POSSIBILITIES OF DEVELOPING THE PRODUCTIVITY APPROACH. PROPOSALS IN CERTAIN MAIN DIRECTIONS

Alexandru Jivan
The Department of Economics and Economic modelling, Faculty of Economics and Business Administration, West University of Timișoara, Timișoara, Romania
alexandru.jivan@e-uvt.ro

Abstract: *Even if very much used in most economic research, the productivity issue and its common indicators do not profoundly capture the whole complexity of the productivity's very inner meaning. Our paper aims at developing elements in the purpose of setting original concrete proposals and suggestions for a more accurate unorthodox approach on productivity. It aims at applying a widened economics angle, in contrast with the common business view (focused on business private interest) based on usual performance criteria., Our research is a purely theoretical one, proposing conceptual grounds for applied quantitative and qualitative analyses that involve, as part of a larger research project, the productivity matter, in the purpose of those widening horizon. Our approach is conceptually fundamentally apart from the usual ones. Namely, in accordance with the reasons explained in each section, our paper is interested in indicators and manners of analysis that bring corrections to the unusual ones concerning market competitiveness, efficiency, productivity, by (a) completing the productivity formula (section 3), by (b) conceiving new indicators, as an alternative, may be even opposite to the usual ones (section 4), or by (c) building a system of equations that approach the market reality in an unusual way (section 5). Concretely, we aim at giving bigger attention to social and systemic aspects, to "externalities", to certain connected qualitative and quantitative features of "productive" economic processes; from the point of view of the interconnections on the market, the paper also explores some aspects of possible price relationships (negotiations) among economic entities, and related value transfers. Concluding propositions concerning prices, original concepts, analyzing ways, evaluating principles and correlation indicators are set and put forward, as apart from the most usual ones, and as possibilities of further theoretical an practical developments and in the purpose of practical application. Our proposals will be useful for economic researches that want to be more consistent with the growing complexity of the economic reality and that dare to put under question the most common approach, ratio and manner of analysing productivity.*

Keywords: *productivity; serviceability; pure and perfect market.*

JEL Classification: *D62; Q51; L11.*

1. Introduction

The common concept of productivity takes this indicator into account as a ratio between production (most often in terms of market value) and the factors under consideration (most often the labour factor, expressed by number of workers or in other ways). Usually, analyses of economic entities are made in this view, whether they are strictly limited to the issue of productivity, or whether they include other related aspects (profitability, market competitiveness ...). Researches commonly

target the performance of those economic entities from *their* point of view (for their benefit, and above all, the "internal" performance).
The scientific background in this regard is vast: it includes most of the research on productivity. See Djellal & Gallouj (2008), for related scientific synthesis, theoretical delimitations and syntheses, and also for important developments in the productivity matter. Having such documentary basis, this article does not propose to make another presentation of the literature on productivity. Moreover, it does not focus on the calculation of productivity as an indicator, or / nor on methodological aspects concerning such calculations. We are not concerned in this article with punctual-applied research; so presentations of certain particular analyses from the literature are not necessary for this research, not even as examples: the presentation of such specific analyses from the very rich research literature on productivity remains outside the concerns of this research. As a result, we do not add more to our references to literature in this manner or orientation: In fact, in that what concerns the researches on the productivity issue, for our paper, the optics and the way of approach matter. And this is, in principle, the same in the overwhelming majority of research in the field (most of them being applicative, empirical).
Our paper proposes and applies a switch of the angle of seeing the economic activities and companies, from the most common angle, focused on business individualist purposes, to that given by the original servicity approach. We propose and describe several alternative ways of analysis that can be applied in empiric researches, conceived as a more general approach. The necessary references for each element we are describing or developing are made in the section to which they belong.
In this introductive section we have to say that the present paper is a theoretical-conceptual one, so that, once we have made the necessary references to the synthesis and contributions of Djellal & Gallouj, we only mention the additional widening of the vision developed in the quoted book, widening made in Jivan (2014). However, we emphasize that the dominant economic conception presumes that productivity and growth are the fundamentals of the quality of economic and social (in this respect we exemplify only Stiglitz's formulation: "those with higher productivity gained higher incomes, reflecting their increased contribution to society"; Stiglitz, 2012, p. 81). But the concern of the common approach is and remains close to "growth for the sake of growth", as Sedlacek points out (Sedlacek, 2012, p. 164). Given Sedlacek's criticisms of this "quantitative" style, we support his position on the need for "more and better performance". Our theoretical research is done in the spirit of the same desire for "the better" that the quoted volume regards. Paraphrasing Romer (2008), we also consider that new methods and means are needed. Namely, in this paper we are considering indicators designed to bring about a more complex understanding than the common one, which often turns out to be simplistic (*i.e.* focussing only on quantity increases); we consider widening the perception angle of the market reality, we consider that the common approach is most often from a single angle - that of the economic entity on which the productivity analysis is centred. Therefore, we include such an extension in an original approach to relations between economic agents (through so-called "service transfers"). The optics in which we propose broadening the horizon is the one developed in Jivan (2014), wherein the necessity to increase the horizons of the productivity analysis is supported, in the sense of overcoming (and avoiding) the focus only on the *specific* (punctual, local,

