The general validity of comparative advantage in trade exchanges

Dogaru, Vasile

„Nicholas Georgescu-Roegen" Interdisciplinary Research and Formation Platform,

February 2005

The general validity of comparative advantage in trade exchanges

Vasile Dogaru

„Nicholas Georgescu-Roegen" Interdisciplinary Research
and Formation Platform
West University from Timisoara♣

February 2005

Abstract

In a recent article, Alan Deardorff (2005) analyses the strength of the comparative advantage's principle. The present article's purpose is to follow the generalization of some recent results (Dogaru, 2000; 2005b) and also to sustain the unification's necessity of some comparative advantage's presentation drafts, in the analytical economy's basis. This way the statement of real assumptions inside economics can be assured, connected to processes developed in an extended economic time and space. From this perspective comparative advantage's analysis is necessary due to the existence of the tendency in which once with some new instruments' creations, usually more formal and using a mathematical instrument more sophisticated, the validity of comparative advantage's classic principle would be denied. The idea of introducing the validity of the comparative advantage's principle in the trade exchanges – considered by Samuelson versus Stanislaw Ulam an accepted truth by all economists (and not only) as being un undemonstrated one – is not a productive one from an analytical point of view, which could contribute to the economics' development.

Keywords: comparative advantage, production possibilities frontier, Manoilescu, Mises, cooperation law, individual/national interest, equity principle, analytical economicity

JEL Classification: A11, C78, D61, D63, F13, Q01

♣ Contact author: vdogaru@fse.uvt.ro

I. Introduction. Discussion's framework II. Manoilescu's actual generalized scheme. First stage (a brief discussion) III. Production frontier and the specialization in the world production IV. The second stage of generalised scheme. Productivity V. Findings and openings

I. Introduction. Discussion's framework

The present study regards the sustaining in the basis of some one provable statements, or of other authors and also through denying some opposite statement, the general validity of this principle's use in the exchange action. The comparative advantage's principle has been studied in time from the perspective and in connection with more concepts and notions as: the production frontier (production's possibilities curve) – usually through an approach mostly graphic – the gains from trade, the terms of trade, the specialization in the global production under the shape of the resources' efficient distribution. The present article is a first personal attempt in stating that the founded statements of some authors can be reunited in a scheme relatively unitary, regarding the comparative advantage's principle.[1] Some previous attempts of the author sort of independently accomplished by these statements in time, these being connected with the research's results only of some authors like Manoilescu, Ricardo and Smith.

In the second part we'll analyse the validity of the comparative advantage (CA) using Manoilescu's generalized scheme, from the perspective of the gains from trade, justifying the

[1] In our opinion the strictly necessary laws in economics, put in the importance's order are: the entropy's law (Georgescu Roegen, 1971), the cooperation's law (von Mises, 1949) and the demand and offer's law (the competition's law). The basic principles are: the minimum effort, the interest principle, the comparative advantage, the equity principle and the rationality principle. These principles are explained in relative simple forms in various works. The coherence between them, which could give a certain consistency of the economic human actions, isn't sufficiently explained. The use of the equity's principle, for example, could sustain in time and space the social and economic stability of the human processes. We suppose, also, that "society has a machinery for collective action" (Haavelmo, 1950, p. 2). This minisystem could satisfyingly explain, in a weak sense, a monetary competitive economy. To reanalyse this direction remains a forward task and also that of detailing it, sustaining more systematically the validity of the comparative advantage's principle, which is a form of the minimum effort's principle.

necessity of the simultaneous use in measuring the comparative advantage, the exchange ratios together with the internal relative prices. From our point of view the usage's separation in time of the two types of relative economic measures has stagnated also with the economic research in the direction of the total comparative advantage's measurement connected to each economic entity's one. It will be supported the passing from the comparative advantage's identification through unequalities to that of the simultaneous increase of these through equations. Moreover, the measurement through the two entities' gains is possible, which makes the exchange operation, which represents parts from the total gain from trade (comparative advantage). This way the study's separation of the trade gains from the comparative advantage's one is assured through the production frontier. This way the separation of the gains from trade (classic comparative advantage)'s study from the one made with the production frontier is assured. The main scheme is used through some elementary changes also regarding the empirical exchanges which use the currency. Moreover, the scheme assures the inclusion in the initial prices and in the trade costs – with some restrictions – the combination of this algorithm with the exchange one using the currency.

In this part of the article we'll synthetically revise some results obtained for the validity's grounding of the comparative advantage's principle and also for forwardly comprehend much easier the limits of this scheme's use in the increase of the empirical actions. In this part and also in the rest of this article we'll mainly present some sequential discoveries from the coherence and the unity of Manoilescu's generalized scheme's perspective, including some recent ones of Deardorff[2], connected with the results which can be obtained through the use of this scheme. The issue of the autarchy's hypotheses and balance in the actual exchange and at a national level will be approached from a strictly analytical perspective. A clear separation will be made between the economics' analytical results and the approaches connected to some certain directions of action which overcome economics' actual object, entering in the politics' one of which it has separated from for over a century, and which mainly uses the dialectical logic. This procedure is actually the only possible one in taking decisions which totalizes the analytical results sometimes relatively in opposition or at least unconnected – existing even only because of the opposite individual

[2] Deardorff (2005, p. 1) identifies this tendency of the validity's denial. Following on long term this manner of formal approach of the comparative advantage's principle, Deardorff tends to gradually give up on the mathematical instrument in the grounding of the comparative advantage's principle beyond the comprehension's necessity of increase through trade's ordinal/cardinal relationships. Other analyses use an excessive formalization, without identifying the total comparative advantage and, also, of the two partners.

interests' existence, sometimes these being relatively opposite to the national one and which in fact totalizes them. This logic sustains the statistical judgement's use. Georgescu-Roegen's suggested solution (1971) in this direction will prove necessary in the third grade phenomena's comprehension in the social sciences.

In the third section we'll analyse in the national exchange the comparative advantage's phenomena from the simultaneous perspective of the gains from trade and of the production frontier as a maximum limit of production, after an exchange. The production frontier uses here the basic property of this principle. Even though the observations will be initially made in the easiest case the use of the aggregation's principles allow an extension of this case to *n* products and *m* countries. In forward a framework will be made which can assure a perspective of treatment of the production frontier with more countries and products, using restrictions connected to the resources for relatively optimising the global goods' production. It is underlined this matter from the perspective of the entropy's law priority and of the cooperation towards the competition law (demand and offer law in monetary competitive economies) in using the properties of the comparative advantage's principle.

Now a more clear image of the matter regarding the maximum production possible will appear, which imposes a much bigger redistribution of the resources for some products for which the countries/economical entities are specializing, is different from the comparative advantage's study and is necessary to be treated separately. The comparative advantage, in a strict sense, observed in the goods exchange and not only with this economic process, has as a purpose the achievement of a gain, measured in the monetary competitive economies, usually through profit. In exchange for the extension possibility, the specialization's limits in production have been sort of forwardly simultaneously analysed (Dogaru, 2002).

In the fourth part some requires connected to the study of the comparative advantage's principle are briefly revised together with the one of the productivity. The necessity of separating the analyses through price from the one through efficiency will be grounded these two directions being considered from an analytical point of view as two different issues even though in reality are strongly connected. From this perspective certain "approaches" will be observed regarding the way of approach of some economists towards Manoilescu's generalized scheme (what we call the second stage in the generalized scheme), including a recent article of Deardorff. Here the connection between the analysis through productivity and the one through prices has been defined, being observed sometimes only a reverse of the ratio. Manoilescu's analysis, systematically made three quarters of a century ago with the existent

analytical instruments, has been occasionally taken back.[3]

In the last part there will be formulated some opening and premises regarding this attempt in observing the comparative advantage from the perspective of the analytical economy's principle, in its attempt of unifying the analytical knowledge. The resources' saving, once with the extension of this problem, the control's issue of the nature's rescue become more important in time and therefore the basic requires of the comparative advantage's principle – that of guaranteeing simultaneous gains for all the exchange's parts and that of relatively reduce the resources' consumption – appear necessary to be permanently studied and adequately used in taking decisions in the empiric economy. The resources' consumption in the next half of the century won't reduce the pressure over the resources (WRI, 2001).

