

# The Accounting and mathematical methods of the economy in Libya

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**Abstract:** The paper aims to some economists' state that accounting and mathematical economics deserve support just like other forms of mathematics, particularly its neighbors in mathematical optimization and mathematical statistics and increasingly in theoretical computer science. Mathematical economics and other mathematical sciences have a history in which theoretical advances have regularly contributed to the reform of the more applied branches of economics. In particular, following the program of John von Neumann, game theory now provides the foundations for describing much of applied economics, from statistical decision theory as games against nature and Econometrics to general equilibrium theory and industrial organization. In the last decade, with the rise of the internet, mathematical economics and optimization experts and computer scientists have worked on problems of pricing for online services, their contributions using the mathematics from cooperative game theory.

**Keywords:** Mathematical Economics, Accountant, Statistical methods, Economic Models, Linear Models, Equilibrium analysis, Matrix Algebra.

## Introduction

Mathematical economics Accountant is the application of mathematical methods to represent theories and analyse problems in economics. By convention, the applied methods refer to those beyond simple geometry, such as differential and integral calculus, difference and differential equations, matrix algebra, mathematical programming, and other computational methods (1, 2). An advantage claimed for the approach is its allowing formulation of theoretical relationships with rigor, generality, and simplicity. Most of the economic analysis of the time was what would later be called classical, economics of behaviour to apply the tools of mathematics (3).

It is argued that mathematics allows economists to form meaningful, testable propositions about wide-ranging and complex subjects which could less easily be expressed informally. Further, the language of mathematics allows economists to make specific, positive claims about controversial or contentious subjects that would be impossible without mathematics (4). Much of economic theory is currently presented in terms of mathematical economic models, a set of stylized and simplified mathematical relationships asserted to clarify assumptions and implications (5).

Broad applications include: optimization problems as to goal equilibrium, whether of a household, business firm, or policy maker static (or equilibrium) analysis in which the economic unit (such as a household) or economic system (such as a market or the economy) is modelled as not changing comparative statics as to a change from one equilibrium to another induced by a change in one or more factors dynamic analysis, tracing changes in an economic system over time, for example from economic growth (2,6,7).

## The Nature of Mathematical Economics Accountant

According to Hal R. Varian, "Mathematical economics is not a distinct branch of economics in the sense that public finance or international trade is. Rather, it is an approach to economic analysis," (8) in which the economy makes use of mathematical symbols in the statement or the problem and draws upon known mathematical theorems to aid in reasoning (9, 10).

As far as the specific subject matter of the analysis, then goes, it can be micro- or macroeconomic theory, public finance, urban economics, or what not. Using the term mathematical economics in the broadest possible sense, one may very well say that every elementary textbook of economics today will

exemplify mathematical economics in as geometrical method are frequently utilized to derive theoretical results. "More commonly, however, mathematical economics are reserved to describe cases employing mathematical techniques beyond simple geometry, such as matrix algebra, differential and integral calculus, differential equations difference equations, etc."(10).

In addition, the goal of Mathematical Economics and economic analysis; according to Lord Keynes, not to provide us with a machine or blind solution method gives us the answers does not accept the error, but it gives us a structured way of thinking helps us in the study of the problems and find a solution (11). This analysis depends on the style of abstraction which isolates complex factors one by one, and then re-installs the interaction between these various factors, to determine the effect of each of them in the course of activity the subject of analysis (12).

### **Mathematical Methods in an Economic Setting**

Economy mainly depends on the academy as a sports style, along with its reliance on literary styles. The adoption of mathematical and quantitative methods for the purposes of analyzing an economy accurately, or to analyze specific areas within the economy. These models and methods in the analysis area involve following examples:

#### ***Mathematical Economics***

The term "athlete's economy" on the application of mathematical methods means the explanation and interpretation of economic theory or mathematical ways to resolve economic issues at hand. Mathematical Economics and uses the analysis of differentiation and integration and curriculum matrix algebraic methods. Lord Keynes praised the book economist's big benefits of this method of providing the formulation and derivation of key relationships clearly in the economic model, and tougher, and simplicity (11). The Select (Paul Samuelson) in his book, "Economic Analysis Basics" in 1947, the structures of public sports in several economic areas through which the analysis of issues and economic issues, the amount of a way that can be expressed theories and equations as some scientists do economics Nobel prize in economics as the world John Forbes Nash for his theory of «equilibrium theory» a primary dependence aside purely mathematically (11).

Econometrics is one of the mathematical and statistical methods to analyze economic models derived from the data. For example, you may assume that the theory of what an educated person earns income -palmed- higher than the income earned by someone similar to him all the properties but uneducated (or lower level of education). Here come econometric measures the strength of the relationship and statistical significance. And using econometric methods to infer the number of generalizations, as finding a relationship

between pre-existing data and predict what will be the case in the future (11).