momentary or immediate, "short-sighted", individualistic, biased) and passing to the opposite: the concern for the *general* in space, temporal, social ... dimensions.
The presented theoretical developments and the formulated proposals constitute a basis for conceptual foundation for applied analyses using the indicators and equations in the present paper, also revealing the possibility of observing differences between companies, various differences, by the nature of the calculated indicators, within the limits of the databases available

2. Genuine productivity *vs.* actually calculated productivity

Forgetting the liberalist origins of the concept of productivity, the focus on *appropriation* of values almost replaced the focus on genuine value *creation* (Jivan, 2014). The economic science must modify the very approach on productivity and growth. The servicity concept (Jivan, 1993) puts under question the specific (individual, local, immediate...) point of view and promotes a broader analytical horizon (as general or comprehensive as possible at a certain moment of human kind knowledge development).
The meaning of “productive” has to take into account the creative aspect (in the sense of originating from the concerned entity), and the receptive aspects (in the sense of receiving to the concerned entity, from the external space. Calculation of productivity, however, measures receipt (income). Dominant economic theory only assumes / presumes that market mechanisms fairly reward creativity (internal productivity), declaring it equal to income. The importance of trade and marketing for the success of entrepreneurs is thus denied; or the role of all entrepreneurial market activity is assimilated to value creation (production), to productivity itself.
Such reducing (simplistic reductionist), productivity approaches ignore the increasing importance of trade activities and the fact that nowadays competition is not done primarily through production, but rather through marketing.
The concept of production permits two approaches: the utility (benefit, advantage) from the point of view of an economic entity, but also the utility / benefits in terms of the economic entities that enter into economic relations with it (with the economic entity that we are analyzing).
According to the servicity approach, the revenues obtained on the market do not rigorously measure the creation, the beneficial contribution made, or the service is rendered by an economic entity; that is on the ground that, in addition to the direct contribution (production) made by the concerned economic entity, there come also the market activity, the variable circumstances, the negotiations (with all relational, information and power related aspects; see infra, section 5). The latter decisively alter the chances of a fair remuneration of creation (productivity), due to the entrepreneur's own contribution, beneficial not only to himself but also to the recipients of his / her offers / performance.
The servicity indicator puts forward the idea contained in the usual formula of productivity, but with the interpretations of the servicity theory, *i.e.*, reiterating the conceptual nature of the original Physiocrat liberalism (in this respect, please see the explanations in Jivan, 2014). However, the distortion of the meanings of productivity – in the common way of calculating the indicator –, which, as said above, expresses the capacity to attract incomes, to absorb values from the environment, required a more comprehensive corrective optics: that of servicity.

