

## ASSESSMENT FOR THE PAPER

### **"Boats and Tides and "Trickle Down" Theories: What Economists Presume about Wellbeing When They Employ Stochastic Process Theory in Modeling Behavior"**

The paper **"Boats and Tides and "Trickle Down" Theories: What Economists Presume about Wellbeing When They Employ Stochastic Process Theory in Modeling Behavior"** offers interesting insights on how different assumption on stochastic processes that describe income/wealth evolution also implies strict consequences on income distribution. In particular, a connection is made between three possible kind of stochastic processes and the resulting (steady state) measures of absolute/relative poverty, mobility and inequality. The author also explores what happens when these stochastic processes are different in different subgroups of the population and an empirical application is provided.

The paper appears to produce interesting results but it sometimes suffers from organizational problem which make it hard to understand the actual contribution. General speaking, a better link to the existing literature and, more importantly, a better connection between the different parts of the paper would certainly improve its quality.

#### MAJOR REMARKS

- 1) The main drawback in using stochastic process to explain income distribution is that they lack economic content.

In Mincer words: *From economist's point of view, perhaps the most unsatisfactory feature of the stochastic models... is that they shed no light on the economics of the distributional process. (1958, p. 283).* And again Mincer on the fact that they lack an optimization behavior: *it is difficult to see how the factor of individual choice can be disregarded in analyzing personal income distribution (1958, p. 283).*

The author starts a promising discussion on this subject and also notes that consumption smoothing could be related to stochastic processes. However, the issue is hardly solved and the paper would benefit from a deeper discussion and, possibly, from a whole section where the connection between economic theory of income distribution and stochastic processes is described.

- 2) The relationship between stochastic processes and income distribution is not a new subject. While the authors appear to provide new insight on this subject, it should also relate his contribution to what has already been done in the past. Some chapters of the Handbook of Income Distribution (Atkinson and Bourguignon 2000, Neal and Rosen 2000 and Davies and Shorrocks 2000) deal with this aspect and they also refer to a large body of literature. The author should explain how his work improves on these contributions.
- 3) The main body of the work consists in the presentation of three kind of stochastic processes (Gibrat's Law, Kalecki's Law and one related to "Pareto Law") and what they imply in terms of income distribution measures. I believe that the exposition of this part would benefit from a more systematic treatment of the three cases. That is, for each case (process) it should clearly be described i) what it implies from an economic point of view, ii) how it can be formalized and iii) the consequences on a given set of income distribution measures. Alternatively, for each measure of income inequality, it could be described how it is affected by the different processes. Currently the

paper seems to do a mix of the two so that it first describe each process and its implications on some inequality measures and then introduce some new measures and describe how they are affected by the different processes.

In addition, the treatment of this subject should be more focused, for example, in the present version when describing the Gibrat's law the author starts discussing whether a "civil society" should protect the poor on the base of an absolute or relative definition of poverty: this discussion seems a bit out of place there. Similarly a more symmetrical treatment of the three cases would increase readability.

Finally, some confusion arises because sometimes it appears that "Pareto Law" is a kind of stochastic process. On the contrary, if I understood it correctly, the author is arguing that Gibrat's Law with a reflective boundary for extreme poverty implies Pareto Law. Therefore it would be clearer if this case would be described as "Gibrat's Law with a reflective boundary for extreme poverty" and then analyzed as in the previous two cases.

- 4) Another relevant part of the contribution is related to the analysis of stochastic processes that are group-specific, that is, to the fact that the income of different groups of the population can be described by different stochastic processes and in particular, it is possible for a group to have a "better" (with higher mean or growth) process than another. This idea is interesting but it poses some problems. To understand the problem better consider a population split in two groups: group A has a stochastic process with higher mean and growth than group B. In general, individuals in group A will be richer than individuals from group B: however, in a given moment (due to the stochastic nature of the problem) it is well possible that an individual belonging to group A actually obtain an income lower than an individual belonging to the group B. This problem is acknowledged in the paper but it is not fully discussed. In fact in such a case it is not clear at all what a measure of inequality should capture. Should the measure consider the individual belonging to group A as poor and the one belonging to group B as rich? Or should the measure of inequality try to capture the belonging to the two groups, so that, independently from the actual income realization, it should consider the individual from group A as rich and the one from group B as poor?

One final example to make this problem clearer: suppose that these two groups exist but, for some lucky circumstances, all the individuals draw exactly the same income. In this case, a measure of inequality, should report perfect equalitarian income distribution or should it report the existence of a polarization in the two groups? The paper is not clear on this aspect, it is my impression that the author follows the second approach but this is very questionable. For example, shouldn't income support be given to those whose income is actually low even if they belong to the "better/rich" group?

- 5) The final part of the paper is devoted to the empirical analysis but some aspects should be better assessed. First of all, the author should clearly explain why he is performing an empirical analysis and how it relates to the previous sections. The author should also clearly explain what facts he wants to address and what he wants to test.

Second, the author should describe clearly what variables are used and why they are used. The GDP per capital is mentioned but the other are not well explained. For example, where do the variables for absolute and relative poverty comes from? Are they from micro data? What sense does it make to relate directly index of absolute (or relative) poverty to a stochastic process?

Finally, one of the main contributions of the empirical analysis is the estimation of the stochastic processes within some sub-groups of countries. However, the division between countries is made according to a sort of rule of thumb (more or less, countries with higher income vs. countries with low income): while the results obtained are interesting they are probably weakened by this procedure: I think the author should try to better motivate why this so basic procedure is appropriate within this context.

#### MINOR REMARKS

- 1) The author argues how no debate exists on the difference between relative and absolute inequality. This subject is not well developed and it is probably in an initial phase, but some relevant contributions are starting to appear: for example Svedberg (2004), Atkinson and Brandolini (2010), Bosman and Cowell (2010), Bosmans et al. (2011).
- 2) The relationship between the trickle down theories and the subgroup of population is quite clear to me. On the contrary, the connection between "rising tide raises all boats" and stochastic process is less self-evident and should be explained. Moreover the statement "*These [referred to the concepts of rising tide raises all boats and the trickle down] are essentially notions regarding the nature of income or consumption processes as stochastic processes*" is questionable and I hardly believe that the word *essentially* is appropriate.
- 3) Income inequalities can be related to differences in the income of individuals or of countries. The author is a bit ambiguous to which one he is referring (or if he is referring to both). The theoretical discussion seems to consider mostly the inequalities between individuals (for example, he relates stochastic processes to consumption smoothing theories), however, the empirical analysis is performed on inequalities between countries so that it may not be the ideal example.

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