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Examining the Determinants of Food Prices in Developing Asia

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CONTENTS

ABSTRACT

How the price of food is determined has become a critical issue, given the drastic surges in prices in recent years and the prevailing expectation of further increases. Along this line, this paper examines the sources of food price fluctuations in 11 developing Asian countries. The working model is a block vector autoregression (VAR), and 10 variables are classified into three blocks—world, region, and country—depending on their origin and nature. Empirical evidence shows that the regional shock plays a pivotal role in explaining the variations of domestic food prices, particularly at medium- to long-term horizons. Contrary to conventional belief, the world food price shock contributes little to the dynamics of domestic food prices in developing Asia. The findings suggest Asian food markets are more integrated regionally than with the world market. The short-run movements of domestic food prices are accounted for largely by the country's own shock. Taken together, our findings suggest that promoting food price stability would require efforts at the regional level as well as at the domestic level, reflecting the influence of region-specific factors. Extensions to the developing countries in other regions produce similar findings on the determination of food prices.

Keywords: food price, developing Asia, Shocks, block VAR

JEL Classification: C32, F15, Q11

I. INTRODUCTION

The world witnessed dramatic increases in the prices of major agricultural commodities from 2006 to 2009. Commonly referred to as the global food crisis, the food price surge in 2007–2008 was phenomenal, registering an increase of more than 60% in 2 years. The crisis did not end there, as the global food price rose again sharply in 2010—surpassing the 2008 peak before moderating a bit beginning in the last quarter of 2011.

Surging food prices in recent years have raised concerns about food security, especially with their impact on the most vulnerable, i.e., poor households and their children. The upward trend of food prices is likely to persist for some time, while the increased volatility of food prices presents an additional challenge.

A number of studies have identified the causes and consequences of surging food prices. Trostle (2008) argues that the rapid expansion in global demand, rising crude oil prices, the depreciation of the United States (US) dollar, and other microeconomic factors have all contributed to rising prices. Various actions taken by both exporters and importers in an attempt to moderate domestic food price inflation have worsened the situation by tightening market conditions. Gilbert and Morgan (2010) suggest additional factors—namely, rapid economic growth, especially in the People's Republic of China (PRC) and other Asian economies, and the speculative trade in agricultural commodities—that play in such price dynamics. Headey and Fan (2008), however, argue in their comprehensive and critical review that the role of the PRC and India may not be as great as suggested because both countries are relatively self-sufficient in their food supply. They are also skeptical that speculation in financial markets is a cause of the current food price crisis given the absence of clear causal linkages between futures and spot prices.

Regardless of the causes of the food price increase in recent years, the implications for the economy and poverty are clear. Headey and Fan (2008) note that, at the macro level, the elevated global food prices would have an impact on the size of food and fuel import bills, exchange rate movements and foreign exchange reserves, pattern of food consumption, trade and marketing policies, and so on. Although the net effects on the domestic economic welfare would depend on whether or not the economy is a net food importer or exporter, among various other country-specific factors, the impact would be nonetheless very large.

Trostle (2008) notes that at micro levels, a price increase in basic necessities could be lethal for many lower-income consumers. Using a simulation, Ivanic and Martin (2008) find that, in low-income countries, poor people are typically net consumers of food and are disproportionally more affected by the food price increase. Beyond the direct income effect, high food prices can also affect household welfare through various other indirect channels. For example, poor households strapped with reduced real income may decide to forego their children's education, thus affecting human capital development.

A good understanding of the determinants of food price inflation and its volatility is fundamental to designing an appropriate policy framework to deal with these issues. In this context, this paper aims to identify the underlying causes of food price fluctuations in developing Asian countries. The paper will focus on the relative importance of external and internal factors in determining food prices in emerging and developing Asia. Particularly given that most of the countries under consideration are small open economies, the focus of interest would be on the transmission of external shocks to domestic food prices.

This paper adds to the previous literature that examined the integration and transmission mechanism of food prices between international and domestic markets. Many earlier studies on international food price transmission focused on the movement of food prices only, and did not go further to identify the sources of food price fluctuation. When it comes to the policy level, however, understanding the driving forces of food prices is important, as different sources of food price fluctuation would require different policy measures. Further, previous studies on determining food prices were largely based on single-equation approaches or small-scale systems typically consisting of two to three variables. As such, they may be limited in fully reflecting the interaction among variables and uncovering the factors underlying the determination of food prices.

The present paper develops an extended model that contains a large set of 10 international and domestic variables. The working model is a block vector autoregression (VAR) as in Cushman and Zha (1997), Zha (1999), Peersman (2004), and Lastrapes (2005). The 10 variables are classified into three blocks—world, regional, and country—depending on their origin and nature. The blocks are identified using block exogeneity assumptions consistent with the economic theory. By construction, each country is subject to identical world and regional shocks, and this makes it possible to compare the results across countries at the same base. The block exogeneity assumptions also help to conserve the degrees of freedom, which are desperately needed for studies like this paper having a relatively short span of time series data. Once the model is structurally identified, we will be able to examine the effects and relative importance of underlying shocks in accounting for movements in domestic food prices. Based upon the results, some policy suggestions can be drawn with a view to enhancing the stability of food prices in the region.

The remainder of this paper is organized as follows. Section II discusses our model specification and estimation strategy. In Section III, the empirical applications to developing Asian countries are presented. Section IV undertakes a set of tests to assess the robustness of the results. In Section V, the model is applied to the countries in other regions, and the implications are compared with those from developing Asia. Section VI concludes.

II. MODEL SPECIFICATION

Several econometric techniques have been employed to assess the extent to which world prices affect domestic prices. For example, Mundlak and Larson (1992) apply a regression technique for modeling the effects of world agricultural commodity prices. However, this was criticized by later studies because the relationship between domestic and world prices was analyzed in a static framework. It was suggested that some dynamics be included, since price adjustments usually do not happen instantaneously but take time. Quiroz and Soto (1995), Baffes and Gardner (2003), and Imai, Gaiha, and Thapa (2008) propose error correction models to take price dynamics into account, and to test short- and long-run adjustments. A vector error correction model is also postulated to better capture the dynamics among prices. Conforti (2004) and Minot (2011) employ a two-variable vector error correction model to test the international transmission of food prices to domestic prices. While the use of vector error correction models is certainly rewarding, most of them are based on single-equation approaches or small-scale systems typically consisting of two to three variables. As such, they may be limited in fully reflecting interactions among variables and uncovering factors underlying the determination of food prices.

The present paper attempts to resolve this difficulty by using the block VAR framework. Specifically, our VAR model contains a large set of 10 international and domestic variables, and examines how and to what extent these variables affect food prices over time. The 10 variables are classified into three blocks—world, region, and country—depending their origin and nature. The variables in the world block control for changes in world demand and food supply:

1. Oil prices have a considerable impact on the production and transportation costs of agricultural commodities, hence affecting the supply side of food.
2. World gross domestic product (GDP) reflects the general conditions of the world economy, and thus the demand for food.
3. World food price should naturally reflect the balance between the world demand for and world supply of food.
4. Food price futures have been included on the basis of previous studies, suggesting that speculative trading in agricultural commodities may have played a role in recent food price surges. While there is a causality argument, the model can test whether futures markets have contributed to stabilizing or destabilizing food prices.

The regional block represents the Asian economy, and includes Asian gross domestic product (GDP) and Asian food prices. The country block comprises four domestic variables that can affect food price: (i) the exchange rate against the dollar, which can affect local food prices by altering import prices, (ii) M1 money supply, included to reflect inflationary pressures on the general price level, (iii) real GDP per capita, and (iv) the domestic food price. More details of the data are provided in the next section.

The underlying shocks in the block VAR model are identified using the following restrictions:

1. None of the shocks in the regional and country blocks affect variables in the world block throughout the whole sample period. On the other hand, the shocks in the world block can have an impact on variables in the regional and country blocks. That is, the world block is assumed to be exogenous to the regional and country blocks.
2. The shocks in the regional block can influence variables in the country block, while the shocks in the country block cannot affect those in the regional block over the entire sample period. The regional block is assumed to be exogenous to the country block.
3. Within the block, the individual shocks are identified by assuming the Choleski-type recursive ordering of the variables.

By the block exogeneity assumptions in (1) and (2), each country is subject to identical world and regional shocks, and this feature allows us to compare the responses across the countries at the same base. The model is estimated by seemingly unrelated regression (SUR), developed by Zellner (1962), and is estimated in levels. We did not perform an explicit analysis of the long-run behavior of the economy due to the short span of data. Yet, by doing the analysis in levels, we allow for implicit co-integrating relationships in the data and still have consistent estimates of the parameters (Sims, Stock, and Watson 1990; Peersman 2004).

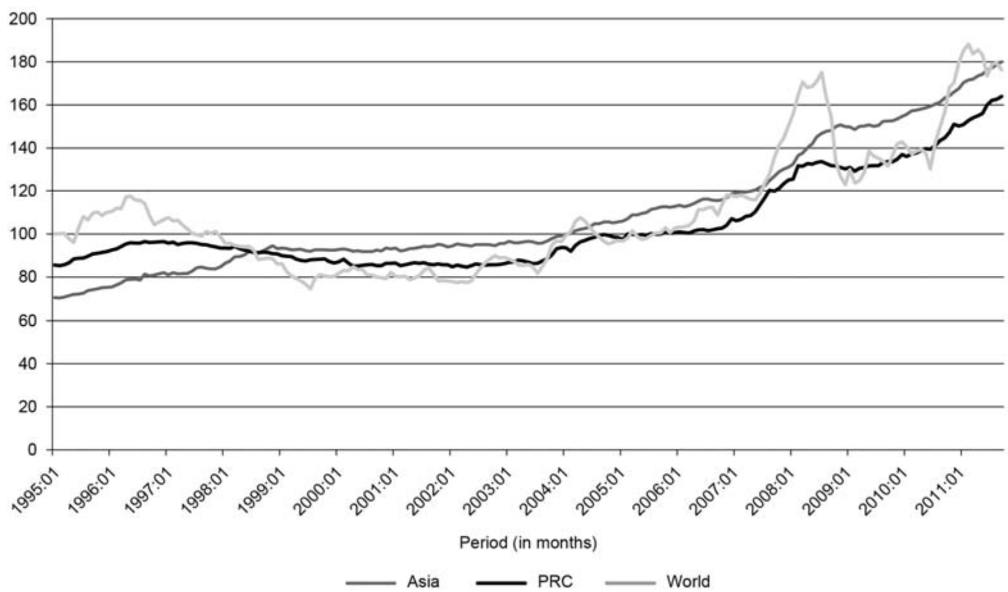
III. EMPIRICAL RESULTS

A. Data

Empirical analysis was undertaken for 11 developing Asian countries: the PRC; Hong Kong, China; India; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; Taipei,China; Thailand; and Viet Nam.

The sample period begins with the first quarter (Q1) of 1995, the earliest period when all data are available, and ends with Q3 2011. Definitions of the data series are as follows. Starting from the variables in the world block, the oil price (POILUS) is the average of the prices of UK Brent, Dubai, and West Texas Intermediate, obtained from the International Monetary Fund (IMF) International Financial Statistics. World GDP (WR_GDP) was obtained by summing up the real GDP of the US and the European Union (EU) from Global Insight (http://www.ihsglobalinsight.com) and accounts for about 50% of world GDP according to the 2010 statistics of the IMF. For world food price (WR_FDP), we used the world food price index compiled by the Food and Agriculture Organization of the United Nations (FAO; http://www.fao.org). The Dow Jones-UBS agriculture subindex (http://www.djindexes.com/commodity) was used to represent food price futures (FUTURE), and is depicted in Figure 1.

Figure 1: Food Price Futures: Dow Jones-UBS Agriculture Subindex, 1995–2011



PRC = People's Republic of China.

Source: Dow Jones. http://www.djindexes.com/commodity

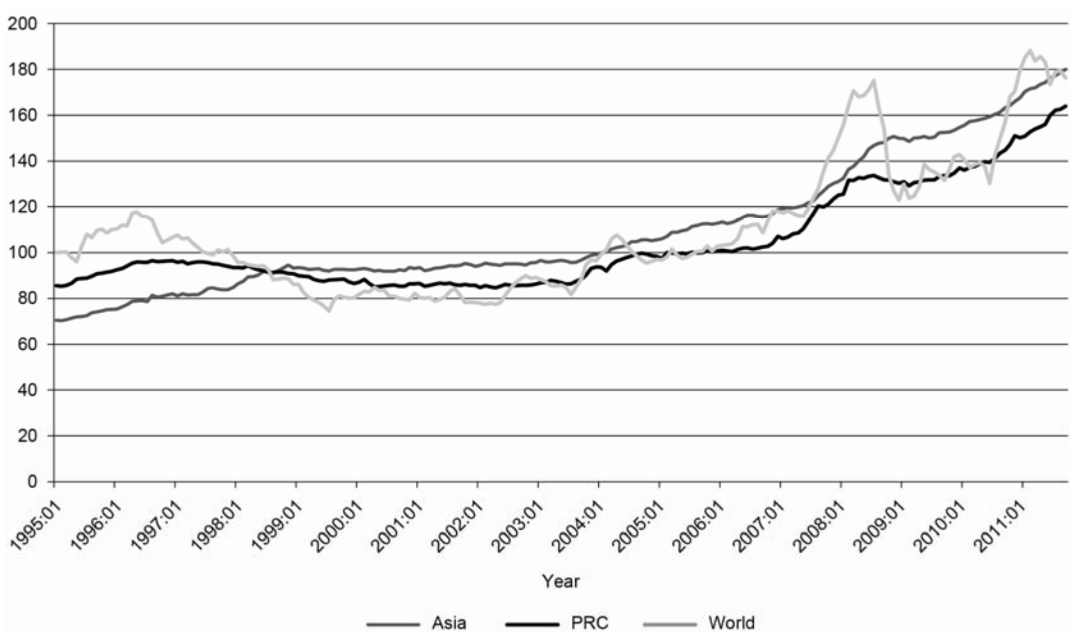
Moving to the regional block, Asian GDP (AS_GDP) was calculated by summing up the real GDPs of the 11 countries under study. The Asian food price (AS_FDP) was constructed by applying the principal component analysis to the food price indexes of these countries, which will be described in Section III-B. Finally, the individual food prices in the country block were obtained from various sources: the Organisation for Economic Co-operation and Development (OECD) for the PRC, Indonesia, and the Republic of Korea; CEIC for Hong Kong, China; India;

the Philippines; Singapore; Taipei,China; Thailand; and Viet Nam; and Bloomberg for Malaysia. These variables are named XX_FDP, where XX is the two-letter country identifier (e.g., CN_FDP for the PRC, HK_FDP for Hong Kong, China, and so on). The same naming system applies to the other three country variables of US exchange rates (XX_USR), M1 money supply (XX_MON), and real GDP (XX_GDP). The data were all taken from Global Insight. For each country, real GDP was divided by population to arrive at per capita values. Quarterly data on population were obtained by interpolating the annual series from *World Population Prospects: The 2010 Revision* (United Nations Department of Economics and Social Affairs, Population Division 2011), through the INTERPOL procedure in the econometric software RATS. All variables are expressed in logarithms. For each country, the block VAR model in Section II was estimated with a constant and a linear trend, and the lag length was set at 3 in all cases.

