How to structure and organize your enterprise

Otávio Raposo Jr, Thadeu Penna

ICEX - UFF / INCT Complex Systems - CNPq
thadeupenna@id.uff.br

April 22, 2013

ICEx
Instituto de
Ciências Exatas
UNIVERSIDADE FEDERAL FLUMINENSE

Outline

Motivation

Disclaimer


Research in active development.

Why ?

To make your organization as much efficient as possible.

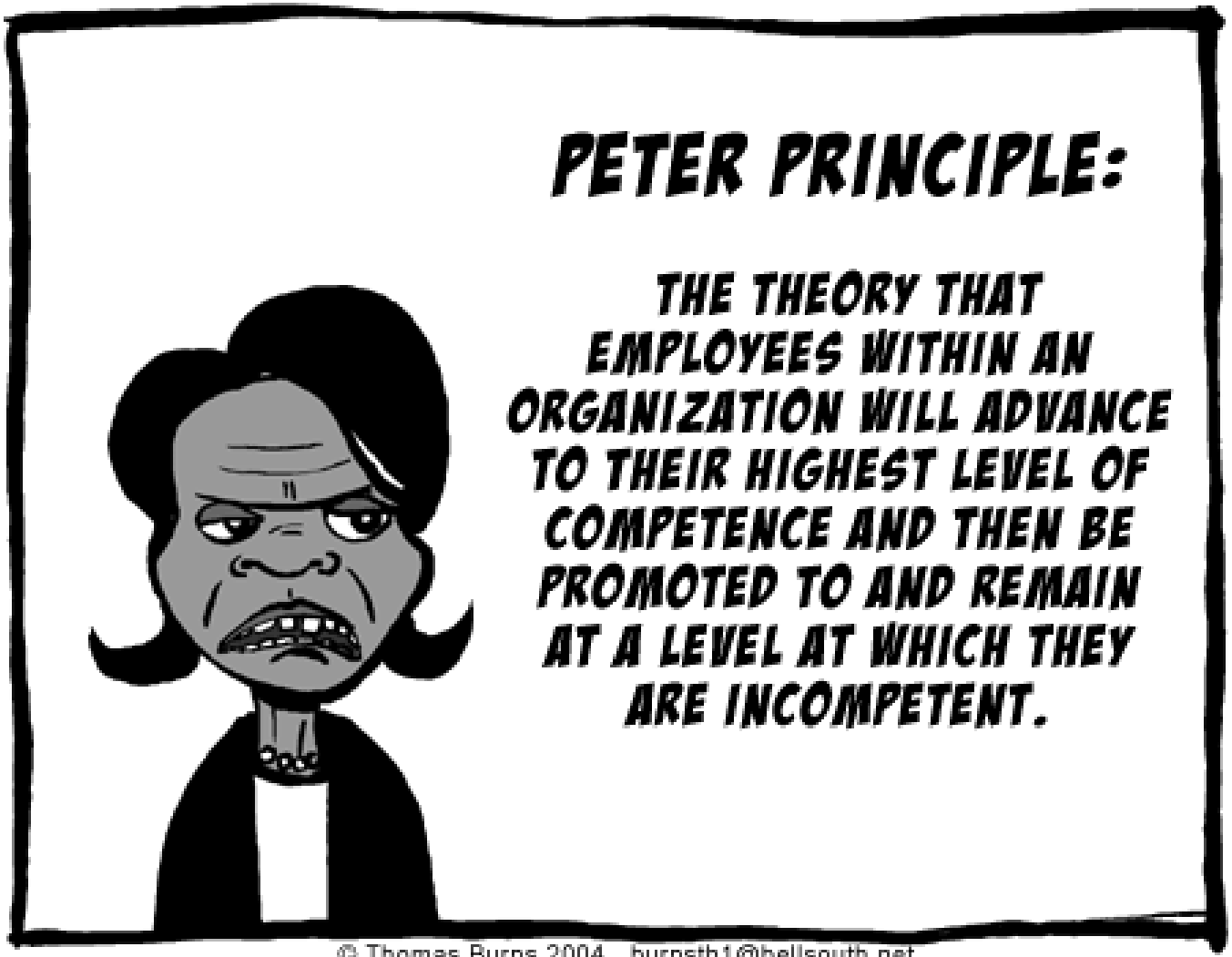
How ?

To manage promotions in a hierarchical organization.

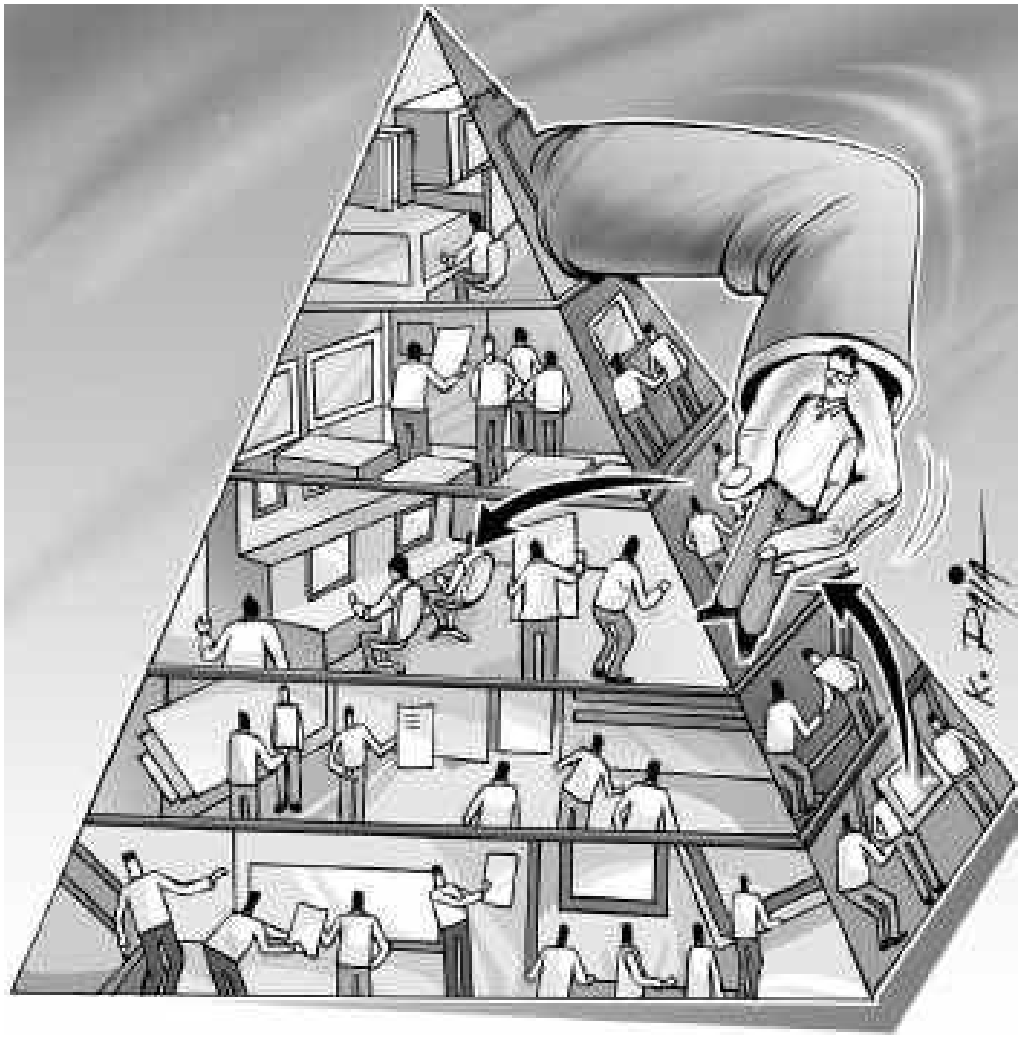
The most famous Enterprise

and the most famous team

The Peter Principle



The Peter Principle



The Peter Principle

The Peter Principle

Physica A 389 (2010) 467–472

Contents lists available at ScienceDirect

Physica A

journal homepage: www.elsevier.com/locate/physa

The Peter principle revisited: A computational study

Alessandro Pluchino [a,b,*], Andrea Rapisarda [a,b], Cesare Garofalo [c]

