

## **Complex behaviour in the Pasinetti-Solow model with optimal saving behaviour**

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In this paper, we develop a two-dimensional growth model. In the economy two types of agents or “classes”, workers and capitalists’ exist with different saving behaviour. The model is close to the one developed by Pasinetti (1962) and Samuelson and Modigliani (1966), which reformulate the Solow (1956) model, with two crucial differences. The first, is that workers and capitalists saving decisions are based on optimal behaviour. In order to model workers and capitalists saving behaviour we follow Michl (2004, 2006). In particular, we combine the assumption of overlapping generations to describe workers’ saving behaviour with the assumption of an infinitely lived “dynasty” (see Barro, 1974) to describe the consumption behaviour of capitalists. The second is that our model is framed in discrete time. We verified the occurrence of various types of bifurcations by applying the Hartman-Grobman theorem. In particular a Neimark-Saker bifurcation can occur by reducing the elasticity of substitution between the factors of production (we assume a CES production function). We also verified how this bifurcations can occur via a diagrammatical tool known as Triangle of stability often employed in the economics literature. Finally, the possible emergence of other complex phenomena is also explored.