

Economic Methodology: Paradox of Ceteris Paribus (CP) Law in the Context of Sierra Leone

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Abstract

Research in the subject area of economics (as a social science) has defined its ontology of scientific investigation through economic methodology; a philosophical approach entailing the proviso of empirical evidence, and backed by an understanding of human interaction in their natural habitat. The contention of economic methodology being refuted for its non-scientific means of investigation, and particularly with the application of Ceteris Paribus (CP) law, has been critically addressed in this article, with Sierra Leone as a case example. Sierra Leone is a complex economy, and issues surrounding the assumption of CP has been brought to the fore, with a view of the political economy structure being made transparent so as to make it possible for economists to address critical issues surrounding corruption (exogenous factors), not accounted for in econometric modelling. This is not necessarily that which is considered as the most obvious, with the use of CP concept, for example, the influence of naturally occurring incidents like adverse weather conditions flooding and earthquake.

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Introduction. Overview of Economic Methodology

Methodology is part and parcel of every discipline, particularly in the academia where it is rooted from philosophy. Approaches to economic methodology is similar in some way to that pursued in the natural sciences (based on laboratory observations, mostly experimental in nature), but slightly varied, given its connection with the behavioural aspect of human beings, and which makes it quite difficult for economists to provide an accurate result of outcomes from endogenous variables studied. This is a sub-discipline around the main subject of methodology, philosophically rooted on the nature of being (*ontology*), and knowledge acquisition (*epistemology*) through pursuance of observable events; an example of such event may include an in-depth study of consumer spending pattern over a period of time. While it is geared towards the study of the behavioural pattern of human beings, economic methodology approach(es) would always be confronted with reality by factoring the effect of ‘*shocks*’¹ in a system, which invariably may affect predictable outcome of events.

The study of economic methodology can be traced as far back as in the late 1970s to early 1980s (Davidsen, 2008: 3); little effort has been paid by academics on the on-going methodological concerns for which economics is an integral part, and as Dow (2001: 35) pointed, every methodologist has his/her own ontology / or ontologies, and these are based on human perception of reality - in order to address methodological realities faced by economists, she postulated four purposes of her new methodologies:

1. to inform debates in economics which have methodological origins;
2. to reveal issues in economic practice as yet unaddressed;
3. to guide progress in economics;
4. to construct an analytical account of economic methodology.

Methodology is much more about using economic phenomenon, and the existentiality of human understanding of economic methodology is construed as a critical, and dialogical concept of philosophical approach(es) to the practice of economics. Dow's interpretation of the new methodology is expressed in terms of an approach to methodological pluralism (Schröder, 2012: 779); that which favours an open critique to the combination of methodological views as a way of arriving at a solution. Some may be contrary to one's own ontology, with a better case made for the expansion of human epistemic quest for knowledge acquisition about concepts relating to economic reality of life.

Economics is a science, a branch of social science that helps people to become rational thinkers in their ethical dealings through life - critically connected with Lionell Robbins's definition as stated thus: "*the science that studies human behaviour as a relationship between ends and scarce means which have alternative uses (Rivett, 2008: 215)*". The rationality of economic decisions based on human's choice of scarce resources to meet their ultimate ends is fraught with criticism, and hence some of the problems confronted in the human manifestation of virtuous actions, may account for the display of tendencies toward seeking the 'self' as priority, and mostly pursued corruptibly. The insatiability of human needs (*exemplified as 'ends and scarce means'*) is paradoxical, thereby making it possible for human beings to display rational actions (selfishly or unselfishly) concerning the alternative use of resources, also exemplified in the CP concept (dealt with later). A rational explanation of the term scarcity as used in economic science is epistemically tied with the notion of limited availability of resources, relative to human desires for them. Hence, the use of CP can be interpreted as an implied ontological experience, given human selfish nature in creating artificial scarcity some of the time, an unexplained element by economic methodologists in the pursuance of testing outcomes from the *error term / shocks*.