[a] Dipartimento di Fisica e Astronomia, Università di Catania, Via S. Sofia 64, I-95123 Catania, Italy
[b] INFN sezione di Catania, Via S. Sofia 64, I-95123 Catania, Italy
[c] Dipartimento di Sociologia e Metodi delle Scienze Sociali, Università di Catania, Via Vittorio Emanuele II 8, I-95131 Catania, Italy

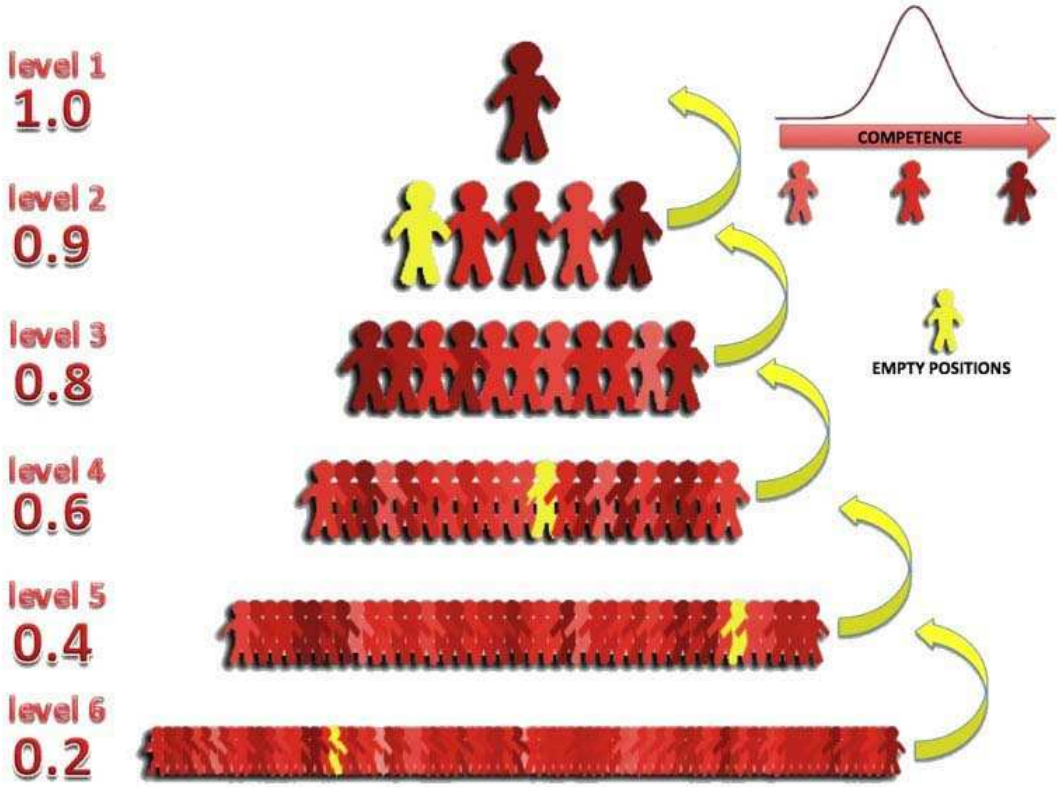
ARTICLE INFO

Article history:
Received 2 July 2009
Received in revised form 3 September 2009

ABSTRACT

In the late sixties the Canadian psychologist Laurence J. Peter advanced an apparently paradoxical principle, named since then after him, which can be summarized as follows:

The Peter Principle



Open positions only for retirement or a below threshold competence.

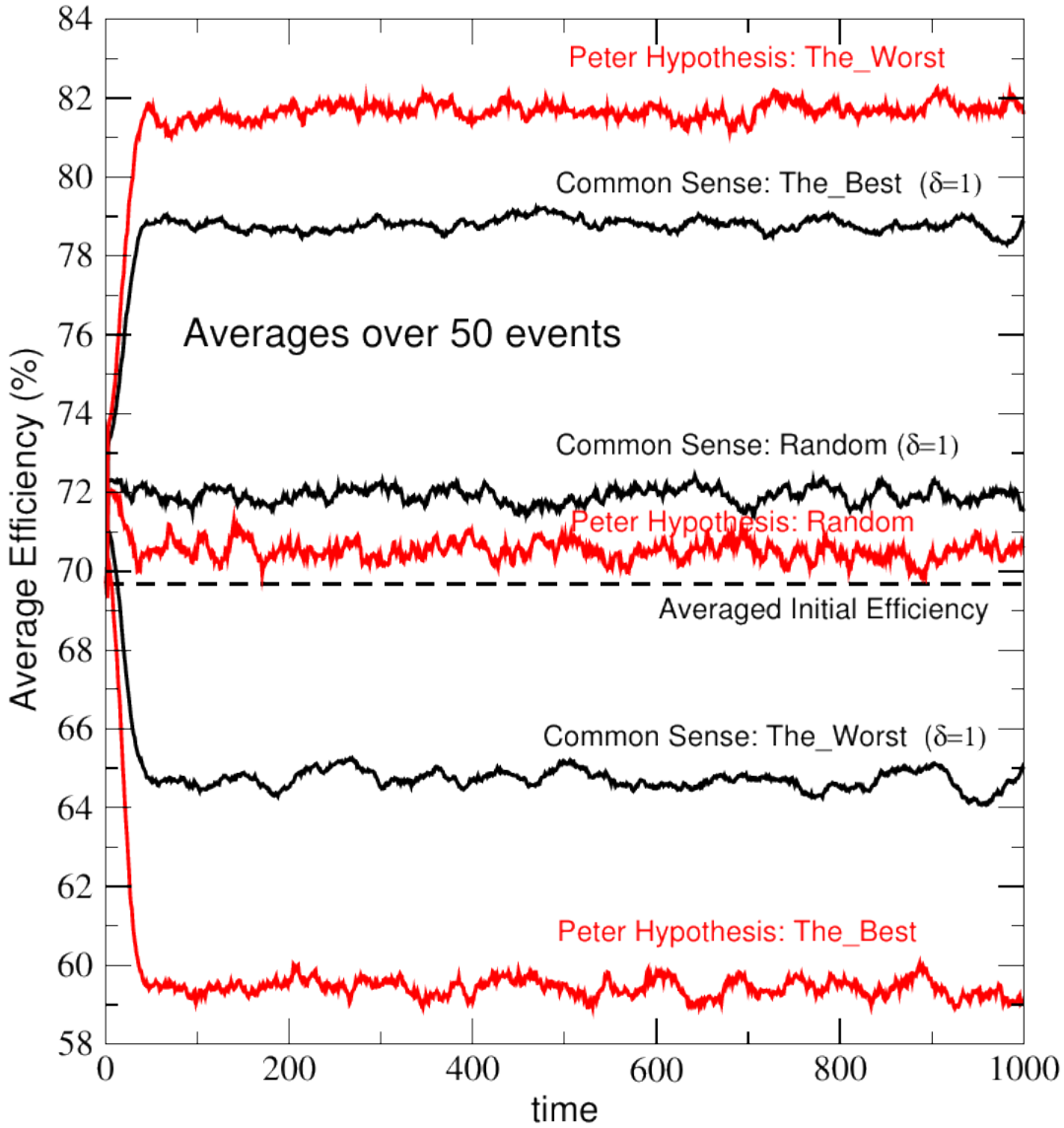
Two hypothesis : common sense and the Peter Principle.

