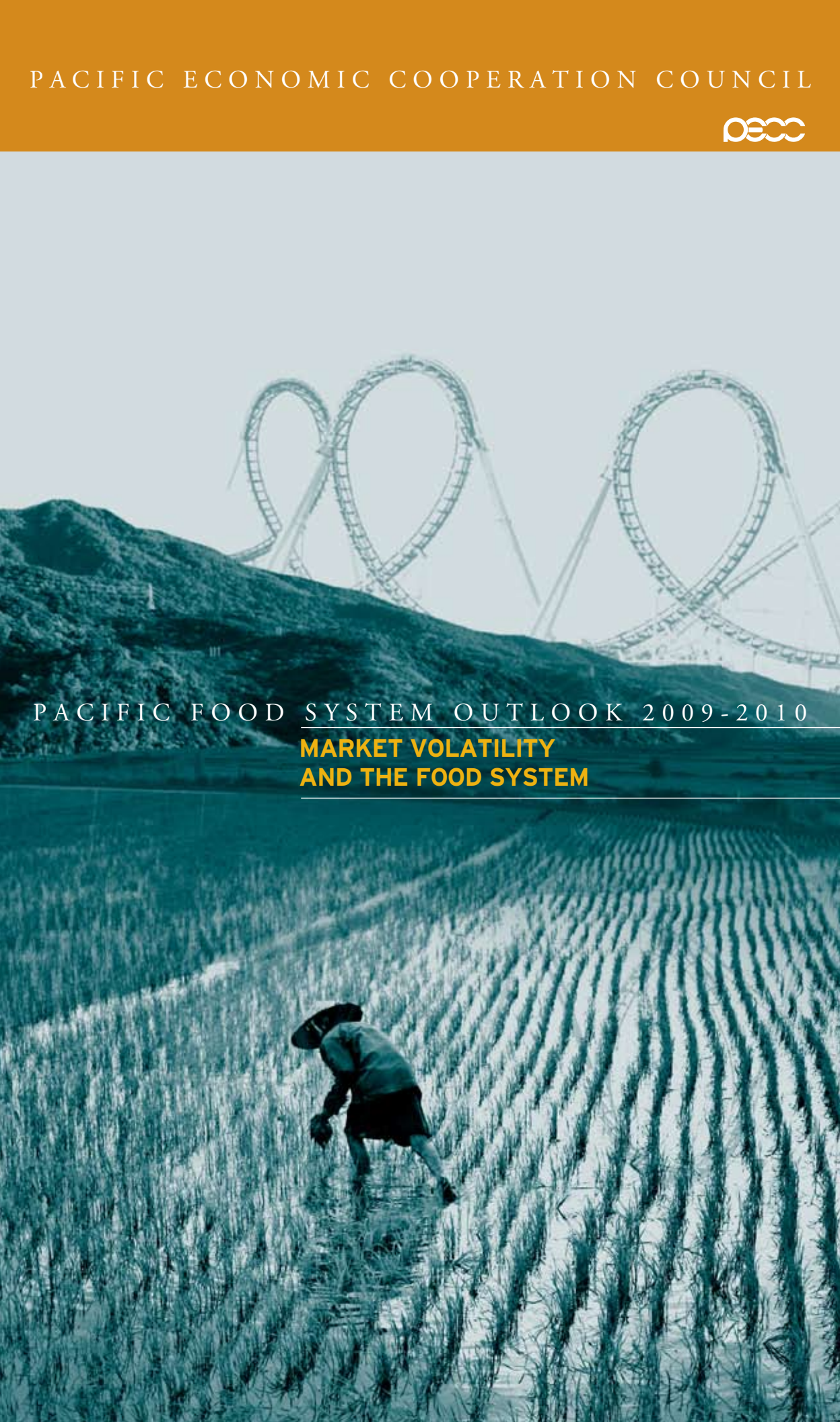


PACIFIC FOOD SYSTEM OUTLOOK 2009-2010

**MARKET VOLATILITY
AND THE FOOD SYSTEM**





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AND THE FOOD SYSTEM**

Pacific Food System Outlook 2009-2010
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FOREWORD

The food system is one of the economic sectors most sensitive to the potential consequences of price volatility. The expectation is that price volatility will continue for at least the near term. Public and private sector decision makers around the region need the best possible information to address this challenge. This year's report analyzes the underlying factors driving volatility; the potential near-term implications for production agriculture, food security, and the broader food system; and the nature of measures and approaches that governments and the private sector might employ to reduce potential adverse economic impacts.

Addressing the potential ongoing challenges of increased price volatility continues the PFSO's history of analyzing key issues that have critical implications for the region's food system. This and previous PFSO reports, along with presentations from the PFSO annual meetings, which provide insights from throughout the PECC region, are available on the PECC website (www.pecc.org/food).



This year's meeting, held in Washington, D.C., kicked off with a very well attended breakout session, "The World Economic Crisis and the Food System" on the last afternoon of the PECC General Meeting. We are grateful for the substantive contributions of William Liefert, Economic Research Service, USDA; Paul Ellinger, University of Illinois; Xiaobo Zhang, International Food Policy Research Institute; and Will Martin, the World Bank. We thank Sarahelen Thompson, Economic Research Service, and Neilson Conklin, Farm Foundation, for their financial support of the project and their participation in the PFSO meeting program.

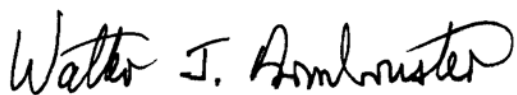
In this report, we synthesized the themes and ideas discussed and developed at our annual meeting. We thank all the economists representing the participating countries of the PECC region for their contributions and continued support to the project. Each participant provided input. Peter Gooday and Caroline Gunning-Trant of ABARE and Brad Gilmour of Agriculture and Agri-Food Canada provided additional analysis and input to help shape the final report. We thank Nathan Childs, John Dyck, Fred Gale, William Liefert, and Paul Westcott of ERS for their comments and input for different parts of the report. Tom Slayton, formerly with the Center for Global Development and a long-time rice market consultant, provided very valuable insight of the global rice market during 2007-08.

We are especially grateful to Betty Ip, Director of Public and Business Affairs, PECC International Secretariat, for her tireless efforts in supporting our project and administering our part of the PECC website. Barbara Wanner of the East-West Center in Washington, D.C. was very helpful in arranging the logistics of our meeting.

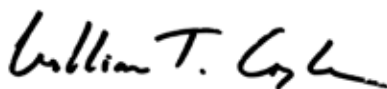
Thanks to the Institute of Southeast Asian Studies in Singapore for publishing and disseminating our report throughout the Asia-Pacific region.

As in previous years, the financial support of the Farm Foundation and USDA's Economic Research Service, as well as the support from the country PECC committees, has made this unique multinational project a reality.

Finally, we appreciate the work of Joe Yacinski and Carol Hardy of Yacinski Design; Jane Sapp, for editorial review; and Mary Anne Normile of ERS, for her important support of this project.



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November 2009

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MARKET VOLATILITY AND THE FOOD SYSTEM

In 2005-09, the Pacific Economic Cooperation Council (PECC) region's food system faced price volatility not seen since the 1970s. Agricultural commodity prices rose sharply in 2006 through the first half of 2008, spurred by tightening stocks, demand from expanding biofuel production, and the policy responses to food-price inflation in a number of food exporting and importing countries. Changing exchange rates and speculation were also influential.

Then, agricultural prices turned sharply downward in the second half of 2008 because of

A New Era of Volatility?

The world and the PECC region faced considerable food price volatility in 2005-09, with food prices rising 80 percent from 2005 to June 2008, then falling about 30 percent in the second half of 2008, and rising modestly again in 2009. Food commodity prices were the most volatile in 2005-09 of any time in the past three decades (Figure 1).

Roller Coaster Prices: The Upswing

In addition to price volatility, real agricultural prices increased in the 2000s, as they became more close-

While there was broad commonality in these recent price rises, there were also distinct differences. Corn prices doubled in late 2006 because of low stocks and prospects for expanding ethanol production, while wheat prices started their upward trajectory later, in mid 2007, brought about by weather-induced shortfalls and policy responses to price increases. Rice prices rose sharply even later, at the end of 2007 and in early 2008, because of the thinness of the market and its susceptibility to export restraints and speculative buying. Other agricultural commodity prices also increased around this time due to spill-over

Food commodity prices were the most volatile in 2005-09 of any time in the past three decades...and real agricultural prices increased in the 2000s, as they became more closely linked to non-agricultural commodity and energy prices.

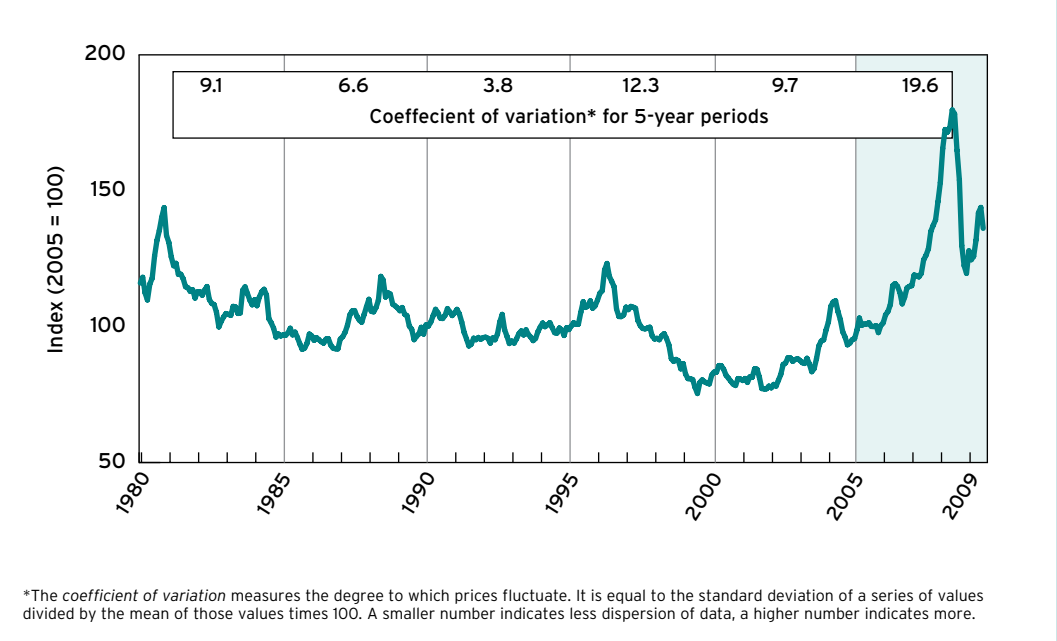
larger harvests and the dampening effects of the world financial crisis on demand: tightening credit markets, slowing or negative economic growth, and higher unemployment.

