

THE POTENTIAL OF ECONOMETRICS FOR MARKETING RESEARCH IN DEVELOPING COUNTRIES

J. E. MORTON

The last few years have witnessed a growing recognition of the importance that marketing can play in economically developing countries, and how marketing strategies can complement the macroeconomic approaches of development planning on the microeconomic levels of the managerial decision.

Parallel with this recognition has gone an increasing interest in the various aspects of marketing research ranging, more recently, all the way from so-called consumer research to the systematic study of industrial markets.*

These developments, in turn, have stimulated interest in various ancillary disciplines whose approaches and findings might be helpful in illuminating and clarifying marketing research problems. Among such disciplines has been, to a growing extent, the field of econometrics in the broad sense of the term. Interest in the potential application of econometric methods to marketing research problems has highlighted the decisive role to be assumed in such approaches by the need for proper information — information in terms not only of content but also of “format” — i.e., by the newly developing insight into information storage and retrieval techniques and systems.

The general climate for such attacks on marketing research problems would seem to be a favorable one. From its very beginnings, marketing research has been one of the most strongly quantitative fields of applied research in the general area of the social and behavioral sciences. In their practice, marketing researchers have shown a great deal of predilection for, and apparent satisfaction in the use of quantitative methods: The “pro-statistical” attitude is as old as marketing research itself. Yet, in its practice, marketing research, until recently, seems to have more or less refrained from seriously exploring, adopting, and using the patterns of thought and the analytical tools developed by econometricians. True — there has been a good deal of lip service given to this, as to other “metrics”,

* See, e.g., A. A. Sherbini. “Marketing in the Industrialization of Underdeveloped Countries,” in *Journal of Marketing*, January, 1965, pp. 28 ff.

but rare is the occasion, even in highly developed countries, when econometrics really has found its way into the workshop of the practicing marketing researcher.

This may seem somewhat surprising, considering that marketing research has been a predominantly American invention — even today more widely accepted in the United States than elsewhere; and considering that the history of econometrics in the United States abounds, sometimes under the name of operations research, with examples of topical analysis in the very areas that are of particular interest to marketing research.

In looking for likely reasons for this seeming lack of contact between the two fields, some obvious differences between the two comes immediately to mind.

The marketing researcher meets his problem mostly as does the engineer or the medical practitioner: it "comes" to the marketing researcher in the course of a client-based relationship. The task, generally, is to find an answer to a pressing problem. As his medical colleague, the marketing researcher is expected to come up with a diagnostic and, hopefully, with a therapeutical suggestion. Such an attitude and approach is even more essential in a developing country where some of the problem areas of marketing have emerged only recently, and frequently unobserved and not in the mainstream of economic development problems. In order to accomplish his task, the marketing researcher is ready to accept suitable research results of others if they seem applicable, and they often come to him secondhand and through intermediaries.

The econometrician, on the other hand, has been in the past most frequently a teacher or staff member of a research organization. He usually selects his topic from the point of its methodological and analytical interest and promise. He is attracted by the results of pure research; and to the extent that some of his projects are problem-oriented, the sought after selection is on overall policy levels, and more often than not of a highly aggregative and macro nature.

The functions and tasks of the econometrician can be described more neatly and orderly than those of the marketing researcher. It is now quite generally agreed upon that such a description will stress:

1. SPECIFICATION — which is expected to result in the building of a mathematical model.
2. ESTIMATION — which means, quoting the late Valavanis' very fortunate formulation, to "use shrewdly our all-too-scanty data", or put differently, to try to hang the empirical flesh on the skeleton of the model.

3. VERIFICATION — in essence the decision on whether or not to accept the proposed model, based on rules, criteria, and procedures which form much of the body of theoretical mathematical statistics and, finally,
4. PREDICTION — or, quite generally, the feeding into the model of observational inputs at hand in order to “grind out” an answer. Perhaps a few examples may help to clarify some of the issues.

