

# Recursive Utility Functions with Extended States

Takanori Adachi  
Graduate School of International Corporate Strategy  
Hitotsubashi University

## Abstract

We introduced a concept called *extended state* that is defined as a history of an observer's recognition on the state of the world  $\Omega$  with a filtration  $\mathbb{G}$ . Then  $\Omega$  is naturally embedded into the set of all extended states  $\Omega[\mathbb{G}]$ . A subset of  $\Omega[\mathbb{G}]$  represents the observer's *ability* to recognize the world.

We applied the concept to dynamic choice theory by calculating value functions that characterize preference relations between consumption plans. The resulting functions are aware not only of prior ambiguity but also of *state ambiguity*.

Graduate School of International Corporate Strategy  
Hitotsubashi University  
2-1-2 Hitotsubashi, Chiyoda-ku, Tokyo, Japan  
E-mail address: taka.adachi@gmail.com

一橋大学大学院国際企業戦略研究科 足立 高德