B. Food Price Index for Asia (AS_FDP)

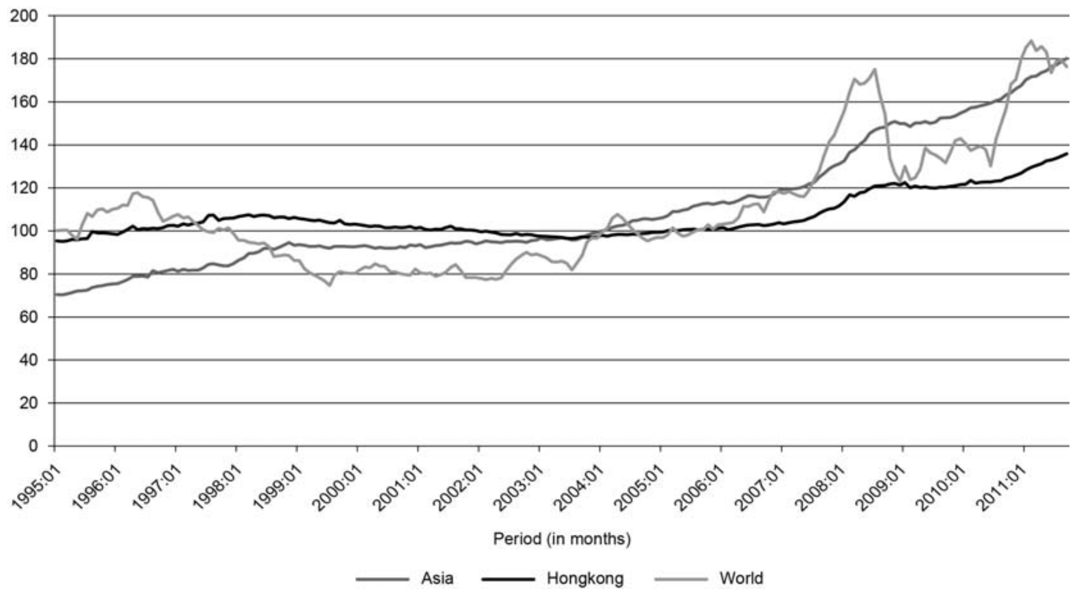
Figure 2 depicts the food price indexes of the 11 Asian countries being studied. The FAO world price index (WR_FDP) is also presented for comparison. It is quite apparent that the food prices of most Asian countries exhibit different patterns from the world price. They are also less volatile—except for Indonesia, during the second half of the 1990s, and Viet Nam since the second half of the first decade of the 2000s. A question arises whether such deviations from the world price movement are common among Asian food prices. One way of addressing this issue is to check composite indicators that can represent co-movements of Asian food prices. Since there is no such measure available in the literature, we decided to construct one.

Figure 2A: Food Price Indexes: World, Asia, and the People's Republic of China, 1995–2011



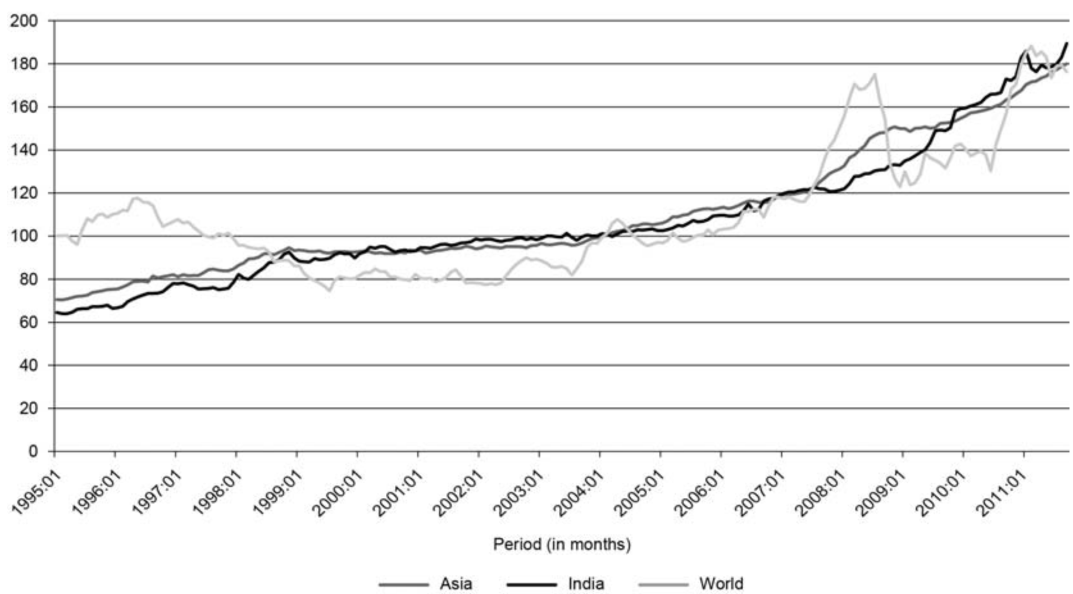
Source: Authors' calculations.

Figure 2B: Food Price Indexes: World; Asia; and Hong Kong, China, 1995–2011



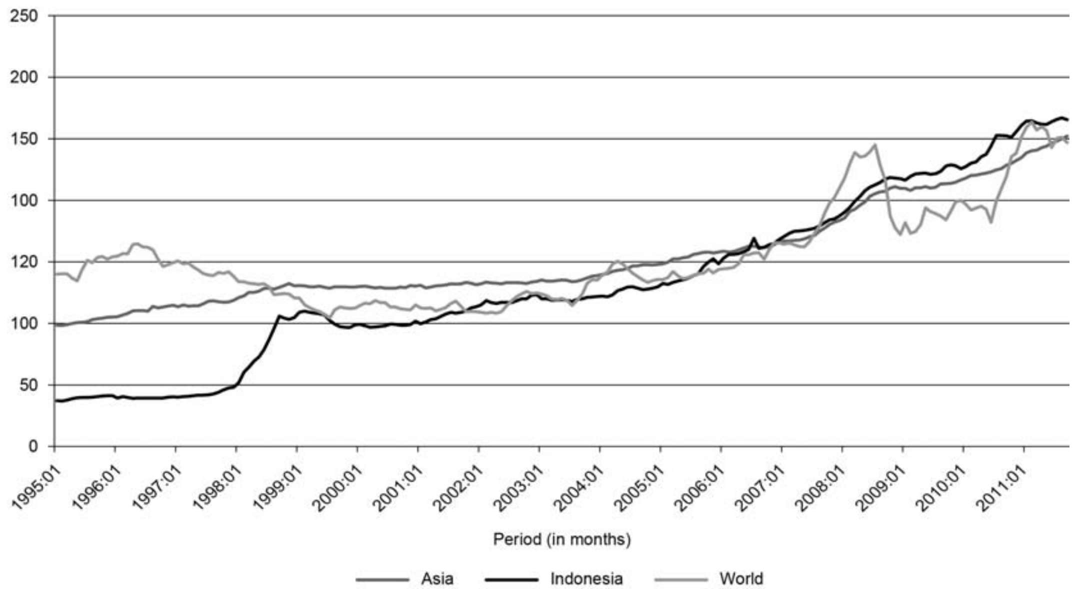
Source: Authors' calculations.

Figure 2C: Food Price Indexes: World, Asia, and India, 1995–2011



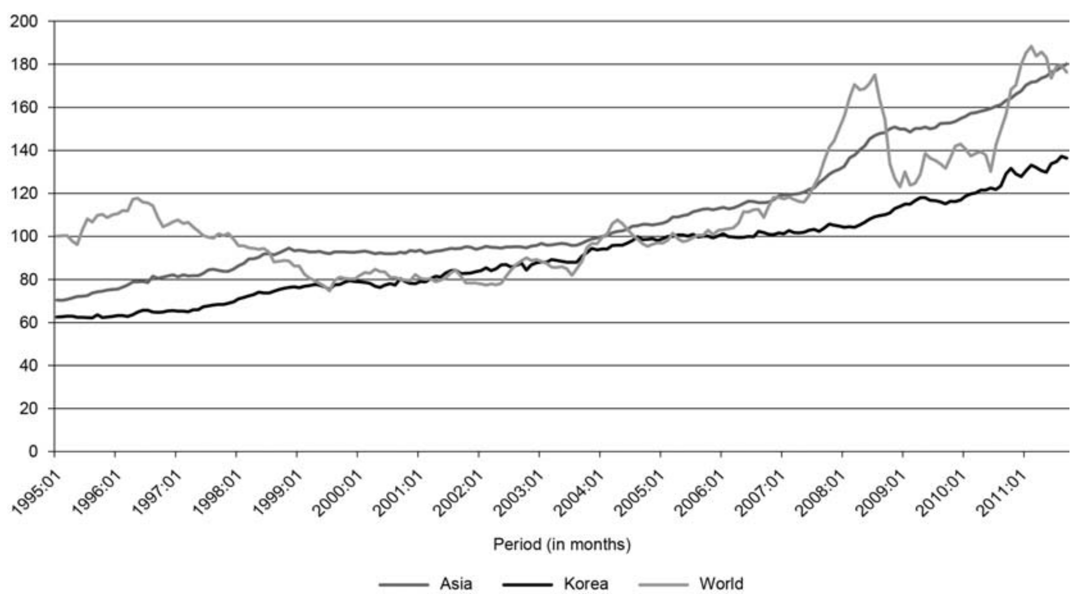
Source: Authors' calculations.

Figure 2D: Food Price Indexes: World, Asia, and Indonesia, 1995–2011



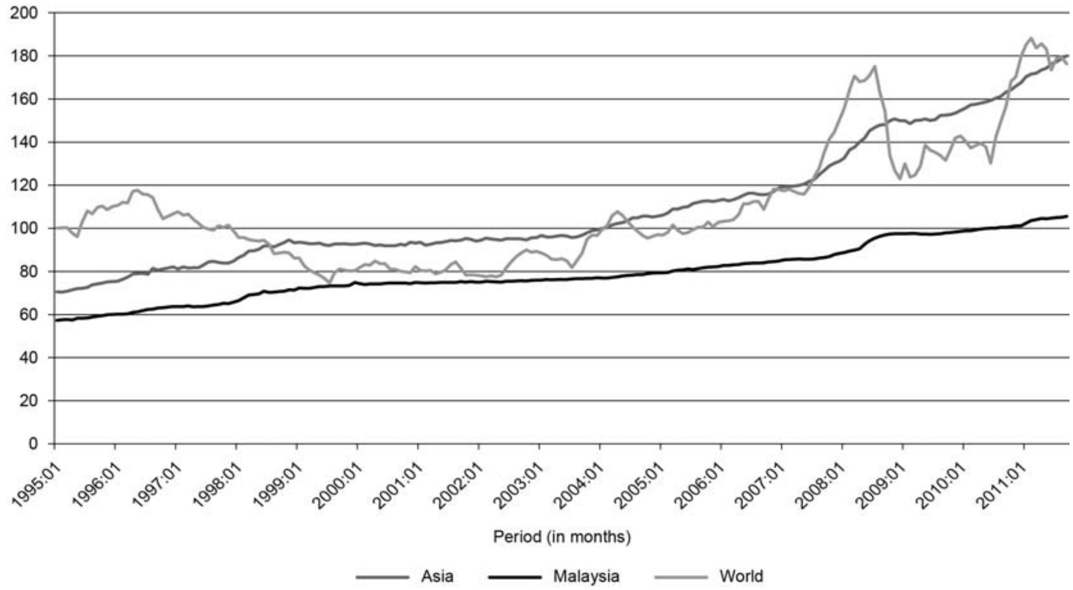
Source: Authors' calculations.

Figure 2E: Food Price Indexes: World, Asia, and the Republic of Korea, 1995–2011



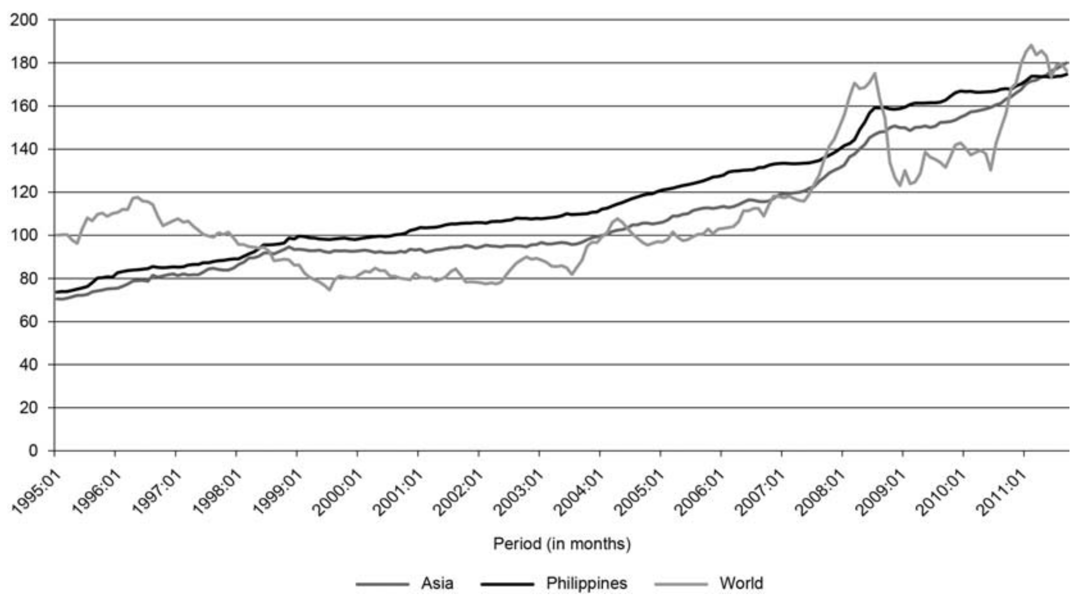
Source: Authors’ calculations.

Figure 2F: Food Price Indexes: World, Asia, and Malaysia, 1995–2011



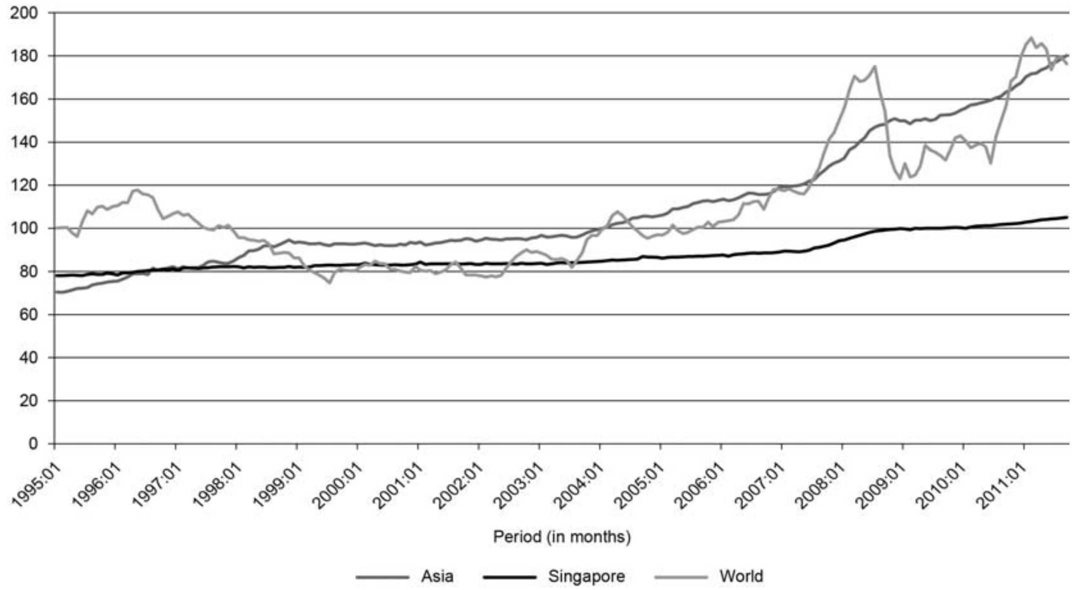
Source: Authors' calculations.

Figure 2G: Food Price Indexes: World, Asia, and the Philippines, 1995–2011



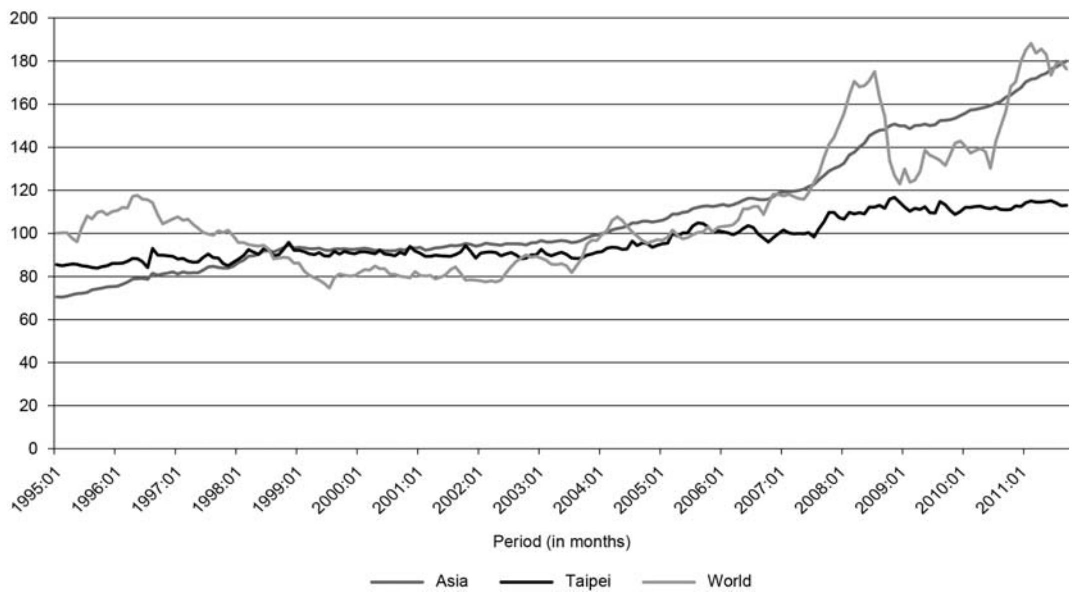
Source: Authors' calculations.