### **The Economic Models**

As mentioned before, any economic: theory is necessarily an abstraction from the real world. For one thing, the immense complexity of the real economy makes it impossible for us to understand all the interrelationships at once; nor, for that matter, are all these interrelationships of the equal importance of the understanding of the particular economic phenomenon under study. The sensible procedure is, therefore, to pick out what appeals to our reason to be the primary factors and relationships relevant to our problem and to focus our attention on these alone. Such a deliberately simplified analytical framework is called an economic model, since it is only a skeleton and rough representation of the actual economy (10, 13).

#### ***Ingredients of a Mathematical Model***

An economic model is merely a theoretical framework, and there is no inherent reason why it must be mathematically. If the model is mathematical, however, it will usually consist of a set of actions designed to describe the structure of the model. By relating a number of variables to one another in certain ways, these equations give the mathematical form of the set of analytical assumptions adopted. Then, through application of the relevant mathematical operations to these equations, we may sock to derive a set of conclusions which logically follow from those assumptions (10, 8, and 13).

### **Equilibrium Analysis in Economics**

#### ***The Meaning of Equilibrium***

What is known as static analysis? Also, like any economic term. Equilibrium can be defined in various rays. According to one definition, equilibrium is "a constellation of selected interrelated variables so adjusted to one another that no inherent tendency to change prevails in the model which they constitute" (10, 14).

Frist, the word interrelated suggests that, in order for equilibrium to occur all variables in the model must simultaneously be in a state of rest. Moreover, the state of the rest of each variable must be compatible with that of every other variable; otherwise, some variable(s) will be changing, thereby also causing the others to change in a chain reaction, and no equilibrium can be said to exist (10).

Second, the word inherent implies that, in defining an equilibrium, the state of rest involved is based only on the balancing of the internal forces of the model, while the external factors are assumed fixed. Operationally, this means that parameters and exogenous variables are treated as

constants. When the external factors do change, there will be a new equilibrium defined on the basis of the new parameter values, but in defining the new equilibrium, the new parameter values are again assumed to persist and stay unchanged (10).

### *The generation of equilibrium*

In essence, the equilibrium of a specified model is a situation characterized by a lack of a tendency to change. It is for this reason that the analysis of equilibrium (more specifically, the study of what the equilibrium state is like) is referred to as statics.

The fact that an equilibrium implies no tendency to change may tempt one to conclude that an equilibrium necessarily constitutes a desirable or ideal situation, on the ground that only in the ideal state would there be a lack of motivation for change (10).

Such a conclusion is unwarranted. Even though a certain equilibrium position may represent a desirable state and something to be striven for, such as a profit maximizing situation, from the firm's point of view, another equilibrium position may be quite undesirable and therefore something to be avoided, such as an underemployment equilibrium level of national income.

### **Linear Models and Matrix Algebra**

The linear Models and Matrix Algebra for the one-commodity model the solutions  $p$  and  $Q$  as expressed respectively, are relatively simple, even though several parameters are involved. As more and more commodities are incorporated into the model, such solution formulas quickly become cumbersome and unwieldy.

### *Matrices and Vectors*

Matrix algebra enables users to do many functions. In the first place, it provides a compact way of writing an equation system. Even an extremely large one. Second, it leads to a way of testing the existence of a solution by evaluation of a determinant—a concept closely related to that of a matrix. Third, it gives a method of finding that solution (if it exists). Since equation systems are encountered not only in static analysis, but also in comparative static and dynamic analyses and in optimization problems, you will find ample application of matrix algebra in almost every chapter that is to follow. Therefore, it is desirable to introduce matrix algebra early (10).

### *Identity Matrices and Null Matrices*

The identity Matrices and Null Matrices, one slight catch is that matrix algebra is applicable only to linear equation systems. How realistically linear equations can describe actual economic relationships depends, of course, on the nature of the

relationships in question. In many cases, even if some sacrifice of realism is entailed by the assumption of linearity, an assumed linear relationship can produce a sufficiently close approximation to an actual nonlinear relationship to warrant its use (10). In other cases, while preserving the nonlinearity in the model, we can affect a transfer motion of variables so as to obtain a linear relation to work with, for example, the nonlinear function.

### **Summary**

In fact, it is undoubtedly the best way to proceed, require the use of advanced mathematical methods in the economics, language the distinction is worth emphasizing, an analytical approach to economics is one that uses rigorous, logical reasoning of mathematics certainly helps to ensure a rigorous analysis and using it. Mathematical Economics at a lot of diagrams of shifting curves, but they don't see much algebra, or much calculation of any sort for that matter. But it is the algebra that is used to solve problems in practice. Graphs can provide insight, but the real power of economic analysis comes in calculating quantitative answers to economic problems. Every economics and Economic analysis of the different levels and methods and modalities, in addition to offer explanations of what is happening in the economic world, it offers the following benefits for each of the decision makers, owners of economic actors and consumers.

It should be noted that the results of the economic analysis do not enjoy the highest degree of reliability because the world is very complex economy, and the subject of economics deals with human behaviour, which begins economics than as rational people always act with wisdom and logic, which in fact is not free of emotions and expectations in its decision-making and economic.

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