

EVOLUTIVE PATTERN FOR THE ECONOMIC GLOBALIZATION

Essay

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Abstract

The necessity to identify and implement a solution for the region subject to the process globalization appeared due to the following reasons:

- *During the stage of evolution of the process of globalization, there is no kind of coordination of this process towards the accomplishment of its goals, the character of this process being determined by the multitude of microeconomic processual elements coordinated from particular levels;*
- *Therefore, the only objectives to be achieved are microeconomic by their nature, and there is a risk that adverse effects appear at the macroeconomic levels in relation with the specific objectives of the microeconomic level;*
- *The possible configuration of a global system of process administration is outrun temporally by the evolution of the global real economy. This entire period, represented by the stage of evolution of the process of globalization, is characterized by the lack of risk management capacity, the only such capacities, possibly to be activated, being those at the local level, but they have a low efficacy compared to the global nature of the risk and effects.*

The main problem resulting from the conglomeration of these aspects is the need to establish a correspondence between the administrative capacity and the potential effects, the need to temper the evolution of the process of globalization in agreement with the real possibilities or risk management.

In order to be able to identify a set of solutions answering the current global macroeconomic problems, we consider that the starting point should be to identify the main characteristics of the process of economic globalization – process which underlies the current economic and social evolutions.

1. RESEARCH TOPIC

Globalization, as process, can be seen from two perspectives of generating the socio-economic pattern:

- A process that evolves, first as a phenomenon, from regional levels to national levels; as the process consolidates, the idea of global coordination will necessarily come forth;
- A process self-regulated by the free movement of the economic actors within the space of a market with specific facilities, tending towards the free market.

The strategic goal of promoting the evolution of the process of globalization comprehends:

- Dampening the differences between the macroeconomic national levels of development;
- Increasing the economic efficiency;
- Increasing the standard of living.

The accomplishment of the strategic goal relies on the following secondary objectives:

- Ensuring the national economic continuity, stability, performance and efficiency, according to the policy of macroeconomic sustainability;

- Ensuring the sustainable development of the institutional administrative capacities and of the economic policies;
- Increasing the quality of life.

Seen in dynamics, the process of globalization may entail the following contradiction: the early stages of the administrative liberalization of the processes of economic internationalization – basic components of the general process of economic globalization – will generate, in favour of the developed economies, higher gaps between the levels of macroeconomic development of the national economies; this means widening the existing gaps between the levels of macroeconomic development of the national economies and, consequently, an opposite result to the strategic goal of promoting the general process of economic globalization.

This aspect can be seen from the following perspectives:

- It can be considered as being absolutely normal and generated by the already existing gaps between the levels of macroeconomic development of the national economies. According to this approach, this situation must be controlled by monitoring it so as to be used as resource generating processes which can narrow the gaps between the levels of macroeconomic development; this model presumes the following elements:
 - o Existence of the administrative framework (institutional, regulatory and of economic policies) needed to accomplish the objective of filling up the macroeconomic gaps which widened naturally during the early stages of administrative liberalization of the processes of economic internationalization;

- Existence of the financial resources needed to support the processes associated to the accomplishment of the objective to fill up the macroeconomic gaps which widened naturally during the early stages of administrative liberalization of the processes of economic internationalization;
- If there is no administrative framework (institutional, regulatory and of economic policies) needed to accomplish the objective of filling up the macroeconomic gaps which widened naturally during the early stages of administrative liberalization of the processes of economic internationalization, a powerful contradiction may develop between the accomplishment of the general strategic objective of promoting the general process of economic globalization and the first outcomes of the early stages of administrative liberalization of the processes of economic internationalization – components of the general process of economic globalization; there is a risk that these gaps turn deeper for undetermined periods of time, risk which may entail phenomena such as macroeconomic shocks. When these macroeconomic shocks propagate within the economic area undergoing the general process of globalization, they may generate, in turn, phenomena such as economic crises.

Consequently, of the two ways of approaching the evolution of the general process of economic globalization, given the main phenomena and processes currently running within the real economy, we will select, as working hypothesis, the version of administered approach of the general process of economic globalization.