Economic methodology differs completely from that pursued in the physical sciences, as it does not involve laboratory experimentation, but an exploration of the manifestation of human behaviours; the mere logical epistemic quest on how best human beings can apply rationality through opportunity cost concept. The term methodology itself is philosophical, and therefore, entails the process through which knowledge can be pursued; in this situation, it could simply involve an estimation of concepts around revenue (GDP) at a particular point in time, with a focus on the application of the under-mentioned econometric model (Jackson and Conteh, forthcoming):

$$GDP_t = \alpha_0 + \alpha_1 I_t + \alpha_2 MS_t + \alpha_3 ER_t + \alpha_4 CPI_t + \epsilon_t. \quad (1)$$

Where:

GDP_t = Gross Domestic Product

α_0 = the intercept

$\alpha_1 I_t$ = investment over a period of time

$\alpha_2 MS_t$ = money supply

$\alpha_3 ER_t$ = Exchange Rate

$\alpha_4 CPI_t$ = consumer price index

\mathcal{E}_t error = shocks (exogenous) not accounted for in the endogenous variables.

The mere inclusion of the \mathcal{E}_t term into the model has given it an attribute of an undetermined behavioural mechanism, and for which econometricists would be inclined to control / explain by the unexplained factors in an econometric model. This is what differentiate a typical mathematical model (with no error term) from an econometrics model, as the existence of ‘shocks’ⁱⁱⁱ is a strong influence in the interpretation of outcome from results (a complex process not even fully accounted for during econometric estimations).

Complexities around economic methodology may unearth itself in situations involving ‘multicollinearity, heteroscedasticity, and many more’; a statistical concept in its own right, but by the nature of econometrics (an applied statistics and mathematical concepts in economics), application of multicollinearity for example, can result in high standard error of the coefficient, which invariably may result in the failure of rejecting a false null hypothesis (a Type II error). Their complexity may also be aggravated where a small change in the input data (endogenous) can result in large parameter estimate(s). Even the most experienced of econometricians like Gujarati and Porter (2009), also cautiously raised concern about the use of heteroscedasticity (collection of random variables) which normally is a problem in regression analysis and Analysis of Variance (ANOVA), even with the use of testing procedures like F-Test to prove its scientific base.

A typical economic methodology is akin to that pursued in the physical sciences, with the difference attributed to the fact that it does not involve laboratory experimentation, and instead based on observations of human behaviours; according to Nash (2007: 56), this can be accomplished through the following steps:

- Formulation of maintained hypothesis;
- Testing of maintained hypothesis;
- Evaluation of estimates;
- Evaluation of model’s forecasting.

This is philosophically rooted, through initial formulation of hypothetical postulate(s) which needs to be tested in order to arrive at valid outcomes. The short-comings of economic methodology is the fact that, it cannot be (easily) carried out under controlled experimentation environment, and therefore, meant that the principles of Ceteris Paribus will always be an implied assumption for economic validity to prevail. It is never going to be possible for parity to be drawn between a ‘pure scientific methodology’ and that of a ‘behavioural science’, which incorporate economics / economic science; this poses great challenge as the use of economic methodology allow other forms of human explorations for the acquisition of knowledge to be tested, for example, questions relating to ontological and epistemological processes, and equally, Phronesis in understanding / interpreting human virtuous dealings through life (reference to Jackson, 2016: 3).

Ceteris Paribus (CP) Concept in Economics and its Philosophical Underpinnings

The term Ceteris Paribus is a Latin derivative of ‘Caetris Paribus’, implying “other things being equal” (Stanford Encyclodedia, n/d) - its usage is very popular in the field of economics, and more so applied by scholars like William Petty around the period of 1662, in his English publication titled “*Treatise of Taxes and Contributions*”, with an excerpt quotation shown below:

“If a man can bring to London an ounce of Silver out of the Earth in Peru, in the same time that he can produce a bushel of Corn, then one is the natural price of the other; now if by reason of new and easier Mines a man can get two ounces of Silver as easily

as formerly he did one, then Corn will be as cheap at ten shillings the bushel, as it was before at five shillings caeteris paribus. (Petty 1662)"

CP concept was also occasionally used by John Stuart Mill on the notion of an economy coping with disturbances. In terms of economic analysis / methodology, such disturbances are factored in by the \mathcal{E}_t term, which then account for error in the process of an econometric estimation. CP is methodologically construed, and underpinned by the epistemological quest to reconnoiter patterns, hinged on the grounds of human behaviour, and as well as the inclusion of exogenous / uncontrollable factor(s) beyond the remit of human beings, for example, natural disasters.

