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## **Empirical Economic Model Discovery and Theory Evaluation\***

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**Abstract:**

Economies are so high dimensional and non-constant that many features of models cannot be derived by prior reasoning, intrinsically involving empirical discovery and requiring theory evaluation. Despite important differences, discovery and evaluation in economics are similar to those of science. Fitting a pre-specified equation limits discovery, but automatic methods can formulate much more general initial models with many possible variables, long lag lengths and non-linearities, allowing for outliers, data contamination, and parameter shifts; then select congruent parsimonious-encompassing models even with more candidate variables than observations, while embedding the theory; finally rigorously evaluate selected models to ascertain their viability.