

## **Inference in Structural VARs with External Instruments**

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May 2012

### **Abstract**

We lay out methods for inference in structural Vector Autoregressions (SVARs) which are identified using external instruments, by which we mean variables constructed to estimate exogenous components of structural macro shocks, the first and classic example being the Romer and Romer (1989) monetary policy indicators. We examine the consequences for estimation of structural impulse response functions, variance decompositions, historical decompositions, and tests of overidentifying restrictions of the external instruments being weak, and we provide weak-instrument robust methods for inference on impulse response functions which are optimal under weak and strong instruments in a sense we make precise. Many of these general insights and tools carry over to internal instruments (instruments implicitly generated by parameter restrictions on the SVAR coefficients). An empirical application focuses on estimation of the macro effects of oil shocks using several exogenous shock series (i.e. instruments) previously proposed in the literature.