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Personal

Marital Status: Married to my wife Rebecka, and we have a wonderful son.

Visa Status: USA. Citizenship

Education

- 2009 PhD in Economics Expected, University of Pittsburgh 2005 – 2009
- 2007 M.A. in Economics, University of Pittsburgh 2005*- 2007
- 2003 M.A. in Mathematics, University of Pittsburgh 2000**-2003
- 1997 M.S. in Mathematics, University of Science and Technology of Iran Tehran, Iran.
- 1994 B.S. in Mathematics, Sharif University of Technology (*summa cum laude*) Tehran, Iran.

Fields of Interests

Primary: Econometrics Theory, and Applied Econometrics.

Secondary: Financial Economics. (Asset Pricing, and Asymmetric Information.)

Working Papers

- **Model Selection for Moment Condition Models Using the Penalized Empirical Likelihood Procedure**[†] (Job-market paper)

This paper develops a model selection technique based on the penalized empirical likelihood procedure and provides guidelines for extending it to the more general setting of the generalized empirical likelihood (GEL). By using this technique, which in the linear and GMM settings, has been called “*least absolute shrinkage and selection operator*” (LASSO), we are able to combine the selection and estimation steps together and improve the post-selection properties of the resulting estimators. This technique is easy to implement, and it is computationally feasible even in a model with a large number of parameters. As a further contribution, I propose a framework to investigate the penalized empirical likelihood with a fairly general penalty function. In addition, a new PEL estimator based on a penalty function other than lasso type, has been also introduced. This estimator, which is very similar to the EL estimator, has an implied probability measure with better properties than the implied probability measure of the EL estimator. A simulation study is carried out to compare the properties of the model selection method proposed here with some of the already available ones. The simulation results show the better performance of the method developed in this paper compared to the classical methods like AIC, BIC, and DT.

- **Modulation Method for Empirical Likelihood Estimator.**[†]

In this paper, we introduce the modulation method in the framework of empirical likelihood estimator. This method is an example of what are generally known as shrinkage methods. Shrinkage methods are frequently used to improve an existing estimator, and they provide powerful tools to correct ill-posed

^{*}For two years from 2003 to 2005, I worked as a computer consultant. (School of Info. Sciences)

^{**}From 1996 to 2000, I taught at different colleges and universities, see the teaching experience section

inference problems due to small samples, unknown heteroskedasticity, and etc. In this paper, we show how modulation method works in theory, and how we can implement it in special, yet very important estimation problems. Although, devising algorithms to implement all of the methods and procedures introduced in this paper, is currently a work in progress, I will conduct Monte Carlo simulations using two important examples, which show the advantages of using the shrinkage procedures, introduced in this paper, over their regular counterparts, specially when the sample size is very small. Also, very recently, I have realized that it is possible to use this method to design moment selection procedures for the framework of EL, and GEL estimators.

- **Celebrity Effect: How Famous Traders Impact the Financial Market.**[†]

Imitation is one of those personal behaviors which have profound social and economical implications. It has been suggested that this phenomenon is the leading cause of wide spread modes and fashions. Even financial markets with rational, and to some extent, experienced and serious participants are not immune from imitative behaviors. The term “animal spirit” was adopted by Keynes mostly in reference to these kind of behaviors. Although, this Keynesian view has been somewhat overshadowed by the considerable successes of rational expectation argument, new research in herd behavior, informational cascades, and behavioral economics has shown that not all herds behavior are necessarily caused by irrationality, nor can learning and training completely prevent irrational behavior. In this paper, we study a model of imitation in which not all participating agents carry the same weight when it comes to affecting other people’s behavior. We show, how having a “*star*” or *celebrity* player impacts the entire herd formation. Embedding this model in a simple market with a single asset to be traded, we show how this *celebrity effect* can inflate prices and be a cause of bubble formation in the financial market.