For now we will refer to narrow servicity (σ_n). Narrow servicity takes into account only the interests of other economic entities, other than the concerned one (Jivan, 2000). This is opposite to the common sense of the usual productivity indicator (which is calculated from the angle of the interests of the enterprise concerned). The comparison with productivity is more relevant in the case of narrow servicity (see also the concrete observations made infra, section 4, regarding some concrete proposals of indicators of productivity analysis in a widened view, from the angle opposite the usual / common). Broad servicity (serviceability) puts together the results that are concerned by the economic entity (targeted by the common productivity indicator) and those in the opposite angle (targeted by narrow meaning of servicity), providing the complex picture of the related reality.
The servicity indicator can be written according to the principle below (Jivan, 2000, p. 104):

$$\sigma = \frac{\Delta S}{Ef},$$

where:

σ is the servicity indicator;
ΔS – the rendered service;
Ef – the effort or the factor (factors) taken into account.

Such principle of building indicators stays on the basis of building new, more appropriate, indicators, as told in the next sections.

3. Shortly about a socio-ecologically added indicator of productivity

The competitive stress for productivity growth let in an, at least partially, ignored position, the effects of the economic entities concerning the social and, also, the ecological dimension of humans' life; the social impact is not usually concerned in the common calculation of the productivity indicator. Therefore accurate completions should be made, in the purpose of revealing aspects of the social dimension. In this section we present a productivity formula that contains main completions aiming at revealing such social and even ecological elements that are ignored in the usually calculated productivity. The formula was conceived during a doctoral research concerning the social equity (as a part of several research projects developing the "servicity" approach, grounded in Jivan 1993, 2000, 2014; please see also the previous section). The formula can be found in Mihai (2014), and the presentation developed in this section is on the basis of that doctoral research.

$$\psi = \frac{\mathrm{VNB}\left(\frac{1}{\mathrm{EMP}} + \frac{1}{\mathrm{CAP}}\right)}{\mathrm{GINI}} * (\beta - \mathrm{EF}), pentru\ \mathrm{GINI} > 0$$

where:

ψ - Productivity adjusted by sustainability and equity;
VNB – Gross National Income
EMP – Number of persons occupied (employees and enterprisers together)
CAP – Capital compensation
β - Bio-capacity
EF – The Ecological Stamp of Consumption

The formula shows the productivity gained on labour and capital factors (together), calculated with Gross National Income (GNI). To those components of the

productivity calculations, another one was added: a component designed to express a social aspect, correlated with equity: the GINI index; this, taking values between 0 and 100, shows the differences between entities within the economies of the analyzed countries. In the formula in question, it is placed in the denominator, which highlights the increases in the complex productivity indicator proposed (cited in this section), the higher the dispersion (social differentiation, inequalities) are lower. The values of the GINI index point out the more advantageous situations (and thus the economies of the countries, the more socially equitable), as they have smaller inequalities (closer to 0) and respectively, the more disadvantageous, the greater the inequality / the greater the inequality.
The ecological dimension is captured by the inclusion in the formula and the environmental footprint of consumption. This is given by the area that supports consumption in a country and is calculated for primary production and imports, and this sum is diminished with the amount of the export footprint. It is calculated as the number of hectares needed for the production of consumer goods and for the absorption of carbon emissions.
A conceptual limit of this formula is that, in the optics of servicity (Jivan, 2000), the issue in question is not inequality revealed by the GINI index, but inequity; and inequality does not necessarily mean inequity.
The formula we quote here is a completive correction brought to the common productivity formula.

