

## Editorial “In honor of Gustav Feichtinger”

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The objective of this special issue is to demonstrate the influence of Prof. Gustav Feichtinger on OR in Austria. He became professor emeritus in 2008, but he is still highly active and also through his students, assistants, co-authors, and collaboration partners his work lives on. Many authors of this special issue have been former students and assistants of Gustav. Meanwhile, many of them became full professors in Austria or Germany. Furthermore, several national and international co-authors as well as collaboration partners from ÖGOR contributed to this special issue, with which we congratulate Gustav to his 70th birthday. It has been always important to him that his research is applied to crucial economic problems of public interest. Thus, we aim to reflect this attention of Gustav in all eleven contributions of this special issue.

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As Gustav's main research interest is focused on optimal control theory and differential games, seven papers examine those approaches applied to a wide range of economic problems:

- (1) The contribution of [Dawid et al. \(2010\)](#) develops a differential game to investigate the dynamic strategic interaction between two firms on a homogeneous product market. One of the most remarkable results they find is that in most cases the non-innovating firm benefits when the other firm carries out the innovation option.
- (2) [Hartl and Kort \(2010\)](#) use optimal control theory to investigate the consequences of introducing a delay in finite time capital accumulation. They show that in case of no salvage value the problems of time-to-install/deliver and time-to-build are equivalent. However, the property is lost if a salvage value is added.
- (3) The diversity of a firm's life cycle resulting from the firm's technology investment decision in the presence of pronounced straight adverse effects of investment on sales is analyzed by [Fortune-Devlaminckx and Haunschmied \(2010\)](#). Again, the non-linear economic dynamics are modeled by an optimal control approach.
- (4) [Van Long and Sorger \(2010\)](#) model a dynamic principal-agent problem as a feedback Stackelberg differential game. A principal tries to induce an agent to spend effort on accumulating a state variable that affects the well-being of both parties. The theoretical approach is illustrated by a linear-quadratic example that can be solved analytically. The results are useful for general policy making.
- (5) [Veliov \(2010\)](#) examines the relationship between continuous-time and discrete-time control models. The issue is of key importance for numerical approximations of optimal control problems and uncertain dynamical systems. The author proves that under certain reasonable conditions the approximation error is of higher than first order with respect to the time-step. This extends results known previously for linear systems.
- (6) An oligopolistic product market in which two competing firms instead of paying a competitive input price choose a two-part tariff is explored in a static and a dynamic two-stage differential game by [Dockner \(2010\)](#). He shows that in dynamic markets with high competition firms do not benefit from two-part cost structures in contrast to a static market with not too strong competition when firms have a higher incentive to choose two-part cost structures.
- (7) [Grass and Tragler \(2010\)](#) present an advanced optimal control model that addresses a central challenge of de-concentrating poverty via "housing mobility programs" which move poor families to middle-class neighborhoods. This problem is of special interest to policy makers as impoverishment rises worldwide especially due to climate change and its provoked catastrophes, economic crisis, aging of the population, and immigration.

Gustav is also interested in experimental economics. Here, management games are used to analyze the rational behavior of individuals. Two papers of this special issue focus on this topic:

- (8) [Brandl et al. \(2010\)](#) analyze how commission rates influence a firm's success in a corporate strategic planning simulation game. In a realistic setting the players

learn the complex situation in which they act as managers to increase the performance of a firm by choosing specific parameters.

- (9) The contribution of [Kraus et al. \(2010\)](#) discusses the importance of main hospital management games for both teaching and policy making. Most games are based on simulation approaches. The varying features of the different games are compared using a taxonomy. A special focus is on how hospital games can be used to teach different OR approaches to students. The authors also disclose potential avenues for further research in this field.

Another main research interest of Gustav is economic demography. Therefore, the review paper of [Prettner and Fürnkranz-Prskawetz \(2010\)](#) is included which investigates the role of population size and population growth in the most commonly used endogenous economic growth models. The authors discuss in particular models that allow for the key issue of population aging. Finally, they compare and draw useful policy implications of most commonly used endogenous growth models.

The contribution of [Luptacik and Böhm \(2010\)](#) is concerned with efficiency analysis applied to a single economy represented by the Leontief input-output-model and extended by the constraints for primary factors. The efficiency of the given economy is defined as the difference between the potential of an economy and its actual performance and is obtained as a solution of a DEA model. They extend their approach to the augmented Leontief model including emissions of pollutants and abatement activities for analyzing the eco-efficiency of an economy. This is of special interest to policy makers as environmental issues have gained in importance.

## References

- Brandl B, Leopold-Wildburger U, Mietek A, Pickl S (2010) How do commission rates influence a firm's success? Statistical Analysis of some corporate strategy simulation experiments. *Cent Eur J Oper Res* 18(4). doi:[10.1007/s10100-010-0176-1](#)
- Dawid H, Kopel M, Kort PM (2010) Dynamic strategic interaction between an innovating and a non-innovating incumbent. *Cent Eur J Oper Res* 18(4). doi:[10.1007/s10100-010-0173-4](#)
- Dockner EJ (2010) Equilibrium two-part cost structures. *Cent Eur J Oper Res* 18(4). doi:[10.1007/s10100-010-0177-0](#)
- Fortune-Devlaminckx E, Haunschmied JL (2010) Diversity of firm's life cycle adapted from the firm's technology investment decision. *Cent Eur J Oper Res* 18(4). doi:[10.1007/s10100-010-0171-6](#)
- Grass D, Tragler G (2010) Optimal dynamic management of the population mix. *Cent Eur J Oper Res* 18(4). doi:[10.1007/s10100-010-0174-3](#)
- Hartl RF, Kort PM (2010) Delay in finite time capital accumulation. *Cent Eur J Oper Res* 18(4). doi:[10.1007/s10100-010-0170-7](#)
- Kraus M, Rauner MS, Schwarz S (2010) Hospital management games: A taxonomy and extensive review. *Cent Eur J Oper Res* 18(4). doi:[10.1007/s10100-010-0178-z](#)
- Luptacik M, Böhm B (2010) Efficiency analysis of a multisectoral economic system. *Cent Eur J Oper Res* 18(4). doi:[10.1007/s10100-010-0175-2](#)
- Prettner K, Fürnkranz-Prskawetz A (2010) Demographic change in models of endogenous economic growth. A survey. *Cent Eur J Oper Res* 18(4). doi:[10.1007/s10100-010-0179-y](#)
- Van Long N, Sorger G (2010) A dynamic principal-agent problem as a feedback Stackelberg differential game. *Cent Eur J Oper Res* 18(4). doi:[10.1007/s10100-010-0172-5](#)
- Veliov V (2010) On the relationship between continuous-and discrete-time control systems. *Cent Eur J Oper Res* 18(4). doi:[10.1007/s10100-010-0167-2](#)