min}	1	
Normalized value of ratio of square average to arithmetic average $m^*_n = \dfrac{m^* - m^*_{min}}{m^*_{max} - m^*_{min}}$	M_n	$\dfrac{\sqrt{H} - \dfrac{1}{\sqrt{n}}}{1 - \dfrac{1}{\sqrt{n}}}$	Normalized Hirschman index
Normalized Renyi square entropy index*	M	$\dfrac{\ln(H) + \ln(n)}{\ln(n)}$	
Degree of structural dominance of the leader*	GDL	$\dfrac{\dfrac{p_1^2}{H} - \dfrac{1}{n}}{1 - \dfrac{1}{n}}$	

Note: Indicators introduced in the economic analysis in 2010 by Prof. Dr. Cezar Mereuță. Based on the research of more than 1000 structural distributions in the economic field, the universal symmetric concentration scale in the 0 - 1 field and the matrix of the economic concentration codes were elaborated.

11.2. The issue of referentials

The finding of some desirable structures of the economy cannot ignore the fundamental question of referential.

From this perspective, it should be noticed that referring to the reference models has relevance as a *tendency signal*, but in our view, it does not impose a necessarily similar solution to a country.

We have to highlight our choice regarding the specificity of the structural models. *We believe that each country has a systemic personality that incorporates effects not only of economic policies, but also various aspects pertaining to natural resources, culture, entrepreneurship, etc.*

Of course, the market imposes successful sectors or subsectors, but on the other hand there are countless cases where consumer behavior is unexpectedly influenced by certain types of products within the same sector or subsector. *The role of international classifiers in the markets is considerable in the choice of referential.*

The comparative analysis of two structures is made by using several methods, from which we have opted for:

a) The qualitative approach that we consider very important because it allows the identification of the significant differences represented by the application of the Spearman correlation coefficient.

b) The Student Test, in versions applicable to the comparability of averages.

c) The informational correlation coefficient, which assesses the degree of proximity or distance of a structure towards the chosen reference ($R_{ST} =$

$$\frac{\sum\limits_{1}^{n} p_i p_j}{\sqrt{H_S \cdot H_T}}$$).

11.3. Structure of referentials

11.3.a. The global trend referential of the world economy for 38 years (1970-2008)

11.3.b. The EU-15 referential in 1989 and 2008. We use the EU-15 reference in 1989 by adding the three countries that have subsequently acceded (Austria, Finland and Sweden in 1995), this inclusion not introducing errors, since the development stages of the three countries were totally compatible with the other 12.

11.3.c. For Romania, the structure is referenced in 1989. The change in structure by the main sectors of the economy was assessed in 2008. The convergence trends were assessed by the major economic sectors between Romania in 1989 and 2008 and the EU-15 in 1989 and 2008.

11.3.d. The evolution of manufacturing industry and services in Romania in 1989 and 2008 was strongly emphasized.

11.3.a. The global trend referential of the world economy for 38 years (1970-2008)

Data on world economy*

Year	Agriculture; GVA (ratio to GDP)	Industry, GVA (ratio to GDP)	Services, GVA (ratio to GDP)	GDP (constant 2000 USD, bill.)	Total population (bill.)	t
1970	0.088045	0.381748	0.530251	12150.33	3.686779	1
1971	0.084897	0.377599	0.537551	12643.13	3.765568	2
1972	0.084013	0.376785	0.539247	13365.88	3.842803	3
1973	0.089573	0.379025	0.531450	14238.58	3.919222	4
1974	0.084936	0.377787	0.537352	14460.27	3.996170	5
1975	0.081331	0.368939	0.549790	14593.57	4.071400	6
1976	0.078016	0.371967	0.550059	15314.79	4.144645	7
1977	0.074667	0.370761	0.554620	15940.03	4.217882	8
1978	0.071681	0.369615	0.558744	16638.98	4.292203	9
1979	0.070681	0.369713	0.559647	17325.44	4.368026	10
1980	0.065403	0.370473	0.564165	17647.64	4.444643	11
1981	0.065812	0.368637	0.565589	18028.15	4.522608	12
1982	0.064648	0.360305	0.575076	18103.90	4.602867	13
1983	0.061020	0.352885	0.586194	18608.00	4.683379	14
1984	0.061733	0.354120	0.584217	19506.92	4.763281	15
1985	0.059244	0.349202	0.591632	20270.77	4.844674	16
1986	0.057499	0.341153	0.601437	20950.69	4.929429	17
1987	0.056396	0.339716	0.603986	21698.84	5.016017	18
1988	0.054619	0.338840	0.606624	22723.94	5.103373	19
1989	0.054651	0.335589	0.609840	23578.32	5.190608	20
1990	0.054093	0.331011	0.614959	24279.62	5.278933	21
1991	0.050616	0.322149	0.627230	24657.04	5.363293	22
1992	0.048123	0.314516	0.637356	25178.55	5.444311	23
1993	0.045894	0.309434	0.644647	25625.26	5.526087	24
1994	0.046195	0.307962	0.645821	26471.29	5.606785	25
1995	0.043922	0.304649	0.651416	27238.21	5.689054	26
1996	0.044168	0.301752	0.654066	28161.00	5.769199	27
1997	0.041764	0.299625	0.658600	29204.83	5.849340	28
1998	0.040106	0.291380	0.668505	29896.58	5.928479	29
1999	0.038155	0.289516	0.672320	30886.20	6.007010	30
2000	0.035791	0.289166	0.675034	32209.31	6.084959	31
2001	0.035332	0.279287	0.685370	32725.52	6.162194	32
2002	0.034840	0.275002	0.690145	33365.57	6.238739	33
2003	0.034501	0.274907	0.690581	34256.90	6.315161	34
2004	0.034002	0.275966	0.690020	35655.09	6.391312	35
2005	0.030951	0.279704	0.689260	36929.93	6.467321	36
2006	0.028969	0.280146	0.690771	38412.43	6.543713	37
2007	0.029098	0.276533	0.694284	39922.80	6.620500	38
2008	0.028703	0.270658	0.700571	40541.99	6.697799	39

The evolution of structure over the 38 years at global level states:
- the reduction in the global share of agriculture by 67.39%;
- the reduction in the share of the industrial sector by 29.1%;
- an increase in the share of services by 32.12%.

The model highlights the clear trend towards tertialization of the world economy over the past 38 years.

11.3.b. The structure of the world economy and the EU-15 in 1989 and 2008

1989

Sector	World, %	EU-15%	EU-15 / World index
1. Agriculture	5.47	5.17	0.945
2. Industry	33.56	31.43	0.936
3. Services	60.97	63.40	1.040

2008

Sector	World, %	EU-15%	EU-15 / World index
1. Agriculture	2.87	1.75	0.610
2. Industry	27.07	25.94	0.958
3. Services	70.06	72.31	1.032

Source: World Data Bank and UNO Statistics (http://unstats.un.org/unsd/snaama/dnlList.asp).

Conclusions:
a) In both periods, the EU-15 recorded lower average values of the shares of agriculture and industry and higher of services.
b) As compared to 1989, in 2008 the gap of agriculture share is growing due to the reduction in the gaps of industry and services.

The comparative analysis of Romania's gross value-added structure with the EU-15 averages in 1989 based on the Student criterion (%).

	Agriculture	Industry**	Manufacturing industry sector*	Con-struction	Trade, hotels and restaurants	Transport, post, storage and telecom-munications	Other services
EU-15 M/S	5.17/3.135	25.09/3.484	21.94/3.530	6.33/0.927	15.01/2.601	7.10/0.913	41.29/4.900
Romania M	16.0	51.2	45.4	6.10	7.50	6.40	12.8
T	13.38	29.00	25.72	0.96	11.17	2.97	22.5
P	> 0.001	> 0.001	> 0.001	< 0.05	> 0.001	0.05 – 0.01	> 0.001
Difference intensity***	Very high	Very high	Very high	Insignificant	Very high	Average	Very high
Place of difference intensity	4	1	2	7	5	6	3

Note: * Sectors have been structured according to the UN standards. ** Industry includes the mining and quarrying industry, manufacturing industry, electricity, heating, gas and water. *** The classes of intensity of difference between the mean of the function of the values of t for the Student criterion: > 0.001 - very high; 0.01 - 0.001 - high; 0.05 - 0.01 - average; < 0.05 - insignificant.
Source: UNO Statistics (http://unstats.un.org/unsd/snaama/dnlList.asp).

The comparative analysis of Romania's gross value-added structure with the EU-15 2008 averages, based on the Student criterion (%).

	Agriculture	Industry**	Manufacturing industry sector*	Construction	Trade, hotels and restaurants	Transport, post, storage and telecom-munications	Other services
EU-15 M/S	1.75/0.854	19.33/4.641	16.37/2.560	6.61/1.863	14.61/3.120	7.42/1.441	50.28/5.560
Romania M	7.4	25.8	22.40	11.90	13.80	11.20	29.90
T	25.60	5.39	5.11	10.99	1.00	10.15	14.18
P	> 0.001	> 0.001	> 0.001	> 0.001	< 0.05	> 0.001	> 0.001
Difference intensity *	Very high	Very high	Very high	Very high	Insignificant	Very high	Very high
Place of difference intensity	1	5	6	3	7	4	2

Note: *Sectors have been structured according to the UN standards. **Industry includes the mining and quarrying industry, manufacturing industry, electricity, heating, gas and water. ***The classes of intensity of difference between the mean of the function of the values of t for the Student criterion: > 0.001 - very high; 0.01 - 0.001 - high; 0.05 - 0.01 - average; < 0.05 - insignificant.
Source: UNO Statistics (http://unstats.un.org/unsd/snaama/dnlList.asp).

The conclusions of the comparative analysis of the gross value-added structures of the Romanian economy with that of the European Union in 1989 and 2008:
1) The significant differences between the industry and manufacturing industry shares were considerably diminished.
2) Romania recorded a significantly higher share of the construction sector in 2008.
3) The significant difference in "other services" was considerably diminished.
4) The share of the "trade, hotels and restaurants" sector in 2008 led to an insignificant difference as compared to the EU-15, the sector registering in 1989 a lower value, with a very high intensity of the difference.
5) The share of agriculture increased the difference significantly in 2008 as compared to 1989, which clearly shows Romania's exceptional specialization in this field.

11.3.c. Evolution of structure of the gross value-added of the main sectors of the Romanian Economy over the 1989-2008 period (%)

	1989	1994	1999	2004	2008
Agriculture	16	21.5	15.1	14.1	7.4
Industry	51.2	39.2	28.2	27.9	25.8
Manufacturing industry	45.4	31.1	21.5	23.6	22.4
Construction	6.1	7.1	5.7	6.6	11.9
Trade, hotels and restaurants	7.5	8.9	15.5	11.8	13.8
Transport, post and telecommunications	6.4	9.5	11.3	11	11.2
Other services	12.8	13.8	24.2	28.6	29.9
	100	100	100	100	100
Spearman correlation in relation to 1989		0.964286	0.821429	0.785714	0.428571
Informational correlation		0.975602	0.87826	0.859599	0.806928

Source: Statistical Yearbooks of the National Institute of Statistics and author's computations.

Conclusions

The qualitative Spearman correlation indicates a "break" in the structure in 2008 as compared to 1989, which shows the net significant change in the structure of gross value-added in 2008 as compared to the reference value.

The informational correlation shows the further structural shift away from 1989, with a higher differential in 2008.

The main changes in the structure of gross value-added in 2008 as compared to 1989 are:

a) the continuous reduction in the share of agriculture, by 53.8% in 2008;
b) the continuous reduction in the share of industry, by 49.6% in 2008;
c) reduction in the share of the manufacturing industry, with a slight increase in 2004, by 50.7% in 2008;
d) a sharp increase in the share of construction in the 2004-2008 period, up to 11.9%, and by 95.1% as compared to 1989!
e) increase in the share of the trade, hotels and restaurants sector, with a maximum in 1999, up to 13.8% in 2008, by 84% as compared to 1989;
f) increase in the share of the transport, mail and telecommunication sector, by 75%;
g) *continuous growth of the "other services" sector, by 133.6%. Overall, the highest difference was recorded in this sector, largely due to the "explosion" of small and medium-sized companies, which reached 141577 in 2008, or 26.4% of the total companies active in industry, trade and services.*

It is important to remember the change in the structure of the gross value-added of the Romanian economy from the perspective of concentration.

Thus, in 1989, the structure had a low value concentration coefficient (M = 0.36) and a high degree of structural dominance of the leader (industry) (GDL = 0.79).

In 2008, the structure had a very low concentration value (M = 0.12) and a structural dominance of the leader (other services) of low value (GDL = 0.32).

11.3.d. Evolution of gross value-added structure of the manufacturing industry between 1989 and 2008

The manufacturing industry continues to be the main driver of growth despite all the fall in the gross domestic product on account of the growth rate differential with 'other services'.

Let us mention the fact that the goods of the manufacturing industry, which are majority as compared to those of the mining and quarrying industry, determine, to a great extent, the development of:

– the construction sector, through the non-metallic industry activity;

- the transport and telecommunications sectors, by the means of transport and the fixed and mobile telephones;
- the trade, hotels and restaurants sector, through the sale and purchase processes in specialized units of food and beverage products and the use of non-metallic products.

As a result, only the "other services" sector is relatively autonomous from the manufacturing industry products.

Evolution of gross value-added of the manufacturing industry by NACE Rev. 1 divisions between 1989 and 2008 (%).

	1989	1994	1999	2004	2008
Food and beverages	14.1	24.8	29.4	28.8	26.3
Tobacco products	1.4	0.9	1.0	0.4	0.3
Textiles and textile products	9.9	4.6	3.5	3.3	2.4
Wearing apparel	5.7	6.3	6.5	6.3	4.4
Tanning and finishing of hides	3.0	1.9	1.9	2.4	1.7
Wood and wood processing	2.7	3.4	4.4	4.6	3.9
Pulp, paper and cardboard and articles thereof	0.9	1.1	1.6	1.5	1.9
Publishing, printing and reproducing of recorded media	0.9	1.0	2.5	2.2	2.8
Crude oil processing, coal coking and nuclear fuel treatment	1.9	4.5	4.2	4.2	4.6
Chemicals and chemical products	3.1	7.3	5.3	4.6	4.1
Rubber and plastic products	2.7	2.3	2.0	3.2	4.1
Other products of non-metallic minerals	5.2	5.6	6.0	4.7	5.3
Basic metals	5.7	6.8	4.5	4.0	3.4
Metal constructions and metal products	7.3	4.9	4.5	4.8	6.5
Machinery and equipment	14.3	9.0	6.2	5.2	4.7
Office and computing machinery	1.1	0.2	0.4	0.4	0.5
Electrical machinery and appliances	2.7	2.3	3.0	3.3	4.1
Radio, TV and telecommunications equipment	2.9	2.3	1.9	1.2	1.5
Medical, precision, optical and watch making apparatus and instruments	3.8	1.4	0.7	0.9	0.7
Road transport means	1.9	3.2	3.5	6.6	10.2
Other transport means	4.0	1.7	2.4	2.2	2.2
Furniture and other industrial products, n.e.c.	4.8	4.5	4.6	5.2	4.4
	100.0	100.0	100.0	100.0	100.0
Spearman correlation		0.785714	0.682101	0.573405	0.451440
Informational correlation		0.884079	0.818716	0.803285	0.78411

Source: Statistical Yearbooks of NIS and author's computations.

The Spearman correlation coefficient indicates a statistically significant difference in structure since 1999. The informational correlation coefficient indicates a continuous shift of structure away from the 1989 reference.

11.4. Milestone for the industrial policies of Romania

The year 1998 marks the efforts of the DCR government to develop industrial policies in Romania.

The Ministry of Economy has contracted a specialized consultancy with the Center for Management and Technology Transfer - CEMATT SA, winner of the national tender for the diagnostic analysis model of the commercial companies.

As a result, the report "The Romanian Manufacturing Industry 1990-1998. Structural Diagnosis. Industrial Policy Options" was written. In the collective of authors were included specialists from the Institute of World Economy, Institute of Economic Forecasting, State Property Fund, quality specialists, economists, etc.

The report was accepted by the contractor and the conclusions were presented by the Ministry of Economy to the Romanian Parliament.

Three were the key approaches in the report:
- the structural classification of the manufacturing industry markets;
- industrial policy options;
- initiation of the nodal analysis of the system of companies (identification of the "hard core" covering 80% of turnover of the manufacturing industry).

a) The structural classification of the domestic markets

An important contribution to the identification of domestic demand is the classification of the internal market according to some specific criteria, which takes into account the use of resources, the technologies used, the position of certain sectors within the system and the product destinations. The structural classification proposed in this paper used the following criteria:
- the qualification/skill level of the human resource;
- the intensity of labor force use;
- the intensity of use of energy resources;
- the intensity of use of agricultural resources;
- the level of technologies;
- the drive effect in the upstream sectors;
- the products intended for communication and dissemination of knowledge;
- the products intended for transport;
- the products intended for equipping the manufacturing industry;
- the durable products (except for transport);

    – the intermediate products.

From the simultaneous analysis of the above-mentioned criteria, a breakdown by seven structural sectors resulted, each sector characterized by specific features.

- The *high technology sector* (ITH), bringing together the electrical and optical equipment industries (NACE codes 30, 31, 32, 33), as well as publishing, printing and reproduction of recorded media (NACE Code 22).

The peculiarities of this sector are:
    – very high qualification of the human resource;
    – the use of very advanced technologies;
    – the manufacture of products designed largely to increase the level of communication, creativity and dissemination of knowledge.

- The *transport means (TR) sector* - NACE codes 34, 35

Characteristic of this sector is that it has the most important driving effect in the upstream branches with a high qualification of human resources, and that it uses advanced technologies and manufactures products meant to increase the speed and/or transport safety.

- *The complex machinery, equipment and technological lines sector (TH)* NACE code 29

The sector uses highly skilled human resources, has advanced technology, its products are designed to equip other manufacturing sectors. The sector also produces durable equipment to increase the comfort level of dwellings.

- *The power-intensive sector (EI),* including the pulp and paper industry, petrochemicals, cement, glass and building materials, metallurgy (EI) - NACE codes 21, 23, 26, 27

The key feature of the sector is the very high (significantly higher than the national average) use of the energy resources, quantified by the ratio of energy expenditure to value-added. The sector typically uses medium-skilled human resources (with some exceptions in the petrochemical industry), has medium-level technologies (also with some exceptions in the petrochemical industry) and mainly produces intermediate goods used in other manufacturing sector or for propulsion of means of transport, soil fertilization, construction of buildings.

- *The labor-intensive sector (MFI)*, bringing together the textile, clothing, leather and footwear, woodworking and furniture production - NACE codes 17, 18, 19, 20, 36

The fundamental feature of the sector is the high level of use of the relatively low-skilled labor force. As a consequence, the productivity of this sector, measured by the value-added per employee, is much lower than the

national average, and the lowest in the selected structural groups. The sector has medium-level technology, its products being usable over a longer duration.

- *The food and beverage industry (ALB)* - NACE code 15

It is the strategic sector of processing of agricultural resources, its products being vital for the health of population.

- *Other industrial sectors (ASI)* - NACE codes 16, 25, 28, 37

The sector is characterized by a great heterogeneity, with no particular peculiarities to justify joining one of the previously selected groups.

b) The industrial policy options

Fundamental recommendation: "Channeling of all financial resources oriented towards Romania to develop the infrastructures that allow for the movement of goods and services (transport, telecommunication, information services, financial-banking) and the desirable sectors:

- ITH - the high technology industry;
- TR - the means of transport industry;
- ALB - the food and beverage industry;
- TH - the machinery and equipment industry."

We add that an infusion of foreign capital involving one or more multinational companies decided to use Romania as a basis for export promotion would produce a *favorable rupture in the production and export data series*.

All the major economic objectives must be geared towards prioritizing the desirable sectors, without deliberately undermining the development of the other sectors the way they can.

The options were developed as a result of the 25-year analysis of the manufacturing industry evolution.

c) According to the options resulted from the nodal analysis, Romania did not have to give up important production capabilities, among which we mention:

- the Pipera platform;
- Electroputere Craiova;
- Roman Brașov;
- Aro Câmpulung;
- Rocar Bucharest;
- Tractorul Brasov;
- Rulmentul Brașov;
- Hidromecanica Brașov.

Those companies should have been privatized with large-scale strategic investors.

The report was criticized for designating winners (although the desirable sectors were validated on the market), while the "guiding lines" imposed *laissez-faire* policies.

The *second option* was winning and the results are known.

11.5. The evolution of structure of gross value-added of the manufacturing industry, grouped into seven areas, during the 1989-2008 period (%)

	1989	1994	1999	2004	2008
ALB	14.10	24.80	29.40	28.80	26.30
IFM	26.10	20.70	20.90	21.80	16.80
EI	16.80	25.30	21.60	19.00	19.30
TH	14.30	9.00	6.20	5.20	4.70
TR	5.90	4.90	5.90	8.80	12.40
ITH	11.40	7.20	8.50	8.00	9.60
ASI	11.40	8.10	7.50	8.40	10.90
	100.00	100.00	100.00	100.00	100.00
Spearman correlation		0.785714	0.571429	0.321429	0.285714
Informational correlation		0.925509	0.900407	0.903624	0.888413

Source: Statistical Yearbooks of NIS and author's computations.

Conclusions:

a) The Spearman correlation coefficient shows that since 1999 the structure differs significantly from that of 1989;

b) The informational correlation coefficient validates the structure's shift away from that of 1989.

From a sectoral perspective:

– The share of the food and beverage industry (ALB) has increased significantly.

– The share of the labor-intensive sector (MFI) has declined.

– The share of the power-intensive sector (EI) has slightly increased - which is why the energy intensity does not decline.

– The share of machinery and equipment (TH) has sharply decreased.

– The share of the transport industry (TR) increased by the "break" effect (2004-2008).

– The share of the high technology sector has been reduced, with a revival in 2008 (ITH).

– The "other industrial sectors" sector remained relatively stable.

11.6. Development of entrepreneurial structures

The evolution of entrepreneurial structures takes place on two main axes, identifiable in all the economic systems: 1) the increase in efficiency of the existing capital and the organizational restructuring of the large companies (intensive development), whose supporters base on arguments derived from the comparative advantage theory of A. Smith, according to which an increase in the division of labor automatically leads to an increase in the efficiency of the system; 2) creation of new companies (extensive development), in favor of which the argument of the economic advantages of competition is brought.

The economic policy of supporting entrepreneurial structures is nothing more than a mix of measures designed to emphasize, in a specific development phase of each nation, one or the other of these development directions.

Generally speaking, in all the EU member countries, in the socio-political and institutional context, especially the technological development favored the concentration of companies towards the system of very large industrial companies (generally between 1950 and 1970), after which, as the growth potential of the economies of scale has begun to deplete, the developed countries have assisted and encouraged the creation of SMEs to meet their standard service functionality, as well as particular economic and social needs (coverage of some markets with a very high degree of specificity or located in sparsely populated areas, software development, tourism and entertainment, etc.)

The capability of these structures to absorb the redundant workforce in the industry already dominated by automated technological lines has been a major asset in favor of supporting them through economic policy measures. However, there are also countries that have managed to converge towards the EU GDP on the basis of an economic structure based on the dominance of SMEs - especially those countries that joined after 1980 (Greece, Spain, Portugal).

In this section, we aim to position Romania in relation to these general trends.

Romania was ranked, according to the latest available data, on the penultimate position in 2006, ahead of Slovakia, in terms of the number of SMEs/1000 inhabitants (see the table below).

Czech Republic	83.2
Portugal	81.2
Greece	74.7
Italy	65.2
Sweden	59.6
Spain	57.9
Cyprus	55.1
Hungary	53.8
Slovenia	48.0
Luxembourg	46.0
Poland	36.9
Finland	38.5
Belgium	38.3
Denmark	38.3
France	38.1
Lithuania	37.1
Austria	34.1
Estonia	33.1
Bulgaria	31.2
Netherlands	30.1
Latvia	29.1
United Kingdom	26.8
Ireland	22.1
Germany	21.5
Romania	19.9
Slovakia	9.8
Malta	NA
Average	42.68
Standard deviation	18.97

Note: NA – unavailable data.
Source: European Business, 2009.

In order to identify the average trends in the European Union, we apply the "core" method[1] to the series representing the number of companies per 1000 inhabitants. Assuming a distribution close to normal, according to the standard classification, we define the following groups:

1) Predominantly intensive development (x_{min}, $x_{med}-\sigma$): Germany, Ireland, Romania, Slovakia.
2) Extensive and intensive balanced development ($x_{med}-\sigma$, $x_{med}+\sigma$): Austria, Belgium, Bulgaria, Denmark, Estonia, Finland, France, Latvia, Lithuania, Luxembourg, Netherlands, Spain, Sweden, Hungary, Cyprus.

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[1] The "core" method in the case of distribution close to the normal one identifies a "core group" of values ranging from $x_{med}+\sigma$ to $x_{med}-\sigma$, which typically covers 67% of the total observations. It also identifies external groups of values ranging from x_{max} to $x_{med}+\sigma$ and x_{min} to $x_{med}-\sigma$, indicating accentuated trends. These groups of values cover each, as a rule, about 17% of the total observations.

3) Predominantly extensive development ($x_{med}+\sigma$, x_{max}): Czech Republic, Italy, Portugal, Greece.

A recent study by the Institute of Economic Forecasting and the Romanian Modeling Center identified SMEs development opportunities in manufacturing according to the degree of accessibility and economic performance in the following sectors:

– metal and metal products industry, excluding machinery and equipment;
– food industry
– manufacture of textile products;
– manufacture of footwear, travel goods;
– manufacture of basic pharmaceutical products and pharmaceutical preparations;
– manufacture of rubber and plastics products;
– manufacture of electrical equipment;
– manufacture of furniture and toys.

11.7. Strategic options regarding the structures on which we should to rely

a) Agriculture and food and beverage industry
Romania has the most important agricultural potential in the European Union.

The food and beverage industry is the leading industry of the manufacturing sector in Romania in terms of its contribution to the formation of gross domestic product.

In every analyzed year after 1994, the share of gross value-added of the food and beverage industry in the manufacturing sector exceeded 25%, putting its mark on what we called the "systemic personality of the Romanian manufacturing industry".

Referring to the contribution of the food and beverage industry to the formation of gross domestic product, we find that it is higher than that of electricity and heating, gas and water industry.

These are the reasons why we regard the food and beverage industry as a fundamental strategic benchmark for the Romanian manufacturing sector and the structure of the economy, in general.

– In our opinion, the division of responsibilities between the Ministry of Agriculture and the Ministry of Economy must be avoided. *Agriculture and the food and beverage industry must be coordinated by the Ministry of Agriculture*, which, in addition to the known agricultural problems, should stimulate the creation of SMEs in processing of food products in the rural areas, thus reducing the enormous gap between the number of enterprises per 1000 inhabitants in the urban and the rural areas (multiple of ≈ 4).

– Efforts must also be made to promote abroad the Romanian food and beverage brands.
– Development of rural tourism in order to increase the index of net use of accommodation capacity (14.2% in 2008).
– Romania cannot remain net importer of food and beverages, as currently is (coverage of imports through exports, GA = 22.3% in 2009).

b) Development of the machinery and equipment sector, TH

It is necessary to mend the errors made through the brutal decline of this sector of great importance for the technological equipment of the country. *The "Greenfield" or franchise or OPT operation of important tractor, agricultural machinery and bearings production capacities needs to be achieved.*

c) Further development of the transport sector, TR, through efforts by Ford Craiova Company to achieve the committed parameters, which will lead to the creation of new production capacities for upstream components.

d) The *development of the high-tech sector, ITH*, through efforts to attract strategic foreign investors, multinational companies, able to achieve "break" effects in this area through major export growth in markets outside the European Union (*e.g.*, the BRICS).

e) Stimulating the service sectors with pronounced creative input, components of the "other services" section. They are:

Division	NACE Rev. 2
58	Publishing activities
59	Motion picture, video and television programme production, sound recording and music publishing activities
62	Computer programming, consultancy and related activities
63	Information service activities
71	Architectural and engineering activities; technical testing and analysis
72	Scientific research and development
73	Advertising and market research
74	Other professional, scientific and technical activities
85	Education
86	Human health activities
87	Residential care activities
90	Creative, arts and entertainment activities
91	Libraries, archives, museums and other cultural activities
93	Sports activities and amusement and recreation activities

The Romanian creativity may lead to significant increases in the value-added share of these activities.

f) Developing tourism, by building the infrastructure mix (airports, ports, motorways, rural roads rehabilitation, rail rehabilitation to increase transport speed).

The goal should be to increase significantly the net accommodation usage index (28.4% in 2009) and the number of tourists (6.1 million in 2009).

The construction of highways will increase the gross value-added in another sector of the economy - construction.

g) The *strategic option of developing some sections of the mining and quarrying industry* remains to be considered.

h) The *option to turn Romania into a net exporter of electric power* should also be considered.

The first six strategic options, plus the entrepreneurial development, form, in my opinion, the structural axis of the Romanian real economy in the medium term.

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EU-15 in 1989

	Agriculture	Industry	Services
Austria	3.68	32.02	64.31
Belgium	2.67	30.04	67.29
Denmark	4.30	26.05	69.64
Finland	6.34	35.09	58.57
France	3.83	27.10	69.08
Germany	1.87	37.67	60.46
Greece	10.53	25.95	63.53
Ireland	10.55	34.23	55.22
Italy	3.77	33.01	63.22
Luxembourg	1.71	29.98	68.30
Netherlands	4.50	29.43	66.07
Portugal	10.04	28.87	61.09
Spain	7.79	34.65	57.56
Sweden	4.12	31.95	63.92
United Kingdom of Great Britain and Northern Ireland	1.92	35.34	62.74
M	5.17	31.43	63.40
S	3.135	3.599	4.288
V	0.606	0.115	0.068
Max	10.55	37.67	69.64
Min	1.71	25.95	55.22

EU-15 in 2008

	Agriculture	Industry	Services
Austria	1.67	30.86	67.46
Belgium	0.77	23.18	76.06
Denmark	1.11	26.27	72.61
Finland	3.02	31.65	65.34
France	2.00	20.45	77.55
Germany	0.88	30.16	68.97
Greece	3.29	19.72	76.99
Ireland	1.73	34.16	64.11
Italy	2.01	27.00	70.99
Luxembourg	0.41	15.91	83.68
Netherlands	1.78	25.46	72.76
Portugal	2.35	23.94	73.70
Spain	2.77	28.89	68.34
Sweden	1.55	27.95	70.50
United Kingdom of Great Britain and Northern Ireland	0.90	23.52	75.58
M	1.75	25.94	72.31
S	0.854	4.952	5.189
V	0.488	0.191	0.072
Max	3.29	34.16	83.68
Min	0.41	15.91	64.11

Annex 11.3

EU-15 in 1989

	Agricul-ture	Industry	Manufac-turing industry	Con-struction	Trade, hotels and restaurants	Transport, post and communi-cations	Other services
Austria	3.68	25.33	21.63	6.69	18.15	7.83	38.33
Belgium	2.67	24.83	22.03	5.21	12.88	7.79	46.63
Denmark	4.30	20.46	17.42	5.59	13.68	7.62	48.34
Finland	6.34	26.57	23.94	8.51	13.19	8.72	36.66
France	3.83	20.55	18.47	6.55	13.29	6.36	49.43
Germany	1.87	31.80	28.56	5.87	11.50	5.58	43.39
Greece	10.53	18.99	15.31	6.96	21.20	6.24	36.09
Ireland	10.55	29.23	26.85	5.00	13.87	5.70	35.65
Italy	3.77	27.07	24.49	5.95	17.19	6.89	39.14
Luxembourg	1.71	24.00	22.32	5.99	15.10	7.49	45.71
Netherlands	4.50	23.54	18.79	5.89	14.57	7.01	44.49
Portugal	10.04	23.13	20.06	5.74	18.06	6.70	36.33
Spain	7.79	27.03	23.91	7.62	15.76	6.57	35.23
Sweden	4.12	25.53	22.06	6.42	13.22	7.85	42.85
United Kingdom of Great Britain and Northern Ireland	1.92	28.37	23.34	6.97	13.52	8.09	41.13
M	5.17	25.09	21.94	6.33	15.01	7.10	41.29
S	3.135	3.484	3.530	0.927	2.601	0.913	4.900
V	0.606	0.139	0.161	0.146	0.173	0.129	0.119
Max	10.55	31.80	28.56	8.51	21.20	8.72	49.43
Min	1.71	18.99	15.31	5.00	11.50	5.58	35.23

Annex 11.4

EU-15 in 2008

	Agricul-ture	Industry	Manufac-turing industry	Con-struction	Trade, hotels and restaurants	Transport, post and communi-cations	Other services
Austria	1.67	23.62	20.40	7.24	16.93	6.31	44.22
Belgium	0.77	17.86	15.78	5.31	14.65	8.37	53.04
Denmark	1.11	20.48	14.64	5.79	13.39	8.04	51.18
Finland	3.02	24.90	22.46	6.75	11.70	9.85	43.78
France	2.00	13.77	11.93	6.68	12.24	6.41	58.90
Germany	0.88	25.97	23.44	4.19	12.08	5.78	51.11
Greece	3.29	13.60	10.54	6.13	23.28	9.90	43.81
Ireland	1.73	24.19	22.49	9.97	12.85	5.26	46.00
Italy	2.01	20.84	18.41	6.16	14.76	7.35	48.89
Luxembourg	0.41	9.71	8.44	6.20	11.88	9.57	62.23
Netherlands	1.78	19.68	14.56	5.78	14.18	6.77	51.80
Portugal	2.35	17.56	14.46	6.38	17.39	6.94	49.37
Spain	2.77	17.33	15.08	11.56	17.69	6.77	43.88
Sweden	1.55	22.83	19.46	5.11	12.31	7.13	51.06
United Kingdom of Great Britain and Northern Ireland	0.90	17.65	13.49	5.87	13.85	6.85	54.88
M	1.75	19.33	16.37	6.61	14.61	7.42	50.28
S	0.854	4.641	4.560	1.863	3.120	1.441	5.562
V	0.488	0.240	0.279	0.282	0.214	0.194	0.111
Max	3.29	25.97	23.44	11.56	23.28	9.90	62.23
Min	0.41	9.71	8.44	4.19	11.70	5.26	43.78

<div align="right">**Annex 11.5**</div>

Central and East-European countries in 1989

	Agriculture	Industry	Manufacturing industry	Con-struction	Trade, hotels and restaurants	Transport, post and communi-cations	Other services
Bulgaria	10.94	51.65	38.87	7.74	7.60	8.62	13.44
Czechoslovakia	7.92	31.11	31.11	7.96	11.36	5.43	36.23
Hungary	11.92	33.06	24.74	6.98	10.27	8.41	29.36
Poland	13.07	42.83	33.08	10.14	8.40	3.64	21.92
Romania	16.00	51.20	45.40	6.10	7.50	6.40	12.80
M	11.97	41.97	34.64	7.78	9.03	6.50	22.75
S	2.955	9.710	7.853	1.505	1.714	2.090	10.145
V	0.247	0.231	0.227	0.193	0.190	0.322	0.446
Max	16.00	51.65	45.40	10.14	11.36	8.62	36.23
Min	7.92	31.11	24.74	6.10	7.50	3.64	12.80

<div align="right">**Annex 11.6**</div>

Central and East-European countries in 2008

	Agriculture	Industry	Manufacturing industry	Con-struction	Trade, hotels and restaurants	Transport, post and communi-cations	Other services
Bulgaria	7.29	21.92	15.65	8.63	11.64	11.91	38.62
Czech Republic	2.33	31.26	26.01	6.29	14.95	10.46	34.70
Hungary	4.31	24.89	21.96	4.56	13.85	8.33	44.06
Poland	4.51	23.05	17.55	8.00	20.04	7.22	37.19
Romania	7.40	25.80	22.40	11.90	13.80	11.20	29.90
Slovakia	3.42	28.15	22.23	8.69	17.97	8.18	33.59
M	4.88	25.84	20.97	8.01	15.38	9.55	36.34
S	2.063	3.430	3.743	2.483	3.080	1.893	4.844
V	0.423	0.133	0.179	0.310	0.200	0.198	0.133
Max	7.40	31.26	26.01	11.90	20.04	11.91	44.06
Min	2.33	21.92	15.65	4.56	11.64	7.22	29.90

<div align="right">**Annex 11.7**</div>

Romania's participation in the foreign market

	1994	1999	2004	2008
ALB	4.39	1.97	1.44	1.61
IFM	35.36	48.29	40.55	22.25
EI	41.64	27.75	28.52	27.90
TH	6.50	6.10	7.35	8.25
TR	6.10	6.38	6.77	18.37
ITH	3.07	6.30	11.07	13.50
ASI	2.94	3.21	4.30	8.12
	100.00	100.00	100.00	100.00

The role of majority foreign-owned node companies on the main markets of Romania[*]

Romania's integration into the global economy can be traced through dynamics of presence of majority foreign-owned companies in the Top 100 Romania - a real qualitative indicator of the state of Romanian economy.

The Top 100 Romania in 2011 led to conclusions of vital importance for the future approaches on analyzing competitiveness growth, namely that for the first time the foreign-owned companies covered **82.1%** of the top turnover and **86.31**% of the gross profit.

According to the author's theory[**] on the significance of the **80%** threshold, these results indicated that, as a whole, the majority foreign-owned companies played a vital part in the performance of the Romanian economy. **There was an urgent need for research focused on the main markets of Romania, which had to answer some key questions, from among which we mention:**

- What is the share of majority foreign-owned companies in the main markets of Romania?
- What is the influence of majority foreign-owned companies on the manufacturing industry markets - the main export sector of the Romanian economy?
- What is the share of market leaders, majority foreign-owned companies?

12.1. **Methodological benchmarks**

According to the purpose of the study, to identify the share and influence of the majority foreign-owned companies in the Romanian economy, the methodological approach accepted the following computing assumptions:

a) The reference markets were chosen at NACE Rev. 2 level. Of the 88 classification markets, we have retained 80, excluding:

- three codes comprising the financial companies: 64, 65 66;

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[*] The chapter presents a representative selection from the study *Capitalul majoritar străin în companiile-noduri de pe principalele piețe din România*, authors Cezar Mereuță, Ionuț Pandelică, Amalia Pandelică, Editura Economică, 2013.
[**] *Clasele concentrării economice și factorul 80%*, author Prof. Cezar Mereuță, Editura Economică, 2012.

- a code including public administration and defense, social security in the public system: 84;
- a code comprising various associative activities: 94;
- two codes of activities of private households as employers of household hired personnel and activities of private households for producing goods and services for own consumption: 97, 98;
- a code of activities of extraterritorial organizations and bodies: 99.

The 80 analyzed markets are presented in Table 12.1 and cover **99.88% of turnover of the national system of non-financial companies**.

Table 12.1

NACE Division	Significance of activity
01	Crop and animal production, hunting and related service activities
02	Forestry and logging
03	Fishing and aquaculture
05	Mining of coal and lignite
06	Extraction of crude petroleum and natural gas
07	Mining of metal ores
08	Other mining and quarrying
09	Mining support service activities
10	Manufacture of food products
11	Manufacture of beverages
12	Manufacture of tobacco products
13	Manufacture of textiles
14	Manufacture of wearing apparel
15	Manufacture of leather and related products
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
17	Manufacture of paper and paper products
18	Printing and reproduction of recorded media
19	Manufacture of coke and refined petroleum products
20	Manufacture of chemicals and chemical products
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
22	Manufacture of rubber and plastic products
23	Manufacture of other non-metallic mineral products
24	Manufacture of basic metals
25	Manufacture of fabricated metal products, except machinery and equipment
26	Manufacture of computer, electronic and optical products
27	Manufacture of electrical equipment
28	Manufacture of machinery and equipment n.e.c.
29	Manufacture of motor vehicles, trailers and semi-trailers
30	Manufacture of other transport equipment
31	Manufacture of furniture
32	Other manufacturing
33	Repair and installation of machinery and equipment
35	Electricity, gas, steam and air conditioning supply
36	Water collection, treatment and supply
37	Sewerage

NACE Division	Significance of activity
38	Waste collection, treatment and disposal activities; materials recovery
39	Remediation activities and other waste management services
41	Construction of buildings
42	Civil engineering
43	Specialized construction activities
45	Wholesale and retail trade and repair of motor vehicles and motorcycles
46	Wholesale trade, except of motor vehicles and motorcycles
47	Retail trade, except of motor vehicles and motorcycles
49	Land transport and transport via pipelines
50	Water transport
51	Air transport
52	Warehousing and support activities for transportation
53	Postal and courier activities
55	Accommodation
56	Food and beverage service activities
58	Publishing activities
59	Motion picture, video and television programme production, sound recording and music publishing activities
60	Programming and broadcasting activities
61	Telecommunications
62	Computer programming, consultancy and related activities
63	Information service activities
68	Real estate activities
69	Legal and accounting activities
70	Activities of head offices; management consultancy activities
71	Architectural and engineering activities; technical testing and analysis
72	Scientific research and development
73	Advertising and market research
74	Other professional, scientific and technical activities
75	Veterinary activities
77	Rental and leasing activities
78	Employment activities
79	Travel agency, tour operator reservation service and related activities
80	Security and investigation activities
81	Services to buildings and landscape activities
82	Office administrative, office support and other business support activities
85	Education
86	Human health activities
87	Residential care activities
88	Social work activities without accommodation
90	Creative, arts and entertainment activities
91	Libraries, archives, museums and other cultural activities
92	Gambling and betting activities
93	Sports activities and amusement and recreation activities
95	Repair of computers and personal and household goods
96	Other personal service activities

b) The analysis was structured by companies with three forms of ownership: majority state-owned, majority Romanian privately-owned, majority foreign-owned.

c) The identification of the companies undergoing computation was done by using the concept of nodal analysis [25], i.e. by selecting in each of the 80 markets the companies, which, in descending order, cover **80%** of the market turnover and determine the economic performance, named **node companies**.

d) For each market, the total number of node companies, the turnover, the overall profitability ratio (the gross profit of the year in relation to turnover - Rb/CA, %), the gross profit or gross losses, were computed. In this way, each of the 80 markets was characterized by a six-section sheet:

Section A – Data on the market's node companies:
- The total number of companies in the market.
- The total number of node companies.
- Share of node companies, %.
- Leader's turnover, millions of euro.
- Leader's market share, %.
- Minimum turnover of the node companies, millions of euro.

Section B - Economic performance of node companies:
- Turnover of node companies, millions of euro.
- Overall profitability rate, Rb/CA, %.
- Gross profit amount, EUR millions.

Section C – Ownership structure of node companies:
- Number of majority state-owned node companies.
- Number of majority Romanian privately-owned node companies.
- Number of majority foreign-owned node companies.

Section D - Economic performance of majority state-owned node companies:
- Turnover of node companies, millions of euro.
- Overall profitability rate, Rb/CA, %.
- Gross profit amount, EUR millions.

Section E - Economic performance of majority Romanian privately-owned companies:
- Turnover of node companies, millions of euro.
- Overall profitability rate, Rb/CA, %.
- Gross profit amount, EUR millions.

Section F - Economic performance of majority foreign-owned companies:

- Turnover of nodal companies, millions of euro.
- Overall profitability rate, Rb/CA, %.
- Gross profit amount, EUR millions.

The structure chosen according to the presented methodology allows for, apart from determining the influence of the foreign-owned companies on the fundamental economic performances of the 80 markets, also their comparative analysis with the majority Romanian privately-owned companies and the majority state-owned companies.

e) The data sources consist of economic and financial balances, company reports and the National Trade Register Office (ONRC). We mention that any errors in the economic data or ownership structure belong to the issuing companies. Due to the uniqueness of the sources, all data tables have no footnotes on the sources of information.

All data presented in the paper refers to 2011.

f) Two groups of data were used in the study to allow for a consistent interpretation:

- The first group refers to the shares of turnover of the node companies with a given ownership structure in the total turnover of the analyzed markets and it is as follows:

The share of turnover of the node companies with a given ownership structure in the total of the node companies, %	Class	Significance of share
$0 < x \leq 20$	1	Very low
$20 < x \leq 40$	2	Low
$40 < x \leq 60$	3	Medium
$60 < x \leq 80$	4	High
$80 < x \leq 100$	5	Very high

- The second group refers to the economic performance assessed by the general profitability rate (RB/CA,%) and it is as follows:

Value of class, Rb/CA, %	Class	Significance of overall profitability
$Rb/CA \leq -5$	1	Unfavorable
$-5 < Rb/CA \leq -0.05$	2	Relatively unfavorable
$-0.05 < Rb/CA \leq +0.05$	3	Balanced
$+0.05 < Rb/CA \leq +5$	4	Relatively favorable
$+5 < Rb/CA$	5	Favorable

12.2. Synthesis of the 80 selected markets

The following sheet presents the synthesis of the 80 selected markets, by the six sections, as according to the methodology.

A. Data on the markets' node companies
1. Total number of companies 421056
2. Total number of node companies 35972
3. Share of node companies, % 8.54
4. Leader's turnover, mill. EUR 3908.886
5. Leader's market share, % 1.64
6. Minimum turnover of node companies, mill. EUR 0.011

B. Economic performance of node companies
1. Turnover of node companies, mill. EUR 193279.769
2. Overall profitability rate Rb/CA, % 2.79
3. Gross profit amount, mill. EUR 5394.883

C. Ownership structure of the node companies
1. Majority state-owned node companies 277
2. Majority Romanian privately-owned node companies 29794
3. Majority foreign-owned node companies 5901

D. Economic performance of majority state-owned node companies

1. Turnover of node companies, mill. EUR 11315.527
2. Overall profitability rate Rb/CA, % 0.85
3. Gross profit amount, mill. EUR 95.744

E. Economic performance of majority Romanian privately-owned node companies
1. Turnover of node companies, mill. EUR 80556.300
2. Overall profitability rate Rb/CA, % 3.30
3. Gross profit amount, mill. EUR 2654.838

F. Economic performance of majority foreign-owned node companies

1. Turnover of node companies, mill. EUR 101407.942
2. Overall profitability rate Rb/CA, % 2.61
3. Gross profit amount, mill. EUR 2644.301

Analysis of synthesis provides us the following important information:

- The share of turnover of the majority foreign-owned node companies in the total turnover of the node companies in the 80 markets is **52.47%**, therefore, the majority. It is higher than the share of turnover of the majority Romanian privately-owned node companies, which is **41.68%**, and it is clearly higher than the share of the majority state-owned node companies of **5.85%**.