This report identifies the causes and impacts of the market volatility on the region's food system in 2005-09 and the policy implications arising from this volatility. The report is based on presentations at the 13th annual meeting of the Pacific Food System Outlook, "*The World Economic Crisis and the Food System*," held in Washington, DC, on May 14, 2009.

ly linked to non-agricultural commodity and energy prices. Some of these price increases changed the cost structure of agriculture, such as higher fertilizer and transportation costs. Agricultural price increases are likely a temporary phenomenon. For many years, agricultural commodity prices have trended downward as a result of improvements in plant breeding, fertilizers, handling and storage, and farm management techniques. Wheat is a good example (Figure 2). Additionally, global food availability per capita continues to expand, with shortages primarily arising from distributional problems.

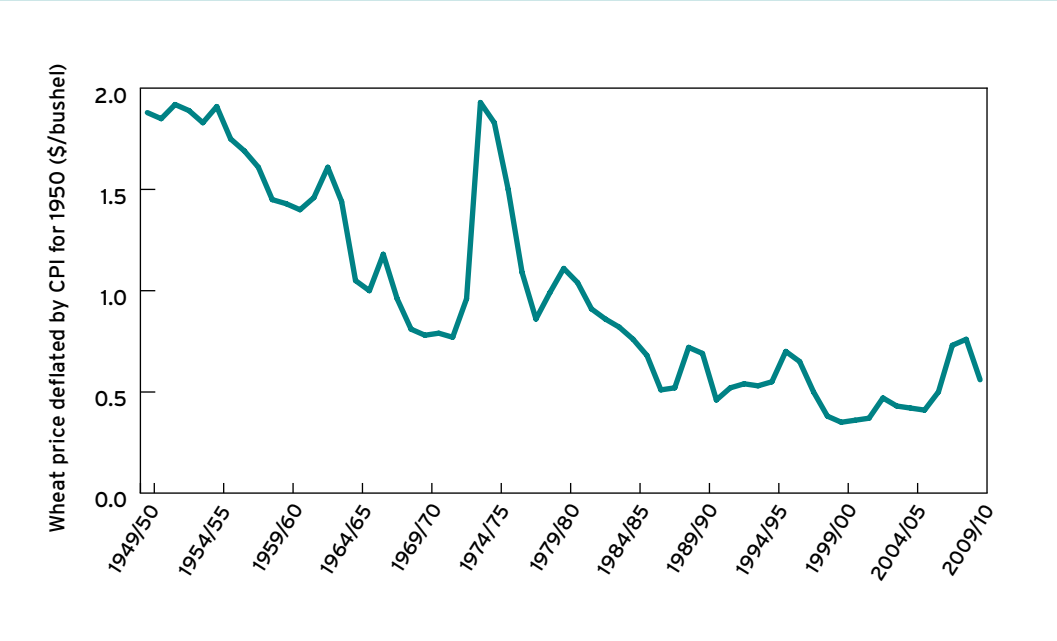
effects. Soybean prices rose as land was shifted away from soybean production to corn production, and reduced soybean crush boosted vegetable oil prices. Higher grain prices adversely affected the cost structure of livestock and ethanol producers. For livestock producers this led to the short-term liquidation of herds, while biofuel producers faced a greater threat of bankruptcy. There were some exceptions, notably sugar, whose price spiked earlier than corn prices in 2006 and rose for a second time in 2009 because of supply and demand factors, including a production shortfall in India (Figure 3).

Figure 1 Food Commodity Prices in 2005-09, Most Volatile in Three Decades



Source: IMF, <http://www.imf.org/external/np/res/commod/index.asp>

Figure 2 Inflation-Adjusted Wheat Prices Still Lower Than in Earlier Periods



Source: Wheat prices are average farm wheat prices (all grades) as reported by the USDA

These price increases are generally ascribed to declining grain stocks, expanding biofuel production, and policy interventions. Each of these causes is worth examining in some detail.

Declining Grain Stocks

Declining grains stocks in the mid-2000s created the preconditions for volatility and price increases later in 2005-09. Stocks had declined to very low, in some instances historically low, levels. Stocks of many commodities, including grains and oilseed products, had not been so low since the 1970s; wheat stocks were at their lowest level in 50 years (Abbott et al, 2008). Given the inelasticity of demand—relatively small response in demand to a change in price—for these commodities, their markets became increasingly vulnerable to shocks (Trostle, 2008).

It was neither dietary transition in developing countries nor production shortfalls in other countries that were singularly responsible for the decline in stocks. A combination of policy and commercial choices, along with supply and demand factors, led to the depletion of grain stocks.

Stock level reduction was a matter of policy choice in some countries and had a commercial rationale, in light of more liberalized markets in the aftermath of the 1994 Uruguay Round Agreement. Starting in 1999, China implemented policies to reduce grain stocks by more than 50 percent in five years. Private traders, having become accustomed to stable supplies and fewer trade barriers, were able to reduce costs by holding smaller

stocks and applying “just-in-time” principles of logistics management (Childs, 2009; Trostle, 2008).

Other supply-demand factors also affected grain markets. In the last 10 years, global use exceeded global grain production six times (Figure 4). Just before the price run-up in 2005-06, global grain production was below trend. Australia suffered droughts affecting its grain and rice production. Production in Europe and Ukraine was also below trend because of adverse weather (Gilmour, 2009). But production declines in the Newly Independent States (NIS) in the last two decades were not a factor, because increased exports from the NIS added to export supplies (Headey, 2009). In other areas, growth in crop yields slowed and areas for expanding production became scarcer. In some places, farmers resorted to double-cropping and other more intensive and sometimes less sustainable practices on marginal lands. Some economists believe that a declining trend in public research some time ago is adversely affecting yield growth currently (Fuglie, 2008).

On the demand side, strong GDP and population growth and expansion of the middle class in developing countries led to changing diets—a growing preference for more meat, fish, poultry, and dairy products and for less food grain. These dietary shifts amplify the demand for feed grain and other feedstuffs. Meat production requires large amounts of feed: 2.6 kilograms of grain per kilogram of chicken meat, 6.5 kilograms per kilogram of pork, and 7.0 kilograms per kilogram of beef (Trostle, 2008).

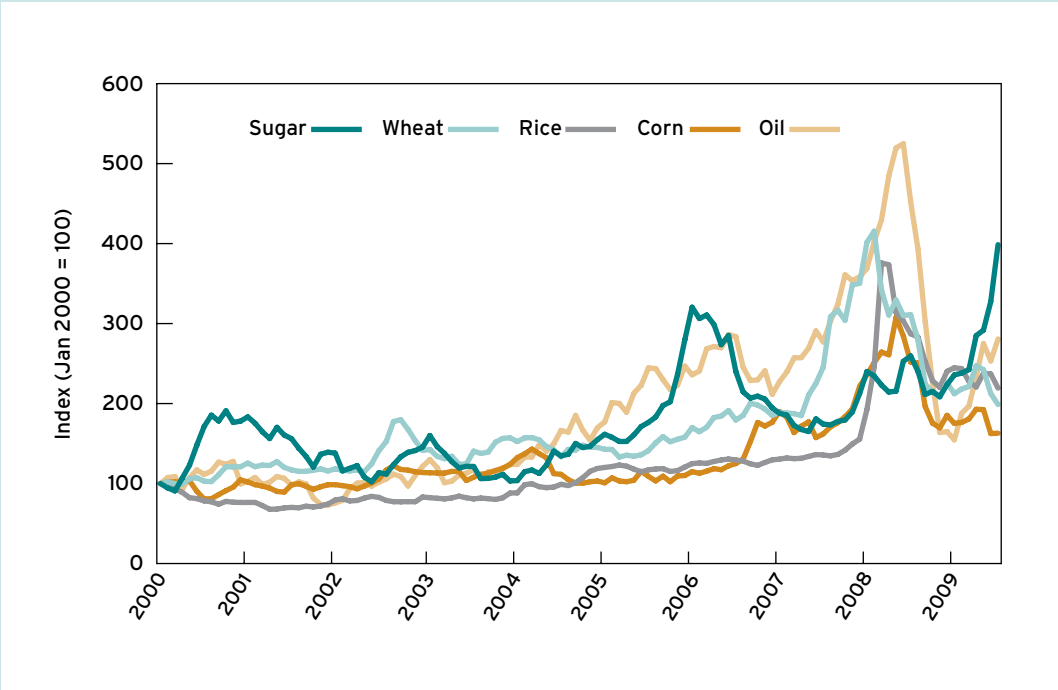
Despite all the attention given changing diets in countries such as China, India, and Indonesia, growth in food and feed demand in 2005-07 in these countries just before the run-up in prices was modest and on trend. It showed no unusual surge that might have triggered sharply rising prices (Headey, 2009).

Expanding Biofuel Production

Expansion of biofuel production in the 2000s represented a significant change in the structure of agricultural markets and led to the growing linkage between agriculture and energy markets. Global production of fuel ethanol and biodiesel quadrupled during 2000-08 and continued to grow in 2009, although at a slower pace. This was a new and growing source of demand for agricultural commodities, particularly sugarcane, corn, soybeans, and rapeseed. About one-third of the U.S. corn crop and more than half of Brazil's sugar crop are now being used for ethanol production. Other feedstocks important in the PECC region include cassava and wheat. While soy, rape, and recycled vegetable oils are the leading feedstocks in global biodiesel production, African palm oil, coconut oil, and jatropha are significant or potentially significant feedstocks in the PECC region.

