

Managing Commodity Price Volatility and Inflation in Emerging East Asia

Since late 2009, headline inflation has been edging up in emerging East Asia, driven by strong economic growth and rising food and energy prices.

As emerging East Asian economies recovered quickly from the global crisis, both headline and core inflation started to rise (**Figure 68**).⁷ Yet, from mid-2010, as prices of commodities accelerated, headline inflation rose much faster than core inflation. From early 2010, authorities began to unwind the stimulus adopted in response to the global crisis. However, it has been more difficult to determine the appropriate monetary policy response because the higher inflation came mainly from commodity prices. Traditionally, central banks have been reluctant to tighten monetary policy when this happens. In addition, because higher commodity prices can reduce aggregate demand in net commodity-importing countries, authorities may worry that tightening monetary policy could excessively weaken growth.

Monetary authorities tend not to respond systematically to commodity-based surges in headline inflation.

In recent years, headline inflation increased to relatively high rates in the region without eliciting very large monetary policy responses. This was especially true during much of 2008 and in 2011, when surging commodity prices contributed to sharp increases in headline inflation—but did not impact core inflation, which authorities normally use when setting targets or adjusting policy. Thus, many central banks did not aggressively tighten monetary policy. However, the recent upturn in inflation in the region is increasingly driven by underlying demand pressures as output gaps close, as well as surging commodity prices. As a result, both core and headline inflation have been rising.

How can emerging East Asia respond to inflation driven by surging commodity prices?

The importance of this question is related not only to the recent sharp increases in commodity-based inflation

across the region, but also to the possibility that the global economy may be entering a “new normal” of large and sustained increases in commodity prices relative to manufactured goods and services. This special section examines potential monetary policy responses to commodity-price inflation. As monetary policy influences the overall inflation rate in the long run—and cannot deal with the sources or real consequences of relative commodity price hikes—the section also looks at how fiscal, financial, and structural policies can help manage large, rapid changes in commodity prices.

This section answers four questions:

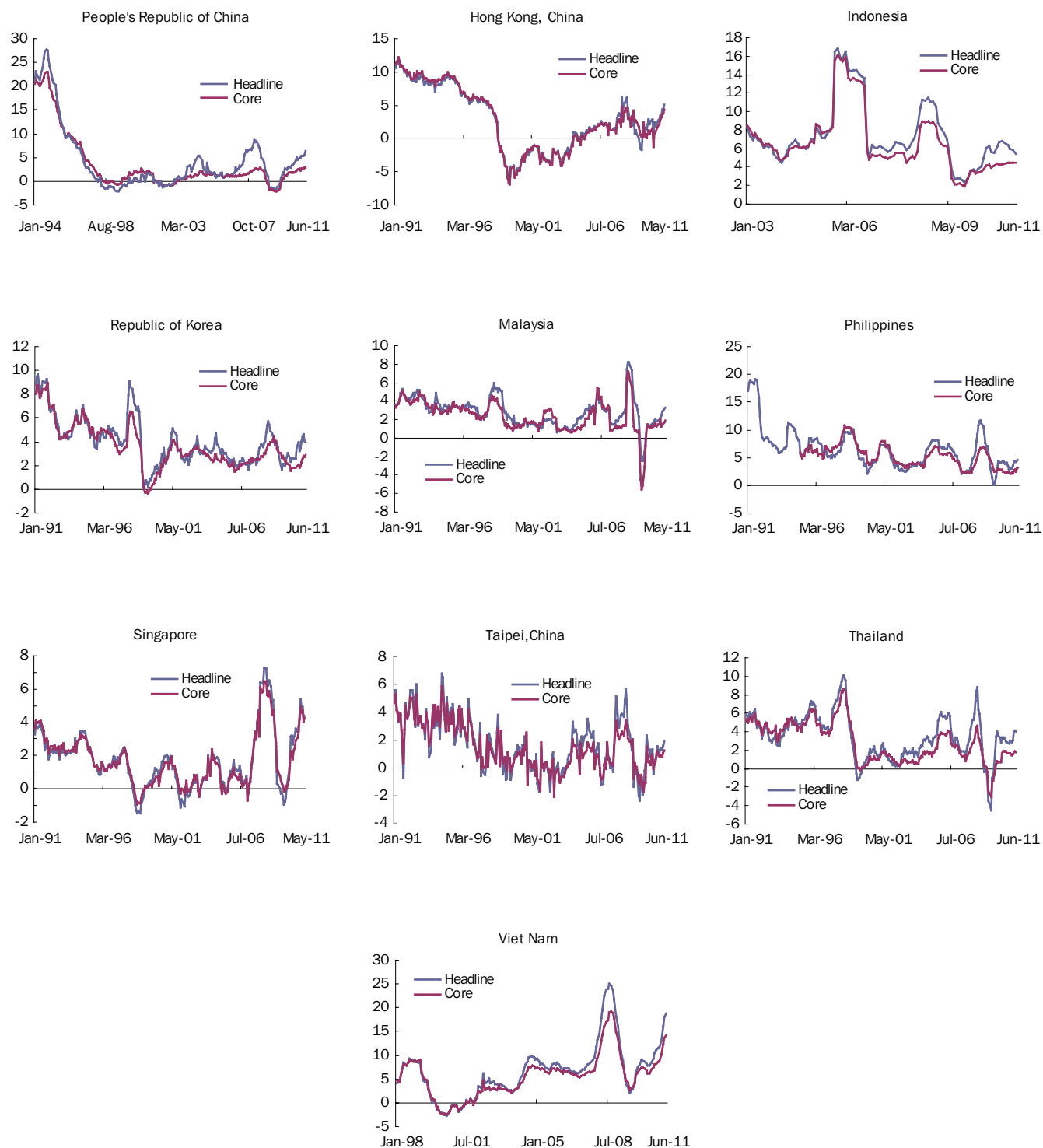
- 1) What is behind current inflation in the region—and are underlying inflationary pressures rising?
- 2) Should monetary policy respond to commodity-driven inflation?
- 3) What are the longer-term global trends for commodity prices?
- 4) How might monetary and other policies manage commodity price volatility and inflation?

