

# Application of Differential Equations to Imperfect Labour Market Analysis

M. Mikhalevich<sup>1</sup> and L. Koshlai<sup>2</sup> and J. Moeller<sup>3</sup>

<sup>1</sup>*Ukrainian State University of Finance and International Trade, mmihalevich@ukr.net, mmikhalevich@mail.ru*

<sup>2</sup>*Glushkov Institute of Cybernetics, Ukraine, koshlai@ukr.net*

<sup>3</sup>*University of Regensburg, Faculty of Economics, joachim.moeller@wiwi.uni-regensburg.de*

We assume the existence of monopsony and oligopsony on the labour market of transition economy and analyze the impact of these imperfections on general economic dynamics. Dynamical macromodels, which consist of systems of nonlinear differential equations with variable structure, were developed for these purposes. These systems can not be solved analytically, but their quality analysis and model simulations allow us to make some conclusions about peculiarities of investigated phenomena. The monopsony in a labor market provides employers with the greatest income on a bounded time interval. However, an economy with such a labor market demonstrates its incapacity for development and stable growth. Business-cycles similar to classical with the stages of growth, recession, depression and revival can be the result of interaction between competitive and imperfect market segments. Consequences of oligopsony are quite the same.