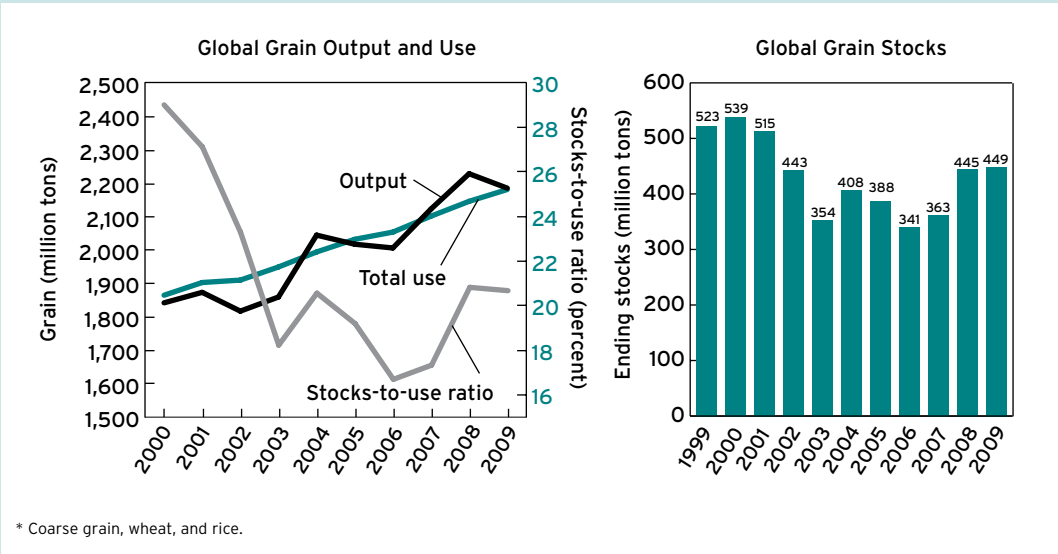
Biofuel demand alone accounted for 60 percent of the change in global demand for wheat and coarse grain in 2005-07, representing more demand growth than for feed and food combined (Headey, 2009). About 90 percent of this demand growth came from the U.S. market, where

Figure 3 Each Commodity Has a Different Story



Source: World Bank, Commodity Price Data; updated Sept. 15, 2009

Figure 4 Global Grain Production* Now Surpassing Consumption, Stocks Rebuilding



* Coarse grain, wheat, and rice.

Source: USDA, 2009.

corn used for ethanol surpassed corn exports and approached feed use as the single most important use of U.S. corn (Figure 5).

About 90 percent of global biofuel production is concentrated in three regions—the United States, Brazil, and the EU—and will likely become more concentrated in these areas, given the ambitious mandates in the United States and the EU to expand the use of biofuels in the future as a transportation fuel additive or substitute. Programs in non-U.S. PECC countries are much more modest; China, Canada, Thailand, and Colombia are the leading smaller biofuel producers in the region.

Biofuel expansion in the 2000s was driven by policy and steadily rising oil prices. Prices of agricultural commodities and energy commodities became increasingly correlated during the decade (Figure 6). Agriculture is no longer just a consumer of energy, but a more important producer of energy. Governments saw biofuels as a potential alternative to fossil fuel in light of rising oil prices and the relatively low cost of agricultural feedstock in the early 2000s. They also saw biofuels as an opportunity to diversify a country's sources of liquid fuel, to reduce GHG emissions and meet other environmental goals, and to promote economic development in rural areas. Still, biofuel use is relatively limited, accounting for less than 3 percent of global transportation fuel.

But some of these goals have been challenged in the last two years. Concerns about environmental and food-price impacts created uncertainty about the advisability of using biofuels.

Life-cycle calculations of CO₂ emissions vary by feedstock and conversion process. In some calculations biofuels had little or no advantage in reducing CO₂ emissions relative to fossil fuels. Theoretically, cellulosic biofuels meet higher thresholds for reducing CO₂ emissions but are still not commercially viable. Estimates of food-price impacts from biofuel production vary greatly, accounting for 10 to 75 percent of food price increases, because the estimates are based on different time periods and definitions of "food." A recent U.S. Federal Reserve study found that while biofuel production had sizeable impacts on corn, soybean, wheat, and barley prices, it had a much smaller impact on global food prices because many food price components are not affected by biofuels. According to the study, nearly 90 percent of the rise in global food prices in 2006-08 came from factors other than biofuels (Baier, et al, 2009).

Despite the controversies, the biofuel opportunity was strengthened by a distinct difference in the current oil market compared with previous high-price periods.

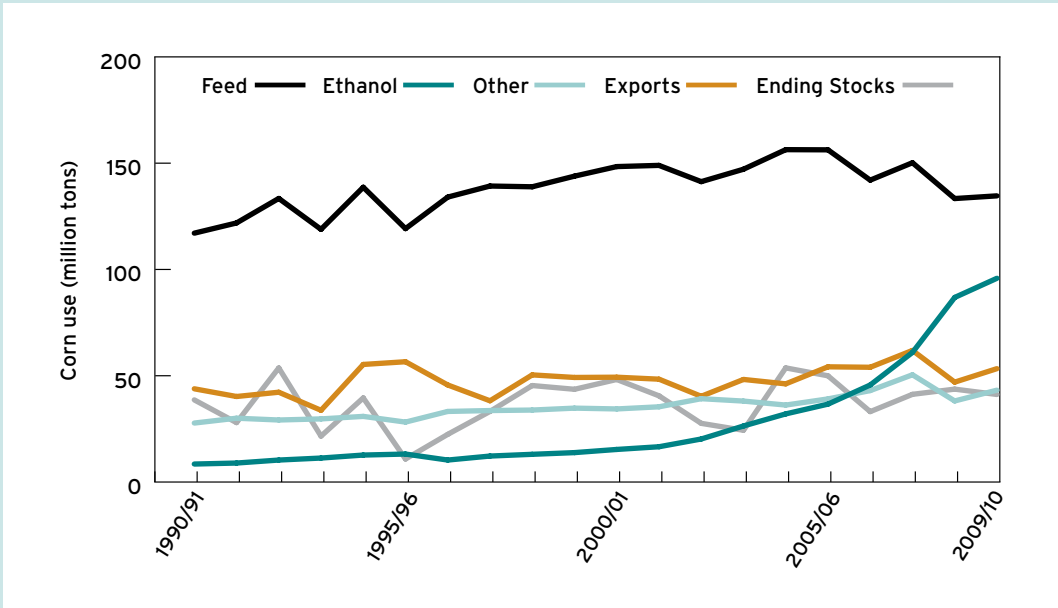
Increases in oil prices in the 2000s occurred gradually, starting in 1999 and peaking in mid-2008 before declining. In previous periods, high and rising oil prices were not sustained for nearly as long. The last three major oil price spikes were induced by temporary military-related supply shocks. In each instance, oil prices rose sharply, peaked in a matter of weeks or months, and then gradually declined or stabilized. Following these price spikes, rapid declines in oil prices made it difficult to sustain alternative fuel

programs and reduced incentives for consumers to curb their use of petroleum products. In addition to supply-side constraints and uncertainties, the current oil market is driven by significant longer-lasting demand-side factors, including rising oil demand from middle-income economies, where consumers aspire to a higher standard of living involving greater energy consumption.

Oil prices have nearly doubled from their 2009 lows to about US\$70 per barrel. Prices are projected to remain relatively high for the next five years, according to the U.S. Department of Energy and other forecasters. High prices should prolong opportunities for efficiency gains, stimulate energy conservation, and generate increased supply from traditional and alternative energy sources, including biofuels. Rising oil prices boost commercial prospects for alternative fuels, while price declines do the reverse.

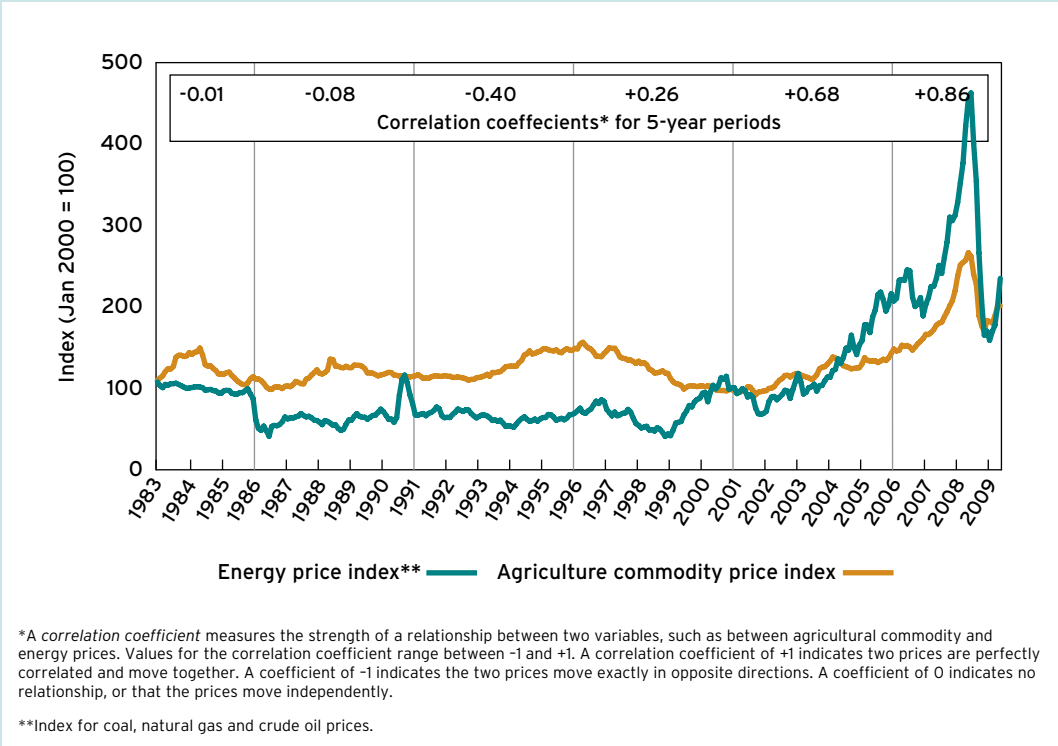
On the other hand, profitability in biofuel production has declined since 2005-06. In the case of U.S. ethanol production, corn prices were low in the mid-2000s. A policy change was made at that time involving the replacement of methyl tertiary butyl ether (MTBE) with the more environmentally benign ethanol as an oxygenate and octane enhancer. This demand shift resulted in high ethanol prices when corn prices were low. As a result, corn ethanol profits were unusually high during these two years (Figure 7), attracting a strong influx of capital to expand ethanol processing capacity. Markets then adjusted when corn prices abruptly doubled at the end of 2006 and ethanol prices fell from their highs

Figure 5 Use of Corn for Ethanol: The Most Significant Change in U.S. Agriculture in Last 10 Years