Are Underlying Inflationary Pressures Rising in Emerging East Asia?

Over the past 12 months, headline inflation has trended upward despite some moderation since the second quarter.

Although not reaching the very high 2008 rates, inflation across the region has already surpassed several targets or objectives. Headline inflation moderated somewhat in the second quarter of 2011 (see Figures 14a, 14b, 14c), or is expected to peak in several economies as commodity prices began weakening in May. Although headline inflation in the region ranges from about 3%–6% on average, there are significant exceptions. Most notably, Viet Nam’s headline inflation increased sharply during the last 12 months, reaching 20% by end-June.

⁷In this section, headline inflation refers to the overall inflation rate as measured by consumer price indexes (CPIs). Core inflation refers to an inflation measure that excludes volatile food and energy prices, and is sometimes also referred to as underlying inflation.

Figure 68: Long-term Headline and Core¹ Inflation—Emerging East Asia (y-o-y, %)


y-o-y = year-on-year.

¹Excluding food and energy. Food excludes beverages and meals consumed outside home except for the People's Republic of China. Energy refers to household facility (People's Republic of China); household electricity, gas, and other fuels, and fuel for transport equipment (Hong Kong, China; Republic of Korea; Malaysia; and Philippines); household fuel, electricity, and water (Indonesia); household fuel and utilities, and fuel for private transport (Singapore); household water, electricity, and gas supply, and oil for transport equipment (Taipei, China); and household and construction materials (Viet Nam).

Source: OREI staff calculations based on data from CEIC and national sources.

The sharp increases in commodity prices—especially food and energy—account for most of the rising inflation in the region.

Core inflation⁸—which strips out rapidly increasing and volatile food and energy prices—has also been increasing in much of the region following a relatively stable period. Core rates are especially large in Hong Kong, China and Indonesia, while they have remained relatively low in Taipei, China (see Figure 68). It has been trending up in ASEAN—close to 15% in Viet Nam.

On average, headline inflation tends to be above core inflation in most of the region's economies.

The descriptive statistics for headline inflation, core inflation, and food and energy inflation show that, in most economies, headline inflation has been higher than core inflation (**Table 13**). However, in some economies headline inflation fell slightly below core inflation during the global crisis in late 2008 and early 2009—when commodity prices plunged. Although the difference between headline and core inflation was generally small, the gap between the two widened sharply through much of 2008 (until the crisis hit) and during 2010/11. Over the entire sample period, and by decade, food and energy inflation has been slightly positive, on average, in many economies.

Food and energy inflation is generally more volatile than core inflation.

Across the region, as measured by the coefficient of variation, food and energy inflation is generally more volatile than core inflation. But the difference is not very large on average. In several economies, there is considerable volatility in core inflation—even without relatively volatile food and energy prices—which may be due to changing real estate rentals and exchange rates. Volatility of food and energy inflation has been somewhat higher since 2000 than in the 1990s.

The upward trend in the region's core inflation comes from demand pressures and possible increased spillover from rising food and energy prices.

Due to the region's V-shaped recovery from the 2008/09 slowdown, output gaps in the region have largely closed (see Table 3). In several economies—including the PRC—labor markets have tightened and wage growth accelerated. Moreover, demand pressure is increasing the risk of higher food and energy prices spilling over into core inflation, threatening a vicious wage-price spiral. There is also the risk that rising inflation pushes up inflationary expectations.

The region has responded to rising headline and core inflation by normalizing macroeconomic policy and adopting a variety of administrative measures.

Central banks in the region have continued to normalize fiscal and monetary policies, with fiscal stimulus being unwound and policy rates raised. Exchange rates have been allowed to appreciate to mitigate imported inflation. Some economies have also used a variety of administrative or tax-related measures to help cushion the effects of surges in commodity prices on domestic inflation (see Table 11). However, in these cases, underlying inflationary pressures may be even stronger than implied by the upward trend in inflation rates as demand pressures are not reflected in prices.

Should Monetary Policy Respond To Commodity-Driven Inflation?

In general, central banks have been reluctant to tighten monetary policy when inflation results mainly from commodity prices.

Many central banks in the region (and worldwide) are reluctant to tighten monetary policy when inflation largely emanates from commodity prices, even where inflation targets or objectives are based on headline inflation.⁹ As a result, they have sometimes missed inflation targets or objectives during periods of high

⁸This section uses a consistent measure of core inflation for the major economies in the region. In some cases, its value coincides with official estimates of core inflation. In other cases, they differ due to different official definitions of core inflation.

⁹A. Filardo and H. Genberg. 2010. Targeting Inflation in Asia and the Pacific: Lessons From the Recent Past. *BIS Paper*. No. 52. Switzerland: Bank for International Settlements.

