

COMMENTS ON

“The Future Phases of the Cuban Economy” by Bernales

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This paper by Barton J. Bernales constitutes a positive contribution to ASCE's work for it develops a Bayesian model to analyze and forecast the Cuban process. As we have said before in these meetings, it is necessary to foster the presentation of quantitative papers, like the present one by Bernales, that analyze Cuban issues. For it is through the extensive and adequate use of quantitative models that we gain: (i) a better understanding of and (ii) a more detached and, hence, productive discussion about, the Cuban problem. And this reflects very positively on ASCE and on its work.

In general, if one is able to establish a quantitative model, with its variables and relationships, one necessarily exercises one's taxonomy and synthesis capabilities. And this allows us to obtain a better understanding of a problem components and a larger picture of the issues involved and their interrelationships. As it often occurs in simulation modeling, for example, a large part of the problem is solved during the model building stage. For, with a better understanding of the underlying problem structures and factors we are able to see things we were missing before, to approach them better informed and to find more efficient solutions.

By using quantitative models we also are able to engage in a less partisan and more detached analysis and discussion of the issues. Anyone can disagree on the values of the model factors, on the factors themselves, or even on the model structure. For example, one can argue that it should be a multiplicative and

not an additive model, etc. But these are useful discussions where everyone can contribute something. In a qualitative paper, on the other hand, the weight of the arguments are often based on the personal opinions of the author, making it more difficult to debate without falling into partisan attacks and controversies.

Therefore, just on the count of having provided an example of Bayesian statistical techniques applied to the analysis and forecast of the Cuban economy, Bernales' paper is a valid contribution to our meeting. We can verify how it joins other such papers (a short list of selected quantitative papers presented to ASCE is given at the end of this paper). And we see how they are becoming more frequent in our meetings, a very positive trend.

Now, directly analyzing Bernales' paper we verify how its main purpose is well defined from its introduction: "to examine the potential for using Bayesian approach to forecast the direction of the Cuban economy (...)". Bernales shows us how there is a good potential for bayesian techniques here too. In what follows, we will comment on several elements in Mr. Bernales' paper that can be improved upon, making his paper more complete and solid.

Bernales has compared his Bayesian approach with the econometric one, with regression and with simulation. He has pointed out the respective strengths and weaknesses and has concluded that the Bayesian approach has several solid advantages he would like to explore. Bernales defines several events, outcomes

or states of the Cuban economy. And, following the Bayesian approach, he provides them with prior probabilities. The three events constituting the partition of the universe are: a centrally planned economy, a mixed economy and a market economy. And here we would like to make a brief side comment.

One additional advantage of quantitative modeling is that it triggers the development of other such models. Bernales' paper is an example of this. By studying his approach for this discussion, we have thought of using a Markov Chain model to describe the Cuban economy as a stochastic process that moves through time, among the above three states. We propose using these three states and time periods of, say, a trimester or a semester. The transition probabilities could depend on: (i) the state in which the process (Cuban economy) currently is and (ii) a series of internal and geopolitical factors that depend on the process contextual situation. We suggested such a Markov model and there are already two ASCE members interested in developing it for next year's annual meeting.

Continuing with Bernales' paper, we now want to comment on his specific assignment of the (subjective prior) probabilities corresponding to his above mentioned three events. Instead of using his own probabilities, we suggest that Bernales conduct a survey of knowledgeable economists and obtain a "distribution" of them. He could then use the mean, median, max, min, weighted average or other combination of each of these probabilities to look into different scenarios. Such Delphi techniques are very useful when data points are few and event evaluation is uncertain, as occurs in the present case.

We also want to comment on Bernales' particular definition of "market economy" and of the other two states or events. We believe that these three events are ill-defined, from a quantitative point of view. We suggest Bernales say, for example, that a market economy is one where 80 percent or more of the GDP comes from private producers, a mixed economy is one where between 30 to 80 percent come from private entrepreneurs and a centrally planned economy one where less than 30 percent of the GDP originate from the private sector. Such numerical val-

ues may be obtained from the literature or by consensus via a Delphi survey.

