Dissertation Abstract

My dissertation is a collection of three independent studies in environmental and energy Economics. The first study focuses on the discrepancy from different data sources in nonmarket valuation. The second study examines the significance of the relationship between two critical concerns, obesity and vehicle emission. The third study investigates the rebound effect in vehicle usage.

The first study, “Combining Revealed Preference Data with Stated Preference Data: A Latent Class Approach”, proposes a new framework to combine revealed and stated preference data when the convergent validity assumption is not hold. While a substantial literature assume that convergence of the two elicitation approaches in an “all or nothing” proposition; i.e., the RP and SP data are either consistent with each other or they are not, this paper suggests a latent class approach that allows for possible divergence among individuals in terms of the consistency between their RP and SP responses. The empirical results suggest that somewhat less than half the sample exhibits inconsistent preferences.

The second study, “Weighing the Effects of Obesity on the Environment,” touches on two prominent social concerns, obesity and GHG emission in the U.S. and throughout the world. A number of studies have suggested that the societal impacts of obesity, which has become a prominent social concern, also extend into the environmental arena. It is argued that obesity can increase gasoline consumption, both directly through the additional fuel required as passenger weight increases and indirectly through the move towards less fuel efficient vehicles by obese and overweight individuals. By adopting panel data and the linkages between obesity on the one hand and both vehicle choice and usage on the other, this study prevents the problem that potentially masking important factors determining vehicle choice and usage from aggregate data analysis. I show that while it has also been suggested that obesity may contribute to environmental problems as well, by inducing
individuals to by less fuel efficient vehicles, this impact is likely small.

The third study, “Vehicle Fuel Efficiency and the Rebound Effect: Evidence from U.S. Panel Data” highlights on a drawback of the Corporate Average Fuel Economy (CAFE) standards which have been long centered in U.S. efforts to reduce the carbon footprint of its transportation sector. The rebound effect is one of classical, but still controversial issues in energy economics because it could offset much of the gains in terms of reduced of energy consumption sought through CAFE standards. This paper analyzes the rebound effect using vehicle choice and usage information from the Panel Study of Income Dynamics (PSID). Moreover, I examine the variation in the rebound effect across income decile. This study shows that the rebound effect in the U.S. is higher than the estimates of studies using cross-sectional and time-series data.