- From a numerical point of view, the percentage distribution of the node companies by type of ownership is:
  - majority foreign-owned companies   16.40%
  - majority Romanian privately-owned companies   **82.83%**
  - majority state-owned companies   0.77%.

- The average turnovers per node companies are:
  - majority foreign-owned companies   **17.18 mill. EUR**
  - majority Romanian privately-owned companies   2.70 mill. EUR
  - majority state-owned companies   4.85 mill. EUR

- The relevance of the information obtained from the processing of synthesis is exceptional: **Validation, on the one hand, of the relative atomization of the majority Romanian privately-owned node companies in terms of average turnover, and, on the other hand, the dominant position in the power structures of a significant part of the 80 markets of the majority foreign-owned companies. On the other hand, the importance of majority state-owned companies with important turnover and high number of employees is also retained.**

- From the point of view of economic performance, there is an important gap between the overall profitability rate of the majority state-owned companies and that of the majority Romanian privately-owned companies and the majority foreign-owned companies to the advantage of the latter. It is noteworthy that, although with a slight difference in 2011, the overall profitability rate of the majority Romanian privately-owned node companies (3.30%) was higher than that of the majority foreign-owned node companies (2.61%).

- The share of node companies resulting from the sum of the 80 markets is **8.54**%. The number of node companies determined as the sum of the node companies of each market at NACE Rev. 2 division level is almost triple to that determined at the level of the national system as a whole. The difference is explained by the **heterogeneity** of the markets in terms of turnover. In other words, there are markets where a relatively large number of companies has large turnover, which excludes companies from other smaller markets from the analysis. Thus, it is also explained the fact that for the overall national system the minimum turnover of the node companies is 1.74 million euro, and the one corresponding to the assessment according to our methodology is 0.011 million euro!

Table 12.2 shows, for each market, the total number of companies, the number of node companies, the share of node companies in the total number of companies and the market shares of the leaders.

Table 12.2

NACE Division	Significance of market	Total companies	Total node companies	Share of node companies in total companies, %	Leader's market share, %
01	Crop and animal production, hunting and related service activities	10013	979	9.78	10.22
02	Forestry and logging	3109	534	17.18	30.78
03	Fishing and aquaculture	499	81	16.23	5.13
05	Mining of coal and lignite	26	2	7.69	64.72
06	Extraction of crude petroleum and natural gas	15	2	13.33	78.99
07	Mining of metal ores	17	2	11.76	48.00
08	Other mining and quarrying	786	124	15.78	14.17
09	Mining support service activities	103	17	16.50	30.56
10	Manufacture of food products	6951	353	5.08	2.75
11	Manufacture of beverages	560	23	4.11	22.00
12	Manufacture of tobacco products	10	1	10.00	84.13
13	Manufacture of textiles	1245	85	6.83	6.90
14	Manufacture of wearing apparel	3719	395	10.62	7.55
15	Manufacture of leather and related products	1336	162	12.13	7.53
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	4786	407	8.50	15.31
17	Manufacture of paper and paper products	649	57	8.78	7.18
18	Printing and reproduction of recorded media	1816	160	8.81	11.77
19	Manufacture of coke and refined petroleum products	44	2	4.55	57.36
20	Manufacture of chemicals and chemical products	768	30	3.91	14.91
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	114	13	11.40	15.27
22	Manufacture of rubber and plastic products	2472	123	4.98	14.03
23	Manufacture of other non-metallic mineral products	2189	96	4.39	8.88
24	Manufacture of basic metals	369	16	4.34	22.56
25	Manufacture of fabricated metal products, except machinery and equipment	5043	494	9.80	5.83
26	Manufacture of computer, electronic and optical products	811	13	1.60	37.14
27	Manufacture of electrical equipment	569	32	5.62	10.48
28	Manufacture of machinery and equipment n.e.c.	1169	89	7.61	15.64

NACE Division	Significance of market	Total companies	Total node companies	Share of node companies in total companies, %	Leader's market share, %
29	Manufacture of motor vehicles, trailers and semi-trailers	373	22	5.90	35.19
30	Manufacture of other transport equipment	385	18	4.68	31.20
31	Manufacture of furniture	3048	181	5.94	15.16
32	Other manufacturing	1707	128	7.50	4.86
33	Repair and installation of machinery and equipment	1662	137	8.24	7.94
35	Electricity, gas, steam and air conditioning supply	744	35	4.70	7.52
36	Water collection, treatment and supply	191	29	15.18	18.33
37	Sewerage	163	16	9.82	32.35
38	Waste collection, treatment and disposal activities; materials recovery	1952	125	6.40	5.41
39	Remediation activities and other waste management services	52	7	13.46	24.96
41	Construction of buildings	18784	1529	8.14	1.72
42	Civil engineering	2947	219	7.43	4.66
43	Specialized construction activities	17624	1828	10.37	2.64
45	Wholesale and retail trade and repair of motor vehicles and motorcycles	14597	689	4.72	13.87
46	Wholesale trade, except of motor vehicles and motorcycles	46084	2789	6.05	2.68
47	Retail trade, except of motor vehicles and motorcycles	96779	4854	5.02	10.79
49	Land transport and transport via pipelines	27019	2190	8.11	6.47
50	Water transport	232	17	7.33	20.98
51	Air transport	62	3	4.84	59.82
52	Warehousing and support activities for transportation	2102	181	8.61	10.06
53	Postal and courier activities	828	9	1.09	47.07
55	Accommodation	4272	574	13.44	3.03
56	Food and beverage service activities	16827	3201	19.02	6.57
58	Publishing activities	2698	205	7.60	8.70
59	Motion picture, video and television programme production, sound recording and music publishing activities	1447	89	6.15	7.93
60	Programming and broadcasting activities	427	9	2.11	38.75
61	Telecommunications	2262	8	0.35	21.77
62	Computer programming, consultancy and related activities	6960	419	6.02	5.17
63	Information service activities	1977	124	6.27	10.18
68	Real estate activities	11375	1003	8.82	2.49
69	Legal and accounting activities	7573	1654	21.84	6.37
70	Activities of head offices; management consultancy activities	14413	1578	10.95	3.34

NACE Division	Significance of market	Total companies	Total node companies	Share of node companies in total companies, %	Leader's market share, %
71	Architectural and engineering activities; technical testing and analysis	12705	962	7.57	7.36
72	Scientific research and development	612	63	10.29	10.11
73	Advertising and market research	6235	455	7.30	2.81
74	Other professional, scientific and technical activities	4587	831	18.12	4.35
75	Veterinary activities	1636	321	19.62	13.89
77	Rental and leasing activities	1571	85	5.41	6.93
78	Employment activities	1462	126	8.62	6.66
79	Travel agency, tour operator reservation service and related activities	2251	156	6.93	8.62
80	Security and investigation activities	1522	279	18.33	5.05
81	Services to buildings and landscape activities	2702	335	12.40	3.84
82	Office administrative, office support and other business support activities	4958	384	7.75	5.48
85	Education	2710	614	22.66	4.56
86	Human health activities	8165	902	11.05	4.49
87	Residential care activities	72	20	27.78	20.52
88	Social work activities without accommodation	65	22	33.85	19.10
90	Creative, arts and entertainment activities	1143	198	17.32	8.42
91	Libraries, archives, museums and other cultural activities	177	14	7.91	20.16
92	Gambling and betting activities	731	78	10.67	21.30
93	Sports activities and amusement and recreation activities	1964	188	9.57	10.58
95	Repair of computers and personal and household goods	3042	514	16.90	4.04
96	Other personal service activities	5992	1263	21.08	3.00
	Average			9.98	16.49

The average of the shares of the node companies confirms the mega-experiment made on 1009 markets in *Analiza nodală a sistemelor de companii* şi *Clasele concentrării economice şi factorul 80%*, reaching 9.98%, i.e. about 10%, thus invalidating the 20/80 paradigm.

The variation coefficient of about 60% of the set of 80 values of the shares demonstrates the diversity of values, of which only 5 (6.25%) are equal to or higher than 20%.

It is remarkable that the sets of the 80 values of the total number of companies, of the node companies and of the shares of the leader, verify one of the fundamental conclusions of the study *Clasele concentrării economice şi factorul 80%,* namely:

Among the number of node companies, the total number of companies and the share of the leader there is a logarithmic dependence relationship, with a 90% determination. Checks on the 80 markets indicated the same value for determination.

12.3. The issue of market leaders

An excellent criterion for assessing the impact of majority foreign-owned companies on the real economy is to identify the leaders of the 80 analyzed markets.

As defined by Kotler and Armstrong in *Principles of Marketing*, the market leader is "**the company with the largest market share from a sector of activity, which usually drives the other companies in terms of price changes, new product launches, distribution grids, and promotion costs**" (p. 1062).

It is obvious that the market leader of the majority foreign-owned companies and the share of turnover of the majority foreign-owned node companies in the total turnover of the node companies give the measure of the power, of the influence that such companies have in a given market.

By extension, for the 80 analyzed markets, we can assess in a consistent way through the two criteria the influence of majority foreign-owned companies on the real economy.

Table 12.3 lists the leading companies on the 80 markets in descending order of turnover.

Table 12.3

List of leading companies of the 80 classified markets

NACE Division	Significance of market	Company	County	Type of ownership	Turnover in 2011, mill. EUR	Profit/ loss, mill. EUR	Profitability rate, %	Leader's market share, %
06	Extraction of crude petroleum and natural gas	OMV PETROM SA BUCUREȘTI	București	***	3908.886	1056.806	27.04	78.99
47	Retail trade, except of motor vehicles and motorcycles	OMV PETROM MARKETING SRL BUCUREȘTI	București	***	3229.091	41.249	1.28	10.79
29	Manufacture of motor vehicles, trailers and semi-trailers	AUTOMOBILE DACIA SA MIOVENI	Argeș	***	3109.522	86.859	2.79	35.19
19	Manufacture of coke and refined petroleum products	ROMPETROL RAFINARE SA NĂVODARI	Constanța	***	2400.908	-173.635	-7.23	57.36
46	Wholesale trade, except of motor vehicles and motorcycles	BRITISH AMERICAN TOBACCO (ROMANIA) TRADING SRL BUCUREȘTI	București	***	1428.026	90.203	6.32	2.68
24	Manufacture of basic metals	ARCELORMITTAL GALATI SA	Galați	***	1100.387	-146.330	-13.30	22.56
35	Electricity, gas, steam and air conditioning supply	E.ON ENERGIE ROMANIA SA TÂRGU MUREȘ	Mureș	***	1005.462	-45.239	-4.50	7.52
26	Manufacture of computer, electronic and optical products	NOKIA ROMANIA SRL CLUJ-NAPOCA	Cluj	***	968.313	2.755	0.28	37.14
61	Telecommunications	ORANGE ROMANIA SA BUCUREȘTI	București	***	939.607	224.636	23.91	21.77
45	Wholesale and retail trade and repair of motor vehicles and motorcycles	RENAULT INDUSTRIE ROUMANIE SRL MIOVENI	Argeș	***	930.782	0.247	0.03	13.87
01	Crop and animal production, hunting and related service activities	INTERAGRO SA BUCUREȘTI	București	**	646.808	48.188	7.45	10.22
22	Manufacture of rubber and plastic products	CONTINENTAL AUTOMOTIVE PRODUCTS SRL TIMIȘOARA	Timiș	***	524.947	56.731	10.81	14.03
49	Land transport and transport via pipelines	SNTFC CFR CALATORI SA BUCUREȘTI	București	*	516.707	0.359	0.07	6.47
12	Manufacture of tobacco products	JTI MANUFACTURING SA BUCUREȘTI	București	***	467.080	-2.984	-0.64	84.13
11	Manufacture of beverages	COCA-COLA HBC ROMANIA SRL VOLUNTARI	Ilfov	***	410.256	38.218	9.32	22.00
30	Manufacture of other transport equipment	DAEWOO MANGALIA HEAVY INDUSTRIES SA MANGALIA	Constanța	***	407.137	-17.176	-4.22	31.20

NACE Division	Significance of market	Company	County	Type of ownership	Turnover in 2011, mill. EUR	Profit/ loss, mill. EUR	Profitability rate, %	Leader's market share, %
20	Manufacture of chemicals and chemical products	AZOMURES SA TÂRGU MUREȘ	Mureș	***	383.581	100.064	26.09	14.91
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	HOLZINDUSTRIE SCHWEIGHOFER SRL SEBEȘ	Alba	***	375.073	87.265	23.27	15.31
28	Manufacture of machinery and equipment n.e.c.	SCHAEFFLER ROMANIA SRL CRISTIAN	Brașov	***	349.614	3.768	1.08	15.64
53	Postal and courier activities	CN POSTA ROMANA SA BUCUREȘTI	București	*	298.452	-43.166	-14.46	47.07
02	Forestry and logging	REGIA NATIONALA A PADURILOR - ROMSILVA BUCUREȘTI	București	*	284.195	6.991	2.46	30.78
92	Gambling and betting activities	COMPANIA NATIONALA LOTERIA ROMANA SA BUCUREȘTI	București	*	273.741	28.238	10.32	21.30
52	Warehousing and support activities for transportation	CNCF CFR SA BUCUREȘTI	București	*	271.291	-167.171	-61.62	10.06
27	Manufacture of electrical equipment	COFICAB EASTERN EUROPE SRL ARAD	Arad	***	267.508	17.851	6.67	10.48
31	Manufacture of furniture	JOHNSON CONTROLS ROMANIA SRL MIOVENI	Argeș	***	264.251	-2.516	-0.95	15.16
05	Mining of coal and lignite	SOCIETATEA NATIONALA A LIGNITULUI OLTENIA SA TÂRGU JIU	Gorj	*	255.570	13.017	5.09	64.72
42	Civil engineering	HIDROCONSTRUCTIA SA BUCUREȘTI	București	**	236.480	14.264	6.03	4.66
51	Air transport	SCCNTAR TAROM SA OTOPENI	Ilfov	*	223.298	-61.876	-27.71	59.82
23	Manufacture of other non-metallic mineral products	HOLCIM (ROMANIA) SA BUCUREȘTI	București	***	222.718	22.082	9.91	8.88
10	Manufacture of food products	AGRANA ROMANIA SA BUCUREȘTI	București	***	219.940	22.883	10.40	2.75
25	Manufacture of fabricated metal	SEWS ROMANIA SRL DEVA	Hunedoara	***	213.669	1.906	0.89	5.83

NACE Division	Significance of market	Company	County	Type of ownership	Turnover in 2011, mill. EUR	Profit/ loss, mill. EUR	Profitability rate, %	Leader's market share, %
	products, except machinery and equipment							
09	Mining support service activities	GRUP SERVICII PETROLIERE CONSTANȚA	Constanța	**	188.050	-72.260	-38.43	30.56
38	Waste collection, treatment and disposal activities; materials recovery	REMAT SA CĂLĂRAȘI	Călărași	***	176.882	3.070	1.74	5.41
71	Architectural and engineering activities; technical testing and analysis	GENERAL ELECTRIC INT. INC. WILMINGTON SUC. ROMANIA BUCUREȘTI	București	**	163.928	3.303	2.02	7.36
14	Manufacture of wearing apparel	BENROM SRL MIERCUREA SIBIULUI	Sibiu	***	150.362	12.353	8.22	7.55
41	Construction of buildings	STRABAG SRL BUCUREȘTI	București	***	138.235	3.620	2.62	1.72
60	Programming and broadcasting activities	PRO TV SA BUCUREȘTI	București	***	117.151	-7.546	-6.44	38.75
36	Water collection, treatment and supply	APA NOVA BUCURESTI SA	București	***	116.483	23.832	20.46	18.33
43	Specialized construction activities	ENERGOMONTAJ SA BUCUREȘTI	București	**	110.092	0.818	0.74	2.64
62	Computer programming, consultancy and related activities	ORACLE ROMANIA SRL BUCUREȘTI	București	***	100.963	6.357	6.30	5.17
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	TERAPIA SA CLUJ-NAPOCA	Cluj	***	99.398	28.244	28.41	15.27
56	Food and beverage service activities	MCDONALD'S ROMANIA SRL BUCUREȘTI	București	***	93.998	5.254	5.59	6.57
18	Printing and reproduction of recorded media	COMPANIA NATIONALA IMPRIMERIA NATIONALA SA BUCUREȘTI	București	*	80.831	14.879	18.41	11.77
15	Manufacture of leather and related products	RIEKER ROMANIA SRL LUGOJ	Timiș	***	79.724	1.068	1.34	7.53
58	Publishing activities	STAR SOFT INTERNATIONAL SRL	București	**	66.890	0.122	0.18	8.70

NACE Division	Significance of market	Company	County	Type of ownership	Turnover in 2011, mill. EUR	Profit/ loss, mill. EUR	Profitability rate, %	Leader's market share, %
		BUCUREȘTI						
79	Travel agency, tour operator reservation service and related activities	ATLASSIB SRL SIBIU	Sibiu	**	65.208	5.444	8.35	8.62
70	Activities of head offices; management consultancy activities	GLOBAL E-BUSINESS OPERATIONS CENTRE SRL BUCUREȘTI	București	***	64.707	8.434	13.03	3.34
13	Manufacture of textiles	RIFIL SA SĂVINEȘTI	Neamț	***	63.597	0.908	1.43	6.90
08	Other mining and quarrying	SOCIETATEA NATIONALA A SARII SA - SALROM BUCUREȘTI	București	*	59.041	1.392	2.36	14.17
17	Manufacture of paper and paper products	RONDOCARTON SRL APAHIDA	Cluj	***	53.596	1.234	2.30	7.18
68	Real estate activities	RA APPS BUCUREȘTI	București	*	52.791	-2.499	-4.73	2.49
82	Office administrative, office support and other business support activities	GENPACT ROMANIA SRL BUCUREȘTI	București	***	52.148	7.678	14.72	5.48
73	Advertising and market research	B.V. MCCANN-ERICKSON SRL BUCUREȘTI	București	***	47.598	2.064	4.34	2.81
50	Water transport	CNFR NAVROM SA GALAȚI	Galați	**	47.042	-0.814	-1.73	20.98
33	Repair and installation of machinery and equipment	SMART SA BUCUREȘTI	București	*	43.753	1.771	4.05	7.94
86	Human health activities	MED LIFE SA BUCUREȘTI	București	**	39.278	-0.762	-1.94	4.49
07	Mining of metal ores	CUPRU MIN SA ABRUD	Alba	*	35.529	9.795	27.57	48.00
77	Rental and leasing activities	ALD AUTOMOTIVE SRL BUCUREȘTI	București	***	34.577	6.445	18.64	6.93
72	Scientific research and development	INCD PT.FIZICA SI INGINERIE NUCLEARA -HH MĂGURELE	Ilfov	*	33.236	0.221	0.66	10.11
80	Security and investigation activities	G4S CASH SOLUTIONS SRL BUCUREȘTI	București	***	31.836	-0.509	-1.60	5.05
63	Information service activities	PROCTER GAMBLE MARKETING ROMANIA SRL BUCUREȘTI	București	***	29.350	1.786	6.08	10.18

NACE Division	Significance of market	Company	County	Type of ownership	Turnover in 2011, mill. EUR	Profit/ loss, mill. EUR	Profitability rate, %	Leader's market share, %
78	Employment activities	MANPOWER ROMANIA SRL BUCUREȘTI	București	***	26.513	0.183	0.69	6.66
69	Legal and accounting activities	KPMG ROMANIA SRL BUCUREȘTI	București	***	25.853	0.538	2.08	6.37
55	Accommodation	BUCURESTI TURISM SA BUCUREȘTI	București	***	25.763	-4.236	-16.44	3.03
59	Motion picture, video and television programme production, sound recording and music publishing activities	CINEMA CITY ROMANIA SRL BUCUREȘTI	București	***	21.969	0.382	1.74	7.93
75	Veterinary activities	MARAVET SRL BAIA MARE	Maramureș	**	17.803	2.081	11.69	13.89
93	Sports activities and amusement and recreation activities	FOTBAL CLUB STEAUA BUCURESTI SA BUCUREȘTI	București	**	15.632	4.142	26.50	10.58
37	Sewerage	ROHRER SERVICII INDUSTRIALE SRL BUCUREȘTI	București	***	15.154	1.825	12.04	32.35
81	Services to buildings and landscape activities	ISS FACILITY SERVICES SRL BUCUREȘTI	București	**	14.713	1.794	12.19	3.84
32	Other manufacturing	DPR DRAXLMAIER PROCESE DE PRODUCTIE ROMANIA SRL TIMIȘOARA	Timiș	***	14.488	0.524	3.62	4.86
39	Remediation activities and other waste management services	OIL DEPOL SERVICE SRL CONSTANȚA	Constanța	**	13.252	6.060	45.73	24.96
74	Other professional, scientific and technical activities	ADMINISTRATIA NATIONALA DE METEOROLOGIE BUCUREȘTI	București	*	11.605	0.176	1.51	4.35
91	Libraries, archives, museums and other cultural activities	GRUP CORINT SA SÂNTIMBRU	Alba	**	9.225	0.634	6.87	20.16
95	Repair of computers and personal and household goods	REGENERSIS (BUCHAREST) SRL BUCUREȘTI	București	***	8.331	1.849	22.20	4.04
85	Education	LUMINA INSTITUTII DE	Constanța	***	7.273	0.212	2.91	4.56

NACE Division	Significance of market	Company	County	Type of ownership	Turnover in 2011, mill. EUR	Profit/ loss, mill. EUR	Profitability rate, %	Leader's market share, %
		INVATAMANT SA CONSTANȚA						
96	Other personal service activities	SCM IGIENA BUCUREȘTI	București	**	6.425	0.020	0.31	3.00
90	Creative, arts and entertainment activities	STAGE EXPERT SRL BUCUREȘTI	București	**	5.628	0.596	10.59	8.42
03	Fishing and aquaculture	GROUP MET CAR SRL TIMIȘOARA	Timiș	**	2.306	0.459	19.90	5.13
87	Residential care activities	GERONTO LIFE MED SRL BUCUREȘTI	București	**	0.887	0.054	6.12	20.52
88	Social work activities without accommodation	MIRPU KIDS SRL BRAȘOV	Brașov	**	0.146	-0.026	-17.97	19.10

Ownership type:

* majority state-owned companies;

** majority Romanian privately-owned companies;

*** majority foreign-owned companies.

From among the leaders of the 80 analyzed markets, **47 (58.75%)** are majority foreign-owned companies, **19 (23.75%)** are majority Romanian privately-owned companies and **14 (17.50%)** are majority state-owned companies.

The three types of companies can be grouped by turnover, profit/loss and overall profitability rate (Rb/CA, %) as in Table 12.4.

Table 12.4

No.	Type of company	Sum of leaders' turnover, mill. EUR	Total profit /loss of leaders, mill. EUR	Leaders' overall profitability rate, %
1	Majority state-owned companies	2440.04	-197.87	-8.11
2	Majority Romanian privately-owned companies	1649.79	14.12	+0.86
3	Majority foreign-owned companies	24722.71	1571.21	+6.36

The distribution of leaders' turnover is disturbing: 85.8% of turnover is accounted for by majority foreign-owned companies, 8.5% by majority state-owned companies and 5.7% by majority Romanian privately-owned companies.

On the other hand, we cannot overlook the significant rate of loss of the majority state-owned leading companies that reveal unfavorable profitability and which represent the high priorities for increasing the efficiency in the Romanian economic environment.

Table 12.5 presents, by increasing order of the NACE Rev. 2 codes, the majority foreign-owned leading companies.