One of the problems which generate effects within the general process of economic globalization is the problem of migration, which can be seen as a phenomenon occurring within the framework determined by the facilities associated to the early stages of administrative liberalization of the processes of economic internationalization – migration which, at the general level, is a phenomenon consisting of a multitude of processes from the following areas:

- Migration of capitals;
- Migration of the labour force;
- Polarization of the demand;
- Polarization of the offer;

It produces effects such as:

- Diminishing/multiplication of the funding resources for the programs of macroeconomic policy;
- Diminishing/multiplication of the resources potentially drawn in to run funding programs at the microeconomic level;

2. EFFECTS OF GLOBALIZATION ON THE MIX OF MACROECONOMIC POLICIES

According to the subject topic, this analysis sets, as main pillars of the study, the two directions of action pertaining to the global and national macroeconomic approach:

- Evolution of the process of globalization;
- National economic and social development.

Regarding these two directions of action, for the purpose of this analysis there are several relevant strategic objectives associated to each level of approach, both approaches having the same strategic objective, the sustainable economic and social development.

The difference between these two approaches is at the level of the patterns to

be applied in order to accomplish the strategic objective, i.e.:

- The process of economic globalization presumes, mainly, the four mentioned aspects represented by the four types of cross-border flows, with the following remarks:
 - o As specific programs are developed, the importance and role of the national levels in the coordination of the processes of socio-economic development is expected to be largely assumed at the global level, by the process of globalization. This leads to two situations:
 - o Theoretically, the evolution of the process of globalization, starting from market liberalization, is expected to have sustainable economic effects for the general evolution of the global system, the main ones being the following:
 - Liberalization of the interstate trade, which might boost the economic cooperation, with specific effects for the individual domains and subdomains of the economic activity;
 - Practically, the evolution of the process of globalization will polarize and depolarize economically particular regions of the system which undergo the process of globalization; this will have adverse effects

on the implementation of the programs of national macroeconomic policies;

- The process of national socio-economic development relies on the pattern of implementation of the programs of macroeconomic policies whose strategic objective is to ensure a dynamic process of sustainable economic growth.

We may also speak of the phenomenological character of the process of globalization, as being a matter related to this study. Question is, is economic globalization a process or a phenomenon – problem which has to be analysed thoroughly? However, as intermediary analytical elements, we may say that economic globalization has both characteristics of process and characteristics of phenomenon, i.e.:

- The economic globalization developed initially on the basis of phenomenological characteristics; namely, the actors of the economic market used:
 - o Cross-border facilities created through regional commercial policies;
 - o Occasional facilities created through national commercial policies;
- Subsequently to this stage which, phenomenologically speaking, might correspond to the first microeconomic beyond border location, the economic globalization developed on the basis of the processual characteristics – this process being understood in a cumulated manner, namely as a cumulation of processes administered at the microeconomic level.

We will now revert to the subject topic, the two directions of actions for the

global and national macroeconomic approach, namely:

- Evolution of the process of globalization;
- National socio-economic development,

Simplistically speaking, it may seem that in order to get outputs from this study, we would have to select any of the two programs of development. However, a more analytical view shows that globalization is, by its nature, as main trait, a process which results chiefly from the freedom of development of the real economy at the international level; the coordination part of this process has an aspect intrinsic to the specificity of the market economy, the size of its development being also due to the macroeconomic administrative facilities within the interstate economic relations.

Consequently, the problem is to make an optimal dimensioning of the process of globalization so that the general economic and social development is in agreement with the macroeconomic strategic objectives, and the development programs associated to the strategies to be implemented are not affected. The dimensioning of the process of globalization is a necessity imposed by risk management. In other words, the management of globalization implies the cumulation of coordination processes at the microeconomic level which, in turn, have specific objectives and this may induce risks to the accomplishment of sustainable macroeconomic objectives.

By its nature, the economic globalization has the following characteristics:

- It is a process;
- It runs using transmission channels represented by the facilities resulting from the relations of interstate economic policy, whose use is influenced by the measures of

macroeconomic policy of the national administrations;

- In it coordinated at two levels:
 - o At the level of the business environment – the interest to increase the market share;
 - o At the macroeconomic administrative level – the interest to maintain the strategic directions of the macroeconomic programs towards the accomplishment of the strategic objectives.