Figure 2H: Food Price Indexes: World, Asia, and Singapore, 1995–2011



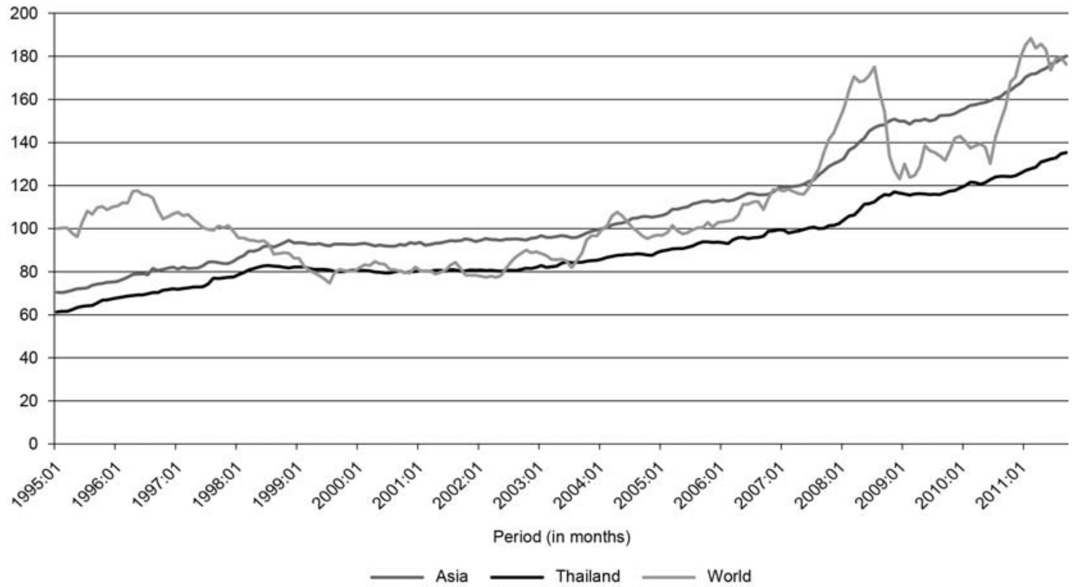
Source: Authors' calculations

Figure 2I: Food Price Indexes: World; Asia; and Taipei,China, 1995–2011



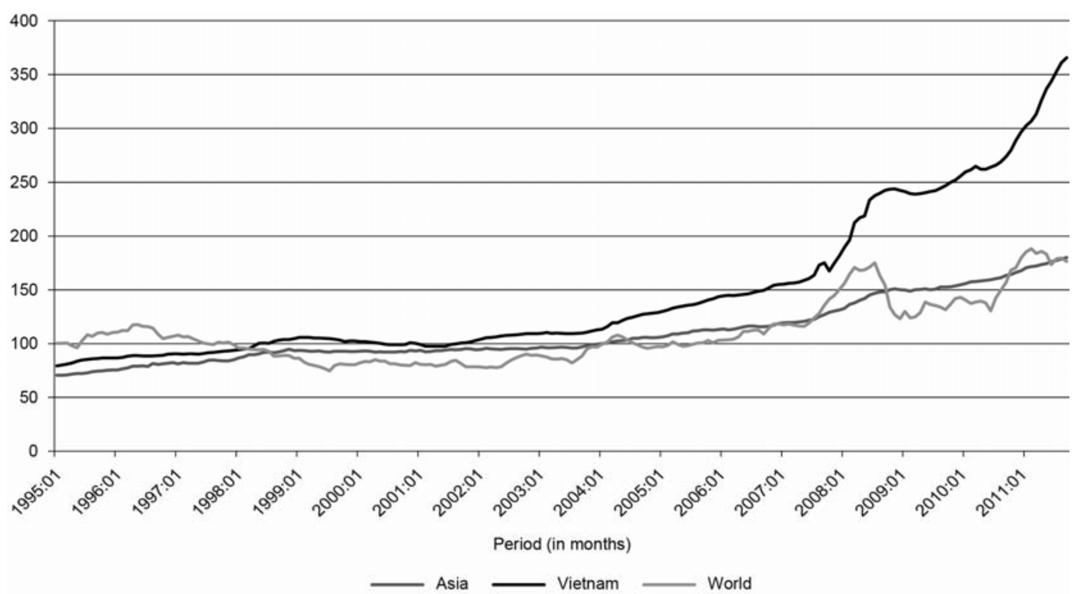
Source: Authors’ calculations.

Figure 2J: Food Price Indexes: World, Asia, and Thailand, 1995–2011



Source: Authors' calculations.

Figure 2K: Food Price Indexes: World, Asia, and Viet Nam, 1995–2011



Source: Authors' calculations.

Among several methods in the literature, we adopted a principal component analysis, which summarizes how different variables change in relation to each other, and how they are associated. The principal component analysis groups together variables that are collinear to form principal components capable of capturing as much common information among those variables as possible. Typically, the composite indicator corresponds with the principal component that has the largest eigenvalue. Some well-known composite indicators using this method are the Chicago Fed National Activity Index and the General Indicator of Science and

Technology by the National Institute of Science and Technology Policy, among others. The literature review in the *Handbook on Constructing Composite Indicators: Methodology and User Guide* (OECD, EU, Joint Research Centre–European Commission 2008) discusses the plurality of the approaches that have been used in building a composite indicator.

Table 1: Principal Component Analysis

Number	1	2	3	4	5
Eigenvalue	10.3636	0.4195	0.0995	0.0625	0.0172
Variance Proportion	0.9421	0.0381	0.0086	0.0056	0.0015
Cumulative Proportion	0.9421	0.9802	0.9888	0.9944	0.9959
Eigenvector					
People's Republic of China	–0.2943	0.4204	0.1283	0.6145	–0.0848
Hong Kong, China	–0.2786	0.6447	–0.1864	–0.5120	0.0416
India	–0.3048	–0.1075	–0.4909	0.0480	0.5498
Indonesia	–0.3030	–0.2991	–0.0628	–0.1754	0.0882
Republic of Korea	–0.2991	–0.3736	–0.1030	0.3342	0.0510
Malaysia	–0.3045	–0.2656	–0.0474	–0.3338	–0.2043
Philippines	–0.3069	–0.2053	0.1290	0.0062	–0.3708
Singapore	–0.3089	0.0771	0.0651	–0.0137	–0.5062
Taipei,China	–0.3093	–0.0466	–0.0476	–0.1277	–0.0972
Thailand	–0.3002	0.0025	0.7963	–0.1258	0.4769
Viet Nam	–0.3052	0.2146	–0.1832	0.2672	0.0757
Fraction of the variance explained by the principal components					
People's Republic of China	0.8981	0.0741	0.0015	0.0236	0.0001
Hong Kong, China	0.8046	0.1743	0.0033	0.0163	0.0000
India	0.9630	0.0048	0.0230	0.0001	0.0052
Indonesia	0.9519	0.0375	0.0003	0.0019	0.0001
Republic of Korea	0.9271	0.0585	0.0010	0.0069	0.0000
Malaysia	0.9611	0.0296	0.0002	0.0069	0.0007
Philippines	0.9763	0.0176	0.0015	0.0000	0.0023
Singapore	0.9890	0.0024	0.0004	0.0000	0.0044
Taipei,China	0.9920	0.0009	0.0002	0.0010	0.0001
Thailand	0.9342	0.0000	0.0605	0.0009	0.0039
Viet Nam	0.9659	0.0193	0.0032	0.0044	0.0000

Source: Authors' calculations.

Table 1 reports the results from the principal component analysis using the food price indexes of 11 developing Asian countries. These results are for the five principal components with the largest eigenvalues. The remaining six components contribute virtually nothing and are not reported. The first principal component corresponding to the largest eigenvalue of 10.36 accounts for 94% of the total variation and over 90% of the variation in the individual food prices of all countries except Hong Kong, China (80%). The second largest eigenvalue is 0.42, and the corresponding principal component explains an additional 4% of the total variation. Since the second principal component adds no significant gain, we constructed a food price index for Asia using only the first principal component having the highest eigenvalue. Selecting this principal component is in compliance with the convention mentioned earlier; further, it is consistent with the Kaiser criterion, which is commonly employed for determining the number of principal components to retain. The Kaiser criterion recommends that the components whose eigenvalues are greater than 1 be used to summarize the data and hence, the components whose eigenvalues are less than 1 can be discarded for the sake of efficiency.

The Asian food price index generated is depicted in various panels of Figure 2 along with price indexes in individual countries. Clearly, the Asian food price moved in a noticeably different way compared to the world price. It has risen persistently since 1995, and the values exhibit less volatility over the entire sample period. In particular, while the Asian food price also rose during the 2008 price spike and the recent price surges, the increase was much smaller than the world price. Figures 2A to 2K also indicate that food prices in individual countries in Asia moved in tandem more with the Asian food price than the world price.

Several studies have tried to explain why Asian food prices rose less than the world price. According to Dawe (2008), the accompanying depreciation of the dollar neutralized a considerable portion of the transmitted increase from world prices to many Asian markets. Byerlee, Jayne, and Myers (2006) argue that, although low-income rice and wheat importers are exposed to world price shocks the most, Asian countries are in a better position to weather world price shocks, thanks to improved infrastructure and abundant foreign exchange reserves. Headey and Fan (2008) conclude that the full transmission of international prices might not take place since local governments aim at dampening price increases, especially in developing countries.

C. Variance Decompositions

Table 2 reports the forecast error variance decompositions of food prices. Figures are the percentage contributions of the structural shocks to the forecast error variance in the food price at various horizons. Beginning with the Asian food price in the top panel, we find it to be the most influential shock, accounting for over 80% of the total variation across the horizons. On the other hand, the world food price shock contributed less than 2% of the price variation. An implication is that the Asian food price as a whole is little affected by changes in the world food price. The contribution of shocks to oil prices and to food price futures was also minimal. This is in contrast to some studies that point to oil prices and food price futures as potential causes of the food price surges. Among the four world shocks, the world GDP shock was the only one exhibiting some significance in explaining the Asian food price. By construction, none of the country shocks were allowed to have an impact on the Asian food price at all horizons.

The remaining panels report the forecast error variance decompositions for the domestic food prices of 11 countries. The results appear to be similar to those for the common regional food price. The world food price shock contributes virtually nothing to explaining the variation in domestic food prices of most Asian countries. The same is true for the shocks to oil prices and food price futures. The key finding is that the Asian food price shock played a pivotal role in determining domestic food prices. The evidence is particularly strong at medium to long horizons. The data for countries such as the PRC; India; Indonesia; Malaysia; the Philippines; Taipei,China; Thailand; and Viet Nam show that the Asian food price shock was the most important or equally as important as the other shocks in the model in explaining the long-run variability of their food prices. A shock to world GDP also accounted for a significant fraction of the forecast error variance in the food prices of India, Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

Table 2: Variance Decompositions of Food Prices, 1995–2011

(%)

Country	Horizons (Quarters)	Shocks									
		World				Region		Country			
		POILUS	WR_GDP	WR_FDP	FUTURE	AS_GDP	AS_FDP	XX_USR	XX_MON	XX_GDP	XX_FDP
Developing Asia [AS]	0	0.01 (0.1)	5.68 (4.8)	1.33 (0.2)	0.19 (0.1)	1.02 (2.4)	91.76 (5.1)				
	4	0.03 (0.1)	9.67 (4.7)	0.48 (0.2)	0.11 (0.1)	6.23 (7.5)	83.48 (8.5)				
	8	0.04 (0.1)	12.53 (4.5)	0.91 (0.2)	0.13 (0.1)	6.33 (10.4)	80.07 (10.8)				
	12	0.04 (0.1)	12.40 (4.5)	1.50 (0.2)	0.19 (0.1)	6.39 (11.8)	79.48 (12.0)				
	24	0.05 (0.1)	12.55 (4.5)	1.96 (0.2)	0.21 (0.1)	5.57 (13.1)	79.66 (13.1)				
PRC [CN]	0	0.00 (0.1)	4.32 (5.9)	2.57 (0.3)	0.12 (0.1)	13.55 (2.4)	21.66 (3.8)	0.80 (22.3)	0.00 (1.9)	6.92 (12.0)	50.05 (19.2)
	4	0.06 (0.1)	13.70 (3.3)	2.23 (0.1)	0.21 (0.1)	22.72 (5.3)	8.31 (8.8)	32.46 (22.2)	1.37 (2.3)	5.27 (12.5)	13.68 (10.3)
	8	0.05 (0.1)	12.30 (2.8)	2.51 (0.1)	0.24 (0.1)	23.86 (6.9)	9.26 (9.8)	28.89 (21.4)	1.54 (2.2)	10.22 (11.8)	11.13 (8.9)
	12	0.04 (0.1)	11.13 (2.7)	2.28 (0.1)	0.28 (0.1)	21.90 (8.0)	12.50 (10.6)	30.19 (21.4)	1.88 (2.2)	9.95 (11.6)	9.85 (8.7)
	24	0.02 (0.1)	7.15 (2.6)	1.10 (0.1)	0.18 (0.1)	10.34 (10.6)	28.45 (12.6)	23.45 (22.2)	1.61 (2.3)	22.94 (11.6)	4.76 (8.9)
Hong Kong, China [HK]	0	0.03 (0.1)	6.46 (1.6)	0.88 (0.1)	0.08 (0.1)	0.03 (0.6)	2.94 (0.9)	8.65 (22.9)	0.03 (0.1)	2.78 (1.6)	78.13 (22.0)
	4	0.00 (0.1)	1.90 (1.1)	0.19 (0.1)	0.02 (0.1)	2.17 (2.1)	3.32 (2.4)	75.98 (20.4)	0.07 (0.2)	0.25 (2.2)	16.11 (17.4)
	8	0.00 (0.1)	1.18 (1.0)	0.26 (0.1)	0.04 (0.1)	3.51 (2.6)	12.50 (3.5)	67.87 (19.0)	0.14 (0.2)	0.09 (2.2)	14.41 (15.7)
	12	0.00 (0.1)	0.39 (0.9)	0.17 (0.1)	0.02 (0.1)	2.95 (3.3)	16.07 (4.1)	67.82 (18.9)	0.13 (0.2)	0.02 (2.2)	12.42 (15.2)
	24	0.00 (0.1)	0.07 (0.9)	0.07 (0.1)	0.01 (0.1)	2.33 (5.3)	20.38 (5.6)	64.82 (20.0)	0.12 (0.3)	0.00 (2.6)	12.20 (15.5)
India [ID]	0	0.01 (0.1)	1.53 (11.0)	1.02 (0.5)	0.02 (0.2)	0.00 (0.1)	10.84 (4.3)	0.01 (4.6)	1.08 (3.4)	17.57 (4.4)	67.88 (12.1)
	4	0.05 (0.1)	17.68 (9.6)	0.33 (0.4)	0.04 (0.2)	0.60 (0.6)	44.55 (11.4)	2.59 (7.8)	3.61 (4.8)	5.98 (6.4)	24.53 (12.3)
	8	0.05 (0.1)	24.57 (8.8)	0.85 (0.4)	0.10 (0.1)	0.53 (1.0)	45.38 (14.2)	2.29 (8.6)	2.89 (5.4)	4.76 (6.5)	18.55 (12.7)
	12	0.05 (0.1)	25.01 (8.6)	0.87 (0.4)	0.12 (0.1)	0.50 (1.2)	46.22 (15.8)	2.31 (8.9)	2.73 (5.6)	4.59 (6.5)	17.57 (13.4)
	24	0.05 (0.1)	24.82 (8.5)	1.00 (0.4)	0.12 (0.1)	0.50 (1.5)	46.87 (18.0)	2.27 (9.3)	2.64 (6.2)	4.52 (6.9)	17.16 (14.6)
Indonesia [IN]	0	0.20 (0.1)	2.47 (13.5)	0.71 (0.8)	1.11 (0.3)	15.70 (6.3)	0.02 (9.5)	2.79 (0.3)	2.21 (2.0)	0.50 (16.2)	74.30 (16.3)
	4	0.11 (0.1)	38.90 (9.3)	0.71 (0.5)	0.12 (0.2)	4.65 (12.0)	43.88 (15.1)	0.68 (0.3)	0.13 (2.3)	6.37 (16.4)	4.46 (9.6)
	8	0.08 (0.1)	36.12 (8.1)	1.98 (0.4)	0.46 (0.2)	22.81 (13.7)	32.01 (16.2)	0.39 (0.3)	0.08 (2.3)	3.70 (16.3)	2.37 (8.4)
	12	0.07 (0.1)	34.67 (7.5)	3.49 (0.4)	0.68 (0.1)	23.93 (14.6)	31.22 (17.2)	0.37 (0.3)	0.08 (2.2)	3.35 (16.4)	2.14 (8.1)
	24	0.07 (0.1)	31.44 (7.2)	3.19 (0.4)	0.61 (0.1)	22.46 (16.2)	37.27 (18.4)	0.31 (0.3)	0.07 (2.4)	2.82 (16.9)	1.77 (8.2)
Republic of Korea [KR]	0	0.05 (0.1)	0.10 (6.7)	2.79 (0.3)	0.45 (0.1)	3.20 (2.6)	13.23 (4.1)	0.18 (0.5)	1.15 (0.6)	0.00 (7.4)	78.83 (9.9)
	4	0.06 (0.1)	4.30 (5.9)	1.64 (0.3)	0.43 (0.1)	8.39 (8.3)	11.20 (11.1)	0.65 (0.9)	3.58 (1.1)	13.82 (10.7)	55.94 (12.7)
	8	0.05 (0.1)	5.44 (5.3)	1.54 (0.2)	0.43 (0.1)	8.54 (10.4)	11.71 (12.9)	0.69 (1.1)	3.95 (1.1)	22.23 (11.3)	45.42 (13.4)
	12	0.04 (0.1)	4.94 (5.1)	1.45 (0.2)	0.41 (0.1)	11.55 (11.3)	11.71 (13.9)	0.63 (1.1)	3.80 (1.2)	25.47 (11.5)	39.99 (14.0)
	24	0.03 (0.1)	5.11 (5.1)	1.27 (0.2)	0.33 (0.1)	9.07 (13.0)	24.77 (15.2)	0.62 (1.2)	3.15 (1.2)	23.73 (11.8)	31.92 (15.2)
Malaysia [MY]	0	0.00 (0.1)	0.28 (1.8)	0.06 (0.1)	0.00 (0.1)	1.73 (0.6)	2.54 (1.0)	0.16 (0.2)	0.08 (0.4)	1.72 (1.8)	93.42 (2.8)
	4	0.01 (0.1)	5.46 (2.1)	0.12 (0.1)	0.08 (0.1)	13.15 (3.8)	20.54 (4.2)	1.03 (0.5)	0.05 (1.0)	4.42 (4.1)	55.14 (7.6)
	8	0.01 (0.1)	10.83 (2.1)	0.15 (0.1)	0.06 (0.1)	10.44 (5.8)	26.15 (6.6)	1.02 (0.7)	0.05 (1.3)	3.65 (4.9)	47.64 (10.8)
	12	0.02 (0.1)	12.51 (2.1)	0.51 (0.1)	0.10 (0.1)	10.17 (7.2)	29.37 (7.9)	0.94 (0.8)	0.04 (1.4)	3.35 (5.4)	42.99 (12.8)
	24	0.03 (0.1)	12.93 (2.1)	1.10 (0.1)	0.14 (0.1)	9.10 (9.9)	37.45 (10.3)	0.78 (0.9)	0.04 (1.9)	2.79 (6.4)	35.64 (16.5)