II. Manoilescu's actual generalized scheme. First stage (a brief discussion)

The requires' analysis of the comparative advantage's principle is usually made through inequalities or graphics and/or in connection with the production's maximization as a result of the possible specialization. The separation of the comparative advantage's principle, which regards in the first works mostly at the gains from trade – fundamental necessity in the monetary competitive economies in the basis of the interest's principle with its complementary – will support us in the future understanding and other aspects regarding the production frontier and also the maximization of the production and the resources' saving. From this point of view the opening of a second different observational direction of the comparative advantage is grounded, in connection with the production frontier. The necessity of respecting, in an elementary empirical reality's analysis in simplified terms, the analytical economy's principle, in the basis of a global approach, can be achieved through the interference between the notions and it has the purpose to take efficient decisions (the analytical economy's principle). The simultaneous observation of the comparative advantage from the two terms' perspective – the gains from trade and the production frontier – contributes at a productive

[3] Manoilescu can be considered a forerunner of the total productivity's concept (The International Symposium of the Romanian Regional Science Association, June 10-11, 2005, Timisoara – forthcoming article "Manoilescu – a forerunner of the total productivity's concept"). The efficiency matter, especially in its most useful shape in economy – the total productivity, isn't systematically and constantly studied, at least in Europe, in connection with the relationship between price and resources' consumption.

orientation in economics to identifying real statements, with a bigger validity in time and space. This way necessary simultaneous knowledge for the researches' continue are provided and the debate is moved from the formal background to a fundamental one, that of the unitary comprehension of the reality.[4]

The comparative advantage's study is made without taking as a reference point the basic simplified empirical reality, usually finished through the graphic analysis. This way here is an increased possibility of "annul" some increased possibilities in knowledge, as a consequence of the analytical *levelling*, through the simultaneous and similar use of two or multiple concepts. The confusion which can be made is crossed, in consequence a double one. On the one hand, through the study only of the production frontier it can indirectly be said that the entities will make the exchange without the need of them to negotiate the commercial terms and to measure the comparative advantage, identified as the gains from trade. The national prices – in other circumstances the costs or internal prices on different intermediate levels – are a fact that includes the autarchy condition.[5] Even though we had shown that the basic initial require of the comparative advantage's principle – that of the gain's existence in trade – it can be found in almost any action of good exchange following the internal prices' comparison, this cannot release itself the unfolding of a trade action because the advantage isn't divided between the parts (Dogaru, 2003a). The international prices' negotiation in the monetary competitive economies is the basic term, of course in connection with other terms of agreement existent in the trade contract. On the other hand, a stable increased production in the basis of the production frontier is supported without the exchange action, made in the comparative advantage's basis.

In the comparative advantage's study, although the reference point is the exchange action, in most works the prior analysis is the possible production's size. Production doesn't only have as initial premises the comparative advantage's existence, identified mainly under profit shape in the monetary competitive economies, because its revision in the comparative advantage phenomena, for each economic entity whom participates in the exchange, involves increased resources for a product also the total/partial giving up on the capital used in the "offered" good's production for the partner's production. But these are only suppositions and

[4] The „conversating" tendency from an analytical point of view, after an economist's distribution or an idea from a certain doctrine, school or tendency, is a tribute paid to the past. In this direction Mark Blaug sustain Jean Baptiste Say's statement „The more perfect the science, the shorter its history" and also Alfred Whitehead similar one (Blaug, 2001, p. 146).

[5] The autarchy's term, from the comparative advantage's perspective, is forwardly analysed.

the existence without a purpose of the choosing and exchanging actions where the two merchants participate in a simple exchange doesn't necessarily involve the unconditional transfer of the possible effects over the production. This way, the production process makes sense in being observed and studied and in consequence is being conceptualized only in connection with the production frontier being in a one-sided relationship only with the real gains from trade. [6]

We'll also briefly observe some possible analytical consequences of this superposition in unconnected use of the two different notions – the comparative advantage and the production frontier – and also those of a single factor's analysis, the connection with the comparative advantage and the case of the factors' homogenize. The homogenizing problem has been widely debated in a recent article (Dogaru, 2005a). In some works the comparative advantage's study is made only in connection with the labour force. The analysis' direction starts from the premise that this factor includes, through levelling, also the efforts of the other factors of production, but sometimes, with or without adequate explanations passes directly only at this factor although initially in the past all the levelled efforts were taken into consideration. The analysis doesn't respect in these terms the globality's principle because the connection also with the other factors' influence isn't made. On the other hand, there aren't any traders who are „priorly" interested in details in some factor's effect towards the size's establishment of the total comparative advantage, of the gains from trade. Ricardo's remarks regarding the comparative advantage's study had considered all factors' influence when the labour force (under a levelled shape) comes into discussion. The fact that in some cases Ricardo has analysed only the labour force factor doesn't justify the present study only of a partial effort over a partial advantage (regarding a single factor), without simultaneously follow or eventually the total advantage. The partial effects' study of some factors/elements of these over the comparative advantage, independently or before all the factors is a more complex issue than it looks at first sight.[7]

---

[6] The comparative advantage's concept in connection with the productions possibilities border will be analysed in the next part. In most of the works an analytical "anxiety" appears mostly regarding the rapid achievement of some significant results concerning the production's increase and the profit's maximization. The analysis is made without the general context of the exchange, the only process which proves the main and efficient premises' the comparative advantage's achievement.

[7] The factors' partial analyses have been initially made in connection with the total productivity and three decades ago in USA they have started to be noticed in direct connection with the labor work's productivity. Measures of the efficiency, according to this last concept, have been made in the USA starting with 1800 and the

Other issues regarding the study and use of the comparative advantage's principle have appeared regarding the simultaneous observation of two cases: the analytical comprehension of the comparative advantage and the identification of some action directions over the external trade indirectly called – in our opinion – from the economics' perspective, „international trade policies". In analytical area these cases need to be separately observed and successively studied.[8] This way, in the comparative advantage's study *a step backward* is required to be done for the separation of the economical analysis from the political one. Once with the separation of economics from politics multiple problems have appeared in the unitary interpretation of the human action (Buchanan, 1975, ch.10, endnote 4, p. 271; Mises, 1949).

An analysis of the comparative advantage, from this perspective, would put an end to

---

study of the equipments' productivity after about one hundred years. Once with Japan's rapid development from past century's '70s and the discovery of some Institute of the productivity's research near the Fiji mountain (the well known study "If Japan Can"), USA creates inside Bureau of Labor Statistics the most advanced team of the total productivity's study, called the multifactor productivity in the American economy. The calculations extended until 1947 (BLS or DOL, 1997, ch.10). Once with the almost prestige in most of the developed economies of the deduction of this sort of distorted economic significance, because of the efficiency's observation only through the labor's productivity, over some total effects as production this new research direction launches indirectly. This moment can be considered the start of the research's subject of the EU from the 6 FP6 research program called EU KLEMS 2003, through which the total productivity will be studied using the five factors. Because in Europe this matter is studied only from a perspective of knowledge economy doesn't limit its importance because the globality's principle is respected. A similar analysis can also be made at the factors' observation over the comparative advantage but it possible that the analysis' efforts won't justify the organizational, collection and use's efforts of the results in taking the future decisions more effectively. The discompose of the comparative advantage's study on production factors can be made through various techniques or instruments after or even before the comparative advantage's calculation relative or absolute, total or of each part's. The levels on factors are necessary to be permanently connected at these last sizes.

[8] Manoilescu (1937) sort of fell in that trap through the "simultaneous" analysis of the two directions. It is necessary to be mentioned that the identification of some solid action directions isn't exactly included in the economics' object. In forward Manoilescu has separated the analytical study, stictly analytical focusing in the last published works only over this matter – the study of the comparative advantage's properties. (Weltwirtschaftliches Archiv, January 1940) According to Deardorff (2005, p. 14), in the study of the goods' exchange, observed in the comparative advantage's basis, the analytical conclusions' separation from the effects of the real-empirical world appears as necessary: "There may be good reasons to doubt that trade in the real world is beneficial, but these reasons should rest on departures from the assumptions of the basic welfare theorem – market failures, non-convex technologies, etc. – not on the sorts of things that may cause comparative advantage to mis-predict the pattern of trade."

some intentioned attacks even in a political area, but also to some speculations/identifications on different directions, sometimes on the basis of the same data. The validity of the Aristotelian judgements in economics is possible to be grounded in a strong way in few decisions regarding the choice of some action directions. The use of the comparative advantage's algorithm in the collection action, determined by the interest and minimum effort's principle, will prove to be one of these cases. In economics, judgements are sustained by a limited analytical reasoning, being based on the dialectical statements correspondent to the third grade phenomena (Georgescu-Roegen, 1971). The task is not easy to be accomplished in economics as in any of the social sciences, and the establishment of some typical cases in which these judgements are valid is a permanent task and difficult to achieve in a strong way. Besides this the necessity of establishing some exceptions which cannot be proved strictly in these principles and laws' basis and which would support, through opposition, the truth of the previous judgements adds. Even the economics area's overcoming or in one with a common border, the politics' one, in connection with the proof of some economic policy isn't necessary from a scientific point of view. In case another interest appears, different from the economic and politic one, the possible results, in connection with some action directions – which can be proved in connection with the use of the comparative advantage's principle – they can't be rigorously supported with the instruments and methods known in economics.[9]