The concept of CP can be argued from an economics point of view, but epistemologically tied with philosophy, and interplay between doctrines like '*Phronesis, Hermeneutics and Etymology*'. In determining the stability of an economic system for example, the idea of CP which implies '*all things being equal*', is highly dependent on trust, and the ethical manifestation of those in authority to manage resources so as to make it possible for stability to be maintained; this may involve the basic application of laws governing demand and supply, and for demand to increase, there must be a tendency for prices to be set at a lower rate (with a corresponding increase in supply) so as to instigate the human psychology to wanting to make purchases.

The etymological (a Greek derivative meaning '*true sense*') route of CP can be explored in detailed so as to grapple with its underlying interpretations, and particularly so in contemporary society. It seemed rather a simple concept, deeply rooted in its epistemic quest to knowledge exploration, particularly in the interpretation of knowing when all things are considered stable for perfection to exist. The prevalence of exogenous condition is making the phrase fallible to human understanding, and therefore critical in the postulation of hypothetical statements; in order for the law to be considered true, it needs to be qualified by a proviso to ensure nothing else happens (Earman and Roberts, 1999: 439).

Earlier on, I gave an example of demand and price mechanism with a corresponding increase in supply, but this may cease to happen or a non-reality under conditions of an irrational behaviour displayed by human beings or even the prevalence of natural occurrences. Hypothetical postulates on methodology pertaining to CP cannot be certainly predicted, as there is no confirmation as to whether a situation might be stable for all conditions to work, and hence it is worthy for the methodologist to ask pertinent questions in order to address doubts:

1. *Under what condition is it possible for CP to operate given the fragility of things surrounding human beings?*
2. *What can be done to help policy makers plan for adversities that may occur in a system?*

There are circumstances for which methodological assumption of this may not operate, particularly in a situation where goods are hoarded by those who may selfishly decide to create an artificial imbalance in the system so as to increase their scope for higher profits, and also, the fictitious reporting of transaction by businesses in a bid to curtail their tax assessment, for example; this thereby, leaves CP opened up to serious scrutiny. The law of CP is paradoxical, and in reality there is no perfect system that may be the norm for things to work, hence a sensible approach in dealing with the error term is for methodologists to acknowledge the existentiality of unaccountable events, for example, corruption, bribery and other forms of unethical dealings.

In view of Popper's (1959:41) test of falsification, the use of economic methodology when applied to CP law is fraught with serious tension / challenges, due to its non-scientific approach to fact findings, and hence, results produced can be contentiously refuted in the real world of practical science. The inclusion of the error term in an econometric modelling has made it quite possible for Popper's falsification test to be applicable, as the influence of *shocks* can be tested through the use of different techniques (t-test, z-test, etc.), so as to enable the economic scientist

to ascertain conformity with predictable outcomes, as would be in the case with the physical / experimental sciences.

As explained by Rol (2012: 31), the test of the ubiquitous nature of Ceteris Paribus assume that all conditions external to the explanatory variables (endogenous) are stable, and hence, a change in explanatory variable(s) nullifies the test outcome, and not necessarily the hypothesis. Hypotheses are mere statements opened up to being refuted, and their true outcomes can only be justified if proven to be true under rigorous test procedures carried out; in the case with physical sciences, this can be done using experimental procedures. Economic methodology assumption of CP laws can equally be subjected to tests as already addressed, to ascertain conformity with scientific theorisation, and particularly in line with Popper's test of falsification.