continued on next page

Table 2 *continued*

Country	Horizons (Quarters)	Shocks: World POILUS		WR_GDP		WR_FDP		FUTURE		Region AS_GDP		AS_FDP		Country XX_USR		XX_MON		XX_GDP		XX_FDP	
Philippines [PH]	0	0.03	(0.1)	22.21	(4.9)	0.02	(0.2)	0.06	(0.1)	3.26	(1.5)	3.18	(2.9)	0.15	(0.4)	0.05	(0.8)	10.56	(9.2)	60.48	(10.2)
	4	0.01	(0.1)	9.32	(4.4)	0.10	(0.2)	0.05	(0.1)	4.34	(6.1)	40.78	(9.3)	0.92	(0.9)	0.18	(1.4)	18.97	(13.2)	25.32	(14.5)
	8	0.02	(0.1)	14.39	(4.0)	0.26	(0.2)	0.06	(0.1)	6.88	(7.8)	35.74	(11.7)	0.83	(1.2)	0.17	(1.7)	17.56	(13.9)	24.08	(15.4)
	12	0.02	(0.1)	14.03	(3.9)	0.65	(0.2)	0.11	(0.1)	7.21	(9.3)	35.55	(12.8)	0.85	(1.4)	0.18	(1.9)	17.58	(14.5)	23.81	(16.3)
	24	0.02	(0.1)	13.61	(3.9)	0.78	(0.2)	0.12	(0.1)	7.08	(11.9)	39.49	(14.7)	0.79	(1.6)	0.17	(2.4)	16.17	(15.4)	21.75	(17.9)
Singapore [SG]	0	0.00	(0.1)	1.53	(0.7)	0.01	(0.1)	0.03	(0.1)	0.00	(0.2)	1.99	(0.4)	0.50	(0.4)	0.65	(0.2)	0.01	(0.3)	95.28	(1.0)
	4	0.01	(0.1)	7.15	(0.8)	0.14	(0.1)	0.05	(0.1)	6.33	(1.2)	14.60	(2.1)	2.09	(1.2)	2.77	(0.4)	0.25	(0.6)	66.60	(3.1)
	8	0.01	(0.1)	11.01	(0.8)	0.24	(0.1)	0.07	(0.1)	8.29	(2.2)	14.75	(3.4)	3.58	(1.7)	1.76	(0.6)	0.24	(0.6)	60.06	(5.1)
	12	0.02	(0.1)	13.43	(0.8)	0.48	(0.1)	0.11	(0.1)	12.54	(3.3)	14.43	(4.4)	6.38	(1.8)	1.27	(0.7)	0.39	(0.7)	50.96	(7.0)
	24	0.02	(0.1)	14.61	(0.9)	0.86	(0.1)	0.20	(0.1)	18.86	(6.8)	9.86	(6.6)	11.29	(2.5)	0.61	(1.0)	0.63	(1.2)	43.06	(12.1)
Taipei,China [TA]	0	0.00	(0.1)	1.57	(13.8)	0.17	(0.6)	0.25	(0.3)	0.50	(4.5)	63.22	(8.0)	0.08	(5.6)	0.02	(3.4)	6.64	(12.0)	27.56	(15.6)
	4	0.01	(0.1)	5.56	(8.5)	0.18	(0.4)	0.40	(0.2)	3.79	(10.8)	69.24	(13.7)	0.16	(6.7)	0.58	(4.3)	6.45	(13.2)	13.63	(10.5)
	8	0.01	(0.1)	9.49	(7.4)	0.42	(0.3)	0.39	(0.1)	5.01	(12.7)	64.31	(14.9)	0.17	(6.9)	0.74	(3.6)	6.08	(13.3)	13.38	(9.4)
	12	0.01	(0.1)	9.83	(7.1)	0.48	(0.3)	0.39	(0.1)	5.16	(13.6)	64.13	(15.7)	0.18	(6.9)	0.76	(3.5)	5.97	(13.1)	13.10	(9.3)
	24	0.01	(0.1)	9.79	(7.1)	0.48	(0.3)	0.39	(0.1)	5.25	(14.7)	64.20	(16.7)	0.18	(6.9)	0.76	(3.8)	5.94	(13.1)	13.02	(9.5)
Thailand [TH]	0	0.03	(0.1)	4.45	(5.0)	0.11	(0.2)	0.00	(0.1)	0.03	(1.8)	8.16	(3.2)	0.14	(0.3)	0.03	(0.9)	2.00	(4.3)	85.06	(7.2)
	4	0.02	(0.1)	8.35	(5.3)	0.33	(0.2)	0.49	(0.1)	3.33	(6.7)	36.71	(9.6)	0.47	(0.6)	0.21	(1.8)	3.47	(6.9)	46.62	(12.6)
	8	0.03	(0.1)	14.47	(4.8)	0.97	(0.2)	0.46	(0.1)	5.29	(9.4)	42.73	(12.1)	0.35	(0.6)	0.16	(2.0)	2.70	(7.5)	32.85	(14.1)
	12	0.04	(0.1)	14.07	(4.6)	1.51	(0.2)	0.46	(0.1)	5.51	(10.5)	47.08	(13.7)	0.31	(0.6)	0.14	(2.0)	2.35	(7.6)	28.53	(15.3)
	24	0.05	(0.1)	13.89	(4.5)	2.04	(0.2)	0.43	(0.1)	4.95	(12.4)	54.85	(16.1)	0.24	(0.6)	0.10	(2.3)	1.79	(7.7)	21.67	(17.6)
Viet Nam [VT]	0	0.01	(0.1)	0.90	(9.1)	0.53	(0.4)	0.07	(0.2)	0.06	(3.5)	22.73	(6.0)	0.49	(9.2)	2.48	(0.9)	6.03	(21.8)	66.71	(18.5)
	4	0.03	(0.1)	3.10	(5.4)	0.70	(0.2)	0.05	(0.1)	2.88	(8.5)	65.59	(9.8)	7.83	(11.0)	0.50	(1.0)	5.45	(19.6)	13.87	(9.5)
	8	0.04	(0.1)	9.91	(4.6)	0.69	(0.2)	0.08	(0.1)	3.45	(10.3)	65.18	(11.4)	6.54	(11.2)	0.32	(1.0)	4.27	(19.3)	9.53	(8.2)
	12	0.04	(0.1)	9.16	(4.5)	1.18	(0.2)	0.15	(0.1)	4.16	(11.3)	66.75	(12.7)	5.76	(10.9)	0.29	(1.0)	3.96	(19.5)	8.55	(8.1)
	24	0.05	(0.1)	10.49	(4.4)	1.67	(0.2)	0.16	(0.1)	3.82	(13.4)	69.57	(15.4)	4.26	(11.1)	0.22	(1.0)	3.48	(20.0)	6.27	8.3)

AS_FDP = Asian food price, AS_GDP = Asian gross domestic product, FUTURE = food price futures, POILUS = oil price, WR_FDP = world food price, WR_GDP = world gross domestic product, XX_FDP = country food price, XX_GDP = country gross domestic product, XX_MON = country M1 money supply, XX_USR = country US exchange rate.

Notes: The table reports the percentage contribution of the shocks to the forecast error variance in the food price. Figures in parentheses are one-standard errors computed using 500 bootstrap replications of the model. The figure 0.1 denotes the one-standard error that is less than or equal to 0.1 percent but greater than 0.

Source: Authors' calculations.

The short-run movement of domestic food prices was accounted for largely by its own shock across the countries. While there are several possible reasons, one of them would be associated with the policies that governments implement in order to dampen the impact of world food price changes on the domestic markets. For example, the PRC, Indonesia, and Viet Nam have been imposing restrictions on rice exports or have been raising export taxes. The PRC and Indonesia have also reduced import barriers on food and have cut domestic food taxes. In addition, the PRC and Thailand hold considerable amounts of rice stocks in order to stabilize the market condition (Brahmbhatt and Christiaensen 2008). The strong influence of domestic food price shocks weakens as the horizon increases.

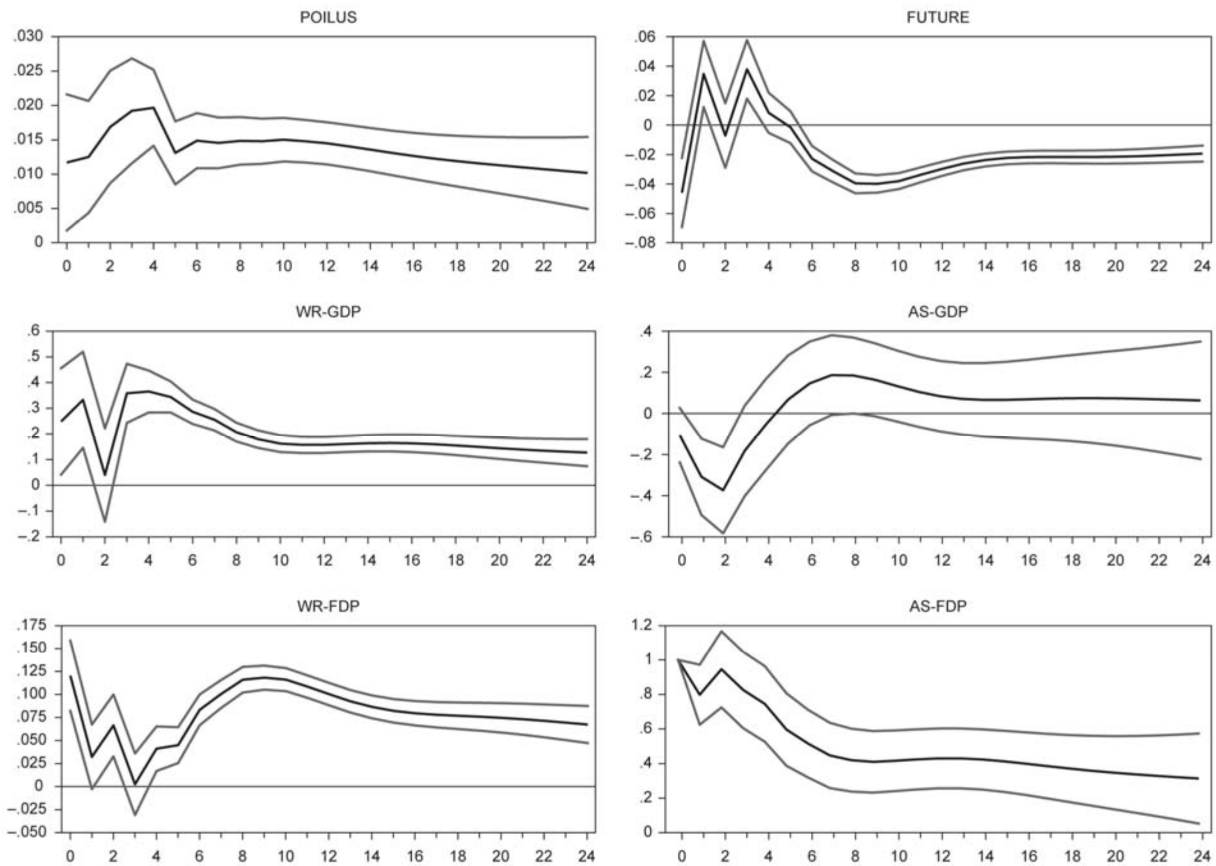
The other domestic shocks did not exhibit a significant impact on the food prices. Yet, two notable exceptions—the PRC and Hong Kong, China—merit discussion. Here, the exchange rate shock is shown to be the most important in accounting for the variation of their food prices, while its importance appears to be minimal in all the other countries. This difference may be partly due to the differences in the exchange rate systems. Unlike other economies that have adopted floating exchange rates, Hong Kong, China operates a fixed exchange rate regime by pegging its currency to the dollar. From 1995 to 2005, the PRC currency, the yuan, was also pegged to the dollar. In July 2005, the PRC announced a shift in its exchange rate regime to a managed float, tying the value of the yuan to a broad basket of foreign currencies. However, the yuan's movement in relation to that of the dollar has been relatively stable compared to those of other regional currencies. The cases of the PRC and Hong Kong, China suggest that under the fixed or managed exchange rate regimes, local food prices may be affected more directly by changes in the exchange rate.