Ideally, these two types of economic interests should converge towards a common strategic objective, namely, the macroeconomic sustainability; this aspect of the macroeconomic sustainability presumes, within the context of the evolution of the process of globalization, the approach at global level.

There are, however, situations – and reality confirms this often – when, due to various reasons (in terms of our study, the main reason is the lack of communication and coordination between the two systems), the two types of interests are not convergent: the business environment is interested exclusively by microeconomic aspects chiefly, most times ignoring the problem of the macroeconomic sustainability. In such situations, the macroeconomic administrative system is burdened by an additional effort to manage the risks produced by the adverse effects generated by the use, by the business environment, of the facilities provided by the evolution of the process or economic globalization.

Such additional efforts required by the macroeconomic administrative system, actually have the purpose to compensate the imbalances created within the real economy by the evolution of processes and phenomena associated to the programs of development at microeconomic level.

Among these issues are the **effects of globalization on the mix of macroeconomic policies.**

A possible pattern for the economic polarization at the level of the region undergoing globalization may be associated to the pattern of light wave interference (as shown below); it will be compared to the approximately uniform pattern of distribution of the source that generate production within the international economic cooperation, which can be associated to the situation of distinct development of each economic area within a region.

This aspect, of a higher volatility of the real economic resources within the evolutive context of the process of economic globalization, may cause serious problems to the development of macroeconomic programs in the regions which have low proportions of main and secondary resources that generate production, within that particular part of the world undergoing globalization. Thus, several effects will appear in the following directions:

- Lower level of macroeconomic predictability in identifying sufficient, stable and efficient resources required to finance macroeconomic programs;
- Higher costs of financing the programs of development compared to the use of national resources, due to the risk of increased volatility of the budget revenues and of M3 monetary mass;
- Lower consistency of the activities monitoring the development of the program and the management of the possible risks, because of the administration of financial resources that have a low level of administrability by the national system;
- Higher level of incertitude regarding the accomplishment of the expected partial and final results of the

program, due to the higher costs of the financing programs compared to the national solutions;

- Risk of macroeconomic imbalances due to the need to counterpoise the costs of financing the macroeconomic programs.

In other words, we may say that a higher level of volatility of the real economic resources within the evolutive context of the process of economic globalization is likely to induce risks affecting the progress of the general activity of macroeconomic administration. This may generate additional effects and requires the analysis of the associated aspects in order to identify the weak spots and come up with solutions.

Given the fact that the process of globalization is a dynamic process, one may ask what happens in the long-run within the region undergoing globalization. In order to give an answer to this question, we will use the model of light interference when two or more coherent waves interfere. From the perspective of our analysis, the pattern of light interference can be associated to the evolutive pattern of the process of economic globalization because of the following reasons: according to the definition from physics, the *coherent waves are those waves that have the same frequency and maintain a phase difference constant in time*; by association with the evolutive pattern of the process of economic globalization, the coherent light waves can be associated to economic activities, partly developed on the vertical, around a production generating source, within the evolutive pattern of the process of globalization; the condition of coherence may be considered to be observed because the levels of development of the production generating sources can be regarded as being almost similar. Starting from these hypotheses and returning to the pattern of light interference, according to Huygens Principle, *any point on a wave*

*front of light, at the present moment, may be regarded as the source of secondary spherical or circular wavelets. The wave front, at the next moment, is sum of all such secondary wavelets emanating from the front, which, by association with the evolutive pattern of the process of globalization can be translated as follows: the secondary sources of spherical waves are similar to the secondary production generating sources from the evolutive pattern of the process of globalization (the spherical aspect from the model of light interference corresponds to the aspect of approximative uniformity associated to the attention paid to the internal development – within the organisational structure – and external development – within the market – at the level of the microeconomic management from the evolutive pattern of the process of globalization, with strict reference to the production-generating sources). The “next moment” from Huygens Principle is the moment corresponding to a long-enough time, within the evolutive pattern of the process of globalization, in which there is a temporal possibility for the emergence of a new wave front, corresponding to the sum of all secondary wavelets emanating from the front; within the evolutive pattern of the process of globalization, it signifies the reduction of differences between the levels of economic and social development between the areas favoured by the evolution of the phenomenon of globalization and the areas disfavoured by the same phenomenon. In other words, according to this model, the division of the regions undergoing globalization in “favoured areas” and “disfavoured areas” is valid only for the *stage of evolution of globalization* and for the *early stage of consolidation*. Subsequently, the economic and social gaps between the two types of areas within the region undergoing globalization fade away, and a trend, associated to the subsequent*

stages of consolidation of the process of globalization, becomes manifest, i.e., reaching a stage of approximate uniform socio-economic development. This aspect can be actually noticed in various cases of regional development, such as the current example of the European integration.

