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Chapter 1 : "Semiparametric Estimation Of Single- And Multiequation Models In The P" by Jeffrey Scott Ra

Semiparametric Estimation In The Presence Of Heteroskedasticity Of Unknown Form. "Semiparametric Estimation In The Presence Of Heteroskedasticity Of Unknown.

This paper proposes a unified approach for consistent testing of linear restrictions on the conditional distribution function of a time series. A wide variety of interesting hypotheses in economics and finance correspond to such restrictions, including hypotheses involving conditional goodness-of-fit, conditional homogeneity, conditional mixtures, conditional quantiles, conditional symmetry, distributional Granger non-causality, and interval forecasts. The finite-sample properties are investigated in a set of Monte Carlo experiments. The proposed tests are conservative but perform well in samples of the size relevant for empirical finance. My thanks go to F. Diebold for his advice and support, to V. Show Context Citation Context Distributional Granger Non-causality We say that it does not Granger-cause x_t in the distribution of x_t . Crump, Michael Jansson " It is shown that under mild assumptions, an estimator is presented which can be used in the usual way to construct valid confidence intervals when identification is strong. Binary choice sample selection models are widely used in applied economics with large cross-sectional data where heteroskedasticity is typically a serious concern. Existing parametric and semiparametric estimators for the binary selection equation and the outcome equation in such models suffer from serious drawbacks in the presence of heteroskedasticity of unknown form in the latent errors. In this paper we propose some new estimators to overcome these drawbacks under a symmetry condition, robust to both nonnormality and general heteroskedasticity. The estimators are shown to be p -consistent and asymptotically normal. We also indicate that our approaches may be extended to other important models. Identifying contract optimality non-parametrically with moral hazard: First order approach and statistical inference by Rongzhu Ke , " This paper develops a non-parametric methodology for identifying contract optimality in the presence of moral hazard. Following the first order approach, a standard method of computing optimal contracts, the paper first proves two theoretical properties of the solutions to the moral hazard problem. First, we show that the profit loss relative to the optimal contract for given effort level has a unique lower bound. The paper shows that under some weak conditions, contract optimality is identified, as long as the output generating process is additive in effort and noise. Based on the approach proposed in this paper, we test contract optimality for a piece-rate contract, and estimate bounds on the profit loss for cotton weavers in Zhejiang Province, China. Newey , " Instrumental variables are often associated with low estimator precision. This paper explores efficiency gains which might be achievable using moment conditions which are nonlinear in the disturbances and are based on flexible parametric families for error distributions. We show that these estimators can achieve the semiparametric efficiency bound when the true error distribution is a member of the parametric family. West, Ka-fu Wong, Stanislav Anatolyev , " We propose and evaluate a technique for instrumental variables estimation of linear models with conditional heteroskedasticity. The technique uses approximating parametric models for the projection of right hand side variables onto the instrument space, and for conditional heteroskedasticity and serial correlation of the disturbance. Use of parametric models allows one to exploit information in all lags of instruments, unconstrained by degrees of freedom limitations. Analytical calculations and simulations indicate that there sometimes are large asymptotic and finite sample efficiency gains relative to conventional estimators Hansen These efficiency gains are robust to minor misspecification of the parametric models. The authors are listed in the order that they became involved in this project.

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Chapter 2 : Semiparametric estimation of a work-trip mode choice model " Northwestern Scholars

Racine, Jeffrey Scott, "Semiparametric Estimation Of Single- And Multiequation Models In The Presence Of Heteroskedasticity Of Unknown Form" (). Digitized racedaydvl.com The author of this thesis has granted The University of Western Ontario a non-exclusive.