Bernales then defines six very interesting "target variables": Foreign Exchange Earnings, Import Substitution, Political Control, Economic Reforms, Financial Integration and External Policies. His objective is to define new events from these six variables. We find this a promising approach.

The first two of these variables, Foreign Exchange and Import Substitution, and their corresponding events, are well defined. For example, the event "Foreign Exchange is Greater Than Four Billion Dollars" is a well defined event, whose probability is somehow obtainable. However, we find that the four remaining variables and their respective events are ill defined.

For example, there is no precise quantification of the variable "Political Control." It could be defined on the basis of the number of political prisoners or on the number of independent and operating radio stations and newspapers, or NGO's or other organizations of the "civil society." Because the variable is not well defined, it is not possible to establish a well defined event, either. An event such as, say, high political control, could be defined as one where there were no independent radio and TV stations or newspapers operating in the country. And an event such as low political control would be defined as one where no constraints existed for the operation of such organizations. Under the present limitations of the variable, such events are not yet refined.

The same comment applies to the remaining three "target variables": Economic Reforms, Integration into Global Financial Community and Foreign Trade/Aid.

- Variable Economic Reforms may be quantified in terms of privatization efforts. For example, as a given percentage of the GDP produced with recently privatized (and previously state-operated) economic units. Then, the event in question is whether this percentage is above or below a specified value.

- Variable Integration to Global Economy may be measured in terms of either the percentage of the foreign debt being serviced or the number of international organizations (e.g. World Bank, IMF, etc) willing/able to provide Cuba with economic assistance. Then, the event of interest may be defined as Cuba achieving an economic assistance beyond a prespecified value.
- Variable Foreign Trade can be similarly treated and measured in terms of dollars of exports to European, North American, G-7 Group countries, or any grouping of countries. And the event of interest may then be defined, for example, as Cuba achieving a pre-established amount of export dollars, expanding trade to at least so many countries, etc.

Our final technical comment pertains to the “scenarios” defined by Bernales, which in turn define the events of interest for which he obtains a posterior distribution. Bernales establishes several orders under which the six “target variables” could occur, as different scenarios. We propose that, instead of such orders, different events of interest be established (say that privatization occurs at a very low level, at medium level or at high speed). And that their relationship to the partition events (state, mixed and open economy) be studied.

Summarizing, we believe that Bernales’ paper constitutes a valuable contribution by providing a first example of the use of Bayesian statistics in the analysis of the Cuban economy. As with any first approximation to a problem, this first example is still open for refinement and additional work. We have discussed several suggestions for such improvements and for the revision and/or additional work. And we look

forward to other such high quality, quantitative papers in future ASCE meetings.

Addendum: Selected Quantitative Papers at Earlier ASCE Meetings

1. “Commodity-Linked Transactions and Recapitalization Needs for Privatizing the Economy in a Democratic Cuba: The Case of Sugar.” F. Alvarez and J. Alvarez (1991).
2. “The Industry Composition of Production and the Distribution of Income by Race and Ethnicity in Miami.” R. D. Cruz (1991).
3. “Non Walrasian Properties of the Cuban Economy: Rationing, Labor Supply and Output.” Jorge Sanguinety (1992).
4. “Endogenous Political Structures.” L. Locay and C. Seigle (1992).
5. “Una Política o un Sistema Monetario Optimo.” J. L. Moreno-Villalaz (1992).
6. “A First Approximation of the Foreign Assistance Requirements of a Democratic Cuba.” J. F. Alonso and A. Lago (1993).
7. “Notas Sobre los Principios Arcos Para la Inversión Extranjera en Cuba.” R. Asón (1994).
8. “More on the Statistical Comparison of Cuban Socioeconomic Development.” J. L. Romeu (1995).
9. “A First Approximation Model of Money, Prices and Exchange Rates in Revolutionary Cuba.” J. F. Alonso and A. Lago (1995).
10. “The Optimal Size of the Military in a Post-Castro Cuba.” C. Seigle (1996).