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Macroeconomic Confusion – A Marshallian Perspective

Ekkehart Schlicht

do not neglect previous theoretical knowledge!

RUDOLF RICHTER (1994, 600)

Introduction

The "New Classical Macroeconomists" seem to pride themselves of pursuing a rigorous approach to macroeconomic phenomena (LUCAS and SARGENT, 1979). Yet its foundations are shaky, and its terminology is confused. This will be outlined in the following. Section 1 starts by explaining TINBERGEN's approach to estimating economic relationships. This approach, involving time-invariant behavioral relations, has been carried to the extreme by the New Classical Macoeconomists. KEYNES criticised the assumption that the parameters in economic models are to be taken as remaining constant over decades or even centuries. This critique is outlined in Section 2 and remains valid to-day. As it comprises the "LUCAS critique," albeit as a minor point only, it seems confusing and inappropriate that the proponents present the originally Keynesian arguments as a critique of "Keynesian" macroeconomics.

It is possible to cope with these issues by allowing economic structures to change over time (Section 3). This line of analysis follows the arguments advanced by MARSHALL who was deeply convinced that economic systems evolve and incessantly change over time, and that the stationary state is a fiction, useful as an analytical construct perhaps, but inappropriate in any descriptive sense. While MARSHALL tried to cope with the issue that economic relationships change over time in a serious manner by devising his temporary equilibrium method, the New Classical Macroeconomists pursued a different path: They rejected the idea of an ever-changing economic universe as a modelling framework and simply declared that everything that may change over time is not "structural" and can, therefore not be taken as a given when analyzing the implications of a change in policies (Section 4). Such a position excludes institutional explanations right away as "superficial" and abrogates the MARSHALLian idea of starting from some givens for purposes of short-run analysis, take them as provisional constants, fix them under a *ceteris-paribus*-clause for the time being, but allow them to change in the longer term, and even explain this change; and further, that anything that remains constant within some period will become variable if we consider a still longer time-span. Contrary to what

the New Classical Macroeconomists assert, the MARSHALLian approach is compatible with evaluating economic policy, as long as "piecemeal engineering" in the sense of POPPER (1971) is considered. That the MARSHALLian vision may rule out "utopian engineering" may be conceded. If the New Classical Macroeconomists aim for the latter, they should say so.

1 Tinbergen's Method

In a pioneering contribution, TINBERGEN (1939) has introduced regression analysis into economics in order to quantify economic relationships. This, along with a number of subsequent contributions, has established the pattern for subsequent econometric research up to the present (TINBERGEN, 1952, 1956).

The proposal was to start from "primary relations" between the economic variables. These were conceived as representing the "direct logical ties between the variables introduced by economic behaviour or by the logic of definition or technique"(TINBERGEN, 1952, 13). These primary relations constitute the structural model of the economic phenomena under study. The problem was to estimate the behavioral coefficients that enter the structural model. Once these coefficients are known, alternative courses of economic policy can be evaluated with respect to their outcomes.

TINBERGEN proposed regression analysis for determining the structural coefficients. These coefficients were assumed to remain constant over time. The proposal was pursued for reasons of practicability, as a provisional approach that was acceptable for lack of better techniques. In spite of this caution, TINBERGEN put economics (and econometrics) on a narrow track that way, setting the pattern for quantitative economic research for over half a century to come. This seems problematic.

2 Keynes' Critique

KEYNES (1939, 559, 566), in particular, was concerned that "Tinbergen's Method" was too mechanic, and therefore unable to deal with "qualitative theories." TINBERGEN himself was, in KEYNES' view, too insouciant in his application of regression analysis to economic data: "If only he is allowed to carry on, he is quite ready and happy at the end of it to go a long way toward admitting, with an engaging modesty, that the results probably have no value. The worst of him is that he is much more interested in getting on with the job than in spending time in deciding whether the job is worth getting on with." And he continues:

> "Thirty years ago I used to be occupied in examining the slippery problem of passing from statistical description to inductive generalisation in the case of simple correlation; and to-day in the era of multiple correlation I do not find that in this respect practice is much improved. In case … others may nurse inductive hopes, it is worth pointing out that Prof. Tinbergen makes the least possible preparation for the inductive transition. Put broadly, the most important

> condition is that the environment in all relevant respects, other than the fluctuations in those factors of which we take particular account, should be uniform and homogeneous over a period of time. KEYNES (1939, 566)

Given that KEYNES' teacher ALFREDMARSHALL (1949, III.IV.1) was so much concerned with "the element of time, the source of many of the greatest difficulties in economics," and devised his temporary equilibrium method in order to theoretically capture an ever-changing economic universe, KEYNES' criticism of the assumed time-invariance of the structural parameter is not surprising. Yet KEYNES went even further:

