A Statistical Approach to Empirical Macroeconomic Modeling with Practical Applications

Jeffrey A. Edwards

Dissertation submitted to the Faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

Doctor of Philosophy
in
Economics

Richard Cothren, Chair___________________
Anya McGuirk, Chair___________________
Sheryl Ball____________________________
Aris Spanos____________________________
Dennis Yang___________________________

April 23, 2003
Blacksburg, Virginia

Keywords: Statistical Specification, Misspecification Testing, Growth, Inflation, Mundell-Tobin Effect
Most of empirical modeling involves the use of Ordinary Least Squares regression where the residuals are assumed normal, independent, and identically distributed. In finite samples, these assumptions become critical for accurate estimations, however, in macroeconomics in particular, these assumptions are rarely tested. This study addresses the applications of statistical testing methods and model respecification within the context of applied macroeconomics.

The first application is a statistical comparison of Gregory Mankiw, David Romer and David Weil’s *A Contribution to the Empirics of Economic Growth*, and Nazrul Islam’s *Growth Empirics: A Panel Data Approach*. This analysis shows that the models in both papers are statistically misspecified. When respecified, the functional forms of Mankiw, Romer, and Weil’s models change considerably whereas Islam’s retain the theoretical structure. The second application is a study of the impact of inflation on investment and growth. After instrumenting for inflation with a set of political variables, I find that between approximately 1% and 9% inflation, there is a positive correlation between inflation and investment—the Mundell-Tobin effect may be a valid explanation. I further this analysis to show that treating investment as an exogenous variable may be problematic in empirical growth models.
Dedication

I would like to dedicate this dissertation to my mother, Ann, my wife, Catherine, my daughter, Ashley, and the rest of my family and friends. Their steadfast support throughout my ‘mood swings’ during the completion of my Ph.D. created an atmosphere of caring that kept me going when times got hard, and made me feel like I could do anything that was thrown my way. I could not have done this without you. Thank you, and I love you all for everything you have done for me.

Sincerely,

Jeff
Acknowledgements

Many have given me the support and knowledge I needed to complete this degree. My co-advisors, Professors Richard Cothren and Anya McGuirk, provided me with the theoretical and statistical skills needed to not only complete this dissertation, but to put me on a path to a successful career. Richard and Anya’s patience in lending advice and editing my numerous drafts has lead to a friendship that will last a lifetime. Professors Aris Spanos, Sheryl Ball, and Dennis Yang have been central in not only providing me with technical support, but also the emotional support to complete this degree.

Thank you all,

Jeffrey A. Edwards
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RLS Plots of CPI and CPI²