Reality based on Human Behaviour and Natural Occurrences with Reference to Sierra Leone

The application of economic methodology to CP law in Sierra Leone is fraught with serious questioning around 'exogeneity', which may affect the existence of normalcy in a model operation. Sierra Leone is a country that is exposed to vulnerable situations (not so as a result of the non-existence of natural wealth), but more to do with poor management of its natural wealth (linked with the concept of 'resource curse hypothesis' – see Jackson, 2016 [forthcoming]), and the unaccounted fraudulent income generated from various veiled sources, and also, selfishness on the part of (public / private) officials in acting ethically. Hence, the use of economic methodology and its postulation will always be opened to critical discourses; firstly, as a result of the falsified accountability of data generated, and secondly, the omission of unaccounted exogenous factors to address the effectiveness of CP law. In economics, and particularly econometric study of occurrences, there is a high tendency for assumptions to be made about CP, and in most cases, these can be non-scientifically proven (in comparison with laboratory experimentation), and thereby exposing it to criticism on the basis of Popper's test of falsification.

Sierra Leone is particularly vulnerable to shocks (uncontrollable situations such as natural occurrences), due to selfishness manifested by those in position of trust, thereby making it hard for condition of CP to be held true in the construct of concepts. To say that the economic application of CP is non-scientific, is a mere assumption as econometric studies are normally carried out under different investigative approaches, similar to that of the pure sciences:

- Cross sectional data: a procedure entailing the process of observing different subjects (firms, individuals and countries) at some point in time; analysis normally allows comparison between subjects under investigation.
- Longitudinal study: a type of correlational test carried out through study of one particular object, for example, either for or an individual attitude towards spending habit. Longitudinal test procedures can be done repeatedly over a period of time to ascertain conformity with observable events. Mostly used in the social sciences, and particularly so in areas like Sociology and Economics in determining variances, for example, the rate of poverty in a country or by a particular socio-economic group.
- Panel data study: this is the case with multiple studies of variants over a period of time, and econometrist can apply time series study to ascertain outcome(s).

Each of these to some extent, have an applied scientific connotation, and with outcomes tested in the context of Sierra Leone, for example, as noted in Suzuki and Bangura (2011) SPSS Econometrics study, and also in two sets of studies by Braima and Kossu (2011 and 2013).

On a wider note, the scientific justification of CP in economic methodology study, and particularly in the case with Sierra Leone, may be inclined to incorporate concepts on 'shocks'

pertaining to the influence of natural disasters or other forms of externalities, for example, as seen in the case with the impact of *BREXIT*ⁱⁱⁱ on the global financial market with fluctuations in leading global currencies (Pound Sterling against the Euro and vice versa); critically, the situation is opened to accommodate human factors (Boulding, 1970:126; Nash, 2007: 54; Rol, 2012: 38-39) like corruption and selfishness / greed (already addressed) into the computational process, and where possible, emphasis on the error term (\mathcal{E}_t) to test for such influences.

In the case with Sierra Leone, corruption is an endemic phenomenon which have eroded virtuous character of citizens to manifest kindness in their dealings or transactions, and hence the branding of the country's inclusion into the resource curse hypothesis category (Jackson, 2016 - forthcoming). The test of CP can be well justified for its (pseudo)scientific approach to methodological investigation when the human elements are incorporated, and more so, in an epistemic manner that justify its scientific approach to knowledge acquisition. To the pure sciences, economic methodology as a social phenomenon can never be pursued in the same manner as that seen in the physical sciences, that is, findings based on traditional scientific experimentation (mostly under controlled situations); the validity of its outcomes, even though prone to scrutiny, can be held authentic in the domain of theoretical proposition.

The Way Forward

Given the contention associated with the concept of CP, there is a negotiable way forward on the authenticity of its usage and application for theoretical conjecturisation. One will agree to some extent with critics (Nash, 2007), about the high level of over-simplistic usage of the concept in economics, and particularly in the plight with Sierra Leone, where situations are complicated by mistrust in human behaviours (selfishness and greed). Economic methodology, and the use of CP must be thoroughly investigated, in terms of their proneness to shocks, and more so, the inclusion of human factors in proving outcomes. Human influences are rarely considered as relevant when dealing with CP concept, and this may be due to the fact that the original idea around it has been focused on natural shocks, for example, influence of adverse weather conditions, as opposed to how human actions are interfering with outcomes of results. Professionals need to come to terms with it, and the fact that it is not dealt with in the open, may always create / cast doubts on CP to justify normalcy in the theorisation of economic concepts. The scientific nature of economics will always come under scrutiny by pure scientists due to the fact that its approach to testing / proving theoretical propositions (hypothetical postulates) is completely different, and would always be highly dependent on human factor, that is, the manifestation of behavioural dispositions, for example, spending and consumption pattern, and even other social aspects like measuring poverty rate in an economy.