> "It seems to me that economics is a branch of logic, a way of thinking ... a science of thinking in terms of models joined to the art of choosing models which are relevant to the contemporary world. It is compelled to be this because, unlike the typical natural science, the material to which it is applied is, in too many respects, not homogeneous through time. The object of a model is to segregate semi-permanent or relatively constant factors from those which are transitory or fluctuating so as to develop a logical way of thinking about the latter, and of understanding the time sequences to which they give rise in particular cases . . . . In chemistry and physics and in other natural sciences the object of experiment is to fill in the actual values of the various quantities and factors appearing in an equation or formula; and the work when done is once and for all. In economics this is not the case, and to convert a model into a quantitative formula is to destroy its usefulness as an instrument of thought.. . . To do so would make it useless as a model. For as soon as this is done, the model loses its generality and its value as a mode of though. ... If the method cannot prove or disprove a qualitative theory and if it cannot give a qualitative guide to the future, is it worth while ? " (KEYNES 1973, 296 ff.; 1939, 566)

Here, it seems to me, KEYNES went too far. As TINBERGEN observed correctly: "Coefficients changing just by chance would, of course, render the whole of quantitative economic science impossible" (in KEYNES 1973, 292). His pragmatic, yet slightly biased, way in dealing with the issue is well reflected in his defense:

> "If there is no reason to suppose that the laws that have governed the reactions of individuals and firms in the past will have changed in the near future, it seems possible to reach conclusions for the near future by measuring as exactly as possible those same reactions in the past. Of course this is only true if no structural changes take place" (TINBERGEN, 1940, 152).

Yet this position begs the question: If, using TINBERGEN's definition of structural parameters, it is assumed that "no structural change takes place", this amounts to the assumption that economic relations remain constant over time – and this assumption lies at the heart of KEYNES' critique.

3 Time-Varying Coefficients

Looking more closely at the arguments put forward by TINBERGEN and KEYNES, it appears that both agree on what is desired, but disagree about to what extend regression analysis meets that goal. TINBERGEN (1940, 152) holds that "in most cases

only small changes in structure will occur in the near future", and defends regression analysis with this argument. KEYNES (1973, 294) concurs with the statement but adds a destructive qualification: "One of the chief dilemmas facing you is, of course, ... that the method requires not too short a series whereas it is only in a short series, in most cases, that there is a reasonable expectation that the coefficients will be fairly constant" (KEYNES 1973, 294).

I have argued elsewhere that MARSHALL conceived economic relationships, such as behavioral equations, as changing over time, but more slowly than the processes that are explained in terms of these relationships (SCHLICHT, 1977, 1985). The argument may be summarized in the "Isolation Principle" that requires that behavioral parameters of a model are permitted to change over time, but only slowly, as compared to the speed of adaptation of the endogenous variables.[1]

A "slow" movement of the behavioral coefficients implies that these coefficients are highly auto-correlated over time. The marginal propensity to save to-day will be close to the marginal propensity to save of yesterday, for example. This would suffice to permit an application of the consumption function for purposes of evaluating effects of tax changes, even if the consumption function changes over time, and the time-span of such predictions will correspond to the relative stability of the consumption function in this case.

Some economists have proposed a straightforward formalization of this idea (COOLEY and PRESCOTT 1973, SCHLICHT 1973, ATHANS 1974). Assuming a linear regression, coefficients can be allowed to change over time:

$$y_t = a_{0,t} + a_{1,t}x_{2,t} + ... + a_{n,t}x_{n,t} + u_t$$

Here time is denoted by t, the n exogenous variables are denoted by $x_{1,t}, x_{2,t}, ... + x_{n,t}$, and the disturbance term is u_t. Now the change of the coefficients can, in the simplest case, be formalized as a random walk

$$a_{i,t} = a_{i,t-1} + v_{i,t}$$

where $v_{i,t}$ denotes the change of coefficient i from period $t-1$ to period t. Assuming that the disturbances $u_t, v_{0,t}, v_{1,t}, ... v_{n,t}$ are normally *i.i.d.* distributed, the variances of the disturbances in the coefficients $v_{i,t}$ measure the instability of the respective coefficient over time. These variances can be estimated by Kalman-filter methods or easily available program packages (LUDSTECK, 2004; SCHLICHT, 2005).

4 Chasing the Mirage of a "True Structure"

Given that the shortcomings of regression analysis for purposes of economic analysis were correctly identified by KEYNES in the middle of the last century, and that the statistical techniques for estimating time-varying coefficients are available for

[1] The Isolation Principle, comprising "temporal" and "causal" isolation, summarizes arguments to be found in MARSHALL, KEYNES, and in the writings of a number of other economists. The mathematical background for the Isolation Principle is provided by the Moving Equilibrium Theorem (SCHLICHT, 1978, 1997).

more than twenty years, it could have been expected that econometric practice and macro-economic model building would have embodied these ideas; but this is not the case. Macroeconomics took a quite different and, I thing, wrong turn.

