Book Review of
Business and Economic Forecasting: Analyzing and Interpreting Econometric Results

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This is the book review of Silvia et al. (2014).

Despite being extremely intuitive and erring on the side of being unassuming, "Business and Economic Forecasting: Analyzing and Interpreting Econometric Results" serves as an excellent and thorough textbook not only for advanced students, but also for analysts who may not have had prior experience with more recent or formal econometric techniques. Although intended for company analysts, this book proves useful for advanced undergraduate and graduate students interested in working with time series. Even without any interest in time series, this will be useful in reinforcing econometric concepts. In particular, this text focuses on contemporary forecasting issues after a major structural break like a recession has occurred. SAS is used as a tool for analysis. The book spans 368 pages of. As a cautionary note to an unsuspecting reader, the book contains a few graphs which would benefit from a bit of editing and possibly color--black and dark gray are virtually indistinguishable on certain graphs.

Chapter 1 is an introductory chapter that considers the problems with forecasting in a post-Great Recession (GR) world and general techniques used in order to forecast accurately. Understanding the data that a forecaster observes is the focus of Chapter 2. This chapter considers important economic indicators such as GDP and its components, along with several data sources for these components and other surveys or government figures that give indications of labor market status. Series used by analysts are introduced as well. Chapter 3 discusses financial ratios along with their interpretation and importance in forecasting. The analyst must always understand the changing ratios, but more importantly should also understand why they give the observed results. In particular, the cyclical ROE and ROA, liquidity ratio, leverage ratio, IVA, and corporate profits as a fraction of GDP all allow the analyst to create a forecast and make appropriate financial decisions for the company. All three chapters serve as an introduction to a very limited, but important set of data used in a wide variety forecasting applications.

Chapter 4 introduces a variety of ways to characterize a time series, and motivates well the reason for doing this—analyzing a variable of interest will very much depend on the behavior of the series over time, and will aid in improving predictions. The authors begin with intuitive measures and descriptive statistics before moving on to trend and cycle estimation as well as tests for stationarity. This is all reinforced well using tables and descriptive statistics for different series. Chapter 5 continues by covering relationships between time series, basic

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regression as well as model selection, including the concept of causality (Granger, one/two-way). Methods for handling nonstationary series are also discussed. The use of ARCH/GARCH models highlights the fact that financial data is more volatile than economic data and that the variance may not be constant or time invariant, though more details about the models would help those not already well versed in them.

Chapters 6-8 cover many relevant applications of SAS to forecasting. Given recent technological advancements, it is easier/faster than ever to run regressions and generate test statistics, but their correct interpretation lies at the discretion of the analyst. Chapter 6 stresses the importance of understanding econometric concepts (even without advanced mathematical techniques) in order to properly implement analysis with the help of SAS. The focus is primarily on employing SAS to generate descriptive statistics and identify time and cyclical trend. Chapter 7 focuses on using the SAS software to test for unit roots and structural breaks. The U.S. CPI series was shown to be stationary at the 5% significance level using three of the aforementioned unit root tests. The book demonstrates a variety of methods to find such in real economic data, using concrete examples to good effect. A few series are examined in detail using the state space approach and HP Filter—this is an important way to reinforce the concepts without relying too much on SAS code. Chapter 8 serves as the SAS counterpart to Chapter 5. Caution is advised when observing commoving variables due to the possibility of spurious relationships, with the Durbin-Watson statistic used as an indicator of such. Preference is given to log-difference forms of variables as these usually avoid nonstationarity problems. The remainder uses SAS to implement the Engle-Granger cointegration test, ECM and VECM, and the Granger causality test. Overall, it's very informative to see the SAS codes presented and implemented; however, it would be useful to have access to more (formatted) data sets to go along with the chapter.

Chapter 9 reviews good practice methods for forecasters, setting up the following chapters which discuss forecasting methods in detail. There are many biases that the forecaster may succumb to, but these commandments are an attempt to hold forecasters to a higher standard. Emphasis is placed on forecasting being an evolving process where even the best models require revision eventually. Chapter 10 focuses on unconditional and conditional forecasting in a single-equation, univariate framework. The atheoretical approach to forecasting is useful in times when the theory may no longer give us an appropriate relationship between variables; e.g., the unemployment rate remained stagnant in post-GR while GDP surpassed pre-recession levels, violating the Okun's law. Box Jenkins methodology is covered along with its associated SAS applications. The conditional approach is broken down into two categories: traditional dependent variable with more traditional regression approaches and binary dependent variable with a probit approach. Perhaps for limited dependent variable models, it would be useful to consider other non-binary models as many macroeconomic variables may inhabit more than two states.

Chapters 11 and 12 cover short and long-term model-based forecasting in a multi-equation framework. Chapter 11 discusses short-term forecasting and the importance of being able to predict macroeconomic variables prior to their release given that the markets react strongly to economic news, especially when the information differs from the consensus expectation. Some issues in short term forecasting arise due to the timing of data release as well as the data frequency. Forecasting in the short term is often evaluated using RMSE, but the often overlooked measure of accuracy that the authors consider is the directional accuracy, which is of particular importance in the financial sector. The authors find that their individual BVAR method produces more accurate forecasts, on average, than the Bloomberg forecasts which are

used as a proxy for the consensus. Chapter 12 considers long term forecasting and the associated issues, such as high risk of significant changes in the economy, varying behavior of macroeconomic variables over business cycles or at certain horizons, policy changes, selection of variables and long-term model selection criteria.

Chapter 13 discusses the challenges of forecasting in both short- and long-term. The authors again emphasize the importance of rebuilding models when necessary, e.g. after numerous errors or given a group of black swans, and contrast this with adding factors when appropriate (e.g. for short-lived shocks or single black swans). As mentioned before, the magnitude of forecast errors tends to increase as we expand the time horizon due to a higher possibility of significant change and larger ranges of possible outcomes. Financial panics tend to be difficult to forecast and lead to a large degree of uncertainty (outside of the bounds of previous prediction). Chapter 14 puts the preceding work into practice, providing and analyzing what the authors consider a set of benchmark economic indicators: growth, inflation, interest rates, profits, and the dollar. They use these to point out possible instability in the current economy. The book also criticizes the bias toward a federal deficit, especially given its reliance on potentially overly optimistic growth forecasts.

These insights provide readers with the key to forecasting. For one, the data analysis must be implemented correctly; before the Great Recession, analyst bias in combination with a changing economic environment likely resulted in lost profits and/or jobs. This book provides many clear and concise examples involving real data. One particular application examines the weakness of the post-GR recovery and attributes the slow response to a shift in credit patterns where the pattern between real estate loans and other loan types has been significantly altered. The rate of delinquencies on real estate loans has been more than double the rate of C&I and consumer loans since about 2009, indicating the economic conditions may have changed since the most recent recession and may provide new challenges to the analyst.

There is much to be learned from these types of financial crises both in the long and short-term, especially from the perspective of a forecaster. This book challenges the reader to think critically about the economic environment, as it may be changing trends and altering economic relationships, and to comprehend the data and all relevant variables especially for long-term forecasting. That being said, programs like SAS are meant to run certain codes and statistical tests, but they are not there to interpret and give meaning to the results—it is important to use these tools correctly and effectively. The book provides simple rules of thumb and teaches new models without so much complexity or heavy technicality for advanced undergraduate or graduate students and analysts. It is written in a comprehensible, clear manner with few inconsequential errors. Most importantly, the book's strength is that it is forward-looking in that it acknowledges ever evolving forecasting models along with the economic conditions.

REFERENCES

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