Source: USDA

Figure 6 Agriculture and Energy Prices More Closely Correlated

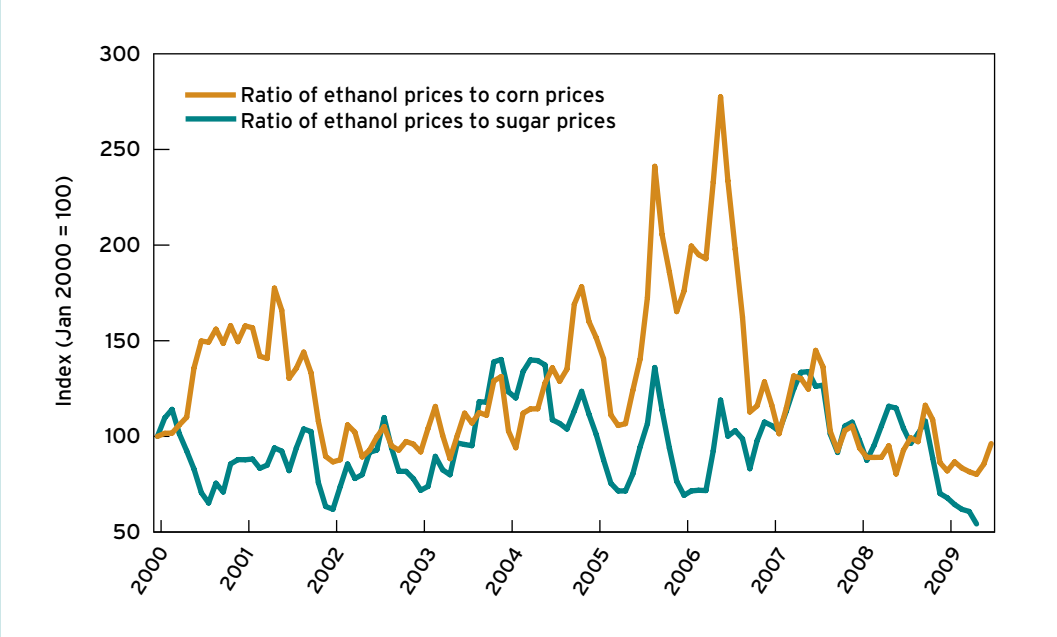


*A correlation coefficient measures the strength of a relationship between two variables, such as between agricultural commodity and energy prices. Values for the correlation coefficient range between -1 and +1. A correlation coefficient of +1 indicates two prices are perfectly correlated and move together. A coefficient of -1 indicates the two prices move exactly in opposite directions. A coefficient of 0 indicates no relationship, or that the prices move independently.

**Index for coal, natural gas and crude oil prices.

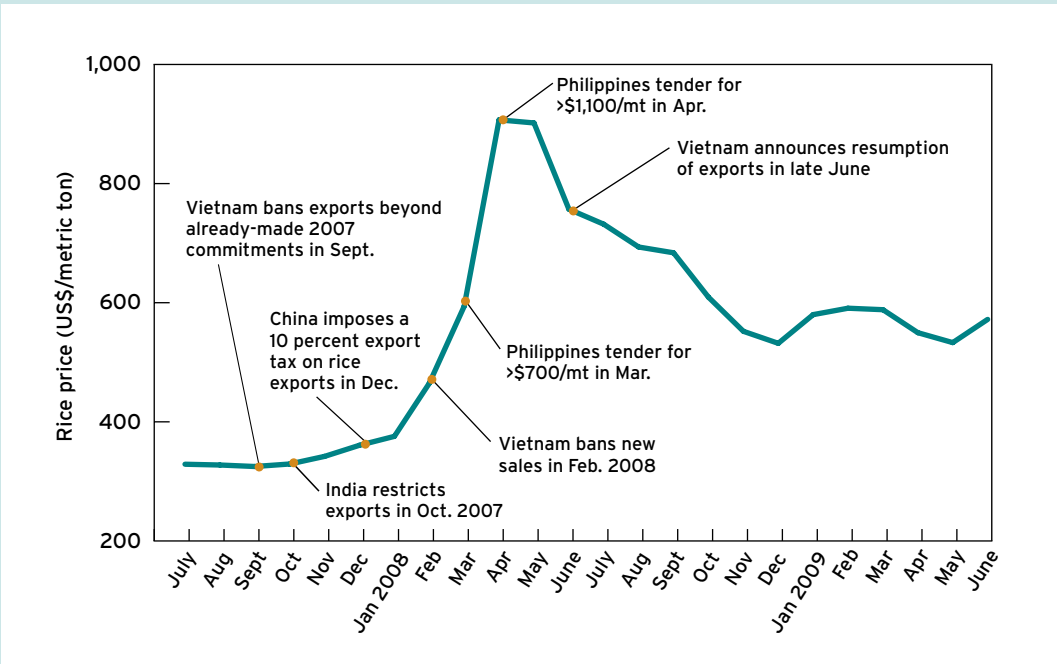
Source: World Bank, real price indices, 2000=100

Figure 7 Ethanol Profits Trending Downward



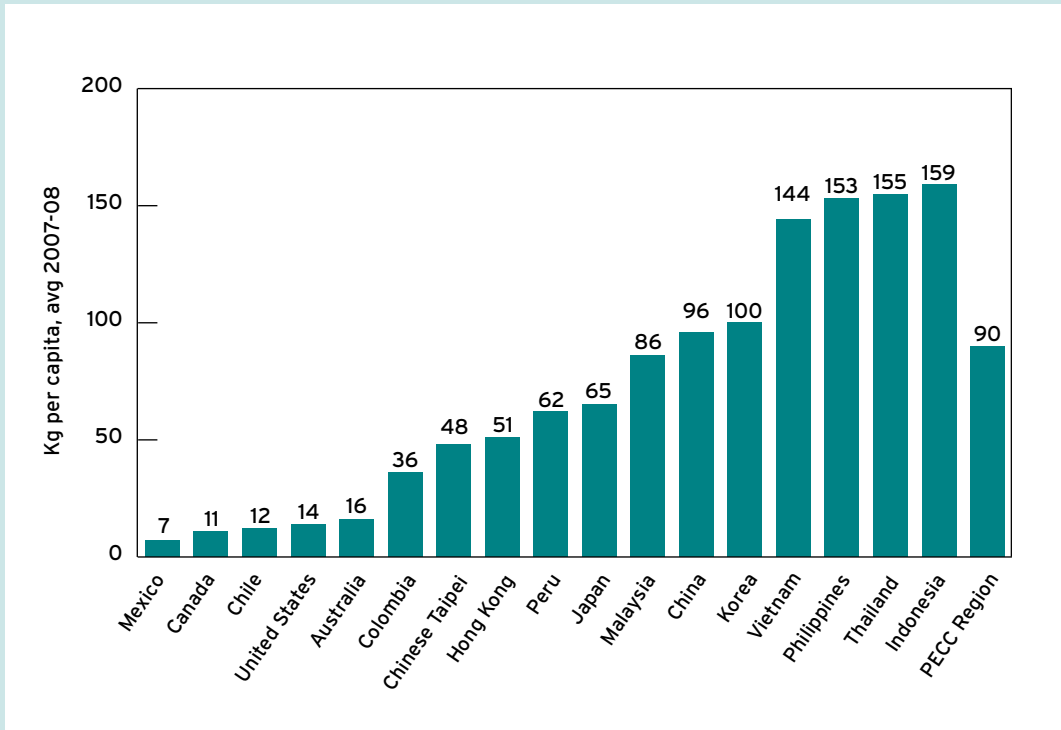
Source: ERS; World Bank Commodity Price Data; Nebraska energy website: www.neo.ne.gov; updated Sept. 15, 2009

Figure 8 Timeline for World Rice Prices



Source: Indica rice, 5% broken; World Bank; Slayton (2009).

Figure 9 Average Per Capita Rice Consumption in Selected PECC Economies



Source: USDA; only household consumption for Vietnam, Dieu, 2009.

of 2006. Profit margins sank and have since remained well below 2005-06 levels. Profits from sugar ethanol production have been more stable, but have turned down in recent months because of the sharp increase in global sugar prices. Now that agricultural commodity prices are more highly correlated with energy prices, as biofuel prices rise so do feedstock prices, which account for 50 percent or more of the cost of biofuel production and are keeping profits in check.

Policy Intervention

Policy intervention played a significant role in raising agricultural commodity prices, especially in the case of rice. Trade restrictions

by major exporters and speculative buying by a few importers were responsible for driving up world rice prices in 2007-08 (Abbott, 2009; Yu et al, 2009; Lustig, 2009). Both kinds of interventions served to create a psychology of scarcity and a propensity to hoard. Countries dependent on imports and a stable open trading system were confronted for the first time in decades with uncertain foreign supplies of a key food staple.

Of all agricultural commodity markets, world rice trade was among the most volatile in the 2000s. This volatility was even more pronounced in 2007-08, when world rice prices rose 175 percent from October 2007 to April 2008 and then dropped 40 percent from April 2008 to

December 2008 (Figure 8), stabilizing at a level above pre-October 2007 prices. Given the central role of rice in the diet and in agricultural production in the PECC region, volatile rice prices were the single most important phenomenon affecting the region’s food system in recent years.

Annual per capita rice consumption is more than 80 kilograms in Malaysia, China, Korea, Thailand, the Philippines, Indonesia, and Vietnam (Figure 9). Furthermore, the PECC region produces almost 60 percent of global rice production, with six countries—China (1), Indonesia (3), Vietnam (5), Thailand (6), the Philippines (8), and Japan (10—among the top ten global producers. The region exports

almost 70 percent of the global total, with three of the top five exporters—Thailand (1), Vietnam (2), and the United States (5)—and has the world’s biggest importer, the Philippines.

For many years, rice has been the most thinly traded of major grains. Most rice is produced relatively close to where it is consumed; only 7 percent of world production, or 29 million tons, now is traded on world markets. This compares with 12 percent for corn and 19 percent for wheat. Nevertheless, trade is now more significant for the global rice market than it was in the 1980s, when the trade share of production was only 4 percent, or 12 million tons. Because rice is a highly supply- and demand-inelastic food staple and so thinly traded, small changes in supply or demand can have disproportionate impacts on world prices.