In order to support its development, in economics the achievement at theoretical level is necessary in the discovery of the connected truths. The changing tendency's capture of the gains' size from trade (the maximum possible production) is partially "economic history"

[9] Mises attempt (1949) of unifying the human action's knowledge, is through those which maintain the unity (and simultaneously shows the difficulty) of the analytical approach and indirectly the validity of the suppositions previously shown and is essential. The statement from "The Economist" regarding the politicians' lack of interest supports the politicians' lack of interest in economically ground individuals' material actions for the strictly economic results also in the basis of the interest's principles and of the minimum effort: "If the economists want to be understood they should learn to use simpler words … [and] to address less to the politicians and more to the others. Politicians are interested in what the electors want – specially the groups which bring them the biggest number of votes – and don't care about the economists' opinion. Talking to politicians about economy is, in consequence, a waste of time" (Epping, 2001). This perspective is supported by the existence of the individual opposite interests, which have as an object the "same" limited existent resources in a certain economic space and time – which determine opposite reactions with the same result or vice-versa, identical cases with different results – and prove once again the analytical approach's difficulty from economics in connection with this object's overcoming by economics.

because nothing guarantees that a past identified tendency could be used in order to make a premonition for an *identical* case which would repeat or not in the future, so we could expect the exact predicted result. The anticipating identification in time and space of this kind of situation would reduce the analytical efforts *in generally* theorizing cases, identifying and connecting algorithms. On the other hand, as Georgescu-Roegen was stating, the capture of this kind of tendencies are the only analytical results which can pass the test of analytical economy – that of them being used in the future in taking more efficient decisions than the past ones in the basis of this knowledge increase.[10] The foundation of a set of true connected statements regarding a minimum number of laws and principles is the basis of any theoretical sciences (Georgescu-Roegen, 1971, pp. 83-85). The attempt of proving in a strong sense the validity of comparative advantage principle (Dogaru, 2003a), no matter the shape of the trade relationships and of the economical and financial instruments used, sustains the economics' approach towards this passing desideratum at the theoretical level (Georgescu-Roegen, 1971).[11]

The purpose of such a unitary scheme was to unite different algorithms next to that of analytical explanation of a simple exchange for understanding in certain simplified terms the trade action. In the comparative advantages' measurement simple formulas were used which would have a guaranteed economical significance regarding a real-empirical negotiation, reducing the calculation's period of time of the comparative advantage's size through the schemes which can be built in a negotiation during the discussions between the two (or more) of the parts.

Before describing an exchange process in simplified terms in order to measure the comparative advantage we'll remark, in connection with this elementary process, two important hypotheses, frequently found in the economic literature: autarchy and equilibrium (balance). The autarchy's hypothesis is necessary to be studied in order to establish the analytical borders of an analytical process of exchange. An exchange process is defined, analytically speaking by two borders: the spatial and temporal one (Georgescu-Roegen, 1971,

[10] The attempt in „connecting" the empirical reality with the analytical-ideal one prevails sometimes in the economic studies which analyses the comparative advantage so the analytical economy's principle isn't strictly respected. Moreover Taussig shows that the „the supposition that all goods come whitin the range of international trade is not at all in accord with facts" (Chipman, 1966, p. 42).

[11] The fact that some authors, as Hausman (1984, Introduction), inverts the theoretical level with the scientifically one doesn't call off the basic issue, that of creating a set of connected statements, which makes the start basis in the analytical knowledge from economics.

ch. 9). The initial observation's limit of the exchange process between two countries and two products has as a purpose the comprehension of this process in its most simplified terms, yet essential.

The analysis of the comparative advantage's phenomenon supposes the exchange process's existence. The acceptance of the initial prices as a reference point, even if it has taken place before or not, is a basic term. In analytical area the time can be „stopped" (Georgescu-Roegen, 1971) as in a manner of „autarchy term", through the supposition of the movement's lack. Supposing, yet, the lack of existence (simultaneous) of the exchange beyond the borders of this process in the case in which only a trade process is analysed, regarding the comparative advantage, means to suspend or cancel this essential initial premise, but without any connection with the actual study.

The autarchy's issue in the observation of this normal exchange process can rise in condition in which this represents a special interest. In the analysis of any economic processes, stopping time, is a hypothesis which simplifies the reality. The exchange processes' separation between them is another analytical term. Furthermore, the introduction also of an exchange process's analysis, supposing that eventually after that the exchange won't take place anymore is similar with accepting the second process without it being necessary and, in forward, the third process which includes the previous ones (Georgescu-Roegen, 1971, ch. 9).

The hystheresis phenomenon takes place also in the exchange economic processes. Therefore, sometimes, prices at a certain moment, contain the influences from the previous cases. The supposition that previously the exchange had taken place or not in the past historical processes, which influence the observed exchange doesn't bring a methodological support in the analytical knowledge of the actual exchange process. In the use of the deducted schemes through the observation of this exchange process, in taking decisions more efficient in the empirical reality in the basis of the comparative advantage's principle, the successive removing, in a certain reversed order in which they had been placed – multiple hypotheses which aren't necessary anymore – is necessary. This is also the autarchy's case, hypothesis which wasn't and isn't necessary for the comparative advantage's analysis (at least generally speaking). Having as a purpose the comparative advantage's measurement, a certain exchange process needs to be brought into discussion, determined through existent prices and quantities, without observing the reality beyond its borders, the limits that we have established. A detailing of the subject at this level of details, according to this established purpose, doesn't justifies in forward.

The perfect competition, the existence of an instant free trade with timeless movement,

is sort of the opposite of the autarchy's hypothesis and also doesn't make sense in the comparative advantage's analysis in Manoilescu's generalized scheme. Meaning, the trade costs' existence puts us in an opposite situation, which brings us back to the empirical reality of the comparative advantage's decrease in any „pure" analytical case taken into consideration in the analytical scheme through the algorithm of the trade costs. The „infant industries" hypothesis, connected with the one of the technology's transfer and management from in other states – what we call the local production's resolution – tend to look like they would have a more rigorous base in the actual terms because of the constant and significant reduction of the existent resources in the world.

The equilibrium's hypothesis is necessary to be studied in connection with the analytical economicity's principle in order to serve, also, in taking decisions more effective in time. In economy, in connection with the economic exchange process, the equilibrium can refer, mainly, either to the equivalents' exchange or to the equality between the importation and exportation. The equilibrium can be relatively defined because in Universe all is in movement.[12] The second perspective will be briefly followed because is a derivated one. The equilibrium between importation and exportation is supposed in the basis of the individual interest's principle in a competitive economy based on private property.

The equivalents' exchange from the trade activity is a supposed one because the international prices are negotiated and accepted. In normal terms – case supposed firstly in an analysis – the two partners won't accept the exchange if they feel in disadvantage. The negotiated price, being a social relationship between the parts at the trade action, supports the equality condition of the exchange. In the second stage of Manoilescu's generalized scheme will be also observed the main exception, the possibility of an unequalties' exchange at the economic value's level.

Mises (1949) shows that each of the exchange's parts have the feeling that they obtain an increased advantage than the partner. This direction is based, in our opinion, on the fact that each part wins in comparison with a certain previous initial case (real-empirical or real-analytical, the last being presented only in the parts' minds) in which this exchange cannot take place (rationality principle). If the basic equilibrium is achieved, through the equivalents' exchange agreed, other balances, at different aggregated levels, regarding this initial

[12] The analytical observation of the human kind can be taken as a reference point, yet this is necessary to be followed in connection with the undetermination of Heisenberg (Georgescu-Roegen, 1971). Aristotle has stated, as a consequence of this relativity's observation: "give me a equilibrium point and I will reverse the Universe".

equilibrium are deducted.

Concerning to the possible equilibrium (balance) of the exportation with the importation in each moment or small periods of time, yet without having a strict justification, is necessary to initially observe that a permanent balance is needed in the exchange processes, towards a purpose. Exportation can be equal with the importation because the currency's savings of each economic entity, in extension of each country, are limited and, also, suppose that every traded good has been paid. The deadline payments, which are current ways of discounting, for example, they make impossible the respect of the imports and exports' balance on short terms. The payments through other merchandises or currency are considered made in normal terms in a pre-established limited deadline and this way doesn't change the basic require of equality. The extreme analysis of such a process leads to this equality.

