NECESITE QUANTUM ECONOMICS

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Abstract

The Necesit Quantum-Lag Theory of the Economy is revealing that which is hidden from Commerce behind weights of supply – demand and institutional norms and regulations. The objective determinants of industry structures, real (natural) prices and economic cycles are technologically and socially **necessary** proportions, quits and lags of consumption, production, money exchange and their innovative modernization.

This way the Necessit Theory overcomes the weaknesses and limitations of the three most well-known basic economic concepts: the being "labor theory" of Classics, margin list utility and their equilibration in Neoclassicism.

In conclusion the **practical deductions** from the theory – for the work of firms and economic agencies are suggested, – the transition of the market from the state of the "*blind* element" in the free, but **anticipating** self-management.

Key words: technological and social necessity, consumption, production, proportions, logs, economic quants, modernization, prices, cycles, money, credit, disbalance, growth, development.

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Introduction

The problem of prices. Prices are nominal and real (natural)

Usually the word "price" causes in the minds of people the image of the price tag on the goods in the store, or the price list, or the scoreboard in a stock exchange, there are some numbers on them and beside – the names of these mysterious money: rubles, dollars, euro's, yuan, yen, etc.

However, the phenomenon of price is much more grandiose. In a broad sense, prices are both profit and rent, and interest, and dividends – the payment for all economic exchanges. Costs are the price of production expenses. The tax is the price of the functioning of the state. The proceeds are the price of goods sold. Income is part of the proceeds after deduction of costs; in particular, wages - the price of "work force" (of work, labor). Profit is the price of exploitation of the means of production, - of capital. A fee or a honor is the price of talent. Salaries and grant is the price of obedience.

Rent is the price of using (tenancy) land or things (property). The nominal price level is the price of the money itself in their exchange for goods. In contrast to natural (real) prices – the proportions of the exchange for each other real goods – products. Loan interest is the price of a credit.

Dividends are the price of a perpetual (termless) credit. The exchange rate of bills or shares is the price of resaling of the credit. Currency rate is the price of money in their exchange for outcountries money.

The glitter and poverty of prices executes people with apathy or then with feverish enthusiasm and blows out the most arrogant governments. A food supply crisis and excessive inflation overthrew the French and Russian monarchy, the Provisional Government and gave dictatorial power to Napoleon and to Lenin and Bolsheviks.

What is the price? What determines these economic phenomena? What are its results and functions in society?

I. The basic economic conceptions of prices

1.1. In the ***Labor*** conception of prices of A. Smith, D. Ricardo, J.Ch de Sismondi, K. Marx and other classicists it is supposed that prices of the goods are defined by the expenditure of labor ("work time", "abstract labor") for its production.

The conception does not give an acceptable explanation to the presence of price for natural assets like virgin land, forest, the interior of the Earth, oil and gas abruption, etc, which any labor ***was not*** expended on.

The conception does not explain the *growth* of the sum of the prices of all commodities in the country (≡ "aggregate social wealth") due to the growth of production facilities expenditure: equipment and materials (though with embodied labor into them), in spite of the *decrease* in "live labor".

The conception comes to an impasse on the ***incommensurability of heterogeneous labor*** (different on its types) which differs for industries, professions, conditions, and productivity. For example, how can we compare the labor of a farmer, miner and teacher?

Although they trade exactly between dissimilar industries. Thus, "abstract labor" and its expenditure turn out to be ***immeasurable***.

1.2. ***Utilitarian*** conception of prices of Aristotle, H. Gossen, W. St. Jevons, K. Menger and other "marginalists" believe that commodity prices are defined by their individual estimate of their utility – demand *(u)*.

It is a general fact for objection: why do the most useful air, sun light, water have no price while not so useful semi-precious stones, gold, antique trifles are expensive? The conception proposes to explain it by the scarcity (rarity) of the resource and by the law of its "diminishing utility" as it is being added to and because of that the exchange occurs by the marginal utility of the of the last added sample of the asset: price p is defined by the "equilibrium" of demand (u) and supply (≡ to the quantity of assets q): $p = du/dq$.

The conception comes to an impasse on the ***incommensurability of the utility*** of ***heterogeneous*** assets: which is more useful – bread, coal, studies? Why do their prices differ? As a result the utility turns out to be only ***immeasurable*** subjective experience.

1.3. Prevailing today ***equilibrism*** of J.B. Say, J.S. Mill, L. Walras, A. Marshall, P. Samuelson and other "*neoclassicists*" – conception of prices "equilibrium" of demand d and supply s" $p = \frac{f(d)}{\varphi(s)}$ claims the combination both approaches: demand suggests an estimate or requirement and supply suggests expenditure. From here comes the name of "neoclassicists".