The Original Model

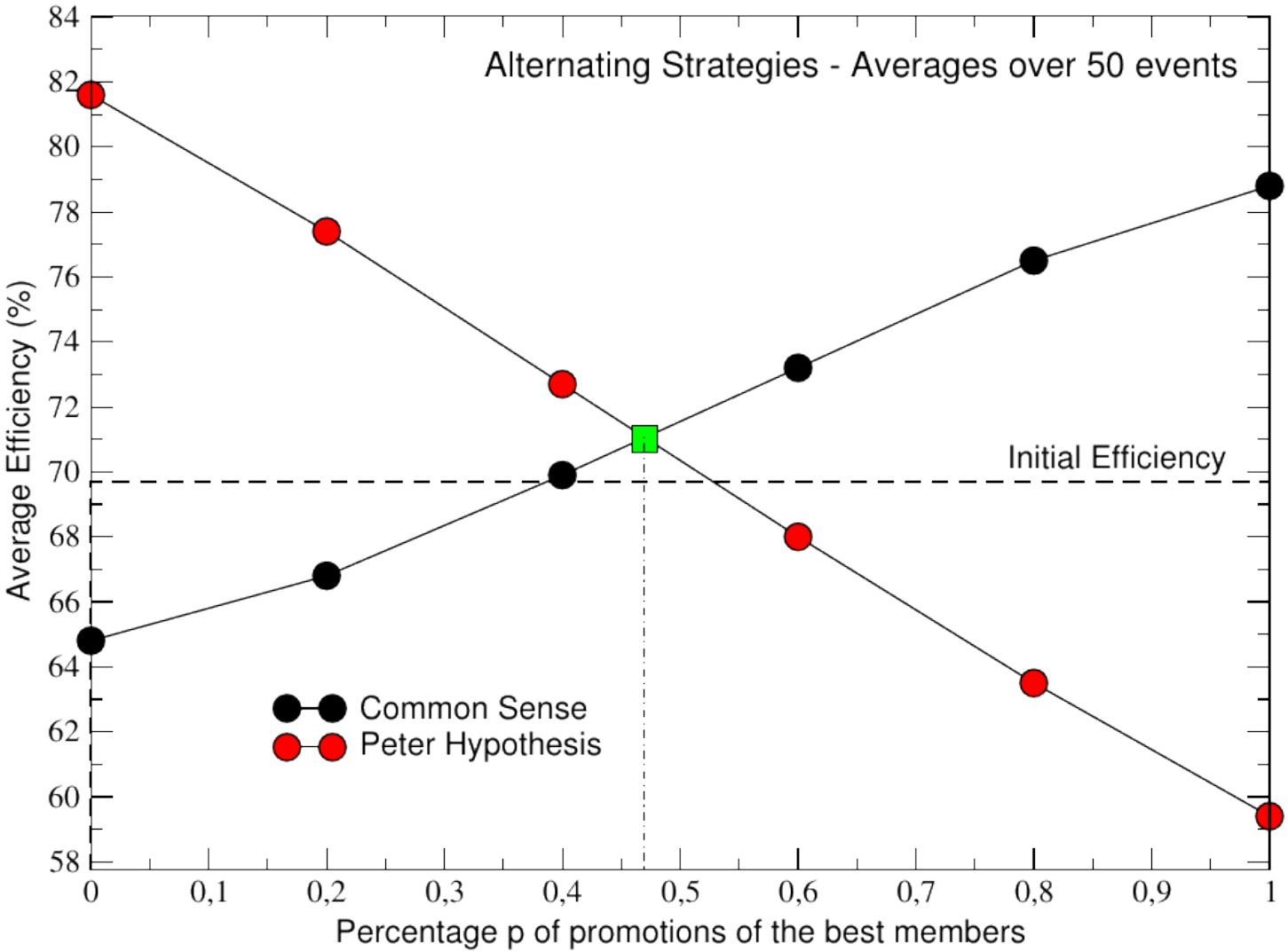
- i level of L levels
- n_i employees/slots
- r_i responsibility
- Total Competence $C_i = \sum_{j=1}^{n_i} c_j$
- Efficiency $= \dfrac{\sum_{i=1}^{L} C_i r_i}{MaxEff}$

Three promotion strategy: The Best, The Worst, at Random.