CP can be applicable were trust and honesty are present in the manifestation of the influence of human factor in the computation of economic models. It is very likely that the hegemonic influence of political structure(s) in the economy is making it very impossible for economists in particular to be very opened about doubts / concerns relating to human influences, and their impacts on the validity of outcomes. An economy where the hegemonic influence of political governance is a dominant factor, people in areas concerned with the computation of data relevant for policy decisions, may be hesitant to express doubts / concerns. In most cases, professionals are too hesitant in '*blowing whistle*' when things are not right, because of their fear of not losing a job / being ostracised; this is an attestation of a typical situation where the '*all things being equal*' conditions can never be held true, thereby leaving CP law inconsistent with scientific test procedures. The semantics of oversimplifying CP in the social sciences and particularly amongst professional economists is making refutable claims put forward by pure scientists about the non-scientific nature of economics being proclaimed as true.

Despite its social science approach to investigating concepts, the use of the term CP has to some extent expressed the application of scientific approach when investigating concepts. Because of the nature of its investigation involving human beings, outcomes cannot be carried out in a laboratory, and equally, its refutation cannot be justified on the grounds of its pseudo-scientific shortcomings. In the context of Sierra Leone, the complexity of the political economy system is making it difficult for the application of economic methodology concepts around CP to be effectively addressed, simply as a result of unexplained factors like ‘*lack of trust, and more overtly, corruption*’.

Conclusion

In my view, an outcry critique of economic methodology attributed to being non-scientific is specious, given the fact that [pure] scientists are oblivious concerned about the complex nature of social science investigations involving human beings - economic rationality on the basis of behavioural patterns of human beings in their natural habitat is one of the most complex thing to decipher. Critics around the usage of CP term to justify economic methodology investigation needs to be done cautiously, particularly in Sierra Leone’s situation where the virtue of being virtuous is lacking (for the majority in position of trust), and which in many instances is rendering economists powerless in executing their duties as qualified professionals. As explained by Zaman (2014: 5), there is a failure on the part of the pure sciences in their understanding of human (economic) rationality, and on which economic methodology is modelled; in the religious scriptures of Genesis (3: 1-7) and similar references in the Quran, God made us in his own likeness, but with the free-will to make choices (good or bad, with consequences), and there is no scientific proof to predict the CP condition on which human being is to manifest perfect rational behaviour in order to reveal the ideal situation for which scientific experimentation is focused in order to ascertain proposed theoretical postulations.

Therefore, the political economy structure should encourage manifestation of professional integrity; that which makes it possible for economists and other professionals to flag up concerns about unaccountable factors such as corruption (an inherent attribute of the human race), and other forms of malpractices in the process of estimating econometric model(s). This will obviously help to dampen doubts about the use of CP concept when economic methodology is used to address economic reality, particularly as seen in the case with the Sierra Leone economy.

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Notes

ⁱ The concept as used in Economics is an unpredictable event that brings about significant change in an economy; their occurrences are unpredictable, and can bring about change in market forces involving demand and supply in the commodity market. Shocks comes in different forms (effect of natural disasters such as adverse weather conditions, and human involvement such as smuggling, hoarding), and which may impact on simple prices of commodities and even the financial market, leading in most cases to either an increase or a decrease in currency exchange rates.

ⁱⁱ Shocks as used in this context refer to a complex situation, and in many cases undecided outcome of events. In one hand, it is a social process (Cuomo and Labate, n/d) which cannot be easily decided upon due to the complex behavioural dispositions likely to be manifested by people, while on the other hand, its outcome cannot be easily determined due to the prevalence of natural occurrences.

ⁱⁱⁱ The use of this term is tied with Britain's exit from the EU, and for which the ramifications is enormous, both on the UK and the EU economies.