However the flaws of both approaches are taken over by equilibrism. In the *natural* form ***heterogeneous*** *expenditure* (different in their type and therefore in measurement) is ***incommensurable***. What *unit* is to be taken to sum up together bread, clothes, coal, electric power, and wear of equipment? Yet in the *monetary* form the conception comes to the faulty *vicious circle*: prices (of the expenditure) define the prices of the products. There remains emptiness: prices are defined by the prices but preceding ones.

Since the price of the products (e.g. clothes) *includes* prices of the expenditure (fabric and it includes wool) which have already been taken into account there arises a multiple repeated summation of the same, and the trial to escape from the circle results in unattainable shelling of the "net" product.

The matter is not that there exists no demand and supply. However the content and cause of neither demand nor supply, nor their "equilibrium" (it is often said about some "equality") is revealed. We are given the visibility of explanation of price fluctuation for the same goods: price rise or reduction depending on the fluctuations of misty demand and supply.

There is absolutely no explanation of the main thing which is **value (*quantity*)** of prices, their *differences* for *various* goods: why does a gram of sugar cost seven times more than salt? Why is cotton more expensive than oil, etc.?

Premonitory calculations of neither price structure nor economic cycles are available here.

It is evident that not only money presence matters with the demand ("income or money demand") but also **consumption** and its regularities ("consumer demand"). Not only the presence of goods matters with supply but **production** and its regularities.

Self-delusion of indefinite and immeasurable abstractions ("terms" having no definition and "values" and "equations" which do not have numerical quantity) such as labor, utility, aggregate expenditure, demand, supply, "equilibrium" have been disappointing for the most thoughtful economists for their pretentious emptiness. This gives rise to their accusations of those formations for substituting science for "metaphors" and ideological "rhetoric" and makes the scientists to go

from such "science" into empirical statistics or into local calculation, economic history and publicism.

The cause of such deplorable state of the economic theory is, in my opinion, in its limitation by the abstract market and in its detachment from realities of consumption and production.

II. Necesite Quantum Theory of Prices

I call my economic theory *necesite* since it is based on the **category** and **law** of necessity.

2.1. In the basis of the social system functioning and development there lies a **necessity** [2] (Latin – necessitas), the objective exchange relations people and their systems with the world, which are *conditions* of its existence and without which therefore the system falls into the stagnation, degradation and as a result is lost. [1], [3. p. 63.]

Namely: *exchange proportions* to be **prices** and **cycles** of economic development come from **technologically necessary proportions** and **lags** (terms) of consumption (including social) – production and also from money goods exchange and their modernizations which as processes also quite material also have their necessary technological proportions and lags.

Whereas consumption and production are considered in their *counter-unity* as mutually reverse but impossible without each other two sides of the unified process and money goods exchange is considered as also necessary way of their connection and regulation in the society.

2.2. The 2nd law: The necessary goods for production and consumption are ***complectary*** and ***complementary*** i.e. they are sets of completing each other components being useless without any of them or their *substitutes* in definite proportions.

As all present-day manufacturers know technological proportions of dissimilar production expenses follow from *natural laws* of physics, chemistry, biology, psychology and they are necessary: while the same

[2] Definition of this fundamental category of social philosophy developed in the authors publications.

technology is used production is impossible without those expenses and their proportions.

Exactly those technological proportions of production (+ functional social) consumption define **industry proportions** (≡ industry structure) (see § 2.3) of the economic system and in there they define **proportions** of **assets exchange** ≡ real PRICES (2.4).

2.3. The 2nd law leads up to the system of matrix equations of balance **production** and **consumer proportions** of economical and other consuming elements x_i and productive and other functional elements y_i in the society, i.e. ≡ the **industry proportions** or even the social structure:

$$\sum_{i=1}^{m} a_{ji}\, x_i = \sum_{i=1}^{m} b_{ji}\, y_i, \qquad j = 1, 2, \ldots, n, \qquad (1)$$

where $\boldsymbol{a_{ij}}$ – being necessary consumption (expenditure) of produce on the types of the elements, $\boldsymbol{b_{ij}}$ – being the produce or function produced: here $\boldsymbol{x} \equiv \boldsymbol{y}$ (of course it happens no always), $\boldsymbol{a_{ji}}$, $\boldsymbol{b_{ji}}$ – values are known, $x = \boldsymbol{y}$ – values are unknown.

