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ALTERNATIVE MARKETS

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Bluford H. Putnam, Erik Norland,
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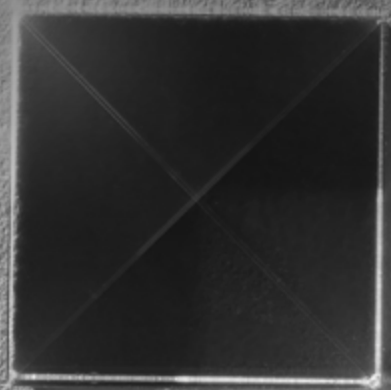
D. SYKES WILFORD



ALTERNATIVE CAPITAL MARKETS

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Welcome to edition 49 of the Capco Institute Journal of Financial Transformation.

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Lance Levy, **Capco CEO**

HAS "ECONOMICS GONE ASTRAY"? A REVIEW OF THE BOOK BY BLUFORD H. PUTNAM, ERIK NORLAND, AND K. T. ARASU[1]

D. SYKES WILFORD | Hipp Chair Professor of Business and Finance, The Citadel

ABSTRACT

This review is intended to highlight the major contribution that the new book by Blu Putnam, Erik Norland and K. T. Arasu, titled Economics Gone Astray, has made to our understanding of economics. A deeper understanding of the role that simplifying assumptions play in economic modeling (and thus the periodic disconnect from reality of the models in practice) is essential if "thinking like an economist" continues to be a badge of respect, not a comment of derision. The challenges of not appreciating the simplifying assumptions, especially those that involve feedback loops and unintended consequences, are exactly the issues Putnam, Norland, and Arasu are addressing in this book. They learned the hard way in the marketplace, not of ideas, but the marketplace of reality. Their experience permeates the book and helps address this fundamental problem that we have in economics. It is an essential read for those who have an interest in the subject, and value how it helps its students develop their thinking in a logical manner.

During my second year as a graduate student, my eventual dissertation advisor asked, "When will you start thinking like an economist?" It probably took me another two years to grasp the power of this question. Economics, in specific macroeconomics and monetary theory, provided a methodology – a set of logical ways of thinking – that would prove necessary (more than just useful) to my career in the City, on Wall Street, as well as in the classroom. For this training, I am grateful. Those educated in the dark arts of economics – well dismal arts – tend to be more analytically consistent and objective, whether those arts are applied in financial markets, the policy arena, or the classroom, than those who avoided the dismal science.

In order to be consistent and orderly in our analysis, however, many of us often fall back on crutches created to quickly analyze problems, even if these crutches may not be applicable in a more dynamic marketplace (or economy). In fact, we economists, in our desire to make models that fit our view of the world – mathematical elegance over understandable (or for many of us, profitable) results – often ignore the implicit assumptions necessary for those models to work out so elegantly. And in many cases, it is those assumptions that are the interesting aspect of analysis that separates the successful analysis, or policy, from those that simply lead to failures. All too often, we like to jump to a model that is easily generated, especially with cheap computing power available, rather than ask the hard question: do the assumptions implicit in our models hold? Or, how dangerous is it to apply this model's projections if the assumptions imbedded in it do not hold?

[1] Putnam, B. H., E. Norland, and K. T. Arasu, 2019, *Economics Gone Astray,* World Scientific Publishing Company

Or, is the power of a generally agreed upon proposition really in the assumptions needed for it to be useful at all?

To this last point consider the analysis of the capital structure of a firm and the Modigliani-Miller (M&M) theorem.[2] To simplify the theory, the model made some heroic assumptions, such as no taxes, no transactions costs, similar borrowing terms for investors and companies, and the same information available to investors and companies. As Professor Clifford Smith of the University of Rochester taught me, the key is to understand the assumptions that make the M&M model useful. Without understanding when an assumption is broken, one cannot truly understand many of the actions taken to change the capital structure of a firm. This is a lesson that we often ignore in other areas of economics, especially in macroeconomic modeling.

> "Make the mistake (of fitting a model while ignoring reality) once and one gets a second chance. Make it twice and you are fired!"

Over and over in the my own career, I have found that the assumptions behind the models we were applying, whether to forecast foreign exchange rates (one of my first jobs), or to analyze the impacts of a devaluation (my first set of disagreements with my bosses at the Federal Reserve Bank of New York, my first job as an economist), or to understand this new market called "swaps," or to understand why I was losing money in a trading book when I thought I had all of the models correctly estimating the outcome (oil swaps business) were broken. And, maybe my favorite is how I learned that most of the applied Markowitz portfolio models were often totally inconsistent with the underlying theory (if you ignore enough of the model's inherent assumptions, there is no wonder outcomes seem not to fit reality); sadly, I had to learn the hard way.

The challenges of not appreciating the simplifying assumptions, especially those that involve feedback loops and unintended consequences, are exactly the issues Putnam, Norland, and Arasu are addressing in their book. They learned the hard way in the marketplace, not of ideas, but the marketplace of reality. Their experience permeates the book and helps to address this fundamental problem that we have in economics.

