

Scientific Revolutions Took Place in the History of Economic Thought

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Abstract—In the works on history of economic thought it is accepted to single out only one scientific revolution. This scientific revolution is the emergence of the marginal utility theory having replaced the labor theory of value. In the paper it is proved that the similar picture arises only because the methodological principle of uniform approach to the studied events is broken. Actually, in the history of economic thought there are also forgotten scientific revolutions. Such scientific revolutions took place as well upon transition from mercantilists to physiocrats and from physiocrats to classics.

Keywords—*philosophy of economics; history of economic thought; social philosophy*

I. INTRODUCTION

Economic history of mankind traveled a long way of theoretical reflection and this process is still ongoing. Different viewpoints appeared repeatedly and contradicted each other while the economic science progressed. Nevertheless, the literature on economic history makes it look like contradictions between economic schools had chiefly tactical nature. Generally, the economic thought developed gradually and in the line of ascent.

Though, this graduality was interrupted occasionally. Scientific papers and textbooks prove that in the last third of the XIX century a so-called marginalistic revolution has after all occurred in economic science. However, even these broken conventions and interrupted graduality are widely viewed as a temporary deviation from the general line as far as A. Marshall made so-called neoclassical synthesis of contradicting viewpoints soon.

If one watched a scientific revolution in economics just once, it would be difficult to escape the question: does the economic thought develop gradually, by climbing from one peak to another, or does it undergo a usual succession of scientific revolutions according to the methodological regularities discovered by T. Kuhn and I. Lakatos? [1]

II. THE METHODS OF SOLVING PROBLEMS OF ECONOMIC SCIENCE

To understand why some theoreticians suppose that the economic thought develops gradually while others think it does by revolutionary leaps, one must determine what

methods particular authors employ and exactly what they consider as the driving forces of economic theory development.

Karl Marx is acknowledged to be the most prominent revolutionary among economists. After all, Marx deliberately based his sweeping criticism of political economy on a revolutionary dialectical method. Unexpectedly, K. Marx wrote nothing about any scientific revolutions in the economic thought. K. Marx discerned the main difference between the theories not in that they broke from a tradition more or less but in that some of them studied essential processes in economics and others did superficial ones.

Inasmuch as marginalists shifted focus of research from production to supply and demand, K. Marx regarded them as ordinary vulgar economists rather than scientific revolutionaries. It was himself whom Marx regarded as a revolutionary in the economic theory. But further development of the economic thought showed that Marx actually completed ideas of the classical school in political economy only.

But if one alternatively looks for the theoretician being a staunch proponent of evolutionary development of economics, Jurg Niehans, well-known American historian of economic thought, seems to best match this role. J. Niehans came to a conclusion, “Over the centuries, the history of economic theory has been one of monotonic, cumulative progress”. [2] In Niehans's opinion, it goes like this because all economists, including those claiming to shake fundamentals, stick to the same concept regardless of differing theoretic and political preferences. “This paradigm is the “economic man”, who makes rational decisions in the sense that he (or she) tries to make the best of any given situation”. [3] And if there was one paradigm in the history of economic thought, then it could not certainly have any scientific revolutions.

Therefore, neither the marginal utility theory, Edward Chamberlin and Joan Robinson's monopolistic or imperfect competition theory, nor John von Neumann and Oskar Morgenstern's Theory of Games and Economic Behavior are scientific revolutions. As to J. M. Keynes's mind blowing ideas, Niehans noted, “Nor was there a revolution in the

1930s, despite all talk about a Keynesian revolution". [4] All knowledge increased in science in an even cumulative way since each and all economists stuck to homo economicus concept maximizing own profit and minimizing loss.

Meanwhile, there is a sense that J. Niehans's argument is incorrect as a matter of fact. Indeed, profit maximization and loss minimization are the generic indicators inherent to economics. They distinguish economic phenomena from all others. Even chess has term "economical mate" i.e. a mate delivered with a minimum number of pieces. J. Niehans's argument feels like as if we said that there were no scientific revolutions in physics because I. Newton and A. Einstein dealt with the same thing — physical world view.

Besides, Niehans wrote, "Among the driving forces of scientific progress in economic theory, the rise in mathematical competence was one of the strongest". [5] He seems to hit the nail on the head here. After all, the marginalists are called so because W. Jevons and L. Walras used differential calculus with its marginal values in their theory.

But does the whole scientificity of the marginal revolution reduce itself only to that they introduced mathematics into economic analysis? There is no doubt that mathematics has played and continues to play a fruitful role in economic theory development. And yet, many marginalists, for instance C. Menger, coped well without it.

