THE ANALYSIS OF THE MOST PRESSING CHALLENGES RELATED TO THE TRANSITION FROM THE DEVELOPMENT MODELS SPECIFIC TO AN ECONOMY IN WICH THE SECONDARY AND TERTIARY SECTORS PREVAIL, TO THOSE ECONOMY IN WHICH THE QUATERNARY SECTOR EMERGES

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Abstract
The intensity and the way each of the major sectors of the economy contributes to its prosperity has been the object of the concerns of the decision-makers of all ages but also of the academic and scientific specialists. The main assumptions that emerged were that the sectors of the economy (primary, secondary, tertiary and quaternary) are sufficiently different to allow for specialized comparison and analysis, and that aggregate growth rates but also performance in the efficiency and effectiveness plan is strongly influenced by the changes taking place in the relative importance of each sector, the contribution they make to the overall economic picture and the correlations and causality between these sectors. In this paper we analyzed the main solutions that can be offered to the increasingly acute challenges that the dynamic transition process brings from the prevalence of the primary and secondary sectors to that of the quaternary sector of the modern economy and we have clarified the most relevant changes of the techno- industry, the basic vectors that influence the efficiency and sustainability of the new economic development models, the threats but also the opportunities that they have to identify and meet those who decide on the macro and microeconomic level.

Keywords
paradigm shift; macroeconomic sector; challenges; new economic model; quternary sector

JEL Classification
O40, O47, O52

Introduction

The level and manner in which each of the major sectors of the economy contributes to its prosperity has been the subject of the works written by Adam Smith, David Ricardo, Karl Marx, John Stuart Mill, and other prominent exponents of economic philosophy. Starting from the initial perception of the economic sector, in recent decades we have witnessed the paradigm shift at the level of the modern economy, the analytical vectors being different, which led to the design of another economic sector design, the quaternary detachment from the tertiary (which now includes all the services) and encompassing the activities defined by intensity in the results of creativity. The research of the sectoral picture of the modern economy was also made in terms of the necessary capital and energy related to the number of employees. All this has led to the emergence of new business and to the establishment of

specialized training mechanisms, increasingly sophisticated management structures and methods, and redefining the aspirations of citizens. Analysis of the structure of the modern economy in the four or more sectors reveals that the allocation of resources among the activities has become more and more distant from the optimal economic state. The authors stress that it becomes increasingly obvious that it is not enough to identify threats and opportunities and to argue it becoming mandatory to say their success story. We offer some sustainable arguments for the idea that decision makers at all levels need to understand that new opportunities need to be identified quickly and correctly, logistics networks have to be optimized and operationalized into an increasingly autonomous machinery and equipment, that it will have to regulate and manage robot cohorts and additive manufacturing (3D printing). The research underline that the rapid pace of change will translate into distortions of current development models that will lead to a permanent need for new skills and attitudes to the challenges of the new economy. An economic model should be considered and operational, taking into account the advancement towards a more developed quaternary sector where intangible assets are a priority and in which knowledge and creativity are defining.

Intra and intersectoral correlations and causalities. Some comments.

The level and manner each of the major sectors contributes to its prosperity has been the subject of the works written by most prominent exponents of economic philosophy. They accepted the doctrine that made a certain delimitation between productive and non-productive activities according to the contribution made to the creation of tangible assets. Friedrich List argued that "*we must consider certain important societal sectors such as education, public administration and the communications network as productive*."(List, F. 1841) In the mid-twentieth century, he gained notoriety, especially in Colin Clark's work, the analytical subject of economic growth in the primary, secondary and tertiary sectors, in addition to the dynamic correlations between them. (Clark, C. 1957) Some relevant contributions in this area belong to Simon Kuznets, who presented some clarifications regarding the medium and long-term transformations in the structures of developed economies. He notes that "*on the example of the most developed countries ... it can be seen that there are significant developments in the non-agricultural sectors' presence in the economy. .....Sectors where growth rates have steadily increased have become those of business, professional or public services* " (Kuznets, S. 1968, pp.25) Most analysts have focused their research efforts on issues such as: the importance of the different sectors of the economy at different moments of economic development; conceptual and instrumental delimitation between productive and non-productive; identifying stages that are undergoing a process of economic growth. Interdisciplinarity has thus emerged at the level of clarifying efforts. Thus, a series of dilemmas have been made clear on the instruments used by the advocates of theories of development and prognosis; those concerning the delimitation between productive and non-productive sectors have turned to the accounting of national accounts and those referring to the stages of the economic development process, have resolved with the methodology related to economic growth theories.