To paraphrase the old adage, economics education "giveth and taketh away." It gives us a truly wonderful way to make rational decisions, but reliance on modeling (yes, an essential part of what it means to be an economist) often causes us to miss the critical elements, often buried in assumptions, that will make our decision useful or lead to unintended consequences. Look no further than the 2008-09 financial crisis or the on-going Greek debt crisis, or any number of historical mind-numbing crises that provide ample examples of unintended consequences of "good analysis."

Economics Gone Astray sets the stage in the first paragraph of the introduction. To quote: "We cut through the assumptions that economists often employ and how many traditional practices often lead them woefully astray." Indeed, the authors have designed this book to provide explanations of reality, like the good economists that they are, when that reality does not coincide with what one might expect from his or her favorite model. Yes, we all have our favorites and as all good economists we will fight tooth and nail with reality to prove we were right all along. For the macroeconomist that is tuned to the market, it makes little sense to argue with reality, but rather it makes more sense to try to understand why that reality did not fit with the one predicted by our models. Make the mistake once and one gets a second chance. Make it twice and you are fired!

The book brings home lessons about many issues that we simply ignore all too often in our analyses, such as noted in Chapter 13 "Death by simulation." Economists use back-tested simulations to demonstrate how their investment strategies might have worked in the past. Often these simulations, based on elegant models, provide answers that work for a while, even in the real world, before blowing up.

In the classroom, we tend to introduce students early to these modeling techniques, sometimes ignoring the necessary conditions (underlying assumptions) of our models. It is one of the great dis-services that a teacher can make. Admittedly, I did not teach an introductory course for many years. I did not want students to discuss policy without understanding the necessary conditions for the economy to function in the first place.[3] One need

[2] Modigliani, F., and M. Miller, 1958, "The cost of capital, corporation finance and the theory of investment," American Economic Review 48:3, 261–297

[3] In all fairness I believe many of the newer "introduction to economics" texts do stress, at least to some degree, basic issues such as property rights, rule of law, contract law, etc. before constructing simplified models.

go no further than to observe politicians, some touting a major in economics, making statements that sound as if they learned nothing at university. They probably remember their favorite model that yielded their chosen suggested policy prescription, without ever understanding when that policy prescription was useful and when, well, silly. There may be no hope for those we half-educated, but there is hope that we do a better job in the future. *Economics Gone Astray* is a big step toward that goal. Solving this fundamental problem in our profession is essential. The book makes economics real and practical to the student by focusing upon the dynamic nature of markets and economies, while putting theory (and results) into perspective. It moves discussion from jargon to explanation, by adapting many of the practices that market economists find essential to do their jobs.

> "There may be no hope for those we half-educated (in classroom economics), but there is hope that we do a better job in the future. Economics Gone Astray is a big step toward that goal."

The authors do not intend for their book to replace the textbook, which is essential to moving a student to the next stage of "thinking like an economist." Rather, it is a tool to be used in conjunction with the normal text in order to highlight the economics of a dynamic world. This is a world in which politics are not stagnant, complex institutional arrangements are variable, demographic changes disrupt the economic environment, global trade agreements are dynamic, new complex financial instruments are created almost daily, and markets are defined by a process of scratching for any advantage (efficiency). These are the factors we truly love about free markets, but these are also the factors that we sometimes ignore to make our macro models seem coherent over time.

As one of my favorite economists, who will remain nameless, stated: "when you make it up (forecast), do so to the 5th decimal." *Economics Gone Astray* argues that such precision is too often the case; we do the math, make the forecast or policy or pronouncement, but forget that these models actually believe us. It "thinks" we have considered all of those other issues that we had to assume away in order that our forecast is to the 5th decimal point. GIGO (i.e., garbage in, garbage out) is rampant in what economists do.[4] To this point, remember how safe collateralized debt obligations (CDOs) were shown to be under the assumptions that best fit the needs of the regulations in 2007 and how wrong those models were in 2009. Most of those regulations, and accepted models, were designed in response to a crisis where the models of the day were deemed inadequate. And yes, those original, deemed inadequate, models were needed since the ones they replaced were found to be inadequate and so on. One of the areas where (quant trained, mathematical) economists are in demand is in the area of risk management. Why? We seem to get it wrong time after time and consequently build bigger and better mathematical models to explain what went wrong before and why it will not go wrong this time. Yes, just one more chance to get it right before the next crisis![5]

Economics Gone Astray provides the macroeconomics teacher a tool to discuss some of the realities as the models of the classroom are actually applied to the economy. Discussions of inflation, not from one model or another's perspective, but per the reality of a dynamically changing economy where even the meaning of money changes. Does that mean Fisher's equation of exchange, 6 MV=PT, is dead? No, but it does mean we have to think differently about the implications of the power of the Fed to finetune an economy or even to generate inflation. It certainly does not mean we ignore the lessons taught to us by Milton Friedman and Anna Schwarz,[7] but to the contrary we need to understand those lessons in today's context; today the marketplace is global, and financial markets are dynamic and ever changing. Or, how can we

[4] In the Introduction to *Economics Gone Astray*, the authors discuss the words of the great Professor Alfred Marshall, Mary Paley's Professor of Political Economy at Cambridge University, who wrote the best-selling economics text of his time (late 1800s, early 1900s). The quote is worth repeating here: "But I know I had a growing feeling in the later years of my work at the subject that a good mathematical theorem dealing with economic hypotheses was very unlikely to be good economics: and I went more and more on the rules: (1) Use mathematics as a short-hand language, rather than as an engine of inquiry. (2) Keep to them till you have done. (3) Translate into English. (4) Then illustrate by examples that are important in real life. (5) Burn the mathematics. (6) If you can't succeed in 4, burn 3. This last I did often."

