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METHODOLOGY OF MODERN MACROECONOMICS – A CRITICAL PERSPECTIVE

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Abstract

Methodology is the field which is concerned with the foundations of economics. Macroeconomics is a particularly important subject for methodological analysis for a variety of reasons. Complaints about the nature and state of the economics discipline throw considerable doubt on the capacity of macroeconomics, as well as many of its strands, to explain or address real world events or to facilitate policy evaluation. The purpose of this study is to raise concerns about the causes of failure of macroeconomics. The study aims to shed light on major methodological issues in macroeconomics and to point out that current controversies in macroeconomics have all methodological roots. It demonstrates that micro-foundations, aggregation, ceteris paribus conditions, unrealistic assumptions and extensive use of formal mathematical modeling are among the methodological fallacies behind macroeconomics' failure. Finally, it concludes that methods of macroeconomic analysis should not be designed without explicit regard to the nature of macroeconomic phenomena.

Key Words: Economic methodology, Macroeconomics.

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MODERN MAKRO İKTİSADIN METODOLOJİSİ– ELEŞTİREL BİR BAKIŞ AÇISI

Öz

Metodoloji, iktisadın temel yapısı ile ilgili olan bir alandır. Makro iktisat pek çok nedenden dolayı metodolojik analiz açısından özellikle önemli bir konudur. İktisat disiplininin doğası ve durumuna ilişkin rahatsızlıklar, diğer dallarının yanı sıra, makro iktisadın gerçek dünya olgularını açıklama veya ele alma veya politika değerlendirmelerine olanak sağlama kapasitesine önemli ölçüde şüphe düşürmektedir. Bu çalışmanın amacı makro iktisadın başarısızlığının nedenlerine dikkat çekmektir. Çalışma, makro iktisattaki başlıca metodolojik sorunlara ışık tutmayı ve makro iktisattaki mevcut tartışmaların tümünün metodolojik kökenli olduğunu göstermeyi amaçlamaktadır. Çalışmada, mikro temeller, toplulaştırma, ceteris paribus koşulları, gerçek dışı varsayımlar ve formel matematiksel modellemenin yaygın kullanımının makro iktisadın başarısızlığının arkasındaki metodolojik yanılgılar arasında olduğu gösterilmektedir. Son olarak çalışmada, makro iktisadi olguların doğasına açıkça bakılmaksızın makro iktisadi analiz yöntemlerinin tasarlanmaması gerektiği sonucuna varılmaktadır.

Anahtar Kelimeler: İktisat metodolojisi, Makro iktisat.

INTRODUCTION

Macroeconomics is the sub-field of economics that examines the overall working of an economy. Its main concern is to develop a comprehensive understanding of how the economy functions as a whole. In this context, macroeconomic theorization attempts to devise a set of principles that explain macroeconomic phenomena, form the basis upon which economic policy is designed and implemented and help to make predictions about future. Given the complexity of the real world, macroeconomic theories simplify reality and convert it into abstract reasoning. Thus, the intellectual problem for economists is how to capture the complicated behaviour of interacting individuals engaged in economic activity (Snowdon and Vane, 2005: 4).

So how successful is macroeconomic theory in delivering explanations and understanding of real world economic systems? There is, in fact, a series of complaints about the nature and state of the economics discipline which throw considerable doubt on the capacity of many of its strands to explain or address real world events or to facilitate policy evaluation (Lawson, 1997: 3). Cassidy tells in *The Decline of Economics* (1996) that there is widespread skepticism about the usefulness of ever more complex theories, especially among policymakers (Cassidy, 1996: 50). He argues that economists don't even have an agreed-upon story of how the economy as a whole works. Blaug (2002) states that "modern economics is sick" because it has increasingly become an intellectual game played for its own sake and not for its practical consequences (Blaug, 2002: 36). It turns out that there is something wrong with economic theory and this situation appears to be increasingly recognized both inside and outside of the academy.