Time Evolution

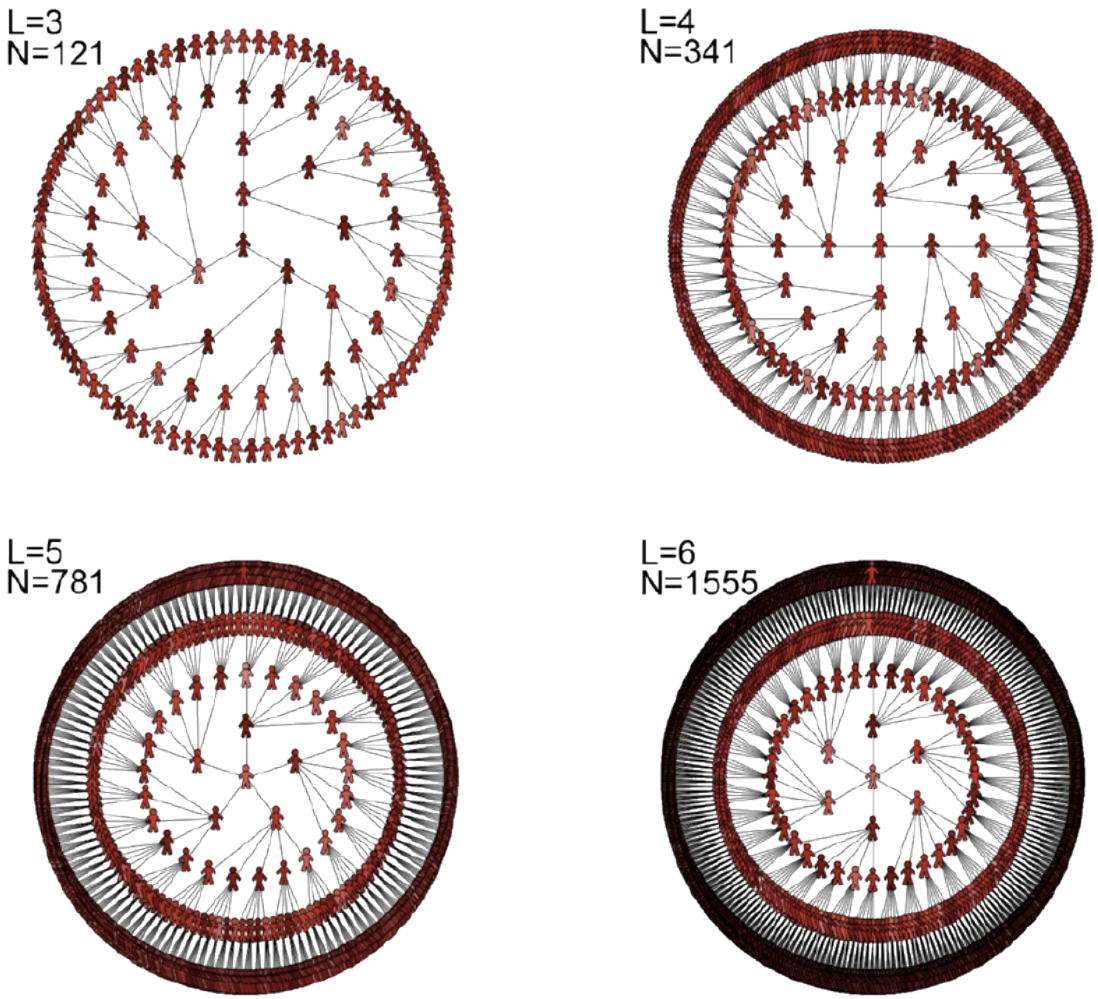


The Best Strategy



Other Works

A. Pluchino et al. / Physica A 390 (2011) 3496–3511



Other Works

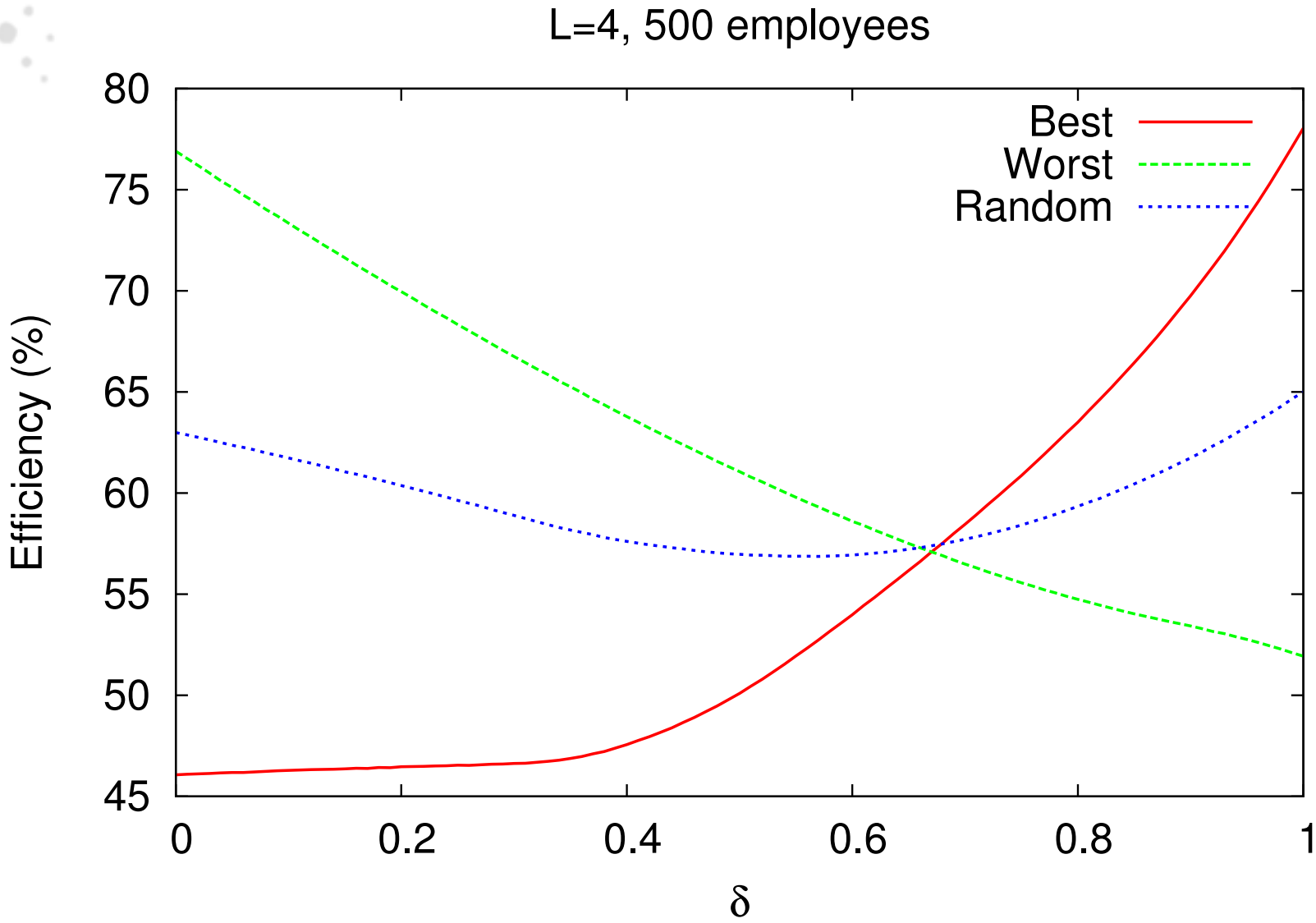
- "Accidental politicians: How randomly selected legislators can improve parliament efficiency", A. Pluchino et al., Physica A390 (2011)
- "The beneficial role of random strategies in social and financial systems", Biondo, Pluchino e Rapisarda, JSP .
- "Noise, synchrony, and correlations at the edge of chaos", Phys.Rev. E 87, 022910 (2013) Pluchino Rapisarda and Tsallis
- "On the Peter Principle: An agent based investigation into the consequential effects of social networks and behavioural factors" Fetta et al., Physica A (2012)