We can write the following equations of light intensity for a given moment in time:

$$E_i = E_0 \sin(\omega t - 2\pi r_i / \lambda), 1 \leq i \leq n$$

where:

E_0 = light intensity of the main source;

E_i = light intensity of the secondary sources;

ω = angular frequency (speed) of the wave front;

t = period of time;

r_i = length of the path travelled by light.

By analogy, for the evolutive pattern of globalization, we will have at a particular time:

$$\sin(\omega t - 2\pi r_i / \lambda) \approx 1$$

and

$$\omega t = 2\pi r_i / \lambda \text{ or } t = 2\pi r_i / \omega \lambda,$$

Starting at time t , we have

$$E_i \approx E_0,$$

In other words, at moment t , the socio-economic gaps between the two types of areas within the region undergoing globalization will fade out.

Since this approach is merely theoretical, we also have to take into consideration the aspect of conditioning the accomplishment of this stage of socio-economic development of the region undergoing globalization.

Analysing the light wave model, theoretically speaking, at a particular time condition $E_i \approx E_0$ will be automatically met if $\omega = ct$, namely, if there are no disturbances in the path of wave front propagation.

Associating with the evolutive pattern of globalization and considering the general evolutive problems of an economic system, the above condition changes into the following set of conditions:

- The economic evolution of the main production generating sources must be rather stable:
 - o Internal factors;
 - o External factors;
- The economic evolution of the secondary production generating sources must be rather stable:
 - o Internal factors;
 - o External factors,

From this system of conditions we are interested by the external factors, set of conditions which changes into the following (we will only mention the economic conditions without, however, excluding the importance of the other types of conditions of the country risk, which anyhow are not subject of this analysis):

- Stability of the macroeconomic environment, in terms of the macroeconomic policies this aspect of stability must be considered and approached, during the present period of the process of globalization, at the level of the national economy, using the terminology from this analysis, at the level of an area from the region undergoing globalization;
- Permissibility of the transmission channels of the elements required by the evolution of the process of globalization; associating this term to the similar term from *Physics – Chapter of electricity*, where the electric permissibility is the inverse of the electric resistance, the above conditions changes into ensuring a minimal resistance of the transmission channels of the elements required by the evolution of the process of globalization;
- Joining the above two conditions, a third condition appears as necessary: the level of development and the economic evolution of the areas forming the region undergoing

globalization, quantifiable according to their objectives and according to the results of the action of the regional system of macroeconomic policies, must ensure enough risk manageability so that the possible shocks generated and transmitted at the level of the region can be absorbed until the safety level is reached.

Based on this last condition and of the model detailed above, we may say that the stage of reaching an approximate uniformity of the levels of socio-economic development within the region undergoing globalization is subsequent to the stage of consolidation of globalization. In terms of the operationability of the system of macroeconomic policies, reaching this stage of evolution of the process of globalization is associated to a socio-economic formula that is optimal at the regional level in terms of the general economic evolution. The distance, both temporal and as level of development between the areas favoured by the evolution of the process of globalization and the areas disfavoured by the same process – distance which is significant during the stage of evolution of globalization and which shows trends of fading away during the stage of consolidation – can be regarded as germ for the subsequent regional development. This is to be done on the basis of the mechanisms which redistribute the economic resources of the region – mechanisms which, phenomenologically speaking, are associated to the second stage of consolidation of the process of globalization and subsequently, macroeconomically speaking, represent a necessity resulting from the objective of accomplishing the previously mentioned set of conditions.

Such a stage of development might be described, graphically, for both categories of areas within the region undergoing globalization, as follows in figure 2.

Given the detailed theoretical model of globalization, we have the following problem:

Is it possible to observe the mentioned set of conditions, until accomplishing the macroeconomic objectives of the second stage, the stage of consolidation of the process of globalization, so that the macroeconomic development of the areas is associable to the aspect of coherence mentioned in the model of light interference?

