

## **The Impact of Final Demand and Technology Shocks on the French Input-output Network**

Topic: Input-Output and the Network Theory

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We investigate the diffusion mechanisms of shocks on final demand and technology creating avalanches in the French economy. The economy is represented by the input-output network, which is constructed using the table of intermediate demands. To model the spreading of shocks in the input-output network we apply three diffusion models. The first model considers the spread of a shock on final demand based on the Input-output model. The second is an adaptation of a network diffusion model to study the impact of changes in the technological relationships between sectors by decreasing the flow of inputs, where the capability of a sector to spread a shock is determined by the size of the shock with respect to the size of the sector and the connectivity of the sector. The third model is an extension of the second, where we introduce an additional step: after a sector gets hit by a shock, the flow of inputs decreases and each sector updates its production level to these new conditions. Results of the first model show that the effect of a shock on final demand translates into homogeneous and large avalanche sizes. On the other hand, the second and third models show more heterogeneous but predominantly large avalanche sizes. The sectors that triggered the largest avalanches applying the network diffusion models have high global centrality in the network.