Solution of the equations (1) gives the necessary industries proportions i.e. their specific quantities both any multiple to them.

2.4. Since every social element if it is necessary for the society has to obtain <u>everything</u> required for the production and functioning and in the necessary proportions (1), the ***industry proportions*** of necessary production and consumption (§ 2.3.1) define proportions of goods exchange, **real prices**:

$$\sum_{j=1}^{n} a_{ij}\, x_i (=) \sum_{j=1}^{n} b_{ij}\, y_i, \qquad i = 1,2,\ldots,m, \qquad (2)$$

In this exchange balance there are no any unknown values. They are not equations. Summing up goods on row vector does not here mean a common mathematical addition, here impossible (see §**1.3**), but only *exchange* **equalization** (we mark (=)) of complex of **heterogeneous** goods in order to state their *necessary* ***exchange proportions*** – to be natural, ***real*** **prices**.

Nominal prices (in the monetary numbers) depend on the amount of nominal money (metal, paper, electronic) emitted in the society $\boldsymbol{p^n = M / p^r B}$. , the necessary velocity and volume of sales and other factors, but nominal

prices almost do not change the real prices, – If there is no hyperinflation or hyper-deflation (≥ 7 – 10% per year). The measurement of these **price scales** is more affordable for the price of reference goods: bread, oil, branded equipment, gold, etc.

3. The political economy

3.1. OVER-necessary ("surplus") product creates the possibility $x > y$, and turns the equations (1) and the equalizations (2) into inequality and in this way gives the limited *freedom* in its redistribution, becomes an apple of discord and dissention in the division of income on tax, wage, profit, rent, etc. and economics turns in ***political*** one.

3.2. But after the choice of one possible variant of industry (1) and exchanges (2) proportions in the society is made the inequality turn again into the equations and the equalizations. Optimum here is defined by the methods analogous to linear mathematical programming of L.V.Kantorovich - G.B. Dantzig - T. Coopmans, but *global* and *necesite,* therefore, free from the paradox of the *best* adaptation to the *worst* conditions.

In the political reality the variant selection is set, of course, not mathematics and not optimum, but the relation of social forces; however it is ***carried*** in the boundaries of the **possible necessity**.

4. The economic quants

The known ***non-linearty*** of changes in proportions between expenditure and output is caused by the consumedly **indivisibility** of clothing, machines, roads etc., consumer and production factors to be **economic quants**.

Their influence is reflected in theory by the introduction into necesite equations (1) and equalization (2) of quant coefficients h_{ij} (from the matrix **H**), meaning a measure of completeness of instant indivisibility use.

$$\sum_{i=1}^{m} a_{ji}\, \hbar_{ji}\, x_i = \sum_{i=1}^{m} b_{ji} y_i, \qquad j = 1, 2, \ldots, n, \qquad (3)$$

$$\sum_{j=1}^{n} a_{ij}\, h_{ij}\, x_i \,(=) \sum_{j=1}^{n} b_{ij} y_i, \qquad i = 1, 2, \ldots, m \qquad (4)$$

The law of its whole-numberal multiplication gives the explanation of the origin of the non-linearly and allows to take them away in the solution of the economical tasks.

5. Space in the economy

Introduction of natural, infrastructural and social distinctions of production and transportation into the model determines geographical differentiation of prices, rents, tariffs, prices of natural resources, optimum customs duties and as a result – the structure of all space of the **GEO-economics**. [**2**. p. 90 - 99.]

6. Monetary turnover of goods

MONEY is necessary technical means to implement and regulate exchange (trade) in consumption and production in its turn directed by the necessary proportions and lags.

6.1. Money allows us to overcome scantiness of natural barter. Under barter operations directly it is impossible to obtain all assets necessary for consumption and production in required proportions and terms.

6.2. CREDIT (in any of its forms: promissory note, bills, bank credit, bonds, joint stocks) is *special* money received *in advance* **prior** to the output or receiving of goods. It is necessary for trade to overcome *diversity* of technological lags (terms) of production, trading turnover and consumption in industries. *Long*-lag production (of heavy machines, crops, cattle, construction of a building, works, ship, etc.) will turn out its products some time but long-lag production is not possible without forestalling gains from other necessary expenditure and thus it can be realized out either from *accumulation* (initial historically) or now above all on credit.

