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ESSAYS' TOPIC: HOW TO APPLY MATHEMATICAL AND STATISTICAL TOOLS IN ORDER TO PREDICT THE FUTURE OF ECONOMIC PLANS REALIZATION

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ABSTRACT
It is for sure that economics is always in the path of progress and development and for centuries, many individuals' actions have become economic theories and ideas due to their authentication and their correctness have been confirmed to all and they have been the measure of others' economic behavior, but this route is still in the evolution and new economic ideas and theories are introduced, and gradually it would be proven true or false and new economic rules would be developed. Whereas, in the course of development, variable sciences are aligned with the economy in different sections and pave and facilitate passing this route and make it quicker and more scientific, that mathematics and statistics are two of those sciences whose rules act as tools to realize future and current economic plans. In this research, the OLS model as one of the mathematical and statistical (econometric) tools is analyzed and described. Statistical data are tested by these tools and Verification of the data is revealed or sometimes variation of the economic behavior of the studied sample (sample data) is specified. Therefore, the deviations should be changed or if possible theories, ideas and assumptions which are related to be proposed, so that in the future it will be likely that they will not be realized. Since the evolution of the economy is a long-term process, thus diversion from economic programs would increase the economic risk.

Keywords: Economic planning - Econometrics - Economic Theories

INTRODUCTION
Essay's Background
Economic developers know that for appreciation of the role of mathematics in various sciences, we can express the famous mathematicians like Archimedes, Euclid, doctor Mahmoud Hesabi, Khajeh Nasir al-Din al-Tusi Khwārizmī Hakim Omar Khayyam Nishapuri, Pythagoras and others that all Have played a role in the evolution of scientific and philosophical thought that its importance is not less than other area of knowledge scientists, even those other scientist have completed their knowledge by the help of mathematics. In this regard we can point out to Khwarizmi's academic reputation related to his body of works in mathematics, especially in algebra that founded algebra science and found one of the most important stages of the this science, so the dawn of bright ray of knowledge and culture of Islam and Muslims by Islamic scholars had been illuminating the world and have been Masters of Europeans in Science and Technology for several centuries and Europeans applied algebra science by reading those books which Muslims had written, and we can also mention Pythagoras that put reasoning into mathematics. The mystic Pythagoras, the mathematician and scientist of his talents were hindered progress. He was gnostic, mathematician and a scientist that His talents had hindered his progress, and as someone has said: (one-tenth of his fame is the result of his genius and the rest of it is the interplay of his culture and guidance). Amazing contrast destroyed all mathematical and physical and metaphysical theories of Pythagoras, historians have not made any mention of the Pythagoras discoveries and inventions and scientific discoveries have been attributed to Pythagoras belong to his followers. Pythagoreans developed arithmetic and music and geometry and astronomy and make dramatic advances in medical science. At the portal of Plato's Academy it was written that anyone who does not know geometry cannot come inside. Pythagoreans believed that Pythagoras is a god who descends on earth as a human to the truth. The historical evolution of mathematical theories emanated from old Europe's largest countries, Italy, UK, France and Germany that as the result of their leadership, the scientific research

Research Article

transcended from borders of these countries. Progress of all sciences, including mathematics is the base of all theoretical and practical sciences. It becomes an Intensive competition among countries that provides the background for its further evolution. Today, more than ever, mathematics and science have profoundly penetrated into other sciences turfs. Geometry and arithmetic are two branches of the Mathematics and the development of mathematics has been achieved by these two fields, but these two basic elements of mathematics have not improved alongside each other and have always competed with each other and perhaps one's progress may have resulted in the other's recession. The first step of mathematics has taken through geometry, so the to put the role of geometry in evolution of mathematics we can cite this sentence: (anyone who does not know geometry cannot come inside) that was written portal of Plato's Academy that illustrates the importance of mathematics, especially geometry among the ancient Greeks.

Humanities that seem too far away from mathematics have made advances because of applying mathematics and so they became capable of making Substantial improvements.

Concepts: Points, lines, angles, triangles, four special quadrilaterals etc. and descriptive characteristics of geometric shapes in plane geometry and other mathematical concepts in geometry has many applications.

Problem Presentation

Given the contrast between the certainty of mathematics and statistical probabilities, how we can accomplish economic plans; the problem is that if we want to achieve economic plans and anticipate the future, how to use the tools of mathematics and statistics and econometrics to make their economic plans realized, Thus, we want to understand how to accomplish economic plans and execute the thoroughly, in order to do that we need to be fully aware of the economic programs and unravel nature of the problem; in order to implement it we should apply the various techniques that are common in econometrics which are the same mathematical and statistical tools to answer our questions.