- **A Conditional Likelihood Ratio Test for Weakly Identified GEL.**

The standard approach to testing statistical hypothesis, and reporting empirical results in econometrics is to provide point estimates and standard errors. Unfortunately, this method fails under the assumption of weak identification. For instance in the linear instrumental variables (IVs) regression, when IVs are weak, two-stage least squares (2SLS) has significant bias and is poorly approximated by a normal distribution. The problem of testing and constructing confidence intervals persist when we deal with non-linear models like GMM and GEL. Anderson-Rubin (AR) statistic is the oldest solution to the testing and constructing confidence intervals for linear models with weak identification. In recent years, other robust test statistics have been proposed to improve AR. Some of the alternatives to the AR test are Lagrange multiplier test (LM), and conditional likelihood ratio (CLR) tests. Several authors have constructed AR, LM, and CLR tests for the GMM case. Analytical results from linear case and simulation results from GMM, shows that CLR test has better power compare to the other weak IVs robust tests. While AR and LM tests are available for the GEL model, currently there is no CLR test available for this model. Since CLR preforms better in the linear and GMM case, one might assume that such a test has a superior performance in the GEL model as well. In this paper we construct a CLR test for the GEL model and preform simulations to compare its power properties with, the previously available, LM, and AR tests.

- **Realized Volatility Forecasting in the Presence of Market Microstructure Noise (A Continuous Time Model).**^{*}

Estimating, and forecasting the return volatility is a fundamental task for both practitioners and those how are interested in studying the financial markets. A natural measure of ex-post return variability is the integrated volatility (IV) measure. Although, theoretically the IV measure provides a complete picture of the volatility function associated with the diffusion process representing the price, in practice IV is not directly observable. The closet measure to IV is the so called realized

[†]See my web page for a pdf file.

^{*}See my web page for an extended abstract.

volatility (RV), which is the summation of high-frequency squared return from the price diffusion. Basic theorems of stochastic analysis guarantee that RV approaches IV, when the sampling frequency increases, or the time between two consecutive samples goes to zero. In practice, when the frequency is too high, the market microstructure noise becomes a major factor, blurring the whole process. In this paper, using the continuous time stochastic filtering theory, we try to model the market microstructure noise and derive a corrected, and more reliable RV, which is robust to this kind of noise.

Works in Progress, and Other Works

• **Empirical Likelihood Estimation in the Presence of Heteroscedasticity When Common Moment Conditions Hold**

Estimating an unknown parameter using information from several independent but inhomogeneous samples is a problem that happens frequently in the real world. One famous example is the measurement error problem. Frequently, economists use data collected over a long period of time to make statistical inferences about the subject of their study, GDP is a good example, but over the year measurement techniques are changed in accuracy. Therefore we have a set of data which according to the economics theory satisfy some moment conditions, they are independent, but no longer coming from a same distribution. In general when several instruments are used to collect the data, and these instruments differ in their precision we face the measurement error problem. In this paper we use the empirical likelihood theory to derive an estimator for the unknown parameters based on the common moment conditions. We also design inference procedure based on this theory.

Other Works:

- Market Timing: An Experimental Study (pdf)*
- Stochastic Modeling and Its Applications “A Case Study of the Interaction of the Blade-Vortex Noise with the Flight Path in a Helicopter.” (My M.S. thesis 1997)

Teaching Experience

Between 1996 and 2000 I had taught the following courses while still in Iran

- Calculus I, and II.
- Probability and Statistics.
- Data Structure in C Languages.

From 2000 to 2003 I was TA for the following courses while a PhD student at the Department of Mathematics, University of Pittsburgh.

- Calculus I, III, and Business Calculus.
- Introduction to PDE.
- Introduction to Mathematical Analysis.

From 2005-present I have been TA for the following courses at the Department of Economics.

- Introduction to Statistics.
- Mathematics for the first year PhD students in Economics.

*See my web page for a preliminary version of this paper

- Introduction to Macroeconomics.

I also have taught (lecturer) **Applied Econometrics** in the 2008 summer session, at the Department of Economics.

Awards and Scholarships

- 2000-2002 TA-ship Department of Mathematics, University of Pittsburgh.
- 2002-2003 Dean Scholarship.
- 2005-present Full Scholarship, Department of Economics, University of Pittsburgh

Skills

Computer: C/C++, Python, Pascal, Matlab, R, STATA, UNIX, Linux, L^AT_EX, Emacs.

Languages: Persian (native), English (fluent).

References

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