It was noteworthy that the theoreticians were increasingly leaning towards the issues that national, regional and global economic realities provided. A first assumption is that the sectors of the economy (primary, secondary, tertiary and quaternary) are sufficiently different to allow for comparison and specialized analysis. Another analytical hypothesis is that aggregate growth rates but also efficiency and effectiveness are strongly influenced by changes in the relative importance of each sector, their contribution to the overall economic picture, and the correlations and causality between these sectors. In recent decades we have

witnessed the paradigm shift at the level of the modern economy, the analytical vectors being different, which led to the design of another economic sector design, the quaternary detachment from the tertiary and encompassing the activities defined by intensity in the results of creativity. The fourth Industrial Revolution, has also put its mark on the sectoral design of modern economy. The most radical changes can be observed in the balance between sectors across all continents and in all national economies, whether developed or under development. Modern production inscribed on the coordinates of internationalization can no longer be imagined without modern, fast, efficient, and easily accessible distribution networks. The information economy tool serves to generate knowledge, disseminate it, and also quantify the impact that creativity have on development processes. As the processes of specialization deepened and the stock of skills necessary to make the modern economy operational, the correlations between the sectors of the economy were redefined. All this has led to the emergence of new business and business entities and to the establishment of specialized training mechanisms, increasingly sophisticated management structures and methods, and redefining the aspirations of citizens. Analysis of the structure of the modern economy reveals that the allocation of resources among the most important types of activities has become more and more distant from the optimal economic state. Over the last decades we have witnessed an overestimation of the tertiary and quaternary sectors (especially financial services, banking and insurance, education, legal and advisory services or administrative services), but also a somewhat hasty acceptance of the post-industrial posture that has to neglect the traditional processing sector. These developments have led to the addition of areas of inefficiency and lower macroeconomic and meso-economic performance. Against this backdrop, the emerging economies, which promote developmental models centered on the manufacturing industry, have become the major exporters to the markets of the states that have advanced on the post-industrial model centered on the tertiary and quaternary sectors. It should be noted that the risk of deepening the macro and mondo-economic imbalances with very risky effects for regional and international stability is accentuated.

One of the assumptions by those who have dealt with the emergence of the quaternary sector assumes that, at least on a principled basis, this process has helped to reduce the rate of increase in economic efficiency. The idea from which most analysts start is that there is potential for increasing efficiency in any of the four sectors of the modern economy. What is important to note is that the risk is at the level of aggregate efficiency and it depends on the optimal allocation of production factors between the four sectors, the optimal combination being the one leading to the expected results. It should also be recognized that the relationship between sectors depends essentially on the technological vector. It is also necessary to assume that currently quaternary production coefficients are less clearly defined in terms of technological relevance than the other sectors. It is also generally believed that the end-user satisfaction of assets generated in the quaternary sector is still outpaced by that fed by assets in other sectors. It is generally understood that economic development implies an increase in the share of iterative activities that replace traditional ones. Hence, the balance between the four sectors of the economy can be ensured at certain levels of economic growth and aggregate societal performance. We have good reason to believe that between economic growth and economic efficiency there is a positive and statistically relevant correlation and also that among the most important activities in the economy can be identified at least the improved balance at which possible the desired efficiency gain. Several analysts suggest that if the optimum cannot be achieved within each sector, we can expect to achieve better cross-sectoral alignment so that efficiency gains in a sector of the economy are not attributable to decreasing efficiency in other sectors. The current contribution of various economic activities to overall progress will be around their contribution to economic growth, explaining the various cyclical or non-cyclical factors on

which development depends. It has already been demonstrated empirically that the existence of structural asymmetries is not due to the increase in the share of tertiary and secondary sectors or to the increase in the volume of the final product achieved in these sectors. Kuznets argued that "*a low elasticity of demand for food and current use and a higher one for durable goods and services*" and „*when users became participants in the production process and moved to the urban environment, they needed goods and services they did not need when they were in the countryside*." (Kuznets, S. 1966. pp.98) The most sensitive challenge is the quantification of the final product achieved in the quaternary sector. Another facet of this problem is the difficulty in estimating the costs of deepening the specialization and the new division of labor. When the very dynamic sectors of the modern economy do not find specialized econometric equipment, the correct evaluation of the resources allocated here suffers. However, advancing the quaternary sector of the economy is both inevitable and beneficial. Despite this certainty, adapting to new challenges is not easy, and the *possibility of feeding inefficient areas is very high.*