In simpler words, we want to apply the economic plans which are economic theories and in order to meet program target.

Ways to achieve the implementation of programs are different and different techniques can be adopted, but what we consider in this essay is econometric. Due to the nature of data we have selected econometric techniques.

Questions:

Other questions arise are:

- Are economic programs development-oriented?
- Why should economic programs be realized?
- Why do we need to apply econometrics?
- Do the economic and econometric programs as economic tools need evolution?

How can we resolve the contrast between mathematics and statistics? Because mathematics gives pure answers and Statistics gives practical answers in fact, in the mathematics we have pure acceptance and truth but statistics shows the path of progress and development, it shows us how to improve from the current point to the desired point by the policy making or how to get the real regression line from the current regression line? Is the mathematical econometrics superior to statistical econometrics? Because mathematics is more accurate compared to statistics and due to this conflict how we can accomplish economic plans?

Is it possible to integrate mathematics and statistics and are the statistical errors really negligible?

Hypotheses

There is a positive relationship between economic models and econometric models

All economic models can be expressed in terms of econometric models by this assumption that instead of calculating variables we calculate parameters and error rate.

The standard scope error rate can be effective by correcting the progress in making economic theory more realistic.

Research Article

Targets

In many developing countries, economic planning is one of the most important tools to achieve higher growth rates and better living standards. Planning can be interpreted as a conscious effort to coordinate economic decisions in the long run, which aims to accelerate the development of a country. This process involves the selection of social goals, setting some quantitative goals, promoting and disseminating data and also organizing a framework for the implementation, coordination and monitoring program.

Tools of economic theory, mathematics and statistical inference are used to analyze economic phenomena.

Since the lack of full implementation of economic development programs or inaccurate accomplishment of them could be a reason to delay some programs and also creates other major problems, so the analysis tools used in these applications must be accurate due to the importance of applying econometrics in programs realization and is among the targets of this study.

Thus the minimum error in the sample data results in more accurate regression. Attaining the targets of Ols graph can lead to fully implementation of the program. Macro-econometric models are widely used in planning operations in developing countries.

A macro-econometric model is a set of behavioral equations, Institutional and definition relations that show the behavior of factors and activities of an economy.

Since our goal is full and 100% implementation of the economic program and the economic models and economic relationships and behaviors, we can succeed I doing that through mathematics and statistics that mathematics is more realistic and accurate and statistics suffers from measurement errors and errors in sampling and less accuracy, too, so we are able to consider mathematics as the criterion and, therefore, we can apply mathematical econometrics more.

Since the 100% completeness and accuracy of the proposed economic plans has been questioned and there is no absolute certainty in this area, so the full implementation of econometrics for it makes the positive or negative goals of the program more tangible, thus the economy due to being proper over the period of time they are proven valid In terms of econometrics, but these plans can also be valuable in the process of evolution of sciences and their limits decrease. Thus the fulfillment of economic plans can be useful in this context. The purpose of this paper is to apply and test economic behavior sample (society and statistical sample and its compatibility with the statistical population) according to what happened in reality (economic patterns). Perhaps a component or a group have reached to the stage of economic development that highly affected economic patterns and to make it closer to the actual pattern that is the place for pure economic theories and even develop and improve those theories.

Concepts

Economic Planning

Planning has a variety of types, but they all have common features that in order to show quantitative relation between the objectives, constraints and variables of policy instruments, a planning model is needed.

A compatible or possible answer, as a set of policy-oriented tools that meets specific targets and do not exceed the preset limits, would be achieved through these models.

In solving a mathematical planning model, analysts are trying to find the best choices in the under study system, so the answer of a linear programming problem consists of finding a set of values for the decision variables. Answer which does not exceed the limits will be known as "possible answer" (available) in practice, an infinite number of possible responses are available in the area of accessible economy (or possible area for production).

The role of objective function is to provide a basis for evaluating possible solutions; because the value-oriented judgment exists implicitly in the objective function, analyzers choose the best among the possible combinations in the accessible area. The most widely used method of mathematical programming is the linear programming (lp). In the case of two variables, the set of possible solutions of a linear programming model can be demonstrated through geometry. In programming, applying statistical models of econometrics including regression model (ols) in finding the parameters and drawing

Research Article

regression lines after taking the test, can prove economic theories and Following these theories new decisions will be taken for overcoming the limits.