This paper explains why this problem arises and proposes an appropriate estimator. Our criticism to conventional practices and the solution we propose extends to a broad range of economic applications where the equation under study is log-linearized. We develop the argument using one particular illustration, the gravity equation for trade, and apply the proposed technique to provide new estimates of this equation. We find significant differences between estimates obtained with the proposed estimator and those obtained with the traditional method. These discrepancies persist even when the gravity equation takes into account multilateral resistance terms or fixed effects. Show Context Citation Context However, despite having been proposed more than 15 years ago, this estimator has never been adopted as a standard tool by researchers doing empirical work, who generally prefer the simplicity of the Empirical likelihood-based inference in conditional moment restriction models by Yuichi Kitamura, Gautam Tripathi, Hyungtaik Ahn - Econometrica , " This paper proposes an asymptotically efficient method for estimating models with conditional moment restrictions. Using a kernel smoothing method, we efficiently incorporate the information implied by the conditional moment restrictions into our empirical likelihood-based procedure. This yields a one-step estimator which avoids estimating optimal instruments. Our likelihood ratio-type statistic for parametric restrictions does not require the estimation of variance, and achieves asymptotic pivotalness implicitly. The estimation and testing procedures we propose are normalization invariant. Simulation results suggest that our new estimator works remarkably well in finite samples. Recent developments in empirical likelihood EL methods are reviewed. First, to put the method in perspective, two interpretations of empirical likelihood are presented, one as a nonparametric maximum likelihood estimation method NPMLE and the other as a generalized minimum contrast estimator First, to put the method in perspective, two interpretations of empirical likelihood are presented, one as a nonparametric maximum likelihood estimation method NPMLE and the other as a generalized minimum contrast estimator GMC. Second, EL is shown to have various advantages over other methods. The theory of large deviations demonstrates that EL emerges naturally in achieving asymptotic optimality both for estimation and testing. Interestingly, higher order asymptotic analysis also suggests that EL is generally a preferred method. Third, extensions of EL are discussed in various settings, including estimation of conditional moment restriction models, nonparametric specification testing and time series models. Finally, practical issues in applying EL to real data, such as computational algorithms for EL, are discussed. Numerical examples to illustrate the efficacy of the method are presented. We study the identification of panel models with linear individual-specific coefficients, when T is fixed. We show identification of the variance of the effects under conditional uncorrelatedness. Identification requires restricted dependence of errors, reflecting a trade-off between heterogeneity and error dynamics. We show identification of the density of individual effects when errors follow an ARMA process under conditional independence. We discuss GMM estimation of moments of effects and errors, and introduce a simple density estimator of a slope effect in a special case. Kniesner, Jose Carbajo, Anthony D. The underlying theoretical model is of a sluggishly adjusting hedonic labor market. We compared results from three parametric estimators, nonlinear least squares plus Poisson and negative binomial pseudo maximum likelihood, to generalized least squares using nonparametric estimates of the conditional variance. Our data support the hedonic model of worker absenteeism. Semiparametric generalized least squares coefficients are similar in sign, magnitude, and statistical

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significance to their econometric analogs where the mean and variance of the errors were specified ex ante. Overdispersion test reject the Poisson specification. Robustness checks confirm that in our data parameter estimates are sensitive to regressor list but are not sensitive to econometric technique, including how we corrected for possible heteroskedasticity of unknown form. Show Context Citation Context Consistent estimation of models defined by conditional moment restrictions by A. Lobato - *Econometrica*, " In econometrics, models stated as conditional moment restrictions are typically estimated by means of the generalized method of moments GMM. The GMM estimation procedure can render inconsistent estimates since the number of arbitrarily chosen instruments is finite. In fact, consistency of the GMM In fact, consistency of the GMM estimators relies on additional assumptions that imply unclear restrictions on the data generating process. This article introduces a new, simple and consistent estimation procedure for these models that is directly based on the definition of the conditional moments. The main feature of our procedure is its simplicity, since its implementation does not require the selection of any user-chosen number, and statistical inference is straightforward since the proposed estimator is asymptotically normal. In addition, we suggest an asymptotically efficient estimator constructed by carrying out one Newton-Raphson step in the direction of the efficient GMM estimator. Estimating functionals of the error distribution in parametric and nonparametric regression by Ursula U. Statist, " We consider estimation of linear functionals of the error distribution for two regression models: We show that the residual-based empirical estimators for the nonparametric type I model remain efficient in the type II model. For the parametric type I regression model, efficient estimators are obtained by correcting the empirical estimator using that the errors are centered, and using an efficient estimator for the regression parameter. Since such efficient parameter estimators do not remain consistent in the parametric type II model, neither does the empirical estimator. We construct efficient estimators for linear functionals of the error distribution in the parametric type II regression model, starting from residual-based empirical estimators, correcting it for the fact that the errors are conditionally centered, and using an appropriate efficient weighted least squares estimator for the regression parameter. Key words and Phrases. Plug-in estimator, local polynomial smoother, i. Semiparametric single-index regression involves an unknown finite dimensional parameter and an unknown link function. We consider estimation of the parameter via the pseudo maximum likelihood method. For this purpose we estimate the conditional density of the response given a candidate index and maximize the obtained likelihood. We show that this technique of adaptation yields an asymptotically efficient estimator: Misspecified Heteroskedasticity in the Panel Probit Model: This paper compares generalized method of moments GMM and simulated maximum likelihood SML approaches to the estimation of the panel probit model. Both techniques circumvent multiple integration of joint density functions without the need to restrict the error term variance-covariance matrix of Both techniques circumvent multiple integration of joint density functions without the need to restrict the error term variance-covariance matrix of the latent normal regression model. Particular attention is paid to a three-stage GMM estimator based on nonparametric estimation of the optimal instruments for given conditional moment functions. Monte Carlo experiments are carried out which focus on the small sample consequences of misspecification of the error term variance-covariance matrix. The correctly specified experiment reveals the asymptotic efficiency advantages of SML. This holds in particular for the three-stage GMM estimator. Allowing for heteroskedasticity over time increases the robustness with respect to misspecification in terms of multiplicative heteroskedasticity. An application to the product innovation activities of German manufacturing firms is presented. We consider estimation of means of functions that are scaled by an unknown density, or equivalently, integrals of conditional expectations. No sample size dependent smoothing is required. A similarly simple estimator is provided for the limiting variance. The proofs include new limiting distribution results for functions of nearest neighbor spacings. Potential applications include endogeneous binary choice, willingness to pay, selection, and treatment models.

