1. Record Nr. UNINA9910970193003321

Autore	Monroe Hunter
Titolo	Can Markets Compute Equilibria? / / Hunter Monroe
Pubbl/distr/stampa	Washington, D.C. : , : International Monetary Fund, , 2009
ISBN	9786612842467 9781462335602 1462335608 9781452797502 1452797501 9781451871715 1451871716 9781282842465 1282842463
Edizione	[1st ed.]
Descrizione fisica	1 online resource (22 p.)
Collana	IMF Working Papers
Disciplina	511.3;511.352
Soggetti	Computational complexity Electronic data processing Asset prices Deflation Inflation Macroeconomics Microeconomic Behavior: Underlying Principles Noncooperative Games Price Level Prices
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Contents; I. Introduction; II. Is Computing Equilibria Difficult?; Table; 1. Payoff Matrix for the Prisoner's Dilemma; Figures; 1. NP-complete: Is there a Hamilton Cycle?; 2. P: Is this a Hamilton Cycle?; III. Are There Natural Problems with No Best Algorithm?; A. Superlinear vs. Blum Speedup; B. No Best Algorithm for Integer and Matrix Multiplication?; 3.

Boolean circuit: Are at least two inputs "TRUE"?; C. The Power of Cancellation; D. No Best Algorithm for coNP-Complete Problems?; E. No Best Algorithm Versus No Algorithm at All; IV. Conclusion; 4. Is speedup inherited?; References

Sommario/riassunto

Recent turmoil in financial and commodities markets has renewed questions regarding how well markets discover equilibrium prices, particularly when those markets are highly complex. A relatively new critique questions whether markets can realistically find equilibrium prices if computers cannot. For instance, in a simple exchange economy with Leontief preferences, the time required to compute equilibrium prices using the fastest known techniques is an exponential function of the number of goods. Furthermore, no efficient technique for this problem exists if a famous mathematical conjecture is correct. The conjecture states loosely that there are some problems for which finding an answer (i.e., an equilibrium price vector) is hard even though it is easy to check an answer (i.e., that a given price vector is an equilibrium). This paper provides a brief overview of computational complexity accessible to economists, and points out that the existence of computational problems with no best solution algorithm is relevant to this conjecture.