Table 12.5

List of majority foreign-owned leading companies

No.	NACE Code	Significance of market	Company	County
1	06	Extraction of crude petroleum and natural gas	OMV PETROM SA BUCUREȘTI	București
2	10	Manufacture of food products	AGRANA ROMANIA SA BUCUREȘTI	București
3	11	Manufacture of beverages	COCA-COLA HBC ROMANIA SRL VOLUNTARI	Ilfov
4	12	Manufacture of tobacco products	JTI MANUFACTURING SA BUCUREȘTI	București
5	13	Manufacture of textiles	RIFIL SA SĂVINEȘTI	Neamț
6	14	Manufacture of wearing apparel	BENROM SRL MIERCUREA SIBIULUI	Sibiu
7	15	Manufacture of leather and related products	RIEKER ROMANIA SRL LUGOJ	Timiș
8	16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	HOLZINDUSTRIE SCHWEIGHOFER SRL SEBEȘ	Alba
9	17	Manufacture of paper and paper products	RONDOCARTON SRL APAHIDA	Cluj
10	19	Manufacture of coke and refined petroleum products	ROMPETROL RAFINARE SA NĂVODARI	Constanța

No.	NACE Code	Significance of market	Company	County
11	20	Manufacture of chemicals and chemical products	AZOMURES SA TÂRGU MUREȘ	Mureș
12	21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	TERAPIA SA CLUJ-NAPOCA	Cluj
13	22	Manufacture of rubber and plastic products	CONTINENTAL AUTOMOTIVE PRODUCTS SRL TIMIȘOARA	Timiș
14	23	Manufacture of other non-metallic mineral products	Holcim (Romania) SA BUCUREȘTI	București
15	24	Manufacture of basic metals	ARCELORMITTAL GALATI SA	Galați
16	25	Manufacture of fabricated metal products, except machinery and equipment	SEWS ROMANIA SRL DEVA	Hunedoara
17	26	Manufacture of computer, electronic and optical products	NOKIA ROMANIA SRL CLUJ-NAPOCA	Cluj
18	27	Manufacture of electrical equipment	COFICAB EASTERN EUROPE SRL ARAD	Arad
19	28	Manufacture of machinery and equipment n.e.c.	SCHAEFFLER ROMANIA SRL CRISTIAN	Brașov
20	29	Manufacture of motor vehicles, trailers and semi-trailers	AUTOMOBILE DACIA SA MIOVENI	Argeș
21	30	Manufacture of other transport equipment	DAEWOO MANGALIA HEAVY INDUSTRIES SA MANGALIA	Constanța
22	31	Manufacture of furniture	JOHNSON CONTROLS ROMANIA SRL MIOVENI	Argeș
23	32	Other manufacturing	DPR DRAXLMAIER PROCESE DE PRODUCTIE ROMANIA SRL TIMIȘOARA	Timiș
24	35	Electricity, gas, steam and air conditioning supply	E.ON ENERGIE ROMANIA SA TÂRGU MUREȘ	Mureș
25	36	Water collection, treatment and supply	APA NOVA BUCURESTI SA	București
26	37	Sewerage	ROHRER SERVICII INDUSTRIALE SRL BUCUREȘTI	București
27	38	Waste collection, treatment and disposal activities; materials recovery	REMAT SA CĂLĂRAȘI	Călărași
28	41	Construction of buildings	STRABAG SRL BUCUREȘTI	București
29	45	Wholesale and retail trade and repair of motor vehicles and motorcycles	RENAULT INDUSTRIE ROUMANIE SRL MIOVENI	Argeș
30	46	Wholesale trade, except of motor vehicles and motorcycles	BRITISH AMERICAN TOBACCO (ROMANIA) TRADING SRL BUCUREȘTI	București
31	47	Retail trade, except of motor vehicles and motorcycles	OMV PETROM MARKETING SRL BUCUREȘTI	București
32	55	Accommodation	BUCURESTI TURISM SA BUCUREȘTI	București
33	56	Food and beverage service activities	MCDONALD'S ROMANIA SRL BUCUREȘTI	București
34	59	Motion picture, video and television programme production, sound recording and music publishing activities	CINEMA CITY ROMANIA SRL BUCUREȘTI	București
35	60	Programming and broadcasting activities	PRO TV SA BUCUREȘTI	București
36	61	Telecommunications	ORANGE ROMANIA SA BUCUREȘTI	București
37	62	Computer programming, consultancy and related activities	ORACLE ROMANIA SRL BUCUREȘTI	București

No.	NACE Code	Significance of market	Company	County
38	63	Information service activities	PROCTER GAMBLE MARKETING ROMANIA SRL BUCUREȘTI	București
39	69	Legal and accounting activities	KPMG ROMANIA SRL BUCUREȘTI	București
40	70	Activities of head offices; management consultancy activities	GLOBAL E-BUSINESS OPERATIONS CENTRE SRL BUCUREȘTI	București
41	73	Advertising and market research	B.V. MCCANN-ERICKSON SRL BUCUREȘTI	București
42	77	Rental and leasing activities	ALD AUTOMOTIVE SRL BUCUREȘTI	București
43	78	Employment activities	MANPOWER ROMANIA SRL BUCUREȘTI	București
44	80	Security and investigation activities	G4S CASH SOLUTIONS SRL BUCUREȘTI	București
45	82	Office administrative, office support and other business support activities	GENPACT ROMANIA SRL BUCUREȘTI	București
46	85	Education	LUMINA INSTITUTII DE INVATAMANT SA CONSTANȚA	Constanța
47	95	Repair of computers and personal and household goods	REGENERSIS (BUCHAREST) SRL BUCUREȘTI	București

The majority foreign-owned companies are leaders in:
- the most important market for the mining and quarrying industry - Code 06 – Extraction of crude petroleum and natural gas;
- 22 out of 24 markets of the manufacturing industry (except for Code 18 - Printing and reproduction of recorded media and Code 33 - Repair, maintenance and installation of machinery and equipment);
- the markets for production and supply of electricity and heat, gas, hot water and air conditioning (Code 35), water collection and distribution (Code 36), wastewater collection and treatment (Code 37), waste collection, treatment and disposal (Code 38);
- all the trade activity markets (codes 45, 46, 47);
- the market for programming and broadcasting (Code 60);
- the telecommunication (Code 61) and information technology services markets (Code 62);
- the legal and accounting activity markets (code 68);
- the market for advertising and market studies (code 73).

It is revealed that in the markets that make up the main benchmarks of the real economy we find majority foreign-owned leading companies.

12.4. Share of turnover of majority foreign-owned node companies in the overall turnover of node companies

Table 12.6 shows the shares of turnover of majority foreign-owned node companies in the total turnover of the node companies.

Table 12.6

NACE Division	Significance	Share of turnover of majority foreign-owned node companies in the total turnover of node companies,%	Classes of shares	Number of markets in the same class	Types of ownership		
					Majority state-owned	Majority Romanian privately-owned	Majority foreign-owned
12	Manufacture of tobacco products	100.00	5 – very high	7	-	-	100.00
19	Manufacture of coke and refined petroleum products	100.00					
29	Manufacture of motor vehicles, trailers and semi-trailers	98.42					
61	Telecommunications	97.82					
24	Manufacture of basic metals	94.88					
26	Manufacture of computer, electronic and optical products	90.13					
27	Manufacture of electrical equipment	85.40					
11	Manufacture of beverages	79.75	4 – high	17	-	-	100.00
06	Extraction of crude petroleum and natural gas	79.73					
15	Manufacture of leather and related products	79.06					
13	Manufacture of textiles	77.82					
77	Rental and leasing activities	76.93					
37	Sewerage	75.39					
22	Manufacture of rubber and plastic products	75.18					
28	Manufacture of machinery and equipment n.e.c.	71.30					
60	Programming and broadcasting activities	70.66					
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	65.69					
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	65.14					
17	Manufacture of paper and paper products	64.96					
30	Manufacture of other transport equipment	63.72					
23	Manufacture of other non-metallic mineral products	63.65					
78	Employment activities	62.67					
47	Retail trade, except of motor vehicles and motorcycles	61.79					
14	Manufacture of wearing apparel	61.39					

NACE Division	Significance	Share of turnover of majority foreign-owned node companies in the total turnover of node companies,%	Classes of shares	Number of markets in the same class	Types of ownership		
					Majority state-owned	Majority Romanian privately-owned	Majority foreign-owned
62	Computer programming, consultancy and related activities	59.08					
63	Information service activities	56.65					
31	Manufacture of furniture	55.78					
20	Manufacture of chemicals and chemical products	53.31					
32	Other manufacturing	50.94					
68	Real estate activities	50.75					
46	Wholesale trade, except of motor vehicles and motorcycles	50.52	3 - average	15	6.66	6.66	86.67
45	Wholesale and retail trade and repair of motor vehicles and motorcycles	48.84					
35	Electricity, gas, steam and air conditioning supply	47.69					
82	Office administrative, office support and other business support activities	47.49					
25	Manufacture of fabricated metal products, except machinery and equipment	47.34					
73	Advertising and market research	44.94					
70	Activities of head offices; management consultancy activities	43.62					
09	Mining support service activities	42.12					
59	Motion picture, video and television programme production, sound recording and music publishing activities	40.67					
58	Publishing activities	38.88					
18	Printing and reproduction of recorded media	37.96					
52	Warehousing and support activities for transportation	37.65					
92	Gambling and betting activities	37.64					
71	Architectural and engineering activities; technical testing and	37.14					

NACE Division	Significance	Share of turnover of majority foreign-owned node companies in the total turnover of node companies,%	Classes of shares	Number of markets in the same class	Types of ownership		
					Majority state-owned	Majority Romanian privately-owned	Majority foreign-owned
	analysis						
38	Waste collection, treatment and disposal activities; materials recovery	36.99	2 – low	16	31.25	31.25	37.50
69	Legal and accounting activities	36.42					
10	Manufacture of food products	35.20					
50	Water transport	34.60					
91	Libraries, archives, museums and other cultural activities	31.53					
86	Human health activities	26.08					
36	Water collection, treatment and supply	25.00					
56	Food and beverage service activities	24.38					
51	Air transport	22.75					
33	Repair and installation of machinery and equipment	21.22					
41	Construction of buildings	21.02					
53	Postal and courier activities	19.45					
79	Travel agency, tour operator reservation service and related activities	18.28					
80	Security and investigation activities	18.28					
55	Accommodation	17.29					
74	Other professional, scientific and technical activities	16.77					
93	Sports activities and amusement and recreation activities	15.96					
01	Crop and animal production, hunting and related service activities	15.60					
49	Land transport and transport via pipelines	15.26					
72	Scientific research and development	15.17					
85	Education	14.40					
08	Other mining and quarrying	14.03					
39	Remediation activities and other waste management services	13.66					
43	Specialized construction activities	13.18	1 – very low	25	32.00	52.00	16.00

NACE Division	Significance	Share of turnover of majority foreign-owned node companies in the total turnover of node companies,%	Classes of shares	Number of markets in the same class	Types of ownership		
					Majority state-owned	Majority Romanian privately-owned	Majority foreign-owned
95	Repair of computers and personal and household goods	12.38					
42	Civil engineering	11.97					
96	Other personal service activities	11.62					
90	Creative, arts and entertainment activities	9.50					
02	Forestry and logging	6.72					
81	Services to buildings and landscape activities	5.47					
88	Social work activities without accommodation	4.39					
87	Residential care activities	4.37					
03	Fishing and aquaculture	2.83					
75	Veterinary activities	0.19					
05	Mining of coal and lignite	0.00					
07	Mining of metal ores	0.00					

In the seven markets with very large share of turnover of the majority foreign-owned node companies, we find 6 markets in the manufacturing industry, to which the telecommunications market adds up.

The 17 markets with large shares of turnover of the majority foreign-owned companies include, *inter alia*, 10 manufacturing markets, a mining and quarrying market and the retail market.

Together, the two categories of shares comprise 16 manufacturing markets, i.e. 66.67% of the sector total.

All the market leaders in the very large and large share classes are 100% majority foreign-owned companies.

In the class of medium shares, the majority foreign leaders cover 86.67% of the markets, the rest of the leaders being in equal proportions majority state-owned companies and majority Romanian privately-owned companies.

In the three classes of shares (very large, large and medium) the market competition is clearly won by the majority foreign-owned companies. The other classes comprise 39 markets, i.e. 48.75% of the total markets.

In the low share class, the leaders are divided into relatively similar proportions, with a slight advantage of the majority foreign-owned companies (37.50%) as compared to the other two types, which have equal proportions of market leaders (32.5%).

As expected, the majority foreign-owned companies clearly lose competition in the last class, of very low shares, where we identify only four leaders in 25 markets, namely 16%.

12.5. The profitability of majority foreign-owned companies

Table 12.7 shows the turnover, the gross operating results and the general profitability rates (Rb/CA, %) for the total of the majority foreign-owned companies in 2011.

Table 12.7

NACE Code	NACE Division	Turnover, mill. EUR	Gross operating result, mill. EUR	Overall profitability rate (Rb/CA), %
06	Extraction of crude petroleum and natural gas	3908.886	1056.806	27.04
36	Water collection, treatment and supply	127.239	26.729	21.01
09	Mining support service activities	224.163	27.888	12.44
74	Other professional, scientific and technical activities	35.763	4.077	11.40
71	Architectural and engineering activities; technical testing and analysis	662.074	58.502	8.84
81	Services to buildings and landscape activities	16.769	1.464	8.73
63	Information service activities	130.839	11.410	8.72
95	Repair of computers and personal and household goods	20.404	1.754	8.60
77	Rental and leasing activities	307.026	26.218	8.54
42	Civil engineering	485.958	39.907	8.21
23	Manufacture of other non-metallic mineral products	1277.698	103.646	8.11

NACE Code	NACE Division	Turnover, mill. EUR	Gross operating result, mill. EUR	Overall profitability rate (Rb/CA), %
01	Crop and animal production, hunting and related service activities	789.997	61.665	7.81
58	Publishing activities	239.406	18.209	7.61
62	Computer programming, consultancy and related activities	922.509	69.621	7.55
61	Telecommunications	3515.438	264.053	7.51
69	Legal and accounting activities	118.304	8.586	7.26
72	Scientific research and development	39.941	2.889	7.23
14	Manufacture of wearing apparel	978.026	68.514	7.01
28	Manufacture of machinery and equipment n.e.c.	1276.085	89.082	6.98
70	Activities of head offices; management consultancy activities	675.385	44.404	6.57
37	Sewerage	28.388	1.781	6.27
11	Manufacture of beverages	1273.341	75.665	5.94
32	Other manufacturing	121.563	6.920	5.69
52	Warehousing and support activities for transportation	812.670	46.272	5.69
73	Advertising and market research	608.264	33.737	5.55
22	Manufacture of rubber and plastic products	2252.197	119.288	5.30
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	1277.163	67.181	5.26
78	Employment activities	199.745	10.163	5.09
33	Repair and installation of machinery and equipment	93.584	4.711	5.03
20	Manufacture of chemicals and chemical products	1103.994	54.429	4.93
15	Manufacture of leather and related products	670.167	32.813	4.90
35	Electricity, gas, steam and air conditioning supply	5104.358	248.026	4.86
43	Specialized construction activities	439.785	20.061	4.56
53	Postal and courier activities	99.904	4.544	4.55
13	Manufacture of textiles	574.052	25.323	4.41
25	Manufacture of fabricated metal products, except machinery and equipment	1387.347	58.815	4.24
85	Education	18.375	0.754	4.10
88	Social work activities without accommodation	0.027	0.001	3.70
27	Manufacture of electrical equipment	1752.620	62.084	3.54
31	Manufacture of furniture	778.161	24.631	3.17
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	347.685	10.900	3.14
50	Water transport	62.770	1.840	2.93
10	Manufacture of food products	2260.482	64.031	2.83
56	Food and beverage service activities	279.271	7.672	2.75
38	Waste collection, treatment and disposal activities; materials recovery	969.123	23.554	2.43
92	Gambling and betting activities	387.231	9.342	2.41
46	Wholesale trade, except of motor vehicles and motorcycles	21550.755	506.317	2.35
87	Residential care activities	0.152	0.003	1.97
45	Wholesale and retail trade and repair of motor vehicles and motorcycles	3165.025	59.762	1.89
29	Manufacture of motor vehicles, trailers and semi-trailers	6981.501	85.629	1.23
96	Other personal service activities	19.890	0.217	1.09
26	Manufacture of computer, electronic and optical products	1898.907	17.535	0.92
30	Manufacture of other transport equipment	672.338	5.766	0.86
49	Land transport and transport via pipelines	974.535	7.935	0.81

NACE Code	NACE Division	Turnover, mill. EUR	Gross operating result, mill. EUR	Overall profitability rate (Rb/CA), %
17	Manufacture of paper and paper products	388.503	1.800	0.46
80	Security and investigation activities	92.334	0.185	0.20
05	Mining of coal and lignite	0.000	0.000	0.00
07	Mining of metal ores	0.000	0.000	0.00
59	Motion picture, video and television programme production, sound recording and music publishing activities	90.277	-0.368	-0.41
12	Manufacture of tobacco products	467.080	-2.984	-0.64
82	Office administrative, office support and other business support activities	361.888	-2.377	-0.66
47	Retail trade, except of motor vehicles and motorcycles	15186.715	-217.818	-1.43
90	Creative, arts and entertainment activities	5.084	-0.103	-2.03
86	Human health activities	182.367	-6.171	-3.38
24	Manufacture of basic metals	3729.408	-143.751	-3.85
18	Printing and reproduction of recorded media	208.515	-13.407	-6.43
19	Manufacture of coke and refined petroleum products	3964.343	-266.041	-6.71
79	Travel agency, tour operator reservation service and related activities	110.742	-8.504	-7.68
60	Programming and broadcasting activities	171.288	-16.205	-9.46
75	Veterinary activities	0.198	-0.020	-10.10
55	Accommodation	117.696	-14.628	-12.43
51	Air transport	69.197	-8.613	-12.45
08	Other mining and quarrying	46.843	-5.885	-12.56
93	Sports activities and amusement and recreation activities	18.873	-2.372	-12.57
41	Construction of buildings	1349.961	-184.509	-13.67
68	Real estate activities	861.017	-120.023	-13.94
39	Remediation activities and other waste management services	6.035	-1.366	-22.63
02	Forestry and logging	49.668	-12.762	-25.69
03	Fishing and aquaculture	1.019	-0.312	-30.62
91	Libraries, archives, museums and other cultural activities	11.611	-12.591	-108.44

The breakdown by economic performance classes is given in Table 12.8.

Table 12.8

No.	Class	Significance of overall profitability	Number of markets	Share of number of markets in total, %	Total turnover of markets, mill. EUR
1	5	Favorable	29	37.18	22418.825
2	4	Relatively favorable	27	34.62	51979.292
3	3	Balanced	0	0.00	0.000
4	2	Relatively unfavorable	7	8.97	200022.819
5	1	Unfavorable	15	19.23	6977.006

The majority foreign-owned node companies have a 71.8% favorable and relatively favorable overall profitability in the markets where they operate. The total turnover of the node companies in the above-mentioned categories accounts for 73.37% of the turnover of the 78 markets. We mention

that out of the 80 analyzed markets, only two do not have majority foreign-owned companies (NACE Code 5 - Mining of coal and lignite and 07 - Mining of metal ores).

From the point of view of losses, we highlight the importance for the Romanian economy of the relatively unfavorable and unfavorable overall profitability of the majority foreign-owned node companies from two key sectors of the manufacturing industry: manufacture of basic metals (NACE Code 24) and Manufacture of coke refined petroleum products (NACE Code 19). In this situation, for instance, we may find companies such as:

- From NACE Code 19:
  - Rompetrol Rafinare SA Năvodari;
  - Rompetrol Petrochemicals SRL Năvodari;
  - Petrotel Lukoil SA Ploieşti;
- From NACE Code 24:
  - ArcelorMittal Galaţi;
  - Ductile Steel SA Buzău;
  - Mechel Târgovişte SA.

The key observation is that these companies, including the market leaders of the two sectors, recorded losses in each year of the 2009-2011 period!

It is obvious that the government's ongoing monitoring of major state-owned companies should be extended to these large, majority foreign-owned companies, which are chronic losers. In these latter cases, discussions with the management of such companies should be initiated to provide accurate information on the causes and prospects of economic performance, as well as on possible intentions to relocate the activities.

With the continuation of the economic crisis, it is required to intensify the activities of attracting large multinational companies to replace the possible delocalization (see the Nokia case in Cluj).

12.6. Contribution of the majority foreign-owned node companies to the Romanian export of goods

The Romanian export of goods is **94.1%** made by the products of the manufacturing industry. The intensity of presence of the manufacturing industry products on the foreign markets is one of the indicators of competitiveness of the Romanian economy and contributes to the assessment of the overall economic performance.

Table 12.9 presents the synthesis of the shares of turnover of majority foreign-owned node companies in the total turnover of node companies in manufacturing.

Table 12.9

No.	NACE Rev. 2 Division	Significance	Total turnover of node companies, mill. EUR	Turnover of majority foreign-owned node companies, mill. EUR	Share of turnover of majority foreign-owned companies in the total turnover of node companies, %
1	10	Manufacture of food products	6421.452	2260.482	35.20
2	11	Manufacture of beverages	1596.607	1273.341	79.75
3	12	Manufacture of tobacco products	467.080	467.080	100.00
4	13	Manufacture of textiles	737.664	574.052	77.82
5	14	Manufacture of wearing apparel	1593.207	978.026	61.39
6	15	Manufacture of leather and related products	847.686	670.167	79.06
7	16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	1960.692	1277.163	65.14
8	17	Manufacture of paper and paper products	598.068	388.503	64.96
9	18	Printing and reproduction of recorded media	549.339	208.515	37.96
10	19	Manufacture of coke and refined petroleum products	3964.343	3964.343	100.00
11	20	Manufacture of chemicals and chemical products	2070.794	1103.994	53.31
12	21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	529.283	347.685	65.69
13	22	Manufacture of rubber and plastic products	2995.734	2252.197	75.18
14	23	Manufacture of other non-metallic mineral products	2007.413	1277.698	63.65
15	24	Manufacture of basic metals	3930.588	3729.408	94.88
16	25	Manufacture of fabricated metal products, except machinery and equipment	2930.815	1387.347	47.34
17	26	Manufacture of computer, electronic and optical products	2106.834	1898.907	90.13
18	27	Manufacture of electrical equipment	2052.316	1752.620	85.40
19	28	Manufacture of machinery and equipment n.e.c.	1789.865	1276.085	71.30
20	29	Manufacture of motor vehicles, trailers and semi-trailers	7093.683	6981.501	98.42
21	30	Manufacture of other transport equipment	1055.072	672.338	63.72
22	31	Manufacture of furniture	1395.174	778.161	55.78
23	32	Other manufacturing	238.619	121.563	50.94
24	33	Repair and installation of machinery and equipment	441.048	93.584	21.22
25		Manufacturing industry – total	49373.376	35734.76	72.38

As for the manufacturing industry as a whole, the share of turnover of the majority foreign-owned node companies in the total turnover of the node companies is **72.38%!**

This share shows that the amount of export of the manufacturing industry is overwhelmingly determined by the majority foreign-owned companies.