Redefining the economic models in the conditions of the challenges of the 21st century

Perspectives on the process of paradigm shift are very different both at the academic, institutional, national, regional or international level. We need to be less attentive to figures and more and more attentive to other determinants such as "*rising aspirations, relative income differences, and the security of gains become increasingly important*" (Graham, p. 47). In the same epistemological landscape, it becomes increasingly obvious that it is not enough to identify threats and opportunities and to argue it, but it becomes mandatory to say "*their success story*", which leads us to what Pink postulates, namely „ *It's no longer sufficient to create a product, a service, an experience, or a lifestyle that's merely functional. Today it's economically crucial and personally rewarding to create something that is also beautiful, whimsical, and emotionally engaging,,* (Pink, 2005, p. 68). The landscape of the fourth industrial revolution is increasingly populated by concepts such as cyber-physical systems, the Internet of things and the Internet of systems. Such processes have a bearing on the whole landscape of modern economics, starting with the discovery of new fundamental principles in various branches of science and the design of new technological systems and continuing with the applicable business models, the skills that intellectual capital must have, talent and initiative as vectors of competitiveness. Decision makers need to understand that new opportunities are emerging that need to be identified quickly and correctly, that logistics networks have to be optimized and supposed to be supposed to operate with increasingly autonomous machinery and equipment, that it will have to regulate and manage robot cohorts and additive manufacturing. More and more citizens are aware of the day-to-day challenges that they have to face, now at the beginning of the 21st century, of another type, they spring from other generations of dominant social logic, they are based on ever more complex and unpredictable resorts, risks that disseminate with great rapidity and compel the best management of time and space. It is becoming increasingly clear that, while the previous century was based on specialists, the current century is based on facilitators or integrators who are able to use their expertise but also excel in looking at the correlations and causality between phenomena and processes. Some experts draw attention to the fact that people have more and more aspirations but fewer achievements, the balance between those who act and those who decide, increse the number of organizations that thrive without creating palpable content, bidder's services that do not have any of their own assets, there is an offer without demand but also a lot of demand without offer. It is becoming increasingly urgent to find the best solutions to new types of challenges such as: *the environment and resource shortages, skills in employment and human capital, gender equality, long-term investment, infrastructure and development, food security and agriculture, international investment and commerce, the future of the Internet,*

global crime and anti-corruption, social inclusion and the future of the financial system. A genuinely revolutionary approach to the new international economic climate is based on: *working dynamics and multidimensional change; increasing the share and societal relevance of the middle class in emerging economies; preoccupied climate change; the growing constraints exerted by the balance of natural resources; geopolitical volatility in dynamic growth; the growing concern of the planet's consumers over the ethical and related aspects of respect for privacy; the "grizzling" of our planet; the asymmetric demographic increase in the various regions of the globe; the impressive dynamics of the urbanization process.* All of these become topics of great interest to the planet's warriors, always bewitched by the fact that they are socially-minded architects and sincerely concerned with these challenges. The changes determined by genetic engineering, artificial intelligence, robotics, nanotechnologies, biotechnologies, 3D technologies, create highly redefined societal landscapes and networking of a totally different kind. A number of intelligent systems will help address challenges ranging from complex logistics chains to careful management of the effects of climate change. Many of the major transformation drivers that affect the different sectors of the economy will have a major impact on the type of jobs, generating both job creation and job diversion effects. In addition, one must expect substantive changes in the level of labor productivity and the deepening of asymmetries between the skills required by the new economy and the qualifications offered by education and training systems. Demographic, socioeconomic, and technological factors, and paradigm developments in business models are making perceptible changes in the global social landscape.