D. Impulse Responses

Figure 3 shows the dynamic responses of the Asian food price to a unit change in the structural shocks. Also depicted are one-standard error confidence bands generated by 500 bootstrap replications of the model. The Asian food price rose significantly over all horizons in response to a shock that raised oil prices. This is much anticipated because a rise in oil prices raises production and transport costs. The responses to the other shocks were also sensible. A positive world GDP shock increased the demand for food, leading to a rise in the Asian food price. The Asian food price increased significantly, given disturbances raising world and Asian food prices. A possible exception is that a positive Asian GDP shock reduces the Asian food price at short horizons. While it is hard to reconcile, the responses are statistically insignificant except for horizons of 1 and 2 quarters. Note that, by construction, shocks in the country block cannot affect the Asian food price at all horizons, and hence, the responses to these shocks are not presented.

To save space, the impulse responses for domestic food prices are not reported, but the main findings can be summarized as follows. These responses to world and regional shocks are similar to those obtained for the Asian food price. Positive shocks to oil prices, world GDP, world food prices, and Asian food prices all led to a rise in the domestic food prices of most countries. An exception is the food price of Hong Kong, China, in which the responses to the Asian food shock fell significantly after a short rise. The Asian GDP shock continued to produce rather unappealing responses. For several countries, the domestic food prices initially declined before moving up toward its long-run levels in response to a positive Asian GDP shock. These short-run responses are mostly insignificant, but they are strong and persistent in Malaysia and the Philippines.

Figure 3: Responses of Asian Food Price to Structural Shocks, 1995–2011
(Responses of Asian Food Prices to a Unit Change in Structural Variables)



AS_FDP = Asian food price, AS_GDP = Asian gross domestic product, FUTURE = food price futures, POILUS = oil price, WR_FDP = world food price, WR_GDP = world gross domestic product.

Note: Shown around each response (in light gray) is the one-standard error confidence interval generated by 500 bootstrap replications.

Source: Authors' calculations.

As regards the responses to the country shocks, a positive shock to the exchange rate caused most domestic food prices to rise at short horizons. This is intuitively clear since an increase in the exchange rate represents a depreciation of domestic currency. The effects flatten out as the horizon increases. The domestic food prices also rose in response to a positive money supply shock, presumably due to inflationary effects. In Malaysia and the Philippines, the responses look peculiar, but they are insignificant at almost all horizons. A positive shock to domestic GDP increased the demand for food and hence, raised the food price. In the case of the Philippines, Singapore, and Taipei,China, food prices fell instead at short horizons, but these responses are not statistically significant. The food price rose in response to its own shocks in all countries, and the effects were strong and statistically significant particularly at short horizons.

IV. ROBUSTNESS CHECK

Different model specifications can lead to different implications. It is thus important to check how robust the results drawn in Section III are when compared to other model specifications. This section undertakes a set of experiments to address robustness issues. The first experiment employed an alternative measure of the Asian food price for representing common movements in the food prices of the Asian countries. The second experiment examined possible effects of the Asian currency crisis, which hit many countries in the region during 1997–1998. In the final experiment, the ordering of variables in the country block was altered to see how the results would be affected. Against these alternative models, the one presented in Sections II and III was designated as the baseline model in the subsequent analysis.

A. An Alternative Asian Food Price Index

An alternative composite food price index for Asia was constructed by applying the weighting procedure of the National Bureau of Economic Research (NBER) to the same 11 food prices. The NBER method has been widely used in business cycle analysis for identifying and anticipating turning points: for example, a list of economic indicators by the OECD, the Conference Board, and the Economic Cycle Research Institute. This measure of the Asian food price (AS_FDP_NBER) is depicted in Figure 4 with the index constructed through the principal component analysis (AS_FDP_PC) for comparison. The figure shows that both Asian food indexes moved very closely together.

Table 3 reports the forecast error variance decompositions of Asian and domestic food prices when the model is reestimated using AS_FDP_NBER as a proxy for the Asian food price AS_FDP. In comparison to the baseline model, there was not much change in the relative contribution of the shocks for explaining the variation of the Asian food price. The Asian food price shock was the most significant, accounting for between 77% and 88% of the forecast error variance at all horizons. The contribution of the world food price shock remained minimal. The results are also virtually unchanged for the food prices of individual countries. In fact, the contribution of Asian food price shocks tends to increase, with the effects particularly noticeable in India, Indonesia, Malaysia, the Philippines, and Singapore. The shocks to world GDP and domestic food prices were less important. To sum up, the Asian food price shock remains influential in accounting for the variations of domestic food prices when AS_FDP_NBER is alternatively adopted.

Table 3: Variance Decompositions of Food Prices, 1995–2011
(%)

Country	Horizons (Quarters)	Shocks: World POILUS	World WR_GDP	World WR_FDP	World FUTURE	Region AS_GDP	Region AS_FDP	Country XX_USR	Country XX_MON	Country XX_GDP	Country XX_FDP
Developing Asia [AS]	0	0.01 (0.1)	10.52 (4.1)	0.31 (0.1)	0.00 (0.1)	1.26 (2.0)	87.90 (4.4)				
	4	0.02 (0.1)	9.68 (3.7)	0.08 (0.2)	0.11 (0.1)	4.79 (6.5)	85.33 (7.3)				
	8	0.02 (0.1)	13.80 (3.6)	0.42 (0.2)	0.13 (0.1)	7.49 (8.7)	78.14 (9.1)				
	12	0.03 (0.1)	13.32 (3.6)	1.09 (0.2)	0.21 (0.1)	9.64 (9.7)	75.72 (9.8)				
	24	0.03 (0.1)	13.02 (3.6)	1.28 (0.2)	0.20 (0.1)	8.99 (10.8)	76.48 (10.8)				
PRC [CN]	0	0.00 (0.1)	5.54 (5.8)	3.02 (0.2)	0.22 (0.1)	15.66 (2.1)	16.26 (4.9)	1.24 (18.4)	0.03 (1.9)	2.81 (11.4)	55.21 (17.4)
	4	0.05 (0.1)	9.63 (3.7)	2.42 (0.1)	0.17 (0.1)	23.61 (5.7)	12.46 (9.6)	29.74 (20.8)	2.33 (2.4)	1.20 (13.1)	18.38 (10.9)
	8	0.04 (0.1)	11.25 (3.2)	2.49 (0.1)	0.18 (0.1)	21.08 (7.7)	13.06 (10.6)	32.23 (20.0)	2.54 (2.6)	1.64 (11.8)	15.49 (9.7)
	12	0.03 (0.1)	9.85 (3.1)	2.08 (0.1)	0.21 (0.1)	18.38 (8.6)	19.17 (11.2)	34.41 (20.0)	2.00 (2.7)	1.94 (11.4)	11.92 (9.5)
	24	0.03 (0.1)	11.42 (3.0)	1.89 (0.1)	0.22 (0.1)	14.92 (10.1)	25.47 (12.6)	28.89 (20.5)	1.86 (2.9)	5.96 (11.6)	9.33 (9.7)
Hong Kong, China [HK]	0	0.01 (0.1)	4.19 (2.1)	0.37 (0.1)	0.01 (0.1)	0.31 (0.6)	7.46 (1.4)	11.42 (23.8)	0.01 (0.1)	4.37 (1.4)	71.84 (22.7)
	4	0.00 (0.1)	1.60 (1.3)	0.13 (0.1)	0.01 (0.1)	0.85 (2.0)	0.76 (3.7)	79.59 (20.0)	0.04 (0.2)	0.45 (2.1)	16.57 (16.5)
	8	0.01 (0.1)	1.62 (1.1)	0.36 (0.1)	0.05 (0.1)	2.01 (2.9)	4.33 (4.5)	75.74 (18.4)	0.09 (0.2)	0.30 (2.0)	15.49 (14.4)
	12	0.01 (0.1)	0.87 (1.0)	0.33 (0.1)	0.04 (0.1)	1.52 (3.4)	5.46 (5.1)	78.67 (18.1)	0.10 (0.2)	0.17 (1.9)	12.84 (13.9)
	24	0.00 (0.1)	0.25 (1.0)	0.15 (0.1)	0.01 (0.1)	0.59 (4.7)	7.71 (7.1)	79.93 (19.0)	0.09 (0.2)	0.05 (2.0)	11.21 (13.8)
India [ID]	0	0.00 (0.1)	0.09 (11.2)	0.27 (0.5)	0.12 (0.2)	0.00 (0.1)	19.51 (8.1)	0.02 (4.1)	0.81 (3.8)	15.56 (4.8)	63.58 (12.8)
	4	0.02 (0.1)	14.03 (8.6)	0.17 (0.4)	0.09 (0.1)	0.18 (0.6)	70.90 (16.4)	0.88 (6.7)	1.81 (5.4)	3.05 (6.5)	12.63 (13.2)
	8	0.02 (0.1)	9.66 (7.8)	0.45 (0.4)	0.14 (0.1)	0.16 (0.8)	75.16 (18.4)	0.89 (7.0)	1.51 (5.6)	2.36 (6.3)	9.61 (13.6)
	12	0.02 (0.1)	9.16 (7.6)	0.41 (0.4)	0.14 (0.1)	0.15 (1.0)	76.86 (19.4)	0.89 (7.0)	1.37 (5.7)	2.16 (6.2)	8.76 (14.0)
	24	0.02 (0.1)	9.12 (7.5)	0.43 (0.4)	0.14 (0.1)	0.15 (1.3)	77.26 (20.8)	0.87 (7.3)	1.33 (6.3)	2.10 (6.6)	8.52 (14.6)
Indonesia [IN]	0	0.11 (0.1)	19.66 (15.0)	0.06 (0.9)	0.18 (0.3)	0.99 (6.0)	29.43 (11.0)	1.75 (0.3)	0.91 (1.8)	0.13 (16.7)	46.78 (17.0)
	4	0.02 (0.1)	13.03 (9.2)	0.49 (0.4)	0.10 (0.2)	4.34 (12.3)	76.92 (16.8)	0.16 (0.4)	0.03 (2.0)	3.38 (16.8)	1.53 (9.5)
	8	0.02 (0.1)	16.13 (7.5)	0.95 (0.4)	0.22 (0.1)	11.47 (13.3)	67.32 (18.1)	0.11 (0.3)	0.03 (1.9)	2.60 (16.4)	1.14 (8.5)
	12	0.02 (0.1)	15.24 (7.1)	1.94 (0.4)	0.39 (0.1)	14.28 (13.9)	64.26 (18.8)	0.11 (0.3)	0.03 (1.8)	2.65 (16.7)	1.07 (8.2)
	24	0.03 (0.1)	14.75 (6.9)	1.93 (0.3)	0.35 (0.1)	12.99 (14.8)	66.69 (19.6)	0.09 (0.3)	0.03 (1.8)	2.24 (17.0)	0.90 (8.1)
Republic of Korea [KR]	0	0.01 (0.1)	4.84 (6.3)	1.25 (0.3)	0.31 (0.1)	4.22 (2.4)	1.07 (5.1)	0.24 (0.5)	1.31 (0.6)	4.53 7.5)	82.22 (10.2)
	4	0.08 (0.1)	5.01 (5.4)	2.23 (0.2)	0.53 (0.1)	6.77 (7.9)	22.51 (12.1)	2.64 (0.8)	2.78 (1.1)	12.94 (10.0)	44.50 (12.8)
	8	0.08 (0.1)	4.89 (5.0)	2.40 (0.2)	0.58 (0.1)	17.95 (10.6)	17.28 (14.2)	2.73 (0.9)	2.10 (1.2)	16.22 (10.8)	35.78 (13.6)
	12	0.06 (0.1)	3.96 (4.8)	2.85 (0.2)	0.71 (0.1)	26.82 (11.4)	13.39 (15.2)	2.37 (1.0)	1.63 (1.3)	13.26 (11.2)	34.95 (14.5)
	24	0.05 (0.1)	4.92 (4.7)	2.72 (0.3)	0.68 (0.1)	27.76 (13.0)	22.09 (16.6)	2.09 (1.6)	1.27 (2.0)	10.26 (11.8)	28.16 (15.8)
Malaysia [MY]	0	0.01 (0.1)	2.20 (1.7)	0.01 (0.1)	0.01 (0.1)	1.48 (0.6)	7.14 (1.2)	0.04 (0.2)	0.09 (0.3)	0.07 (2.4)	88.95 (3.1)
	4	0.00 (0.1)	3.82 (1.9)	0.16 (0.1)	0.12 (0.1)	12.73 (3.3)	49.66 (5.6)	0.26 (0.7)	0.06 (1.0)	0.92 (4.7)	32.27 (8.4)
	8	0.00 (0.1)	7.36 (1.9)	0.09 (0.1)	0.08 (0.1)	7.99 (5.2)	58.46 (7.9)	0.17 (0.9)	0.22 (1.3)	0.59 (5.6)	25.05 (11.3)
	12	0.00 (0.1)	7.64 (1.9)	0.14 (0.1)	0.06 (0.1)	5.55 (6.5)	63.01 (9.0)	0.12 (0.9)	0.27 (1.4)	0.52 (6.3)	22.70 (13.3)
	24	0.00 (0.1)	6.81 (1.8)	0.16 (0.1)	0.02 (0.1)	2.72 (8.1)	71.12 (11.3)	0.04 (1.0)	0.36 (1.5)	0.21 (7.5)	18.55 (16.9)