The merchandise is paid when the new owner is picking it up, usually, at the property's transfer. At a national level, as a principle, the exports are necessary to be equal with the imports. The matter can be raised following this limited regress and at the imports and exports' balance of each economic entity.[13] In time exports should be equal with the imports. A partial truth exists in this direction, but for the bigger periods of time, because each country, considering the natural and financial resources, is necessary to achieve such balances. From this perspective the exchange mustn't be made „mechanically" but in movement and only if the observation is justified according to the individual interest's principle, level at which the payment justifies, and also to the national one through which a structure of products is being followed.

Therefore, in order to study the balance's hypothesis there are simultaneously necessary two conditions: the establishment of some reference points and the simultaneous comprehension of the terms from an exchange process. Quoting Amartya Sen (Atkinson, 2001) regarding the equality: equality to what? In a similar way in connection with the definition of the equilibrium's term an identical question can be formulated: equilibrium with what (in what way)? Equilibrium can be defined in connection with requires of an exchange process having this way a strong economic significance. Through aggregation there can be eventually identified also other equilibrium which would support a purpose for knowledge in

[13] A balance in a weak way can be considered in a country in case in which exports would overcome unsignificantly the imports. A significant example of non-observance of this equality is the American one, which starting with 1971, with a two year exception, had an overcoming commercial balance. The perspective of this unbalance doesn't stop here: also in the future USA has projected a lack of the payment's balance.

this direction of study.[14]

The comparative advantage's calculation in Manoilescu's generalized scheme regards the prices' use. This way the gains' analysis from trade has been chosen through prices which fulfilles from this perspective, in a strong way, the analytical economy's principle. The results which can be obtained in connection with the indirect observation of the comparative advantage through the levels of the utility and productivity's usage in the merchandises's exchange are „connected" to those of the comparative advantage's measurement through prices.[15] The comparative advantage's analysis will be made in the basic algorithm's frame, in a simple barter's case, and others algorithms (the currency's exchange, the trade costs, the internal exchange, the connection between the absolute advantage and the comparative one) will extend in this case.

The general situation of a simple barter exchange can be exposed in detail. The information regarding generic prices and quantities used in a barter exchange, shown in Table 1, provide a more exact observation and understanding of this situation.

Table 1 Domestic and international prices and quantities
of two economic entities in a simple barter

Entity/Product	Quantities	Domestic prices	International prices
Entity E Product 1, *Pr1*	q_{e1}	p_{e1}	P_1
Product 2, *Pr2*	q_{e2}	p_{e2}	P_2
Entity I Product 1, *Pr1*	q_{i1}	p_{i1}	P_1
Product 2, *Pr2*	q_{i2}	p_{i2}	P_2

[14] In a strong way, balance can lead us to stagnation because it is denied in a certain manner the existence of the interest's principle: the possibility of gaining "more" relatively, As compared with the same efforts own or equal as the partners ones.

[15] The acceptance, in economics, regarding the competitive monetary economies, of the main role of the prices in the resources' distribution, guarantees a key position to the analysis through this instrument-term. The suppositions regarding some possible changes from the empirical reality, without being connected in an analytical framework or reverse doesn't serve directly to the scientific purpose, being in opposition with the basic principle of any science: the analytical economy's one. The utility's usage, for instance, is considered an unproductive direction from an analytical point of view (Georgescu-Roegen, 1971, ch. X).

Economic entity *E* can exchange a quantity, q_{e1}, of merchandise to be exported, at the domestic currency value of $q_{e1}p_{e1}$. It is of no importance now whether the entity has manufactured the merchandise so that it may be sold on the domestic market for this initial price, or the merchandise has been purchased for the price of p_{e1} from a manufacturer. Entity *E* aims to gain a comparative advantage, by exporting this merchandise (product *Pr1*), as well as by importing another merchandise (product *Pr2*), which is in demand on the domestic market and could be sold under terms that we are going to discuss.

The value at which this merchandise could be exported is $q_{e1}P_1$, the international price P_1 being expressed in a currency which would raise no further problems of conversion into another currency, to buy the merchandise Pr_2 from country *I*. The explanation would be longer if there were no possibility of conversion, but the scheme would essentially be the same. Economic entity *I*, from the importing country, needs the merchandise *Pr1*, because the international price for which it buys it would enable it to obtain, also, a comparative advantage, by exporting the product *Pr2*.

Entity *E* thus sells the merchandise *Pr1* at the value of $q_{e1}P_1$ and buys the merchandise *Pr2* at the same money value. If the imported merchandise is sold domestically, it will bring a value of $q_{e2}p_{e2}$. In order for the entity to be interested in this exchange, this value should be greater than the domestic value of the former merchandise (1).

$$q_{e2}p_{e2} > q_{e1}p_{e1} \tag{1}$$

Under different circumstances, entity *E* loses its interest, as it may be assumed that there is no comparative advantage. The same judgements, made under similar conditions, hold for economic entity *I*.

We propose to eliminate the quantities from the formulas we have worked out for the partial comparative advantage, since they are expressed in different measurement units. The presence of quantity would increase the difficulty of encoding and understanding in their practical usage. Since the two quantities of merchandise have equal international values, equality (2) results.

$$q_{e2} = \frac{q_{e1}P_1}{P_2} \tag{2}$$

By replacing the quantity q_{e2} from (2) in the inequality (1), we may arrive, by way of elementary transformations, to formula (3).

$$\frac{p_{e2}}{p_{e1}} > \frac{P_2}{P_1} \tag{3}$$

Entity *E*'s relative advantage can be calculated according to formula (4) as a ratio:

$$A_{vrE} = \frac{p_{e2}}{p_{e1}} : \frac{P_2}{P_1} \tag{4}$$

Entity E's absolute monetary advantage A_{vaE} can be determined by multiplying the added relative advantage by the domestic exported value, according to formula (5).

$$A_{vaE} = q_{e1}p_{e1}*(A_{vrE}-1) \tag{5}$$

Entity I's relative advantage is calculated in similarly to (6).

$$A_{vrI} = \frac{p_{i1}}{p_{i2}} : \frac{P_1}{P_2} \tag{6}$$

Entity *I*'s absolute advantage is measured according to (7).

$$A_{vaI} = q_{i2}p_{i2}*(A_{vrI}-1) \tag{7}$$

The total relative advantage in the simple barter exchange is determined with the ratios, by multiplying the relative advantage of the two entities.

$$Avrt = AvrE * AvrI = \frac{p_{e2}}{p_{e1}} : \frac{P_2}{P_1} * \frac{p_{i1}}{p_{i2}} : \frac{P_1}{P_2}$$

By simplifying the two international price ratios, we arrive at formula (8) for the total relative

advantage of the two economic entities.

$$Avrt = \frac{p_{e2}}{p_{e1}} : \frac{p_{i2}}{p_{i1}} \qquad (8)$$

The ratio between the relative prices from (8) is seen in the studies on international merchandise exchange as being the advantage gained by exporting entity *E*. Like other economists, Manoilescu did not consider the empirical reality conditions in calculating the comparative advantages for the economic entity: the domestic prices from the importing country are, to the exporter, international prices (1937, §156). When this situation is mirrored, it follows that the level of the commercial advantage is the same for the two participants in the exchange, the exchange being seen as symmetrical, which contradicts the very thing he tried to prove: the inequality of the exchange. His assumption is not valid, which is easy to verify according to the above algebraic argumentation.[16]

According to Taussig, Chipman shows that if in any case the prices are strictly created between the comparative costs' ratio, both countries will gain in exchange. (1965a, p. 489) The resolution is demonstrated through Manoilescu's generalized scheme. Chipman remarks circumstances in which the statement was made and in the end he stops to strongly support Taussig's supposition. His statement can be supported only in a mutual empirical case, which can appear and refers to the lack of interest of one or both sides because of a relatively small advantage as in these terms the exchange won't be able to take place even though the basic analytical require previously showed is achieved.[17] In the present generalised scheme it can be

[16] To keep our analysis as close to the empirical reality as possible, we shall note that this exceptional situation, taken into account in the literature, does hold partially for the individuals that deal in small-scale cross-border barter. In this case, the total advantage is that of the individual who carries small quantities of products in the neighbour country and returns with small quantities of other products which he then sells in his own country. We can see that there is no partial advantage of a partner, the total advantage somehow being that of the individual, since the small-scale trader sells his merchandise himself to the final consumer in the "importing" country. In any other case, even if he "taps" another country's market – a situation which is impossible under current normal conditions in the exchanges between two economic entities residing in two different countries – he will sell the merchandise to a middleman and will have to share the total comparative advantage with the latter. The share granted will probably be smaller and it will be negotiated, since the risks and expenses undergone by the middleman are smaller than the transportation costs and duties paid by the initiator of the exchange. In the latter situation, formulae (4) and (6) will be applied for the calculation of the relative advantages.