The most pressing paradigm shifts in the economic models

An economic model should be considered and made operational, taking into account the advancement towards a more developed quaternary sector where intangible assets are a priority and in which knowledge and creativity are defining. As a specialist in this field points out, "*Problem solving and strategy building is a central foundation for all business. With the very complex changes brought about by the Internet and the continuing exponential advance of computing (often involving new architectures) that the authors describe throughout their entire book, the old top-down ways, "push" based ways of doing this, are no longer very productive* ". (Hagel, J.S.B and Davison, L. 2010) At the same time, this will require concerted efforts for adaptation, a process for which most of the operational actors in society seem not yet trained. Public authorities still have a lot to do to develop and implement public policies that focus on fostering knowledge-generating processes, regulating novelties attached to new technologies, and putting prosperity-generating processes into quadruple helix logic. The new paradigm of development focuses on the exponential dimension, unlike the previous one in which linearity prevailed. Searching for the optimal development model is not a trap-free approach and contains many of the entropy ingredients. This will mean, firstly, substantive changes in each of the sectors of the economy (primary, secondary, tertiary, quaternary). The amplitude and depth of these transformations is almost equal to productive, management and governance systems. These transfigurations can have many effects, the riskiest one being in terms of social inequality, especially the effects that can occur in the balance of the existing labor market equilibrium. These developments will lead to the emergence of a more and more segregated human capital market in categories such as "*few skills / few money*" and " *transdisciplinary / more money*".

The technological driver will need to be treated in closer correlation with revenues and welfare dynamics. In the future, we will be seeing the increasingly obvious differences in employment dynamics determined by the stock of skills available to the employee. The already manifest effect is the emergence of a intellectual capital market where we will

witness exponential increases in demand for highly qualified (or low skilled) human capital but also stagnation or even regression in the medium-skilled human resource segment. These developments will seriously impinge on the development models that can count on and from which we can expect prosperity. The new model of economy must be one in which ethical and corporate social responsibility issues are prioritized. These ingredients of successful success in a turbulent regional and global economic climate must be cultivated at all levels, political party programs, government strategies and policies, company policies, or programs and projects of civil society actors. The first signs of understanding this imperative can be considered as aspects such as: extra-financial reporting, responsible investment, respect for fundamental rights. We are witnessing an increasingly obvious decoupling of the new development model with its time-based version and centered almost exclusively on generating value for shareholders and orienting it towards a format in which the social dimension becomes increasingly apparent. We see the growing interest of the whole society for a development model in which the increase in the volume of resources that can be attracted to the realization of a particular project is decreasing, and the efficiency with which the existing resources can be used is increased. We can no longer ignore the growing complexity of challenges ranging from those of ecological to technological ones, leaving unaffected any of the aspects of a modern economy, especially economic, socio-cultural, legal or ethical. In this context, where we witness the emergence of a true collection of paradigm shifts, the need to set up new models that operate with other categories of determinants and from which other kinds of results are expected is even more pressing. What is becoming less and less defining for the economy of the present and especially for the future is mass production, centralized and top-down production systems, intensive scale economies in depleting resources, financial markets that have led to dangerous loops, dominance of primary and secondary sectors. By challenging the traditional foundations of economic mechanisms, some authors (Hagel, J; Seely, J. Lang, D. 2010) draw attention to the factors that lead to the failure of some sectors of the economy and suggest some solutions to stop the decline or boost the new economy. It is becoming increasingly obvious that, under the new techno-industrial paradigm, long-range events can have a significant impact on macroeconomic and sectoral policies developed and implemented by some public authorities. We are witnessing a process of transition from international politics to global governance, this process being sensitive and dependent on a wide variety of factors. All public entities are placed in the arena of synergic interdependence between components such as: the complex network of bi, pluri and multilateral agreements; public-private partnerships; private governance and tripartite governance mechanisms. The most sensitive challenge of the 21st century for any country, whether developed, developing or less developed, is that institutional architectures designed to facilitate the management of opportunities and increasingly threatening risks do not seem to be prepared to perform its standard functions, the purpose of which is not to their diversity, scope and nature. The forms of inadequacy of the existing regulatory and institutional framework are very varied but they do not fully express the nature of the asymmetries, but only illustrate different degrees of inadequacy. The world in which we are evolving is "*imperfect and disordered*" and any reform proposal must take into account the ideals of democracy, equity and justice for all. It becomes mandatory for humanity to intelligently manage a radically changed economy model by carefully following the following transitions: from *push to pull* (from pushing structures and assets to pulling resources and consummer habits); from *consuming to creating* (from passivelly consuming to actively creating new assets); *from assets to facilities* (from acquiring and hoarding to spreading and sharing knowledge); *from linear to multi-dimensional* (from independent and predictable systems to interdependent adaptive systems); from *scarcity to abundance* (a limited set of choices to renewable resources); *from universal to unique*.