Although we could not get the list of exporting node companies in the manufacturing industry, some data from the Top 100 Exporting Companies for 2011 are conclusive[*]:

- The top 100 companies from among the 11593 exporting companies of Romania covered **52.33%** of the **45274 million euro** of Romanian exports in 2011.
- 92 companies in the **Top 100 Exporters** are mostly foreign-owned, one is majority state-owned and seven are Romanian privately-owned companies.
- The **92** majority foreign-owned exporting companies in Top 100 cover **49.18%** of Romania's total export.
- The most significant results from Top 100 Exporters belong to the majority foreign-owned companies.
- All the companies included in Top 100 Exporters are multinational companies.

NACE Division	Significance of division	Number of node companies	Share in the manufacturing industry export in 2011, %
29	Manufacture of motor vehicles, trailers and semi-trailers	24	88.7
30	Manufacture of other transport equipment	4	71.4
19	Manufacture of coke and refined petroleum products	2	69.1
24	Manufacture of basic metals	10	61.3
22	Manufacture of rubber and plastic products	4	59.7
26	Manufacture of computer, electronic and optical products	4	50.1

The conclusion drawn from the presented data is that Romania's export strategy, as well as the product performance on the foreign market, are mainly the result of analyses of multinational companies, usually developed in the countries of origin.

12.7. Shareholding of majority foreign-owned node companies

In principle, the shareholding of majority-owned node companies may consist of:

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[*] Computations of Prof. Cezar Mereuţă based on data from NIS and company reports for 2011.

- natural persons shareholders;
- companies of different sizes, including multinational companies.

According to the National Trade Register Office, from among the 5901 majority foreign-owned node companies:

- 2097 have natural persons as shareholders, with a turnover of 6664.42 million euro and a share of 6.6% in the total;
- 3813 have company shareholders, amounting to a turnover of 94741.52 million euro, with a share of 93.4% in the total.

It is revealed that, in an overwhelming proportion the shareholding of the majority foreign-owned node companies is made of companies. Due to the fact that we do not have the database of about 82,000 multinational companies defined according to the conditions specified in Chapter 1, we can only say the following:

- all the majority foreign-owned node companies - market leaders are well-known multinational companies;
- approximately 60% of the majority foreign-owned node companies in the Top 5 of each of the 80 markets analyzed in this paper are known multinational companies.

On the whole, we appreciate that in the node companies from the 80 markets operate around 1900-2000 multinational companies.

- It is relevant that in Top 100 of the majority foreign-owned companies we may find 20 major multinational companies comprised in Top 100 World[*].

No.	Company name	Rank in Top 100 worldwide*	Country	Turnover in Top 100 Romania, mill. EUR	Profit/loss in Top 100 Romania, mill. EUR
1	Vodafone	4	United Kingdom	802.190	115.078
2	GDF Suez	10	France	965.305	52.850
3	E ON AG	12	Germany	1194.343	17.319
4	Arcelor Mittal	14	Luxembourg	1276.761	-152.710
5	Enel Spa	15	Italy	882.359	-5.106
6	Ford Motor Company	27	USA	188.224	-111.223
7	France Telecom (Orange)	37	France	939.607	224.636
8	Procter & Gamble	43	USA	295.872	6.394
9	Roche Group	49	Switzerland	257.277	0.035
10	Lafarge SA	50	France	180.422	52.458
11	Unilever PLC	54	Netherlands/UK	171.574	0.416
12	Carrefour SA	58	France	951.242	41.619
13	Nokia	59	Finland	968.313	2.755
14	British American Tobacco	62	United Kingdom	1428.026	90.203
15	Samsung Electronics Co Ltd	63	Republic of Korea	361.139	9.577
16	Sanofi Adeventis SA	83	France	200.134	8.871
17	Renault SA	89	France	4040.304	87.106

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[*] The last available data is 2010.

No.	Company name	Rank in Top 100 worldwide*	Country	Turnover in Top 100 Romania, mill. EUR	Profit/loss in Top 100 Romania, mill. EUR
18	Coca Cola Company	90	USA	410.256	38.218
19	Japan Tobacco Inc	92	Japan	1027.694	-1.561
20	Holcim Ltd	93	Switzerland	222.718	22.082
	TOTAL			16763.760	499.017

Note: * In the order of the volumes of assets abroad.

Of the 20 countries, six are from the European Union. The country best represented in Top 100 of majority foreign-owned companies is France, with six companies, which amounted to 7277.014 million euro, or 43.4% of the total.

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Chapter 13
Territorial distribution of node companies
by the main activities of national economy[*]

In the context of preoccupations for the regionalization of Romania, we consider that it is important to know the territorial distribution (by counties) of the important companies in Romania.

For the **first time**, the paper provides the political and business environment with a multi-criteria approach of the territorial distribution of important companies.

The major companies were defined according to the concept of nodal analysis [4], such as those covering 80% of turnover for each activity, called node companies.

13.1. Methodological concepts

According to the theme of the paper, the distributions of the node companies is identified in each of the 42 counties and 8 development regions of Romania.

For each territorial entity, the following features are presented:

A) Selected activities

The reference activities were chosen at the level of NACE Rev. 2 division. Of the 88 activities of classification, we retained 80, excluding:

- three codes comprising financial companies: 64, 65, 66;
- a code including public administration and defense, social security in the public system: 84;
- a code comprising various associative activities: 94;
- two codes comprising activities of private households as employers of household personnel and private households activities for producing goods and services for own consumption: 97, 98;
- a code comprising activities of extraterritorial organizations and bodies: 99.

The 80 activities under analysis are presented in Table 13.1 and cover **99.88% of turnover of the national system of non-financial companies.**

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[*] The chapter presents a representative selection from the study *Repartiţia teritorială a companiilor-noduri pe principalele activităţi ale economiei naţionale*, authors Cezar Mereuţă, Ionuţ Pandelică, Editura Economică, 2013.

Table 13.1

NACE Division	Significance of activity
01	Crop and animal production, hunting and related service activities
02	Forestry and logging
03	Fishing and aquaculture
05	Mining of coal and lignite
06	Extraction of crude petroleum and natural gas
07	Mining of metal ores
08	Other mining and quarrying
09	Mining support service activities
10	Manufacture of food products
11	Manufacture of beverages
12	Manufacture of tobacco products
13	Manufacture of textiles
14	Manufacture of wearing apparel
15	Manufacture of leather and related products
16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
17	Manufacture of paper and paper products
18	Printing and reproduction of recorded media
19	Manufacture of coke and refined petroleum products
20	Manufacture of chemicals and chemical products
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
22	Manufacture of rubber and plastic products
23	Manufacture of other non-metallic mineral products
24	Manufacture of basic metals
25	Manufacture of fabricated metal products, except machinery and equipment
26	Manufacture of computer, electronic and optical products
27	Manufacture of electrical equipment
28	Manufacture of machinery and equipment n.e.c.
29	Manufacture of motor vehicles, trailers and semi-trailers
30	Manufacture of other transport equipment
31	Manufacture of furniture
32	Other manufacturing
33	Repair and installation of machinery and equipment
35	Electricity, gas, steam and air conditioning supply
36	Water collection, treatment and supply
37	Sewerage
38	Waste collection, treatment and disposal activities; materials recovery
39	Remediation activities and other waste management services
41	Construction of buildings
42	Civil engineering
43	Specialized construction activities
45	Wholesale and retail trade and repair of motor vehicles and motorcycles
46	Wholesale trade, except of motor vehicles and motorcycles
47	Retail trade, except of motor vehicles and motorcycles
49	Land transport and transport via pipelines
50	Water transport
51	Air transport
52	Warehousing and support activities for transportation

NACE Division	Significance of activity
53	Postal and courier activities
55	Accommodation
56	Food and beverage service activities
58	Publishing activities
59	Motion picture, video and television programme production, sound recording and music publishing activities
60	Programming and broadcasting activities
61	Telecommunications
62	Computer programming, consultancy and related activities
63	Information service activities
68	Real estate activities
69	Legal and accounting activities
70	Activities of head offices; management consultancy activities
71	Architectural and engineering activities; technical testing and analysis
72	Scientific research and development
73	Advertising and market research
74	Other professional, scientific and technical activities
75	Veterinary activities
77	Rental and leasing activities
78	Employment activities
79	Travel agency, tour operator reservation service and related activities
80	Security and investigation activities
81	Services to buildings and landscape activities
82	Office administrative, office support and other business support activities
85	Education
86	Human health activities
87	Residential care activities
88	Social work activities without accommodation
90	Creative, arts and entertainment activities
91	Libraries, archives, museums and other cultural activities
92	Gambling and betting activities
93	Sports activities and amusement and recreation activities
95	Repair of computers and personal and household goods
96	Other personal service activities

B) Microeconomic features:

- Number of node companies: N_c;
- Total turnover of node companies in million euro: CA_T;
- Density of node companies/1000 inhabitants: D_{CN};
- Number of activities with turnover other than zero: N_a;
- Gross profit/loss in million euro;
- Overall profitability rate as ratio to turnover Rb/CA, %.

A breakdown by economic performance assessed through the general profitability rate (RB/CA,%) was used, which is the following:

Value of Rb/CA class, %	Class	Significance of overall profitability
Rb/CA ≤ -5	1	Unfavorable
-5 < Rb/CA ≤ -0.05	2	Relatively unfavorable
-0.05 < Rb/CA ≤ +0.05	3	Balance
+0.05 < Rb/CA ≤ +5	4	Relatively favorable
+5 < Rb/CA	5	Favorable

C) Macroeconomic features
- Gross domestic product in current 2010 prices (million RON) at county level: PIB_j.
- Population of the territorial entity (county) Np.

D) Specialization of node companies at territorial level
According to the experiments carried out by one of the authors [5] to determine the specialization of counties and regions by activity, the **analysis by deciles** was used. As a result, all the node companies of a territorial entity were grouped by the 80 selected activities and they were ranked in decreasing order of turnover of the node companies.

The specialization of a county or regions is determined by the first decile, D_0 (also called the power decile), which comprises the first eight activities ranked in descending order of turnover of the node companies it contains. The concept is justified by the fact that all the D_0 deciles of the analyzed counties and regions cover more than 50% of the total turnover of the node companies at county or regional level.

The share of the D_0 decile in the total turnover of the node companies of the territorial entity is a measure of inequality of coverage of activities by the node companies.

The degree of inequality can be defined by the following breakdown:

Share of the D_0 power decile in total turnover of the node companies of the territorial entity,%	Significance of degree of inequality
10 < D0 ≤ 20	Very low inequality
20 < D0 ≤ 40	Low inequality
40 < D0 ≤ 60	Average inequality
60 < D0 ≤ 80	High inequality
80 < D0 ≤ 100	Very high inequality

The data sources consist of the economic and financial balance sheets of the companies and the Statistical Yearbooks of the National Institute of Statistics. We point out that any errors in the economic data or referring to headquarters addresses belong to the issuing companies. Due to the uniqueness of the sources, all data tables have no footnotes regarding the sources of information.

All the data presented in the paper refer to 2011, with the exception of the county GDP, which refer to 2010, the last available year.

13.2. Synthesis of distribution by counties of the node companies

Node company data by the 80 selected activities:

- Total number of companies   421056;
- Total number of node companies   35972;
- Share of node companies in total, %   8.54;
- Turnover of node companies, mill. euro   193279.769;
- Overall profitability rate Rb/CA, %   2.79;
- Gross profit, mill. euro   5394.883.

Table 13.2 presents the synthesis of the 42 counties, ranked in decreasing order by the value of density of the node companies, D_{CN}.

Table 13.2

No.	County	Number of companies Nc	Total turnover of node companies, mill. euro CA_T	Density of node companies per 1000 inhabitants D_{CN}	Number of activities with turnover ≠ 0 Na
1	București	10401	77271.085	5.522	77
2	Ilfov	1356	12144.820	3.488	62
3	Brașov	1329	5771.223	2.420	63
4	Cluj	1636	6528.996	2.367	63
5	Timiș	1564	6922.273	2.288	65
6	Constanța	1490	8249.480	2.178	58
7	Sibiu	848	4699.566	2.134	57
8	Bihor	1098	3805.850	1.908	54
9	Arad	784	3238.623	1.821	52
10	Argeș	996	7564.532	1.626	59
11	Harghita	495	1225.627	1.592	50
12	Alba	539	2095.022	1.574	50
13	Prahova	1098	6794.495	1.439	65
14	Mureș	783	3630.829	1.421	56
15	Covasna	289	779.386	1.375	41
16	Satu Mare	460	1864.655	1.336	48
17	Tulcea	274	871.740	1.286	37
18	Iași	982	2553.975	1.271	61
19	Galați	653	3676.583	1.218	49
20	Maramureș	576	1633.973	1.203	46
21	Hunedoara	500	1718.374	1.195	52
22	Brăila	374	1475.228	1.164	46
23	Bistrița-Năsăud	333	1238.304	1.163	41
24	Vâlcea	429	1779.874	1.154	48
25	Neamț	525	1603.197	1.115	49
26	Buzău	501	2959.286	1.111	48
27	Suceava	695	1559.593	1.095	44
28	Sălaj	239	949.148	1.065	39
29	Dolj	703	2900.914	1.064	53
30	Ialomița	288	1107.150	1.051	34
31	Bacău	608	2572.222	0.987	50

No.	County	Number of companies N_c	Total turnover of node companies, mill. euro CA_T	Density of node companies per 1000 inhabitants D_{CN}	Number of activities with turnover $\neq 0$ Na
32	Vrancea	336	741.327	0.987	38
33	Călărași	289	1430.097	0.942	35
34	Caraș-Severin	270	708.842	0.913	41
35	Gorj	298	1535.008	0.872	43
35	Giurgiu	220	920.635	0.782	34
37	Teleorman	296	940.545	0.779	37
38	Dâmbovița	398	1752.958	0.767	46
39	Mehedinți	203	675.483	0.765	35
40	Olt	309	1917.125	0.708	38
41	Vaslui	263	754.661	0.665	37
42	Botoșani	246	717.065	0.596	40
Maximum		10401	77271.085	5.522	77
Minimum		203	675.483	0.596	34

An important indicator of "power" assessment at microeconomic level is the **density of node companies per 1000 inhabitants**. As expected, the maximum value is recorded by Bucharest, and the lowest by Botosani County. The average density of node companies per 1000 inhabitants is **1.79**.

For the number of companies, the value of the multiple is 51.24 (Bucharest versus Mehedinți) and for turnover is 114.4 (Bucharest vs. Mehedinți).

From the point of view of the number of activities with a turnover other than zero, Bucharest has Na_{max} of 77 and Giurgiu and Ialomita counties Na_{min} of 34, the multiple being 2.26.

In order to perform the multi-criteria ranking of counties at microeconomic level, we allocate points from 1 to 42 to the following fundamental indicators:

- Number of node companies – Nc;
- Total turnover – CA_T;
- Density of node companies – D_{NC}/1000 inhabitants;
- Number of activities with turnover other than zero – Na.

Table 13.3 shows the ranking of the 42 counties, according to the given scoring, by increasing order. **The score obtained for the four criteria assesses the overall micro-economic development level of each territorial entity, while also identifying its growth paths:**

- **Increase in the number of medium-sized, large and very large node companies;**
- **Establishment of node companies in areas of activity that currently have zero turnover. The method can yield results, especially in counties with a number of activities with a turnover other than zero below 45.**

Table 13.3

No.	County name	Number of companies, N_c	Number of points for N_c	Total turnover of node companies CA_T	Number of points for CA_T	Density of node companies per 1000 inhabitants D_{CN}	Number of points for D_{CN}	Real number of activities with turnover $\neq 0$ N_a	Number of points for number of activities with turnover $\neq 0$ N_a	Total points
1	București	10401	1.0	77271.085	1.0	5.522	1.0	77	1.0	4.0
2	Ilfov	1356	5.0	12144.820	2.0	3.488	2.0	62	6.0	15.0
3	Timiș	1564	3.0	6922.273	5.0	2.288	5.0	65	2.5	15.5
4	Cluj	1636	2.0	6528.996	7.0	2.367	4.0	63	4.5	17.5
5	Brașov	1329	6.0	5771.223	8.0	2.420	3.0	63	4.5	21.5
6	Constanța	1490	4.0	8249.480	3.0	2.178	6.0	58	9.0	22.0
7	Prahova	1098	7.5	6794.495	6.0	1.439	13.0	65	2.5	29.0
8	Argeș	996	9.0	7564.532	4.0	1.626	10.0	59	8.0	31.0
9	Sibiu	848	11.0	4699.566	9.0	2.134	7.0	57	10.0	37.0
10	Bihor	1098	7.5	3805.850	10.0	1.908	8.0	54	12.0	37.5
11	Arad	784	12.0	3238.623	13.0	1.821	9.0	52	14.5	48.5
12	Mureș	783	13.0	3630.829	12.0	1.421	14.0	56	11.0	50.0
13	Iași	982	10.0	2553.975	17.0	1.271	17.0	61	7.0	51.0
14	Alba	539	19.0	2095.022	18.0	1.574	12.0	50	18.0	67.0
15	Dolj	703	14.0	2900.914	15.0	1.064	27.0	53	13.0	69.0
16	Galați	653	16.0	3676.583	11.0	1.218	21.0	49	21.5	69.5
17	Hunedoara	500	22.0	1718.374	23.0	1.195	20.0	52	14.5	79.5
18	Satu Mare	460	24.0	1864.655	20.0	1.336	16.0	48	22.0	82.0
19	Buzău	501	21.0	2959.286	14.0	1.111	25.0	48	22.0	82.0
20	Harghita	495	23.0	1225.627	31.0	1.592	11.0	50	18.0	83.0
21	Bacău	608	17.0	2572.222	16.0	0.987	33.0	50	18.0	84.0
22	Maramureș	576	18.0	1633.973	24.0	1.203	18.0	46	25.0	85.0
23	Vâlcea	429	25.0	1779.874	21.0	1.154	22.0	48	22.0	90.0
24	Neamț	525	20.0	1603.197	25.0	1.115	30.0	49	21.5	96.5
25	Suceava	695	15.0	1559.593	26.0	1.095	29.0	44	27.0	97.0
26	Brăila	374	27.0	1475.228	28.0	1.164	23.0	46	25.0	103.0
27	Dâmbovița	398	26.0	1752.958	22.0	0.767	38.0	46	25.0	111.0

No.	County name	Number of companies, Nc	Number of points for Nc	Total turnover of node companies CA_T	Number of points for CA_T	Density of node companies per 1000 inhabitants D_{CN}	Number of points for D_{CN}	Real number of activities with turnover $\neq 0$ Na	Number of points for number of activities with turnover $\neq 0$ Na	Total points
28	Bistrița-Năsăud	333	29.0	1238.304	30.0	1.163	24.0	41	30.0	113.0
29	Covasna	289	33.5	779.386	37.0	1.375	15.0	41	30.0	115.5
30	Gorj	298	31.0	1535.008	27.0	0.872	35.0	43	28.0	121.0
31	Olt	309	30.0	1917.125	19.0	0.708	40.0	38	34.5	123.5
32	Tulcea	274	36.0	871.740	36.0	1.286	19.0	37	37.0	128.0
33	Călărași	289	33.5	1430.097	29.0	0.942	31.0	35	39.0	132.5
34	Vrancea	336	28.0	741.327	39.0	0.987	32.0	38	34.5	133.5
35	Sălaj	239	40.0	949.148	33.0	1.065	28.0	39	33.0	134.0
36	Ialomița	288	35.0	1107.150	32.0	1.051	26.0	34	41.5	134.5
37	Teleorman	296	32.0	940.545	34.0	0.779	37.0	37	37.0	140.0
38	Caraș-Severin	270	37.0	708.842	41.0	0.913	34.0	41	30.0	142.0
39	Botoșani	246	39.0	717.065	40.0	0.596	42.0	40	32.0	153.0
40	Giurgiu	220	41.0	920.635	35.0	0.782	36.0	34	41.5	153.5
41	Vaslui	263	38.0	754.661	38.0	0.665	41.0	37	37.0	154.0
42	Mehedinți	203	42.0	675.483	42.0	0.765	39.0	35	40.0	163.0
								PT average		90.000
								Standard deviation	(s)	43.889

The "core"[*]method allows for grouping the counties into three categories:

a) A first category, with total PT scores ranging from PT_{min} to $PT_{med} - S$, characterized by a relatively high overall level of microeconomic development of the counties. This category includes the counties of Bucureşti, Ilfov, Timiş, Cluj, Braşov, Constanţa, Prahova, Argeş, Sibiu, Bihor - 10 counties.

b) The second category, with values of PT between $PT_{med} + S$ and $PT_{med} - S$, characterized by a relatively medium level of microeconomic development of the counties. This category includes the following counties: Arad, Mureş, Iaşi, Alba, Dolj, Galaţi, Hunedoara, Satu Mare, Buzău, Harghita, Bacău, Maramureş, Vâlcea, Neamţ, Suceava, Brăila, Dâmboviţa, Bistriţa Năsăud, Covasna, Gorj, Olt, Tulcea, Călăraşi, Vrancea - 24 counties.

c) The third category, with values of PT between PT_{max} and $PT + S$, characterized by a relatively low overall level of microeconomic development of the counties. This category includes the following counties: Sălaj, Ialomiţa, Teleorman, Caraş-Severin, Botoşani, Giurgiu, Vaslui, Mehedinţi - 8 counties.

13.3. Synthesis of distributions of the node companies by development regions

Table 13.4 shows the values of the four microeconomic criteria for the distributions of node companies by the development regions.

Table 13.4

No.	Regions	Number of companies N_c	Total turnover of node companies, mill. EUR CA_T	Density of node companies per 1000 inhabitants D_{CN}	Number of activities with turnover $\neq 0$ N_a
1	Bucureşti-Ilfov	11757	89420.906	5.174	77
2	Centru	4283	18201.653	1.814	70
3	Vest	3118	12588.112	1.705	68
4	Nord-Vest	4342	16020.926	1.670	68
5	Sud-Est	3628	17973.644	1.425	65
6	Sud Muntenia	3585	20510.412	1.143	72
7	Nord-Est	3319	9760.713	1.005	66
8	Sud-Vest Oltenia	1942	8808.404	0.936	63
Max		11757	89415.905	5.174	77
Min		1942	8808.404	0.936	63

The effect of mitigating the differences in the values of the four criteria evaluated by the Max/Min multiple comparison is considerable.

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[*] The "core" method identifies, in the case of distributions close to normal, a "central" group of values ranging between $x_{med} + S$ and $x_{med} - S$, which typically covers between 64% and 70% of the total observations. It also identifies "extreme" groups of values ranging between x_{max} and $x_{med} + S$, and between $x_{med} - S$ and x_{min}, respectively, indicating the accentuated trends. These groups of values usually cover between 15% and 18% of the total observations.

No.	Criterion	Max/Min		Counties/Regions
		Counties	Regions	
1	Number of companies Nc	51.24	6.05	8.47
2	Total turnover CA_T	114.40	10.15	11.27
3	Density of node companies D_{CN}	9.27	5.53	1.68
4	Number of activities with turnover $\neq 0$ Na	2.26	1.22	1.85

The ranking of the overall level of microeconomic development of the eight development regions is presented in Table 13.5.