Food price inflation was a key issue facing consumers in developing countries in the 2000s, becoming more acute toward the end of the decade. It is a particular concern for the PECC region’s urban poor, who may spend 50 percent or more of disposable income on food, with rice accounting for a large share of the household budget. Nominal rice prices in the early 2000s were at their lowest level in more than 10 years, then rose throughout the decade. The slow rise was caused by a variety of factors, including a steady decline in global rice stocks and a growing linkage with non-agricultural commodity prices (Childs, 2009), some of the same factors affecting other agricultural commodities. What is different about rice is that it is not directly linked to biofuel production as

are corn and sugar. Global rice production expanded every year from 2002 to 2008, and rice stocks were historically low but rising from 2005-06 to 2008-09. While global production increased 2.9 percent in 2007 and 2.7 percent in 2008, declines occurred in specific Asian countries. Among top producers, Bangladesh’s production declined 1 percent in 2007, Burma’s 5 percent in 2008, and Vietnam’s 3 percent in 2008.

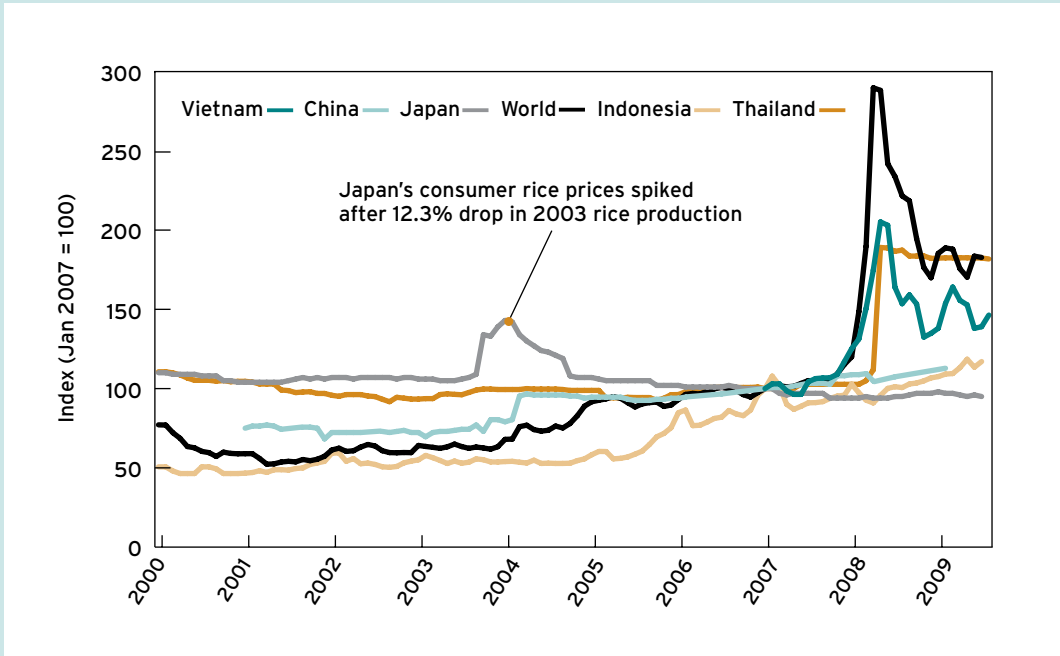
Vietnam, the world’s second largest rice exporter, announced an export sales ban in July 2007, which was lifted for a few weeks and selectively reinstated in February 2008 to ensure adequate supplies for its own market, where per capita rice consumption is among the highest in the PECC region. India, the third largest exporter, imposed restrictions in October 2007 on its rice exports except for basmati rice, a special variety of long grain rice noted for its fragrance and special flavor. China, Egypt, Cambodia, and Pakistan also banned or limited rice exports at various times during this period. Thailand, the United States, and Australia were the only major exporters that did not restrict exports. China, India, and Egypt cut back the most in 2008 from more customary levels of exports.

Net importers in the region, including Mexico, Indonesia, and Malaysia, also made policy adjustments to increase domestic availabilities and restrain price increases. The Philippines, the world’s largest rice importer, increased the size of its purchases and offered prices higher than prevailing market prices to avoid possibly having to pay even higher prices later. While

there were long queues in some regions of the Philippines and admonitions by the government not to hoard, rice in the Philippines was never in danger of being in short supply (Catelo, 2009). Although declining, rice stocks still amounted to a three-month supply at the end of 2007, well above the global stocks-to-use average of 19 percent. The Philippines also had record production in 2007 and 2008. With Vietnam’s lifting of its export ban by the end of June 2008, weather impacts that were not as bad as originally anticipated, and the potential availability of rice stocks in Japan and elsewhere, world rice prices by late May were beginning to decline. Consumers around the PECC region were affected differently. In East Asia and Indonesia, consumers were protected from the external volatility, while in Vietnam and other Southeast Asian countries, the volatility was passed through to the domestic market (Koyama, 2009) (Figure 10).

An important lesson from the volatility in the 2007-08 rice market is that policy interventions, when unchecked, can be more disruptive than economic events. After prying open Asian rice markets as a result of the Uruguay Round in the early 1990s and other factors which eventually doubled the trade share of global rice production in the following two decades, this recent bout with volatility could lead to more inward-looking policies. Already in the Philippines and Malaysia, there are renewed commitments to bolster national rice production and to raise rice self-sufficiency, by 2013 in the

Figure 10 International Rice Prices vs. Selected Consumer Rice Prices



Source: World price is Thai rice, 5% broken based on weekly surveys of export transactions, fob Bangkok (World Bank); Japan retail price is for Akitakomachi, Akita, yen per 10kg (Koyama); China retail price is for late indica, Remimbi per 500gms (Gale); Vietnam retail price is for ordinary paddy at Can Tho, Vietnamese Dong per kg (Dieu); Indonesian consumer price, Rupiah per 10 kg. (Natawidjaja); Thai retail price, 5% white rice (Tokrisna).

Philippines to 100 percent and by 2010 in Malaysia to 86 percent (Slayton, 2009). In late 2008, China set a new food security plan for 2008-2020 to maintain 100 percent self-sufficiency in rice and wheat and 95 percent self-sufficiency in total grains and soybeans (Gale, 2009).

Other Factors

Other factors that played a role in increased volatility of agricultural commodity prices include changing exchange rates and speculation. From July 2001 to March 2008, the dollar depreciated 36 percent relative to a basket of currencies, reducing the foreign currency price and boosting demand for agricultural and non-agricultural commodities denominated in dollars.

In the United States, declining interest rates, real estate values, and stock values in 2006-07 led investors to turn to agricultural and other commodities, driving up prices. During this time the number of U.S. futures contracts increased. In the past, the U.S. Commodities and Futures Trading Commission limited participation by speculators and index funds, but index funds were exempted from limits a couple of years ago, and in January 2008 they accounted for 40 percent of wheat trades (Gilmour, 2009). On the other hand, while the increased volume had some effect on volatility, "It is impossible to say, based on existing research, if the overall price levels have been influenced by speculative activity." (Abbott et al, 2008).

Roller Coaster Prices: The Downswing

After mid-2008, most agricultural commodity prices declined. The same happened to oil and other non-agricultural commodity prices. Between July and December 2008, the price of food commodities dropped by one-third (IMF).

On the one hand, high commodity prices in 2006-08 led to record grain production around the world and in the region. Total grain output in PECC countries rose 12 percent in 2008 compared to 2006 because of expanded area and higher yields. The biggest gains were in wheat (19 percent) and corn (13 percent). Increased production was broad-based with the exception of East Asia, where rice is the principal grain crop and is managed so as to stabilize

Table 1 Grain Production in the PECC Region

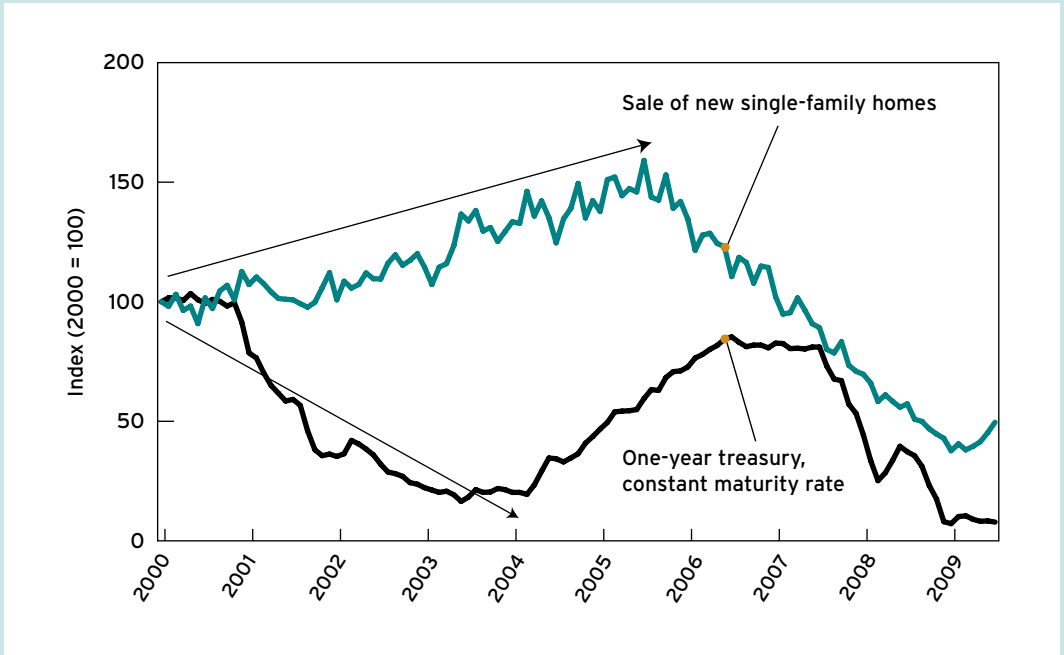
PRODUCTION 1,000 TONS	CORN				RICE (milled)		
Country	2006/07	2007/08	2008/09	2009/10	2006/07	2007/08	2008/09
Australia	240	387	400	400	163	19	66
Canada	8,990	11,649	10,600	10,300	–	–	–
Chile	1,510	1,365	1,346	1,375	71	78	81
China	151,600	152,300	165,900	162,500	127,200	129,850	134,330
Colombia	1,531	1,655	1,635	1,875	1,408	1,453	1,850
Ecuador	365	400	400	410	758	908	762
Indonesia	7,850	8,500	8,700	9,000	35,300	37,000	38,300
Japan	1	1	1	1	7,786	7,930	8,029
Korea, South	65	84	94	87	4,680	4,408	4,843
Malaysia	80	90	95	100	1,385	1,475	1,530
Mexico	22,350	23,600	25,000	22,500	181	178	185
New Zealand	172	172	172	172	–	–	–
Peru	1,400	1,546	1,600	1,655	1,680	1,920	1,270
Philippines	6,231	7,277	6,846	6,850	9,775	10,479	10,753
Taiwan	37	37	37	79	1,100	955	1,042
Thailand	3,800	3,850	4,200	4,250	18,250	19,300	19,400
United States	267,503	331,177	307,386	324,144	6,267	6,344	6,515
Vietnam	4,251	4,600	4,530	4,800	22,922	24,375	23,706
PECC	477,976	548,690	538,942	550,498	238,926	246,672	252,662
WORLD	712,334	791,877	789,560	796,333	420,674	433,393	444,853
INDEX 2006/07 = 100	CORN				RICE (milled)		
Australia	100	161	167	167	100	12	40
Canada	100	130	118	115	–	–	–
Chile	100	90	89	91	100	110	114
China	100	100	109	107	100	102	106
Colombia	100	108	107	122	100	103	131
Ecuador	100	110	110	112	100	120	101
Indonesia	100	108	111	115	100	105	108
Japan	100	100	100	100	100	102	103
Korea, South	100	129	145	134	100	94	103
Malaysia	100	113	119	125	100	106	110
Mexico	100	106	112	101	100	98	102
New Zealand	100	100	100	100	–	–	–
Peru	100	110	114	118	100	114	76
Philippines	100	117	110	110	100	107	110
Taiwan	100	100	100	214	100	87	95
Thailand	100	101	111	112	100	106	106
United States	100	124	115	121	100	101	104
Vietnam	100	108	107	113	100	106	103
PECC	100	115	113	115	100	103	106
WORLD	100	111	111	112	100	103	106