Econometrics

Application of mathematical and statistical tools for measuring economic phenomena (economic theories) is called econometrics. In the hypothesis of econometric equation because of the reasons which we will express later, there is disruption sentence (u) due to the following errors:

1- The error due to sampling

2- The error due to measurement

3- The error due to failure to stipulate a model

4- The error due to human behavior

Therefore all society members cannot be asked, so we choose some people that is the error due to sampling or people won't answer accurately means Measurement and measurement tools may be incorrect. Entering the effective or ineffective variables or having a linear model but having written it as a nonlinear one they all could be the reason for error, and that if a society that experienced an effective formula it does not necessarily mean that it is effective in other communities; for example, in Germany and Iran due to the human behavior, different patterns are applied. Thus, econometrics is a measure of economic theories, but it also has presented errors.

Economic Theories

Economic theories that their legitimacy has been proven and would be cited and applied as the theories and hypotheses of economic performances measurement of community members or organizations, and other organs and accuracy of the sample group is approved or rejected.

An example for this theory is Keynes's rule that suggests: $0 < \text{Mpc} < 1$ The rate of change in consumption for per unit (e.g. one dollar) of change in income is greater than zero but less than one.

$$y = B_1 + B_2 x + u$$

$$0 < B_2 \quad 0 < B_2 < T$$

X: income Y: Consumer Spending B_2 angle coefficient

B_1

Y-intercept

The variables of the rule which were actually proposed in the model must be estimated.

Although the consumption function can be more than one explanatory variable and in addition to income, many factors and variables in this model are effective including wealth and to have model with multiple variables, according to the statistical data of model coefficients should be estimated and finally, In proportion to the data be scrutinized by existing standards and consumption pattern along with other patterns can form the simultaneous equations and simultaneously a new model of simultaneous equations be examined.

In fact another rule has been presented by Keynes called Simultaneous equations model.

In economic planning the concepts of point, line and page space and shape and set and... Have been considered as the basic or undefined concepts and the undefined are things which we accept without defining and just by perception and observation and we call them undefined or first concept. We should also find the economic balance points and business functions lines. Therefore, finding the points and lines and shapes are quite obvious and there is no need for complex mathematical and statistical equations, but after knowing these concepts, achieving it with regard to policy making and planning and decision-making is possible and this is the place that management finds its role, so for finding vague points of making decision, statistics should be adopted. Today, probability and statistics are very important, Statistics is the base of planning that both are considered as important and indispensable affairs in the management and both should be directed in an appropriate way. Management is a heterogeneous Mixture of cultural, political, economic and security conditions that its effective handling involves special abilities and conditions. Management for example can be managing a small community such as urban

Research Article

management or in the broadest sense it involves all citizens and infrastructure such as roads and building equipment and transport, social identity.

Regulation and management are among factors which have been mentioned. Statistics and Planning is one of the fundamental tools and mechanisms to achieve this important thong. Thus, according to the data and statistics we deal with the correct policy and planning and decision-making.

Therefore, according to development and economic planning we find the optimal points and then we base our decisions and policy on it. Economic planning and development guide management in order to empower economy so the evolution of management science, should also be considered by developers of sciences.

MATERIALS AND METHODS
Theoretical Basis and Methodology
In order to estimate the coefficients Econometric models some steps should be taken. Initially different econometric methods are considered. Each of these procedures can be performed with different software, so the technique and method should be selected and the nature of data determines the econometric techniques.

Econometric methods are:

OLS –WLS- ILS – ZSLS- 3SLS- VAR – Augentent Uor- ARDL- CMM

OLS model with its hypothesis are described in the following, this model can be put into all the economic theories and to test the accuracy of the data of economic theories.

OLS model:

$$y_i = \hat{\alpha} + \hat{\beta} x_i + e_i$$

$$\hat{\beta} = \frac{\sum x_i y_i}{\sum x_i} \qquad \begin{cases} x_i = x_i - \bar{x} \\ y_i = y_i - \bar{y} \end{cases}$$

$$\hat{\alpha} = \bar{y} - \hat{\beta}\bar{x}$$

Terms and classical hypotheses that must be included in the equation:

1- Being normal
2- Mean error being zero
3- Conditions of homogeneous variance.
4- The lack of autocorrelation
5- The error and independent sentence should be independent
6- Xs (independent variables) does not have

Probability Distribution; it means they are Specific Numbers

Society
$$y_i = \alpha + \beta x_i + u_i$$
$$y_i = \hat{\alpha} + \beta x_i + e_i$$
$$\Rightarrow \hat{y}_i + \hat{\alpha} + \hat{\beta} x_i$$

Sample

This model is applied when there is an explanatory variable and an independent variable and by minimizing the squared errors the value parameters is estimated. These parameters should undergo test in order to determine its validity and then we have to make decisions for the statistical population and then generalize it to the whole society and with appropriate policy planning we would be able to eliminate restrictions and constraints.

