

SYMPOSIUM ON MARSHALL'S TENDENCIES: 2 WELL-GROUNDED THEORY, AND AGGREGATION

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In *Marshall's Tendencies* (Sutton, 2000),¹ John Sutton poses some fairly deep questions for economists, especially for empirical work. In particular, when (if ever) is it safe to behave as though the 'standard paradigm' applies? In that paradigm, we are attempting to extract and estimate the 'true' model from the data and are only kept from doing so because, while economic analysis captures the main 'tendencies', there are many small influences that we cannot exactly take into account. That paradigm, which Sutton traces to an analogy of Marshall's likening economic predictions to predictions of the tides, leads to the econometric estimation of economic relationships, taking statistical account of the unincluded small influences by placing them in a random disturbance term. Sutton states (p. 5), 'if Marshall's analogy were valid, we would have seen spectacular progress in economics over the past fifty years'.²

Sutton gives a convincing argument and many examples showing that the 'standard paradigm' is not valid in a large number of cases. (He also discusses how one might proceed when it is not.) I want to consider what most, if not all, of those cases have in common.

The 'standard paradigm' works best when we really have a good theoretical foundation for the model we are seeking to estimate. This is

¹ All references are to this book unless otherwise stated.

² As a matter of pure logic, this does not follow. There can exist processes with large random disturbances for which masses of data are required for accurate parameter estimation. But if this characterizes most economic processes, then we are probably in a losing business.

most often true when we are dealing with the actions of rationally-maximizing individuals. Despite the doubts that such assumptions produce in beginners (see p. xv.), it generally appears to be the case that models based on rational maximization yield useful predictions, 'tendencies' strong enough to be central to the behavior of real agents.

Of course, I do not mean that we are always well able to predict the behavior of particular individuals. But the models involved extend to the behavior of competitive markets, and here economics has a good record.

Now consider some of the examples given by Sutton. He begins with two in which the 'standard paradigm' works. The first of these is the valuation of call options; the second is the analysis of the auction of undersea oil tracts where there are both informed and uninformed bidders. The former case is essentially that of a single rational agent processing information. The latter case is more complicated: there are two types of agent and each takes into account the behavior of the other. But, in both cases, a theory based on optimizing agents leads to clear predictions, and those predictions turn out to work – at least in the sense of Marshall's 'tendencies'.

Next, consider the 'bounds' approach, elsewhere pioneered by Sutton (Sutton, 1991, 1998). Sutton considers what markets, characterized by certain common elements, will have in common, and comes up with certain bounding relationships relating to market structure that should be satisfied. Those predictions – which hold up well – are also based on the behavior and interactions of rational agents (firms in this case). But the 'standard paradigm' does not work, because the 'many small influences' are not small and cannot properly be included in a disturbance term.

To put it differently, the old structure-conduct-performance paradigm is not wrong, but yields bounds rather than fitting the 'standard paradigm'. To understand what happens in a particular industry, one needs to know the facts and special circumstances of that industry. Attempts to relate performance to structure through cross-industry regressions, or to predict performance from measures such as the Hirschman–Herfindahl Index are not successful. To get anywhere (beyond Sutton's bounds), they must be combined with a detailed study of the industry in question. The circumstances in which rational agents operate are sufficiently complicated here to prevent the theory from reliably generating anything but bounding relations. It is as though the shape of the coastline and the sea bottom were always so complicated that only extremely general tidal predictions could be made from the position of the moon and sun.

The third class of examples is taken from macroeconomics. This is where the 'standard paradigm' breaks down pretty completely – and, of

course, it is that breakdown which sometimes makes the lay public suspicious of economists.³

This ought not to come as a surprise. Macroeconomic relationships are not soundly based on the theory of the rational maximizing agent. The fact that they are sometimes written as though they are, merely reflects the hope that aggregate relationships (consumption or production functions, for example) can really be thought of as characterizing a 'representative agent'.⁴

That hope is a vain one. There is a long (if often ignored) literature showing that exact aggregation is generally impossible save under very restrictive conditions, and that even good approximation is doubtful as a general matter.⁵ The most we can hope for is that the range of the underlying variables is sufficiently restricted that aggregate relations are a decent approximation for a limited time or in limited circumstances.

But this is exactly the sort of case in which the 'standard paradigm' is bound to break down. Macroeconomic equations do not, in fact, capture the 'tendencies' save in a very general way. They are unlikely to be stable and reliable over different situations or long periods of time. When the distribution of income over households changes, aggregate demand or consumption functions will also change. When the distribution of firm sizes changes, so will aggregate production functions change. These are not small effects that can be comfortably placed in a disturbance term in an otherwise well-specified, soundly based equation. Rather, they systematically affect the extent to which assumed equations remain stable, good approximations. It is not surprising – although it is certainly regrettable – that economy-wide econometric models have not lived up to their early promise.

My sympathy here is all with Tinbergen (and Haavelmo) and not with Keynes. (See pp. 101–11.) But sympathy is not enough. The 'standard paradigm' requires that one begins with the 'tidal forces' correctly specified. Because of the aggregation problems involved, macroeconomic equations have no such secure foundation. Either such foundation must be found or the 'standard paradigm' abandoned when it comes to macroeconomics, although the same conclusion does not apply to microeconomics.

³ Michael Rothschild once remarked to me that 'the public so concentrate on our failure as macroeconomic soothsayers that they fail to understand how much micro-economics really has to say'.

⁴ And it has not escaped my attention (and should not escape that of anybody else) that, as usually written, even the consumption function of a particular consumer or the production function of an individual firm, involves aggregation over goods or factors.

⁵ See Fisher (1992), especially Chapters 1 and 7 and the Introduction for more detail and bibliography.

REFERENCES

- Fisher, Franklin M. 1992. *Aggregation: Aggregate Production Functions and Related Topics*. J. Monz (ed.). Harvester-Wheatsheaf and MIT Press
- Sutton, John. 1991. *Sunk Costs and Market Structure*. MIT Press
- Sutton, John. 1998. *Technology and Market Structure*. MIT Press
- Sutton, John. 2000. *Marshall's Tendencies: What Can Economists Know?* MIT Press