This Work

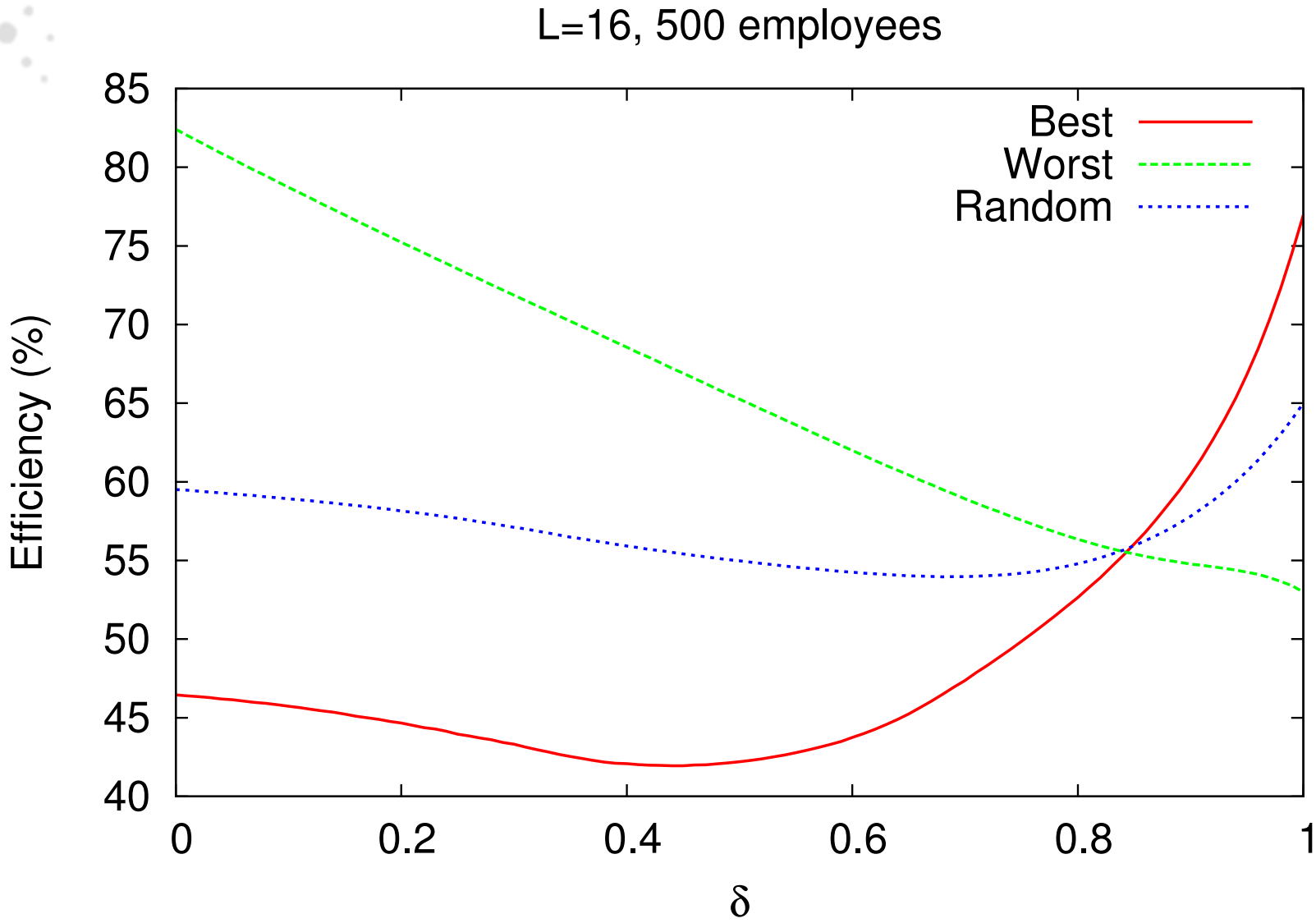
Generalization:

- $c_j^i = c_j^{i-1} * \delta + \eta * (1 - \delta)$
- $c_j, \delta, \eta \in [0, 1]$ and η from a uniform distribution.
- $\delta = 1$ is the Common Sense.
- $\delta = 0$ is the Peter Principle.
- r_i is a linear function and so is n_i.
- Only one CEO.