[17] Ricardo's resolution regarding the gains' distribution from trade in two equal shares can't be justified neither

observed that the internal relative prices' proportionality with the international ones, from any participants, leads as to a case of indifference. For example, Within shows the indifference between one of the two merchandises' production if the internal prices' ratio is equal to the international prices' one (Whitin, 1953, p. 522).[18]

The basic advantage of the generalized scheme's usage is that it starts from a certain empirical (in simplified analytical terms), establishing as a mutual reference point for the partners the negotiated international prices. Another possible reference level is a case previous to this exchange. In consequence, some free or protectionist (Hagen, 1958) trade's existence doesn't condition the scheme's validity or its significance stage: the addition of the trade costs' case at the algorithm with the currency or of a barter which assures the comprehension of any simple exchange, a product over a currency or two products. The aggregation, the multiple exchanges which will be separately observed, allows us suppositions for a volume of merchandise made from multiple products. An adequate multiplication of the total or partial advantage's index, with the connection possibility between the two types of advantages, from successive steps of the exchange, allows the advantage's identification in time.[19]

---

analytical nor through a real-empirical negotiation. Chipman shows the lack of consistency of the comparative advantage's definition on the measuring side: "Even if comparative advantage explains why trade take place it does not explain on what terms" (1965a, p. 482). In our opinion, regarding the gains from trade the measurement issue of the comparative advantage is solved through the generalized scheme in the main case, being grounded rigorously with a simple mathematical instrument.

[18] The statement is justified if we take as a reference point the production for the international exchange. Yet, in the internal prices the trade gains inclusion exists and others gains from trade, from others level of exchange, as so the production can achieved only for the internal exchange. Therefore, Whitin's statement, in a strong way, is valid if the international prices' ratio is equal with the internal costs' one. For a more detailed view it is possible that this case yet to be possible in the internal exchange, because of this require in the absence of the two ratios' equality. See the extension of the comparative advantage's principle at the internal exchanges (Dogaru, 2003b). In his article, Whitin, suggests a programming of the world's production, according to von Newmann's model from1944, through the maximization of the production's vale and also having as main restrictions the consumption, the capacities of production connected to the export's volume, and also the ratio of the opportunity costs.

[19] The supposition is to identify and permanently connect the total advantage, and also a comparison of this with the two partial advantages. Is a control size, this being the significance's limit. Compare Manoilescu's suggested resolution, of addition in time of the net production's sizes – the total costs' sum, if the nature's "price" is excluded regarding the natural resources' extraction – followed by this size's usage for the calculation of some productivity's indexes and in forward of the comparative advantage. We called the timeless indicator, from this perspective, excluding the economic significance.

In the production frontier the ratio's usage between the internal prices of the two products from a country in order to establish the specialization is adequate only in a general observation. Under this mathematical form of the ratio, but using the prices from an inferior level, the factors' costs can be determined at maximum the exchange specialization. A more detailed analytical view, necessary for our approach to the empirical reality through these connections, also indicates us the usage's necessity of the trade costs (Dogaru, 2005b).[20]

An historical circumstances' comprehension in which the discoveries regarding the comparative advantage's principle had been achieved will give the knowledge's frame of comprehension, sometimes incomplete meaning that in the basis of some information's multiplication, additions can be permanently made in order to support a possible unification of this knowledge. Manoilescu's generalized scheme contains, in our opinion, some basic terms for achieving this analytical approach of unification regarding the comparative advantage. The empirical reality's observation in analytical conditions and the redistribution through measurement also in an analytical form which can be demonstrated is the main premise. The connection between the main algorithms, the currency's exchange, the trade costs' case, the efforts' levelling and the connection between the absolute advantage and the comparative one, the main scheme's extension at the internal prices, is assured through the basic algorithm of the simple barter exchange. The scheme's extension to the second stage of the productivity, and also the exchange's analysis with multiple countries and products guarantees the comprehension's possibility of an exchange in real terms, in the basis of the comparative advantage's principle.[21]

Although Torrens has exposed the comparative advantage's principle in 1815, in a strict way, the issue of the discovery's priority of the comparative advantage's principle is still under discussion.[22] It can be stated that Torrens has made a step in forward than Ricardo in the comparative advantage's study, connecting more exactly the sizes for the gains' calculations

---

[20] For an adequate usage of the production's possibilities border in the production's area see the annexes in the next section (specialization in production).

[21] This way the road towards economics' theoretical stage can be levelled in connection with this principle, including the one regarding the efficiency. The adequate use of these algorithms in an actual case doesn't raise special problems, of course, in the instruments and actual economic methodology's limit.

[22] See a similar case of Georgescu-Roegen regarding his definition of non-substitution theorem, with a difference of only few months before Samuelson's. The Torrens – Ricardo case, having a time difference of two years, can be seen equally with our century's few months because presently the time is compressed in the way of Einstein's theory about relativity, through the speed's increase of the processes' development.

from trade (Chipman, 1965a, p. 480). The comparative advantage, although exists, cannot be finished through an exchange action, if the international prices' ratio isn't included between the two relatively internal prices. The case shown by Ricardo within almost two centuries ago is connected with the border's small traffic, case in which the discussion of the trade gains isn't necessary anymore, regarding the distribution of these between partners.[23]

The issue which can be raised regarding the comparative advantage is that if in his study from 1817, Ricardo considered also the gains from trade, only the specialization's idea or both cases simultaneously. No matter which the answer is, the identification's necessity of the monetary flow's circulation concerning the comparative advantage measured in the two concepts – because the resources' consumption is unique on the Time scale, according to the entropy's law – some differences of approach interfere and also some superposed of these two concepts, and the analysis needs to be initially separately made, connected and then, in the end, finished with the gains from trade. Quoting Malraux, regarding his opinion towards the 21st century, „if the trade action doesn't finish, the specialization action can't be achieved either".

Some of other economists' remarks have been shown along the way or will be underlined in forward.[24] A part from the „differences" between scheme and the remarks of other economists regard only the suggested summary, necessary for showing its strength – general validity in time of the comparative advantage.[25]

---

[23] See footnote 16.

[24] After the basic algorithm's deduction, starting from some of Manoilescu's results, our research have extended in order to identify possible connections with published works or articles. See also the 7th footnote (Dogaru 2005b). From Manoilescu's generalized scheme perspective it is certain that our most suppositions have been put under a similar form or relatively different from other economists in the last two and a half centuries. In consequence, even though we summarized some observations, the established reference points from the comparisons and analyses made, the laws and economic principles' order of importance considered is different, it is necessary for us to underline the loan of some ideas, especially from Manoilescu and Ricardo, before the publishing of some articles. It is also necessary to underline the identification of some other similar ideas after the publishing of other results. Extending the perspective, as Georgescu-Roegen was stating (1971) the important truths were told by the Greek philosophers two millenniums ago. That is why, at least in the social sciences, a new knowledge is needed of the social reality and of the environment because of the economic relationships' forms, once with the technological and scientific progress.

[25] As it had been shown, it is signaled the fact that, from the publishing in a summarized form of Manoilescu's generalized scheme in 2000, following the scheme's coherence through the suggested algorithms, we can identify sequences from this scheme at some economists actually regarding the scheme's essence. For example, in Viner's study un economist considered unknown has signaled the calculation's necessity of the ratio's size

III. Production frontier and the specialization in the world production

In a gross form, the measurement's case of the production's increase is connected to the comparative advantage's case. The ratio's comparison between the two internal relative prices is enough for some directions' identification of specializing in order to be produced more, exception being the absence of the production's capacities and the capital loss connected to the capital of the product that will be given up. It is possible that a previous negotiation could lead us to an absence of the exchange action through the trade gains' lack (the comparative advantage). It is a circular condition, and then the comparative advantage's principle can be comprehended only as a consequence between the two term-phenomena, the trade and specialization gains, the second phenomenon being conditioned by the completion of the first one. Moreover, one-sided risks, such as „my product is more necessary in present", can appear in time in connection with the trade between the countries, and which can be supported by temporary bigger stocks, the international prices' oscillation etc.