This problem too, must be seen from the following points of view:

- Macroeconomic potential of the areas;
- Possibility of occurrence of shocks generated by the risks and because of the insufficient administrative capacity associated to the stage of evolution of the process of globalization;
- Orientation of the microeconomic management.

Having stated these problems and the characteristics of the current stage of the process of globalization – stage corresponding to the early stage of evolution of the process of globalization:

- Heterogeneity of the areas composing a region;
- The macroeconomic administrative capacity is outmatched by the evolutive possibilities of the real economy, which creates the risk of occurrence and evolution of phenomena associated to macroeconomic shocks,

there is a *risk* factor which questions the coherence of evolution of the process of globalization towards maximizing the opportunities of this process during stage two, of consolidation. The main deficiency, observed in terms of this analysis, is the lack of international cooperation of the region undergoing globalization to identify the main strategic objectives and to implement a strategy which to establish and maintain the

conditions required to accomplish these long-term objectives.

During the current stage of the process of globalization, the stage of evolution, there is a process of economic polarization which runs through the region undergoing globalization; this polarization is dependent on the country risk, depending on which at the end of the stage of evolution, the region undergoing globalization may be considered to be structured in areas ranked depending on the dimensions of the following factors:

- investments;
- production;
- consumption;
- purchasing power;
- export;
- import;
- trade balance;
- balance of payments

These indicators have direct and substantial effects on the macroeconomic environment of the residence area and they yield the economic gap between the areas of the region.

The current stage of globalization, corresponding to the stage of evolution from the previous analysis, is the stage of economic polarization within the region undergoing globalization. For exemplification and analysis, we will refer to Europe seen as a region undergoing globalization, without making any kind of parallel or similarity with the process of European integration. From the perspective of this analysis, the process of European integration and the process of globalization, seen at this scale of the European Union, or at a broader scale, at the level of Europe (which considers a possible enlargement of the process of European integration, particularly because the analysed aspects of the process of globalization, show a long-term vision) overlap, being two completely different processes; it is, of course, very important to go deeper into the subject of the

relations between the two processes, but this is outside the scope of our analysis. We will now speak about the macroeconomic aspects of the EU member states performance, discussed separately, as macroeconomic areas of the region undergoing globalization, while making no connection whatsoever with their affiliation to the European Union.

Reverting to aspects related to the first stage of the process of globalization – economic polarization within the region undergoing globalization – this process of economic polarization is possible due to the facilities created by the existence of interstate transmission channels, in terms of mutual facilities of international economic policy, facilities which are stimulated by aspects pertaining to the country risk and by macroeconomic aspects characteristic to the different areas composing that particular region. On these grounds, the process of polarization is a process developed on the basis of the decision taken at the microeconomic level: economic growth poles of the regions materialize and concentrate the main production generating sources, clustering the secondary production generating sources, which are in relations of economic cooperation with the main sources. The decisions taken at the microeconomic level, which underlie the development of the process of polarization, are influenced, as already mentioned, by aspects pertaining to the country risk and by macroeconomic aspects associated to the different areas composing that particular region.

Analysing some of the macroeconomic aspects of some European states (Appendices 1-8) one may notice macroeconomic differences between the analysed states. These differences arise from the depth of the economic market from the individual countries, most often being historical differences in relation with the moment when the process of globalization started. From the very beginning of the process of globalization there has been a

theoretical trend of economic polarization – trend which started to materialize as the transmission channels appeared and developed within the cross-border relations within the region.

The theoretical trend of economic polarization relied on the characteristics of country risk and historical macroeconomic advantages compared to the start of the process of globalization; the onset of globalization completed these differences which thereafter grew wider apart, as the process of globalization developed.

Thus, *the investments* (see Appendix 1) tend to follow the path indicated by the direction of the process of economic polarization, which influences in a decisive manner the *industrial production* (Appendix 2), the gross domestic product (Appendix 4), labour force employment (Appendix 6), the private consumption (Appendix 3) and the commercial transactions turnover (Appendix 8); these effects influence in turn the hard currency and monetary policy, while the budget and fiscal policies are already influenced by the results of these indicators.