Economics is a social science where we have a very little opportunity for experimentation. This is particularly true of macroeconomics. Accordingly, economists run "thought experiments" about the causes and consequences of various macroeconomic phenomena. Economic models and theories, at this juncture, are essential tools for economists. Macroeconomic theories that can explain satisfactorily the behaviour of interacting macro variables and are supported by the available empirical data will enable economists to make better predictions about the consequences of alternative policy actions. Thus, the design of successful economic policies aimed at achieving certain macroeconomic goals depends, to a large extent, on the availability of internally consistent theoretical models of the economy. On the other hand, one of the major goals of contemporary economics is to establish an empirical discipline that connects theories and models to the actual world we live in. In that perspective, one question, which has a wider relevance with the dominant orientation of the economics discipline, comes up: How appropriate are the

conventional economic methods and procedures to the successful investigation of macroeconomic reality? It follows that methodological awareness in approaching theoretical and empirical issues is of particular concern for macroeconomics. Methodology is the field which is concerned with the foundations of economics. Accordingly, it provides a framework within which we can discuss a range of issues which are important for modern macroeconomics– why macroeconomics is the way it is; what are its limitations and possibilities; whether or not diversity within macroeconomics is to be explained by methodological concerns, and so on.

The purpose of this study is not merely to mention the limitations and the problems of macroeconomics but also to raise concerns about the causes of them. The primary aim here is to shed light on major methodological issues in macroeconomics and to point out that current controversies in macroeconomics have all methodological roots. In this context, the study begins with a discussion of why macroeconomics is important for methodological analysis. Then, it proceeds by a review of methodological issues currently facing macroeconomics. Finally, it concludes with some final thoughts on the subject matter.

I) WHY IS MACROECONOMICS IMPORTANT FOR METHODOLOGICAL ANALYSIS?

The birth of macroeconomics as a coherent and systematic approach can be traced back to the book, *The General Theory of Employment, Interest and Money* (1936), written by J. M. Keynes, who is known as the "father" of macroeconomics. It is important to highlight that economists before Keynes considered what we now call macroeconomic issues. However, the Great Depression had a dramatic effect upon thought about such issues. On the other hand, the efforts to gain economics a fully autonomous disciplinary status by the late nineteenth century and improvements in both the methods for economic theorizing and statistical techniques for economic data analysis eventually led economic thought to make considerable progress in the twentieth century (Woodford, 1999:1). Keynes's General Theory had a profound intellectual impact in this process and laid the foundations for modern macroeconomics.

Although the novelty of Keynes's ideas were sometimes challenged by his contemporaries, the development of Keynesian economics was undoubtedly central to the development of modern economics. It was not only a change in mainstream economic views but also had an important mission to make macroeconomics a central subject in the economics curriculum. Over the years,

economics has played a more important role in the world at large and economic ideas have become influential in a number of areas outside the discipline's boundaries including sociology, politics, finance and law. Economic advisors have come to play a major role in the formulation of government policies and the policies of international institutions such as the IMF and the World Bank. Accordingly, macroeconomics as being the branch of economics concerned with fluctuations in the overall level of business activity, with the determinants of inflation, interest rates, and exchange rates, and with the effects of government policies – such as fiscal policy, monetary policy, and exchange rate policy – has proven to be of practical use in the design of those policies and for economic forecasting as well.

The rise of macroeconomics as a twentieth-century development is important in terms of the evolutionary process of economic theory. On the other hand, throughout the twentieth century, the evolution of economists' thinking on macroeconomics was far from smooth. Historical events that challenged existing theories and resulted in empirical failures led to the evolution of new ideas, which in turn, gave rise to "revolutions" and "counter-revolutions" in the conventional macroeconomic wisdom. Although prolonged disagreements and controversies were the prominent feature of the twentieth-century macroeconomic thought, today's economists, too, often differ substantially. One of the main reasons why macroeconomics is a particularly important subject for methodological analysis is that there seems to be much greater disagreement amongst economists on macroeconomic questions than on microeconomic ones (Backhouse and Salanti, 1999: 160).

Macroeconomics is largely an applied science where models and theories are constantly evaluated against the data. The relationship between theory and data has become a key theme for macroeconomics over time. Given the way macroeconomics has developed over the course of more than fifty years, econometrics forms a major part of this relationship. Along with the evolvement of econometric models, macroeconomics became a more quantitative subject. On the other hand, among the applied fields, macroeconomics has a special place in modern economic analysis. Though the increased availability of micro data sets and appropriate computing technology have changed the situation substantially in recent years, econometrics has generally been more prominent in macroeconomics than in microeconomics (Backhouse and Salanti, 1999: 160). This is one of the most obvious methodological gaps between macroeconomics and microeconomics, which indeed constitutes another reason why macroeconomics is a particularly important subject for methodological analysis. Additionally, macroeconomics,

in itself, raises methodological concerns about the use of econometrics. This is especially due to the time series properties of macroeconomic data.