4. New Formulas Proposals

The principle of calculation of the servicity ratio is by dividing positive effects (as numerator) to negative ones (as denominator), as developed in Jivan (2000).
In the unusual approach of the present paper, indicators are conceived (originally interpreted ratios in uncommon correlations): for the calculation of the servicity indicators proposed and discussed in the present paper, we considered the socially beneficial effects, consisting in particular of the incomes came from personnel hiring), as positive (constructive) aspects in terms of material income. We consider/ take into account the *employment*, the number of people employed *N*, or the volume (value) of salaries paid, as opposed to the values absorbed by the economic entity from its environment (income in monetary units or *revenue R*). The numerator should be the service rendered by the economic entity to its environment, by employing people and paying wages is put in correlation with the own company's welfare (its private income get from producing with the employees).
The activity of economic entities generates income for themselves, induces, as we have pointed out, labour revenue in the benefit of labour used by those economic entities, as well as other possible revenues occasioned by the activities carried out in the countries in which they operate.
The common approach – both in economics terms and, mostly, for business –, puts / considers (*R*) revenue as directly proportional to productivity (at the numerator of its calculation formula); but in the servicity approaching, value collections capture rather the business success on the market just in the private advantage / interest of the analyzed company, but not always in the direction of improving the social dimension (in what concerns, for example, the social objectives of integration, inclusion, environmental benefit, reduction of social polarization ...).

Personnel employment is a beneficial effect, taking into account also that "Unemployment – the market's inability to create jobs for so many citizens! – is the most terrible market failure, the biggest source of inefficiency and one of the major causes of inequality "(Stiglitz, 2012, pp. 12-13). Employment is not a (social) objective for companies, they do not explicitly target it, but our research was interested in the number of employees precisely from this point of view of the socially beneficial effect for the country where the personnel is hired.
Therefore, based on our research aim, and taking into account the availability of data, we propose *servicity indicators concerning the employment* occasioned by companies' economic activities. Such indicators are alternative to the common calculates productivity ratio. They can concern the employment, totally, or in structure. The main scientific interest of the present paper concerns the employment in less developed countries, *i.e.* the "frontier" (*f*) and "emerging" (*e*) ones. This some can calculate the servicity indicators focussed on the employment effect in the two environments already pointed out: the servicity indicator concerning the total employment (N/R), and that concerning the employment particularly în the type of countries we mentioned (N_{fe}/R).
Other servicity indicators can also be built.
By calculating the above ratios, concrete analyses are allowed; studying such servicity indicators compared to the different economic companies on the market, the curves of their evolutions can reveal interesting dynamics; and, of course, comparisons with the dynamics of the usual labour productivity are possible too. The indicators calculated in that servicity view optics can be compared to common labour productivity, these indicators we propose being "in the mirror" of the commonly calculated indicator of labour productivity ($w = R / N$). Interesting conclusions can be drawn regarding, in particular, the hierarchies that can be set after each indicator, from its point of view, among several companies analyzed.
We note that the common labour productivity formula (R / N) is perceived in the servicity optics described above, as an indicator of average revenues at each job created, so as the efficiency of employing – an indicator capturing the advantages of a firm (strictly for its own benefit) from personnel employment.

5. Price Relations and Value Transfers

As we have shown from the beginning of the present paper, the incomes of the economic entity obtained on the market represent an absorption from its (economic, social, natural) environment, no matter where the values are created: by its own contribution, or the entrepreneur benefits by the values created by other economic entities, or existing in nature and extracted from it. Transactions are made under-pricing conditions that are more or less advantageous for the concerned enterpriser or, respectively, for other economic entities. If we express only the external sources from which our enterpriser can benefit,"by market" (negotiations, marketing activity ...), *i.e.* if we take into account only the contributions to value creation other than the own creative contribution of the concerned enterpriser, the gain (π_e) of such enterpriser is obtained on the basis of its own negotiating power, by benefiting from the servicity (σ_s) of actors that are supplying inputs (suppliers) and that (σ_c) from customers:

$$\pi_e = \sigma_s + \sigma_c.$$

Greater income, got from prices more advantageous for the company (and less advantageous for business partners) are used to calculate a higher productivity (in units of value) of that firm. But productive activity and productivity need to be understood in their complexity: the approach from the servicity view emphasizes that rendered service is even greater as its *own* creation is greater, the benefitting of the values within the environment (Mother Nature, other entities in the economy and society) are, on the contrary, smaller. Thus we can write:

$$\sigma = Q_{internal}max/q_{external}min.$$

The above formula is essentially the expression of productivity. The differences that we highlight between calculated productivity and servicity (serviceability) refer almost exclusively to the calculation method (see especially Jivan, 2014; see also the references made above in the section 2).