Pathos of the marginalists consisted in denial of the labour theory of value, first of all its Marxian version. The marginalists supposed that commodity prices depended not on production expenses but on a supply-and-demand situation, i.e. on "consumption expenses", so to speak. Then why did not Marx see a scientific revolution there while being a recognized dialectician-revolutionary?

In our view, simply because K. Marx believed that, under capitalism, "Production is the dominant moment, both with regard to itself in the contradictory determination of production and with regard to the other moments". [6] Marx meant the other moments to be exchange, distribution and consumption which were derivatives of production actually. In fact, Karl Marx equated production relations with reproduction relations whereas the marginalists equated consumption with production at least.

If so, we must check in terms of methodology: doesn't production prevail over "the other moments" - consumption, exchange, and distribution - in other cases as deemed by K. Marx?

III. THE ISSUE OF IN WHAT WAY WAS THE ECONOMIC THOUGHT DEVELOPING: GRADUALLY OR BY LEAPS?

But the idea that distribution can play an independent role must be abandoned right away since distribution is so related to available private property under civilization that it virtually dissolves in the exchange relations. As for exchange itself, it is easy to see that the relations were not always governed by production. Before XVIII, both in practice and

theory, source of profit was deemed to be trade and nonequivalent exchange rather than labour.

For example, Strabo mentioned a Phoenician merchant in his "Geography". He went for lead and copper to the Cassiterides along the route known to his compatriots only at the time. The Phoenician noticed on his way that a Roman ship was spying on him. To conceal the secret, the Phoenician ran both ships upon a ridge. And grateful compatriots compensated him for all losses as they appreciated benefit of retaining the monopoly so much. [7]

The Act of Venice Government of February 15, 1362, showed the manner in which monopoly prices were kept during the Renaissance, "We (i.e. the Venetian authorities — A.A.) have the obligation not to fluctuate or cut the price for Clugie salt through the means that we applied to Cervie salt in the past. Our community bought Cervie salt for a sum of money over a period of years and threw it into the sea in whole only to sell Clugie salt without hindrance and therefore not to do harm to the good of our community..." [8]

As can be seen, profit-making through non-equivalent exchange and monopoly was the practice in history from Antiquity until the Early Modern Period. Mercantilism just brought it to the level of an economic theory. The non-equivalent exchange faithfully served merchants of all nationalities for thousands of years. Anyhow, that was the point which was primarily resisted by physiocrats who superseded mercantilists. They particularly declared equivalent exchange to be the main axiom of economic science.

F. Quesnay virtually derided supporters of the trade balance system in his dialogue "On trade". "M.N.: What exactly is the very profit you want to gain and you call monetary balance?"

M.H.: I'd like we sell to foreigners more than we buy from them.

M.N.: It seems difficult to me as, actually, *every purchase is sale and every sale is purchase*. (italics by F. Quesnay-A.A.). And I can't see how your wish could be fulfilled. Unless you agree to sell the products and goods to foreigners for which they will pay nothing to you." [9] Then why did nobody notice ludicrousness of the situation before the physiocrats?

Early capitalism is referred to as the era of primitive accumulation. One must have some original capital whether ordinary money or other resources in order to start any manufactory, i.e. to recruit workers, provide them with necessary raw materials and equipment. That is why K. Marx considered the era of commercial capital to be not only historical but logical basis for industrial capital.

Marx gained the principle of unity of the logical and historical in G. W. F. Hegel's dialectics. However, according to Hegel, the logical dominates over the historical; "the abstract" precedes "the concrete" on all occasions. Therefore, content of the preceding is virtually determined by the succeeding whether we pay or do not pay attention to it. And if the era of commercial capital led to the emergence of

industrial capital in its development, then this process is its real essence. What else does K. Marx's term "the era of primitive accumulation" mean?

Meanwhile, contrary to G. W. F. Hegel, Marx adhered to materialistic understanding of history hence he was obliged to explain any era from its own regularities. If we look at the emergence of industrial capital with a historian's eyes, we'll be amazed to find that, even during the era of late mercantilism, trade was not at all inspired by the aim to accumulate money for its further investment into industry.

Trade was internally driven by profit maximization like thousands of years ago. If a deal yielded such profit, it naturally evolved into another similar deal but on a larger scale. In case of failure for some reason, the profit fell out as "money crystals" or was lent as financial capital to other more successful merchants.

And since everything changed at a certain point of history, the reason for this should be found in the modified conditions of goods circulation rather than in some needs of the industry that was practically absent at that date. And how was exchange of goods modified by the time the physiocratic theory originated? After all, both in ancient times and now, any trade is conducted in full compliance with the principle: "buy low in one place, sell high in another".

