

# DEGENERATED HOPF BIFURCATIONS IN A MATHEMATICAL MODEL OF ECONOMICAL DYNAMICS \*

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## Abstract

It is assumed that the dynamics of the capital of a firm is governed by a Cauchy problem for a system of two nonlinear ordinary differential equations containing three real parameters. In this paper we determine a  $k \geq 3$  order degenerated Hopf bifurcation point for this economical model. To this aim the normal form technique is used.

MSC: 37L10, 37G05, 91B55

**keywords:** nonlinear dynamics, Hopf bifurcation, normal form, Liapunov coefficients

## 1 Introduction

The nonlinear dynamics theory enables us to understand and develop more realistic processes and methods in economic models. The development of the theory of singularities and the theory of bifurcation has completed the multitude of ways at our disposal to analyze and represent more and more complex dynamics, giving us the possibility of analyzing some systems which were hard, if not impossible to approach by traditional methods. The study

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