Avoiding potential nonfundamentalness in VAR monetary policy analysis Abstract

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An important feature of the vector autoregression (VAR) models extensively used in macroeconomic analysis is their fundamentalness. This means that they have an alternative representation as a moving average (MA) process. MA representations are closely linked to impulse response analysis, which is one of the main tools used in economic analysis, and is in many cases instrumental to decision making.

However, it often occurs that the information set of economic agents may be larger than that of a modeller. In that case agents' expectations differ from modelled conditional expectations, which leads to a nonfundamental MA representation of the underlying VAR model. The impulse responses based on nonfundamental MA representations are usually quite different from those based on the fundamental MA representation. Since the shocks underlying the model with fundamental MA are the model's prediction errors, they will differ from the shocks of interest that would be obtained using the agent's information set.

Increasing the information set by including additional variables often helps avoid the problem of nonfundamentalness. However, large-scale VAR models, which contain a reasonably big information set, are subject to rapidly increasing estimation and specification uncertainty, and become uninformative with respect to the relationships between variables. Moreover, in many cases standard macroeconomic variables cannot be used as reliable indicators of agents' expectations.

In a VAR model of monetary policy, I increase the information set by adding high frequency financial market data and checking if the principal components of the added dataset are causal to initially included variables. This approach helps obtain enough information to avoid nonfundamentalness while keeping the number of variables in control.