One of the areas of considerable interest to the marketing researcher is what the economists have been referring to as analysis of demand. Many of the most famous mathematical economists and econometricians devoted a good deal of their time to the development of concepts and of patterns of thought aimed at the analysis and understanding of the demand function. Any writer of a history of econometric thought would have to reserve an important part of his exposition to this very topic. In more recent times the study of demand has stimulated some of the interesting discussions also in the field of statistics: some of early multivariate analysis, and some of the formulation of what has become known as “identification problems”, had been undertaken within the immediate context of demand analysis. Names such as H.L. Moore, Henry Schultz, and others, come to mind. Also some of the famous names in other fields (e.g., Pigou, Bowley, Frisch, and Wold) are closely associated with the analysis of demand, and some of the most successful contemporary econometricians have made a contribution to the analysis of demand in their early years (e.g., Jacob Marschak and R. Stone).

Much of this literature has its origin in research concerning agricultural commodities, and is therefore directly relevant in the many situations where problems arise in the developing countries in the areas of agricultural production and the economics of food and nutrition.

But since its initial development phase, demand analysis has rapidly moved to other sectors of the economy as well. Yet the main, not to say the only places where marketing research can be found to lean on demand analysis, is in the predominantly institutionalized form of research which is given to marketing agricultural commodities and undertaken in state schools of agriculture and in government departments. This of course does not mean in any way that the general marketing researcher does not run up against problems which the econometrician might label “analysis of demand”; quite to the contrary, marketing research abounds with situations where price and income elasticities of demand are, in fact, a fundamental issue — for instance, in attempts to estimate market potential or to advise on estimate pricing problems.

In view of this apparent aloofness, it is therefore not at all surprising that even less interest has been voiced on the part of most marketing researchers in the more indirectly related patterns of thoughts and methods; the sometimes rather complex and ingenious structure that has been developed in connection with the pertinent parts of index number theory and techniques, with so-called indifference analysis, and with the related statistical problems are cases in point.

Another econometric area of foremost concern to the marketing researcher is time series or process analysis, because of its obvious relevance to the problems of projection and forecasting, and also because of some of its purely "descriptive" virtues.

Here, unlike in the example of demand functions, economic patterns of thought and of analysis have found somewhat more often their way into the marketing researcher's shop; but the acceptance of, and the interest in, analytical pattern and method has stopped short of what might be considered the main contribution of econometrics: the more rigorous and demanding approach to the problem than the simple extrapolation of an individual series on the basis of the previous behaviour of that series. Unsatisfactory as such an approach may frequently be in the economic analysis of broad, national aggregates, it becomes quite dangerous if relied upon for the more nearly microeconomic situations usually encountered by the marketing researcher.

In other words, the use of an explicit though simple model frequently turns out to be safer than the reliance on intuitively "felt" complex and implicit assumptions. There have, of course, been notable exceptions. For instance, there have been undertaken rather intricate time series analyses of selected markets (e.g., the copper market by C.F. Roos), and there are beginning to emerge courageous and stimulating analyses of time series in a different sense. Thus, many of the phenomena relevant to marketing research are ordered in time even if they are not "economic time series" in the conventional sense; the study of changes over time, e.g., in brand loyalty (see B. Lipsteins' studies) lend themselves to the use of succinct description, frequently pointing toward valuable analytical suggestions, through the medium of stochastic process analysis.

Put differently, the remarkable developments in more recent econometrics, together with the so-called data processing revolution, have opened new avenues for marketing research. On the other hand, the increasing pace of progress in many a newly developing country is creating a situation where even the more straight-forward requirements of long-term market planning, of sales forecasting, or of analysis of markets for style goods with, say, seasonally variable demand, can hardly be met by relying entirely on what in essence are "business barometer-type" of approaches; much more

exacting techniques must be explored with respect to their promise for the practice of marketing research, and modern econometrics is replete with models, techniques, and statistical patterns of thought that would seem to provide a very rewarding area for exploration.

In view of recent developments in the Philippines, we should like to point to inter-industry or input-output analysis as another example of an econometric "model" which is of potential usefulness for marketing research in developing countries.

Quite apart from its intended role as an analytical model for describing the inter-relations of the competent sectors, activities, or "industries" of an economy, the input-output approach is of interest to marketing research as a device for storing an imperative amount of highly useful and very costly information. It is, of course, recognized that input-output data often suffer from a great many shortcomings if viewed by the marketing researcher as a potential cure-all or as a final answer to his economic problems. First of all, adequate data to fill the matrix are generally extremely difficult to locate — even in developed countries. Secondly, if at all available, the "level of aggregations" for which information can be found or developed is a high one — in most instances the level of a country's entire national economy. Thirdly, the taxonomy, even where very fine, will be too rough to serve the purpose of many an important marketing research analysis — a shortcoming that is accentuated by the presence of a dual economy in many developing countries.

Yet, in view of the uniqueness of such information, the ease with which the data could be used once available, and the great care that usually goes into their "purification", input-output tables if properly and imaginatively used could be of the greatest interest to marketing researchers. In addition to serving as a compact information warehouse, the input-output matrix is also of great importance for marketing research because it is a very efficient instrument serving the identification of gaps and holes in the information fabric, thus pointing the way to a rational data production strategy and policy.

The information storage function of the I-O matrices is only one aspect of that particular approach. Also of considerable interest, one would think, might be the I-O model beyond its rich raw material content; for instance, and again subject to the suitability of the available taxonomy, the by now popular inverse of the matrix, makes it possible to gauge not only the direct but also the indirect requirements of given economical activities, outputs or industries. Where the question of allocation of funds for promotional effort arises, it might be interesting to speculate about the desirability and form of a strategy which would aim at increasing the

demand for a given product by stimulating secondary, tertiary, and generally higher order or indirect demand. Or the problem may arise of setting sales quotas including the secondary and generally higher order market and sub markets, and their present and expected potential. For such purposes, the inverse of the I-O matrix is a device that should certainly be investigated. If the appropriate inverse is not available, modern electronic data processing makes the inversion, once admired as a spectacular if tedious and unspiring feat, a very simple undertaking.

There are, of course, many other examples where econometrics can not only furnish a stimulus but also point the way to marketing research. There is, for instance, the entire borderline area between econometrics and management science, the area that has become known more fashionably under the name of operations research. Examples from substantive approaches are the inventory and warehousing problem, or the transportation problem, a special and historically early application of what is now known as linear programming. Such application would seem of particular interest to developing countries with a complex transportation problem, such as that found in economies composed of a great many islands or other complex networks of points of origin and of destination.

From procedures-and methods-oriented viewpoints, the utilization of modern highspeed computing equipment for the simulation of otherwise untractable processes and patterns might be useful — frequently with the help of Monte Carlo methods to simplify what under traditional and “rigorous” mathematical treatment might quickly become a hopelessly complex and opaque mass.

Thus it would seem that there are quite definite contributions that econometrics could make to marketing research in developing countries. But, somehow, the two do not appear to find it easy to get together.

The marketing researcher, as practitioner, seems to be fearful of using the operating language of the econometrician even where it would seem to be very efficient; he appears to be seriously worried about the inadequacy of abstract models even where they are powerful tools in the specific situation or where the alternative is clearly no more adequate.

The econometrician, on the other hand, has a tendency to remain aloof and distant from the not necessarily dramatic but often involved problems facing the marketing researcher in developing countries. He too apparently dislikes making concessions which would be required for effective communication with the marketing researcher. And all too often the econometrician seems to create the impression of his being disdainful of the marketing researcher's inelegant approach to messy problems. The question, therefore, poses itself on how to produce a “rapprochement” between the two.

First, what are some of the things marketing researchers might profitably borrow from the econometrician?

- 1 - There are the methods and "tricks" used in econometrics for the solution of specific problems. Perhaps this is an area where the curiosity and eagerness to borrow are most pronounced; but it would not seem the area of greatest promise.
- 2 - More important is the orderly and systematic methods of econometrics in the attempt to arrive at inferences. E.g., not all that is called statistics is what the term seems to imply.

The differentiation between what A.A. Chuprov, a generation ago, called the idiographic and the nomothetic function of statistics is particularly relevant to the practice of marketing research.

All too often the collection of *ad hoc* information through sample survey appears to be an objective in itself. The implied hope may well be that the data will speak for themselves; but they rarely do if the problem is at all complicated.