Weight the papers by LUCAS (1976) and LUCAS and SARGENT (1979) which are considered seminal by many. LUCAS (1976) criticised TINBERGEN's "Theory of Economic Policy" – which KEYNES called "TINBERGEN's method" – with the argument that behavioral coefficients may change if policy changes occur. (In a similar vein, KEYNES (1939, 561) asked TINBERGEN: "What happens if the phenomenon under investigation itself reacts on the factors by which we are explaining it?") This is just a special case of the general point that economic relations must be expected to change over time.[2]

LUCAS (1976) accepted the time-varying coefficients approach for purposes of short-term forecasting, but this remained a lip-service, as he insisted that this approach is not useful for policy purposes because it does not give quantitative long-term predictions: "Under the adaptive structure, a small standard error of short-term forecasts is consistent with *infinite* variance of the long-term operating characteristics of the system." The argument neglects that what "short term" and "long term" is must, in a MARSHALLian framework, be seen *relative* to the time-scale of the model used. So a "short term" may be quite long if the model is a long-term model, even if it is not conceived as being time-invariant for all eternity.

The LUCASian search for the mirage of a "true structure" has dominated macroeconomic theorizing for the last twenty years. LUCAS and SARGENT (1979, 6) criticise what they call "Keynesian models" by observing: "We see no reason to believe that these models have isolated structures which will remain invariant across the class of interventions that figure in contemporary discussions of economic policy". Their aim is, apparently, to find models with parameters that remain invariant across the class of possible inventions and – I submit – remain invariant over time.

Yet the idea that there exists a "true economic structure" that remains constant over decades, let alone centuries, and across policies, seems preposterous. It is, of course, easy to criticise any realistic theory because it starts from "superficial" characteristics, but such a criticism implies that there *actually exist* some perennial and enduring structures, presumably stable and invariant over decades, even centuries (LUCAS and SARGENT, 1979, 11). The New Classical Macroeconomists provide no argument for their postulate apart from the assertion that "all practitioners knew it to be necessary" LUCAS (1976, 24). The argument neglects, further, the MARSHALLian innovation of building theories on such "superficial" characteristics.

5 Terminological Confusion

The argument of the New Classical Macroeconomists is further confounded by statements that are simply confusing. They emphasize what they call the "classical postulates:" "(a) that markets clear and (b) that agents act in their own self-interest."

[2] The particular problem emphasized by LUCAS (1976) seems empirically not very important, see LINDÉ (2001). KEYNES' general point is fully justified by recent studies about the Phillips curve, such as BALL and MANKIW (2002), though.

If both postulates are fulfilled, we have an equilibrium in the sense of LUCAS and SARGENT (1979, 7).

Regarding the principle of market clearance they point out that "Cleared markets is simply a principle, not verifiable by direct observation, which may or may not be useful in constructing successful hypotheses about the behavior of these series." Here they simply iterate what HICKS has formulated much more carefully:

> There is a sense in which current supplies and current demands are always equated in competitive conditions. Stocks may indeed be left unsold; but they are unsold because people prefer to take chance of being able to sell them at a future date rather than cut prices in order to sell them now. ... In this (analytically important) sense the economic system ... can be taken to be always in equilibrium ..."[3]

Given this concept of market clearance, any theory, including KEYNES', could be characterized as fulfilling assumption (a), but such an assertion comes down to a play with words, and a confounding of issues.

Regarding equilibrium, LUCAS and SARGENT (1979, 7) correctly note that individual rationality does not carry over to markets, and that their concept of equilibrium is empty: "... the general hypothesis that a collection of time series describes an economy in competitive equilibrium is *without content"* (LUCAS and SARGENT, 1979, 7).

Insisting on market clearance and rationality while attributing to others that they violate these principles, and, *at the same time,* emphasizing that these concepts are empty, is confusing. Such phrases appear to me substantially irrelevant, but they obfuscate substantial issues.

Conclusion

In this note it has been urged that the assumption of time-invariant behavioral relations has been introduced by TINBERGEN for practical reasons and as an approximation appropriate for short-period analysis only. The New Classical Macroeconomists have carried this assumption to the extreme by postulating the existence of ever-lasting and invariant economic structures.

KEYNES has criticised the invariance assumption as quite inadequate for most economic applications, as we must assume that economic relations will drift over time and in response to economic processes and policies. The New Classical Macroeconomists have criticised allegedly "Keynesian" theories with KEYNES own arguments. This misuse of terms – also exemplified by the misuse of terms like market clearance and equilibrium – has created confusion on the semantic level and led, on a more popular level, to the impression that all unemployment is "voluntary" without taking notice that this is, in the New Classical Macroeconomics, not a statement about any fact, but a postulate.

[3] HICKS (1946, 131). Let me note that this principle – what I have called the HICKS-D'ALEMBERT-Principle, applies not only to the WALRASian equilibrium concept (cleared markets) but to other concepts as well, such as the Swedish (*ex ante-ex post)* or the MARSHALLian one (state toward things are tending), see SCHLICHT (1978, 1985).

It is to be hoped that a new generation of economists will start to think the issues over again, and study their classics more carefully in order to avoid the semantic traps encountered in the "New Classical Macroeconomics" and devise quantitative theories that can cope with ever-changing economic environments. It is to be hoped that macroeconomics and econometrics some day catches up with MARSHALL – and KEYNES.

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