

Evolution of Economic Science

An Introduction to Osman Gani's Foundations of Economic Science

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Abstract:

This paper briefly reviews the work of Osman Gani written in his book Foundations of Economic Science which is an outcome of his 40 years experience as student and teacher of economics. In addition, it provides a brief description of the evolution of economic science from classical economics from the time of Adam Smith through neoclassical micro economics from the time of Alfred Marshall, L. Robins and Paul Anthony Samuelson; Keynesian macro economics and Karl Marx's Labor Theory of Value.

Following Osman Gani, it emphasizes that the economists have for long period been doing economic arts to provide policy prescription and we have just laid the foundation of the economic science. For Osman Gani, economics is redefined as study of the quantities and kinds of goods and services that have economic value by gainful exchange. To him, economic science must be based on observation and analyses of the causal process and any subject matter in economic science must be mathematically expressible. In economic science, making assumption is irrelevant and there is no place of inferential statistics or probability while descriptive statistics of observed facts are acceptable.

Finally, the paper recommends for the economists to participate in a study circle to expedite a move towards making economics a science from the stage of political economy through practicing scientific methods in economic studies. This will help better to address the problems of allocation of resources, poverty, equity, efficiency and sustainability.

1. Introduction

When I read Osman Gani's Foundations of Economic Science, I didn't understand much. Because the courses in economics taught us that economics is a social science. Osman Gani taught us thinking differently. The pioneering work I am introducing today is an outcome of his 50 years of study as a student and teacher of economics. Although I have read it immediately after published in 2003, I was able to understand the fundamentals of it as late as in 2017. He explained it in a couple of hours sitting early this year. It is fortunate that the Bangladesh Economic Association includes a sub-theme "Evolution of Economic Sciences" for the upcoming BEA conference to be held in July 2017. I took this opportunity to present his work to the fellow economists. After this brief introduction Osman Gani will present his economic science what he called consistent economics.

What Osman Gani wants to mean that we have just laid the foundation of economic science. He argues with strong justification that we have so far studied economic arts and not economic science. The questions often asked to the economists concern reducing unemployment and poverty, increasing per capita GDP or GNP, improving equity or equality of distribution and improving environmental as well as institutional sustainability. Economists have also been dealing with the maximization or optimization of the gains of utility or welfare or wealth but these have been answered with the use of tools or methods that are not part of science although economics has reached a point in rigor far ahead of other branches of social science.

Osman Gani showed that the optimization theory does not work. In the real world the parties involved gain from exchange and price of a commodity is higher than its marginal cost. The difference is the gain of the producer or seller. Similarly, the consumer derives benefit higher than marginal utility. The difference is the gain of the consumer. Although economists intended to study exchange (Whatley 1832) the neoclassical revolution turned it into a study of allocation (Robins 1932) ignoring the pursuit of gain. As an example, to agent "A" utility of two apples and two bananas is equal and to "B" utility of two apples and four bananas is equal. But "A" gets three bananas from "B" for selling two apples. Here he gets extra benefit of one banana. Similarly "B" pays three bananas for two apples and thus gains one banana.

Osman Gani saluted Socrates for favoring knowledge to wealth and for the teaching that power comes from scientific knowledge. Universally, knowledge in science means knowledge of causation. Once causal relation is identified, the past is known and the future is also known. Then there is no need to worry about prediction of the future. Causal explanation has no time limit and it is true forever and with certainty. Probability theory or statistical inference is meaningless in economic science but descriptive statistics of observed values are fine. Inferences are not permissible as they are based on the assumption of vague randomness and it is not acceptable in science.

Economic science is not a matter of giving opinion and it must be based on observation and analyses of the causal process. It must be kept in mind that "those who know write equations" and "those who do not know give opinions". Any subject matter in economic science must be mathematically expressible such as $Y = p \cdot q$ where Y is income of a farmer selling banana, p is price of banana and q is quantity of banana sold. It cannot be one taka more or less and it has no underlying assumption like other things remaining unchanged. It simply states that a farmer who sold q amount of banana and prevailing market price p, his income is y taka.

Science appeals to reason and expects a skeptic reader to demand explanation. Science must use mathematics to prevent probable distortion of meaning. Economists should remember Alfred Marshall saying that use math to present what you have found but not to find what you are looking for. Osman Gani cautioned that same as too many words loses clarity, too much of math not relevant to economics may also destroy clarity and even hide meaning.