What we know today about the economic system consists not only of theoretical constructions but it is also comprised of all our insights, discoveries and past experiences. Economic knowledge about the way that economies function is the result of a prolonged research effort often involving intense controversy and an ever-increasing data bank of experience. So, it is to a large extent historically determined. Besides, the issues that macroeconomics deals with are mostly determined by factors outside the discipline. This is one of the reasons that lead to controversy in macroeconomics because it may result in limited knowledge about how the economy works. Therefore, for a range of issues that macroeconomists investigate, they need to take into account wider influences, such as political factors, and differences in the value judgements, social aspects and methodologies of various economists.

The science of economics always draws sharp criticisms from both outside and inside the profession. Those criticisms are mostly directed to the "failure of macroeconomics", which refers particularly to the failure of macroeconomic forecasting. Global economic crises have been the key factors that raise arguments about the predictive failure of macroeconomics. This failure is, to a large extent, the result of the fallacy that the laws of macroeconomics completely govern the real-world economy. In modern macroeconomics, to develop and rely on models is common practice among economists. However, these models fail to account for the actual evolution of the real-world economy because they disregard some key factors that govern market activities. The most remarkable feature of the standard models in modern macroeconomics is that they implicitly regard markets and economies as inherently stable. Thus, macroeconomists, who imposed unrealistic restrictions on their theoretical models to assure stability, unavoidably neglect external shocks and internal dynamics of macroeconomic system, and consequently fail to warn the public about the threatening system crisis. As Colander et al. point out:

"*This failure has deep methodological roots. The often heard definition of economics—that it is concerned with the 'allocation of scarce resources'—is short-sighted and misleading. It reduces economics to the study of optimal decisions in well-specified choice problems. Such research generally loses track of the inherent dynamics of economic systems and the instability that accompanies its complex dynamics. Without an adequate understanding of these processes, one is likely to miss the major factors that influence the economic sphere of our societies. The inadequate definition of economics often leads researchers to disregard questions about the coordination of actors and*

the possibility of coordination failures. Indeed, analysis of these issues would require a different type of mathematics than that which is generally used now by many prominent economic models" (Colander et al., 2009: 3).

Though they do not exhaust the subject, the issues outlined above simply summarize why macroeconomics is a particularly important subject for methodological analysis. The methodological issues arising in macroeconomics are just as important as those arising in microeconomics and thus deserve more attention. The following section includes a brief discussion of the state of modern macroeconomics from a methodological point of view.

II) THE STATE OF MODERN MACROECONOMICS FROM METHODOLOGICAL PERSPECTIVE

Our current understanding of macroeconomics is the result of an evolutionary process in which the failure of old ideas has eventually led the rise of new ones. As Blanchard (1997: 3) points out "*…macroeconomics is the result of a sustained process of construction, of an interaction between ideas and events*". Longstanding disagreements and controversies that have been the driving forces behind the rise and fall of ideas and theories have frequently had methodological roots. In this context, providing an adequate account of the current state of macroeconomics requires exploring the methodological as well as the theoretical issues within the discipline. Surely there is no completely general answer that summarizes the present methodological state of modern macroeconomics. There exist sharp criticisms, concerning the health of macroeconomics from methodological perspective, from both outside and inside the economics' academy. Lawson (1997) declares that within the academy, the unsatisfactory nature of the prevailing state of affairs seems to be acknowledged by non-orthodox and orthodox economists alike. He asserts that contemporary academic economics is not in a healthy state (Lawson, 1997: 3). Lawson's reference to the problems which throw considerable doubt on the capacity of many of economics' strands to explain, or even to address real world events or to facilitate policy evaluation are of particular concern to macroeconomics. However, not everyone believes that macroeconomics is itself in poor condition relative to microeconomics. McCallum (2002) argues that the extent of disagreement is about the same in the two sub-disciplines. According to him, the current state of macroeconomics (as well as monetary economics more specifically) is not as highly unsatisfactory as has been claimed by various critics (McCallum, 2002: 90).