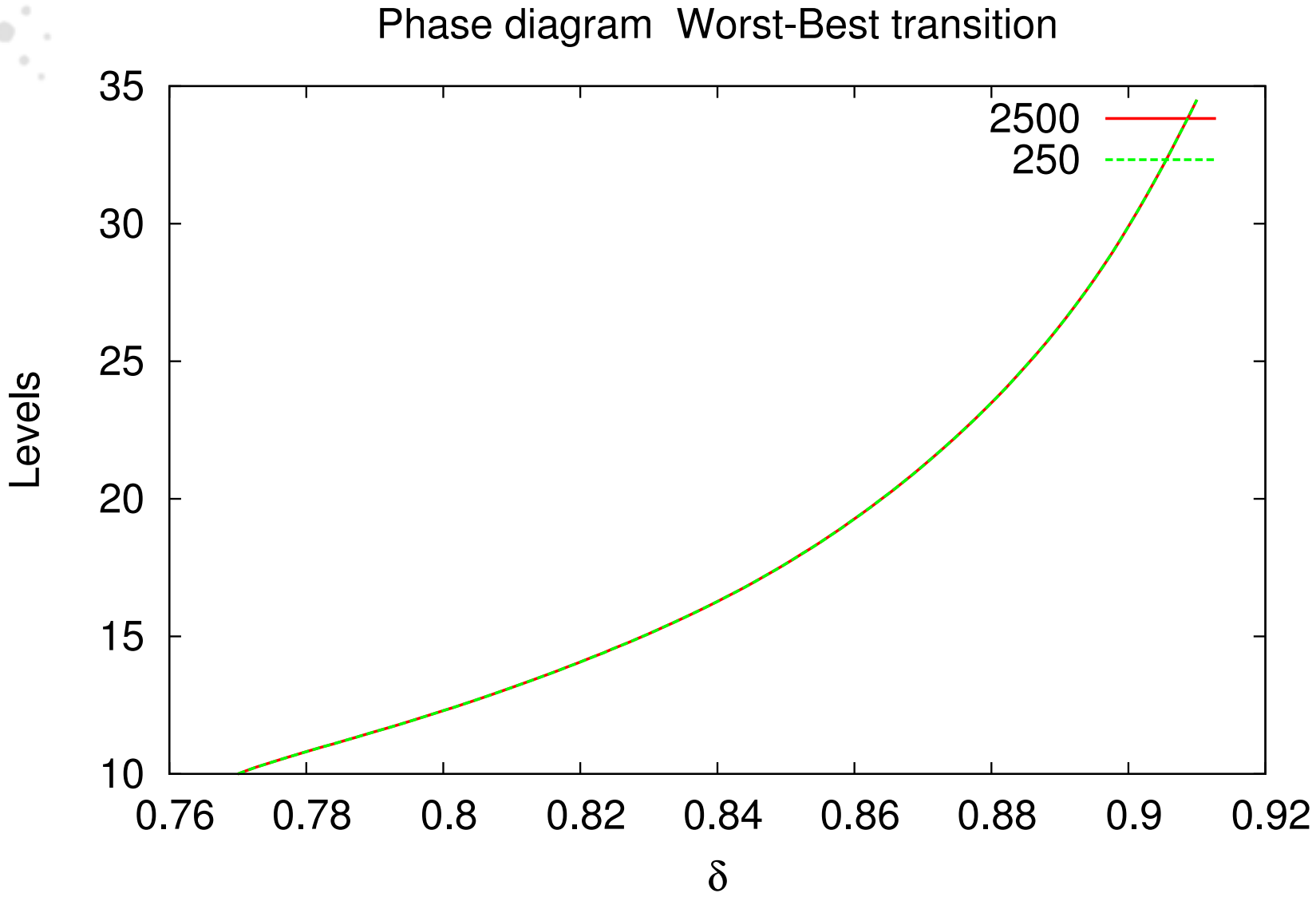
Results averaged on 200,000 time steps



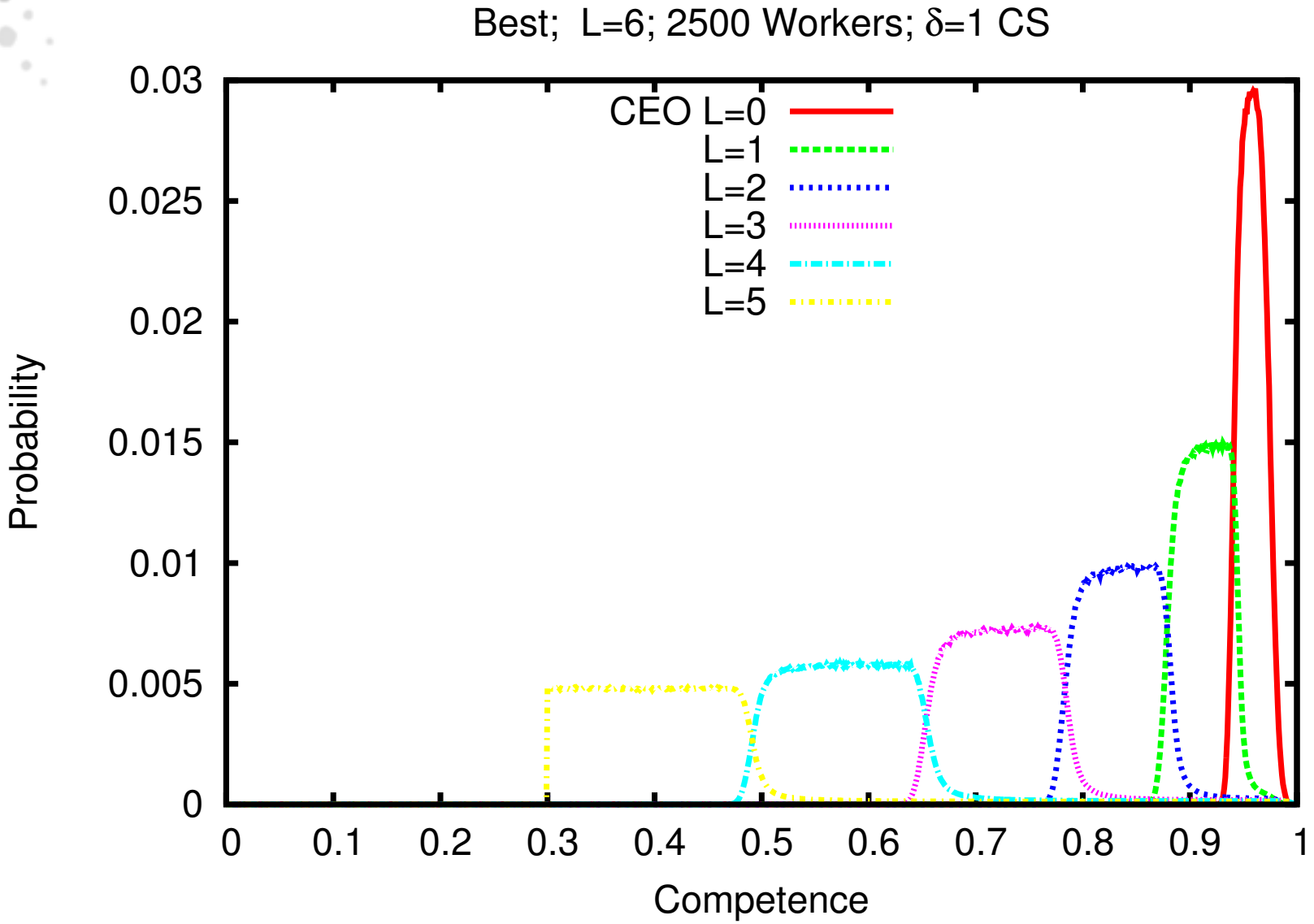
Results averaged on 200,000 time steps