Economics is not a study of how people foresee the future and plan for it, bears risk and adopts contingency plans. Instead, economics is the study of the quantities and kinds of goods and services that have economic value by gainful exchange. Osman Gani argues that the preferences and expectations that the economists use are analytical concepts to make sense of observed outcomes. These are not empirical concepts and there is no need to look into the minds of people. Studying mind of people is a job of psychologists and not of the economists.

Osman Gani quoted Bertrand Russell saying that the point of philosophy is to start with something so simple that seems not worth stating, and ends with something so paradoxical that no one will believe it. To give an example, Osman Gani says that economic science starts with very simple fact that one who is to get something must pay for it and ends up with the finding that price is not determined by demand and supply, it requires in addition, a mutual agreement between two traders who are involved in the deal. He argues that demand and supply of apple together determine the quantity of apple traded. Price of apple counted in bananas cannot be determined by the demand and supply of apples only but by the demand and supply of both banana and apple and by agreement between banana and apple traders. At least one of the two traders must arbitrate to agree on a price ratio, say two apples for three bananas. And, the price is not equal to marginal cost or marginal utility.

The diamond-water paradox provides a good example demonstrating that utility of usefulness has nothing to do in determining price. The uncritical mind supposes that price is determined by demand which is linked to a vague sense of usefulness and forgets to consider availability or supply. Once supply is taken into consideration together with demand and the agreement between buyer and seller, the price is determined. Another paradox to quote is persistence of hunger amidst plentiful food supply. It is also paradoxical that 92% of the people not eating enough are food producers (farm labor, farm women, marginal farmers etc.) while 96% of the well-fed people do not produce food. Reader may know from rural respondents in Bangladesh that most of the farmers rearing one or two cows can't drink milk and can't afford milk even for the children.

Osman Gani provided some examples of paradoxes like above that explain limitations of the previous economic theory:

- Everybody believes that the demand and supply determine price which is incorrect. Actually, demand, supply and mutual agreement between buyer and seller determine price.
- Everybody believes that trade happens when demand is equal to supply. If this was the case, plentiful of food supply and hunger could not exist together. The hungry people simply do not have enough income to buy food because their income is suppressed by artificially set low price of the produces or low wages.
- Everybody thinks that economics does study the market or the exchange process. But it studies allocation and mistakes allocation for exchange.
- Everybody treats money as a store of value as one of its "four functions". But money is simply a medium of exchange.
- Everybody thinks that economics cannot be unified and it must stay divided between micro and macro. Osman Gani says that micro and macro can be unified and the same set of tools can be applied to the micro and macro economics.
- Everybody believes that economists are always divided to make statement. It happens so because they give opinion without applying scientific methods.

Osman Gani laid the foundation of the economic science recognizing human ingenuity as following:

- Humans as two legged-animal invented trade as an alternative to natural plunder to acquire goods from strangers rather than producing directly or even going into barter. Because, by trade or exchange one can get more than what could be directly produced,
- Humans created market as an institution to permit and facilitate peaceful and gainful trade,
- Humans invented fiat money as the most powerful tool to conduct trade, and
- Humans found out how new knowledge can be turned into both power and wealth.

2. Evolution of Economic Theory

2.1 Classical Economics

To classical economists, economics was a study of wealth and welfare. To Osman Gani, this is a vague definition as wealth is not necessarily an economic subject. In biology, animals decide how to produce (meaning hunt) and divide. Earliest humans were hunters and gatherers where killed animals and fruits were wealth. In political arena, the king or queen could decide how to acquire wealth often by invasion and distribute by political will without economic considerations like productivity, efficiency, profit or cost. Classical economics was indeed political economy which is still the case and its concerns were more political than economic. To Osman Gani, welfare is not a legitimate part of any science, though it is part of all arts. Classical economics saw non-intervention in the market was based on a moral judgment which is not a subject matter of science. The belief that the market mechanism is coordinated by invisible hands that maximizes welfare has no scientific basis since it cannot be proven by observation of

facts. The reality is that the market functions though and is coordinated by the actions of the intermediaries.

