The Relevance of the Natural Sciences Methods in Economics

Quality Stock Arts/Shutterstock

By Frank Shostak

11/18/2024 Updated: 11/18/2024

Commentary

Popular understandings of economics often attempt to incorporate the methodology of natural sciences as the supposed key to economics. Some economic experts are of the view that the methods employed by the natural sciences, such as advanced mathematics, are important tools for the assessments of historical data to establish the state of an economy. It is also believed that the knowledge secured from the assessment of the empirical data is likely to be tentative since it is not possible to know the true nature of reality. Thinkers such as Milton Friedman held that the best approach to comprehend this elusive reality is to build a model that could generate accurate forecasts.

For instance, an economist forms a view that consumer outlays on goods and services are determined by disposable income and interest rates. Based on this view, he formulates a model, which is then validated by means of quantitative methods. An important test of the model is how well it fits with empirical data. The better the fit with the historical data, the higher the likelihood that the model is likely to be accepted as a useful tool for the assessment of the future consumer outlays.

In order to secure a good predictive model, what matters here is how well consumer outlays are correlated with disposable income and interest rates. If the model fails to produce accurate forecasts, it is either replaced, or modified by adding some other explanatory variables. By following such thinking, the economist forms a view of the world of economics by means of the model's forecasting accuracy. If the model generates accurate forecasts, then it could mean that the model closely resembles the real world. However, what about a situation where the model does not generate accurate forecasts yet its structure seems to be well-designed? Or, how do we treat models of different structures that generate accurate forecasts?

To make sense of the data, one must necessarily have a theory; one which stands on its "own feet," and did not originate from the data. The heart of such a theory is that it must originate from something logically consistent, informs about the nature of reality, and cannot be refuted. A theory that rests on the foundation that human beings are

consciously and purposefully employing means to reach goals—human action—conforms with this requirement.

The theory that human beings are acting, consciously and purposefully, cannot be refuted, because anyone that tries to do this does so consciously and purposefully (i.e., he contradicts himself). Ludwig von Mises, labeled this approach praxeology.

Natural Science Methodology Not Applicable in Economics

Could it be valid to employ the methodology of natural sciences—like physics and chemistry—to economics? According to Murray Rothbard,

"This methodology [empiricism], briefly, is to look at facts, then frame ever more general hypotheses to account for the facts, and then to test these hypotheses by experimentally verifying other deductions made from them. But this method is appropriate only in the physical sciences, where we begin by knowing external sense data and then proceed to our task of trying to find, as closely as we can, the causal laws of behavior of the entities we perceive. We have no way of knowing these laws directly; but fortunately, we may verify them by performing controlled laboratory experiments to test propositions deduced from them. In these experiments we can vary one factor, while keeping all other relevant factors constant ... there is greater possibility that some other explanation will be devised which fits more of the observed facts and which may then replace the older theory."

While a scientist can isolate variables in an empirical laboratory experiment, he does not, however, know the laws that govern these particles. All that he can do is hypothesize regarding the "true law" that governs the behavior of the various particles identified. He can never be certain regarding the "true" laws of nature.

Whereas, in the natural sciences we cannot be certain regarding the true causes, this is not the case with respect to economics. The fact

that man acts purposefully implies that causes in the world of economics are known—they emanate from human beings themselves and not from external factors. In economics we do not have to hypothesize regarding the true causes—we know them. Hence, it is not required to verify these causes by means of quantitative methods. Moreover, the use of mathematics prevents the understanding of true causes in economics. According to Mises,

"The mathematical method must be rejected not only on account of its barrenness. It is an entirely vicious method, starting from false assumptions and leading to fallacious inferences. Its syllogisms are not only sterile; they divert the mind from the study of the real problems and distort the relations between the various phenomena."

Murray Rothbard had also expressed misgivings regarding the use of mathematical methods to develop or verify economic theory.
He wrote that,

"Not only measurement but the use of mathematics in general in the social sciences and philosophy today, is an illegitimate transfer from physics. In the first place, a mathematical equation implies the existence of quantities that can be equated, which in turn implies a unit of measurement for these quantities. Second, mathematical relations are functional; that is, variables are interdependent, and identifying the causal variable depends on which is held as given and which is changed. This methodology is appropriate in physics, where entities do not themselves provide the causes for their actions, but instead are determined by discoverable quantitative laws of their nature and the nature of the interacting entities. But in human action, the free-will choice of the human consciousness is the cause, and this cause generates certain effects. The mathematical concept of an interdetermining 'function' is therefore inappropriate.

"Indeed, the very concept of 'variable' used so frequently in econometrics is illegitimate, for physics is able to arrive at laws only by discovering constants. The concept of "variable" only makes sense if there are some things that are not variable, but constant. Yet in

human action, free will precludes any quantitative constants (including constant units of measurement)."

Theory the Final Judge Regarding the Facts of Reality

We suggest that if there is a disagreement between the data and the theory, one should follow the theory—provided that the theory is apodictically certain. Such a theory is going to be the final authority in establishing the facts of reality.

For instance, according to economic theory, individuals prefer consuming an identical consumer good in the present rather than in the future. This stems from the fact that, in order to maintain their lives and wellbeing, individuals *must* consume in the present before considering future consumption. Hence, present consumption must be preferred over future consumption. This is also labeled as the positive time preference.

From this it follows that the present consumer goods are at a premium to the identical basket of future consumer goods. The premium is the interest. Hence, interest rates cannot be negative. If, however, we do observe negative interest rates, this does not falsify the theory, but rather forces the analyst to figure out how this could have happened and what other variables might have been in play. Most likely he will discover that the main reason for the discrepancy between the observed data and the theory is on account of central bank monetary policies, which have distorted the market interest rates. Again, no quantitative methods are required to validate a logically-ascertained theory.

The knowledge that individuals are acting consciously in a means-to-ends framework also permits us to evaluate the popular view that the "motor" of an economy is consumer spending. Now, without means, no goals can be met. However, means do not emerge out of the blue. Some of the means, such as tools and machinery, must be produced first.

Hence, contrary to some popular thinking, the “motor” of the economy is production, not consumer spending.

Conclusion

The employment of quantitative methods in the analysis of historical data in order to ascertain the state of the economy generates suspect outcomes. Quantitative methods that are applied on the historical data cannot establish causes. These methods cannot explain, they can only describe. What is required to ascertain the causes is a logically-established theory that stands on its own feet (i.e., a theory that is not derived from the data as such). The theory introduced by Ludwig von Mises, which he labeled praxeology, complies with this requirement. This theory—which rests on the foundation that human beings act consciously and purposefully—enables us to uncover the causes in the world of economics. Ludwig von Mises held that since causality emanates from human beings and their choices, no quantitative analysis can ascertain the causes in economics. The analysis should be qualitative.

From Mises.org

Views expressed in this article are opinions of the author and do not necessarily reflect the views of The Epoch Times.

Frank Shostak
Author

Frank Shostak, Ph.D., is an associated scholar of the Mises Institute. His consulting firm, Applied Austrian School Economics, provides in-depth assessments and reports of financial markets and global economies. He has taught at the University of Pretoria and the Graduate Business School at Witwatersrand University.

Author's Selected Articles

Assumptions in Economics and in the Real World

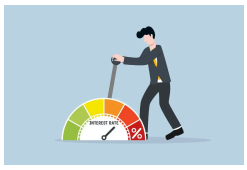
Nov 17, 2024

Who Sets the Prices for Goods?

Oct 29, 2024

Does the Central Bank Determine Interest Rates?

Oct 20, 2024



Does Technical Knowledge by Itself Drive Economic Growth?

Oct 16, 2024