In fact, much of the dispute over the state of macroeconomics is primarily related with methodological issues. Despite the existence of a long

history in the realm of macroeconomic theorization, there are still controversies over some key concepts for they don't have sound methodological bases. In contrast to micro-level analysis, a macro-level analysis is concerned with the behaviour of economic aggregates. So, macroeconomists need a profound theoretical foundation in addition to concrete methodological tools to explain the interactions between different economic units. In this respect, to explore the methodology of macroeconomics is surely a broader topic than it might at first appear. Centerpiece of a wide-ranging content, some of the current methodological issues that arise in macroeconomics are discussed briefly in the following sections.

A) The Problem with Micro-Foundations

The development of Keynesian economics led to the rise of macroeconomics as a second main branch of economic theory in addition to microeconomic theory. By this development, which is often referred to as "revolution", not only did macroeconomics gain a new content and importance, but it also gained a separate disciplinary status. However, the nature of the connection between the principles of macroeconomics and the more familiar principles of microeconomic theory was left unclear. Although the methodological gap between the two sub-disciplines was not really so extreme in the beginning, it widened as macroeconomics became a quantitative subject with the development of econometric models as its central aim. This made statistical relations between aggregate variables even more important than theoretical notions, so that the connections with the elements of microeconomic analysis became less and less explicit (Woodford, 1999: 8-9). Keynesian-type macroeconomic analysis of the 1950s and the 1960s, was challenged by Lucas critique that attacks large-scale macroeconometric models that lack foundations in dynamic economic theory. According to Lucas (1976), the parameters of those models are not structural, so that they will necessarily change whenever policy changes (especially when economic agents behave strategically in anticipation of or in response to policy changes). Therefore, policy conclusions based on those models will potentially be misleading. So as to make their models secure against the Lucas critique, modern macroeconomists began to build their models based on deep structural parameters, the so-called "micro-foundations" that are assumed to govern individual behaviour. The idea is that if these models can explain observed empirical regularities, then, individuals' responses to any policy change can be predicted. Subsequently, individual decisions can be aggregated to calculate the macroeconomic effects of the policy change.

However, the problem with micro-foundations is that they often lack a strong empirical foundation. Complexity and heterogeneity of individual behaviour and institutional factors are insufficiently captured in modern macroeconomic models (Vermeylen, 2013: 2). This, in turn, limits their ability to establish clear links with microeconomic evidence, which is already tangled. The lack of evidence for micro-foundations induces modern macroeconomic models to make a set of assumptions such as representative agent, which refers to the typical decision-maker of a certain type. Many macroeconomic models today are characterized by an explicitly stated optimization problem of the representative agent, which may be either a household or a firm. The derived individual demand or supply curves are then used as the corresponding aggregate demand or supply curves.

It is therefore apparent that micro-foundations in macroeconomic models may not be 'descriptively realistic'. They are, in fact, rather simplified to describe positively the microeconomic reality that they can at best mimic some aspects of it. The fact remains that for as long as their micro-foundations are not descriptively realistic, which means the calibrated or estimated preference parameters may be largely different than their real world values, modern macroeconomic models may tell little about preferences of the population. Thus, the claim that these parameters do reveal the preferences of the population is in itself highly controversial (Vermeylen, 2013: 2-3). Yet, this does not entirely invalidate modern macroeconomic models because they are not tested against microeconomic evidence. Lucas asserts that economists need to test these models as useful imitations of reality by subjecting them to shocks for which how actual economies, or parts of them, would react (Lucas, 1980: 696-7). Nevertheless, the issue of micro-foundations is one of the prevailing sources of criticism that has been raised against modern macroeconomics.

B) Aggregation Problem

Another discussion in the economics literature refers to the reality of macroeconomic aggregates and aggregate relations. Aggregation is a matter of simply summing up the behavior of individual agents. Microeconomic theory treats the behavior of optimizing individual agents. The attempt to analyze the aggregates of macroeconomics leads to the theories that construct such aggregates from behavior of individual agents. Generally, aggregation problem is a scientific task to reduce or combine detailed information when data are too numerous or in too much details to be manageable. The question of whether the aggregates used in macroeconomics refer to anything real is still ambiguous.