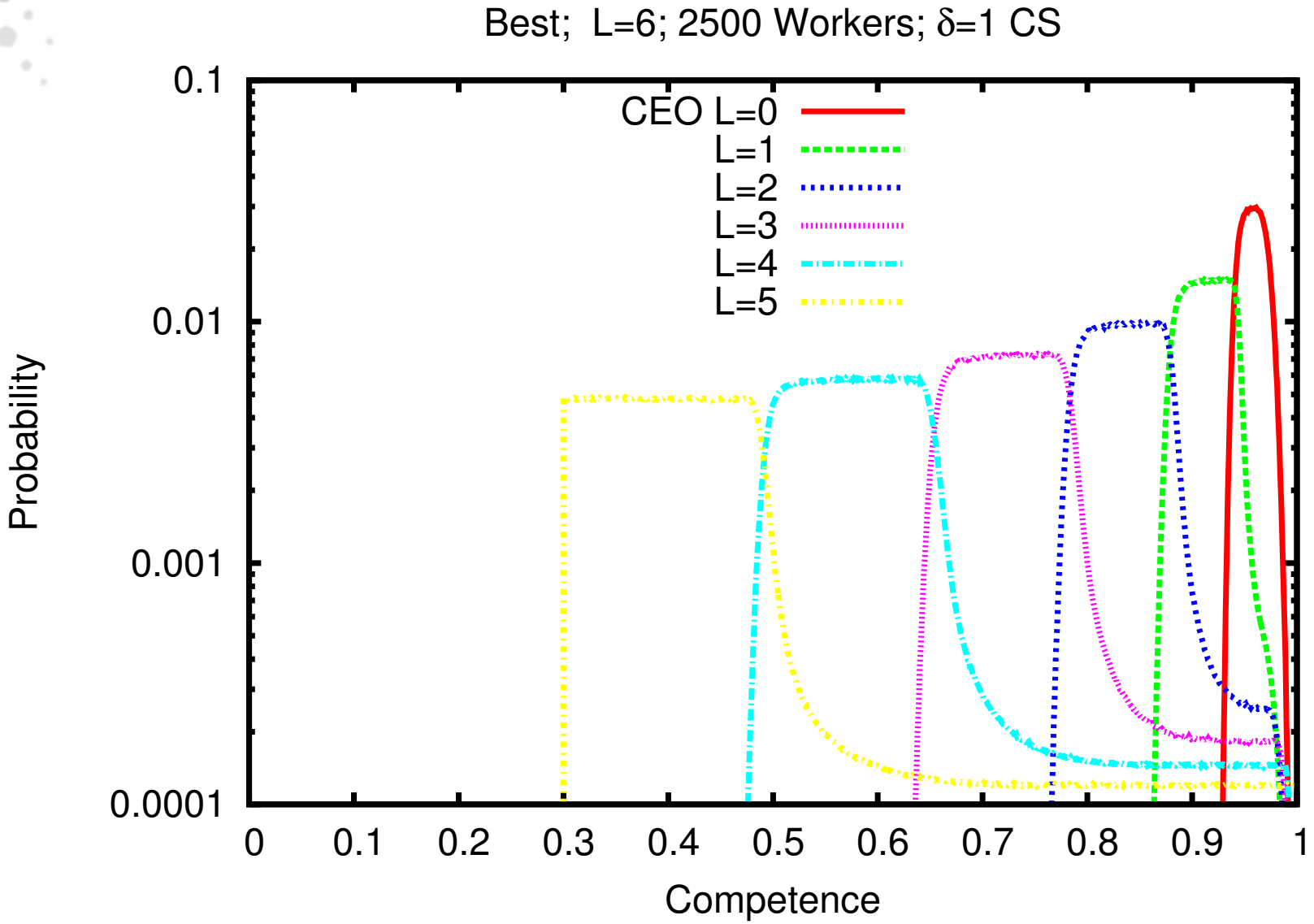
Phase Diagram



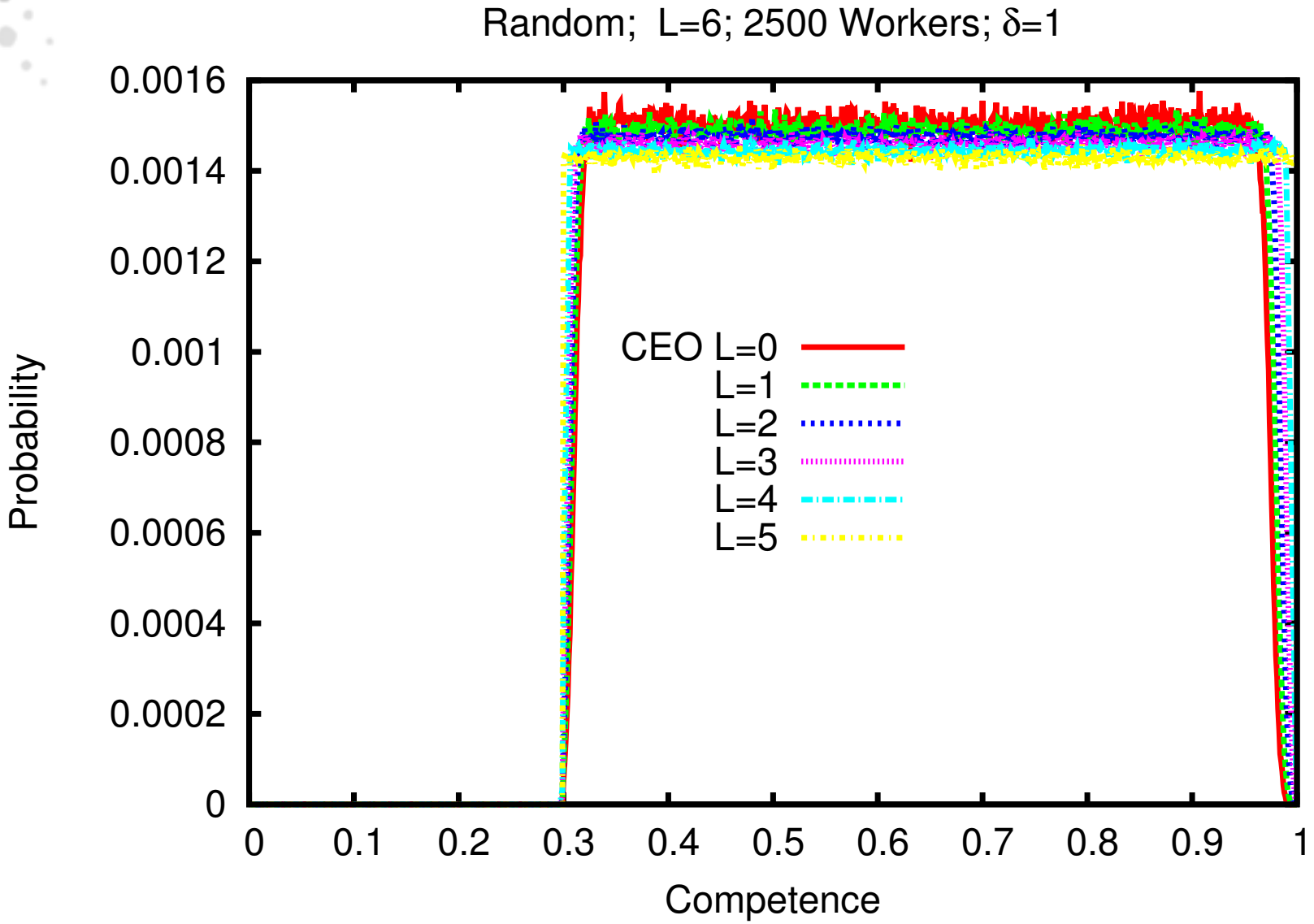
Competence Distribution



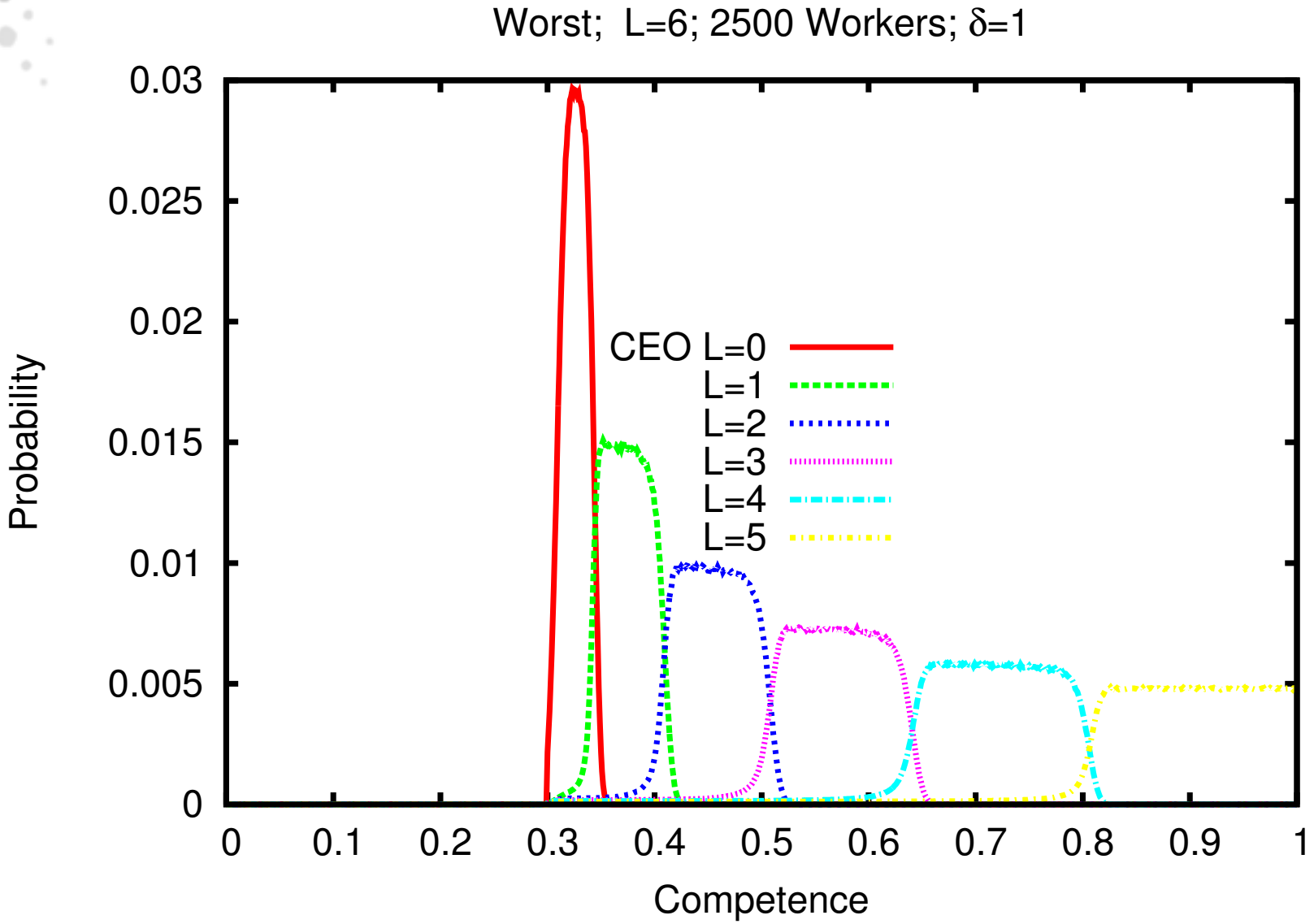
Competence Distribution (Pareto??)