The paradox here is that this inalterable principle altered trade itself eventually. Tradespeople earned major profit only in cases where disparities between "buy low" and "sell high" were the greatest. This made merchants and adventurers to ship out across the global ocean. Trailblazers were followed by vessels with those who also rushed to be in time for sharing of the cake. Hence, another "immutable" trade law came into effect: the more mass of profit the less sensitive it is to its rate. Outlandish goods were consumed in bulk due to competition among merchants. Soon such exotic goods as tea and coffee came into common use. Advent of three-mast galleons and caravels turned them into the most ordinary goods.

Trade development resulted in that the whole range of goods encountered on the Earth in their natural state eventually ceased to be a curiosity bringing superprofits to merchants. Sooner or later, only the things produced rather than readily available in nature could become super lucrative. As is evident, this very circumstance being on the other side of both commercial and industrial capital was the actual cause of subsequent increase in the number of manufactories. Therefore, money accumulations didn't give rise to them but facilitated their growth. Intensification of trade exchange led to that the equivalent exchange became normal for settlement of a transaction.

As one can see, the equivalent exchange considered by the physiocrats as inherent to the trade was the logical outcome of its long-term historical development in reality. Then where did profit come from if the exchange could no more be a source of profit due to equivalence?

The physiocrats declared productive forces of nature to be a new source of social wealth. F. Quesnay wrote, "Reproducible agricultural wealth serves the basis for all

other forms of wealth, provides employment of any and all professions, promotes trade and well-being of the population, drives the industry and maintains prosperity of the nation".

[10] If F. Quesnay said only this, he should probably have added that nature generated profit not directly but using intermediate economic forms. Instead, F. Quesnay stirred up the discussion whether labour could make profit in the industry but denied such possibility in every way.

F. Quesnay's reasoning seems unimpeachable. If we recognize the equivalent exchange as axiomatic, then there can be no profit in case of exchange between an employee (labour) and an employer (remuneration). "This drinking glass costs one sou. The original material used for its manufacture costs one liar. Labour of a craftsman who made this glass quadrupled value of the material. Therefore, wealth tripled in this case. So, it would be highly advantageous to find a way to manufacture such glasses through labour of two workers during a year and more advantageous through labour of four workers during two years". [11]

There is no logical mistake in this reasoning. And yet, the labour theory of value simply ignored it because conditions of circulation of goods being produced changed once again. Whether we notice or not, F. Quesnay virtually recognizes any labour as socially necessary in his discourse on full recovery of expenses incurred by workers. Meanwhile, different manufactories will have different production expenses. And none of competitors will be able to upsell their commodities on account of higher expenses within one economic area.

However, that will be the case if there are commodities of the same type but with different conditions of production at the market. Such circumstance was lacking in the days of F. Quesnay when manufactories just originated. As a consequence, commodities mostly appeared as "incomparable" at the market. That is why F. Quesnay didn't know the difference between concrete and socially necessary labour in the historical environment then prevailing. All of a sudden, while recognizing payment of labour expenses as socially normal, Quesnay paradoxically began advocating the non-equivalent exchange which was ardently opposed by him.

Just as the physiocrats started with rejection of the non-equivalent exchange, the backbone of the mercantilist theory, so the classical theory of value acknowledged that labour was the essence of economics. And the physiocrats denied its participation in creation of value in every way. So, another true scientific revolution went unnoticed. It was traditionally accepted that there was no gap between the physiocrats and classics. For example, Charles Gide and Charles Rist wrote in their "History of Economic Doctrines", "Notwithstanding the originality and vigour displayed by the Physiocrats, they can only be regarded as the heralds of the new science". [12]

However, the days of A. Smith proved, "Though the manufacturer has his wages advanced to him by his master, he, in reality, costs him no expense, the value of those wages being generally restored, together with a profit, in the improved value of the subject upon which his labour is bestowed". [13] K. Marx went further, showing that labour

capacity, as a commodity, rather than labour shaped the capitalist mode of production in the context of machine production. First manufactories and then machinery rendered human labour meaningless by turning it into a simple operation of physical exertion and the worker into an appendage to a machine. The former worker turned into a proletarian who could sell the only thing — their own labour capacity.

According to K. Marx, “The determination of the *value* of labour capacity, as a commodity, is of vital importance. This value is equal to the labour time required to produce the means of subsistence necessary for the reproduction of labour capacity, or to the price of the means of subsistence necessary for the existence of the worker as a worker. It is only on this basis that the difference arises between the *value* of labour capacity and the *valorisation* of labour capacity — a difference which exists with no other commodity.” (italics by K. Marx-A.A.) [14] With any particular reservations, the capitalist pays to the worker as much as he needs to keep himself in working order. However, while performing as labour capacity, the proletarian generates more value than required for their sustention. The margin accrues to the capitalist.