This lack of observation in this circularity becomes obvious only in the production frontier in the comparative advantage's study, because, on the one hand the trade gains aren't measured and on the other hand neither is this gain's exact value identified (the loss and win of capital through the increase of the capacity's usage, also through the renouncing at the yielded product's capacity) but are calculated through increases, in general terms of quantities, as a result of the specializing.[26]

In order to show the specialization in production through a simplified relationship, with the replaces showed from the second part, the internal prices and costs' usage isn't enough anymore, even with taking into consideration the trade costs' algorithm. In the new terms, of

---

between the relative price from a country and the international one, connected to the comparative advantage from a barter operation. This is, in Manoilescu's generalized scheme, the partial or relative comparative advantage of an entity who taken part in the exchange, and continue of this direction would have contributed much earlier probably at the generalized scheme's deduction (first stage). According to Viner, Penington shows the "terms of trade" variation's necessity between the internal prices' ratios. An anonymous pamphlet published in 1818 and recommended by Arnold Plant also refers at the necessity of the simultaneous usage of the internal and international prices (Viner, 1937, par. 8.24 and 8.94).

[26] That's why the tendency of passing from the multiple products exchange isn't justified because neither this simple case is being comprehended in its essence.

the comparative advantage's analysis, connected to the production process, the ratios between prices are required to be replaced with the ones between the total capitals, necessary in the actual production. The two observed economic processes, of exchange and production, are different so as to identify an economic significance according to requires of the analytical economy's principle, the theoretical scheme needs to be adequately built.[27]

Between two extreme limits, *a* and *b*, beyond an entity starts to lose, therefore to lose through negotiation the maximum comparative advantage (trade gain) another significant area appears, that in which this advantage is equally (or approximately) distributed (Dogaru, 2002). The equal sharing option was supposed by Ricardo in the negotiation's absence of the international prices in the exchange between England and Portugal (Viener, 1937).

Bottomline, the calculation of the production frontier can be made through:

- prices, and in these conditions having an general approximate of the measurement possibilities of the production's increase;
- costs, a better approximate being made than the previous case;
- through the necessary capital's volume for a good's production, case in which the measurement is more exact. In this case the sizes of the production's capacities will be considered, by the eventual increase of these capacities, and also by the caused/suffered losses through the exclusion of the actual product's capacity which was given up. In order to start a new cycle of production the capital used will be calculated according to an adequate methodology.

In taking decisions for the practical area of the production's specialization issues regarding the food safety can also occur – for a national economy. One of these cases and also the increase in time of the trade costs tend to the practical solution of the local production or of the „infant industries". A part from these matters have been signaled (Dogaru, 2003a) and the transportation costs increase (Harrigan, 2003) shows that the suggested solutions in the basis of the comparative advantage's principle will have a resolution in the future.

According to require of the comparative advantage's principle the general observation of the works level's specialization, as a necessary phenomenon in the resources' distribution for multiple countries and products, is an extension of the production frontier in the simple case. Analytically speaking, this specialization process can be justified if the prices relatively

[27] The constant scale efficiency's hypothesis doesn't analytically condition, in a strict way, the comparative advantage's comparison from an exchange action. Only the production's analysis, through the production's possibilities border needs this hypothesis' introduction.

decrease and the relative consumption reduces.[28] A prices' increase, observed in the empirical reality would point out a possible unefficiency of the specializing (from a social perspective) and in a strict way, another argument for the general validity of the entropy's law (Georgescu-Roegen, 1971).

In order to maintain the respect of the analytical economicity's principle we initially study the case of two countries and two merchandises. The multiple exchange's case can be studied through a general projection, being identified in the case of the necessity's acceptance in saving the resources at a global level or in a more limited area (the entropy's law in a weak way). We'll accept the initial case of two countries and *n* merchandises. This might be found also in the empirical reality at a mutual commercial agreement of the merchandises' exchange. In order to make the exchange, considering only the first stage's requires from the generalized scheme, the total exchanges from the *n* merchandises (two together taken) require to calculate all the combinations, and the resulted sizes to be hierarchised. The fact that merchandises are exchanged over currency doesn't change the issue's basis, because the transitivity's identification in a weak way between currencies assure the comparative advantage's measurement from this exchange, having as a starting point a simple barter (Dogaru, 2004a). In the actual cases of exchange the same merchandise will be followed in order not to be exchanged more than once and a bigger quantity than the possible production won't be taken. In taking decisions in the practical area the cases that don't interest us will be excluded: a comparative advantage to small, an uncompatible case with a country's strategy etc.

In the case of two products and n countries there will be calculated the total relative advantages for all the combinations possible, which will be hierarchised in an ascending order. Also, simultaneously, the exchange direction will be established. In order to maximize the comparative advantage at the level of all countries and also to maintain each country in the trade actions, the mutual exchange will take place only following this order between the near countries from the hierarchical order as so each participant would win, if the ratios between the connected international prices respect the sufficient condition from an analytical point of view: to be included between the internal relative prices.[29]

---

[28] The two phenomena, of the price and the consumption of resource's decrease, mostly superposes but here their enumeration has the purpose to support, to show on the one hand that they can have an "independent" and different evolution, the last time being the difference of evolution between price and productivity, and also, on the other hand, that the resources' usage is ""priorly'.

[29] The entrance in the second stage from the generalized scheme will be made in a similar way in the exchange's case with multiple countries and products, with the respect of the hierarchy's identity of the products from the

The multiple exchange's issue can be decomposed, as it was shown, in two cases which can then combine: two countries and n products.[30] Not taking into consideration the hierarchy's matter regarding the comparative advantage in the second stage of the productivity for the connection of the simultaneous preference order at the products' importation and exportation after gains from trade and efficiency, complete resolutions can be identified (when there aren't any partial or total comparative advantages or any other uncompatibility cases) or at least some resolutions like the „second best". It is necessary to underline in this successive algorithms the importance of the relative price in comparison with the product's absolute value, a term which, according to Eatwell (PAL I, p. 5) has lost from its importance and which, in our opinion, needs to be defined in connection with the reduction of the resources' relative consumption and, in consequence, with the entropy's law.[31]

Metzler Lloyd (1950, p. 300) shows that for an intermediate country, in case of two products and three countries, is necessary that the internal prices' ratio to be the same with the international prices' one. This situation is less probable to be a practical one because in this case the exchange wouldn't take place because the interest's principle in the monetary competitive economies wouldn't be checked for this country. More probable, this would be found in the case in which this equality doesn't exist, yet, as it has been shown, the case of the limit approach between the two ratios isn't interesting practically speaking because of the decreased size of the comparative advantage.

One of the analytical study's purpose in economics is the efficient distribution of the resources. This is a main function of the prices, but in the international exchange this must be analysed correspondently. Developing the analysis of the comparative advantage's principle for multiple products we will follow the specialization issue. This is the matter's extension of the production frontier in an adequate analysis for *n* products. The study from the specialization's perspective, made in the comparative advantage's basis assures a measurement of the maximum production possible connected with different variants of exchange. The analysis, extended according to the algorithms previously mentioned, is authoritative and assures reference points in the decisions made in the empirical reality in the international exchange. The actual follow of this direction is made also through the recording

---

both perspectives. The instrument is the chain of the comparative advantage (Deardorff, 2005, p. 9).

[30] The necessary followed resolution is actually Danzig's suggestion in 1949 and detailed by Whitin (1953).

[31] Simultaneously Pareto optimum can be calculated in the weak/strong way in connection with the comparative advantage's requires. The international values' theory is considered to be based either the costs' theory or the reciprocal demand's one.

of the efficiency's development in time and space (second stage of generalised scheme).

The general analyses' accomplishment can be a justified concern if the follow and influence possibility is accepted of the comparative advantage from the collective interest's perspective, including the national level. This means to take into discussion that prices – choosing a correspondent reference point, this being the productivity – can stray, remaining exact or modifying in an opposite way than the efficiency's one. Because in the comparative advantage's measurement in the individual level occur this kind of restrictions, neither at a strategic level, from this perspective, can be identified tendencies, only like a result and through the deviations' compensation (the law of large numbers). Therefore, the aggregation, including its total productivity, needs to be made from the perspective of an economic significance's follow established before. In the 30s of the last century, once the analytical knowledge was progressing, a relatively reversed phenomenon was happening: the existence of the „forwarding" tendency with the economic analysis towards the less aggregated levels, like the sector, the entity or even the product (Georgescu-Roegen, 1967 (2000), pp. 165-66).

The multiple exchange's study isn't generally necessary – being in the case of the nonsense of misplaced concrete (Georgescu-Roegen, 1971, p. 110; p. 515). This kind of complex scheme isn't necessary to be developed on the one hand because of the multiple cases which can occur and on the other hand because of the sum of this kind of simple combinations leads to a case difficult to define, scientifically speaking. Moreover, the economist's effort is discouraged from the respect's perspective of the analytical economy's principle and, in forward, of the result's usage in the empirical economy.

