

# A Dynamic Programming Approach to Learning-by-Doing

Charles Ng

Stanford University, Stanford, CA, USA  
<tzechao@stanford.edu>

The concept of learning-by-doing (LBD) rests on the assumption that production costs of a product goes down as experience is accumulated. These non-convex LBD cost curves sometimes cause the appearance of multiple local optimal solutions in our models. In the realm of energy modeling, this translates into a "lockout" of certain technologies. We present a dynamic programming version of a model originally proposed by Manne and Barreto. The dynamic program is then solved numerically and refined using CONOPT. We also give an example where this procedure finds a global optimal solution while a CONOPT solve using the default starting point does not.

Abstract for the International Energy Workshop  
jointly organized by the  
Energy Modeling Forum (EMF), International Energy Agency (IEA) and IIASA.  
24-26 June 2003 at IIASA Conference Center, Laxenburg, Austria