Table 13: Descriptive Statistics¹ of Headline, Core², and Food and Energy Inflation

	People's Republic of China			Hong Kong, China			Republic of Korea			Singapore			Taipei, China		
	Headline	Core	F&E	Headline	Core	F&E	Headline	Core	F&E	Headline	Core	F&E	Headline	Core	F&E
Full series															
Mean	4.3	3.5	5.7	2.8	2.8	3.1	4.0	3.6	5.7	1.7	1.7	2.0	1.7	1.5	2.6
Standard Deviation	6.7	5.9	9.2	4.6	4.8	5.3	2.0	1.9	3.9	1.7	1.6	3.7	1.9	1.7	3.5
Coefficient of Variation	1.6	1.7	1.6	1.6	1.7	1.7	0.5	0.5	0.7	1.0	0.9	1.9	1.1	1.1	1.4
Before 2000															
Mean	8.4	8.3	8.4	6.2	6.5	4.2	5.3	4.8	7.2	1.8	1.8	1.2	2.7	2.7	2.7
Standard Deviation	9.8	8.0	13.3	4.4	4.6	3.5	2.2	2.2	4.6	1.3	1.2	2.4	1.8	1.5	3.3
Coefficient of Variation	1.2	1.0	1.6	0.7	0.7	0.8	0.4	0.5	0.6	0.7	0.7	2.0	0.7	0.6	1.2
After 2000															
Mean	2.1	1.0	4.2	0.2	-0.1	2.2	3.1	2.7	4.6	1.7	1.6	2.5	1.0	0.6	2.4
Standard Deviation	2.4	1.2	5.6	2.7	2.5	6.2	0.9	0.7	2.8	2.0	1.8	4.4	1.6	1.1	3.8
Coefficient of Variation	1.2	1.2	1.3	14.1	-29.4	2.9	0.3	0.3	0.6	1.2	1.1	1.7	1.6	1.8	1.5
	Indonesia			Malaysia			Philippines			Thailand			Viet Nam		
	Headline	Core	F&E	Headline	Core	F&E	Headline	Core	F&E	Headline	Core	F&E	Headline	Core	F&E
Full series															
Mean	7.4	6.7	9.5	2.8	2.4	3.6	6.5	5.2	5.7	3.5	2.9	4.9	6.7	5.6	8.4
Standard Deviation	3.4	3.3	4.6	1.6	1.7	2.1	3.5	2.0	3.2	2.4	2.2	4.0	5.8	4.5	7.7
Coefficient of Variation	0.5	0.5	0.5	0.6	0.7	0.6	0.5	0.4	0.6	0.7	0.8	0.8	0.9	0.8	0.9
Before 2000															
Mean	–	–	–	3.7	3.2	4.4	8.5	7.1	6.5	4.7	4.6	5.0	5.5	5.7	5.2
Standard Deviation	–	–	–	0.9	0.9	1.5	3.7	1.7	2.5	2.2	1.7	3.9	3.4	3.2	3.8
Coefficient of Variation	–	–	–	0.3	0.3	0.3	0.4	0.2	0.4	0.5	0.4	0.8	0.6	0.6	0.7
After 2000															
Mean	7.4	6.7	9.5	2.2	1.7	2.9	4.9	4.4	5.4	2.5	1.5	4.8	7.0	5.6	9.0
Standard Deviation	3.4	3.3	4.6	1.6	1.8	2.3	2.3	1.6	3.4	2.1	1.3	4.0	6.1	4.7	8.1
Coefficient of Variation	0.5	0.5	0.5	0.8	1.1	0.8	0.5	0.4	0.6	0.8	0.9	0.8	0.9	0.8	0.9

F&E = food and energy, – = unavailable.

¹Using year-on-year changes in price levels from Jan 1990 to May 2011, except for the People's Republic of China (Jan 1993–May 2011), Indonesia (Jan 2002–May 2011), Philippines (Jan 1994–May 2011 for core inflation only), and Viet Nam (Jan 1997–May 2011).²Excludes food and energy (see Figure 68 for definitions used for each economy).

Source: OREI staff calculations based on data from CEIC and national sources.

commodity price inflation, which can damage credibility. In other cases, such as Thailand, inflation is targeted on core inflation, thus obviating the need to respond to food and energy inflation.

Five arguments explain why monetary policy traditionally focuses on core rather than headline inflation.

Central banks justify reluctance to systematically tighten monetary policy in response to commodity-based inflation for five reasons: (i) core inflation is better at predicting future inflation; (ii) commodity prices fluctuate moderately; (iii) commodities are only a small part of the consumption basket; (iv) monetary policy is ineffective against commodity price inflation and—if used—its instruments could become unstable; and (v) commodity prices are driven by supply shocks. For the most part, these arguments have their basis in advanced economies. Are these arguments applicable to emerging East Asia?

1. Core inflation is a better predictor of future inflation.

Core inflation has traditionally been the better and more reliable predictor of future price movements

over the time horizons that matter for monetary policy. Unless they are expected to spill over into core inflation, commodity price hikes can be largely ignored by monetary authorities, so tradition dictates. To see if this is true for emerging East Asia, the argument was tested using 36-month moving averages of past values of core and headline inflation to predict headline inflation—12, 24, and 36 months into the future. The test was conducted by the root mean square error (RMSE) statistics from the forecasting exercise, which essentially measures the precision of the forecasts and should ideally be as close to zero as possible. Thus, if core inflation has lower RMSEs than headline inflation, it means core inflation is a better predictor of future inflation.

In emerging East Asia, core inflation predicts future price trends only slightly better than headline inflation.