IV. The second stage of generalised scheme. Productivity

The judgements regarding the comparative advantage, concerning the economic processes, including the exchange one, can be made either at an individual level or at an aggregate level (local, regional or national) from the economy's perspective of a city/area/country – at this stage of generality another interest can be identified, almost different from the individual one. On the one hand, the necessity of this double perspective, individually and nationally (locally), comes from the fact that the individual level considers (the observation interest exists) the resources' consumption only on a certain period, 1-2 generations (parents and children), while at the national level a perspective view is required, at a historical scale. On the other hand, in the same period of time the necessity of the resources'

saving and making a certain structure of the production through the individual interests' balance – relatively in opposite – in a national one, is a matter which is required to be considered a structure of consumption.[32]

The comparative advantage's principle firstly sustains this cooperative direction (the cooperation law), even in the conditions of the individual opposite interests' existence. In these terms the priority of the total productivity's increase – process which supports the relative economy of resources, which represents the argumentation's essence of the validity of the national interest's priority, towards the individual's interest based on the monetary profit's maximization – appears necessary. In consequence, these directions – the individual and the collective one – can support each other, the priority being the phenomenon's efficiency, because the predominant (the deciding factor, Florian (1983)) is the national factor. The price's maintenance once with the productivity's increase reveals in the competitive monetary economies, in the study's efficiency absence, an analytical gap, a „weakness" in the analytical concepts' defining, connected to the difference between the individual interest and the collective one.[33]

The comparative observation of the efficiency and price can reveal us, in consequence, the economic processes' unconnected development of the two phenomena. The separate measurement and the simultaneous analysis of the two phenomena assures from the perspective of the comparative advantage's study, a higher consistency of the external economic exchanges' analysis, and in extension of the internal ones (Dogaru, 2003). Although the price has in its structure the efficiency effect, the increasing complexity of the economic exchanges of production and exchange, especially, the increased number of products and also the absence of the effects' self-levelling in real time from the perspective of the request and offer's law of such phenomena, lead us to a certain „unconnected" development. This tendency appears because of the opposite individual interests' existence regarding the

---

[32] The issue of the resources' economy, having the comparative advantage as a reference point, is indirectly identified by McKenzie (1953, p. 165) through the achievement of the maximum production possible following the multiple exchange in the world's economy. Also see his study from 1955.

[33] No matter how hard we could try in the scientific area, these "gaps" either remain or appear as superposing zones in the study of the economic processes and phenomena. The last can be called "zones of dialectical semidarkness" (Georgescu-Roegen, 1971). On the other hand, the analytical judgments from the individual perspective, and in forward aggregate, are made, like it has been shown, starting from the observation of some economic elementary processes in connection with the two basic principles of economics: the interest and the minimum effort's one.

inclusion of the efficiency's increase in terms of price. The national productivity's follow assures a significance of this analytical effort in measuring the comparative advantage, because the territorial organization in time of the economic processes in national area has guaranteed an increasing coherence of the economic entities' activities. On the other hand, the change's matter of the form and of the products' content in time, also the existent difficulty in various economic areas of some relatively difficult products, but with similar use, makes relatively difficult the comparison of these under the price and the value of use's aspect. The identity's principle from the Aristotle' logic is put under mark.[34]

In usual terms the price includes the costs, and the change (the increase/decrease in time) because of the efficiency is shown in the price according to the economic entity's books or in duality with this costs (the book-keeping's law, accepted in a weak way).[35] Also, some studies over the empirical reality , regarding the manner in which the prices are established, shows that the products sell at negotiated offer prices, which are established through the sum of the unitary cost and of a profit's margin (PAL I, 1987, pp. 158-9, Godley's original hypothesis). From the perspective of the productivity/efficiency's change, the costs and in extension in double nature, having the price as a reference point, is permanently included in the price through the profit's size. In a competitive monetary economy the price would modify in the opposite direction of the total efficiency's change. In these terms a separate analysis of the comparative advantage through the total productivity wouldn't be necessary in the second stage.

Manoilescu has studied three quarters of a century ago this issue, having the existent methods from that time, even grounding some. The total productivity's concept, used in the USA and presently being in extension in Europe, assures a coherence of the analytical speech of basic matters regarding the efficiency's measurement (Dogaru, 2000; Productivity: *Measurement problem*, in Palgrave, tome III). The productivity can be calculated, as having an increased economic significance, as a ratio between two physical sizes or two sizes of value (real, levelled) for multiple products. At a product's level the efficiency is found (as we have

[34] The American economists' efforts, especially from the last decades, have established some instruments and methods of comparison in the power's area (Kravis, 1975; Triplett, 2005; Palgrave, Hedonic prices).

[35] We will exclude de external costs which, also, on long terms can be considered included in the normal costs because of the training effect. At limits the initial overcome of these is reflected, in last instance in a general way, through the damaging effects of the environment and even of the social relationships, including the connection between human and nature. In a certain way the overcome of these costs have a similar effect as the productivity one, measured in time towards the price.

shown) in its gross primarily form, under a profit form.

It is difficult to identify from an analytical point of view a productivity's hierarchy under the shape of some relative sizes as a ratio between two absolute sizes, and therefore with a direct economic significance. This hierarchy should be identical or at least similar with the one with the trade gains as criteria.[36] The efficiency's study direction appears to be the single one which guarantees us a „control" of the relative consumption of resources at a national level. Moreover, as Krugman proved, the productivity is significant only at national level: "competitiveness is a meaningless word when applied to national economies" (Atkinson, 2002).[37]

The total productivity's measurement through relative sizes, came from absolute sizes, following that in the future they will be compared to these sizes, for different products, economic entities or countries is relatively difficult. The support of the total productivity's measurement, at least from two perspectives, as a value or physical per capital unit production appears as possible and necessary. The follow of the marginal increase (medium), having a period as a reference point (year), is yet possible (in more slight conditions) that we can achieve the hierarchy of the productivity's increase.[38]

From the usage's perspective only of a single instrument – concept, prices, the case's observation of the comparative advantage can be misunderstood entirely. That is why the efficiency is required to be comparatively followed. An exchange situation based through Pareto optima can be followed from the perspective of the comparative gain (in time) in comparison with the comparative advantage's case. The limits of the Pareto optima remarks better compared to the comparative advantage's one (Chipman, 1965b, p. 735): „When comparing two Pareto-optimal situations it is in the nature of things that what is preferable for one country is disadvantageous to another". According to the comparative advantage's principle, the global observation respects the equity's principle, true suppositions being

[36] Deardorff (2005, p. 6) indirectly captures the efficiency's necessity, under the competitive structure's shape, in the achievement of the real comparative advantage: "And indeed we cannot really ascribe the avoidance of loss from trade to the presence of comparative advantage, since the comparative structure assures it."

[37] At an elementary process' level the productivity is expressed in "gross" way, through the difference between the costs and price. Yet, here the productivity is also considered better expressed through real sizes of value, at this level the natural unities also being possible to use.

[38] Multifactor productivity is analysed in US by input of capital (K in KLEMS), not by total input of capital (Bureau of Labor Statistics, 1997, ch. 10). The measure of productivity is deviated from an ideal indicator (Diewert, in PAL III, Productivity: Measurement problem).

identified which can rigorously demonstrate exchanging directions in which simultaneous comparative advantages are made on both sides. The existence of a complete analysis of the collection action, from both perspectives, which would take into consideration the comparative advantage's requires would allow the elimination of the possible losses of national value because the efficiency's size and development wouldn't possible be taken into consideration.

V. Findings and openings

Through the demonstration in a strict way of the validity of the comparative advantage's principle inside economics the proving possibility is sustained through statements of the analytical truth. These suppositions have a relatively high level of generality in time and space.

In the collection action of the economic entity, in extension, of the individual, the basic form of the exchange process hasn't changed in time. Only some new instruments appear, also the payment ones, other costs, but the action is based on the essential principles from economics, also the interest and minimum effort's ones. That is why, the validity in time of the comparative advantage's principle, starting from its initial definition, can be supported in a rigorous way.

In essence, in this principle's basis the partial trade gains' maximization is followed (of each entity participating in the exchange), of the individual comparative advantage. The forward chase of this direction of analytical research, through the phenomenon of the production frontier, assures a consistency and continue by the main action of the economic activity, the production, in which there can be also achieved the relative economy of resources.

The specialization matter in the world's production following the international exchange of goods is considered fundamental in the saving process of the resources. An increase of the transportation costs, also other costs connected to some tariffless and non-tariffless measures leads us in time at the main possibilities remained in present, necessary to be taken into consideration.[39] On the other hand, no matter the tendency of sustaining the

[39] Also another interesting perspective exists, signaled by David Korten (1999), of the individual interest's absence at a world's level in developing the local production.

globalization processes (Dogaru, 2004b), in a strict way, there is a point beyond which the national interest's representing isn't possible (the food safety, of people, of resources etc).

