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DYNAMICS OF MARKET MODELS WITH INVENTORY

A PROJECT REPORT PRESENTED BY

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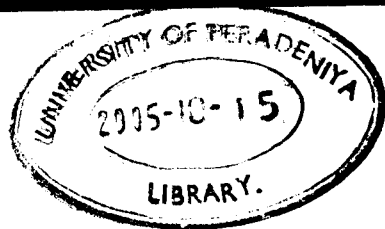
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ABSTRACT

DYNAMICS OF MARKET MODELS WITH INVENTORY

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Dynamics of three types of market models with inventory are considered. These models are categorized into Quasi-Periodic, Lagged – Inventory and Pseudo – Quadratic according to the mathematical nature of the assumptions of the model. The governing mechanism of these models can be stated commonly in the functional form $\Delta P_t = P_{t+1} - P_t = \sigma f(-E_{st})$, where $E_{st} = Q_{st} - Q_{dt}$ is the excess supply function (inventory function) and $\sigma (\geq 0)$ is a time independent parameter.

In the three models the dynamic stability of time paths of the price function P_t (unit price at time t) are investigated by providing possible ranges of values for the *stock – induced- price- adjustment* (SIPA) coefficient $\sigma = \left| \frac{\Delta P_t}{f(E_{st})} \right|$ in terms of the exogenous model parameters.

In this direction the following main results are established:

1. In the Quasi-Periodic model, P_t is asymptotically stable if, and only if, $0 \leq \sigma < \frac{2}{\beta + \delta}$.
2. Unlagged Inventory model (UIM) is a deductive sub – model of the Lagged – Inventory (LIM) model.
3. In the Pseudo – Quadratic model, equilibrium price $\bar{P} = \frac{\alpha + \gamma}{k + \delta + \beta}$ is attainable but it is unstable for all $\sigma > 0$.