

# Macro-financial linkages in the Polish economy: combined impulse-response functions in SVAR models<sup>1</sup>

Dobromił Serwa\*, Piotr Wdowiński\*\*

\* Narodowy Bank Polski, Financial Stability Department, [Dobromil.Serwa@nbp.pl](mailto:Dobromil.Serwa@nbp.pl)

and Warsaw School of Economics, Institute of Econometrics

\*\* Narodowy Bank Polski, Financial Stability Department, [Piotr.Wdowinski@nbp.pl](mailto:Piotr.Wdowinski@nbp.pl)

and University of Łódź, Department of Econometrics, Institute of Econometrics

**Abstract:** We estimated a structural vector autoregressive (SVAR) model describing the links between a banking sector and a real economy. We proposed a new method to verify robustness of impulse-response functions in a SVAR model. This method applies permutations of the variable ordering in a structural model and uses the Cholesky decomposition of the error covariance matrix to identify parameters. Impulse response functions are computed for all permutations and are then combined. We explored the method in practice by analyzing the macro-financial linkages in the Polish economy. Our results indicate that the combined impulse response functions are more uncertain than those from a single specification ordering but some findings remain robust. It is evident that macroeconomic aggregate shocks and interest rate shocks have a significant impact on banking variables.

**Key words:** vector autoregression, Cholesky decomposition, combined impulse response, banking sector, real economy.

**JEL codes:** C32, C51, C52, C87, E44, E58.

---

<sup>1</sup> We are grateful to the participants of the seminar held on 27 November 2015 at the National Bank of Poland for useful comments which improved the paper. The usual disclaimer applies.