– = zero or negligible.

Source: USDA

	WHEAT				TOTAL GRAIN			
2009/10	2006/07	2007/08	2008/09	2009/10	2006/07	2007/08	2008/09	2009/10
70	10,822	13,838	21,500	23,000	11,225	14,244	21,966	23,470
–	25,265	20,054	28,610	22,500	34,255	31,703	39,210	32,800
102	1,100	1,238	1,145	1,450	2,681	2,681	2,572	2,927
135,100	108,466	109,298	112,500	114,500	387,266	391,448	412,730	412,100
1,620	32	37	30	42	2,971	3,145	3,515	3,537
871	3	9	8	9	1,126	1,317	1,170	1,290
37,600	–	–	–	–	43,150	45,500	47,000	46,600
7,710	837	910	882	843	8,624	8,841	8,912	8,554
4,500	6	8	10	25	4,751	4,500	4,947	4,612
1,575	–	–	–	–	1,465	1,565	1,625	1,675
243	3,240	3,593	4,000	4,300	25,771	27,371	29,185	27,043
–	277	277	277	277	449	449	449	449
1,685	175	179	182	185	3,255	3,645	3,052	3,525
10,710	–	–	–	–	16,006	17,756	17,599	17,560
1,089	0	0	0	0	1,137	992	1,079	1,168
20,000	–	–	–	–	22,050	23,150	23,600	24,250
6,753	49,217	55,821	68,026	59,428	322,987	393,342	381,927	390,325
23,795	–	–	–	–	27,173	28,975	28,236	28,595
253,423	199,440	205,262	237,170	226,559	916,342	1,000,624	1,028,774	1,030,480
433,462	595,620	610,951	682,399	659,293	1,728,628	1,836,221	1,916,812	1,889,088
	WHEAT				TOTAL GRAIN			
43	100	128	199	213	100	127	196	209
–	100	79	113	89	100	93	114	96
144	100	113	104	132	100	100	96	109
106	100	101	104	106	100	101	107	106
115	100	116	94	131	100	106	118	119
115	100	300	267	300	100	117	104	115
107	–	–	–	–	100	105	109	108
99	100	109	105	101	100	103	103	99
96	100	133	167	417	100	95	104	97
114	–	–	–	–	100	107	111	114
134	100	111	123	133	100	106	113	105
–	100	100	100	100	100	100	100	100
100	100	102	104	106	100	112	94	108
110	–	–	–	–	100	111	110	110
99	–	–	–	–	100	87	95	103
110	–	–	–	–	100	105	107	110
108	100	113	138	121	100	122	118	121
104	0	0	0	0	100	107	104	105
106	100	103	119	114	100	109	112	112
103	100	103	115	111	100	106	111	109

**Figure 11 Precursors to the Global Financial Crisis:
Low Interest Rates and a Housing Bubble in the United States**



Source: Federal Reserve of St. Louis, <http://research.stlouisfed.org/fred2/>; updated through July 2009

consumer prices. Some of the regional increase resulted from Australia's getting back on track after two drought-reduced wheat harvests in 2006 and 2007, but China, the United States, and Mexico all registered sizable gains in grain production in 2008 (Table 1).

The economic crisis also brought about significant weakening of demand from slower or negative income growth, compounded by higher unemployment rates. Every economy in the PECC region in 2009 except Australia, China, Indonesia and Vietnam contracted.

But despite recession and increased supplies, food prices were still higher in the first half of 2009 than before the run up in prices in 2007-08. The higher-than-pre-spike levels

may have been caused by demand to restock granaries above the low levels of 2006-07 for commercial operations as well as by government efforts to bolster aid and other safety net programs to feed the poor and unemployed. Global stock levels for major grains are now above recent very-low levels. Another factor may be the continued demand for corn and other feedstocks for biofuel production, driven by U.S. and EU programs. Since the U.S. mandate calls for an expanding volume of ethanol to be blended with gasoline, ethanol use has been shielded from the effects of the recession. In 2009, U.S. corn used for ethanol is forecast to rise 15 percent to 107 million tons. The combination of expanding ethanol use and contracting gasoline demand has raised ethanol's

share of gasoline to more than 7 percent.

Additionally, the value of the dollar appreciated from April 2008 to February 2009 but has since weakened. This has made the cost of grain and other commodities less expensive in foreign currency, thus boosting demand.

Food System Impacts

Price volatility in the food system has broad and variable impacts. The price of food affects everyone, but in different ways depending on income levels and whether the food is a staple or a luxury item. The impacts are greatest on the poorer segments of society.

The extent to which high or low, and volatile, international prices are passed through to consumers depends on the com-

ANATOMY OF THE FINANCIAL CRISIS

The current financial crisis originated in the United States starting in the early 2000s, aided by the inflow of low-cost foreign capital, and later spread around the world.

From 2000 to 2004, macroeconomic imbalances led to a flow of capital from over-saving and under-consuming countries such as China, Japan and Germany to under-saving and over-consuming countries such as the United States and Great Britain. The imbalances were reflected in differences in savings rates and trade balances. In the case of the United States, U.S. interest rates declined to low levels (Figure 11). Since U.S. real estate is usually purchased with borrowed capital, low interest rates spurred demand for housing and led to expansion in construction and rising home prices. Low interest rates also stimulated business investment and other consumption (Liefert, 2009). Rising stock and real estate values made consumers feel wealthy and willing to spend more.

When the U.S. Federal Reserve began to raise interest rates in 2004 because of inflation fears, U.S. real estate sales began to slow, peaking in 2005 and then declining rapidly. The decline in the real estate sector eventually took the financial sector down with it because of its large stake in mortgage-backed securities. The U.S. stock market hit its peak at the end of 2007, after which it began to decline slowly and then more sharply toward the end of 2008.

When the value of stocks and real estate dropped, people felt poorer and responded by spending less and saving more. U.S. consumers alone lost \$13 trillion in wealth in 2008. Banks likewise became reluctant to lend in a recessionary market, freezing credit because of the uncertainty about borrowers' credit worthiness. Financial innovation during the 2000s aggravated the credit freeze. Because many of the new financial products were complicated and opaque, lenders had difficulty assessing their value and, thereby, the solvency of the holders of these assets. High oil prices earlier in the year also had a negative effect on spending and economic growth. This and the credit crisis drove economies around the world into recession, having broad impacts across economic sectors, including the food system. The biggest food system impacts were in low-income countries where food accounts for a large share of the consumer budget.

The caution of consumers and banks motivated governments to try to stimulate or maintain consumption by cutting taxes, covering state and provincial budget shortfalls, and spending on infrastructure and other projects. Central banks injected liquidity into the banking system to support the financial sector and reduce credit risk. Government programs around the region have probably helped to slow the economic decline and spur the incipient stages of recovery. And countries such as the United States and China started a process of correcting the economic imbalances that led to the crisis. China's current account surplus dropped from 11 percent of GDP in 2007 to about 5 percent in 2009. The U.S. savings rate has risen to more than 5 percent in 2009, up from near 0 in 2008, and its current account deficit has declined from 5 percent of GDP in 2008 to 3 percent in 2009.

There is evidence that markets now are improving: consumer confidence is better, oil prices and other agricultural commodity prices are up somewhat but still much lower than in mid-2008, interest rates are low, and stock markets have rebounded from lows of March 2009. On the other hand, incomes are shrinking or growing slowly and unemployment rates are at high levels in most of the PECC region.

modity and the policy environment. During 2007-08, when international grain prices rose sharply, consumer prices in many developing countries rose less: 7.8 percent for wheat, 11 percent for bread, 12.2 percent for wheat flour, 24.3 percent for rice, and 35.9 percent for corn, according to data from FAO's Global Information and Early Warning System (GIEWS) (Headey, 2009). These compared with a 73 percent increase in the world

corn price, 134 percent increase in the world rice price, and a 56 percent increase in the world wheat price between June 2007 and June 2008 (World Bank).

The explanation for this disparity depends in part on the nature of the commodity. In developed markets, the price of wheat, regardless of whether it is an international or national price, has little impact on the price of bread or noodles, since the agricultural raw material only accounts for a

relatively small share of the retail price. On the other hand, the consumer price of less-processed rice is likely more similar to the international grain price if there are no policies or other factors insulating the market. This was the case of consumer rice prices in the rice-exporting countries of Vietnam and Thailand (Figure 10).