Given such situation, two potential approaches may yield effects in the macroeconomic policies of the particular areas:

- for the areas favoured by the evolution of the process of globalization, the macroeconomic policies aim to preserve a stable and sustainable balance which should absorb the shocks associated to the stage of evolution of globalization and generated by the process of economic polarization;
- for the areas disfavoured by the evolution of the process of globalization, the macroeconomic policies aim to absorb the shocks associated to the stage of evolution of globalization and generated by the process of economic polarization and

to identify solutions to reach and maintain a sustainable balance;

The economic development relying on the pattern of economic polarization within the region undergoing polarization also means a polarization of the financial and labour force resources within the region and the pursuit of the process of development, due to the higher demand within the context of market consolidation. The process may have the shape in figure 3.

With the following remarks:

- All evolutions are submitted to the general risk given by one of the characteristics of the process of globalization, namely interchangeability, which can be generated by economic phenomena occurring within the region, such as crisis phenomena;
- There is some consolidation of the evolutions due to the demographic growth, higher for the areas favoured by the evolution of the process of globalization and lower for the areas disfavoured by the process of globalization.

Under the conditions in which the process of globalization would evolve according to the analysed pattern, i.e. when the consolidation of the regional markets generate a uniform distribution of the financial resources and of the labour force within the region, it would be improper to use the formulation “area disfavoured by the evolution of the process of globalization”; a better expression would be “area less favoured by the evolution of the process of globalization”.

Reverting to a problem discussed earlier, namely the risks that the process of globalization doesn't progress according to the described pattern, and ultimately there is no uniform distribution of the financial and human resources within the particular region, it is possible that the adverse effects of globalization yield risks that hinder the

evolution of the process, jamming it, particularly if there are no institutions and strategies of globalization during the early stages of this process which is monitored only through the movements within the real economy, within the regional macroeconomic context. Moreover, part of the potential risks for the stage of evolution of the process of globalization may be yielded by the very effects of the process of globalization. The strategic pursuit of the objectives of globalization presumes the implementation of the strategy considering the region under its global aspect which, at least for this stage of the process has no correspondent, not even a theoretical-methodological one.

Under these circumstances, one may speak of the risk of blockages in the development of the real economy due to the adverse effects of globalization during the stage of evolution; these obstacles would have macroeconomic effects at the regional scale which, within the context of the interstate economic relations specific to that particular region, may trigger the occurrence of shock-generating risks, and when these shocks reach the economic system of the region they might generate phenomena associated to the economic crisis.

3. BLOCKAGES IN THE DEVELOPMENT OF THE REAL ECONOMY DUE TO THE ADVERSE EFFECTS OF GLOBALIZATION ON THE MIX OF MACROECONOMIC POLICIES

Using the above-mentioned facts we may give some definitions useful for the next part of our analysis:

- The blockages in the development of the real economy due to the adverse effects of globalization on the mix of macroeconomic policies are disruptions or contractions of the economic activity due to the volatility of the financial resources

and of the labour force resources that have been transferred, within the region undergoing globalization, due to economic reasons associated to the process of economic polarization.

- The economic polarization within the region undergoing polarization is the process of redistribution of the financial and labour force resources, at a particular moment of the economic situation at the level of the region, due to the perception, thus created, of the decision making factors from the microeconomic level, towards some specific economic objectives; the financial and labour force resources within the region undergoing polarization tend to be redistributed, through the process of economic polarization associated to the process of globalization (during the stage of evolution) according to the Gaussian distribution; this pattern can be associated to the distribution of resources during the process of globalization because of the following reasons:

- o It is a continuous distribution which can be considered similar to the real distribution of resources during the process of economic polarization associated to the process of globalization;
- o The pattern of the function can be considered similar to the need of modelling the phenomenon of polarization, the maximum corresponding to the economic poles, while the other positions from the evolution of the function corresponding to the association, according to criteria of risk and performance, of the different

areas of the region to the phenomenon of economic polarization.

The modelling of the phenomenon of polarization is not necessarily similar to the normal Gaussian distribution; we propose to consider it a Gaussian distribution, the possible similarity with the normal Gaussian distribution being just momentarily and accidental.

With these specifications and approximations, we may consider that the phenomenon of economic polarization of the financial and human resources is similar to the Gaussian distribution, as shown Figure 4.