6.3. Introduction of **lag** *relations* into equations (1) and equalization (2), terms of consumption t_{ij}^{a} and production t_{ij}^{b} of goods out the matrixes $\mathbf{T}^{a}$ and $\mathbf{T}^{b}$ defines the relations of monetary **accumulation** and **credit**, *inflation* and *deflation*, and *economic* ***CYCLES.***

7. Economic Growth and Development

7.1. Inter-industrial exchange between production units links them into a whole economic system which urges them to **synchronize** their modernization lags to *replace technology*. When other partners and

competitors replace their technological equipment with new and advanced one, the rest cannot work using old technology under the threat of going bankrupt. In this way the necessary periods of modernization – **economic cycles** take place.

7.2. At that the **MODERNIZATION** of technology means the **substitution** of functional elements a_{ij}, y_i, b_{ij}, made by the people for the *better* ones, yet it creates the *bad* contradiction, because it makes former inter-industrial proportions (2.3.1) and exchange balances and prices (2.4.2) ***not*** *adequate* to the new technology i.e. turns former inter-industrial **proportions** into ***dis*proportions**, former exchange **balances** and prices into ***dis*balances** and brings about the necessity of new prices, entailing *differential prices* Δp – difference of system necessary and actual factual own prices, bringing additional gains to more effective productions and damage and losses to other ones, resulting in bankruptcy of some manufacturers and establishing new ones till the proportionality is not restored but already in a new way.

Here lies **market regulation** of economic **DEVELOPMENT** or progress; in difference from the simple economic **growth**, where industrial proportions and prices do not change, there remain unchanged initial (1) and (2) ones.

However ***now*** *unknown* of new necessary industrial proportions and prices around which their real proportions and prices fluctuate make the present market "*blind* search" of the new necessary balance for the society inadmissibly *painful*.

7.3. In the course of substitution of technology, the ***acceleration*** of the specified *lag* modernizational price and the industry effect (6.3, 7.1-2) different in dependence on **capital-intensity** of the industry $\alpha = t_{ij}^{a} / t_{ij}^{ba}$ is the cause for phase production *rise* and *recession* to arise.

8.1. To modernize production-consumption (≡ synchronized change in the innovational technology) they need the **cheap long-term credits,** therefore the ***suppression of price-inflation***. Besides such credits must be *larger*, **extraordinary** big, in total sum exceeding the amount of

existing *savings* and thus accomplished only at the emission of monetary loan issue being controlled and regulated partially by the stock exchange and ultimately by the central bank through refinancing rates.

8.2. Instead of now unknown and conjectural "demand and supply", necesite comparison of technological proportions and lags allows us using corresponding matrix equations and equalizations to *measure* **forestallingly** socially necessary **prices** and total sum of the **credit** changing in various cycle phases in this way resolving and preventing crises. Approximately fixed necessary prices and credit appear to be a means to overcome disbalances of modernization.

8.3. International goods turnover results in establishing global economic system and its *international currency*. Some country's national currency cannot be used since the national central bank cannot but regulate and exploit the currency above all in its national interests and to the detriment for other countries. There arises the necessity to set up *central bank's central bank*, regional at the start and consequently unified global international world bank.

III. Necesite self-management of the market. Practical implications from the Necesite Theory.

As we can see, necesite quantum theory eliminates from the ***utopia*** of *all* general administrative fee in the country of *natural* productive economic information, the shoreless, often selfishly hided and oft falsifying, because of its diversity impossible (see §1.3) summation ≡ "generalization", from any illusion of "finite" "net" and "gross" products, from fantasying on such "statistics" *all general* state *natural plans* – from all this vain dream to replace mind and initiative of millions of local heads of a few heads of the central bureaucracy.

Necesite theory discovers and reveals a other new understanding and management of economies: on the basis of public knowledge for each technologically and socially **necessary** proportions and lag consumption - production mathematically deduce the idealized model of the necessary economic structure, i.e., the necessary the **industry** proportions (2.3), of which deduce the necessary **exchange** proportions – real **prices** (2.4), from them – real

need a mass of money emission, investment, credits, and the periods of modernizations (§ 6.3, 7.1-3, 8.1-2), and so on.

So owing to Necesite Theory – the market from the "*blind* element" become sighted and **self**-manageable – **through** these for each **foreseeable** prices (Including interest rates of credits, dividends, etc.), **because** the factual *sales* prices dictated by the **necessity**, why in their fluctuation circling around it.

Accordingly, the monograph considers the possibilities also of some other interesting special practical applications of the necesite quantum theory to its use to solve the problems of functioning of stock exchange, banks, budget, rates, loan issue, inflation, monopolism – for private firm, mainly innovation, engineering, consulting, venture ones and also research institutes, universities, colleges, legislative bodies, statistical institutions, and other public establishments.