The results from the estimation were mixed (**Table 14**). The ability of lagged values of core and headline inflation to predict future inflation tends to improve in some economies as the forecast time horizon is extended from 12 months up to 36 months, but declines in other cases. The results also suggest that core inflation seems better than headline inflation as a predictor of future inflation.

Table 14: Root Mean Square Error of Forecasting Headline Inflation¹ Using Core² and Headline Inflation at Different Time Horizons

	12 months		24 months		36 months	
	Core Inflation	Headline Inflation	Core Inflation	Headline Inflation	Core Inflation	Headline Inflation
People's Republic of China	2.2	3.0	2.2	3.1	1.8	2.2
Hong Kong, China	4.7	4.5	5.8	5.6	5.9	5.7
Indonesia	2.4	3.2	1.8	2.4	–	–
Republic of Korea	2.7	3.6	3.0	3.8	2.5	3.4
Malaysia	2.7	3.2	2.5	3.2	2.5	3.0
Philippines	4.5	5.8	4.3	5.9	3.8	5.6
Singapore	2.4	2.6	2.2	2.3	1.7	1.7
Taipei, China	2.0	2.4	2.0	2.3	1.8	2.1
Thailand	3.8	4.7	4.0	4.9	4.0	4.8
Viet Nam	6.4	8.3	5.8	7.8	4.0	4.7

– = unavailable.

¹Using year-on-year changes in price levels from Jan 1990 to May 2011, except for the People's Republic of China (Jan 1993–May 2011), Indonesia (Jan 2002–May 2011), Philippines (Jan 1994–May 2011 for core inflation only), and Viet Nam (Jan 1997–May 2011).

²Excluding food and energy (see notes in Figure 68 for definitions used for each economy).

Source: OREI staff calculations based on data from CEIC and national sources.

This is similar to the results in advanced economies.¹⁰ Overall, however, the results are not as clear-cut as in advanced economies. Headline inflation appears to provide useful information for forecasting future inflation in several economies in the region.

2. Commodity price changes are largely random and have low persistence.

If commodity price inflation is noisy and does not persist, then food and energy inflation measures (that are based on commodity price movements) will also have low persistence, and will not be very useful in understanding inflation trends. Conversely, core inflation measures typically exhibit high persistence as a result of slowly adjusting wages and prices in most economies, and therefore are useful in understanding inflation trends.

Food and energy inflation is clearly persistent in most emerging East Asian economies—and food and energy inflation affects inflation trends.

Autocorrelation functions for food and energy inflation and core inflation over the last two decades measure the degree of persistence in the core, and food and energy components of inflation. When persistence is very high, autocorrelations tend to die out very slowly; if inflation is largely random, autocorrelations die out more quickly. The tests found that, as expected, core inflation in most economies tends to display a relatively high degree of persistence as autocorrelations die out slowly (**Figures 69a, 69b**). Food and energy inflation, however, tends to have somewhat lower persistence than core inflation in several economies, as autocorrelations die out faster. In contrast to the traditional view that food and energy inflation is largely white noise, food and energy inflation in the region is quite persistent, as its autocorrelations die out slowly.¹¹

¹⁰P. Krugman. 2011. Core Madness. *The New York Times*. 2 June. <http://krugman.blogs.nytimes.com/2011/06/02/core-madness-wonkish/>

¹¹Part of the persistence in year-on-year inflation rates is the result of carry over or base effects. Ideally, the estimates of the autocorrelation functions should be based on month-on-month inflation rates in order to avoid carry over effects. Unfortunately, month-on-month inflation rates across much of the region are very noisy and characterized by irregular seasonal effects. As a result, it was not possible to identify stable autocorrelation functions for month-on-month inflation rates.

Table 15: Core¹, and Food and Energy Components of the Consumer Price Index (%)

	Core	Food and Energy
People's Republic of China	65.8	34.2
Hong Kong, China	86.7	13.4
Indonesia	74.5	25.5
Republic of Korea	77.6	22.4
Malaysia	69.0	31.0
Philippines	52.6	47.4
Singapore	87.6	12.4
Taipei, China	77.6	22.4
Thailand	65.6	34.4
Viet Nam	57.5	42.5

¹Excluding food and energy (see notes in Figure 68 for definitions used for each economy).

Source: *Asian Development Outlook 2011*, Asian Development Bank; CEIC; and national sources.