The red colour is the normal Gaussian distribution, the density of repartition being given by the below formula:

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

The utility of this model showing the association with the phenomenon of economic polarization within the process of globalization is generated by the lack of the possibility, if other approaches are used, to quantify the different effects of the polarization and of the globalization – possibility which, due to this proposal of modelling, appears as achievable, particularly as we need it to quantify the effects of globalization too.

The mathematic representation of the mean is:

$$M(X) = \int_{-\infty}^{\infty} x \cdot f(x) dx = \int_{-\infty}^{\infty} x \cdot \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}} dx = \mu$$

where

variable “x” can be associated to the macroeconomic indicators or to their derivatives to be identified, and

σ^2 is the dispersion of the function calculated with the formula below:

$$\begin{aligned} \sigma^2(X) &= \int_{-\infty}^{\infty} (x - M(X))^2 \cdot f(x) dx \\ &= \int_{-\infty}^{\infty} (x - M(X))^2 \cdot \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}} dx \\ &= \int_{-\infty}^{\infty} (x - \mu)^2 \cdot \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}} dx \\ &= \sigma^2 \end{aligned}$$

Considering the proposed mathematical model as being associable to the evolution of the process of globalization, phenomenologically speaking, there are several significant points in the evolution of the process of globalization, in regard of the graphic representation and mathematical formula of the function of dispersion:

- During the stage of evolution of the process of globalization, as the phenomenon of economic polarization develops (the blue part), the amplitude of the function is high (corresponding to the primary polarization of the resources and of the production generating sources) and dispersion is low (corresponding to the same evolution);
- As the evolution of the process of globalization moves towards the stage of consolidation, the amplitude of the function decreases (the red and yellow parts) and dispersion increases, corresponding to the process of redistribution of resources within the region.

For the same problem of quantifying the effects of globalization, when we have complex situations where yet another variable interferes, with the same approximations, the evolutive pattern of the phenomenon of economic polarization and of the process of globalization can be associated to the 3D Gaussian distribution as shown Figure 5:

The mathematic formulation is

$$f(x, y) = A \exp \left(- \left(\frac{(x - x_o)^2}{2\sigma_x^2} + \frac{(y - y_o)^2}{2\sigma_y^2} \right) \right).$$

where:

- A is the amplitude;
- x_o and y_o show the centre;
- σ_x and σ_y are the functions of dispersion oriented according to axes x and y.

The volume below the graphical representation of the function is calculated as follows:

$$V = \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} f(x, y) dx dy = 2\pi A \sigma_x \sigma_y.$$

Associated with the real pattern of the phenomenon of economic polarization and with that of globalization, giving values to x and y, according to the indicators to be quantified, we may obtain the values produced by the effects of the process of globalization.

4. CONCLUSIONS

Phenomenologically, the character of globalization is:

- Of phenomenon, during the stage of evolution, consisting of microeconomic processes developed by the existence and operation of specific transmission channels within the region undergoing globalization;
- As objective, from the perspective of the proposals presented in this analysis, globalization should optimally become a phenomenon coordinated to the benefit of the socio-economic development of the region.

The part analysed in the presented evolutive pattern refers to the stage of evolution of globalization. In this stage, the lack of administrative capacity at the global level and the lack of a strategy associated to the process, allow the development of a

cumulation of risks whose occurrence generates effects which are transmitted and multiplied through the transmission channels specific to that particular region.

The macroeconomic administrative approach of globalization, towards transforming it from phenomenon to process, at the global level, is one of the potential solutions to turn globalization into a resource for the socio-economic development.

In view of all above, we propose the following definition of globalisation, as it results from this analysis: *globalization is a form of resetting and reorganising the financial and production economic resources within a region; its evolution relies on the existence of the transmission channels specific to the particular region, its economic potential, if administered, being a resource for socio-economic development, while if it is not administered, it may become a source of risk within the region undergoing globalization.*