Romania at the confluence with the challenges of transition from the secondary and tertiary to the quaternary sectors

It is striking that in Romania, all these sensitive subjects should be the first on the agenda of public decision makers, subject to academic debates, to be the preferred subjects of public debate and to be on the agenda of every citizen. The Romanian experts should become more visible in the large European and international networks established in the field of advanced research, contribute to the world dialogue of innovative ideas with problem solving and feasible solutions, compare their scientific results with those of other experts from the other countries of the world. It can be noted that the challenges we have to face are strategic ones, not conjectural-tactical, and as such, require answers of the same nature and amplitude. Common issues of debate and action need to become the issues of transforming value chains and production networks into vector-shaping for the international economy, integrating states at different levels of development. In this economic register, production of goods and services takes place where the material and financial resources and skills inventories are available and they can be procured at the cost and quality that generates more competitiveness. We are now witnessing the deepest level of fragmentation of production across national borders, which has serious implications for trade and investment flows and provides concrete insights into growth, technological development and job creation. The economic reality in Romania shows that we are still far from the endowment with the mechanisms of rapid reaction to these challenges. For small and medium-sized companies (SMS), participation in global production networks is vital to accessing technology and hoping to achieve competitive advantages in terms of labor productivity. Public policies that facilitate the integration of domestic firms into internationalized production processes and promote the attraction of intangible assets from abroad become essential for transforming cross-border exchanges into a vector of prosperity. The decision makers in our country should be increasingly interested in supporting Romanian capital companies to connect to these integrated logistics chains in order to gain access to know-how, useful information and high standards of quality. It will also have to be understood that participation in global logistics chains can create many positive externalities such as: more, better paid and more stable jobs, technical progress, the acquisition of managerial skills and high expertise, the modernization of capacities production and diversification of exports. On the other hand, accessing global supply chains can also increase the need to find the best answers to a number of increasingly sensitive challenges. Within these global logistics chains, Romanian companies are reserved places for intensive processing processes in less skilled labor and sectors with lower added value. Even under these circumstances, as a result of the intensification of the inter-corporatist competition, it is still possible to benefit from the optimization of productive processes, technological modernization, easier access to foreign direct investment, the strong signal they can transmit in terms of quality and punctuality. If sustainable development strategies are being developed and smartly structured public policies are implemented, the chances are that our firms can move to the value-added creation chain to those areas where profits are higher. It is indisputable that, in order to achieve this progress, we need to reinvent at the sector level or at process or phase stage the productive process.

The main challenge the operational actors in the Romanian business environment are confronted with, is not how to participate in the global logistics chains but rather how to maximize the gains that can be gained from this participation. One of the reference vectors of this process is the technological one. Instead of confining itself to the hesitant management of a turbulent daily, public authorities in our country may dare to think about solutions such as: promoting foreign investor attraction policies; Enhancing supply efficiency by improving business climate; modernizing the infrastructure and inducing

professional excellence at the level of the education system. You cannot navigate the agitated waters of the "Fourth Industrial Revolution" with young people ready for the past or present trades. Our young people should take note of the challenges of the future and the alternatives to them from the primary school to the tertiary education. Education for the future must contribute to the operationalization of sustainable production and consumption processes integrated into national, regional and international strategies. There should be no shortage of curriculum design at any level of the educational landscape where the development of critical and creative thinking, the "creative economy" and related industries are concerned.

Conclusions

The new development model is based on vectors such as: *social engagement, increased transparency, cooperation with civil society and a quest for an energy saving, low carbon mode of operation that is attentive to human and social rights.* Despite the progress made in recent years, the issue of structural analysis of the economy needs to be further explored. Historical reality has shown that the transition from any of the traditional sectors to the more advanced was difficult. This situation also occurs in the case of the transition from the predominance of the tertiary sector to the quaternary sector.

There are some signs that things have begun to move in Romania, but what is essential is that they continue at least at the same level. Unfortunately, the relevant personalities of our business environment seem more preoccupied with survival than with European or international acknowledgment and confirmation, and are not found in the arena of the great economic forums currently being organized. Involvement in this duel of dilemmas as well as innovative solutions will allow to understand at the level of the entire Romanian society that radical paradigms at societal level are radically changing. We should recognize the importance of culture and the creative economy and support the development of national programs to stimulate them and reposition them as vehicles of economic and social transformation. Developing and implementing policies that target the creative economy is not only responsive to economic needs but also to special needs of communities such as education, cultural identity, social inclusion, protection of natural resources and their integration into local, regional and global markets. The cultural and creative industries are boosted by the competitive advantages of states in the way of innovative products, the emergence and dedication of brands, and the improvement of the external image of the countries that encourage them.

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