A unique subject matter of economics that other sciences cannot handle is the voluntary exchange of profit. All entrepreneurs produce for profit and all traders do business for profit and not for welfare. The traders and producers are not “*Anjumane Mofidul Islam*” type philanthropic organizations. So, philanthropy which cannot be measured and objectively observed is not a subject matter of economics but the profit and exchange are. Economics can be justified as a separate science if it studies exchange as a unique kind of event not studied by other sciences. The classical economics did attempt to study exchange but without consideration of profit motive and saw market as a naturally installed institution rather than a manmade institution operated through the intermediaries.

2.2 Neoclassical Economics

The neoclassical economists defined economics as a study of the allocation of scarce resources which have alternative uses. To Osman Gani, this is a too narrow definition because it excludes exchange. This exclusion happens because the process of exchange is not within the grasp of optimization analysis. Exchange is not allocation. It requires agreement between different people and involves payment. The neoclassical economics deals with the consumers or household and firms as economic actors maximizing utility and profit respectively but ignored the presence and in fact the need for the intermediaries and exchange.

Daniel Torrez defined Neoclassical Economics on 12 Apr 2016 as “a set of solutions to economics focusing on the determination of goods, outputs, and income distributions in markets through supply and demand” (<https://www.quora.com/What-is-neo-classical-economics> downloaded on 29 May 2017). This determination is often mediated through a hypothesized maximization of utility constrained by individual income and of profits of firms constrained by cost of production employing manpower and other factors of production, available information and in accordance with rational choice theory. Neoclassical economics dominates microeconomics, and together with Keynesian economics forms the neoclassical synthesis which dominates mainstream economics today. Although neoclassical economics has gained widespread acceptance by contemporary economists, it is facing criticism like use of many unfounded and unrealistic assumptions that do not represent real situations (John Hines 19 Jan 2016 <https://www.quora.com/What-is-neo-classical-economics> downloaded on 29 May 2017) .

The classical "substance" theories of value, which took value to be a property inherent in an object, gradually gave way to a perspective in which value was associated with the relationship between the object and the person obtaining the object. Several economists in the 1870s and 1880s began to base value on the relationship between costs of production and "subjective elements," later called "supply" and "demand."

The framework of neoclassical economics summarizes that buyers attempt to maximize their gains by increasing their purchases of a good or service until what they gain from an extra unit is just balanced by what they have to give up to obtain it. In this way they maximize "utility". Likewise, individuals provide labor to firms that wish to employ them by balancing the gains from offering the marginal unit of their services (for the wage they would receive) with the disutility of labor itself—the loss of leisure. Similarly, producers attempt to produce units of a good so that the cost of producing the incremental or marginal unit is just balanced by the revenue it generates. In this way they maximize profits. Firms also hire employees up to the point that the cost of the additional hire is just balanced by the value of output that

the additional employee would produce. This came to be known as the Marginal Revolution in economics. (E. Roy Weintraub <http://www.econlib.org/library/Enc1/NeoclassicalEconomics.html> downloaded on 29 May 2017).

Neoclassical economics, the resulting equilibrium was "best" in the sense of optimization explained by marginality. **E. Roy Weintraub claims** scientificness of neoclassical economics (an economics professor at Duke University and associate editor of *History of Political Economy* <http://www.econlib.org/library/Enc1/NeoclassicalEconomics.html> downloaded on 29 May 2017).

Osman Gani does not subscribe to this view and instead is critical of it, not just for the dependence on unrealistic assumptions, but also for not inclusion of exchange to determine allocation and the intermediaries involved as crucial agent.

2.3 Karl Marx

According to the labor theory of value of Karl Max the amount of labor time necessary to produce commodities that governs their relative prices (POSTED BY ZERA | 04:03 | Karl Marx's Labor Theory of Value <http://www.economictheories.org/2008/07/karl-marx-labor-theory-of-value.html> downloaded on 03 June 2017). In his theory, value of a commodity is measured by amount of abstract labor (skilled labor converted to equivalent unskilled labor by productivity). He saw capital as accumulated past labor accrued to the capitalist by exploitation or extraction of surplus value. To Marx, labor is the only means of production. Land is a gift of nature to humanity and if someone claims it as land lord is simply an exploiter. Entrepreneurship to the extent of skills or expertise can be converted to labor equivalence and to the extent of capital is accumulation of exploited past labor.