Table 13.5

No.	Region name	Nc	CA_T	D_{CN}	Na	Total points	
1	Bucureşti-Ilfov	1	1	1	1	4	
2	Centru	3	3	2	3	11	
3	Sud Muntenia	5	2	6	2	15	
4	Nord-Vest	2	5	4	4.5	15.5	
5	Sud-Est	4	4	5	7	20	
6	Vest	7	6	3	4.5	20.5	
7	Nord-Est	6	7	7	6	26	
8	Sud-Vest Oltenia	8	8	8	8	32	

Currently, the structure of the eight development regions by counties is the following:

No.	Region name	Counties of the region
1	Bucureşti-Ilfov	Bucureşti, Ilfov
2	Centru	Alba, Braşov, Covasna, Mureş, Harghita, Sibiu
3	Sud Muntenia	Argeş, Călăraşi, Dâmboviţa, Giurgiu, Ialomiţa, Prahova, Teleorman
4	Nord-Vest	Bihor, Bistriţa Năsăud, Cluj, Maramureş, Satu Mare, Sălaj
5	Sud-Est	Brăila, Buzău, Constanţa, Galaţi, Tulcea, Vrancea
6	Vest	Arad, Caraş Severin, Hunedoara, Timiş
7	Nord-Est	Bacău, Botoşani, Iaşi, Neamţ, Suceava, Vaslui
8	Sud-Vest Oltenia	Dolj, Gorj, Mehedinţi, Olt, Vâlcea

13.4. Overall profitability of the node companies from counties and development regions

In Table 13.6, the overall profitability ratios (Rb/CA,%) of all node companies in each of the 42 counties are shown in descending order.

Table 13.6

No.	County	Gross profit/loss, mill. euro	Gross profit (loss) rate, %
1	Sibiu	487.759	10.38
2	Ialomiţa	86.399	7.80
3	Olt	141.388	7.38
4	Alba	151.259	7.22
5	Bacău	185.783	7.22
6	Sălaj	53.566	5.64
7	Tulcea	43.988	5.05

No.	County	Gross profit/loss, mill. euro	Gross profit (loss) rate, %
8	Caraş-Severin	35.501	5.01
9	Mureş	177.608	4.89
10	Timiş	323.776	4.68
11	Satu Mare	81.859	4.39
12	Călăraşi	60.464	4.23
13	Iaşi	107.500	4.21
14	Arad	114.678	3.54
15	Neamţ	56.785	3.54
16	Gorj	54.381	3.54
17	Mehedinţi	23.409	3.47
18	Covasna	26.837	3.44
19	Vrancea	24.265	3.27
20	Bucureşti	2462.596	3.19
21	Teleorman	30.000	3.19
22	Bistriţa-Năsăud	38.582	3.12
23	Cluj	195.711	3.00
24	Argeş	225.983	2.99
25	Botoşani	20.593	2.87
26	Vaslui	21.235	2.81
27	Braşov	141.263	2.45
28	Maramureş	39.843	2.44
29	Dâmboviţa	39.954	2.28
30	Harghita	26.610	2.17
31	Suceava	26.878	1.72
32	Bihor	48.875	1.28
33	Brăila	15.504	1.05
34	Prahova	48.363	0.71
35	Buzău	18.171	0.61
36	Ilfov	65.175	0.54
37	Dolj	-15.306	-0.53
38	Galaţi	-41.683	-1.13
39	Constanţa	-107.583	-1.30
40	Vâlcea	-37.424	-2.10
41	Giurgiu	-34.652	-3.76
42	Hunedoara	-71.010	-4.13
Max		2462.596	10.380
Min		-107.583	-4.130

The average overall profitability rate is 2.79%.

According to the breakdown chosen in the methodological concepts, eight counties had a favorable overall profitability, 28 counties had a relatively favorable overall profitability and six counties had a relatively unfavorable overall profitability, with a significant influence in these cases of the negative results obtained by Arcelor Mittal Galaţi, Rompetrol Rafinare Constanţa, Compania Naţională a Huilei Hunedoara and Oltchim Râmnicu Vâlcea.

Table 13.7 shows in descending order the overall profitability ratios of all node companies of each development region.

Table 13.7

No.	Region name	Gross profit/loss, mill. euro	Gross profit (loss) rate, %
1	Centru	1011.336	5.56
2	Nord-Est	418.774	4.29
3	Vest	402.945	3.20
4	Nord-Vest	458.436	2.86
5	Bucureşti-Ilfov	2527.771	2.83
6	Sud Muntenia	456.511	2.23
7	Sud-Vest Oltenia	166.448	1.89
8	Sus-Est	-47.338	-0.26
Max		2527.771	5.556
Min		-47.338	-0.263

A single region, namely Centru, has overall favorable profitability, six regions have relatively favorable overall profitability, and a single region, Sud-Est, has relatively unfavorable overall profitability.

Both in the case of counties and of regions, the maximum gross profit was obtained by the Bucureşti Municipality, and Bucureşti-Ilfov Region, respectively, thanks to OMV Petrom, which registered in 2011 the largest gross profit (EUR 1056.806 million) of all the node companies in Romania.

13.5. The leading companies in counties and development regions

Table 13.8 shows the leading companies at county level.

No.	NACE Code	Company name	Locality	County	Ownership type	Turnove mill. eur
1	16	HOLZINDUSTRIE SCHWEIGHOFER SRL	SEBES	Alba	***	375.073
2	29	TAKATA ROMANIA SRL	ARAD	Arad	***	359.216
3	29	AUTOMOBILE DACIA SA	MIOVENI	Argeş	***	3109.52
4	47	DEDEMAN S.R.L.	BACAU	Bacău	**	475.796
5	26	CELESTICA (ROMANIA) S.R.L.	BORS	Bihor	***	556.406
6	29	LEONI WIRING SYSTEMS RO SRL	BISTRITA	Bistriţa-Năsăud	***	156.756
7	13	SC ROLANA TEX SRL	BOTOSANI	Botoşani	***	41.766
8	46	SELGROS CASH CARRY SRL	BRASOV	Braşov	***	804.193
9	24	LAMINORUL SA	BRAILA	Brăila	***	220.386
10	46	BUNGE ROMANIA SRL	BUZAU	Buzău	***	324.941
11	24	TMK-RESITA SA	RESITA	Caraş-Severin	***	189.772
12	01	AGRO CHIRNOGI SA	CHIRNOGI	Călăraşi	**	265.367
13	26	NOKIA ROMANIA SRL	CLUJ-NAPOCA	Cluj	***	968.313
14	19	ROMPETROL RAFINARE SA	NAVODARI	Constanţa	***	2400.90
15	47	DOMO RETAIL SA	TARGU SECUIESC	Covasna	***	165.417
16	24	MECHEL TARGOVISTE SA	TARGOVI?TE	Dâmboviţa	***	259.504
17	35	CEZ VANZARE	CRAIOVA	Dolj	***	329.402
18	24	ARCELOR MITTAL GALATI SA	GALATI	Galaţi	***	1100.38
19	35	COMPLEXUL ENERGETIC TURCENI SA	TURCENI	Gorj	*	361.005
20	42	ROMSTRADE SRL	ADUNATII-COPACENI	Giurgiu	**	127.357
21	11	ROMAQUA GROUP SA	BORSEC	Harghita	**	127.785
22	25	SEWS ROMANIA SRL	DEVA	Hunedoara	***	213.669
23	10	EXPUR SA	SLOBOZIA	Ialomiţa	***	184.339
24	29	DELPHI DIESEL SYSTEMS ROMANIA SRL	MIROSLAVA	Iaşi	***	310.891
25	46	MEDIPLUS EXIM SRL	MOGOSOAIA	Ilfov	**	637.233

No.	NACE Code	Company name	Locality	County	Ownership type	Turnover, mill. euro	Gross profit/ loss, mill. euro	Gross profit/ loss rate, %
26	27	EATON ELECTRO PRODUCTIE SRL	SARBI - FARCASA	Maramureş	***	192.097	9.912	5.16
27	20	REGIA AUTONOMA PENTRU ACTIVITATI NUCLEARE	DROBETA-T. SEVERIN	Mehedinţi	*	168.950	9.419	5.57
28	35	E.ON ENERGIE ROMANIA S.A.	TARGU MURES	Mureş	***	1005.462	-45.239	-4.50
29	47	ALTEX ROMANIA SRL	PIATRA NEAMT	Neamţ	**	208.303	6.979	3.35
30	24	ALRO SA	SLATINA	Olt	***	528.892	66.113	12.50
31	19	PETROTEL-LUKOIL S.A.	PLOIESTI	Prahova	***	1563.435	-92.406	-5.91
32	10	UNICARM SRL	VETIS	Satu Mare	**	149.909	4.427	2.95
33	24	SILCOTUB S.A.	ZALAU	Sălaj	***	340.360	32.036	9.41
34	06	S.N.G.N.ROMGAZ S.A.	MEDIAS	Sibiu	*	993.688	311.632	31.36
35	16	EGGER ROMANIA S.R.L.	RSDSUTI	Suceava	***	139.540	2.601	1.86
36	01	INTERAGRO SRL	ZIMNICEA	Teleorman	**	143.498	0.490	0.34
37	22	CONTINENTAL AUTOMOTIVE PRODUCTS SRL	TIMISOARA	Timiş	***	524.947	56.731	10.81
38	24	ALUM SA	TULCEA	Tulcea	***	135.501	7.682	5.67
39	28	RULMENTI S.A.	BARLAD	Vaslui	***	61.729	5.786	9.37
40	20	OLTCHIM SA	RAMNICU VALCEA	Vâlcea	*	361.740	-65.679	-18.16
41	17	VRANCART SA ADJUD	ADJUD	Vrancea	**	38.640	0.555	1.44
42	06	OMV PETROM S.A	BUCURESTI	Bucureşti	***	3908.886	1056.806	27.04

Legend:

* majority state-owned companies.

** majority Romanian privately-owned companies.

*** majority foreign-owned companies.

Referring to the ownership structure, we find that out of 42 leading companies, 29, *i.e.* **69.04%,** are majority foreign-owned companies, covering **83.45%** of the total turnover of the county leaders!

The ownership structure of the leading companies is as follows:

No.	Ownership structure	Number of companies	Total turnover, mill. euro	Share of turnover by ownership structure, %
1	Majority state-owned companies	4	1885.383	7.69
2	Majority Romanian privately-owned companies	9	2173.888	8.86
3	Majority foreign-owned companies	29	20471.710	83.45

From the perspective of overall profitability, according to the above data it results that 30 leading companies, covering 67.79% of total turnover of leaders, have favorable and relatively favorable overall profitability. However, we have to mention the chronic loser companies over the last 3 years, which were Mechel (Brăila and Târgovişte), Arcelor Mittal Galaţi, Rompetrol Rafinare Constanţa, Oltchim Rm. Vâlcea. These companies determine the relatively high turnover of the leaders with unfavorable profitability (24.08%).

No.	Overall profitability rate Rb/CA, %	Significance of overall profitability	Number of leader companies	Turnover, mill. euro	Share of turnover in total, %
1	Rb/CA > +5	Favorable	14	8441.035	34.41
2	+0.05 < Rb/CA ≤ +5	Relatively favorable	16	8188.813	33.38
3	-0.05 ≤ Rb/CA ≤ +0.05	Balanced	1	324.940	1.32
4	-5 ≤ Rb/CA < -0.05	Relatively unfavorable	5	1669.830	6.81
5	-5 < Rb/CA	Unfavorable	6	5906.360	24.08

The types of activity of the 42 leading companies are mostly manufacturing (28). We point out that there is no county-level leading company in market services.

No.	Sector name	Number of leader companies	Turnover, mill. euro	Share of turnover in total, %
1	Agriculture, forestry, aquaculture	2	408.865	1.67
2	Mining and quarrying industry	2	4902.574	19.99
3	Manufacturing industry	28	14780.433	60.25
4	Electric and thermal power, gas and water	3	1695.869	6.91
5	Construction	1	127.357	0.52
6	Trade, accommodation and catering	6	2615.883	10.66
7	Market services	0	0.000	0.00

The leading companies by development regions are presented in Table 13.9.

Table 13.9

No.	NACE Code	Region	Company name	Locality	County	Owner ship type	Turnover, mill. euro	Gross profit/ loss, mill. euro	Gross profit/ loss rate, %
1	06	Bucureşti-Ilfov	OMV PETROM S.A	Bucureşti	Bucureşti	***	3908.886	1056.806	27.04
2	35	Centru	E.ON ENERGIE ROMANIA S.A.	Târgu Mureş	Mureş	***	1005.462	-45.239	-4.50
3	47	Nord-Est	DEDEMAN S.R.L.	Bacău	Bacău	**	475.796	55.982	11.77
4	26	Nord-Vest	NOKIA ROMANIA SRL	Cluj-Napoca	Cluj	***	968.313	2.755	0.28
5	29	Sud Muntenia	AUTOMOBILE DACIA SA	Mioveni	Argeş	***	3109.522	86.859	2.79
6	19	Sud-Est	ROMPETROL RAFINARE SA	Năvodari	Constanţa	***	2400.908	-173.635	-7.23
7	24	Sud-Vest Oltenia	ALRO SA	Slatina	Olt	***	528.892	66.113	12.50
8	22	Vest	CONTINENTAL AUTOMOTIVE PRODUCTS SRL	Timişoara	Timiş	***	524.947	56.731	10.81

Legend:
* majority state-owned companies.
** majority Romanian privately-owned companies.
*** majority foreign-owned companies.

Seven of the eight leading companies are majority foreign-owned, accounting for 96.32% of turnover of the leaders of the eight regions.

A single company has unfavorable overall profitability, Rompetrol Rafinare Constanţa. The presence of Nokia as a leader is explained by the fact that the reference year was 2011, the year of liquidation of company activity in Romania.

Five of the eight regional leading companies operate in manufacturing, covering 58.29% of the total regional leaders turnover.

13.6. Macroeconomic features of the counties

Table 13.10 presents the county values of Gross Domestic Product in 2010 (latest available data), ranked in decreasing order and each receiving a score corresponding to its position in the ranking of the 42 counties.

Table 13.10

County	GDP, mill. RON current 2010 prices	Points
Municipiul Bucureşti	118716.8	1.0
Timiş	25378.1	2.0
Constanţa	21183.4	3.0
Cluj	21164.4	4.0
Prahova	18200.3	5.0
Braşov	17741.0	6.0
Argeş	16601.7	7.0
Iaşi	16122.8	8.0
Dolj	13482.8	9.0
Bihor	13345.4	10.0

County	GDP, mill. RON current 2010 prices	Points
Ilfov	12862.4	11.0
Bacău	12134.6	12.0
Arad	11549.8	13.0
Sibiu	11547.6	14.0
Galaţi	10962.7	15.0
Mureş	10861.7	16.0
Dâmboviţa	10248.9	17.0
Suceava	9959.9	18.0
Gorj	9731.6	19.0
Hunedoara	9396.8	20.0
Alba	9275.4	21.0
Maramureş	8483.1	22.0
Buzău	7820.9	23.0
Vâlcea	7361.8	24.0
Neamţ	7190.3	25.0
Olt	7077.6	26.0
Caraş-Severin	6658.6	27.0
Brăila	6223.8	28.0
Satu Mare	6186.3	29.0
Harghita	5855.3	30.0
Vrancea	5747.6	31.0
Bistriţa-Năsăud	5644.4	32.0
Teleorman	5585.6	33.0
Botoşani	5464.8	34.0
Călăraşi	5382.2	35.0
Giurgiu	5274.2	36.0
Ialomiţa	4821.9	37.0
Vaslui	4796.6	38.0
Sălaj	4468.9	39.0
Tulcea	4401.1	40.0
Mehedinţi	4287.4	41.0
Covasna	3839.1	42.0
PT average		21.5
Standard deviation (s)		12.27

According to the "core" method we identified:

- A first category, with a relatively high level of GDP, including the following counties: Bucureşti Municipality, Timiş, Constanţa, Cluj, Prahova, Braşov, Argeş, Iaşi, Dolj - nine counties.
- A second category, with a relatively medium level of GDP, including the counties: Bihor, Ilfov, Bacău, Arad, Sibiu, Galaţi, Mureş, Dâmboviţa, Suceava, Gorj, Hunedoara, Alba, Maramureş, Buzău, Vâlcea, Neamţ, Olt, Caraş-Severin, Brăila, Satu mare, Harghita, Vrancea, Bistriţa-Năsăud, Teleorman - 24 counties.
- A third category, with a relatively low level of GDP, including the counties: Botoşani, Călăraşi, Giurgiu, Ialomiţa, Vaslui, Sălaj, Tulcea, Mehedinţi, Covasna - nine counties.

Table 13.11 presents data on population of the counties according to the final data of the 2011 Census, communicated by the National Institute of Statistics.

Table 13.11

No.	County	Population – total Np
1	Alba	342,376
2	Arad	430,629
3	Argeş	612,431
4	Bacău	616,168
5	Bihor	575,398
6	Bistriţa-Năsăud	286,225
7	Botoşani	412,626
8	Braşov	549,217
9	Brăila	321,212
10	Buzău	451,069
11	Caraş-Severin	295,579
12	Călăraşi	306,691
13	Cluj	691,106
14	Constanţa	684,082
15	Covasna	210,177
16	Dâmboviţa	518,745
17	Dolj	660,544
18	Galaţi	536,167
19	Giurgiu	281,422
20	Gorj	341,594
21	Harghita	310,867
22	Hunedoara	418,565
23	Ialomiţa	274,148
24	Iaşi	772,348
25	Ilfov	388,738
26	Maramureş	478,659
27	Mehedinţi	265,390
28	Mureş	550,846
29	Neamţ	470,766
30	Olt	436,400
31	Prahova	762,886
32	Satu Mare	344,360
33	Sălaj	224,384
34	Sibiu	397,322
35	Suceava	634,810
36	Teleorman	380,123
37	Timiş	683,540
38	Tulcea	213,083
39	Vaslui	395,499
40	Vâlcea	371,714
41	Vrancea	340,310
42	Bucureşti	1,883,425
	Total	20,121,641
	Maximum	1,883,425
	Minimum	210,177

13.7. The fundamental qualitative micro-macroeconomic correlation

The comparative analysis between the overall level of microeconomic development in the counties, defined by four criteria:

- Number of node companies;
- Turnover of node companies;
- Density of node companies (number of node companies per 1000 inhabitants);
- Number of activities with turnover other than zero;

and the values of the county gross domestic product show an exceptional qualitative correlation by ranks between the two rankings obtained by aggregated scoring of the global level of microeconomic development and the gross domestic product.

The value of the Spearman qualitative correlation coefficient by rank is **r = 0.891**, with a determination of **79.4%**, with the highest degree of significance (**0.001**)!

One may say with great confidence that the degree of GDP growth in the territorial profile depends to the extent of about **80%** on the global microeconomic development, the way we have defined it.

13.8. Conclusions regarding some features of the territorial microeconomic specialization

The main conclusions drawn from the analysis of the synthesis sheets of specialization at county and regional level are:

a) It was fully justified to choose the first eight activities called the "D_0 power decile" as a selection group of specializations at county and regional level. Table 13.12 shows the values of the D_0 power deciles at county level, observing that their values range between 60.4% and 88.33%, with an average of 77.37%. As a consequence, the high and very high degrees of inequality in coverage of activities validate the criterion adopted in the selection of county specializations.

Table 13.12

No.	County	D0
1	Alba	76.84
2	Arad	71.03
3	Argeş	86.03
4	Bacău	81.72
5	Bihor	72.02
6	Bistriţa-Năsăud	65.82
7	Botoşani	78.30
8	Brăila	83.87
9	Braşov	66.12
10	Bucureşti	69.57
11	Buzău	79.10
12	Călăraşi	84.83

No.	County	D0
13	Caraş-Severin	76.34
14	Cluj	67.71
15	Constanţa	77.71
16	Covasna	75.09
17	Dâmboviţa	75.52
18	Dolj	75.23
19	Galaţi	83.56
20	Giurgiu	88.33
21	Gorj	86.55
22	Harghita	72.71
23	Hunedoara	69.66
24	Ialomiţa	86.19
25	Iaşi	60.07
26	Ilfov	82.48
27	Maramureş	75.53
28	Mehedinţi	86.08
29	Mureş	73.53
30	Neamţ	72.84
31	Olt	86.92
32	Prahova	72.89
33	Sălaj	83.66
34	Satu Mare	79.34
35	Sibiu	73.94
36	Suceava	80.03
37	Teleorman	84.96
38	Timiş	61.82
39	Tulcea	82.76
40	Vâlcea	75.54
41	Vaslui	86.86
42	Vrancea	80.54
Max		88.330
Min		60.070

b) Table 13.13 shows the frequency of occurrence of county specializations in the D_0 power deciles. Out of a total of 80 activities, 36 activities were identified as specializations of the D_0 power deciles.

Table 13.13

No.	NACE Code Rev. 2	Significance of NACE Code	Number of counties registering occurrence
1	46	Wholesale trade, except of motor vehicles and motorcycles	42
2	47	Retail trade, except of motor vehicles and motorcycles	42
3	41	Construction of buildings	28
4	10	Manufacture of food products	27
5	01	Crop and animal production, hunting and related service activities	23
6	49	Land transport and transport via pipelines	23
7	45	Wholesale and retail trade and repair of motor vehicles and motorcycles	15

No.	NACE Code Rev. 2	Significance of NACE Code	Number of counties registering occurrence
8	24	Manufacture of basic metals	12
9	27	Manufacture of electrical equipment	10
10	38	Waste collection, treatment and disposal activities; materials recovery	9
11	42	Civil engineering	9
12	16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	8
13	22	Manufacture of rubber and plastic products	8
14	29	Manufacture of motor vehicles, trailers and semi-trailers	8
15	14	Manufacture of wearing apparel	7
16	25	Manufacture of fabricated metal products, except machinery and equipment	7
17	20	Manufacture of chemicals and chemical products	6
18	35	Electricity, gas, steam and air conditioning supply	6
19	23	Manufacture of other non-metallic mineral products	5
20	28	Manufacture of machinery and equipment n.e.c.	5
21	52	Warehousing and support activities for transportation	5
22	30	Manufacture of other transport equipment	4
23	43	Specialized construction activities	4
24	13	Manufacture of textiles	3
25	31	Manufacture of furniture	3
26	05	Mining of coal and lignite	2
27	06	Extraction of crude petroleum and natural gas	2
28	11	Manufacture of beverages	2
29	17	Manufacture of paper and paper products	2
30	19	Manufacture of coke and refined petroleum products	2
31	26	Manufacture of computer, electronic and optical products	2
32	02	Forestry and logging	1
33	15	Manufacture of leather and related products	1
34	21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	1
35	51	Air transport	1
36	61	Telecommunications	1

It was found that:
- The trade activities:
  – Code 46 - Wholesale trade, except of motor vehicles and motorcycles
    42 occurrences
  – Code - 47 Retail trade, except of motor vehicles and motorcycles
    42 occurrences

reveal in all the counties.

- The trade activity
  - Code 45 - Wholesale and retail trade and repair of motor vehicles and motorcycles   15 occurrences
- The food industry and agriculture and forestry are found in 27 and 24 counties, respectively. As a rule, the first two activities are coupled.
- Of the 23 manufacturing sectors (excluding the food industry), 21 are found, with 96 occurrences, in the D_0 power deciles. The Manufacture of tobacco products (NACE Code Rev. 2.12) and the Printing and reproduction of recorded media (NACE Code Rev. 2.18) are missing.