So planning for economic theory by means of econometric theories has been very effective on the evolution of economic theories and it develops economics and economic theories. With this process of economics development planning, individuals, and community and economic of all mankind attain better economic condition. But in this process, people who are effective in this area should be considered and supported and their economic model be considered.

Research Article

The Realization of Economic Programs Process

Since many mathematical concepts do not have economic meaning, by hypothesizing for these equations can give economic meaning to them and put it as a base for the study of diverse groups of people. Correct hypotheses will be accepted and incorrect ones will not. Correct hypotheses will be basis for predicting future policy and decision making and so the econometrics equation is created like this. Calculating or predicting the future is the direction of econometrics during the realization of plans. From the minimum squared error of econometrics equations we calculate the coefficients of econometrics equation; in order to do this we have a variety of options that OLS method is the most famous and important. It is the selfsame normal minimum squared. In order to make use of the OLS method in calculating the coefficients of the econometrics equation, there are some requirements that should be considered, if they do not exist, we need to establish them. Knowing mathematics and statistics helps us with attaining regression model coefficients. After attaining regression model coefficients, they should take the test in order to find whether they comply with our hypotheses or not. If the answer is positive, the coefficient will be acceptable and hypotheses are accepted and that regression model can be basis for predicting the future and decision making. In Keynes's Model, if our aim is to evaluate consumption behavior of a group among society (Sample group) and that of whole society; after calculating the coefficients of Keynes's consumption equation by econometrics method, we investigate to see whether the results of sample coefficients comply with our hypotheses or not.

It means in Keynes's Model we define the slope of consumption equation in a range of 0 to 1. If resulted coefficients are in this range, they are acceptable and if not we refute them. Finally, after calculating the coefficients with all the standards set forth, this model is able to be a basis for predicting future and making decisions.

Importance of Essay

Since the conflict between sciences makes some trouble for reaching the common or specific objectives, so it seems necessary to have specialized studies and studies that consider common areas among sciences, so that they achieve the desired results by collaborative partnership.

Innovation

According to the studies conducted we get notices education achievement of students in mathematics implies the existence of tendency towards mathematics among students in terms of their perseverance and willingness to do homework and learning more and curriculum in this context, that this tendency is different for male students compared to females, but what is certain is the necessity of mathematics improvement. Thus, economics can apply mathematics as a tool and improve them and use them to realize economic plans, so offering this course to students who enjoy more wealth and have house compared to those who suffer from some deficiencies regarding wealth and house, is more efficient. The same story is for people who have academic qualification and therefore, are able to expand mathematics, algebra and geometry. Therefore, in order to introduce innovation in realization of economic planning targets, we recommend that Elite Husbandry be done among well-off students and educated and academic people and hand pick them in order to facilitate the realization and attaining economic planning and development.

Because the better applied tools for measuring economic theories is developed, the more accurate the measurement is and the result will be certain.

Essay's Scope

Various economic development planning determine time and space of the plan and the way and method to achieve the objectives of the program, therefore, they define the essay's scope. So according to the time for every plan and place of its realization we apply a specific method. Offering new economics theories can be accepted in long term be realized and be adopted as the basis for economic practice and decision makings.

Policy Making

Establishing an academy of technical and popular Sciences among variety of sciences and can fulfill the aims of this study.

Research Article

Suggestions for Researchers

Pure separation of mathematics, statistics and economics and then combining them in common cases can be a suggestion for further study of researchers in order to realize the contrast between technical and popular Sciences and reduce the adverse impact of the contrast and the lack of correlation error of sciences decreases in achieving common goals.

Conclusion

If we express economic theories in the form of econometrics, we can adopt econometrics as a utility (tool) to organize Theories in terms of numbers and parameters and descriptive geometry and shape. By this mathematical organization (algebraic and geometric) and statistical organization (Minimizing the error) we attain better Figures, parameters and geometrical shape, and unavailable equilibrium points and lines may become obtainable in the future and vague points of decision making become clear and policy making gets facilitated. For this purpose, the development of mathematics and statistics should be carried to serve economics; so that best results will be achieved.

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