

**Technological Change, Productive Efficiency and Industrial Dynamics:  
An Evolutionary Model**

by

Carlos Carreira and Paulino Teixeira

*Faculdade de Economia, Universidade de Coimbra, Portugal*

May 2001

***Abstract***

This paper analyses the impact of technological change and productive efficiency on the dynamics of industrial competition. Our theoretical model takes into account the innovation possibilities and the organisational structure of the firm. It considers three decision stages in which firms first have to solve for output and profits (and the market price), given the state of production techniques, decide about the technique to use in the next period, and finally decide whether continue, exit or enter in an industry. We evaluate the main predictions of the model by numerically simulating the impact of entry and exit barriers (and market demand growth) on industrial dynamics, namely on the evolution of the population of firms (entry and exit rates), the average productivity, and the productivity of continuing, entrants and exiting firms. This simulation exercise largely confirms the theoretical predictions of our study.

***Address for correspondence:***

Faculdade de Economia da Universidade de Coimbra  
Av. Dias da Silva, 165  
3004-512 Coimbra  
PORTUGAL

Carlos Carreira:  
**Tel.:** +351 239790545  
**E-mail:** ccarreir@sonata.fe.uc.pt  
**Fax:** +351 239403511

Paulino Teixeira:  
**Tel.:** + 351 239790565  
**E-mail:** paulinot@sonata.fe.uc.pt  
**Fax:** +351 239403511