  The Top 5 of the manufacturing sectors occurrence is made up of:
  - Code 24 - Manufacture of basic metals   12 occurrences
  - Code - 27 Manufacture of electrical equipment   10 occurrences
  - Code 16 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials   8 occurrences
  - Code 22 - Manufacture of rubber and plastic products   8 occurrences
  - Code 29 - Manufacture of motor vehicles, trailers and semi-trailers
                                   8 occurrences
- The construction activities:
  - Code 41 - Construction of buildings   28 occurrences
  - Code 42 - Civil engineering   9 occurrences
  - Code 43 - Specialized construction activities   4 occurrences
- The market services activities:
  - Code 49 - Land transport and transport via pipelines   23 occurrences
  - Code - 52 Warehousing and support activities for transportation
  5 occurrences
  - Code - 51 Air transport   1 occurrence
  - Code 61 - Telecommunications   1 occurrence
- The power industry and related activities:
  - Code 35 - Electricity, gas, steam and air conditioning supply
  6 occurrences
  - Code 38 - Waste collection, treatment and disposal activities; materials recovery   9 occurrences
- The mining and quarrying industry activities:
  - Code 05 - Mining of coal and lignite   2 occurrences
  - Code 06 - Extraction of crude petroleum and natural gas 2 occurrences

c) The analysis required the acceptance of a new concept in county administration: **monitoring of economic performance of some large-scale node companies found in the D_0 power deciles of specialization**. The identified companies, with a large number of employees, sometimes with relatively poor economic performance, signify a potential social risk that must

always be taken into account. According to our analysis, the very large companies in this situation are found mainly in the counties:

- Bistriţa Năsăud
- Brăila
- Buzău
- Caraş Severin
- Călăraşi
- Constanţa
- Dâmboviţa
- Hunedoara
- Olt
- Sălaj
- Tulcea
- Vâlcea.

d) In the following, the leading activities in the 42 counties corresponding to the fundamental specializations are presented.

The analysis of structure of the leading activities shows a significant decline in the diversity of activities, from 36, in the case of specializations in the D_0 power deciles, to only 13.

- In 18 counties, the leading activities are found in trade:
  - Code 46 - Wholesale trade, except of motor vehicles and motorcycles 13
  - Code 47 - Retail trade, except of motor vehicles and motorcycles 5
- In 15 counties, the leading activities are found in manufacturing (excluding food industry):
  - Code 24 - Manufacture of basic metals 4
  - Code 29 - Manufacture of motor vehicles, trailers and semi-trailers 4
  - Code 19 - Manufacture of coke and refined petroleum products 2
  - Code 20 - Manufacture of chemicals and chemical products 2
  - Code 16 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials 1
  - Code 25 - Manufacture of fabricated metal products, except machinery and equipment 1
  - Code 31 - Manufacture of furniture 1
- In five counties, the leading activities are found in agriculture and food industry:
  - Code 01 - Crop and animal production, hunting and related service activities 3
  - Code - 10 Manufacture of food products 2

- In four counties, the leading activities are found in the power industry
  and in the mining and quarrying industry:
  – Code 35 - Electricity, gas, steam and air conditioning supply   3
  – Code 06 - Extraction of crude petroleum and natural gas   1

e) The regional approach to the current configuration was intended to demonstrate some essential changes in the inequality degree of activity coverage.

Table 13.14

No.	Region	D_0
1	Bucureşti-Ilfov	69.920
2	Centru	59.160
3	Sud Muntenia	68.980
4	Nord-Vest	60.760
5	Sud-Est	72.630
6	Vest	56.600
7	Nord-Est	63.960
8	Sud-Vest Oltenia	64.740
Max		72.630
Min		56.600

As one may see in Table 13.14, the reduction of inequality degrees is apparent. The range of variation was diminished to values ranging between 56.6% and 72.63%, much closer than in the case of counties.

We believe that the future regionalization of Romania must maintain the current trend of mitigating the high disparities among counties, also from the point of view of the degree of inequality of activity coverage.

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Chapter 14
Evolution of the system of companies residing in Romania, after 1990[*]

The analysis of evolution of the system of companies residing in Romania is important because, both on the side of formation of the gross domestic product (resources) and on the side of its use, the companies play a key role. Active companies contribute by more than 90% to the country's exports and imports and by about 81-84% to gross fixed capital formation.

In the following, we present the main aspects of the evolution of the system of companies residing in Romania, grouped into the following sections:

14.1. Size structure of companies

14.2. Development of small and medium companies

14.3. The ownership structure

14.4. The economic performance of the group of active companies and some of its peculiarities

14.5. Some desirable issues regarding the development of the system of companies residing in Romania.

14.1. Size structure of companies

We cannot present the significant aspects of the size structure of the system of companies residing in Romania without highlighting the structure of the systems of mining and quarrying industry and manufacturing industry (the only available data, statistically grouped) in 1989. Table 14.1 shows the shares of the number of companies, the numbers of employees and incomes by size classes of the **2102** companies in the mining and quarrying industry and the manufacturing industry in 1989.

Table 14.1

Size classes	Number of companies, %	Number of employees, %	Industrial output, %
Total	100	100	100
Less than 200 employees	6.7	0.5	1.2
201 - 500 employees	18.8	3.6	4.8
501 - 1000 employees	23.4	9.3	9.1
1001 - 2000 employees	22.4	17.0	16.9
2001 - 3000 employees	12.5	16.7	17.5
3001 - 5000 employees	9.4	20.0	16.7
Over 5000 employees	6.8	32.9	33.8

Source: Statistical Yearbook, NIS, 1990.

The centrally-planned economy feature was the tendency to build large and very large enterprises with significant capacity to concentrate production, because the total lack of private initiative. Suffice it to mention that **74.5%** of the enterprises in the mining and quarrying industry and in the manufacturing industry had more than 500 employees, concentrated **95.9%** of the employees and produced **94%** of the amount of industrial output. The average number of employees per enterprise in the two mentioned sectors was **1756**.

In 1989, in Romania operated:

- 52243 trade units;
- 21616 restaurants and buffets;
- 8146 kiosks and
- 67622 units of services to the population, out of which 4773 services in construction. (Statistical Yearbook, NIS, 1990)

In addition to the smaller number of service units (trade, restaurants, services to the population), it should be emphasized that most were legally grouped into large public catering establishments or services to the population establishments.

These are the main reference data, which marks the beginning of the fundamental change in the system of enterprises, with the change of state ownership into private ownership and the guarantee of the free initiative by law.

The change in the structure of the system of companies residing in Romania was based on several fundamental normative acts, of which we mention:

- Decree Law No. 54/1990 regarding the organization and carrying out of economic activities on the basis of free initiative;
- Law No. 31/1990 of commercial companies;
- Law No. 58/1991 on the privatization of commercial companies, which stipulated the shrinking state role as shareholder.

Taking into account the moments of emergence of the most important laws, the quantitative analysis of the evolution of the system of companies residing in Romania in terms of size structure begins with 1992.

Table 14.2 shows the dynamics of number of active companies in Romania in industry, construction, trade, hotels and restaurants and services.

Table 14.2

Year	Number of companies	Industry*	Construction	Trade, hotels and restaurants	Services
1992	130076	20976	4330	86422	18348
1993	217857	30706	6718	150775	29658
1994	285501	32683	6291	222899	24628
1995	304359	34850	7655	231303	30551
1996	312067	32529	7046	236924	35568
1997	316751	36430	9470	236223	34628
1998	318376	39327	10521	232164	36364
1999	318736	41542	11329	227565	38300
2000	308064	42157	12021	212750	41136
2001	311280	43454	14299	203043	50464
2002	315105	47284	16567	191195	60059
2003	349061	51818	20628	194717	81898
2004	394519	56399	25389	208436	104295
2005	433030	59060	30372	219609	123989
2006	461812	60114	36115	226525	139059
2007	499857	61463	46925	233626	157843
2008	534525	61260	59389	237790	176086
2009	519441	58853	60135	223781	176672
2010	470080	53448	49348	206305	160979
2011	430608	49715	43503	187310	150080
2012	449482	51077	44607	193222	160576

* The industry includes the mining and quarrying industry, the manufacturing industry and the energy industry.
Source: Statistical Yearbooks NIS 1991-2013 and author's computations.

The dynamics of the number of active companies over the 1992-2012 period may be synthetically presented as follows:

- A first "boom" period, determined by the issuing of Decree Law No. 54/1990, which allowed the carrying out of economic activities on the basis of free initiative in companies with up to 20 employees. Under these circumstances, a large number of small trade businesses have been established; many small bars and restaurants have been opened, so that in 1994 the share of these enterprises covered **77.8**% of the total. The explanation of this situation is that the trade activity is characterized by a low investment rate in relation to turnover, as well as by more modest requirements regarding the skills of employees.
- After 1994, with the establishment of branches of multinational trade companies in Romania, the "atomized" enterprises of the local traders were not able to cope with the competition, so that the share of companies in trade and restaurants decreased, reaching **43**% of the total in 2012.
- To the change in the structure of the number of active companies also contributed the strong development of the companies in the service sector, which did not exist before 1989, such as: real estate transactions,

legal activities, bookkeeping and auditing, market research and business and management consultancy, advertising, gambling, private investigations and protection of goods and people, etc. To them add up the development of telecommunication, IT and information technology services.

- As compared to 1994, the share of construction companies in total, in line with the increase in demand, especially over the 2005-2008 period, has increased.
- The share of the active companies in industry decreased significantly, corresponding to the reduction in the share of industry in the gross domestic product existent in 1989.

The synthesis of the shares of active companies in total companies in 1992 and 2012 is presented in Table 14.3.

Table 14.3

Year	Industry, %	Construction, %	Trade, hotels and restaurants, %	Services, %
1992	16.1	3.3	66.5	14.1
2012	11.4	9.9	43.0	35.7

Source: NIS Statistical Yearbooks and author's computations.

Indices of sectoral growth in the number of active companies between 1992 and 2012 are presented in Table 14.4.

Table 14.4

Year	Total	Industry	Construction	Trade, hotels and restaurants	Services
2012/1992	3.46	2.44	10.30	2.24	8.75

Source: NIS Statistical Yearbooks and author's computations.

Previous observations on the sectoral dynamics are fully verified.

* * *

Beginning with 1997, when Romania was quasi-accepted as a functioning market economy, the growth indices of the Gross Domestic Product and the total number of active companies were significantly correlated ($r = 0.650$, significant at a significance threshold of 0.01).

A simple qualitative analysis of the data in Table 14.2 highlights the significant increase in the number of active companies over the 2003-2008 period, its decrease during the 2009-2011 crisis and a slight increase in 2012.

From the above-mentioned, it follows that the number of active companies reflects to a relative significant extend the dynamics of the gross domestic

product. **It may be stated that the extensive entrepreneurial development favorably influences the overall economic development.**

The breakdown by classes of the number of employees of active companies in Romania has as reference the year 1997 (as in the case of economic performances) and is presented in Table 14.5.

Table 14.5

Year	Number of companies	0 - 9	10 - 49	50 - 249	Over 250
1997	316751 (100%)	287209 (90.7%)	21210 (6.7%)	5764 (1.8%)	2568 (0.8%)
2012	449482 (100%)	394024 (87.7%)	45601 (10.1%)	2251 (1.8%)	1606 (0.4%)

Source: NIS Statistical Yearbooks and author's computations.

In the 15 analyzed years, a significant increase in the share of small companies at the expense of micro-companies, the stable share of the medium-sized companies and the halving of the shares of the large and very large companies have occurred.

The average number of employees per company was relatively close to the EU average in 2012:
- total, 9.65;
- industry, 24.64;
- construction, 7.98;
- trade, hotels and restaurants, 4.52;
- services, 11.53.

In 23 years, the average number of employees per company in industry decreased by **71.2 times**!! This is one of the consequences of the great economic mutation of 1989.

14.2. Development of small and medium-sized companies

Defined mainly by three size classes, 0-9 employees; 10-49 employees and 50-249 employees, the small and medium-sized companies have a key role to play in stimulating the initiative of the citizens of the country in order to build a real middle class of the Romanian society.

The most relevant data series on the contribution of SMEs to the real economy is the dynamics of share of turnover of these companies in total turnover of the companies in industry, construction, trade, hotels and restaurants and services, presented in Table 14.6.

Table 14.6

Year	Share, %	Period volume indices
1992	30.9	
1993	33.8	
1994	41.3	
1995	46.7	
1996	48.3	
1997	45.2	
1998	52.8	
1999	54.5	
2000	55.9	1.81 – 2000 – 1992
2001	57.2	
2002	55.9	
2003	57.4	
2004	57.5	
2005	57.6	
2006	58.7	
2007	60.1	
2008	61.0	1.09 – 2008 – 2000
2009	60.3	
2010	59.4	
2011	58.2	
2012	57.9	0.95 – 2012 – 2008
Total		1.87 – 2012 – 1992

Source: NIS Statistical Yearbooks and author's computations.

As one may see from the presented data, three stages are distinguished in the evolution of SMEs:

- The first stage, which corresponds to the "**initial momentum**" with annual volume indices reaching 1.22 (1994/1993) and 1.17 (1998/1997) and covering the 1992-2000 period. The volume index of the period was 1.81, although Romania experienced a recession in 1997-1999.
- The second stage, which corresponds to the continuous growth of GDP between 2001 and 2008. Paradoxically, during this period the volume index was only 1.09, with the maximum achieved in 2008.
- The third stage, 2009-2012, in which Romania has experienced a severe crisis that has affected the index, which has reached the minimum value of 0.95. We underline that neither the exit from crisis in 2012 has led to a volume index higher than in the previous year. In 2012, the share of SMEs turnover in total turnover had a value approximately equal to that reached in 2005!

Overall, we can say without fear of mistaking that in the 21ˢᵗ century the SMEs policies did not meet the expectations and that, probably, new qualitative measures are needed in this area.

14.3. The ownership structure

The privatization of the commercial companies began in 1993. Over the 1993-1996 period, the small and, partly, the medium-sized companies, were mostly privatized. **Privatization of large and, especially large commercial companies started in 1997 and continued intensively until 2004**.

From the point of view of the author, which he has stated many times, the efficiency of the privatization process should not be assessed, first of all, by the number of the privatized companies, but by the share of turnover of the majority privately-owned companies in total turnover.

Considering the reference year 1997, we obtain the data series presented in Table 14.7.

Table 14.7

Year	Share of $CAmp/CA_T$, %	Share of $CAmp$ ind/CA_T ind, % - Companies with more than 500 employees
1997	58.6	21.2
1998	68.6	26.6
1999	72.2	32.8
2000	76.6	38.6
2001	79.2	43.6
2002	81.4	49.3
2003	83.6	51.2
2004	88.1	63.7
2005	90.3	71.8
2006	92.9	79.5
2007	94.1	81.6
2008	94.3	82.2
2009	94.1	80.9

Source: NIS Statistical Yearbooks and author's computations. Since 2010, NIS has not published any data.

We have added Industry into Table 14.7, in order to highlight the long delay in the privatization of industrial companies with over 500 employees.

Due to delay in the privatization decisions of the large industrial companies, under appropriate strategic conditions, Romania lost very important production capacities. A recent analysis published in *Ziarul Financiar* on September 2, 2014 shows that out of the first 100 companies ranked by the Top 100 in 1994 one third are currently radiated or obtain zero turnover, and another 15 an annual turnover of less than 10 million USD. Four big companies with a major impact on the upstream industry call for attention: Tractorul Braşov, Roman Braşov, Aro Câmpulung and ROCAR Bucureşti, which have deprived Romania of the production of tractors, lorries, land vehicles, buses and trolleybuses.

A major problem when analyzing the ownership structure of the active companies in Romania is the presence of foreign-owned companies.

Over the 1997-2012 period, the number of entirely foreign-owned companies increased from 6,102 (1.93% of the total number of companies in 1997) to 24,000 (5.33% of the total number of companies in 2012).

Much more important than the number of foreign-owned companies is the role they play in the Romanian economy.

A recent research (2013) showed that from among the 80 markets classified as according to NACE Rev. 2, **47** markets had majority foreign-owned leading companies, accounting for **85.8**% of the total turnover of all leaders! Also, referring to the node companies (which cover, in decreasing order, 80% of the turnover of a market) in the manufacturing industry, the turnover of majority foreign-owned companies accounts for **72.38**% of the total turnover of the node companies!

Under these circumstances, the value of export of the manufacturing industry is determined to a large extent by the majority foreign-owned node companies. **The issue of increasing the share of Romanian majority privately-owned companies in the Romanian exports is, in my opinion, a vital challenge for the future development of the system of active companies in our country.**

14.4. The economic performance of the ensemble of active companies and some of its peculiarities

From a performance perspective, the first peculiarity of the group of active companies is the extraordinary concentration of the values of the main economic indicators.

Thus, in 1997, 2568 companies with more than 250 employees, accounting for 0.8% of the total number of active companies in Romania, concentrated from the main economic indicators:

- **54.8% of turnover;**
- **80.6% of direct exports;**
- **70.5% of gross value added at cost of factors;**
- **76.0% of gross investment.**

Source: NIS Statistical Yearbooks and author's computations.

In 2012, 1606 companies with more than 250 employees accounting for 0.4% (half of the share in 1997) of the total number of active companies in Romania concentrated from the main economic indicators:

- **42.1% of turnover;**
- **70.4% of direct exports;**
- **50.0% of gross value added at cost of factors;**
- **55.1% of gross investment.**

Source: NIS Statistical Yearbooks and author's computations.

In industry, 889 active businesses, accounting for 1.7% of those active in the sector, concentrated from all the main economic indicators:

- **64.8% of turnover;**
- **79.4% of direct exports;**
- **69.3% of gross value added at cost of factors;**
- **63.2% of gross investment.**

Source: NIS Statistical Yearbooks and author's computations.

Moreover, recent research (2014) shows that, starting from the unanimously accepted assumption that 80% of the value of an economic indicator of a system of companies defines the economic performance of the system the concentration degree of the values of the key economic indicators of companies residing in Romania is outstanding.

Thus, in 2012, the number of node companies (accepted name for the companies covering 80% of the value of an ascending-ordered economic indicator) and their main economic indicators were those presented in Table 14.8.

Table 14.8

No.	Name of economic indicator	Number of active companies	Number of node companies	Share of node companies in total companies, ρ_{80}, %
1	Turnover	449482	14227	3.16
2	Gross profit	246667	10920	4.43
3	Gross loss	202321	6594	3.26
4	Operating profit	246496	11725	4.76
5	Operating loss	202584	9573	4.73
6	Outstanding payments	128074	4046	3.16
7	Financial expenses	189127	3080	1.63

Source: Paper [7] in the references.

The fact that less than 5% of the active companies of the system of companies residing in Romania concentrate 80% of the values of the main economic indicators is concomitantly a vulnerability and an advantage: vulnerability, in the sense that the poor economic performance of a very small number of active companies can significantly worsen the performance of the entire system; and advantage because it allows corporate governance to quickly identify priorities according to the ABC leadership method. The high degree of concentration also determines the representativeness of tops 100 companies that provide consistent qualitative pictures of some aspects of the real economy.

From the point of view of the overall economic performance of the system of active companies in Romania, the percentage values of the pre-tax gross profit rates in relation to turnover since 1997 are presented in Table 14.9. The author's research on the degree of economic concentration of turnover showed the overwhelming influence of the profitability of companies with more than 500

employees on the profitability of the whole system. Therefore, Table 14.9 also shows the rates of pre-tax gross profit in relation to turnover for companies with over 500 employees.

Table 14.9

Year	Gross profit/loss to turnover, %	Gross profit/loss to turnover, % for companies with more than 500 employees
1997	3.03	0.01
1998	0.16	-4.98
1999	-0.88	-3.98
2000	-0.04	-3.99
2001	1.53	-1.75
2002	0.18	-3.30
2003	3.04	-0.97
2004	4.93	4.25
2005	5.55	4.76
2006	6.94	6.50
2007	5.61	7.44
2008	3.37	3.17
2009	1.51	0.97
2010	0.62	1.66
2011	1.55	2.75
2012	1.84	3.24

Source: NIS Statistical Yearbooks and author's selection.

The data analysis validates the impact of profitability of companies with more than 500 employees on the profitability of the entire system over the 1997-2012 period.

The correlation coefficient between the two data sets is **0.855** (significant at the highest significance threshold - 0.001), which shows **73%** a share of the above-mentioned influence.

Also, the data confirms the impact of privatization delay of large companies, the six negative annual profitability rates in the 1998-2003 period being enlightening.

Interestingly, in 2010-2012, the overall profitability rates of companies with more than 500 employees were higher than the total system values, showing a higher resilience to the crisis of the large companies as compared to the small and medium-sized companies.

The 2012/1997 turnover multiples of the Romanian system of companies and of the main economic sectors were as follows:

- total   4.38;
- industry   3.19;
- construction   5.68;
- trade, hotels and restaurants   4.51;
- services   10.72.

Note. Turnover figures in 1997 and 2012 were calculated in EUR at the average annual exchange rate of the NBR.

Source: NIS Statistical Yearbooks and author's computations.

The figures confirm the fact that during the analyzed period the services, construction and trade have grown strongly in Romania, and to a significantly lower extent, the industry.

14.5. Some desirable issues regarding the development of the system of companies residing in Romania

a) Industry and exports

Recent academic researches (2013) have unequivocally demonstrated that the key structural change in the Romanian exports during the 2007-2013 period, as well as in its dynamics, was mainly due to the majority foreign-owned companies, usually subsidiaries residing in Romania of the large multinational companies. As a result, a very consistent approach should be developed to identify methods and best practices for attracting majority foreign-owned companies to priority areas of the Romanian economy, such as:

- Manufacture of motor vehicles, trailers and semi-trailers (Code 29 NACE Rev. 2);
- Manufacture of other transport equipment (Code 30 NACE Rev. 2);
- Manufacture of basic pharmaceutical products and pharmaceutical preparations (Code 21 NACE Rev. 2);
- Manufacture of computer, electronic and optical products (Code 26 NACE Rev. 2);
- Manufacture of machinery and equipment n.e.c. (Code 28 NACE Rev. 2).

The majority foreign-owned companies attracted to Romania must support the diversification of Romanian exports outside the EU, which is an important priority.

b) SMEs policies

In my view, changes are needed in all the SMEs policies.

- In addition to emphasizing entrepreneurial development for business start-ups and, consequently, for increasing the SMEs density (number of SMEs per 1000 inhabitants), efforts are needed to create medium-sized export-oriented companies in order to boost the share of Romanian exporters on the international market. There are currently identified manufacturing sectors where it is opportune to create export-oriented SMEs (Annex 14.1).
- Another important resource for the development of the Romanian system of companies is the creation of SMEs in creative fields, identified as possessing a huge potential for capitalizing the Romanian intelligence on the international market (Annex 14.2).

In this way, we shall also get closer to the value of the **convergence indicator in the field of SMEs**, namely the achievement of a 0.5 ratio of the retail and wholesale turnover to the turnover of other service activities. In Romania, the value of this ratio was **0.659** in 2012!

c) The essential feature of Romania in relation to all the countries of the European Union regarding the share of population employed in agriculture (28.6%) and the very large difference as compared to the second country of the European Union according to this criterion, Poland (**12.9%**), leads to the strategic target of developing agriculture and the food and beverage industry. Besides, the share of over 25% of the gross value added of food and beverage industry in the total manufacturing industry defines what we called the **systemic personality of the Romanian manufacturing industry**.

- A major effort must be made to create SMEs in the rural areas for processing the agricultural raw materials, with a strong impact on regional development.
- Investments should be made by using the structural funds in the irrigation system, in order to reduce Romania's weather dependency.
- Significant efforts must be made to promote abroad the Romanian food and beverage brands.
- A separate strategy for the export promotion of food and beverage products should be developed, because Romania cannot remain a net importer of food products.