The distinction between individual and aggregate relationships has a long history in economic theory. Formerly, assuming a straightforward analogy between individual and aggregate relationships was common practice among economists. Hicks, for example, tells that the method of transition (from individual to aggregate units) he pursues in his *Value and Capital* is made by using the simple principle "…that the behaviour of a group of individuals, or group of firms, obeys the same laws as the behaviour of a single unit" (Hicks, 1946: 245). However, there are two main points in the literature on aggregation that are of interest from a methodological point of view (Janssen, 1998: 5). Firstly, the early literature in macroeconomics shows that only the one from the following two statements can be accepted by macroeconomists: 1) the structure of aggregate relationships is analogous to the structure of their microeconomic counterparts; 2) aggregate variables are simply the sum of the individual variables. Janssen (1998) states that macroeconomists have to remove one of the statements from their terminology since they cannot accept both of them. The other important point is that there is no *a priori* ground to believe that aggregate functions satisfy all properties in general equilibrium theory. More recent literature shows that by imposing some restrictions on the aggregation procedure some properties of aggregate functions are created that do not have their individual counterpart indeed.

Aggregation is the process of connecting the microeconomic to the macroeconomic. However, there is no one-to-one link between micro and macro relationships. Different approaches have been followed to solve the aggregation problem [see: Klein (1946); May (1946); Pu (1946)] but whichever method is adopted, it is not possible to allow simultaneously for aggregate variables to be equal to the sum of micro level variables and for macro relationships (e.g. market supply function) to be analogous to micro level counterparts (firm's supply function). This, in turn, indicates that it is an unavailing attempt to search for a definite and unique micro-foundation for macroeconomic relationships (Bergh and Gowdy, 2003: 66-67). Macroeconomists cannot build aggregated variables with similar definitions that they have for microeconomic agents. What we know about the behavior of macroeconomic variables is based largely on our understanding from empiricism and the laws of the inter-relationship among macroeconomic variables are rare to find. In this context, the analytical use of macroeconomic aggregates lacks a sound foundation. Moreover, the level of aggregation necessary in macroeconomic models requires unrealistic assumptions and this weakens the correspondence between the variables in the theory and the qualitatively distinct variables that are empirically observed (Hoover, 2003: 13). Bergh and Gowdy (2003:67) argue that microeconomic and

macroeconomic theories and models can provide complementary descriptions of economies.

C) Testability of Macroeconomic Theories

Testing macroeconomic theories through econometric models and techniques is one of the major practices to analyze aggregate economic phenomena. Macroeconomic theories are usually tested by using non-experimental data. The obvious differences between experimental and non-experimental (or historical) data are of crucial importance for testing economic theories. However, an economic phenomenon cannot be isolated from other influencing factors. Accordingly, this makes it somewhat unlikely to draw causal relations based on the observed data alone (Orsi, 1993: 377).

Following philosophers of science, many economic methodologists have concerned about Duhem-Quine thesis (which states that the truth or falsity of a scientific hypothesis cannot be determined independently of a network of auxiliary hypotheses or background assumptions) and called into question the possibility of conclusively testing any economic theory. Economic theories rely largely on *ceteris paribus* conditions and auxiliary assumptions which make it possible to save any theory from refutation. They are, in fact, typical assumptions for controlled experiments, while the available economic data are the result of uncontrolled and passive experiments. This state of affairs make it difficult to figure out if a particular relationship found in the data reveals an important truth rather than a spurious link that mimics a causal relationship (Thoma, 2013). Moreover, since economics is dealing with complex and hard-to-control systems, the contents of the *ceteris paribus* condition cannot be controlled easily. This is one of the reasons which dampen the predictive and technological successes of economics as well as the ability of its theories to capture "the true and the real" (Mäki, 2011: 3-4).