Another explanation for more modest food price increases is protective policies designed to keep food prices low and stable and

to restrain price increases. This is particularly the case for food staples such as rice, on an ongoing basis in East Asian countries, and corn, on a more intermittent basis in Mexico. The government of Mexico and many of the main tortilla producing companies, for example, agreed to cap tortilla prices in early 2007 to protect the poorest consumers after U.S. corn prices doubled in late 2006.

Policymakers have good reason to be concerned about rising food prices. When significant price increases are passed through to a country's market, social unrest

above 2003-05 averages, with much of the increase attributed to high food prices (FAO, 2008). According to the U.S. Department of Agriculture, the growth in the number of food-insecure people in developing countries, slowed to 2 percent in 2009. Despite a sharp decline in food commodity prices in late 2008, financial deficits and higher inflation may also have played a role in the continued increase in the number of food-insecure people (Shapouri et al, 2009). The greatest concentration of food-insecure people, however,

with large rural populations, such as China (55 percent), Indonesia (46 percent), Thailand (66 percent), and Vietnam (71 percent). Based on World Bank estimates, a 10 percent increase in food prices and non-food cash crops led to a decline in poverty in Vietnam because of the large number of relatively poor farmers who are net sellers of food (Lin and Martin, 2009). This is the only such case among the seven countries analyzed; the dominant result for the other countries is that high food prices lead to higher rates of urban and

While it is critical for governments to protect the most vulnerable, it is also important to avoid such “beggar thy neighbor” policies as occurred in the global rice market in 2007-08.

may sometimes ensue. More than 30 countries in 2008, mostly outside of the PECC region, in Africa and Latin America, reported demonstrations or riots related to high food prices. These were primarily in countries that were net importers of key staple commodities. Five people died in food riots in early 2008 in Haiti, a net importer of rice, leading to the ouster of its prime minister. In the Philippines, the world's largest rice importer, the government ordered the population not to hoard rice or convert farm land for housing or golf courses. It also required fast-food outlets to reduce the size of rice servings (Catelo, 2009).

Higher food prices may have raised global poverty rates. According to FAO estimates, the number of chronically hungry people rose to 923 million in 2008, almost 9 percent

is outside the PECC region in South Asia and Africa.

Another complicating factor is the extent to which a country is urbanized. Food price increases have their greatest impact on the urban poor who are more dependent on a money-based economy and spend large shares of their household budget on food. Price increases can lead to the deterioration of diets or crowd out purchases of other goods and services, which may have adverse nutritional implications (IFPRI, 2008). The rural poor may have greater access to food through familial relationships or the capacity to produce their own. The net effect depends on the extent to which they are net sellers of food. Where this is the case, they are positively affected by high prices. This is most likely to occur in countries

rural poverty. The poverty rate impacts of the financial crisis and lower food prices vary depending on regional circumstances, with lower food prices offsetting to some extent the effects of reduced incomes and remittance flows and higher unemployment. Reduced government revenues have forced cut backs in safety net programs and increased risk premia reduced capital flows to developing countries in 2007-08 (Ivanic and Martin, 2009). A number of governments in the PECC region have initiated economic stimulus programs to offset these forces. Those announced by China, Thailand, and the Philippines, and Vietnam place a significant emphasis on infrastructure development that could have direct longer-term benefits for the region's food system.

An impact of the economic crisis from negative or slow income growth and high unemployment is reverse rural-urban migration. In the 1997-99 Asia financial crisis and in this current situation, some urban unemployed returned to rural areas where they still had family ties and where prospects for subsistence were better in the short run. Data from past economic crises suggest that the agricultural sector is more resilient in the face of economic crises; agriculture income growth is less adversely affected than income growth in the non-agriculture sector. In most of the countries hardest hit by the Asian financial crisis, for example, agriculture-sector income declined less than the non-agriculture sector. In the case of the 1994 peso crisis, Mexico's agricultural sector actually grew almost 2 percent, spurred by export demand, while its non-agricultural sector declined almost 8 percent (Headey, 2009). A key difference this time is that the economic crisis has spread around the world, reducing trade opportunities in practically all countries. The better performance of Mexico's agriculture in 1994 depended on a robust U.S. economy and the continued flow of remittances to Mexico, including to rural areas.

Policy Implications

The recent food price volatility, accompanied by the world economic and financial crisis, has created challenges for the PECC food system and those producing, processing, and marketing food and agricultural products. Leaders in the private sector and policymakers in government

have a significant role to play in what may be a new era of greater price instability in the food and agricultural sectors. When we review the upswing in prices and the causes involved, the ensuing downturn, and the impacts on the food system, a number of important points become apparent.

■ While it is critical for governments to protect the most vulnerable, it is also important to avoid such “beggar thy neighbor” policies as occurred in the global rice market in 2007-08. Even though the global rice market was fundamentally sound, some governments imposed export restraints to meet certain parochial objectives, and others engaged in speculative buying, both to the detriment of many. Where export restraints were imposed, consumers faced low and stable prices. Producers did not benefit from the higher prices and thus received muted price signals to expand production. In net-importing countries, consumers had to pay higher prices and lost trust in foreign suppliers. Some countries now are pursuing inward-looking rice and other food policies as a number of countries have done for many years.

There is little evidence of market failure in world commodity markets. Prices have performed their role, signaling when demand has increased, when stocks have declined, and where shortfalls have occurred. Interventions that supplant market signals could undermine incentives for farms and firms to invest in the research, infrastructure, and other activities necessary to increase productivity and returns to the

sector over the longer term. Many emerging and transition economies have already learned that efforts that distort market incentives can lead to unintended consequences.

The PECC community has the opportunity to be vocal about the consequences of interventionist policies and to continue to promote the advantages of an open food system. APEC could reinvigorate its Open Food System initiative (See box, page 22).

■ Since poor people are the ones hardest hit by high food prices, particularly people who are net buyers of food, policies are needed to reduce their vulnerabilities in the short run, through safety net programs, and to raise their incomes in the long term. Since some countries may not have the resources, safety net programs may require broad regional support in order to avoid the short-term use of border measures to restrain food price inflation, as was seen in the case of rice. For the longer term, governments must pursue pro-growth policies; resulting higher incomes for the poor will reduce their vulnerability and enhance their capacity to adjust to high and volatile food prices.

■ Much has been made about the role of biofuels in this high-price and volatile era of the late 2000s. While there is no question that expansion of biofuels is one of the most significant developments in global agriculture in the last decade, its impact on the volatility and high level of agricultural prices may be overstated. Although biofuel expansion was rapid, it rose from a very small base. This new demand for agricultural commodities is still substantially less

APEC'S OPEN FOOD SYSTEM

An initiative of rising significance in APEC is the Open Food System (OFS), which focuses on the importance of both trade liberalization and rural development to agricultural economies throughout the region. OFS was initially proposed in 1998 by APEC's Business Advisory Council to tailor the economic precepts of open regionalism to the specific dynamics of agriculture and food supply. Endorsement of OFS followed in 1999 when APEC leaders met in Auckland.

Central to OFS is the view that trade liberalization will provide consumers with a lower cost, more secure supply of food. But eliminating impediments to trade is merely one goal of a broad-based agenda for food systems. OFS also aspires to optimize the gains from trade liberalization by developing rural sectors throughout the region with government/private sector cooperation. The following are key OFS objectives.

Trade liberalization. The OFS initiative accepts APEC's backing for trade liberalization, under the original Bogor Declaration. The initiative assumes that trade impediments in food products distort the allocation of land, water, labor, and capital resources in an era when efficient resource allocation is urgently needed. It makes little sense, for example, for an economy with scarce land and water resources to export land- and water-intensive food products.

Food security. With the intent of achieving trade liberalization, OFS requires assurances that restrictions on food exports are not imposed except in the most dire of circumstances. If markets are to be open, exporters must expect greater access to import markets, and, equally, importers must expect free access to export supplies.

Rural development. OFS addresses not only trade liberalization itself but also its socioeconomic effects. While trade liberalization tends to increase agricultural productivity, thus stimulating output growth, it also reduces the labor input required per unit of production. Economic opportunities must be created in rural areas to stem outmigration to already densely populated cities in the regions. More than half of the world's cities with populations greater than 10 million are located in APEC member countries.

Creating economic opportunities in rural areas requires:

- investment in infrastructure;
- rural education and health care comparable to that in urban areas;
- partnerships between government and private-sector agents to attract investments into rural areas and thus create greater off-farm employment opportunities;
- realistic rural development plans that can be funded and executed by the private sector in conjunction with the World Bank, Asian Development Bank, and Inter-American Development Bank.

Technology diffusion: OFS aims to cultivate a "food technology culture," which will facilitate the diffusion of useful recent developments in food production, storage, shipping, packaging, and processing. Improved access to technology is expected to accelerate gains in productivity through information technology and biotechnology, spurring growth in those economies that are less developed and thus contributing to faster and more balanced economic growth across all of the region's economies.

than for feed or for direct food use. The future of biofuels will depend on:

- Profitability, which in turn depends on the prices of biofuels and feedstocks. The latter accounts for a large share of biofuel cost of production. Margins have been squeezed as feedstock prices and energy

prices have become more highly correlated.

- Resolution of policy concerns about environmental and food-price impacts.
- Success of technology in reducing costs of production both for first-generation biofuels and for commercializing the conversion of cellulosic biomass.

Profitably converting agricultural commodities to biofuels and other new products will increase the returns to agriculture and other primary industries. Over the longer term, commercially viable biofuel production could help to keep more resources in the primary sector than would otherwise be the case.

This would improve the capacity for the region to deal with food scarcity issues in the future, rather than undermine it.

■ Have we entered a new era of volatility and high agricultural commodity prices? Making projections requires a healthy skepticism about claims that watershed levels have been reached or that long-standing trends are now reversing. That is not to say that these changes do not occur; they most certainly do. But in making projections, caution must be exercised in adopting assumptions about the continuation into the future of recently occurring or emerging phenomena, such as the commodity price volatility that we have seen in the late 2000s. Will supply and demand factors keep prices relatively high and volatile, or will real prices continue on a long-term downward trajectory?

There are two factors that may help to keep agricultural prices relatively high in the longer term:

- Demographic shifts and the growing affluence of emerging and transition economies such as Brazil, Russia, India, China, and the ASEAN are leading to fundamental shifts in food demand and supply relationships worldwide.
- Likely sustained high and rising energy prices are an issue creating challenges and opportunities for resource-based industries such as agriculture. Increased integration of fuel, fiber, feed, and food markets contributed to a possibly new price plateau in world commodity markets.

