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An Applied Physicist Does Econometrics L.G. TAFF, Taff & No Associates — The biggest problem those attempting to understand econometric data, via modeling, have is that economics has no $\mathbf{F} = m\mathbf{a}$. Without a theoretical underpinning, econometricians have no way to build a good model to fit observations to. Physicists do, and when $\mathbf{F} = m\mathbf{a}$ failed, we knew it. Still desiring to comprehend econometric data, applied economists turn to mis-applying probability theory—especially with regard to the assumptions concerning random errors—and choosing extremely simplistic analytical formulations of inter-relationships. This introduces model bias to an unknown degree. An applied physicist, used to having to match observations to a numerical or analytical model with a firm theoretical basis, modify the model, re-perform the analysis, and then know why, and when, to delete "outliers", is at a considerable advantage when quantitatively analyzing econometric data. I treat two cases. One is to determine the household density distribution of total assets, annual income, age, level of education, race, and marital status. Each of these "independent" variables is highly correlated with every other but only current annual income and level of education follow a linear relationship. The other is to discover the functional dependence of total assets on the distribution of assets: total assets has an amazingly tight power law dependence on a quadratic function of portfolio composition. Who knew?

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