3. Commodities are only a small part of the consumption basket.

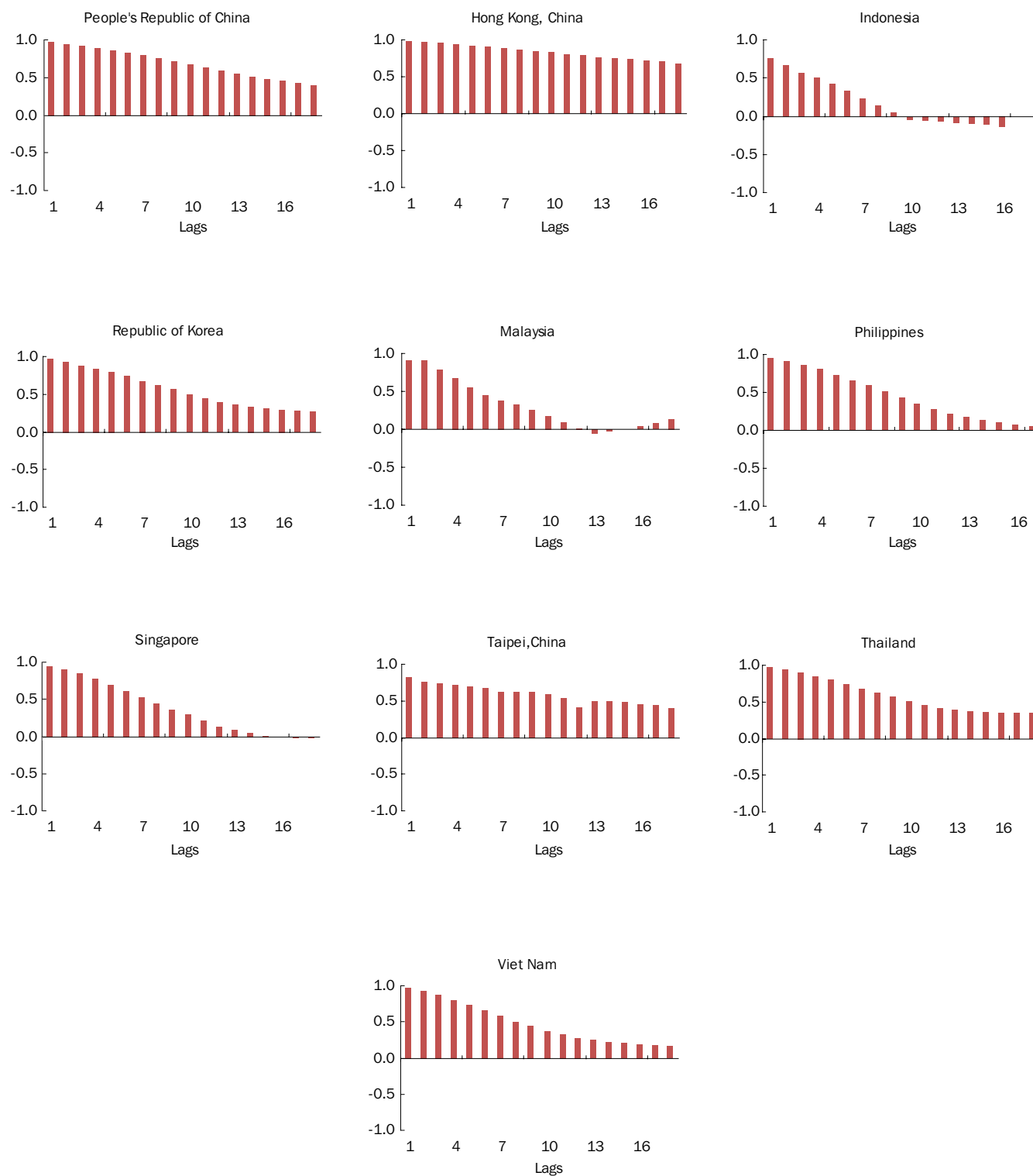
Commodities like food and energy usually constitute a relatively small share of CPIs and do not have a quantitatively significant impact on headline inflation. Consistent with Engel's Law,¹² spending on food is typically a very small share (less than 10%) of advanced country consumption baskets. Also, energy is not a very large direct share of consumption baskets in many advanced economies. Therefore, central banks should focus on core rather than headline inflation, and leaving commodity price movements out does not imply much loss of information and has the benefit of keeping some very volatile items out of inflation analysis.

In emerging East Asia, however, food and energy account for a significant portion of consumer baskets.

The situation in lower income emerging East Asian economies is quite different. In many of these economies, food and energy can account for more than 20%–30% of the consumption basket with weights in some cases being close to the 40%–50% range (**Table 15**). So for the region, much information about changes in purchasing power is lost if the focus is limited to core inflation. And, by excluding food and energy, measures of core inflation can provide a misleading indicator of future inflation trends.

¹²The proportion of individual income spent on food will tend to decline as income rises.