The issue of assumptions is both ubiquitous and central to macroeconomics and to economics more generally. Yet, economic methodologists might seem to pay relatively little attention to this theme. Most of the discussion by economists has actually centered around the issue if the assumptions of a given economic theory are (or ought to be) realistic or unrealistic since Milton Friedman's statement that realism of assumptions are irrelevant (Mäki, 1994: 239-40). According to Friedman, the significance of a theory does not depend on the realism of its assumptions (Friedman, 1953: 14). Friedman's "as if" argument refers to an instrumentalist methodology in economics which usually holds the position that assumptions do not need to be true in order to be useful for explaining and predicting economic phenomena.

In this regard, this position also justifies the hypothesis that a set of micro-foundations that are descriptively unrealistic may nevertheless be useful for explaining and predicting the macroeconomic phenomena (Vermeylen, 2013: 3).

In relation to econometrics, the theory testing problem is also complicated by the point that economists are required to put empirical models between theory and data. This refers to the fact that it is possible to test empirical models but not to test theories directly. Under these circumstances, it is questionable whether the tests of empirical models can be construed as the tests of the underlying theories. The main concern here is when economists want a theory to be capable of being used for empirical purposes, they need to translate it into an empirical model. Therefore, an empirical model represents "a natural linkage between economic theory and observed data" (Orsi, 1993: 366). On the other hand, Thoma (2013) asserts that the biggest problem in macroeconomics is not the imaginative construction of models but the inability of econometricians to definitively choose one model over another. For an economist acting as a scientist, if data cannot settle theoretical disputes, then the claim for scientific validity of models has little or no merit.

Although testing macroeconomic theories by using non-experimental data have been traditionalized, the fact remains that a wide variety of macroeconomic models and theories have been examined using controlled laboratory experiments over the past twenty five years (Duffy, 2014: 1). The practice of testing macroeconomic theories by using non-experimental data follows from the widely-held belief that macroeconomics is a purely observational science. According to Duffy (2014), controlled manipulation of the macroeconomy to gain insight regarding the effects of alternative institutions or policies is seen relatively impossible. Thus, it is argued by many macroeconomists that macroeconomic questions cannot be dealt with using experimental methods. While experimental methods are not yet a mainstream research tool used by the typical macroeconomist, there is, nevertheless, a growing body of literature on macroeconomic experimental research. The use of experimental analysis to deal with macroeconomic questions has largely taken place due to changes in macroeconomic modeling and innovations in experimental techniques.

D) The Relationship between Theory, Data and Policy

Macroeconomics involves the interplay of theory, data, and policy. It starts with the observation of the real world and then a theoretical framework is developed to explain the observed phenomena. A theory is, thus, a simplified-

yet realistic formulation which is tested by its ability to match the existing data and also provide accurate predictions about new data. After a sequence of mutual interactions between theory and data, a practical framework arises, which is then becomes the basis for policy-making. This basis allows policy makers to grasp the link between the theoretical frameworks and the implementation of macroeconomic policies. As in the sequence of interactions between theory and data, policy-making is also a cyclical process. It can take decades of experience to understand the links from policy to the aggregate economy and how to use the policy tools effectively.

As emphasized by Ouliaris (2012), if economic theory is to be a useful tool for policy-making, it must be quantifiable. So economists aim to develop economic models in order to explain repeatedly occurring relationships that is called "empirical regularities". These models make causal connections between economic variables. What matters most to policy makers is the magnitude of the relationships between these variables. At this stage, economists employ econometrics to convert qualitative statements about these relationships into quantitative statements. Econometrics uses economic theory, mathematics, and statistical inference to quantify economic phenomena and turns theoretical economic models into useful tools for economic policy-making (Ouliaris, 2012).

The use of econometrics in economic analysis enables not only to uncover empirical regularities that can serve as a basis for new economic thinking, but to have some confidence in the soundness of empirical inferences (Juselius, 2011: 406). However, the problem with using empirical methods arises from the quantity and quality of the data economists use to draw important conclusions in macroeconomics (Thoma, 2013). Certain features of macroeconomic data make it challenging for economists to assess economic models. The data econometricians use to estimate economic relationships is actually generated by a complex system in which all variables may change simultaneously. This raises the question of whether the data is informative enough to identify the parameters in the model. As stated by Juselius (2011: 407); "*The basic dilemma of empirical macro modeling is that the reality behind the available macroeconomic data is so much more rich and complex than the often narrowly analyzed problem being modeled by the theory*". These additional features that are not captured by the data usually violate the *ceteris paribus* assumptions of the economic model and divide the profession into the proponents of various approaches to empirical economics at the same time.