Figure 1

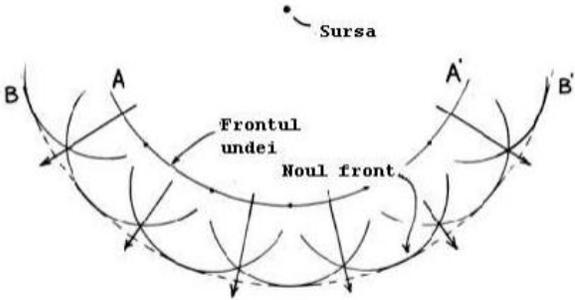


Figure 2

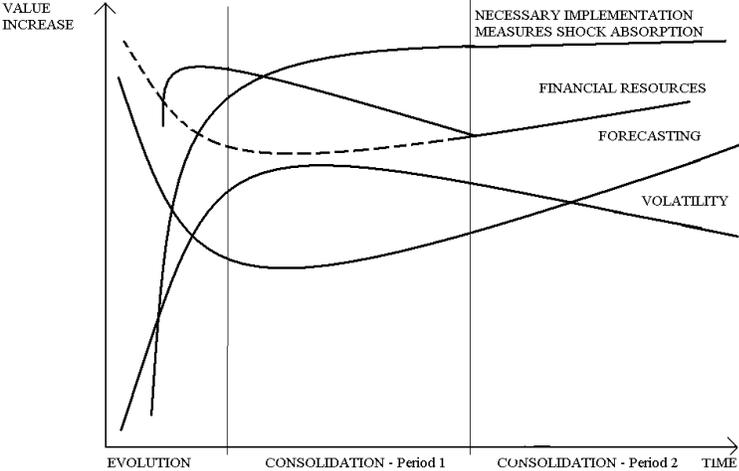


Figure 3

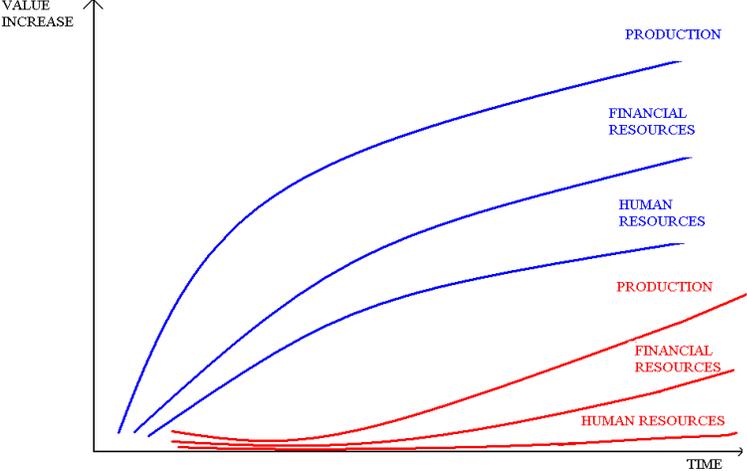


Figure 4

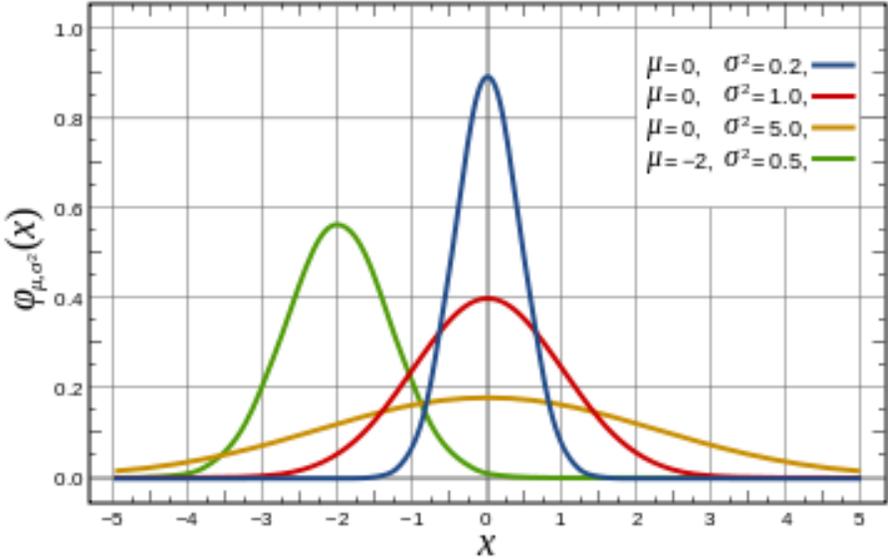


Figure 5