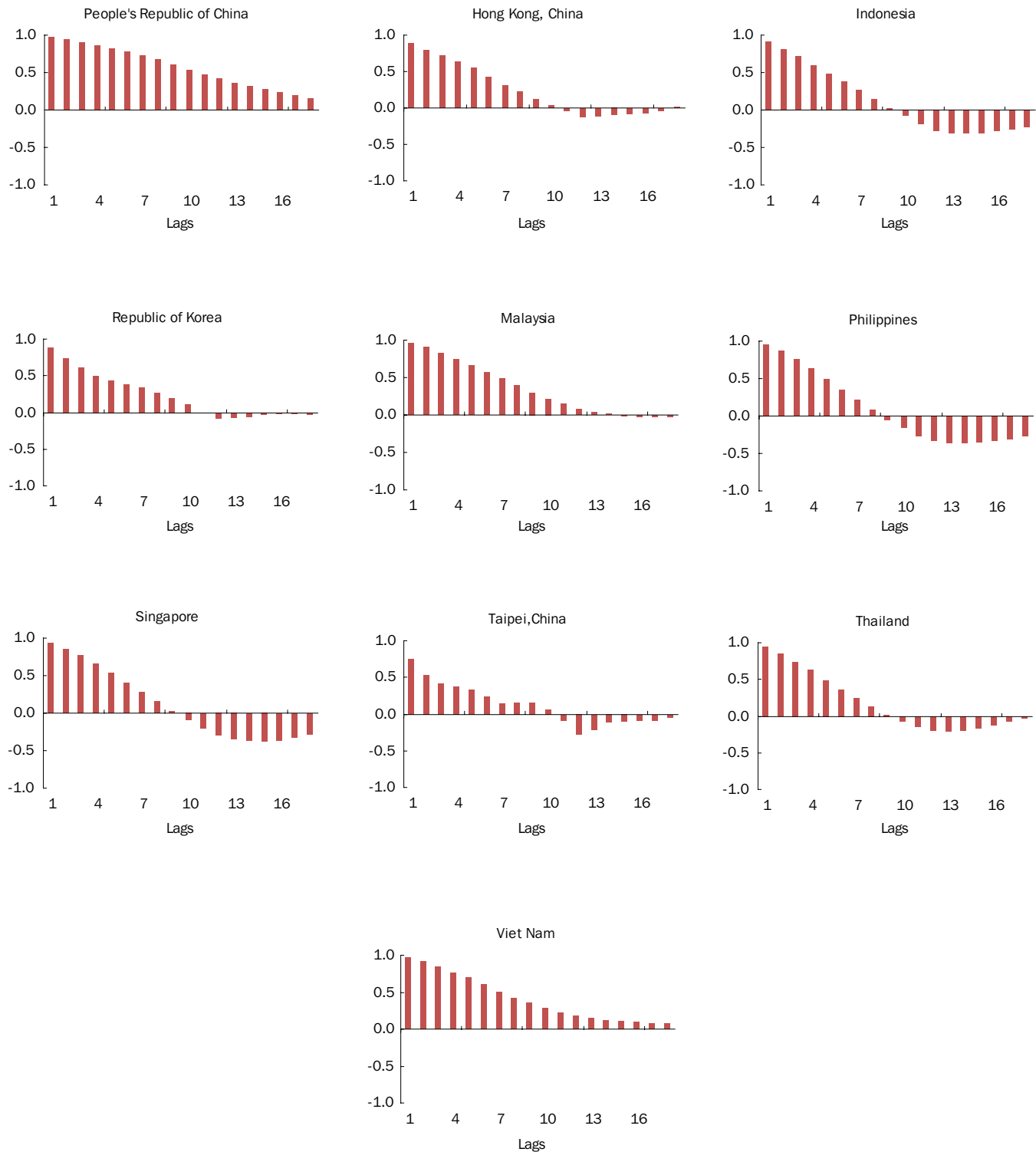
Figure 69a: Autocorrelation¹—Core Inflation²



¹Using year-on-year changes in price levels from Jan 1990 to May 2011, except for the People's Republic of China (Jan 1993–May 2011), Indonesia (Jan 2002–May 2011), Philippines (Jan 1994–May 2011) and Viet Nam (Jan 1997–May 2011).

²Excluding food and energy (see notes in Figure 68 for definitions used for each economy).

Source: OREI staff calculations based on data from CEIC and national sources.

Figure 69b: Autocorrelation¹—Food and Energy Inflation²


¹Using year-on-year changes in price levels from Jan 1990 to May 2011, except for the People's Republic of China (Jan 1993–May 2011), Indonesia (Jan 2002–May 2011), Philippines (Jan 1994–May 2011) and Viet Nam (Jan 1997–May 2011).

²See Figure 68 for definitions used for each economy.

Source: OREI staff calculations based on data from CEIC and national sources.

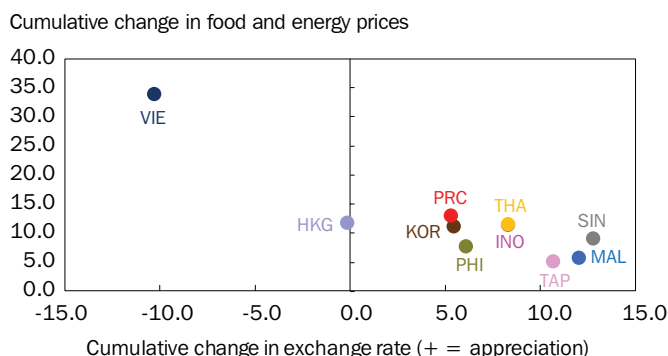
4. Monetary policy is ineffective against commodity price inflation and, if used in response to volatile commodity prices, policy instruments could become unstable.

It usually takes months before the impact of monetary policy can be felt in an economy. Thus, for short-term swings in commodity prices, monetary policy may not be an appropriate tool. Given the large swings in commodity prices, for monetary policy to be effective, it would require raising interest rates to such high levels that it will impose high costs on the economy. Furthermore, commodity prices tend to be much more volatile than other prices. So a systematic policy response could lead to instability in monetary policy instruments such as short-term policy interest rates.

Monetary policy is effective when it helps anchor inflationary expectations and reduces the impact of higher commodity prices through currency appreciation.

The argument that monetary policy is ineffective ignores two critical transmission channels. The first relates to the role monetary policy can play in anchoring inflationary expectations. In response to inflation “surprises” from commodity or other sources, the willingness of authorities to tighten monetary policy could help anchor inflationary expectations and reduce the risks of spillovers from headline inflation into core inflation. The second channel relates to the role exchange rates play in reducing the pass-through effect of increases in commodity prices denominated in major currencies such as the US dollar. Especially when there is already upward pressure on domestic currencies, allowing exchange rates to appreciate can reduce the impact of global commodity price increases on food and energy inflation measured in local currency terms. Those emerging East Asian economies with the largest exchange rate appreciations tend to have somewhat lower rates of domestic food and energy price increases (**Figure 70**). While many other factors may be at work, the results suggest a possible role for exchange rate policy in helping reduce imported energy and food price inflation.