continued on next page

Table 3 *continued*

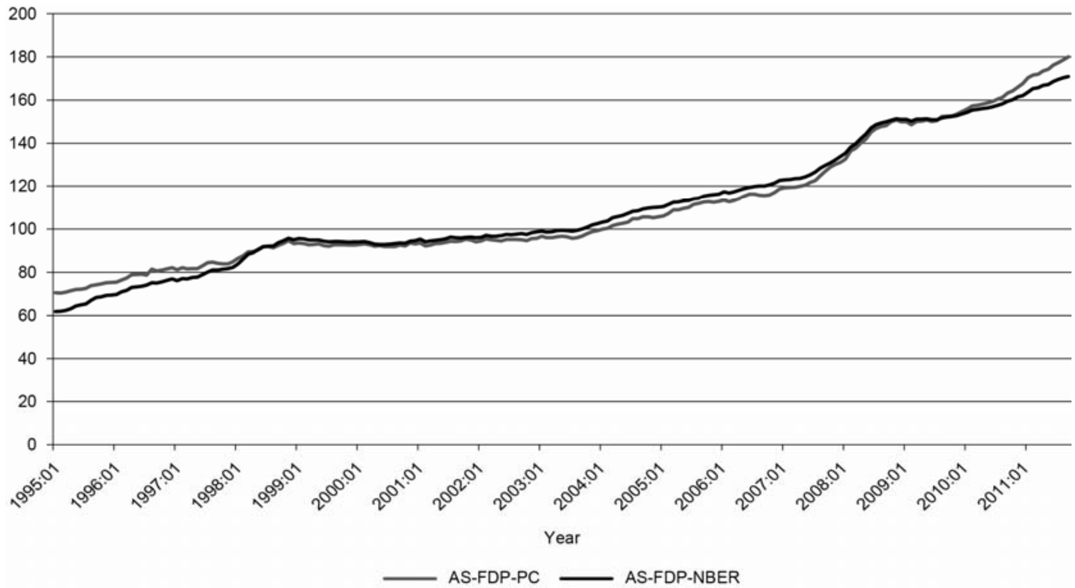
Country	Horizons (Quarters)	Shocks									
		World			Region				Country		
		POILUS	WR_GDP	WR_FDP	FUTURE	AS_GDP	AS_FDP	XX_USR	XX_MON	XX_GDP	XX_FDP
Philippines [PH]	0	0.06 (0.1)	20.69 (3.4)	0.03 (0.1)	0.07 (0.1)	4.42 (1.2)	9.30 (2.7)	0.11 (0.4)	0.05 (0.5)	0.46 (6.5)	64.80 (7.5)
	4	0.01 (0.1)	9.69 (3.3)	0.09 (0.1)	0.06 (0.1)	4.61 (5.1)	70.31 (8.9)	0.38 (0.9)	0.13 (0.9)	4.10 (11.5)	10.63 (13.0)
	8	0.02 (0.1)	18.20 (3.0)	0.17 (0.1)	0.06 (0.1)	6.47 (6.9)	61.54 (11.2)	0.33 (1.0)	0.15 (1.0)	3.57 (12.5)	9.49 (14.6)
	12	0.02 (0.1)	17.50 (2.9)	0.87 (0.1)	0.18 (0.1)	9.23 (8.2)	59.19 (12.4)	0.32 (1.2)	0.15 (1.1)	3.44 (13.0)	9.11 (15.6)
	24	0.02 (0.1)	16.74 (2.9)	0.94 (0.1)	0.18 (0.1)	9.20 (10.5)	61.40 (14.3)	0.29 (1.5)	0.13 (1.2)	3.04 (13.7)	8.04 (17.5)
Singapore [SG]	0	0.00 (0.1)	1.88 (0.6)	0.00 (0.1)	0.03 (0.1)	0.00 (0.2)	0.84 (0.6)	0.34 (0.3)	0.80 (0.2)	0.05 (0.2)	96.05 (0.9)
	4	0.01 (0.1)	5.56 (0.8)	0.22 (0.1)	0.06 (0.1)	2.76 (1.4)	11.03 (2.5)	2.93 (0.8)	4.63 (0.4)	0.78 (0.6)	72.02 (3.3)
	8	0.01 (0.1)	8.80 (0.8)	0.21 (0.1)	0.05 (0.1)	2.29 (2.5)	22.88 (4.0)	2.82 (1.2)	3.41 (0.5)	0.63 (0.8)	58.91 (5.7)
	12	0.01 (0.1)	12.45 (0.9)	0.34 (0.1)	0.06 (0.1)	4.11 (3.5)	27.27 (5.3)	3.86 (1.7)	2.77 (0.7)	0.83 (1.0)	48.30 (8.3)
	24	0.02 (0.1)	15.19 (0.9)	0.85 (0.1)	0.12 (0.1)	8.00 (5.5)	30.40 (7.3)	5.37 (2.5)	1.62 (0.9)	1.14 (1.3)	37.29 (12.2)
Taipei,China [TA]	0	0.02 (0.1)	4.16 (12.2)	0.33 (0.6)	0.27 (0.2)	0.55 (4.3)	41.77 (9.2)	0.28 (4.6)	0.13 (3.7)	16.68 (10.7)	35.81 (14.6)
	4	0.00 (0.1)	11.35 (8.0)	0.10 (0.4)	0.33 (0.2)	5.09 (10.2)	65.27 (15.6)	1.02 (6.0)	0.41 (4.3)	5.81 (12.0)	10.62 (10.8)
	8	0.01 (0.1)	18.36 (7.0)	0.17 (0.4)	0.30 (0.1)	5.52 (11.7)	59.42 (16.6)	0.92 (5.8)	0.46 (4.0)	5.44 (12.1)	9.41 (10.0)
	12	0.01 (0.1)	18.46 (6.7)	0.27 (0.4)	0.31 (0.1)	5.53 (12.6)	59.44 (16.8)	0.92 (5.9)	0.49 (3.9)	5.34 (12.0)	9.23 (9.8)
	24	0.01 (0.1)	18.21 (6.6)	0.29 (0.3)	0.31 (0.1)	5.48 (14.2)	60.15 (17.7)	0.89 (6.2)	0.48 (4.0)	5.20 (12.3)	8.99 (10.0)
Thailand [TH]	0	0.02 (0.1)	8.23 (5.3)	0.00 (0.2)	0.04 (0.1)	0.02 (1.9)	15.16 (3.7)	0.02 (0.3)	0.06 (0.8)	2.44 (4.0)	74.00 (7.2)
	4	0.02 (0.1)	3.55 (5.1)	0.19 (0.2)	0.30 (0.1)	2.56 (6.0)	70.24 (10.8)	0.03 (0.6)	0.06 (1.6)	0.87 (6.3)	22.19 (12.7)
	8	0.02 (0.1)	9.14 (4.6)	0.47 (0.2)	0.27 (0.1)	5.24 (8.3)	66.82 (13.4)	0.04 (0.7)	0.04 (1.7)	0.72 (6.9)	17.25 (14.6)
	12	0.03 (0.1)	8.99 (4.3)	0.98 (0.2)	0.31 (0.1)	6.83 (9.7)	66.21 (14.4)	0.04 (0.8)	0.04 (1.6)	0.66 (7.0)	15.91 (15.5)
	24	0.03 (0.1)	9.42 (4.2)	1.21 (0.2)	0.29 (0.1)	6.74 (12.2)	68.40 (15.7)	0.03 (0.9)	0.03 (2.0)	0.55 (7.3)	13.30 (17.3)
Viet Nam [VT]	0	0.01 (0.1)	0.13 (9.8)	0.20 (0.5)	0.09 (0.2)	0.08 (3.5)	51.81 (7.7)	1.55 (9.1)	0.63 (1.0)	0.14 (22.3)	45.37 (17.6)
	4	0.00 (0.1)	1.28 (5.3)	0.23 (0.3)	0.10 (0.1)	0.93 (7.3)	74.06 (11.7)	9.14 (9.6)	0.11 (1.2)	5.88 (19.7)	8.26 (8.9)
	8	0.01 (0.1)	5.18 (4.5)	0.17 (0.2)	0.08 (0.1)	1.76 (9.0)	75.94 (13.4)	7.29 (9.7)	0.08 (1.1)	3.86 (19.3)	5.63 (7.9)
	12	0.01 (0.1)	5.31 (4.3)	0.46 (0.2)	0.12 (0.1)	4.29 (10.0)	74.34 (14.7)	6.51 (9.9)	0.08 (1.1)	3.68 (19.7)	5.21 (7.8)
	24	0.02 (0.1)	6.62 (4.1)	0.95 (0.2)	0.14 (0.1)	5.26 (11.4)	73.96 (16.4)	5.18 (10.2)	0.06 (1.1)	3.69 (20.2)	4.13 (7.8)

AS_FDP = Asian food price, AS_GDP = Asian gross domestic product, FUTURE = food price futures, POILUS = oil price, WR_FDP = world food price, WR_GDP = world gross domestic product, XX_FDP = country food price, XX_GDP = country gross domestic product, XX_MON = country M1 money supply, XX_USR = country US exchange rate.

Notes: The table reports the percentage contribution of the shocks to the forecast error variance in the food price when the index constructed using the NBER weighting scheme (AS_FDP_NBER) is used as a proxy for the AS_FDP. Figures in parentheses are one-standard errors computed using 500 bootstrap replications of the model. The figure 0.1 denotes the one-standard error that is less than or equal to 0.1% but greater than 0.

Source: Authors' calculations.

Figure 4: Asia Food Price Indexes, 1995–2011



AS_FDP_PC = Asian food prices constructed through the principal component analysis, AS_FDP_NBER = Asian food prices constructed with the National Bureau of Economic Research weighting procedure.

Source: Authors' calculations.

B. The Role of the Asian Currency Crisis

The Asian currency crisis in 1997–1998 caused severe economic downturns in many Asian economies. It is often argued that the resulting co-movement has exaggerated the importance of regional shocks relative to world shocks in explaining economic fluctuations in Asian economies. Some also predict that the world shocks should regain influence as the Asian economies recover to their precrisis levels (Zhang, Sato, and McAleer 2004; Lee and Koh 2012).

In light of this, we examined whether the Asian currency crisis has affected the results concerning the determination of food prices. The crisis is taken into account by augmenting the model with a dummy, which assigns a value of 1 for the period of Q3 1997–Q4 1998, and 0 otherwise. Estimation results are provided in Table 4. Across countries, there is no visible difference in the variance decompositions of food prices relative to those from the baseline model. Indonesia, the Republic of Korea, and the Philippines show some changes, yet the effects were marginal and not strong enough to revoke the main findings. Overall, there is no major variation generated when the model includes the dummy variable reflecting the Asian currency crisis.

Table 4: Variance Decompositions of Food Prices, 1995–2011

(%)

Country	Horizons (Quarters)	Shocks									
		World				Region		Country			
		POILUS	WR_GDP	WR_FDP	FUTURE	AS_GDP	AS_FDP	XX_USR	XX_MON	XX_GDP	XX_FDP
Developing Asia [AS]	0	0.01 (0.1)	5.68 (4.8)	1.33 (0.2)	0.19 (0.1)	1.02 (2.4)	91.76 (5.1)				
	4	0.03 (0.1)	9.67 (4.7)	0.48 (0.2)	0.11 (0.1)	6.23 (7.5)	83.48 (8.5)				
	8	0.04 (0.1)	12.53 (4.5)	0.91 (0.2)	0.13 (0.1)	6.33 (10.4)	80.07 (10.8)				
	12	0.04 (0.1)	12.40 (4.5)	1.50 (0.2)	0.19 (0.1)	6.39 (11.8)	79.48 (12.0)				
	24	0.05 (0.1)	12.55 (4.5)	1.96 (0.2)	0.21 (0.1)	5.57 (13.1)	79.66 (13.1)				
PRC [CN]	0	0.01 (0.1)	12.57 (5.2)	2.04 (0.3)	0.05 (0.1)	10.97 (2.2)	20.83 (3.2)	4.10 (21.8)	0.00 (2.0)	1.04 (11.5)	48.40 (19.7)
	4	0.05 (0.1)	17.24 (3.3)	1.79 (0.1)	0.13 (0.1)	22.84 (4.8)	8.06 (8.2)	31.77 (21.7)	1.35 (2.2)	2.65 (12.2)	14.11 (10.9)
	8	0.04 (0.1)	14.97 (2.9)	2.29 (0.1)	0.20 (0.1)	25.33 (6.4)	9.76 (9.2)	28.33 (21.3)	1.53 (1.9)	6.09 (11.5)	11.45 (9.4)
	12	0.04 (0.1)	13.52 (2.8)	2.06 (0.1)	0.22 (0.1)	22.78 (7.5)	13.10 (9.9)	30.15 (21.3)	1.73 (1.8)	6.31 (11.3)	10.08 (9.1)
	24	0.03 (0.1)	8.44 (2.7)	1.16 (0.1)	0.16 (0.1)	12.36 (9.8)	31.20 (11.8)	26.69 (21.9)	1.68 (2.0)	12.30 (11.3)	5.99 (9.2)
Hong Kong, China [HK]	0	0.03 (0.1)	4.79 (1.5)	0.98 (0.1)	0.11 (0.1)	0.01 (0.5)	2.12 (0.8)	14.98 (23.6)	0.04 (0.1)	2.93 (1.5)	74.03 (22.8)
	4	0.00 (0.1)	1.75 (1.1)	0.20 (0.1)	0.02 (0.1)	1.87 (1.9)	2.84 (2.6)	78.35 (20.1)	0.06 (0.2)	0.21 (2.0)	14.71 (17.1)
	8	0.00 (0.1)	1.23 (1.0)	0.22 (0.1)	0.03 (0.1)	3.24 (2.6)	12.44 (3.6)	67.40 (18.8)	0.15 (0.2)	0.13 (2.2)	15.15 (15.3)
	12	0.00 (0.1)	0.43 (0.9)	0.15 (0.1)	0.02 (0.1)	2.99 (2.8)	16.41 (4.1)	66.93 (18.6)	0.14 (0.2)	0.04 (2.0)	12.89 (14.9)
	24	0.00 (0.1)	0.09 (1.0)	0.06 (0.1)	0.01 (0.1)	2.40 (4.5)	20.60 (6.0)	64.17 (19.8)	0.13 (0.2)	0.02 (2.4)	12.51 (15.2)
India [ID]	0	0.00 (0.1)	0.05 (1.5)	2.53 (0.4)	0.03 (0.2)	0.02 (0.1)	3.44 (4.1)	0.03 (4.1)	2.62 (3.4)	17.66 (4.2)	73.57 (12.3)
	4	0.07 (0.1)	17.59 (10.1)	0.57 (0.4)	0.04 (0.2)	0.65 (0.6)	42.58 (10.9)	2.69 (7.7)	3.26 (5.1)	5.77 (5.6)	26.73 (12.4)
	8	0.06 (0.1)	24.01 (9.3)	0.95 (0.4)	0.11 (0.2)	0.56 (4.0)	44.78 (14.0)	2.45 (8.4)	2.58 (5.6)	4.62 (5.8)	19.84 (12.9)
	12	0.05 (0.1)	23.41 (9.1)	0.91 (0.4)	0.13 (0.2)	0.53 (6.0)	47.10 (16.0)	2.37 (8.7)	2.44 (5.9)	4.47 (5.9)	18.54 (13.6)
	24	0.06 (0.1)	22.81 (9.1)	1.02 (0.5)	0.14 (0.2)	0.53 (18.7)	48.80 (18.7)	2.28 (9.3)	2.30 (6.6)	4.33 (6.3)	17.66 (14.9)
Indonesia [IN]	0	0.18 (0.1)	6.05 (13.5)	0.82 (0.8)	1.07 (0.3)	11.94 (6.3)	0.47 (9.8)	2.74 (0.3)	2.75 (2.0)	0.52 (16.6)	73.46 (16.5)
	4	0.11 (0.1)	36.86 (9.7)	0.39 (0.5)	0.08 (0.2)	1.53 (11.9)	48.36 (15.3)	0.82 (0.3)	0.30 (2.3)	7.31 (16.2)	4.25 (9.5)
	8	0.10 (0.1)	32.77 (8.3)	1.50 (0.4)	0.39 (0.2)	18.10 (13.7)	38.37 (16.3)	0.44 (0.3)	0.24 (2.0)	5.81 (15.9)	2.28 (8.3)
	12	0.10 (0.1)	29.71 (7.8)	2.62 (0.4)	0.53 (0.2)	19.28 (14.7)	39.50 (17.1)	0.41 (0.3)	0.23 (1.9)	5.54 (16.0)	2.08 (8.1)
	24	0.09 (0.1)	26.65 (7.4)	2.46 (0.5)	0.47 (0.2)	17.22 (16.4)	46.05 (18.1)	0.35 (0.3)	0.19 (2.1)	4.75 (16.6)	1.77 (8.0)
Republic of Korea [KR]	0	0.07 (0.1)	5.37 (6.9)	1.88 (0.3)	0.23 (0.1)	4.62 (2.6)	16.17 (3.7)	0.09 (0.5)	0.75 (0.7)	0.30 (9.0)	70.53 (10.7)
	4	0.06 (0.1)	8.34 (6.4)	1.92 (0.3)	0.75 (0.1)	15.77 (8.2)	15.56 (10.8)	0.31 (0.9)	2.07 (1.2)	12.58 (11.9)	42.63 (12.9)
	8	0.05 (0.1)	8.18 (5.7)	1.90 (0.2)	0.76 (0.1)	18.38 (10.1)	15.47 (13.0)	0.38 (1.2)	2.12 (1.3)	18.50 (12.1)	34.26 (13.3)
	12	0.04 (0.1)	7.02 (5.6)	1.99 (0.2)	0.72 (0.1)	23.92 (11.1)	14.12 (14.1)	0.37 (1.3)	1.84 (1.4)	18.72 (12.4)	31.27 (14.0)
	24	0.04 (0.1)	7.62 (5.5)	1.84 (0.3)	0.58 (0.1)	17.96 (13.2)	29.86 (15.9)	0.43 (1.4)	1.39 (1.7)	15.04 (13.0)	25.25 (15.2)
Malaysia [MY]	0	0.00 (0.1)	0.95 (1.8)	0.06 (0.1)	0.00 (0.1)	1.88 (0.6)	2.73 (0.9)	0.36 (0.3)	0.17 (0.5)	1.93 (1.9)	91.92 (3.0)
	v4	0.00 (0.1)	6.14 (2.3)	0.07 (0.1)	0.05 (0.1)	11.95 (3.8)	19.75 (4.5)	1.36 (0.6)	0.08 (1.1)	4.78 (4.4)	55.82 (8.0)
	8	0.01 (0.1)	9.45 (2.2)	0.11 (0.1)	0.04 (0.1)	9.48 (6.0)	25.65 (6.7)	1.39 (0.7)	0.12 (1.2)	3.94 (5.3)	49.81 (10.9)
	12	0.01 (0.1)	10.79 (2.1)	0.39 (0.1)	0.06 (0.1)	8.43 (7.3)	30.21 (7.9)	1.29 (0.8)	0.15 (1.2)	3.55 (5.8)	45.11 (12.7)
	24	0.02 (0.1)	11.64 (2.1)	0.87 (0.1)	0.09 (0.1)	6.65 (10.0)	40.54 (10.2)	1.07 (0.9)	0.16 (1.5)	2.78 (7.2)	36.18 (16.6)

