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Supply Response to Food Price Changes in Asian Countries

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1 Introduction

Primary commodity prices have been increasing, especially since the early 2000s and at an accelerated pace during 2007–08, with implications for food security in the developing world. Against this backdrop, much recent research has focussed on understanding the causes and consequences of food price increases. The objective of the present analysis is to examine how food commodity and input prices have affected the supply of the former in 10 Asian economies. This analysis assumes greater significance in the context of the recent surge in oil and food prices, and its persistence. If, for example, oil prices continue to rise – as feared on present evidence – the food price surge may also persist.

A number of hypotheses have been put forward to explain the global rise in agricultural commodity prices. Some have identified demand-side factors as the culprit while others have emphasized supply-side effects – especially rising oil and other input prices.

Imai et al. (2011) examined the extent to which commodity yields responded to price changes using country-panel data for 10 Asian countries covering the period 1966–2005. The present study revisits the same issue and explores how rising food commodity and input prices have influenced supply of major
agricultural commodities in Asia. More specifically, we will econometrically test: 1) whether an output price (or its own price) positively affects supply of a major food commodity (that is, rice, maize, wheat, fruits, or vegetables); and 2) whether an input price negatively affects their supply in Asian countries. While Imai et al. (2011) used oil price as a proxy for an input price, we will use alternatively a fertilizer price. While these may seem elementary propositions, their implications for dampening of food price surge through a timely and adequate supply response are of considerable importance.

The structure of the rest of the chapter is as follows: Section 2 reviews recent evidence on supply response to higher food prices in 2007–08; the surge in food prices since mid-2010; the close correlation between food and oil prices; and growth impacts of food price inflation. As the poverty impacts have been investigated in considerable detail, a distillation of the evidence is given in Section 3. This sets the stage for our econometric analysis of supply response to output and input prices. Section 4 describes salient features of the data used and the econometric specification. Section 5 contains the econometric results. Concluding remarks are given in Section 6.

2 a) Review of supply response

Recent evidence suggests that most major cereal producers – including both consumer nations and exporter nations – responded positively to spiraling food prices in 2007–08. USDA production estimates (2009) are summarized in Table 16.1.

The exporters are distinguished on the basis that they export more than 10 per cent of their production. The major consuming nations increased their production of maize by 16.8 per cent during 2007–08 and 2008–09, of rice by 12.4 per cent, and of wheat by 8.5 per cent. The response in China and India was particularly strong as they increased public agricultural spending by 25 to 30 per cent in 2008. The response from major exporting nations was even stronger – especially for maize and wheat production, which increased by 25 to 30 per cent. Rice production grew less as it is dominated by smallholders.

There were other constraining factors for rice. Firstly, rice prices rose with a lag. Secondly, in most rice-producing countries, protectionist government policies limited incentives to produce more. Thirdly, Asian rice producers are much more dependent on fertilizers than smallholders from other regions. In countries where fertilizers were highly subsidized and/or their export was restricted, fertilizer price did not rise much (as in China and India) and the supply response was quite high.

Supply response is impeded by transport and other input costs. Transport costs have risen because of rising fuel prices, cutting into producers’ profits.