The Beginning and the End of Econometrics?

The History of Econometric Ideas. *By Mary S Morgan Cambridge, MA Cambridge Univ Press, 1990, 296 pages, $44 50*

Reviewed by Clark Edwards

At the turn of the century, economists could be divided into two groups armchair theorists and brute-force empiricists The deductive theorists were sometimes introspective and sometimes mathematical The inductive empiricists relied on history or statistics Econometrics was seen by its first practitioners as a synthesis of these two apparently disjointed and mismatched approaches to economics Mary Morgan's fascinating yet easy-to-read history of econometrics during the first half of the 20th century quickly dispels the popular notion that econometrics appeared, almost full-blown, at mid-century Conflicts arose as theory met data one and two generations earlier, enabling striking changes in approach from 19th-century economics

Morgan's dramatization of the story of econometrics is in three acts Act I is devoted to the business cycle, Act II discusses demand analysis, and Act III turns to the evolution of formal models of data-theory relationship since the turn of the century

Act I opens with Jevons's sunspot theory Jevons was one of the first to seek systematically a bridge between theory and data, though his link to sunspots was ridiculed by his contemporaries Jevons distinguished between endogenous and exogenous variables, he relied on evidence of uniformity in statistical data to derive a general theory using inductive reasoning, and his use of "most probable cause" anticipates the idea of "maximum likelihood "

H H Moore extended Jevons's theory to the movements of the planet Venus He abandoned comparative statics in favor of methods explaining the path between two periods His cyclical theory and statistical methods flouted conventional theory and methods as he learned to use harmonic analysis, correlation, multiple regression, and time-series decomposition Moore's contemporaries applauded his efforts to bridge the gap between abstract reasoning about what should happen and statistical descriptions of what does happen At the same time, they criticized his performance Another example of cosmic theorizing saw Frisch develop a small, "rocking horse" model to demonstrate how earthly events such as war and weather, and celestial events on the sun or Venus, could explain the business cycle

Empiricists such as Juglar (a Jevons contemporary), Mitchell, and Persons (Moore's contemporaries) improved quantitative techniques (describing, classifying, measuring concepts, and preparing and adjusting data) But the relative roles assigned by them to theory and data led to a minority view of "measurement without theory "

Morgan illustrates continued gains in linking theory and data, developing quantitative methods, and recognizing probability by discussing several models built by Tinbergen in the mid-1930's Strong criticism of Tinbergen, tempered by staunch support, helped to hone the methods of econometrics Morgan closes Act I on a synthesis of mathematically expressed dynamic theory and statistical method

In Act II, Morgan turns to a discussion of demand analysis The scene opens on a price-quantity schedule of the demand for wheat constructed in 1699, progresses through Cournot's graphical and mathematical representations in 1838, and then shifts to a broad attack based on the idea of marginal analysis in the late 19th century

By the early 20th century, two facts were clear First, demand analysts had a cohesive theory that business cycle analysts did not have Second, simple statistical fits of price-quantity data were not going to work Demand theory assumed a static relationship with other variables constant, while data appeared in a dynamic context with other variables shifting The apparent mismatch between theory and data led to much adjustment of data, some twisting of theory, and eventually, progress in the use of correlation and regression in the identification of supply and demand relationships, and in model specification and testing

As Morgan closes Act II, we see that most of the important ideas about simultaneous equations, structural and reduced forms, instrumental variables, and identification of supply and demand curves lay buried in obscure books, book reviews, U S Department of Agriculture bulletins, and foreign language journals of the early decades of this century Mainstream economists took little notice of the relations among economic activity, data, theory, and measurement

In Act III, formal models of the data-theory relationship progress during the first half of this century from single equation models to mature, stepwise multiple-equation models (including the cobweb), and then to

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simultaneous multiple-equation models The complex problem is intertwined with econometric issues such as identification, simultaneity, and causality Morgan tells how economists dealt with difficult questions How does one resolve the conflicts that arise when the economic relationship suggested by theory does not correspond with a relationship generated from data? How does one respond to a recognition that the theoretical relationships are interdependent in a complex system while the models are relatively simple?

Act III closes with a discussion of Haavelmo's "probabilistic revolution" in econometrics Morgan examines and explains the paradox that the theoretical basis for statistical inference lies in probability theory, yet economists using statistical methods explicitly rejected probability theory Haavelmo's revolution changed the way economists related theory to data It led to a method for seeking the correct choice of a model for the observed data by using statistical tests Haavelmo made it clear that measurements through correlation and regression require no theory, but probability theory is needed to judge the quality of such measurements

By the late 1940's, the probability revolution had taken hold of economics One could mindlessly fit regressions, but now there was a framework for testing econometric theories Solutions and insights from earlier work on business cycles, demand analysis, and model building fit together like the pieces of a jigsaw puzzle Morgan credits much of this synthesis to a handful of econometricians Her book, despite its too-frequent typographical errors and misspellings, provides a fascinating and clear story about an important period that few economists know, yet all are affected by

It looks like a happy-ever-after ending until Morgan adds a final twist She concludes that by the 1950's the founding ideal of econometrics, the union of mathematical and statistical economics, had collapsed At first, her closing words shook me up and I did not want to believe them Up to the last paragraph, the book had been a clearly told history of progress in econometric ideas, a history of concern to all readers of this journal I was caught up in the rush of progress and was not ready to hear about regress

But on reflection, I thought of econometricians who regard data merely as an aid for illustrating new statistical tests and methods, not as a basis for explaining real and relevant economic issues I also thought of economic theorists who offer solutions to problems with no recourse to data And I thought of the volumes of data used to describe but not to explain the economy Perhaps Morgan is right Perhaps we are back to where we started a century ago some economists are armchair theorists, others are brute-force empiricists, and only a handful worry about building a bridge between them