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Table 4 *continued*

Country	Horizons (Quarters)	Shocks																			
		World								Region				Country							
		POILUS		WR_GDP		WR_FDP		FUTURE		AS_GDP		AS_FDP		XX_USR		XX_MON		XX_GDP		XX_FDP	
Philippines [PH]	0	0.09	(0.1)	12.80	(4.2)	0.01	(0.2)	0.03	(0.1)	1.32	(1.3)	0.52	(1.9)	0.01	(0.5)	0.01	(0.7)	9.99	(8.5)	75.22	(9.0)
	4	0.03	(0.1)	8.70	(4.1)	0.79	(0.2)	0.18	(0.1)	0.46	(6.0)	25.74	(7.8)	2.04	(0.9)	0.16	(1.3)	36.21	(11.4)	25.68	(12.9)
	8	0.08	(0.1)	10.14	(3.7)	0.63	(0.2)	0.15	(0.1)	3.59	(7.4)	34.73	(10.7)	1.74	(1.0)	0.31	(1.5)	27.41	(12.7)	21.21	(14.6)
	12	0.09	(0.1)	16.91	(3.6)	0.54	(0.2)	0.14	(0.1)	3.59	(8.7)	27.33	(12.1)	2.39	(1.1)	0.30	(1.7)	31.41	(13.4)	17.29	(15.8)
	24	0.10	(0.1)	16.97	(3.7)	1.10	(0.2)	0.22	(0.1)	7.36	(11.1)	24.68	(14.3)	2.75	(1.5)	0.43	(2.3)	30.01	(14.3)	16.37	(17.9)
Singapore [SG]	0	0.00	(0.1)	1.60	(0.8)	0.01	(0.1)	0.03	(0.1)	0.00	(0.2)	1.93	(0.4)	0.52	(0.4)	0.78	(0.2)	0.00	(0.3)	95.11	(1.1)
	4	0.01	(0.1)	8.38	(0.9)	0.07	(0.1)	0.05	(0.1)	4.75	(1.3)	14.64	(2.1)	2.88	(1.2)	2.41	(0.5)	0.21	(0.6)	66.61	(3.2)
	8	0.01	(0.1)	11.36	(0.9)	0.24	(0.1)	0.08	(0.1)	9.97	(2.4)	12.94	(3.6)	4.51	(1.7)	1.49	(0.7)	0.24	(0.7)	59.16	(5.5)
	12	0.02	(0.1)	12.39	(1.0)	0.69	(0.1)	0.17	(0.1)	15.32	(3.5)	12.85	(4.8)	6.64	(1.9)	1.11	(0.9)	0.38	(0.8)	50.43	(7.7)
	24	0.02	(0.1)	13.08	(1.1)	1.29	(0.1)	0.31	(0.1)	19.86	(6.6)	13.04	(7.7)	9.81	(2.8)	0.64	(1.5)	0.65	(1.3)	41.30	(13.6)
Taipei,China [TA]	0	0.00	(0.1)	0.95	(13.8)	0.20	(0.6)	0.30	(0.3)	0.49	(4.3)	62.93	(7.7)	0.09	(5.7)	0.01	(3.5)	7.08	(12.1)	27.94	(15.4)
	4	0.01	(0.1)	6.61	(8.7)	0.32	(0.4)	0.49	(0.2)	3.25	(10.5)	67.09	(13.7)	0.30	(6.8)	0.48	(4.2)	6.45	(12.5)	15.00	(9.9)
	8	0.01	(0.1)	10.08	(7.7)	0.55	(0.3)	0.48	(0.1)	3.90	(12.4)	63.47	(15.2)	0.41	(6.8)	0.54	(3.6)	6.05	(12.5)	14.50	(8.9)
	12	0.01	(0.1)	10.41	(7.3)	0.57	(0.3)	0.48	(0.1)	4.65	(13.3)	62.87	(15.8)	0.44	(6.9)	0.54	(3.5)	5.92	(12.5)	14.11	(8.8)
	24	0.01	(0.1)	10.39	(7.3)	0.58	(0.3)	0.48	(0.1)	4.81	(15.0)	62.85	(16.7)	0.44	(7.2)	0.54	(3.8)	5.90	(12.8)	14.00	(8.8)
Thailand [TH]	0	0.01	(0.1)	0.25	(4.9)	0.92	(0.2)	0.15	(0.1)	0.10	(1.6)	5.60	(2.8)	0.24	(0.5)	0.02	(0.8)	3.55	(4.1)	89.15	(6.6)
	4	0.02	(0.1)	3.68	(5.3)	0.60	(0.2)	0.38	(0.1)	5.51	(6.0)	35.15	(9.5)	0.33	(1.0)	0.71	(1.5)	2.06	(6.6)	51.57	(12.2)
	8	0.02	(0.1)	7.50	(4.8)	0.49	(0.2)	0.33	(0.1)	5.15	(8.3)	44.28	(12.4)	0.47	(1.0)	0.56	(1.8)	1.96	(7.2)	39.24	(14.5)
	12	0.03	(0.1)	9.50	(4.6)	0.83	(0.2)	0.35	(0.1)	5.65	(9.5)	46.53	(14.2)	0.45	(1.0)	0.51	(1.8)	1.85	(7.5)	34.29	(16.2)
	24	0.04	(0.1)	10.57	(4.6)	1.42	(0.2)	0.35	(0.1)	5.27	(11.3)	53.05	(16.7)	0.44	(1.0)	0.42	(2.1)	1.51	(7.9)	26.93	(18.2)
Viet Nam [VT]	0	0.03	(0.1)	1.31	(8.7)	0.72	(0.4)	0.01	(0.2)	0.78	(3.4)	19.33	(5.6)	0.47	(9.0)	2.44	(0.9)	6.14	(21.9)	68.78	(18.4)
	4	0.05	(0.1)	2.94	(5.5)	1.41	(0.3)	0.06	(0.1)	2.12	(7.8)	64.62	(9.8)	9.65	(10.9)	0.59	(0.9)	4.40	(19.7)	14.17	(9.4)
	8	0.05	(0.1)	9.00	(4.7)	0.92	(0.2)	0.06	(0.1)	2.08	(9.4)	67.71	(11.5)	7.57	(11.1)	0.35	(0.9)	3.33	(19.7)	8.92	(8.3)
	12	0.05	(0.1)	8.64	(4.6)	1.19	(0.2)	0.10	(0.1)	2.69	(10.6)	69.37	(12.7)	6.42	(10.9)	0.31	(0.9)	3.53	(20.0)	7.69	(8.2)
	24	0.06	(0.1)	10.28	(4.5)	1.76	(0.3)	0.13	(0.1)	2.90	(12.7)	71.40	(15.3)	4.46	(10.9)	0.22	(1.0)	3.48	(20.6)	5.31	(8.3)

AS_FDP = Asian food price, AS_GDP = Asian gross domestic product, FUTURE = food price futures, POILUS = oil price, WR_FDP = world food price, WR_GDP = world gross domestic product, XX_FDP = country food price, XX_GDP = country gross domestic product, XX_MON = country M1 money supply, XX_USR = country US exchange rate.

Notes: The table reports the percentage contribution of the shocks to the forecast error variance in the food price when the model includes a dummy to take account of the Asian currency crisis. Figures in parentheses are one-standard errors computed using 500 bootstrap replications of the model. The figure 0.1 denotes the one-standard error that is less than or equal to 0.1% but greater than 0.

Source: Authors' calculations.

C. Ordering of the Variables in the Country Block

The shocks in the country block were identified by assuming the Choleski-type recursive ordering. Accordingly, the shocks can be identified differently, and the model can produce different results, if the ordering of the variables alters. To study this possibility, we experimented with a different ordering of the variables in the country block. In the current setting, the variables are ordered by the exchange rate, money supply, real GDP, and domestic food price. All domestic shocks are allowed to have contemporaneous effects on its food price. An alternative ordering places the food price first, followed by the exchange rate, money supply, and real GDP. Under this structure, the domestic food price is not affected by any of the domestic shocks other than itself contemporaneously.

The corresponding forecast error variance decompositions of domestic food prices are reported in Table 5. Note that the alternative ordering of the variables did not affect the forecast error variance decomposition of the Asian food price by the block exogeneity assumptions. The results are quite straightforward to interpret. The relative contribution of the shocks in explaining the variation in the food prices did not vary much from the baseline model. There are small changes for India and the Philippines in that the fraction of the variation accounted for by its own price shock somewhat increased at short horizons. The domestic GDP shock becomes less important. All this evidence is weak and does not substantiate the fact that the results are sensitive to the alternative ordering of variables under consideration.

V. ANALYZING OTHER REGIONS

In this section, we extend the analysis to countries in other regions to check whether and how the results vary across the regions. The countries considered are Bulgaria, the Czech Republic, Hungary, Moldova, Poland, Romania, the Russian Federation, the Slovak Republic, and Ukraine in emerging Europe; Argentina, Brazil, Chile, Colombia, Mexico, Paraguay, Peru, Uruguay, and Venezuela in Latin America; Botswana, Côte d'Ivoire, Kenya, Malawi, Mauritius, Nigeria, and South Africa in Sub-Saharan Africa; Algeria, Israel, Jordan, Morocco, and Turkey in the Middle East; Finland, France, Germany, Ireland, Italy, the Netherlands, and Spain in the eurozone. Also included for comparison are the G7 countries: Canada, France, Germany, Italy, Japan, the UK, and the US. For each country, the model in Section II is estimated, and the data descriptions and the sample period are the same as in Section III. The composite food price index for each region is constructed through the principal component analysis.

Table 6 summarizes the results of variance decompositions for the food prices of the different countries. Figures reported are regional averages, obtained by averaging the percentage contributions of the structural shocks to the forecast error variance in the domestic food price over the horizons up to 24 quarters, and then, over the member countries in the region. We restrict the discussion to these regional averages, but the results for each member country are available upon request. Beginning with the developing Asia region, the Asian food price shock is the most important, accounting for 33% of the variation in the domestic food prices. The domestic food price shock comes second. These are the results expected in Section III, in which shocks to Asian and domestic food prices were found to be the two main determinants of individual food prices for most of the developing Asian countries.

Table 5: Variance Decompositions of Food Prices, 1995–2011

(%)

Country	Horizons (Quarters)	Shocks: World POILUS	World WR_GDP	World WR_FDP	World FUTURE	Region AS_GDP	Region AS_FDP	Country XX_USR	Country XX_MON	Country XX_GDP	Country XX_FDP
PRC [CN]	0	0.00 (0.1)	4.68 (7.3)	2.79 (0.3)	0.13 (0.1)	14.69 (3.3)	23.48 (4.1)	54.24 (8.4)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
	4	0.06 (0.1)	14.20 (4.2)	2.31 (0.2)	0.21 (0.1)	23.54 (6.3)	8.62 (8.6)	14.53 (12.8)	31.73 (19.9)	1.43 (1.8)	3.35 (10.8)
	8	0.05 (0.1)	12.67 (3.7)	2.59 (0.1)	0.25 (0.1)	24.58 (7.6)	9.54 (10.1)	11.99 (11.8)	28.24 (19.8)	1.60 (1.8)	8.50 (10.7)
	12	0.04 (0.1)	11.45 (3.6)	2.35 (0.1)	0.28 (0.1)	22.53 (8.9)	12.86 (10.7)	10.75 (11.7)	29.55 (20.1)	1.95 (1.8)	8.23 (10.7)
	24	0.02 (0.1)	7.42 (3.5)	1.14 (0.1)	0.19 (0.1)	10.73 (10.9)	29.52 (12.0)	6.92 (12.0)	22.45 (20.8)	1.68 (1.9)	19.91 (11.3)
Hong Kong, China [HK]	0	0.03 (0.1)	7.29 (2.1)	0.99 (0.1)	0.10 (0.1)	0.03 (0.8)	3.32 (1.1)	88.24 (2.5)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
	4	0.00 (0.1)	2.25 (1.3)	0.23 (0.1)	0.02 (0.1)	2.56 (2.5)	3.92 (2.8)	19.89 (19.4)	70.85 (21.9)	0.05 (0.1)	0.22 (1.7)
	8	0.00 (0.1)	1.40 (1.1)	0.31 (0.1)	0.05 (0.1)	4.19 (3.3)	14.90 (3.5)	18.77 (17.3)	59.94 (20.4)	0.12 (0.1)	0.32 (1.6)
	12	0.00 (0.1)	0.46 (1.1)	0.21 (0.1)	0.03 (0.1)	3.52 (4.2)	19.14 (3.9)	15.55 (17.1)	60.52 (20.4)	0.11 (0.1)	0.47 (1.9)
	24	0.00 (0.1)	0.08 (1.1)	0.09 (0.1)	0.01 (0.1)	2.77 (6.4)	24.23 (5.8)	15.03 (17.4)	57.20 (21.3)	0.10 (0.2)	0.49 (2.3)
India [ID]	0	0.01 (0.1)	1.89 (12.3)	1.25 (0.6)	0.02 (0.2)	0.00 (0.1)	13.33 (4.6)	83.47 (12.7)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
	4	0.05 (0.1)	18.90 (10.0)	0.35 (0.4)	0.04 (0.2)	0.64 (0.5)	47.63 (12.2)	25.80 (13.1)	2.76 (5.7)	3.19 (4.7)	0.57 (5.1)
	8	0.05 (0.1)	25.81 (9.0)	0.89 (0.4)	0.10 (0.1)	0.55 (0.8)	47.66 (15.0)	19.20 (13.6)	2.40 (6.2)	2.55 (5.6)	0.73 (5.5)
	12	0.05 (0.1)	26.18 (8.8)	0.91 (0.4)	0.12 (0.1)	0.52 (1.0)	48.37 (16.3)	17.88 (14.2)	2.42 (6.6)	2.41 (5.7)	1.09 (5.6)
	24	0.05 (0.1)	25.93 (8.7)	1.04 (0.4)	0.13 (0.1)	0.53 (1.3)	48.97 (18.3)	17.12 (15.4)	2.37 (7.7)	2.34 (6.3)	1.47 (5.8)
Indonesia [IN]	0	0.21 (0.1)	2.61 (15.9)	0.75 (1.0)	1.17 (0.4)	16.61 (7.5)	0.03 (10.2)	78.62 (16.5)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
	4	0.10 (0.1)	37.17 (9.6)	0.68 (0.5)	0.11 (0.2)	4.45 (13.7)	41.93 (16.9)	8.58 (10.1)	0.25 (0.2)	0.17 (1.7)	6.55 (14.9)
	8	0.08 (0.1)	35.18 (8.3)	1.93 (0.4)	0.45 (0.2)	22.21 (14.6)	31.17 (17.7)	4.86 (8.9)	0.17 (0.3)	0.11 (1.9)	3.86 (15.3)
	12	0.07 (0.1)	33.82 (8.0)	3.41 (0.4)	0.66 (0.2)	23.34 (15.1)	30.45 (17.7)	4.49 (8.5)	0.16 (0.3)	0.11 (1.9)	3.50 (15.0)
	24	0.07 (0.1)	30.80 (7.9)	3.12 (0.4)	0.60 (0.2)	22.00 (16.3)	36.50 (18.4)	3.73 (8.7)	0.13 (0.3)	0.09 (2.2)	2.96 (15.0)
Republic of Korea [KR]	0	0.05 (0.1)	0.10 (8.0)	2.83 (0.3)	0.46 (0.1)	3.25 (3.0)	13.41 (4.1)	79.89 (8.9)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
	4	0.05 (0.1)	3.53 (6.4)	1.35 (0.3)	0.35 (0.1)	6.90 (8.9)	9.21 (11.6)	65.87 (13.4)	0.18 (0.6)	1.11 (0.9)	11.45 (9.1)
	8	0.04 (0.1)	4.44 (6.1)	1.26 (0.3)	0.35 (0.1)	6.98 (10.9)	9.57 (13.9)	57.25 (14.3)	0.23 (0.9)	1.61 (1.0)	18.27 (10.4)
	12	0.04 (0.1)	4.18 (5.9)	1.23 (0.3)	0.34 (0.1)	9.76 (12.0)	9.89 (14.9)	50.83 (14.9)	0.23 (1.0)	1.92 (1.1)	21.58 (10.9)
	24	0.03 (0.1)	4.57 (5.8)	1.14 (0.3)	0.30 (0.1)	8.10 (14.4)	22.13 (16.7)	40.20 (16.2)	0.31 (1.1)	2.00 (1.4)	21.23 (11.5)
Malaysia [MY]	0	0.00 (0.1)	0.28 (1.8)	0.06 (0.1)	0.00 (0.1)	1.77 (0.6)	2.59 (1.2)	95.29 (2.2)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
	4	0.00 (0.1)	4.73 (1.9)	0.11 (0.1)	0.07 (0.1)	11.39 (2.9)	17.79 (4.6)	64.05 (6.7)	0.46 (0.4)	0.02 (0.9)	1.39 (2.8)
	8	0.01 (0.1)	9.49 (1.9)	0.13 (0.1)	0.05 (0.1)	9.15 (4.4)	22.92 (6.4)	56.52 (9.1)	0.49 (0.6)	0.02 (1.1)	1.20 (3.6)
	12	0.02 (0.1)	11.10 (1.8)	0.45 (0.1)	0.09 (0.1)	9.02 (5.7)	26.05 (7.5)	51.63 (11.0)	0.46 (0.7)	0.02 (1.2)	1.16 (4.0)
	24	0.03 (0.1)	11.69 (1.8)	0.99 (0.1)	0.13 (0.1)	8.23 (8.8)	33.86 (10.0)	43.67 (15.7)	0.40 (0.9)	0.02 (1.6)	0.99 (4.9)