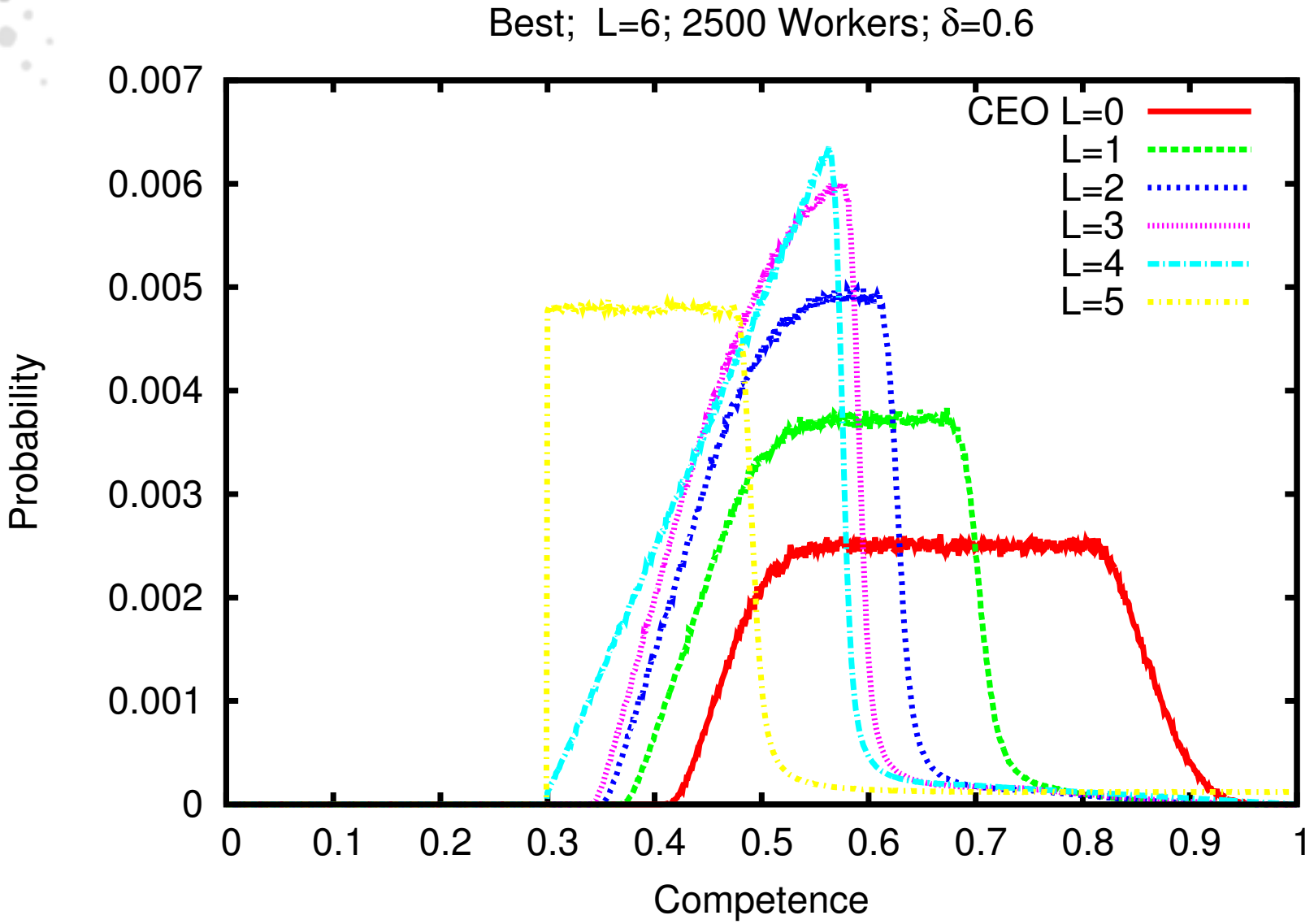
Competence Distribution



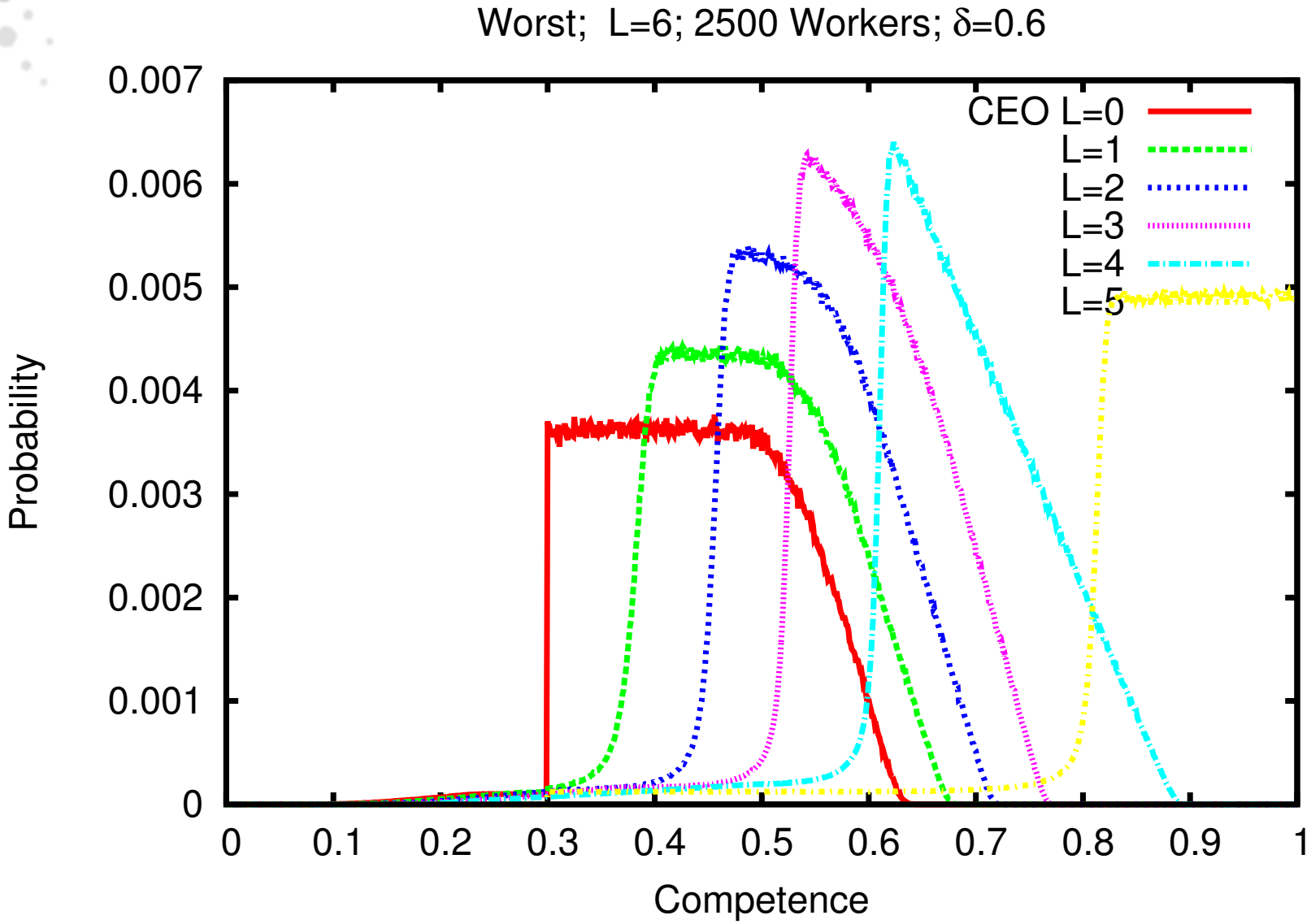
Competence Distribution



Competence Distribution



Competence Distribution



Conclusions

- Increasing levels of hierarchy does not seem to be a good thing.
- It does not depend on the organization size.
- The simple model is robust
- Yes, the probability of a boss being stupid is remarkable.

To Do

- Age/Learning effects.
- Different functions for responsibilities.
- Strategies of dismissal.