Hence, the marketing researcher may have to consider the need for balancing analysis of the data with the effort of collecting them. Use of EDP equipment for more complex and ambitious analytical manipulation of the data may have to be considered, in addition to the convenience of electronic processing of the data for presentation. Put differently, one might perhaps say that a maxim which the marketing researcher might well take over from econometrics is to squeeze out as much as possible from as little as possible information. In fact the scantier the data, the more sophisticated, usually, need be their manipulation or exploitation.

- 3 - Although the predominantly macroeconomic approaches of much of contemporary econometrics have their limitations, marketing research practice usually has a tendency to sin in the opposite direction. This sin, to the extent that it is one, can be an expensive one because quite often the cost of the information to the marketing researcher varies inversely with its level of aggregation. This is particularly true where large masses of data are being collected by the government or where industry statistics could be readily enough produced by industry itself through trade associations and similar channels. Some optimization of information use, therefore, is urgently needed - perhaps by approaching the problem in "stages", proceeding from higher levels of aggregation down.

The *ad hoc* survey might then be limited to the exploration of only such questions for which no other available information can be

found. In other words, ready-to-wear apparel should be utilized where at all feasible before having recourse to tailor-made suits. But the systematic use of available, and frequently aggregative information also requires expertise which must be nurtured along, and the economist by his very training, is usually much more aware of this.

- 4 — Finally, there is a great variety of patterns of thought, of analytical and descriptive instruments in the econometrician's tool kit which could be borrowed from him for possible use in the study of specific marketing research situations. Past experience with similar lend-lease arrangements, say, with psychologists or psychometricians (e.g., motivation research) has provided considerable stimulus to marketing research. There is no reason to assume that a similar working relationship with the econometrician might not prove to be equally beneficial.

What, then, are some of the factors for consideration in achieving rapprochement between marketing research and econometrics?

There is the general language problem. Both, the new analytical devices (the building of explicit models) and the new computing technology would seem to point toward a need for appropriate training in the understanding of basic mathematical language by the producer as well by the primary consumer in management of marketing research results.

The importance of the latter can hardly be exaggerated since he, more so ultimately than the research producer, determines the kind and the quality of marketing research and its level of sophistication. The problem obviously, is largely one of education and training.

There is the need for more, and more systematic basic marketing research. The client is a purchaser of applied research results. But here, as elsewhere, basic research must be carried on somehow to support the superstructure of sound applied research. This raises the question as to where such research is best undertaken, and how to finance it effectively. Answers to these questions may not always be easy but they must be found if marketing research is to keep up with its own problems, and with the competing disciplines.

And there is of course the all-important problem of preparing, in time, for an adequate, future flow and use of information. Information is perhaps the single most important ingredient in marketing research as we know it — so much so that to many a person marketing research has been synonymous with data gathering and statistical survey. Especially in developing countries, it would seem that there are important data sources as yet not fully utilized: the micro-information which can be made to accrue as a byproduct of the record keeping functions in connection with sales operations, and of accounting and of personnel departments, are only a few

examples of the enormous wealth of data on the company level. Such information, if imaginatively designed and exploited, can be of immense use in underpinning management's decision making — considerably beyond the immediate purpose of such data for record keeping and administration. Further "aggregation" of the data, within and by the private sector, with the assistance of organizations designed for this very purpose (the National Industrial Conference Board in New York is one of many examples) by industry itself.

Also, rapid developments are taking place in the very technology of information handling and information science, as distinct from the information theory which is essentially an application of probability theory to communication engineering. Thus, highly important and stimulating changes have taken place and are taking place in the area of information storage and retrieval which with the use of high speed electronic data processing equipment are likely to introduce one of the several significant technological "revolutions" — the so called information revolution.

In many a developing country where appropriate data are scarce and not easy to come by, the problem of how to manipulate this scarce information carefully and efficiently, and how to utilize its analytical potential to the fullest is rapidly becoming one of the most crucial ones. Therefore the marketing researcher, in such circumstances, must have a much more thorough and careful look at his data problem than in the past, and he must participate more directly in the related dialogue. Only then will the interest of marketing research be taken care of adequately in this most recent addition to the border land between statistics and econometrics.