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Annex 14.1

List of manufacturing sectors selected
to create export-oriented SMEs

No.	NACE Code	NACE Rev. 2 Division
1	10	Manufacture of food products
2	13	Manufacture of textiles
3	15	Manufacture of leather and related products
4	23	Manufacture of other non-metallic mineral products
5	25	Manufacture of fabricated metal products, except machinery and equipment
6	27	Manufacture of electrical equipment
7	32	Other manufacturing
8	14	Manufacture of wearing apparel

Source: Paper [5] of the references.

Annex 14.2

Creative fields of great interest
to stimulate the creation of export-oriented SMEs

No.	NACE Code	NACE Rev. 2 Division
1	58	Publishing activities
2	59	Motion picture, video and television programme production, sound recording and music publishing activities
3	62	Computer programming, consultancy and related activities
4	63	Information service activities
5	71	Architectural and engineering activities; technical testing and analysis
6	72	Scientific research and development
7	73	Advertising and market research
8	74	Other professional, scientific and technical activities
9	85	Education
10	86	Human health activities
11	87	Residential care activities
12	90	Creative, arts and entertainment activities
13	91	Libraries, archives, museums and other cultural activities
14	93	Sports activities and amusement and recreation activities

Source: Paper [6] of the references.

Chapter 15
Strategic priorities of Romania's development
at horizon 2025[*]

The approach presented below is based on some assumptions that we deem as feasible for the period 2014-2025:

- The European Union project stays valid, with the club comprising in 2025 **at least** the member countries in 2014.
- The European Union will not face major food and sanitary security crises affecting a significant number of its population.

There will be no war situations that will involve the group of the European Union countries.

* * *

From our point of view, the global strategic objective of Romania, quantifiable at horizon 2025, is to exceed the 0.8 value of the human development index (HDI), which ranks the countries of the world in the category of "very high values of the human development index".

The rationale for choosing this global strategic objective for Romania in 2025 is that the ranking of countries exclusively by the value of the GDP per capita at current prices or by the purchasing power parity (PPP) does not in many cases reflect the population's satisfaction with access to food and utilities, as well as the quality of the medical care. Also, the same indicator does not reflect in many cases the general level of education of adults over 25 years of age, in direct relation to the multiplication of possibilities to choose qualitatively different professions.

Because of the above-mentioned cases, the Human Development Index (IDH) was developed in 1990 within the United Nations Development Program (UNDP), comprising three fundamental dimensions, of which one consists of two components:

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[*] Study published in *Piața Financiară* journal in November 2014 – Special issue: Romania after 25 years and as synthesis in *Foreign Policy Romania* journal, Aug. 2015.

- Gross domestic product per capita at purchasing power parity (PPP) in USD.
- Life expectancy at birth (years).
- The average number of years of schooling for adults over 25 years - component A.
- Years of schooling expected to be attended by children - component B.

The HDI ranges between 1 (maximum) and 0 (minimum).

Depending on the HDI, the countries of the world may have:

a) a very high HDI, higher than or equal to 0.8;

b) a high HDI, higher than or equal to 0.7 but lower than 0.8;

c) an average HDI, higher than or equal to 0.55 but lower than 0.7;

d) a low HDI, of less than 0.55.

The latest UNDP report on the HDI 187 countries from September 2014 ranked the 28 countries of the European Union as shown in Table 15.1.

Table 15.1

Country	Country rank in the global ranking	Country rank in the European Union Countries ranking	HDI value in 2013
Netherlands	4	1	0.915
Germany	6	2	0.911
Denmark	10	3	0.900
Ireland	11	4	0.899
Sweden	12	5	0.898
United Kingdom	14	6	0.892
France	20	7	0.884
Austria	21	8	0.881
Belgium	21	9	0.881
Luxembourg	21	10	0.881
Finland	24	11	0.879
Slovenia	25	12	0.874
Italy	26	13	0.872
Spain	27	14	0.869
Czech Republic	28	15	0.861
Greece	29	16	0.853
Cyprus	32	17	0.845
Estonia	33	18	0.840
Lithuania	35	19	0.834
Poland	35	20	0.834
Slovakia	37	21	0.830
Malta	39	22	0.829
Portugal	41	23	0.822
Hungary	43	24	0.818
Croatia	47	25	0.812
Latvia	48	26	0.810
Romania	54	27	0.785
Bulgaria	58	28	0.777

From among the 28 countries of the European Union, 26 have a HDI higher than 0.8. The next category includes Romania and Bulgaria. Romania is in the proximity of 0.8, at 0.015 points. The overall strategic objective can be achieved, because in the 2005-2013 period the HDI of Romania increased from 0.750 to 0.785, with the mention of a relative stagnation during the 2010-2012 period.

Our strategic option for Romania also makes us to address some fundamental issues:

- Completion of health reform with specific objectives in relation to the transition to a positive natural population growth (-3.6 ‰ in 2012) and a significant decrease in infant mortality. Please note that Romania is the only country in the European Union where the infant mortality rate has two digits (10‰ in 2012)!

- Completion of reform in education, with emphasis on increasing the quality of the process and on the stability of long-term solutions. It is necessary to initiate in a public-private partnership a program for the development of vocational schools, a concrete action package against school dropout and for the educational integration of the Roma children. The discipline in the pre-university education and the significant increase in the quality of university education must be strengthened, so that at least three Romanian universities meet the criteria for accessing the Top 500 World. Sustained development of the Romanian research is also required.

- **Transposing the requirements of the two mentioned directions requires the allocation for health, education and research, by stages up to 2025, of expenditures with shares in the gross domestic product at least equal to the average values of the countries of the European Union.**

- Measures to ensure sustainable economic growth with an average annual growth rate between **2.5%** and **4%**. The high gap between the maximum and the minimum values of the annual economic growth rates is due to the current **weather dependence of the GDP in Romania**.

Achieving a sustained economic growth implies the fulfillment of necessary conditions, from among which we mention:

- Political stability, accompanied by a significant increase in public confidence in the government;

- Increasing the confidence of states and international business environments in the fairness and predictability of decisions in Romania, in line with the EU law. A key contribution is the reduction of corruption to a level leading the EU to terminate the cooperation and verification mechanism in the case of Romania;

- High reduction in tax evasion, with a new, essential component: turning to the best account as fast as possible of the amount of damages in relation to the state occurred in the course of corruption. This activity should explicitly be the task of the National Tax Administration Agency, in a special department. An analysis of the great missed privatizations would also be useful, seeking to identify the causes and acknowledge the responsibilities;
- The stability of the Tax Code;
- Support by the banking system in Romania of the efforts of companies, regardless of their size, for increasing their turnovers and profits. Romania's accession to the banking union and the adoption of the euro, when all the conditions for macroeconomic stability will be created;
- Increasing the absorption rate of structural funds.

The strategic objectives that we further mention as components of sustained economic growth cannot be achieved without the priority use of structural funds.

* * *

Next, we mention the main strategic targets for achieving the objective of sustainable economic growth, with the observation that we cannot provide objective values because of the volatility of conjunctions in almost every field.

The signal we are transmitting consists of identifying the priorities according to the well-known ABC leadership method.

15.1. **Industry and exports**

Recent academic researches (2013) have unequivocally demonstrated that the essential structural change in the Romanian exports during the 2007-2013 period, as well as their dynamics, was mainly due to the majority foreign-owned companies, usually subsidiaries residing in Romania of the large multinational companies. It is of prime importance to identify the priority sectors in attracting strategic foreign investments.

As it is known, the SITC-4 International Standard Trade Classification includes nine codes with clear specifications and an additional code of goods not covered by other sections, as follows:

Code	Name
0	Food and live animals
1	Beverages and tobacco
2	Raw, non-edible materials, excluding fuels
3	Mineral fuels, lubricants and related materials
4	Vegetal and animal oils, fats and waxes
5	Chemicals and related materials not elsewhere specified
6	Manufactured goods, mainly classified by raw material
7	Machinery and transport equipment
8	Miscellaneous manufactured goods
9	Goods not included in other sections

According to the UNCTAD[*] breakdown developed each year in one of the most structured databases, it is demonstrated that in 2013 the specializations of export of the EU as a whole were:

Code	Name	%
1	Machinery and transport equipment (7)	34.86
2	Manufactured goods (6+8)	21.96
3	Chemicals and related products not elsewhere specified (5)	15.75
4	Food and agricultural products (0+1+2+4 −27 −28)	10.77
5	Fuel (3)	8.02
6	Minerals, metals, precious stones (27+28+68+667+979)	5.30
7	Non-classified materials	3.34

The analyses we made by using the above-mentioned database show that, without exception, during the 1995-2013 period the basic specialization of the European Union in the field of export was Code 7 - machinery and transport equipment. In every year of the period, the share of this code exceeded 30% of the total exports of the European Union countries.

Due to its importance, Code 7 requires a detailed analysis. In my opinion, the code's name of Code 7 of machinery and transport equipment is incomplete.

Code 7 comprises by definition:
- computers and all types of office machinery and apparatus;
- telecommunication apparatus and equipment and for recording and reproduction of sound and images;
- electric apparatus and machinery (including non-electric equivalents of household electric machinery);
- all types of machinery and equipment for upgrading the production technologies in the manufacturing sectors;
- road vehicles (including air-cushion vehicles);

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[*] United Nations Conference on Trade and Development Handbook, 2014.

- the road vehicle components and parts industry;
- other transport equipment (shipbuilding, sports craft, rolling stock, aircraft and spacecraft).

One may see that Code 7 includes all the features of 21st century development, from habitat modernization to the most sophisticated information technology equipment.

> That is why we define Code 7 as a code of development and modernization of countries in the 21st century.

As a consequence, in all the developed countries a tough battle is going on in the field of Code 7 export growth. The dynamics of the basic specialization of the 28 countries of the European Union in 1995, 2005 and 2013 is enlightening.

No.	Country	Specialization			Share, %		
		1995	2005	2013	1995	2005	2013
1	Austria	6+8	7	7	38.3	41.1	39.7
2	Belgium	7	5	5	22.3	27.5	28.6
3	Bulgaria	6+8	6+8	6+8	29.4	37.5	22.4
4	Croatia	6+8	6+8	6+8	39.5	29.6	27.4
5	Cyprus	0+1+2+4-(27+28)	7	7	50.9	41.0	23.2
6	Czech Republic	6+8	7	7	43.0	50.2	54.1
7	Denmark	0+1+2+4-(27+28)	7	7	26.9	26.1	24.3
8	Estonia	6+8	7	7	34.4	32.1	34.0
9	Finland	6+8	7	6+8	42.0	44.1	31.8
10	France	7	7	7	39.4	41.6	38.2
11	Germany	7	7	7	46.1	50.2	46.8
12	Greece	6+8	6+8	3	38.3	28.0	39.8
13	Hungary	6+8	7	7	30.5	59.7	52.0
14	Ireland	7	5	5	34.5	45.6	57.9
15	Italy	6+8	6+8	7	43.6	37.6	34.8
16	Latvia	0+1+2+4-(27+28)	6+8	6+8	37.4	37.0	26.9
17	Lithuania	6+8	6+8	6+8	27.7	25.5	23.4
18	Luxembourg	6+8	68	6+8	36.9	47.0	49.0
19	Malta	7	7	7	61.3	62.2	30.9
20	Netherland	0+1+2+4-(27+28)	7	7	24.8	28.6	23.5
21	Poland	6+8	7	7	42.4	38.6	37.9
22	Portugal	6+8	6+8	6+8	51.2	39.1	37.8
23	Romania	6+8	6+8	7	54.4	48.1	42.0
24	Slovakia	6+8	7	7	50.8	44.2	57.2
25	Slovenia	6+8	7	7	47.6	39.1	29.8
26	Spain	7	7	7	42.4	40.2	32.3
27	Sweden	7	7	7	42.1	41.8	36.9
28	United Kingdom	7	7	7	43.8	38.6	28.0

Source: UNCTAD 2014 Report and author's computations.

In 1995, **eight** countries, *i.e.* **28.6%** of the 28 countries of the European Union, had Code 7 as the basic specialization, which in 2013 was found in **18** countries, *i.e.* **64.3%** of the 28 countries of the European Union.

The most developed countries of the world had since 1996 Code 7 as basic export specialization:

- US   48.3%;
- Japan   70.3%;
- Germany   46.1%;
- United Kingdom   43.8%;
- France   39.4%.

A fully relevant example of what the "battle for Code 7" means is the evolution of China's basic specialization over the 1995-2013 period.

Year	Basic specialization	Share of basic specialization, %
1995***	6+8	58.4
2005	7	46.2
2013	7	47.1

* In 1995 the share of Code 7 reached 21.1%.
Source: UNCTAD 2014 Report and author's computations.

In only 10 years, China has increased its share of Code 7 in the export structure from 21.1% to 46.2%!

We also highlight the dynamics of Code 7 export in all the EU countries and Romania in 1995, 2005 and 2013.

Country	Amount of Code 7 export, mill. USD			EU index	Romania's index
	1995	2005	2013	2013/1995	2013/1995
European Union	794189.7	1591757.0	2163108.0	2.72	
Romania	1036.2	7043.7	27647.5		26.68

Source: UNCTAD 2014 Report and author's computations.

In 1995, Romania's share in the Code 7 export of the European Union was 0.13%, reaching 1.27% in 2013!!

Romania's dynamics in case of Code 7 was also reflected in Romania's export share in the European Union exports.

In 1995, Romania's total export of USD 7910 million accounted for 0.37% of the European Union's total, reaching USD 65881 million in 2013, with a share of 1.06% of the EU export.

From the point of view of the share in the structure of exports as Romania's basic specialization, of 42.0% in 2013, ranked it fifth in the European Union, a net favorable position.

We cannot conclude this research without demolishing a quite recently revealed belief, namely that the share of Code 7 in Romania's export specialization is exclusively due to S.C. Dacia Automobile and the automotive parts producing companies.

In 2013, the percentage structure of the NACE codes (which are contained in Code 7 of SITC-4) in the Romanians export was:

Code	Significance	Share in Code 7 export, %
26	Computers and electronic and optical products	12.0
27	Electrical equipment	17.8
28	Machinery and equipment	18.6
29	Road transport means	44.1
30	Other transport means	7.5

Source: National Institute of Statistics and author's computations.

One may see that the four NACE codes other than means of transport cover 55.9% of the export of Code 7!!

The above-mentioned results show unequivocally that priority sectors of the manufacturing industry from the perspective of strategic foreign investment are contained in the five NACE codes of Code 7 of the SITC-4, namely the code of development and modernization of countries in the 21st century.

The Government of Romania, through its specialized agency, should use best practices to attract real strategic investors, usually subsidiaries of large multinational companies capable of securing Romania's extra-EU exports, which are an important priority.

15.2. SMEs policies

In my view, changes are needed in all the SMEs policies.

- In addition to increasing entrepreneurial development for business start-ups and, consequently, increasing the SMEs density (number of SMEs per 1000 inhabitants), **the efforts to create medium-sized export-oriented enterprises in order to increase the share of Romanian exporters on the international market are vital.** There are currently identified the manufacturing sectors where it is suitable to create export-oriented SMEs (Annex 15.1).
- Another important resource for the development of the Romanian business system is the creation of SMEs in **creative domains, identified as holding a huge potential for capitalizing the Romanian intelligence on the international market** (Annex 15.2).

In this way, we shall also get closer to the value of convergence indicator in the SMEs area, namely the achievement of a **0.5** ratio of the retail and wholesale turnover to the turnover of other service activities. In Romania, the value of this ratio was **0.659** in 2012!

15.3. The essential feature of Romania in relation to all the countries of the European Union regarding the share of population employed in agriculture (28.6%) and the very large difference as compared to the second country of the European Union according to this criterion, Poland (12.9%), leads to the strategic target of developing agriculture and the food and beverage industry. Besides, the share of over 25% of gross value added of the food and beverage industry in the total manufacturing industry defines what we called the **systemic personality of the Romanian manufacturing industry**.

- A major effort must be made to create SMEs in the rural areas for processing the agricultural raw materials, with a strong impact on regional development.
- Investments should be made by using the structural funds in the irrigation system, in order to reduce Romania's weather dependency.
- Significant efforts must be made to promote abroad the Romanian food and beverages brands.
- A separate strategy for the export promotion of food and beverage products should be developed, because Romania cannot remain a net importer of food products.

15.4. Tourism development in Romania by building up the infrastructural mix (airports, ports, highways, express roads, rehabilitation of rural roads, railway rehabilitation for increasing the speed of transport). The above-mentioned actions carry significant increases in gross value added in construction and in the number of jobs.

The development of tourism must be designed in a broad sense, including:
- classic tourism in resorts specially designed for the summer-winter seasons;
- rural tourism, by developing pensions in the most attractive areas of Romania;
- spa tourism, by modernizing the existing resorts and building up new ones;
- high-level medical care, by developing specialized private clinics and endowing them with state-of-the-art equipment. The entry of at least a private specialized clinic from Romania into the network of clinics of excellence in the European Union.

15.5. Continuing the efforts to achieve the energy independence of Romania

and its transformation into a net regional energy exporter. At the same time, measures to increase energy efficiency in all areas and to initiate a national waste recovery program should be strengthened.

15.6. Digitalization of society

Sustained efforts must be made to increase the use of Internet by the population and to increase its use of computers (50% in 2012). Romania ranked in 2011 as first from last and last in the European Union countries as according to the two above-mentioned criteria.

15.7. High-tech research

Creating, by using European funds, a pharmaceutical research institute, endowed with equipment and personnel providing it with a high international prestige.

The creation of a "**high technology**" pole in Romania, by using the opportunity to build in Măgurele the largest power laser in Europe. It is mandatory to take all the measures, from the environmental permits to access infrastructure, so that the term of commissioning is not exceeded. The creation of an initiative group to identify the main areas of application of the high-powered laser, with the aim of establishing specialized companies in this field in Romania, is an important opportunity. This strategic component is particularly important, because it would place Romania on the map of countries with a 21st century level research specialization.

15.8. Complex arrangements, by elaborating impact studies and ensuring the material resources in case of disasters: floods, earthquakes, etc.

This last strategic goal is of particular importance, because:
- The climate change has led to an increased likelihood of floods;
- In the period ahead, the risk of a major earthquake in Romania is increased, as a result of the period of more than 37 years since the last big one.

15.9. Conclusions

The current approach envisaged a set of measures that would allow Romania to emerge from the zone of the last two rankings as according to most of criteria on analyzing the development levels of the European Union countries.

Using Spearman's qualitative analysis, according to the levels of analysis criteria the 28 countries of the European Union can be grouped into five classes.

No.	Class name	Country ranking for an analyzed criterion	Class symbol
1	Clearly favorable condition	1 – 6	A
2	Relatively favorable condition	7 – 12	B+
3	Average condition	13 – 16	B
4	Relatively unfavorable condition	17 – 22	B-
5	Clearly unfavorable condition	23 – 28	C

A SWOT analysis recently developed by the author of this study for a number of **10** domains and **70** indicators has identified **25** indicators that fall into the C class, namely "clearly unfavorable condition", being the most important "weaknesses" of Romania as compared to the European Union countries.

It is very important that out of the **25** "weaknesses" indicators, **18**, *i.e.* **72**%, rank **27** and **28**, thus placing Romania on the penultimate and last positions (Annex 15.3).

Achievement of Romania's global strategic goal of exceeding the 0.8% value of HDI by 2025 will, in the author's opinion, lead to a total reduction in the weaknesses of the 27th and 28th ranks, and to an overall reduction in weaknesses by around 50%.

At the same time, the overall strategic objective, as well as the strategic targets specific to the three fundamental action lines, corresponds to the main challenges of the European Union 2020 strategy.

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Annex 15.1

List of manufacturing sectors selected to create export-oriented SMEs

No.	NACE Code	NACE Rev. 2 Division
1	10	Manufacture of food products
2	13	Manufacture of textiles
3	15	Manufacture of leather and related products
4	23	Manufacture of other non-metallic mineral products
5	25	Manufacture of fabricated metal products, except machinery and equipment
6	27	Manufacture of electrical equipment
7	32	Other manufacturing
8	14	Manufacture of wearing apparel

Source: Paper [5] of the references.

Annex 15.2

Creative areas of great interest to stimulate the establishment of export-oriented SMEs

No.	NACE Code	NACE Rev. 2 Division
1	58	Publishing activities
2	59	Motion picture, video and television programme production, sound recording and music publishing activities
3	62	Computer programming, consultancy and related activities
4	63	Information service activities
5	71	Architectural and engineering activities; technical testing and analysis
6	72	Scientific research and development
7	73	Advertising and market research
8	74	Other professional, scientific and technical activities
9	85	Education
10	86	Human health activities
11	87	Residential care activities
12	90	Creative, arts and entertainment activities
13	91	Libraries, archives, museums and other cultural activities
14	93	Sports activities and amusement and recreation activities

Source: Paper [6] of the references.

**Weaknesses - Ranks 23 to 28 - Clearly unfavorable ranking
vis-à-vis the EU countries**

No.	Indicator	Rank as compared to the EU countries	Observations
1	Minimum average wage in the economy (2013)	27	
2	Share of number of employees in total population (2013)	23	
3	Share of expenditure on health in the GDP (2012)	28	
4	Share of expenditure on education in the GDP (2012)	28	
5	Wage level of physicians (2012)	28	
6	Wage level of teachers (2012)	27	
7	Life expectancy at birth (2012)	25	
8	At-poverty or social exclusion risk (2012)	27	Ascending order
9	Fertility rate of women (2012)	27	
10	Gross domestic product per capita (2013)	27	
11	Annual average inflation rate (2013)	27	Ascending order
12	VAT level (2013)	26	Ascending order
13	Absorption rate of structural funds over the 2007-2013 financial period 2007-2013	28	
14	Share of services gross value added in total gross value added of the GDP (2012)	27	
15	Average modern commercial surface per 1000 inhabitants (2012)	26	
16	Total number of SMEs per 1000 inhabitants (2012)	27	
17	Energy intensity (2012)	26	Ascending order
18	Waste recycling (2012)	28	
19	Motorway network (2012)	27	
20	Cost of building 1 KM of motorway (2012)	28	
21	Commodity air traffic (2012)	23	
22	Number of computers per 100 inhabitants (2010)	27	
23	Number of Internet users per 100 inhabitants (2010)	28	
24	Number of fixed and mobile subscriptions per 100 inhabitants (2010)	25	
25	Expenditures on insurance per capita (2013)	28	

Note: One of the most important "weaknesses" is tax evasion, which we have not identified as a rank due to the lack of credible data for all the EU countries.

Annex 15.4

Some significant data on the evolution of the HDI index of the 28 EU countries as compared to the baseline of 0.8.

In 2000, 12 countries of the current composition of the European Union (out of 28) had a value lower than 0.8: Greece, Portugal, Croatia, Estonia, Lithuania, Poland, Slovakia, Malta, Hungary, Latvia, Romania, Bulgaria.

Of the new wave of 12 countries, only 3 had HDI higher than 0.8: the Czech Republic, Cyprus and Slovenia.

In 2005, out of the 12 countries, only 5 had HDI below 0.8: Portugal, Latvia, Croatia, Romania, Bulgaria.

In 2013 only two remained: Romania and Bulgaria.

We have to ascend from the second league to the first league!!!