We can express servicity transfers *to* the concerned entity as follows:

- from customers (buyers): $\tau_C = Q \cdot |p_2 - \varphi_2|$;
- from suppliers (vendors): $\tau_F = q \cdot |\varphi_1 - p_1|$.

In the equations we used (and will use) the next indicators, with the symbols in brackets (for these formulas we used their description in Jivan, 2016):

- the output (Q, in physical units) produced (created) by the economic entity;
- the factor (q) considered (input; in physical expression) used by the concerned;
- the price (p_2) actually received by the economic entity at the sale of the output;
- the fair price (φ_2) of that type of output;
- the price (p_1) actually paid by the economic entity when buying input items (factors);
- the fair price (φ_1) of that type of inputs (factors);
- the profit (π) calculated by the economic entity considered;
- the fair profit / return (ρ) that could be calculated for the entity being analyzed.

In order to can put the issue in terms that allow for a mathematical analysis, we can operationalize the ideas and situations highlighted by using the profit indicator, instead of the "transfers" above. With reference to profit, we propose to take into account two distinct situations: the formal (market) and the theoretical (perfectly equitable, corresponding to the "pure and perfect" market model, meaning no noticeable differences in information, market position, and power of influence ...):

Ππρ

$$\pi = Qp_2 - qp_1;$$
$$\rho = Q\varphi_2 - q\varphi_1.$$

The issue can be analyzed in two steps: firstly the relation between the concerned economic entity and its clients, and then the relation with its suppliers. It means that firstly the prices for the output of the economic entity are taken into analysis, and just than the prices for the inputs. Here supplementary hypothesis may intervene in the purpose of better building the system of equations, assuming, for instance, that certain variables are constant, in certain well defined conditions (time and space conditions, or other).

From the above relations, it follows:

$$\varphi_2 = (\tau_F + q \cdot p_1)/q$$
and
$$\varphi_1 = (Q \cdot p_2 - \tau_C)/Q.$$

Servicity transfers from the entity concerned:

- to customers: $\tau_c = Q \cdot |\varphi_2 - p_2|$;
- to suppliers: $\tau_f = Ql \cdot |p_1 - \varphi_1|$.

From those relations, it follows:

$$\varphi_2 = (\tau_c + Q \cdot p_2)/Q$$

and

$$\varphi_1 = (q \cdot p_1 - \tau_F)/q.$$

Servicity:

$$\sigma = (Q \cdot \varphi_2)/(q \cdot \varphi_1).$$

By replacing the calculated expressions of φ_2 and φ_1 in the rendered service formula, we obtain (after Jivan, 2016)

$$\sigma = (Q \cdot p_2 - \tau_C)/(q \cdot p_1 + \tau_F).$$

That is, the servicity is given by the ratio between the revenues of the economic entity corrected by the part of those revenues representing servicity transfers from the customers (at the numerator) and the corrected payments to the suppliers (at denominator); the numerator is corrected by deducing the revenues those transfers; the denominator is corrected by adding the transfers from the suppliers.

The numerator thus calculated represents that part of the achievements (receipts) of the entity that is not vitiated by obtaining, through market various mechanisms and manifestations (negotiations, differences of power on the market, or maybe even by cunning on the market), higher sales prices, *i.e.* market transfers on in the own account of the concerned actor.

The revenues thus corrected, which servicity counts as a numerator, can be called *strictly fair* ; they are opposed to the usual ones on the market, which are, on the contrary, as maximized as possible.

The denominator considered in this calculation represents those costs that are not vitiated by obtaining – by imposing on the market the position and the interests of the economic entity being analyzed – lower costs, that is to say transfers of value to suppliers). In analogy with the above (regarding receipts), we can call these costs strictly fair.