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Chapter 3 : Semiparametric Estimation In The Presence Of Heteroskedasticity Of Unknown Form

"Second Order Approximation in a Linear Regression with Heteroskedasticity for Unknown Form," Cowles Foundation Discussion Papers , Cowles Foundation for Research in Economics, Yale University. Bertschek, Irene & Lechner, Michael,

The EMSE of both estimators tends to increase with the increase in level of collinearity and degree of heteroscedasticity. On the other hand, the stated EMSE decreases as the sample size grows. Conclusion This study is focused to estimate the DLM plagued with the heteroscedasticity of unknown form. One of the most popular technique, which is used for estimating the parameters of the DLM, is proposed by Almon In Almon technique, the DLM is transformed under the assumption that lag coefficients lie on a polynomial of some suitable degree and then the OLS is applied on the transformed model. If the error term is homoscedastic, there is no hindrance in applying the OLS to the transformed model but in presence of heteroscedastic errors, the OLSE for the transformed model may become seriously inefficient. Based on the work of Carroll we have proposed an adaptive estimator combined with the Almon technique, which is more efficient as compared to the conventional Almon estimator, which is based on the OLS. The estimators are evaluated by varying degree of heteroscedasticity, degree of collinearity, sample size and probability distribution for the error term. The simulation results reveal that the proposed estimator AWLSE is an attractive choice for being more efficient over the conventional Almon OLSE in the presence of heteroscedasticity of unknown form. Funding The author received no direct funding for this research. References References Ahmed, M. Inference under heteroscedasticity of unknown form using an adaptive estimator. Communication in Statistics-Theory and Methods, 40 24 , " On the Liu and almost unbiased Liu estimators in the presence of multicollinearity with heteroscedastic or correlated errors. Surveys in Mathematics and Its Applications, 4, " Some modifications for choosing ridge parameters. Communication in Statistics-Theory and Methods, 35 11 , " The distributed lag between capital appropriations and expenditures. Journal of the Econometric Society, 33 1 , " Adaptive procedures for estimation of linear regression models with known and unknown heteroscedastic errors Ph. Some monte carlo evidence. Communication in Statistics-Simulation and Computation, 43 4 , " Efficient estimation and robust inference of linear regression models in the presence of heteroscedastic errors and high leverage points. Communications in Statistics - Simulation and Computation, 42 10 , " Adapting for heteroscedasticity in linear models. Annals of Statistics, 10 4 , " Robust estimations in heteroscedastic of linear models. Annals of Statistics, 10 2 , " Asymptotic inference under heteroscedasticity of unknown form. A new heteroskedasticity-consistent covariance matrix estimator for the linear regression model. Semiparametric generalized least squares estimation in the multivariate nonlinear regression model. Econometric Theory, 8, " A note on the estimation of polynomial distributed lags. Econometric research program research memorandum. University of California, Berkeley School of Law. Some properties of the Almon lag technique when one searches for degree of polynomial and lag. Journal of the American Statistical Association, 70 , " Estimation for a linear regression model with unknown diagonal covariance matrix. Annals of Statistics, 6 5 , " A simulation study of some ridge estimators. Journal of American Statistical Association, 76 , " Basic Econometrics 4th ed. Comparisons of the alternative biased estimators for the distributed lag models. Communication in Statistics-Simulation and Computation, 46 4 , " The theory and practice of econometrics. Performance of some new ridge regression estimators. Communications in Statistics - Simulation and Computation, 32 2 , " Distributed lags and investment analysis. North Holland Publishing Company. A simulation study of ridge and other regression estimators. Communications in Statistics A, 5 4 , " A simulation study of some ridge regression estimators under different distributional assumptions. Communication in Statistics-Simulation and Computation, 39 8 , " Theory Probability and Its Applications, 9 1 , " The Almon two parameter estimator for the distributed lag models. Journal of Statistical Computation and Simulation, 87 4 , " The feasible generalized restricted ridge regression estimator.

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Estimation methods for regression models with unequal error variances Ph. Asymptotically efficient estimation in the presence of heteroscedasticity of unknown form. *Journal of the Econometric Society*, 55 4 ,
" Is adaptive estimation useful for panel models with heteroskedasticity in the individual specific error component? Some Monte Carlo evidence. *Econometric Reviews*, 21, " A distributed lag estimator derived from smoothness priors. *Journal of the Econometric Society*, 41 4 , " Density estimation for statistics and data analysis. *Recent advances in regression methods. Sankhya A*, 26 4 , " You are free to: Share " copy and redistribute the material in any medium or format. Adapt " remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms. Under the following terms: Attribution " You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. No additional restrictions You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits.

Chapter 4 : CiteSeerX " Citation Query Adaptive estimation of regression models via moment restrictions

from conditional heteroscedasticity of unknown form. An instrumental variables version of the estimator can deal with some forms of endogenous or mismeasured regressors.

Chapter 5 : Computing nonparametric functional estimates in semiparametric problems. - CORE

In a regression model with conditional heteroskedasticity of unknown form, we propose a general class of M-estimators scaled by nonparametric estimates of the conditional standard deviations of the dependent variable.