The comparative advantage's follow in two steps is based on the unconnected evolution (in a strict way) on small periods of time of the productivity and price, in which in fact the gains from trade are achieved (the comparative advantage). That is why the comparative advantage's analysis from this double perspective assures an increased coherence of the analytical speech.

Therefore, as long as the goods exchange will mentain, even in some natural economy's frame, and the human election action will be present in the usual activities – considering that, also, the human behaviour, connected to his own interest in saving as much as possible his efforts towards the possible effects, will remain the same – the truth about the comparative advantage principle's validity isn't necessary to be discussed again. In other terms another adequate definitions are required according to the new knowledge and also to the new usage of other instruments which will be provided by science. The basic algorithm, the one which explains the comparative advantage's mechanism in the simple barter, makes possible and necessary that some changings of the exchange action through the mutual algorithms to be redefined. Manoilescu has made systematical efforts in understanding and using the existent analytical knowledge and anticipated some new instruments, like the total productivity's one. In this direction, the generalized scheme of Manoilescu's comparative advantage, with some possible improvement, can be considered a small step towards the researcher's effort of creating a system of connected statements in economics.

References

Atkinson Tonny. 2001. *Inequality, Poverty and the Welfare State: A European Perspective on the Globalisation Debate*, Nuffield College Oxford, UK. (electronic version; author's site, 2003)

Atkinson Tonny. 2002. Reassessing the Fundamentals: Social Inclusion and the European Union *Journal of Common Market Studies,* volume 40(4), 2002.

Blaug, Mark. 2001. No History of Ideas, Please, We're Economists, *Journal of Economic Perspectives*, volume 15(1), Winter 2001, pp. 145-164.

Buchanan, James, James, Tullock, M. Gordon (1975). *The Limits of Liberty. Between Anarcy and Leviathan*, Iasi, Institutul European Publishing House, 1997.

Bureau of Labor Statistics of DOL. 1997. *Handbook of Methods*, April 1997, Department of Labor, Washington.

Chipman, John S. 1965. A Survey of the Theory of International Trade: Part 1, The Classical Theory, *Econometrica*, July 1965, 33(3), pp. 477-519.

Chipman, John S. 1965a. A Survey of the Theory of International Trade: Part 2, The Neo-Classical Theory, *Econometrica*, October 1965, 33(4), pp. 685-760.

Chipman, John S. 1965b. A Survey of the Theory of International Trade: Part 3, The Modern Theory, *Econometrica*, January 1966, 34(1), pp. 18-76.

Deardorf, Alan. 2005. How Robust is Comparative Advantage, Paper prepared for a session of the 2005 AEA meetings, "*On the 75 th Anniversary of the Opportunity Cost Formulation of Comparative Advantage,"* January 7, 2005 (site of author).

Dogaru, Vasile. 2000. The Theoretical Scheme of International Trade. The Generalization of Mihail Manoilescu's Formula, *Romanian Statistics Magazine*, July 2000, pp. 48-65.

Dogaru, Vasile. 2002. The Limits of the Total and Partial Relative Advantage in the International Exchange of Two Products, in *Conference Proceedings Section 4 Statistics, Economic Analysis, Data Processing, Mathematics*, Tg Jiu, Academica Brancusi, 2002, pp. 173-182.

Dogaru, Vasile. 2003a. The theoretic scheme of comparative advantage in barter exchange - a note, in volume International Conference *„The Role of Science and Formation for Economic Reform within republic of Moldova"* (2003, 25-26 September), volume II, Chisinau, Publishing Department of Academy of Economic Studies, pp. 698-705.

Dogaru, Vasile. 2003b. The Comparative Advantage in Domestic Exchanges and the Boundary of Output Possibilities, *Romanian Statistics Magazine*, No. 4, 2003, pp. 66-83.

_____ . 2004a. Analyse of comparative advantage using cost trade and money, in *Some Problems of Statistics. Trend of social-economic process and phenomena*, Iasi, Junimea Publishing House, pp. 210-211.

Dogaru, Vasile. 2004b. *The Basics of Trade* (coursebook), Timisoara, Eurostampa Publishing House.

Dogaru, Vasile. 2005a. Relation between absolute and comparative advantage – a note, *Proceedings of the 2nd International Scientific Conference*, vol. I, Craiova, Universitaria, June 2005, pp. 35-40.

Dogaru, Vasile. 2005b. The comparative advantage's study in Manoilescu generalised scheme, *Romanian Journal of Economic Forecasting*, no. 3, 2005.

Epping, Randy Charless. 2001. *A beginner's guide to the world economy*, Vintage Books, A

Division of Random House, Inc., New York), Bucharest, Arc Publishing House, 2002.

Florian, Mircea. 1983. *Recession as a World Structure)*, Bucharest, Eminescu Publishing House, Tome I.

Georgescu-Roegen, Nicholas. 1971. *The Entropy Law and the Economic Process,* Harvard University Press, Cambridge, Massachusetts*)*, Bucharest: Editura Politica, 1979.

Georgescu-Roegen, Nicholas. 1967. New economy of Chamberlin and production unit, in *Analitical Economy*, tome 4.1, Bucharest, Expert Publishimg House, pp 165-201, 2000.

Haavelmo, Trygve. 1950. The Notion of Involuntary Economic Decision, *Econometrica*, 18(1), pp 1-8.

Hagen, Everett E. 1958. An Economic Justification of Protection, *Quarterly Journal of Economics*, 72(4), pp. 496-514.

Harrigan, James, Evans, Carolyn L. 2003. Distance, Time, and Specialization, Working Paper 9729, http://www.nber.org/papers/w9729, *National Bureau of Economic Research*, Cambridge, MA 02138.

Hausman, M. Daniel (coord). 1984. *The Philosophy of Economics – An Anthology,* Cambridge University Press), Bucharest, Humanitas, 1993.

Korten, David. 1999. *The Post-Corporate World – Life after Capitalism*, The People-Centered Developed Forum), Bucharest, Antet XX Press, without year.

Kravis Irving B, Kenessey, Zoltan, Heston, Alan, Summers, Robert (KKHS). 1975. *A System of International Comparisons of Gross Product and Purchasing Power,* Baltimore: The John Hopkins University Press.

Manoilescu, Mihail. 1937. *Die nationalen Producktivkräfte und der Aussenhandel. Theorie des internationalen Warenaustausches,* 400pp, Junker und Dünnhaupt, Verlag, Berlin, 1937*)*[40], Bucharest, Editura Stiintifica si Enciclopedica, 1986.

McKenzie, Lionel W. 1953. Specialisation and Efficiency in World Production, *Review of Economic Studies*, 21(3), pp. 165-170.

McKenzie, Lionel W. 1955. Specialisation in Production and the Production Possibility Locus, *Review of Economic Studies*, 23 (1), pp. 56-64.

Metzler, Lloyd A. 1950. Graham's Theory of International Values, *The American Economic Review*, 40 (3), pp. 302-323.

[40] The Romanian edition is the translation of the German edition. According to translator in Romanian edition have replaced the paragraphs §72 and §73. The quotation of the paragraphs is made after Romanian edition. Others previous editions: *The Theory of Protectionism, London: King, 1931; Theorie du protectionisme et de l'echange international, Paris: Giard, 1929*

Mises, Ludwig von. 1949. *Human Action*, San Francisco, Fox and Wilkes, 1996.

Palgrave, The New. A Dictionary of Economics, Vol I-IV (PAL), Eatwell, J. and others (eds.), 1988, London, The Macmillan Press Limited, 1998.

Ricardo, David. 1817. *Selected Works*, Bucharest, Publishing House of the Romanian Academy, 1959.

Smith, Adam. 1789. *The Whealth of Nations*, Chisinau, Universitas Publishing House, 1992.

Triplett Jack E. 2004. *Handbook on Hedonic Indexes and Quality Adjustments in Price Indexes: Special Application to Information Technology Products*, Statistical Analysis of Science, Technology and Industry, DSTI/DOC (2004)9, OECD, 2004.

Viner, Jacob. 1937. *Studies in the Theory of International Trade*, Harper and Brothers Publishers. New York, 1937.

Whitin, T.M. 1953.Classical Theory, Graham's Theory, and Linear Programming in International Trade, *Quarterly Journal of Economics*, 67(4), pp. 520-544.

World Resources Institute (WRI). 2000. *The Weight of Nations*, *Material Outflows from Industrial Economies*, New York: World Resources Institute.