

ABSTRACT

The National Economy as an Example of Control Under Conflict/Cooperation- A Simulation Approach

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A simplified model of the national economy is drawn from available literature[1]. “Reasonable” refinements are made to this simplified model in order to show that the possibility of conflict and cooperation may exist in the interaction of government and business. The possibility of conflict in the goals of business with the goals of government has been suggested in an earlier paper [2].

The model of the interaction between government and business and their effects upon the economy is a dynamic model. The dynamics are linearized and therefore represent deviations from a given point of operation at a given time. This model has inputs from business and government only. Consumer input is excluded. There are two outputs in the model. The dynamic equations are solved by use of a simulation program, Matlab, with a graphical input package called Simulink.

In this paper a new definition of conflict and cooperation is given. As a result of this definition and use of simulation, it is found that conflict/cooperation can occur through signal injection into the system or through system modification, or both.

Using the simplified model, a specific example is given showing the effects of controls by both government and business upon the performance indices chosen. Both conflict and cooperation (in the context of the definitions used here) are shown.

Additional work to include consumers in the model is suggested. Further refinements in defining scaling limits and including practical data is needed. This extension will probably require participation of personnel with backgrounds in business and economics to provide interdisciplinary insight.

- [1] S.M. Shinnars, Modern Control System Theory and Application, Reading, Mass. Addison-Wesley, 1972.
- [2] R.L. Drake, “Do Checks and Balances Contribute to Cycles in the Economy?”, MAESC 2003, Christian Brothers University, Memphis, TN, May 15, 2003.

