

## **Combining Input-Output (IO) analysis with Global Vector Autoregressive modeling (GVAR): Evidence from the USA**

Topic: CGE and econometric input-output modeling III

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The purpose of this paper is to assess the interdependencies among the fourteen (14) main sectors of economic activity in the US economy, using quarterly data on output and R&D for the time period (1992-2006), just before the first signs of the global recession made their appearance. In this context, we set up a novel methodological framework which combines Input-Output (IO) analysis with state of the art Global Vector Autoregressive (GVAR) modeling. The GVAR is an advanced econometric technique suitable for assessing relationships between economic entities which provides a general, yet practical, global modeling framework for the quantitative analysis of the relative importance of different shocks and channels of transmission mechanisms. In the core of the GVAR methodology is the trade weight matrix that relates the endogenous to the exogenous variables of the model. In this work, in a novel approach, we use the GVAR methodology at the sectoral level. To this end, we suggest using the IO matrices of the US economy to serve as the trade weight matrix. In addition, we use the IO matrices to examine the stability and existence of dominant sector(s) in the USA. Next, using relevant econometric tools, we identify the dominant sector(s) and we estimate a GVAR model with dominant sector(s) and the exogenous variables of Finance and Trade acting as the transmission channels, pictured through the Generalized Impulse Response Functions (GIRF). Also, a comparison of impact analysis based on the results by the two methodologies takes place. Our results imply that a combination of IO and GVAR is highly desirable because it is capable of providing very useful insights.