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Table 5 *continued*

Country	Horizons (Quarters)	Shocks									
		World				Region		Country			
		POILUS	WR_GDP	WR_FDP	FUTURE	AS_GDP	AS_FDP	XX_USR	XX_MON	XX_GDP	XX_FDP
Philippines [PH]	0	0.03 (0.1)	24.89 (5.1)	0.02 (0.2)	0.07 (0.1)	3.65 (1.7)	3.56 (2.7)	67.77 (5.8)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
	4	0.01 (0.1)	9.75 (4.5)	0.11 (0.2)	0.05 (0.1)	4.54 (6.5)	42.65 (9.0)	34.63 (12.9)	0.56 (0.7)	0.14 (1.3)	7.57 (10.9)
	8	0.02 (0.1)	15.01 (4.1)	0.28 (0.2)	0.07 (0.1)	7.18 (9.0)	37.28 (11.5)	32.67 (14.4)	0.49 (1.0)	0.12 (1.4)	6.90 (12.3)
	12	0.02 (0.1)	14.61 (4.0)	0.68 (0.2)	0.12 (0.1)	7.51 (10.4)	37.03 (13.0)	32.39 (15.5)	0.50 (1.2)	0.14 (1.5)	7.00 (12.8)
	24	0.02 (0.1)	14.12 (3.9)	0.81 (0.2)	0.12 (0.1)	7.35 (12.9)	40.98 (15.2)	29.60 (17.8)	0.47 (1.5)	0.13 (1.9)	6.40 (13.6)
Singapore [SG]	0	0.00 (0.1)	1.54 (0.8)	0.01 (0.1)	0.04 (0.1)	0.00 (0.2)	2.01 (0.4)	96.40 (1.0)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
	4	0.00 (0.1)	3.85 (0.9)	0.07 (0.1)	0.02 (0.1)	3.41 (1.5)	7.86 (1.9)	83.48 (3.0)	0.37 (0.9)	0.80 (0.3)	0.12 (0.4)
	8	0.01 (0.1)	7.21 (0.9)	0.16 (0.1)	0.04 (0.1)	5.43 (2.5)	9.65 (3.1)	75.38 (4.8)	1.32 (1.4)	0.66 (0.4)	0.13 (0.5)
	12	0.01 (0.1)	9.57 (0.9)	0.34 (0.1)	0.08 (0.1)	8.93 (3.5)	10.28 (4.0)	66.56 (6.7)	3.40 (1.8)	0.58 (0.5)	0.25 (0.6)
	24	0.02 (0.1)	13.48 (1.0)	0.80 (0.1)	0.18 (0.1)	17.40 (6.0)	9.09 (6.0)	48.51 (11.0)	9.19 (2.1)	0.81 (0.9)	0.52 (0.8)
Taipei,China [TA]	0	0.00 (0.1)	1.68 (14.0)	0.18 (0.7)	0.27 (0.3)	0.53 (5.7)	67.79 (9.7)	29.55 (15.4)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
	4	0.01 (0.1)	5.75 (9.2)	0.19 (0.4)	0.41 (0.2)	3.92 (10.4)	71.55 (14.8)	14.28 (11.1)	0.15 (5.9)	0.60 (3.3)	3.14 (11.4)
	8	0.01 (0.1)	9.81 (8.2)	0.43 (0.4)	0.40 (0.2)	5.18 (12.2)	66.46 (15.6)	13.88 (10.2)	0.18 (5.9)	0.80 (3.3)	2.86 (11.4)
	12	0.01 (0.1)	10.15 (7.9)	0.49 (0.4)	0.40 (0.2)	5.33 (13.3)	66.22 (16.0)	13.58 (10.1)	0.19 (5.7)	0.82 (3.2)	2.81 (11.6)
	24	0.01 (0.1)	10.10 (7.8)	0.49 (0.4)	0.40 (0.1)	5.42 (14.8)	66.28 (17.0)	13.49 (10.5)	0.19 (5.7)	0.82 (3.2)	2.79 (12.1)
Thailand [TH]	0	0.03 (0.1)	4.55 (5.3)	0.11 (0.2)	0.00 (0.1)	0.03 (1.8)	8.34 (3.3)	86.94 (6.3)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
	4	0.02 (0.1)	8.47 (5.6)	0.33 (0.2)	0.49 (0.1)	3.38 (6.8)	37.23 (9.5)	45.91 (12.0)	0.40 (0.5)	0.19 (1.4)	3.58 (4.6)
	8	0.03 (0.1)	14.60 (5.2)	0.98 (0.2)	0.47 (0.1)	5.34 (9.0)	43.14 (11.9)	32.18 (14.0)	0.29 (0.5)	0.14 (1.5)	2.84 (5.4)
	12	0.04 (0.1)	14.18 (5.0)	1.52 (0.2)	0.47 (0.1)	5.56 (10.4)	47.46 (13.3)	27.92 (15.4)	0.26 (0.7)	0.12 (1.5)	2.47 (5.8)
	24	0.05 (0.1)	13.97 (4.9)	2.05 (0.3)	0.43 (0.1)	4.98 (13.0)	55.18 (15.3)	21.16 (17.8)	0.20 (1.1)	0.09 (1.8)	1.88 (6.7)
Viet Nam [VT]	0	0.01 (0.1)	0.99 (12.6)	0.58 (0.5)	0.08 (0.2)	0.06 (5.2)	24.97 (7.5)	73.31 (13.6)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
	4	0.03 (0.1)	3.08 (6.6)	0.70 (0.3)	0.05 (0.1)	2.86 (9.3)	65.15 (12.1)	13.20 (10.9)	7.50 (9.6)	0.10 (1.0)	7.34 (19.1)
	8	0.04 (0.1)	9.88 (5.5)	0.69 (0.3)	0.08 (0.1)	3.45 (10.7)	65.03 (13.9)	8.87 (9.3)	6.47 (9.1)	0.10 (1.0)	5.39 (19.0)
	12	0.04 (0.1)	9.14 (5.2)	1.18 (0.2)	0.15 (0.1)	4.15 (11.6)	66.60 (14.8)	7.94 (9.1)	5.70 (9.0)	0.10 (1.1)	5.00 (19.0)
	24	0.05 (0.1)	10.47 (5.1)	1.66 (0.2)	0.16 (0.1)	3.82 (13.1)	69.46 (16.4)	5.83 (9.3)	4.22 (9.3)	0.07 (1.3)	4.25 (19.4)

AS_FDP = Asian food price, AS_GDP = Asian gross domestic product, FUTURE = food price futures, POILUS = oil price, WR_FDP = world food price, WR_GDP = world gross domestic product, XX_FDP = country food price, XX_GDP = country gross domestic product, XX_MON = country M1 money supply, XX_USR = country US exchange rate.

Notes: The table reports the percentage contribution of the shocks to the forecast error variance in the food price when the variables in the country block are ordered alternatively. Figures in parentheses are one-standard errors computed using 500 bootstrap replications of the model. The figure 0.1 denotes the one-standard error that is less than or equal to 0.1% but greater than 0.

Source: Authors' calculations.

Table 6: Variance Decompositions of the Food Prices for Various Regions, 1995–2011
(%)

	Shocks									
	World				Region			Country		
Region	POILUS	GDP	FDP	FUTURE	GDP	FDP	USR	MON	GDP	FDP
Developing Asia (11)	0.03	12.47	1.01	0.22	8.08	33.35	9.67	0.96	6.93	27.29
Emerging Europe (9)	0.17	31.98	4.53	0.67	3.26	22.02	1.36	0.83	16.56	18.62
Latin America (9)	0.14	34.60	1.44	0.49	3.96	16.86	2.47	1.19	14.09	24.74
Sub-Saharan Africa (7)	0.06	10.20	0.64	0.23	1.58	53.55	1.52	0.92	16.42	14.88
Middle East (5)	0.06	23.02	1.03	0.19	3.41	17.57	21.25	2.01	12.34	19.13
Eurozone (7)	0.03	10.43	0.53	0.39	3.75	7.17	12.98	2.35	18.98	43.39
G7 (7)	0.03	8.07	0.30	0.10	10.88	6.92	0.68	0.87	28.73	43.41

FDP = food price, FUTURE = food price futures, GDP = gross domestic product, MON = M1 money supply, POILUS = oil price, USR = US exchange rate.

Notes: The table reports the regional average contribution of the shocks in explaining the variation in domestic food prices. Figures in parentheses are the number of countries included in the region.

Source: Authors' calculations

The contribution of the regional food price shock gets larger in Sub-Saharan Africa, as the shock accounted for over 50% of the movements in domestic food prices. For emerging Europe, Latin America, and the Middle East, the regional food price shock loses some strength, but remains important in determining domestic food prices. In these cases, the world GDP shock is the most influential, and the domestic food price shock also explains a significant portion of the variation in food prices. Interestingly, the results change considerably for the eurozone and G7. Only a small fraction of the variation in domestic food prices was accounted for by the regional food price shock. The domestic food price shock becomes most crucial and explains over 40% of the variation in food prices. The domestic GDP shock also plays a significant role. It appears that the food prices of those advanced countries constituting the eurozone and G7 are determined mostly by domestic factors on average. Shocks originating externally do not seem to affect the domestic food price. This is in contrast to the results from the other regions where the members are mostly developing countries. The regional food price shock was an important factor for driving domestic food prices. Obviously, it would be interesting to explore the reasons for this difference between advanced and developing countries in the determination of food prices. As the topic is beyond the scope of this paper, it is left for future research.

VI. SUMMARY AND CONCLUDING REMARKS

Surging food prices over recent years have raised concerns that high and volatile food prices would persist, with potentially devastating consequences on poverty. The experiences of 2008 and 2011 are particularly daunting. Stabilizing food prices now arises as a major challenge to the policy makers of many countries and is high on the global agenda.

For policy analysis, it is important to understand the underlying sources of food price fluctuations because policy should respond differently according to these sources. Yet, there have been only a limited number of empirical studies for Asian countries. The present paper adds to the literature with the development of the structural model that can identify the key determinants of food prices for 11 developing Asian countries. The working model is a block VAR, and a large set of 10 variables were classified into three blocks—world, Asia, and country—depending on their origin and nature. The blocks were identified using block exogeneity restrictions, and the structural shocks within the block were identified by assuming the Choleski-type recursive ordering of the variables.

We also constructed a composite food price index of Asia in order to measure common movements among the food prices of Asian countries. This index exhibits distinctively different dynamics compared to the world food price. The block VAR model produced results confirming that the variation in the Asian food price is mainly accounted for by its own innovations.

Our empirical results reveal some interesting findings. First, the variation in domestic food prices is mainly accounted for by the countries' own shocks, especially at short horizons. Second, a shock to the common regional food price exerts a significant and large influence on domestic food prices across Asia. This effect is particularly pronounced over the medium- to long-term horizons. Third, the world food price shock contributes little to the movements of both common regional food price and domestic food prices in Asia. Similarly, other world factors such as oil prices and food price futures appear to provide very little explanation for the variations in both common regional price and the individual domestic prices of Asian countries.

Our findings seem to confirm those of the earlier literature on the segmentation of Asian food markets from the world market. A confluence of factors may be responsible for the limited role of world food prices and other global factors in determining food prices in Asia. Obviously, domestic food prices are influenced by interrelated factors of domestic food market conditions, macroeconomic and sector policies, as well as international trade and other external factors. On top of these, food prices are often very carefully monitored and become the target of policy interventions, especially in developing countries, given their impact on poverty and household welfare. Various subsidies and price controls on food have been observed across Asia, while governments have intervened in food markets to stabilize local food prices. Concerns about food security, agricultural protection, and food self-sufficiency also imply that food is not readily traded. Unlike other manufactured goods, agricultural commodities tend to be subject to heavy protectionist agricultural policies. All of these may explain the limited transmission of the international food price and other factors to domestic food prices in Asia.

On the other hand, our findings suggest that there is a strong common component in the movement of domestic food prices across Asia, and that a shock in the common regional food price plays an important role in determining individual domestic food prices. Similar patterns were also observed for other developing regions, including Sub-Saharan Africa, and to a lesser extent, emerging Europe, Latin America, and the Middle East.

The common regional component may reflect the effects of region-specific food market conditions, growing regional economic integration, and similar policy responses to the regionally common shocks. Many of these regions have region-specific food cultures with distinctive main staples—for example, rice in much of Asia, wheat in most of Europe and the Middle East to North Africa, white maize in Eastern and Southern Africa, and sorghum and millet in West Africa's Sahel. The countries in the same region may also face similar agroclimatic shocks. Common staples and shocks could then cause the domestic price stabilization policies to converge. The effect of regional economic integration on domestic demand conditions cannot be ignored either. For example, while further assessment is warranted, a number of studies argue that the business cycles in Asian nations are more synchronized regionally than globally (McKinnon and Schnabl 2003; IMF 2007; Kose, Otrok, and Prasad 2008; Moneta and Rüffer 2009). All of these factors may be manifested in the common regional component of domestic food prices.

Some interesting policy implications can be drawn from our findings. While internal factors play a major role in determining domestic food prices, the importance of regional factors suggests the role of regional cooperation in stabilizing local food prices in many developing regions, including Asia. Specifically, the findings suggest that Asian food markets are not fully integrated with the world market, but rather, are integrated regionally.

In the context of developing Asia, regional cooperation and integration offer unique opportunities to discuss the food security issue in a regional framework. Regional efforts to promote food security can have three strategic purposes: (i) strengthening intraregional trade; (ii) supporting national programs and initiatives for food security, and harmonizing national food and agricultural policies where necessary; and (iii) establishing regional mechanisms, such as regional strategic food reserves, for the prevention and management of food crises.

Obviously, food security is not synonymous with food self-sufficiency. The promotion of intraregional trade is crucial to a stable food supply for the region, particularly in some of the major regional staples such as rice. In this context, the region's policy efforts should focus on identifying trade barriers, facilitating trade through the modernization of food safety control systems and standards, and developing trade support programs for major agricultural commodities.

Regional support can be envisaged to promote investment in agricultural production together with appropriate agricultural policy assistance. First, it is important to identify areas requiring technical and financial support for agricultural development and food security. Second, regional policy dialogue and cooperation can help promote trade facilitation programs and pressure national agricultural policies to adopt international standards.

Finally, regional food security reserves may be considered one of the major components of regional strategies for preventing and managing food crisis. The low level of food stocks is often a cause of price hikes. The level of stocks can be suboptimal if it is primarily the outcome of business decisions made by private sector agents. Therefore, there is scope for policy interventions to induce higher levels of stocks. Managing food security stocks is challenging and requires effective coordination among various stakeholders at national and regional levels. Effective regional mechanisms that maintain adequate levels of reserves could help avert or ameliorate the adverse effects of crises on the supply of basic food items, such as rice.

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Examining the Determinants of Food Prices in Developing Asia

With food prices expected to continue their surge, there is a need to understand what determines them to come up with appropriate policies that would help stabilize them—and consequently, reduce the vulnerability of developing countries. This paper studies the factors that determine food prices, specifically focusing on the transmission of external shocks to domestic prices. Using a block Vector Autoregression model, the authors examine the sources of food price fluctuation in 11 developing countries in Asia. The findings suggest that stability in food prices would require regional as well as domestic efforts.

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