2.4 J. M. Keynes

Keynesian economics is a school of economic thought founded by the UK economist John Maynard Keynes (1883-1946) and developed by his followers. In 1936, at the height of the great depression, Keynes' landmark book *The General Theory Of Employment, Interest And Money* caused a paradigm shift for economics: it suddenly replaced emphasis from study of the economic behavior of individuals and companies (microeconomics) to the study of the behavior of the economy as a whole (macroeconomics).

To Keynes the aggregate demand created by households, businesses and the government and not the dynamics of free markets is the most important driving force in an economy. This theory further asserts that free markets have no self-balancing mechanisms that lead to full employment. Keynesian economists urge and justify a government's intervention in the economy through public policies that aim to achieve full employment and price stability. This idea has greatly influenced governments all over the world accepting their responsibility to provide full or near-full employment through measures (such as deficit spending) that helps stimulate aggregate demand.

<http://www.businessdictionary.com/definition/Keynesian-economics.html> downloaded on 29 May 2017.

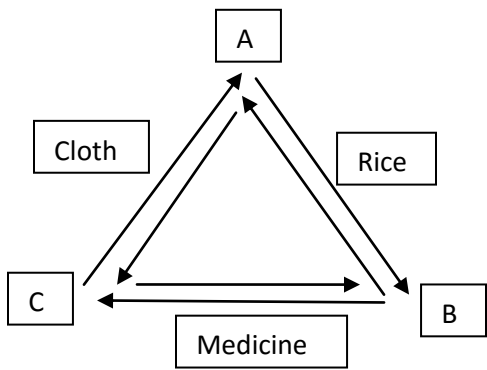
3. Determining Price

In the neoclassical allocation theory, price is determined by the equilibrium of demand and supply at individual level and value is $p \cdot q$. But actually this equilibrium fails to determine price as is claimed in the previous paradigms. In fact, demand and supply determine quantity traded and not price. Price is

determined by demand, supply and agreement between the buyer and seller arbitrated by at least one of the above two agents.

To give an example, farmer Abu sells 5 bags of rice to Dr. Bibi and in return gets Tk 1,000 which is worth 5 bags of rice. Price of rice is Tk 200 per bag. Dr. Bibi sells medical service to Tailor Chini and gets Tk. 1000 which is worth 5 packages of medical advice with drugs. Each package of medical service is Tk 200. Tailor Chini sells 5 pairs of lungi and Punjabi to farmer Abu which is worth Tk. 1000, each pair price Tk. 200. Everybody sold all that is produced and got all that is demanded. Here demand is not need but the amount that is bought at prevailing price.

Fig. 1: Exchange Model

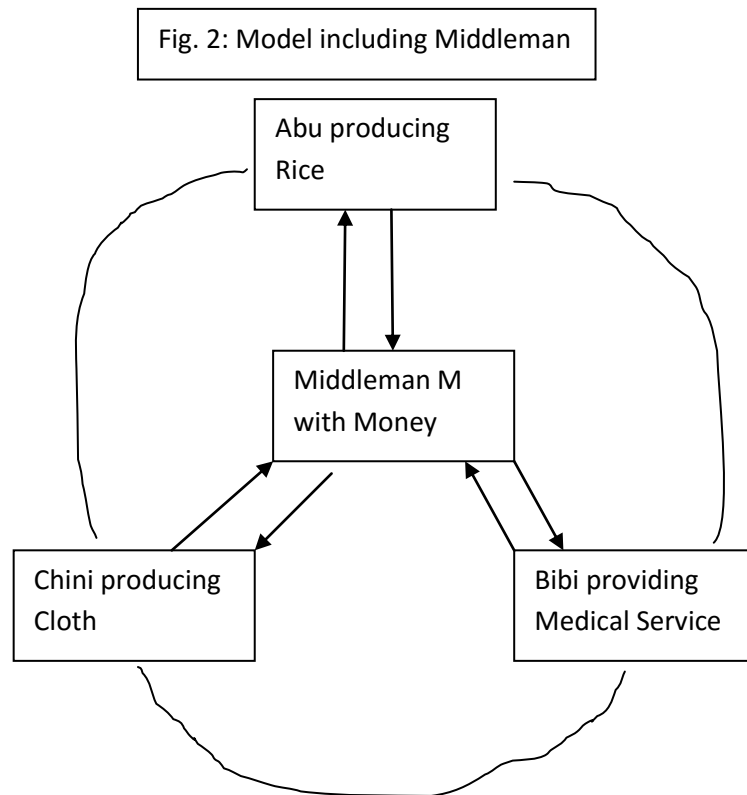


In the exchange model shown in Fig.1 above, A is farmer Abu, B is Dr. Bibi and C is tailor Chini selling rice, medical service and cloths respectively. Please note that farmer Abu needs cloth and not medical service hence, tailor Chini needs medical service and farmer. So, barter is no possible and each agrees to accept money as medium of exchange and trade happens. The outer triangle arrows show flow of traded goods/ service while the inner triangle arrows show flow of money.

What happens with the exclusion of money from the above model? Abu produces 5 bags rice as Bibi demands 5 bags. Then Bibi cannot sell medical service as Chini can't pay as Bibi does not want cloth. Chini finally agrees to take rice for the medical service and Abu accepts rice for cloth. Then rice becomes medium of exchange which did happen in the distant past. Gradually direct and indirect barter have been replaced by kori, gold, silver, metal coin and paper bill became medium of exchange.

Abu might have needed 6 packages of medical service but could not afford more than five. In this circumstance Abu won't produce 6 bags of rice as he cannot sell an extra bag. Similarly, the other two will also produce and sell 5 units even if capacity could be higher and need were higher. Here production is not maximized and it is kept at a level that is demanded. Marginal cost of producing the 6th unit of each could be lower but this rule does not help and optimization does not occur.

Making them having higher level employment by producing and selling an extra unit would require extra 200 taka pumped into the system. This can be in the form of bond, say Abu provided 200 taka loan with money coming from others or from the state in the form of bond. Then production will increase by one unit for each. Thus employment is increased and level of consumption is also increased. With the inclusion of money as medium of exchange and the middleman trading the model is modified as follows.



Here, Abu, Bibi and Chini, everybody sells respective goods and service to the middleman M and everybody is paid in money. Everybody sold 6 units and got 6 units through M. The price Tk. 200 per unit includes profit charged by the middleman M.

4. Conclusion and Recommendation

4.1 Conclusion

1. Following Bertrand Russell economic science begins its point with a very simple fact that people must pay to get something in exchange and ends up with a highly controversial conclusion that demand and supply do not determine price, they determine quantity bought and sold. Determining price requires agreement between buyer and seller and in such deal at least one of the two agents must arbitrate to set price.
2. Economic science is not for giving opinion, it must be based on observation of facts and the statements must be expressed in the form of equation.
3. Inferential statistics has no place in economic science and probability calculation is of no use. Economic science cannot make conclusion based on even 99.9% probability. The conclusion must be based on 100% observation of facts. Descriptive statistics of observed values are fine to economic science.
4. Humans are not just two-legged animals. Also they are not just rational animal. They are far above that and as alert being humans build institutions like market and create money as medium of exchange.
5. Market mechanism is not coordinated and welfare ensured by invisible hands rather market functions through the deliberate actions of intermediary agents.

6. People tend to blame middlemen unnecessarily. Economy has to operate through intermediaries, the days of barter are gone and it is absurd for a farmer of Fulchari to sell water gourd in Dhaka even if price is five times higher in Dhaka.
7. Money supply can efficiently address the problem of involuntary unemployment. Similarly, monetary and fiscal measures can address the problems of inequality, poverty, environmental and institutional sustainability etc. By these measures aggregate demand can be increased to higher potential levels to reach near full employment situation.
8. Economist has so long been divided and failed to give agreed decision as the methods and tools applied failed to be scientific.
9. Economics has so long been divided between micro and macro for the failure to apply science in it.
10. Finally, it should be made clear that economists have for long period been doing economic arts to provide policy prescription and we have just laid the foundation of the economic science.

4.2 Recommendation

We have just one recommendation and would like to announce open invitation to the audience initiate and participate in a study circle to practice economic science. The study circle may be lead and sponsored by the Bangladesh Economic Association in cooperation with the Dhaka School of Economics, universities, BIDS and other relevant institutions. We may also cooperate in this regard with the universities and other relevant institutions outside of the country.