The Future of Economics is Scientific

Sergio Da Silva
Allow me to illustrate the perspective that the future of economics is scientific. Although this may also mean ‘rational’ or even ‘Austrian’, as Andrew Lilico and Mark Pennington argued elsewhere (Economic Affairs’ Student and Teacher Supplement), it certainly does not mean either ‘only rational’ or ‘only Austrian’.

Take any textbook on microeconomics. It is widely read and learnt that: (1) people optimize, that is, they choose the better goods which they can afford, and (2) the prices adjust until the demand for goods matches the supply. Principle (1) highlights on consumers’ behavior, whereas principle (2) focuses on how the market institution works. These two principles provide so many useful analyses that it would be damaging to discard the microeconomics textbooks. However, the textbooks do not tell the whole story, and moreover, some stories are entirely fictitious.

The model of preferences has not been conceived to reflect how the human brain actually works. Thus, it is solely a special case where the axioms of choice theory are not rooted in neurobiology. One might interpret principle (1) as implying some type of rationality. Thus, rationality is also a borderline situation. Choice theory is currently restricted to quadrant I of an accepted model of the neural functioning of the brain in the table given below.

<table>
<thead>
<tr>
<th>Neural functioning</th>
<th>Rational</th>
<th>Emotional</th>
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<tbody>
<tr>
<td>Deliberative</td>
<td>I</td>
<td>II</td>
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<tr>
<td>Spontaneous</td>
<td>III</td>
<td>IV</td>
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In terms of the brain processes involved, all rational-choice models of optimization implicitly assume that behavior is a result of decisions that are both controlled and rational and thus occur in the cerebral cortex. However, on the other hand, decisions can also be automatic and emotional. Behavior is then a result of four kinds of decision processes that may either cooperate or compete. Axiomatic choice theory, as it stands today, cannot explain every kind of economic choice behavior as it only considers the particular case of brain processes involved in quadrant I (rational and careful deliberation).

True, revealed preference theory equates unobserved preferences with observed choices. However, owing to the fact that observed choices can also reflect brain processes that are neither rational nor thoughtful, revealed preference cannot validate axiomatic choice theory.

Neuroscience has now made it possible to measure utility objectively, an achievement once considered inconceivable by Jevons. Functional magnetic resonance imaging and other techniques are currently being applied to enable comprehensive mapping of the cerebral regions involved in choice valuation. This endeavor would provide a detailed picture of how choice works in the brain. Hence, it is only a matter of time before the new generation of economists rebuilds choice theory after taking such discoveries into account.
Consider Hal Varian’s microeconomics textbook, and refer to the concluding stages of the ‘choice’ chapter. On evaluating the relative effects of an income tax in comparison to a quantity tax for the individual consumer, it was observed that the income tax is more desirable because it is less harmful for the consumer while generating the same revenue for the government. However, Varian warns us that this result holds good for only one consumer, and not for everyone. It is argued that a correct income tax should be different for distinct consumers. Thus, a uniform income tax is not necessarily better than a quantity tax for everyone.

Macroeconomists have confined themselves to the agenda of providing micro foundations for macroeconomics by deliberately ignoring examples such as the one mentioned above. Partly as a result of this, current macroeconomics is grossly off target. It wrongly relied on the dangerous delusion of a ‘representative agent’ that averages over all the heterogeneous agents. The behavior of the representative agent was then extended to the analysis of the economy as a whole. The problem is that the representative agent and the individual agents themselves may behave in tandem.

In a sense, though macroeconomics is analogous to physics, it is the wrong type. In physics, if there is ‘self-averaging’, concentrating on averages can be justified. As a matter of fact, macroeconomics exhibits the property of non-self-averaging (see the first reference given below).

In his 1974 Nobel Prize lecture, Hayek observed:

“Unlike the position that exists in the physical sciences, in economics and other disciplines that deal with essentially complex phenomena, the aspects of the events to be accounted for about which we can get quantitative data are necessarily limited and may not include the important ones. While in the physical sciences it is generally assumed, probably with good reason, that any important factor which determines the observed events will itself be directly observable and measurable, in the study of such complex phenomena as the market, which depend on the actions of many individuals, all the circumstances which will determine the outcome of a process […] will hardly ever be fully known or measurable.”

This explanation holds good for the type of physics that underlies macroeconomics. However, like Jevons, who could not anticipate neuroeconomics, Hayek could not anticipate the right type of physics for the whole economy – the emerging field of ‘econophysics’, which embraces the complexity of the economy. Today, using the approach of non-equilibrium statistical physics, it is possible to deal with the aggregate economic phenomena including those exhibiting non-self averaging. In addition, this enterprise could even boost Austrian economics through the computational approach of agent-based models.

As macroeconomics is about the behavior of a large number of heterogeneous and interacting people, the statistical physics approach to the macro system is inevitable. However, one needs to think in terms of complex patterns, and not people. Grasping such patterns would help in effectively designing better economic institutions.

It was illustrated that we now have the means for economics to become a booming science analogous to biology and physics. Nevertheless, deciding whether the future of economics is scientific is also a matter of choice – hopefully, a quadrant I choice that the young economist has to make.
References