The long struggle of workers and capitalists first for the normal working hours, then for the 10-hour workday and later for the 8-hour workday seemed to confirm how right K. Marx was. His theory of value was consistent with the reality insomuch that S. Bulgakov, Russian religious thinker, wrote many years after Marx's death in 1912, “In practice, economists are Marxists, even if they hate Marxism”. [15]

Nevertheless, in 1871 during K. Marx's lifetime, W. Jevons and C. Menger released program books asserting fallacy of Marx's theory of value. They offered the marginal utility theory as the substitute that measured value only with intensity of individual needs rather than with socially necessary labour time and production expenses.

That was another scientific revolution in economics. The ideas underlying the marginal utility theory were expressed many times during XIX century. It is no wonder that W. S. Jevons wrote on August 21, 1878, to his brother Tom, “I am, therefore, in the unfortunate position that the greater number of people think the theory nonsense, and do not understand it, and the rest discover that it is not new”. [16]

Then why did the marginalist ideas expressed many times during XIX century await acknowledgment in science so long? Was it because they reflected some evolving economic process that became evident to everyone after a while?! In our opinion, the point is that the social conditions of goods circulation changed once again.

However, why did manufacturers solely set value in the days of classics? The manufacturers' dictate can be best explained simply by unsaturation of the market with goods. During K. Marx's lifetime the capitalism still developed extensively and expanded geographically only. It made no sense to compete within their own industry. It was much easier to invest into production of new goods or to cover new geographical regions with enterprises. During Marx's

lifetime the buyer faced commodities of one or two manufacturers at the market. For instance, “Singer” sewing machine soon conquered the entire world due to successful technical improvements and pioneered credit sale. Today this name brand doesn't stand out among commodities of the same kind.

Sellers and buyers were unequal under the economic conditions prevalent at the time of the classics. Sellers of proprietary commodities determined their value in all ages. The classics adequately reflected this state of affairs in the labour theory of value. The fact that Marx presented it as the only true was no mistake in his time.

Meanwhile, capitalism could not develop extensively in perpetuity simply because we have only one planet. As soon as the capitalism started involving into intensive development, the market got saturated with identical goods. A situation arose where commodities began to compete among themselves already not as average specimens of different types of labour, as described in “Capital”, but also as particular patterns of the same type of labour within every sector. Monopoly of manufacturers vanished. As a consequence, such conditions did not any more allow that the market value of commodities was dictated by the manufacturers who proceeded in their assessments from production expenses. Consumers began to determine it by their real choice. Already the marginalists and not the classics started adequately reflecting new economic performance in their theory.

IV. A NEW VIEW ON THE HISTORY OF ECONOMIC THOUGHT

Then why did not such authoritative methodologists and historians of economic science as K. Marx, J. Niehans, M. Blaug and many others notice scientific revolutions while transiting from the mercantilists to the physiocrats and further to the classics? Why did not they see interrupted graduality there? For instance, M. Blaug wrote, “but all the basic elements of the classical approach to economic activity are embedded in the mercantilist literature”. [17]

We believe that was just because one could not look at any paradigm from the outside if they secretly shared some of its prerequisites. That was exactly what happened to J. Niehans and M. Blaug. While criticizing T. Kuhn's theory of scientific revolutions, J. Niehans and M. Blaug did not notice that their acknowledgment of linear development of economic science was associated with the mode of existence of normal science as described by T. Kuhn.

T. Kuhn wrote that in references, “Partly by selection and partly by distortion, the scientists of earlier ages are implicitly represented as having worked upon the same set of fixed problems and in accordance with the same set of fixed canons that the most recent revolution in scientific theory and method has made seem scientific”. [18] As a result, “From such references both students and professionals come to feel like participants in a long-standing historical tradition”. [19] That is why, “science once again comes to seem largely cumulative” after another scientific revolution when all old facts pave the way for a new paradigm. [20]

The classic paradigm prevailed in economic science overlong. Unsurprisingly, all that remained after the mercantilists and physiocrats' doctrines in economic theory turned them into ordinary precursors of the classics as they were generally accepted.

V. CONCLUSION

This article points out that presented history of economic thought still violates the methodological principle of a uniform approach to the phenomena under study. In fact, the economic history repeatedly witnessed departure from traditions of the economic science that gave rise to the marginalist school and that most researchers perceived as a scientific revolution. Social conditions of goods reproduction changed in the same way during transition from the mercantilists' doctrines to the physiocrats' theory and then to the classics' economic school.

Logically speaking, that means that the history of economic thought saw not one scientific revolution (the marginal revolution). There were more such revolutions actually.

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