However, other factors could increase food system productivity and reduce prices:

- Creation of more efficient supply chains that reduce post-harvest losses and food spoilage.
- Development of higher yielding crops and livestock production and more efficient input use.
- Adoption of less resource-intensive diets.

In the end, the policies put in place now will influence the extent of price volatility for agricultural commodities and food in coming years. Regional and international cooperation will be necessary to avoid undesirable actions by individual countries in times of crop shortfalls or other factors affecting commodity and food price stability. PECC can play an important role in stimulating dialogue and development of plans to collaborate with other countries within the PECC region and internationally on policies to benefit everyone.

ABBREVIATIONS USED IN THE PACIFIC FOOD SYSTEM OUTLOOK

APEC– Asia Pacific Economic Cooperation
ASEAN– Association of Southeast Asian Nations
CO₂– Carbon dioxide
EU– European Union
FAO– Food and Agriculture Organization
GDP– Gross domestic product
GHG– Greenhouse gas
GIEWS– FAO’s Global Information and Early Warning System

IFPRI– International Food Policy Research Institute
IMF– International Monetary Fund
NIS– Newly Independent States
MTBE– Methyl tertiary butyl ether
OFS– Open Food System
PECC– Pacific Economic Cooperation Council
PFSO– Pacific Food System Outlook
USDA– U.S. Department of Agriculture

REFERENCES

- Abbott, Philip (2009). "Development Dimensions of High Food Prices." Unpublished paper. Purdue University. May.
- Abbott, Philip C., Christopher Hurt, and Wallace E. Tyner (2008). *What's Driving Food Prices?* Farm Foundation. July.
- Baier, Scott, Mark Clements, Charles Griffiths, and Jane Ihrig (2009). "Biofuels Impact on Crop and Food Prices: Using an Interactive Spreadsheet." Number 967. International Finance Discussion Paper. Board of Governors of the Federal Reserve System, March.
- Catelo, Salvador (2009). "Understanding the Causes of Recent Price Volatility: The Case of the Rice Sector in the Philippines." Presentation at 13th annual Pacific Food System Outlook meeting, Washington, D.C., May 14.
- Chang, Ching-Cheng (2009). "Market Volatility and the Food System: Chinese Taipei Report." Presentation at 13th annual Pacific Food System Outlook meeting, Washington, D.C., May 14.
- Childs, Nathan, and James Kiawu (2009). *Factors Behind the Rise in Global Rice Prices in 2008*. RCS-09D-01. Washington, D.C.: Economic Research Service, USDA, May.
- Dieu, Pham Quang (2009a). "Market Volatility and the Food System: The Case of Vietnam." Presentation at 13th annual Pacific Food System Outlook meeting, Washington, D.C., May 14.
- Dieu, Pham Quang (2009b). Personal communication. September 28.
- Ellinger, Paul (2009). "Financial Crisis and Access to Credit for Agriculture." Presentation at 13th annual Pacific Food System Outlook meeting, Washington, D.C., May 13.
- Eor, Myong Keun (2009). "Market Volatility and Food System: Korean Experiences and Implications." Presentation at 13th annual Pacific Food System Outlook meeting, Washington, D.C., May 13.
- FAO. FAOSTAT. <http://faostat.fao.org/site/452/default.aspx>
- FAO (2008). *The State of Food Insecurity in the World 2008*. Rome, Italy.
- Fuglie, Keith (2008). "Is a Slowdown in Agricultural Productivity Growth Contributing to the Rise in Commodity Prices?" *Agricultural Economics*, 39 supplement: 431-441.
- Gale, Fred (2009). Personal communication. September 3.
- Gilmour, Brad, Pierre Charlebois, and Bruce Phillips (2009). "Market Volatility and the Food System: A Canadian Perspective." Presentation at 13th annual Pacific Food System Outlook meeting, Washington, D.C., May 14.
- Gooday, Peter (2009). "Australian Food." Presentation at 13th annual Pacific Food System Outlook meeting, Washington, D.C., May 14.
- Headey, Derek, Sangeetha Malaiyandi, and Shenggen Fan (2009). "Navigating the Perfect Storm: Reflections on the Food, Energy, and Financial Crises." Invited paper for presentation at the International Association of Agricultural Economists' 2009 Conference, Beijing, China, August 16-22.
- Henderson, David (2009). "Did the Fed Cause the Housing Bubble? Don't Blame Greenspan." *Wall Street Journal*, March 27.
- Hu, Dinghuan (2009). "Market Volatility and the Food System in China." Presentation at 13th annual Pacific Food System Outlook meeting, Washington, D.C., May 14.
- International Food Policy Research Institute (IFPRI) (2008). "High Food Prices: The What, Who, and How of Proposed Policy Actions." Policy Brief. Washington D.C., May.

- Ivanic, Maros and Will Martin (2009). "Financial Crisis and Vulnerability in Developing Countries." Working paper. Washington, D.C.: The World Bank, August.
- Koyama, Osamu (2009a). "Market Volatility and the Food System: Country Presentation, Japan." Presentation at 13th annual Pacific Food System Outlook meeting, Washington, D.C., May 14.
- Koyama, Osamu (2009b). Personal communication. September 3.
- Liefert, William M. (2009). "The World Economic Crisis and Agriculture: Effects on Production, Consumption, and Trade." Presentation at 13th annual Pacific Food System Outlook meeting, Washington, D.C., May 13.
- Liefert, William M., and Mathew Shane (2009). "The World Economic Crisis and U.S. Agriculture: From Boom to Gloom?" *Choices*, 24(1): 22-26.
- Lin, Justin Yifu, and Will Martin (2009). "The Financial Crisis and Its Impact on the Global Agricultural Landscape." Invited paper for presentation at the International Association of Agricultural Economists' 2009 Conference, Beijing, China, August 16-22.
- Lustig, Nora (2009). Coping with Rising Food Prices: Policy Dilemmas in the Developing World. Working Paper Number 164. Washington, D.C.: Center for Global Development, March.
- Muchnik, Eugenia (2009). "Market Volatility and the Food System: Chile." Presentation at 13th annual Pacific Food System Outlook meeting, Washington, D.C., May 14.
- Natawidjaja, Ronnie S. (2009). "The World Economic Crisis and the Food System: Impact on Poverty, Food Security, and Rural Prosperity in Indonesia." Presentation at 13th annual Pacific Food System Outlook meeting, Washington, D.C., May 14.
- Oster, Shai (2008). "China Fears Restive Migrants As Jobs Disappear in Cities," *Wall Street Journal*, December 2.
- Posner, Richard A. (2009). "Capitalism in Crisis," *Wall Street Journal*, May 7.
- Prasad, Eswar and Isaac Sorkin (2009). "Assessing the G-20 Economic Stimulus Plans: A Deeper Look." Washington, D.C.: Brookings Institution, March.
- Saunders, Caroline, William Kaye-Blake, and Selim Cagatay (2009). "Analyzing Drivers of World Food Prices: Weather, Growth, and Biofuels." Contributed paper for presentation at the International Association of Agricultural Economists' 2009 Conference, Beijing, China, August 16-22.
- Shapouri, Shahla, Stacey Rosen, Birgit Meade, and Fred Gale (2009). *Food Security Assessment, 2008-09*. GFA-20. Washington, D.C.: Economic Research Service, USDA, June.
- Slayton, Tom (2009). "Rice Crisis Forensics: How Asian Governments Carelessly Set the World Rice Market on Fire." Working Paper Number 163. Washington, D.C.: Center for Global Development, March.
- Taylor, John B. (2009). "How Government Created the Financial Crisis." *Wall Street Journal*, Feb. 9.
- Tokrisna, Ruangrai (2009). "Market Volatility and the Food System: Thailand." Presentation at 13th annual Pacific Food System Outlook meeting, Washington, D.C., May 14.
- Trostle, Ron (2008). Global Agricultural Supply and Demand: Factors Contributing to the Recent Increase in Food Commodity Prices (revised). WRS-081. Washington, D.C.: Economic Research Service, USDA, July.
- USDA (2009). World Agricultural Supply and Demand Estimates. August.
- World Bank. Commodity Price Data. Various months.
- Yu, Tun-Hsiang, Simla Tokgoz, Eric Wailes and Ed Chavez (2009). "A Quantitative Analysis of Trade Policy Responses to High Agricultural Commodity Prices." Contributed paper for presentation at the International Association of Agricultural Economists' 2009 Conference, Beijing, China, August 16-22.

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PACIFIC ECONOMIC COOPERATION COUNCIL

Overview

The Pacific Economic Cooperation Council (PECC) is an independent, multi-stakeholder organization committed to the promotion of cooperation and dialogue in the Asia Pacific. Founded in 1980, the PECC is a network of member committees composed of individuals and institutions dedicated to this mission. The Council is one of the three official observers of the APEC process.

Membership

Currently PECC has a total of 26 members representing the economies of Australia, Brunei Darussalam, Canada, Chile, China, Colombia, Ecuador, Hong Kong, China, Indonesia, Japan, Korea, Malaysia, Mexico, Mongolia, New Zealand, the Pacific Islands Forum, Peru, the Philippines, Singapore, Chinese Taipei, Thailand, the United States, Vietnam, and French Pacific Territories and institutional members: the Pacific Trade and Development conference (PAFTAD) and Pacific Basin Economic Council (PBEC).

Member Committees comprise representatives from business, government, academic, media, and civil society who initiate and/or participate in the PECC work program while undertaking their own activities to promote Asia Pacific cooperation in their respective economies.

Governance

PECC's governing body is the Standing Committee, which con-



sists of the chairs of each Member Committee. The Standing Committee meets once a year. Day-to-day operations are managed by PECC's International Secretariat in Singapore.

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PECC signature projects are decided on by the Standing Committee and undertaken by its Member Committees. In addition, PECC's Member Committees also



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GETTING TUGGED UP A THAI RIVER.

The *Pacific Food System Outlook* represents the first regionwide coordinated effort to provide the outlook for the Pacific food system. The food system includes not just production agriculture, but also the whole complex of economic relationships and linkages that tie the region's food consumers to producers. The goal of the *Pacific Food System Outlook* is to help increase knowledge about the diverse components of this vital segment of the global economy.