Figure 70: Food and Energy Prices¹ versus Exchange Rate²
(%, cumulative change, Jan 2010 to Jun 2011³)



PRC = People's Republic of China, HKG = Hong Kong, China, INO = Indonesia, KOR = Republic of Korea, MAL = Malaysia, PHI = Philippines, SIN = Singapore, TAP = Taipei, China, THA = Thailand, VIE = Viet Nam.

¹See notes in Figure 68 for definitions used for each economy.

²Based on monthly average of the local currency value of \$.

³Except Hong Kong, China; Malaysia; and Singapore for which latest data May 2011. For the PRC, data are Jun 2010–Jun 2011.

Source: OREI staff calculations based on data from *Asian Development Outlook 2011*, Asian Development Bank; CEIC; national sources; and Reuters.

5. Commodity prices are driven by supply shocks.

Commodity price hikes tend to be driven mainly by supply shocks that slow real economic activity in net commodity-importing countries. Tightening monetary policy in response to supply-driven increases in commodity prices could lead to even sharper economic contractions. Therefore, using monetary policy here can be counterproductive.

In emerging East Asia, however, strong demand—rather than supply disruption—appears largely behind recent commodity price inflation.

While some large increases in commodity prices over the past 50 years were due to supply shocks or disruptions—most notably the two oil price shocks of the 1970s—commodity price inflation can also result from excessive growth in demand relative to unchanged supply. While supply problems have played a role,¹³ recent surges in commodity prices were largely driven by demand from emerging economies—which tend to soak up more commodities than advanced economies.

¹³For example, recent food price hikes were in part due to bad weather in the PRC, the Russian Federation, and Australia. The surge in energy price increases in part reflects geopolitics and instability in the Middle East and North Africa.

Under demand-driven commodity price increases, tighter monetary policy can help assure that growth in aggregate demand is in line with its sustainable rate. Yet, increasingly globalized commodity markets imply that tighter monetary policies in smaller economies may exert little impact on global commodity price inflation. The required dampening of global demand pressures in such cases would depend on macroeconomic policies in large, commodity-consuming economies.

Yet, globalization and increased financialization of commodities indicate monetary policy may have a limited role in managing commodity price volatility.

Commodity prices are increasingly determined by world aggregate demand and supply. Countries, in particular smaller ones, generally have minimal impact on commodity prices and are price takers in the currencies in which commodities are priced. Increasing financialization of commodity markets and the expanded role of hedging and speculation could exacerbate commodity price volatility (or bubbles) with potential inflationary and other implications (**Box 2**). Monetary policies may be less effective in countering these pressures. Macroprudential policies would be more appropriate and the responsibility of major economies where commodity derivatives are traded and priced.

In sum, monetary policy needs to consider the effects of commodity price inflation and requires other policies in tandem to mitigate or reduce their economic impact.

The evidence reviewed so far indicates that traditional arguments for focusing monetary policy on core inflation (largely ignoring surges in food and energy prices) do in fact have some validity for the region. Food and energy price inflation is very volatile and does not contain much additional information for predicting longer-term inflation. In addition, there are substantive questions on the effectiveness of monetary policy in mitigating the costs of commodity price inflation on the economy. Nonetheless, the results suggest that food and energy inflation do have some persistence that cannot be ignored. Also, the relatively high weights of food and energy in many of the region's CPI baskets imply that central banks may find it increasingly difficult to justify "benign neglect" when it comes to commodity price inflation. This is particularly true given the possibility of a "new normal" in which commodity prices rise at more rapid rates.

Are We Heading Toward a "New Normal" of Sustained Increases?

The conventional view is that, over time, commodity prices tend to decline in real terms.

The so-called Prebisch and Singer Hypothesis¹⁴ was seen to reflect both the relatively low-income elasticity of demand for primary commodities and a tendency for productivity in primary industries to grow more rapidly than in manufactures.¹⁵ At least through the early 2000s, as discussed by Cashin and McDermott,¹⁶ real commodity prices globally do appear trending down at a very modest rate—a key feature, nonetheless, was very high and time-varying volatility, especially since the 1970s.

However, the behavior of real commodity prices changed markedly in the early- to mid-2000s.

In real terms, both energy and food prices surged ahead during the 2000s, after trending down modestly from the early 1980s (**Figure 71a**). So are most other commodities (**Figure 71b**). Yet, these changes in behavior need to be interpreted carefully. Looking at the much longer-run trend in real commodity prices, there were frequent but irregular episodes during which commodity prices surged for extended periods—only to fall again. Therefore, the behavioral change in the early- to mid-2000s does not necessarily mean they will be sustained. It is simply too soon to conclude that there has necessarily been a permanent change in trend.

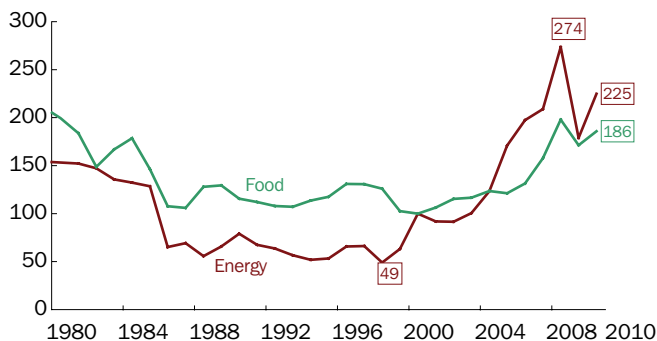
In the short term, commodity prices could continue to rise with increased volatility.

