

## THE CLASSICAL SAMUELSON'S MODEL IN A MULTI-COUNTRY CONTEXT UNDER A DELAYED FRAMEWORK WITH INTERACTION

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**Abstract.** This paper extends the classical Samuelson's multiplier-accelerator model for the national economy of one country into a multi-country context. Actually, we assume a union of countries where each national economy interacts with the others. Firstly, we propose a new model where delayed variables are incorporated into the system of equations and the interaction element is restricted into the annual governmental expenditure that is determined according to the experience of the total system. Next, we consider the case where the model absorbs information from recent past and study properties for stability, the appropriate control actions as well as the total system design in order to obtain a stable situation. Finally, a practical application is also investigated that provides further insight and better understanding as regards the control actions, system design and produced business cycles.

**Keywords:** Samuelson model, network, difference equations, stability, control, state feedback

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