[5] Personally, I love to teach the history of financial risk management; doing so allows one to show all of the mistakes that have led to the latest and greatest model, which we will gladly teach to the latest group of students. Hopefully this lesson will not be lost on them as they learn the math and models they must know if they are to call themselves risk managers.

[6] Fisher, I., 1911, The purchasing power of money, Augustus M. Kelley Publishers

build productivity models without understanding structural changes? What policies work and do not work to spur productivity in a dynamic economy? They are unlikely to be the same ones that worked 20 years ago.

One of my favorite chapters in the book is the one that discusses the impacts of demographic changes on the integrity of our forecasting. Ignoring the demographic realities often lead to policies that are counterproductive and forecasts that are simply wrong. The focus here is on the long-term implications of changing demographics, the implications of rural to urban movement of people for growth (and the implications for immediate increases in productivity), and the reality of a declining labor force in many advanced countries. Forecasters have to understand this reality. With a zero (or negative) population growth, should one expect Japan to grow at 3% a year? Should we expect macroeconomic policies of the 60s, so successful in Japan of the 1960s through the 1980s, to succeed today? Ignoring this in our classrooms, which most textbooks do, will leave the economics student only half-educated (and often totally bored).

There is even a chapter on machine learning, which explains why it will be much more difficult to build a successful financial model with artificial intelligence than just matching faces, recommending a book, or beating a human at chess. The challenge, compared to winning chess, for example, is that one cannot ignore the feedback loops in how markets function, where each action by a market participant gets a reaction. Different players have different objectives, the rules change often, and some players cheat.

For students to become engaged in the discipline it must be made interesting and geared to the reality they are experiencing. *Economics Gone Astray* is designed to do just that. It brings alive analysis of issues faced today. Connecting theories and models to reality in forecasting and analysis is essential if we as a profession are to keep the next generation of students engaged. The chapter on "Bitcoin economics" touches something all students want to understand. Or, a discussion of volatility and uncertainty can highlight the issues that the student will face when trying to apply the modeling techniques that arise in a basic portfolio theory course. Many of those courses will not differentiate the concepts and will ignore the assumptions behind models, going straight to the models. For example, finance classes often focus on the mathematics and modeling. As usual, that activity can completely miss the assumptions implied in the models. In chapter 9, **Volatility and uncertainty,** the theme is to appreciate that volatility may not measure risk appropriately and uncertainty may not create volatility. The chapter highlights an issue that economists should focus upon, but often conflate, when making simplifying assumptions.

Make a concept interesting and the student will somehow store that information for when it is needed. Connecting economics to reality excites students in a way that theory alone cannot. Two more chapters that are essential reading for any student who reads the Wall Street Journal or The Financial Times are Chapters 15 and 16. Chapter 15 highlights the different approaches taken by the Federal Reserve and the European Central Bank for dealing with the financial panic of 2008, a topic for every macro class, but one in which the key assumptions are often overlooked even though they are critical to understanding the pros and cons of quantitative easing. Chapter 16 tackles one of the more widely discussed issues in today's marketplace: prescriptions for Fed policy. Just listen to CNBC almost any day to hear both the dual mandate and/or the Taylor Rule discussed. In *Economics Gone Astray*, the Taylor Rule is analyzed using a Bayesian approach, turning it from a fixed approach to a dynamic one for policy analysis.

For those of us who believe that we live in a dynamic economy, these last two chapters punctuate the real issues that economics faces. Tom Sowell, Senior Fellow at the Hoover Institution, Stanford University, brought this home when discussing his basic economics course as a student; to paraphrase, "and then what happens" once a policy is implemented, not so much on the first round but the resulting, (unintended) consequences of the policy as it fully plays out in the economy.[8] *Economics Gone Astray* makes the dynamic factors at play in an economy come alive not only for the student, but also for those of us who get stuck in a general equilibrium rut. This book is strongly recommended for those of us who want to bring our profession to life once again. Why? Because thinking like an economist is important. We just need to think dynamically!

[7] Friedman, M., and A. J. Schwartz, 1963, A monetary history of the United States, 1867-1960, Princeton University Press

ABOUT CAPCO

Capco is a global technology and management consultancy dedicated to the financial services industry. Our professionals combine innovative thinking with unrivalled industry knowledge to offer our clients consulting expertise, complex technology and package integration, transformation delivery, and managed services, to move their organizations forward.

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