

The use of real-coded genetic algorithms for modelling economic systems

Janice Gaffney, Leo Lazauskas, Charles Pearce

School of Mathematical Sciences, The University of Adelaide, North Terrace, Adelaide, 5005 SA, Australia

Corresponding author e-mail: jgaffney@maths.adelaide.edu.au

This paper revisits issues raised by Dawid (Adaptive Learning by Genetic Algorithms: Analytic Results and Applications to Economic Models. 2nd ed., Berlin: Springer, 1999) in using genetic algorithms to model adaptive behaviour in economic systems. Despite some problems in interpretation, the preferred method for encoding GAs in the economic literature has been binary. Markov chain methodology provides a powerful, general and flexible machinery for addressing these issues. In particular, this approach is well suited to considering the conditions for the existence and uniqueness of equilibria and for the convergence and stability in the economic system. Previous simulation studies using real-coded GAs give comparable results to those using the binary approach. There are, however, interesting and significant qualitative differences. We discuss some pertinent examples.