ELSEVIER

Journal of Economic Dynamics & Control
25 (2001) 805–824

JOURNAL OF
Economic
Dynamics
& Control

www.elsevier.nl/locate/econbase

Futures market equilibrium with heterogeneity and a spot market at harvest[☆]

Henri Fouda[a], Lawrence Kryzanowski[b], Minh Chau To[c,*]

[a]*Putnam Investment Corporation, Boston, USA*
[b]*Concordia University, Montréal, Canada*
[c]*École des Hautes Études Commerciales, 3000, Chemin Cote-Sainte-Catherine, Montréal, Que, Canada H3T 2A7*

Received 1 January 1997; accepted 1 May 1999

Abstract

This paper studies equilibrium in the futures market for a commodity in a single good economy, which is populated by heterogeneous producers and speculators. The commodity is traded only in the spot market at harvest whereas futures contracts written on the commodity are traded continuously. The model illustrates the role of heterogeneity and non-tradeness in a futures market equilibrium. The results show that the futures price is driven by aggregate wealth, rather than the spot price as in other models and that the futures price process is a simple one which depends on the relative risk process. © 2001 Elsevier Science B.V. All rights reserved.

JEL classification: C61; G13

Keywords: Futures price dynamics; Volatility of futures prices; Demand for futures contracts; Heterogeneity of producers; Non-tradeness of commodity

---

[☆] The material presented in this paper is based upon work supported by the Social Sciences and Humanities Research Council of Canada (SSHRC) and by Fonds pour la formation de chercheurs et l'aide à la recherche (FCAR).

* Corresponding author. Tel.: + 1-514-340-6599; fax: + 1-514-340-5632.
E-mail address: minh-chau.to@hec.ca (M. Chau To).

0165-1889/01/$ - see front matter © 2001 Elsevier Science B.V. All rights reserved.
PII: S0165-1889(99)00041-X

1. Introduction

This paper studies hedging and (partial) equilibrium in the futures market for a commodity which is populated by heterogeneous producers and speculators. The commodity is traded in a spot market only at harvest time. Each producer is endowed with a non-traded private technology and trades in futures contracts in order to reduce her quantity and price risks. Speculators invest their initial wealth in bonds and take positions in futures contracts written on the commodity.

The model is motivated by the observation that a spot market is open only at harvest time for some commodities.[1] In such a setting, the producer faces both a price risk and a quantity risk. However, most of the optimal hedging literature deals only with price risk. Hirshleifer (1990,1991) discusses the effects of both types of risk on the hedging decision but does not model them simultaneously. A simple way to represent the quantity and price risks of each producer is to model them as a private cash flow risk, where the cash position of a hedger is the present value of her terminal cash flows. The difficulty in solving the equilibrium under these conditions is that both the futures price and the cash position of a hedger are endogenous. In more traditional models, the cash position, which is the fixed quantity of the commodity held by the producer, is independent of the futures price.[2]

The optimal demand for a futures contract depends on tastes, on the resolution of uncertainty, and on the formulation of the hedging problem. Early contributions in the optimal hedging literature usually assumed that hedgers were monoperiodic expected utility maximizers (see for instance Stein, 1961; Johnson, 1960; Anderson and Danthine, 1980; Losq, 1982). A common result from most of these papers is that the optimal hedge ratio consists of a pure hedge component, and a mean variance component.

More recent models are derived in a continuous-time framework, whereby the hedger maximizes the expected utility of intertemporal consumption subject to a wealth-budget or cash-budget dynamic constraint. The cash-budget formulation has been used by Ho (1984) in a model in which a farmer, subject to both output and price risk during the production period, hedges a non-traded position. The optimal demand for futures contracts depends on the exogenous

---

[1] This observation is especially true for seasonal and not storable commodities such as fresh strawberries. Since these characteristics imply a discontinuous cash market, which is open only at harvest time, a food processing firm or a restaurant operator using fresh strawberries as input has a strong incentive to trade in strawberry futures contracts during the interim period in order to hedge against price and quantity risks. Likewise, a farmer producing strawberries might want to hedge against price and quantity risks of her crop.

[2] See, for example, Anderson and Danthine (1983).

دریافت فوری ← **متن کامل مقاله**

ISIArticles
مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات