

# Penalized Quantile Regression with Semiparametric Correlated Effects: Applications with Heterogeneous Preferences\*

Matthew Harding<sup>†</sup> and Carlos Lamarche<sup>‡</sup>

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## Abstract

This paper proposes new  $\ell_1$ -penalized quantile regression estimators for panel data, which explicitly allows for individual heterogeneity associated with covariates. We conduct Monte Carlo simulations to assess the small sample performance of the new estimators and provide comparisons of new and existing penalized estimators in terms of quadratic loss. We apply the techniques to two empirical studies. First, the new method is applied to the estimation of labor supply elasticities and we find evidence that positive substitution effects dominate negative wealth effects at the middle of the conditional distribution of hours. The overall effect tends to be larger at the lower tail, which suggests that changes in taxes have different effects across the response distribution. Second, we estimate consumer preferences for nutrients from a demand model using a large scanner dataset of household food purchases. We show that preferences for nutrients vary across the conditional distribution of expenditure and across genders, and emphasize the importance of fully capturing consumer heterogeneity in demand modeling. Both applications highlight the importance of estimating individual heterogeneity when designing economic policy.

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<sup>†</sup>Corresponding author: Department of Economics, Stanford University, 579 Serra Mall, Stanford, CA 94305; Phone: (650) 723-4116; Fax: (650) 725-5702; Email: [mch@stanford.edu](mailto:mch@stanford.edu)

<sup>‡</sup>Department of Economics, University of Kentucky, 335A Gatton College of Business and Economics, Lexington, KY 40506-0034. Tel.: +1 859-257-3371. Email: [clamarche@uky.edu](mailto:clamarche@uky.edu)