By this calculation, we attempt to consider only the value of the own contribution of the economic entity analyzed and to remove (to avoid including) the advantages or disadvantages on the market. We underline that all the symbols used in such equations may, of course, represent also negative values. Through these conceptual delimitations, we want to preserve only the value created strictly (exclusively) by the economic entity itself, trying to eliminate the gains made on the market .on the accounts of suppliers and beneficiaries. As a limit of such calculations, we must notice that these incomes are determined by the prices as opposed to the minimum prices of selling (for the corresponding output goods and services) and as compared to the maximum prices for goods consumed or used (for input). But we do not exclude using the average prices on the market (for sales and purchases, respectively) as a procedure instead of the minimum or maximum ones that we have considered in this approach. We propose such variants to carry out research for the future.

Based on these formulas for servicity transfers, income (R) or net income (π) equations can be immediately set. This may result in equations that can be used for simulations and optimizations that can fundamentally contribute to economic analysis (including productivity). Such approaches allow conceptualization of applied (empirical) research, in a broader horizon than the most common approaches.

6. Final Conclusions

In the present research (for this paper) we limited the operationalization to the indicators concerning the servicity of the nature of revenues induced by the economic companies, by employing personnel (as social effects). Namely, we referred and limited the scope of the paper to money earnings and chances for wages in general, occasioned by the employment made by the companies; particularly we considered only separately (strictly) the employment in other than the most developed countries.

For further developments in research, we are proposing to include in the relevant analysis also other collateral effects when large companies let enter their business in "frontier" or emerging countries (effects such as business opportunities in the area where the investments were made, as a chance for other incomes, in this case from new business undertaken in these countries, local economic growth in general, aspects concerning environmental protection, social issues – requiring more in-depth studies –, with the design of certain appropriate indicators and that can be computed with existing data in statistical databases); widening analyses may include other aspects too.

The complex market picture suggests also equations that permit imagining value transfers between business partners – partners that are usually very different one from the other, in that what concerns the power in getting more or less advantageous prices in negotiations on the market (section 5).

In conclusion, our analysis consists in unorthodox ways of assessing the economic activity of economic entities. In a purely theoretical approach, we assumed to make presentation and conceive certain proposals, rather than to focus on only one idea and apply it on numerical data. In the previous sub-sections, we had not the intention to set well completed or final models, neither to give, at all costs, some final touches to such approaches, nor to apply them on particular real numbers from the economic practice; moreover, certain of the ideas we described represent primary drafts. But the contribution brought consists in the openings and the necessary widening for assessing productivity. Our proposals may be all detailed and made adequate to real economic life and data, and stay as fundamental for future empirical research.

References

1. Djellal, F. and Faïz G. (2008) *Measuring and Improving Productivity in Services*, Edward Elgar Publishing, Cheltenham,

2. Jivan, A. (1993) “Services and Servicity”, *Services World Forum Bulletin*, no. 3,4/1993, pp. 16-24.

3. Jivan, A. (2000) *Servicity – More Than Productivity, in Service Economy* (in Romanian), Sedona Publishing House, Timisoara.

4. Jivan, A. (2014) “Productivité et servicité”, *Economies et Sociétés*, No.4/2014, *Cahiers de l’ISMEA*, No 4/2014 (*Série « Economie et Gestion des Services »* EGS No 15, Avril 2014), pp 579-599.

5. Jivan, A. (2016), “Co-production in the Servicity Approach, on the Grounds of Knowledge Economy” (www.icbaer.ro) in *University “Eftimie Murgu” Annals, Resita,* p 116-123 (cf http://www.analefseauem.ro/upload/arhiva-revista/2016/Cuprins_2016.pdf,

6. Mihai, A.I. (2014), *Productivitate Local Productivity and Social Equity in the Context of World Economy* (in Romanian; Doctoral Thesis, scientific coordinator, A. Jivan).
7. Romer, P.M. (2008), "Economic Growth", Liberty Fund, Inc., https://paulromer.net/wp-content/uploads/2008/01/Economic_Growth.pdf
8. Sedlacek, T. (2012) *The Economy of the Well and of the Bad. Searching for the Economic Sense, from Gilgamesh to Wall Street* (in Rumanian), Publica Printing House, Bucharest.
9. Stiglitz, J. E. (2012), *The Price of Inequity* (in Romanian), Publica Publishing House.