As a matter of fact, economics is thought to be a discipline which is closer to natural sciences than are the other social sciences. The reason behind this is that economics make more use of formal mathematical modeling.

Natural sciences advance by discovering the ways to compress data concerning the natural world. Although economics intends to carry out the same task in relation to data on the economy, it is, nevertheless, less successful (Sims, 1996: 105-106). Economists develop theories to characterize data, but the actual data inevitably includes considerable variation that is not captured in the theory. Sims (1996) maintains that the quality of the theory's characterization of the data tends to deteriorate as it is extended to data remote in time, location or circumstances from the data from which the theory was initially developed.

Given the nature of data, the replication of econometric results is highly unlikely when an economy can be observed only once. Observed data are believed to cover policy regimes according to which economic agents change their optimal decision rules. So, this raises doubts about the way macroeconometric research is currently being pursued. Juselius (1999: 287) points out the need for "research programmes in macroeconomics that mimic that of the present state of research in macroeconometrics, in the sense of developing theoretical models of the macro economy that replicate the basic features of macroeconomic data".

Though, macroeconomics has developed over years in such a way that econometrics forms a major part of it, the issue of whether macroeconomic theories change in response to empirical evidence is still ambiguous. McCallum (2002: 67-68) argues that the evolution of macroeconomic theory has in part been driven by theoretical concerns, but macroeconomists have certainly taken evidence into consideration. He actually points out the roles of economic theory and empirical evidence in bringing about the changes in policy formulation since 1971-1973. Economic science, McCallum claims, "evolves by way of a complicated back-and-forth interaction of theoretical and empirical considerations". However, an important point here is relevant to the way in which empirical evidence drives this evolutionary process. Although single econometric studies are generally not conclusive, cumulative effect of several econometric studies usually makes sense to an economist. So, what matters is to bring together various bits of evidence obtained from different studies in an informal, but nonetheless persuasive, way (McCallum, 2002: 87).

CONCLUSION

Throughout the twentieth century and even today economists have often had prolonged disagreements and controversies about the fundamental economic issues. These disagreements and controversies arise mostly in macroeconomics and stem from methodological concerns. Macroeconomics,

which has increasingly become an applied science, is a particularly important subject for methodological analysis for a variety of reasons.

Like in the other disciplines, methodological discussions have a rightful place in scientific discourse within macroeconomics. On the one hand, they may raise the awareness of and track down underlying problems and so, pave the way for scientific progress. On the other hand, they may provide new unifications in the diversity when the disciplinary heterogeneity intensifies. Methodological awareness could make the task of dealing with fundamental issues easier.

Economics is always being severely criticized for its failure to deal with real world issues. This failure refers especially to economic forecasting and thus has a particular concern for macroeconomics. Considering that the primary goal of economics is to address real world problems, providing explanations for these problems and predictions about future macroeconomic values should be central to macroeconomics. What is wrong with macroeconomics is then the methodology generally it follows. Economic theorists have long committed themselves to creating macroeconomic models that are usually conceived as the real economic system. This modeling tradition, which has become predominant strategy among macroeconomists, is considered as useful and essential. Due to financial, legal and ethical constraints, economists have hardly any opportunity to conduct experiments on a societal scale. So to understand and explain relationships between different units in the real economy, economists build models and make things happen in these models rather than engineering the real economic problems. Building these make-believe worlds necessitates rather arbitrary presuppositions which results in a lack of strong empirical foundation. Micro-foundations, aggregation, ceteris paribus conditions, unrealistic assumptions and extensive use of formal mathematical modeling are among the methodological fallacies behind macroeconomics' failure. It's needless to say that methods of macroeconomic analysis should not be designed without explicit regard to the nature of macroeconomic phenomena.

There are always new policy problems arising in a rapidly changing economic environment. Thus, economists are required to be open to different possibilities for the future development of macroeconomic discipline. Existing frameworks need to be revised in order to be more suited to new macroeconomic circumstances. The better our capacity to discuss openly questions about the foundations of the discipline, the more effectively macroeconomics perform.

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