Available online at www.sciencedirect.com

ScienceDirect

Journal of Economic Theory 172 (2017) 55–87

JOURNAL OF Economic Theory

www.elsevier.com/locate/jet

Rational inattention and the dynamics of consumption and wealth in general equilibrium ☆

Yulei Luo [a,*], Jun Nie [b], Gaowang Wang [c], Eric R. Young [d,e]

[a] *Faculty of Business and Economics, The University of Hong Kong, Hong Kong*
[b] *Research Department, Federal Reserve Bank of Kansas City, United States*
[c] *Center for Economic Research, Shandong University, Jinan, China*
[d] *Department of Economics, University of Virginia, Charlottesville, VA 22904, United States*
[e] *AFR, Zhejiang University, China*

Received 18 April 2017; final version received 8 August 2017; accepted 17 August 2017
Available online 30 August 2017

Abstract

We propose a recursive utility version of a basic Huggett (1993) model to study the implications of rational inattention (or RI, Sims, 2003, 2010) for the cross-sectional dispersion of consumption and wealth (relative to income) in general equilibrium. We find that incorporating RI can significantly improve the model's predictions in both dimensions in general equilibrium. In addition, we find that intertemporal substitution plays an important role in determining the two key dispersion moments via affecting the degree of optimal attention in equilibrium. Finally, we show that alternative models that rely on habit formation,

☆ We are grateful to Laura Veldkamp (editor) and two anonymous referees for many constructive suggestions and comments. We also would like to thank Jesus Fernandez-Villaverde, Ken Kasa, Chris Sims, Neng Wang, Mirko Wiederholt, and Christian Zimmermann for helpful discussions and suggestions, and conference and seminar participants in the 2015 SED annual meeting, the 11th world congress of the econometric society, the 2015 international conference on computing in economics and finance, University of Kansas, Kansas City Fed, University of Hong Kong, Central University of Finance and Economics and Shandong University for helpful comments. Luo thanks the General Research Fund (GRF No. HKU791913 and HKU17500515) in Hong Kong for financial support. Wang thanks Humanity and Social Science Foundation of Ministry of Education of China (No. 16YJC790095) for financial support. We thank Andrew Palmer for excellent research assistance. The views expressed here are the opinions of the authors only and do not necessarily represent those of the Federal Reserve Bank of Kansas City or the Federal Reserve System. All remaining errors are our responsibility.

* Corresponding author.
E-mail addresses: yulei.luo@gmail.com (Y. Luo), jun.nie@kc.frb.org (J. Nie), wanggaowang@gmail.com (G. Wang), ey2d@virginia.edu (E.R. Young).

http://dx.doi.org/10.1016/j.jet.2017.08.005

incomplete information about current income, or borrowing constraints are not consistent with the facts we document.

JEL classification: C61; D83; E21

Keywords: Rational inattention; General equilibrium; Consumption and wealth dispersion

1. Introduction

Our interest in this paper is to evaluate the general equilibrium implications of limited information-processing capacity (rational inattention or RI) for the joint cross-sectional dispersions of consumption, wealth, and income. In intertemporal consumption-savings problems, *prudent* households save today for three reasons: (i) they anticipate future declines in income (saving for a rainy day), (ii) they face uninsurable risks (precautionary savings), and (iii) they are patient relative to the interest rate. For example, the "permanent income hypothesis" (PIH) of Friedman (1957) emphasizes the motive (i) in which consumption is solely determined by permanent income (the annuity value of total wealth) and follows a random walk (see Hall, 1978).[1]

A growing recent literature inspired by Sims (2003) shows that RI plays an important role in influencing the consumption and saving dynamics and has also gained some empirical support.[2] Specifically, Sims (2003), Luo (2008), and Luo and Young (2010) introduce RI into the basic partial equilibrium PIH environment; RI implies that agents process signals slowly and therefore appear to respond sluggishly to innovations in permanent income. This sluggish response appears to deliver changes in consumption in response to anticipated income changes, and as a result also delivers smaller responses to permanent income changes; that is, the model delivers both excess sensitivity and excess smoothness in the consumption behavior we observed in the US data. Some empirical studies found that incomplete information about the state plays an important role in affecting individual agents' optimal decisions. For example, Coibion and Gorodnichenko (2015) and Andrade and Le Bihan (2013) find pervasive evidence consistent with Sims (2003)'s rational inattention theory using the U.S. and European surveys of professional forecasters and other agents, respectively.[3]

However, the above RI-PIH models are partial equilibrium, taking as given a constant exogenous risk-free rate. By construction, the models shut off the feedback loop from the equilibrium interest rate to the dynamics of consumption and wealth. Furthermore, these RI models do not separate risk aversion from intertemporal substitution in determining consumption dynamics, while many papers on recursive utility (RU) preferences highlight the importance of the separation between risk aversion and intertemporal substitution in affecting optimal consumption-portfolio rule and asset pricing. (See, for example, Epstein and Zin, 1989; Campbell, 2003;

[1] This statement holds, for example, if households have quadratic utility, have access to a single risk-free bond with a constant return, and do not face borrowing constraints.

[2] See Veldkamp (2011) for a textbook treatment on how to build and test economic models with information choice and frictions including rational inattention.

[3] Hong et al. (2007) find supportive evidence for rational inattention in the financial markets. Specifically, they find that investors in the stock market react gradually to information contained in industry returns about their fundamentals and that information diffuses only gradually across markets.