Still, the marked change in the behavior of commodities could continue. Key contributing factors may include: (i) strong demand from fast-growing emerging economies—given their relative high consumption of commodities; (ii) continued accommodating monetary

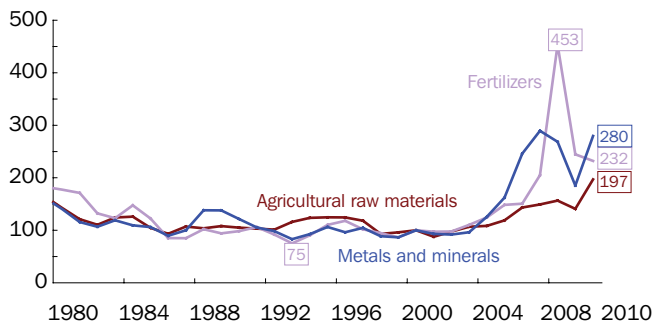
¹⁴R. Prebisch. 1950. *The Economic Development of Latin America and its Principal Problems*. Lake Success, United Nations; H. Singer. 1950. The Distributions of Gains Between Investing and Borrowing Countries. *American Economic Review*. 40. pp. 473-85.

¹⁵P. Cashin and C. McDermott. 2002. The Long-Run Behavior of Commodity Prices: Small Trends and High Variability. *IMF Staff Paper*. 49(2). pp. 175-199.

¹⁶P. Cashin and C. McDermott. op cit.

Figure 71a: Commodity Price Indexes—Energy and Food
(2000=100, constant \$)

Source: World Bank Commodity Price Data (Pink Sheet), World Bank.

Figure 71b: Commodity Price Indexes—Agricultural Raw Materials, Fertilizers, and Metals and Minerals
(2000=100, constant \$)

Source: World Bank Commodity Price Data (Pink Sheet), World Bank.

policies in many advanced economies—given the anemic recovery there; (iii) the growing importance of commodities as an asset class to meet search-for-yield investment demand in an unusually low interest rate environment; and (iv) geopolitical uncertainties—whether poor weather in major agriculture regions or instability such as in the Middle East. Together, these factors could help explain the recent strong upward pressure on many commodity prices as well as high price volatility and close correlation with measures of global risk appetite.

Real commodity prices may now be following a sustained upward trend—“a new normal” may be emerging.

Longer-term factors that could contribute to the “new normal” include, most notably, continued rapid growth of emerging economies (especially in Asia) and their high resource demands, and more general pressures on natural resources as a result of rapid global growth. Other

possible contributing factors include the adverse effects of global warming and extreme weather on agriculture, and possible shifts from nuclear to other power sources in the aftermath of Japan’s nuclear disaster. In addition, monetizing the environmental costs of using fossil fuel could also push up relative prices of energy. Nevertheless, the longer-term trend in real commodity prices will be determined by both demand and supply factors. And, there is a need to consider the possibilities of more rapid productivity growth in primary industries.

While the “new normal” may be uncertain, commodity price volatility will likely increase due to the interaction between cyclical and fundamental factors.

Even though commodity prices in recent years have trended up at a somewhat faster pace, it is not clear to what degree it reflects short-term cyclical factors such as loose monetary policies in advanced economies. Regardless, all factors affecting commodity prices—whether short- or long-term—will interact with each other. They will influence investor perception of future commodity prices, and thus commodity price volatility would rise. High commodity price volatility means that picking up signals from short-run price increases is even more difficult. At a minimum, policymakers may face the challenge of responding to more episodes of commodity price surges and continued high price volatility. But it is also possible that a “new normal” may evolve with sustained and high commodity price inflation.

How Might Monetary and Other Policies Better Manage Commodity Price Volatility and Inflation?

A pragmatic approach to a range of policies may help policymakers manage the inflation impact of persistent and volatile changes in commodity prices.

Rapid and volatile commodity price inflation in the past year or so has brought challenges to policymakers in the region. Can the current approach of “benign neglect” of monetary policy continue? How should monetary policy in the region respond to volatile and possible sustained rises in commodity prices? What are the roles of other policies—including fiscal, financial, and structural—in helping manage and mitigate the consequences of rapid and volatile commodity price inflation? These are

important issues when commodity prices are volatile and become more critical if commodity prices persistently rise at more rapid rates relative to other goods and services.

The empirical assessment above suggests that the current approach of relatively “benign neglect” of monetary policy toward commodity price inflation needs to change.

It has been increasingly difficult for the region’s central banks to defend a “benign neglect” approach when energy and food prices trend up rapidly and account for a substantial share of CPIs. Traditional core inflation measures become increasingly divorced from reality and monetary policy credibility risks being challenged. The high level of commodity price volatility implies there may be no easy solutions for monetary policy. If monetary policy were required to systematically respond to large swings in commodity prices, large economic costs could follow and monetary instrument instability could result. To balance the tradeoff, a pragmatic approach to monetary policy might just work.

Using trends in global food and energy prices to project headline inflation may help define monetary policy in headline terms—making it easier to communicate inflation targets or objectives to the public.

Consistent with the reality that headline rather than core inflation is what “matters” for the public, implicit and explicit inflation targets could be specified in headline terms. Not only will this help address potential damage to credibility when narrow measures of core inflation are implicitly or explicitly targeted, it can also help improve communicating monetary policy to the public at large. In addition, this approach can help address the perception that policymakers are not concerned about commodity price inflation—in so far as trend changes in commodity prices would be reflected in officially targeted inflation rates. Nonetheless, central banks may still find it useful to continue using internal estimates of core inflation in preparing inflation forecasts and making forward-looking monetary policy decisions.

Persistent increases in relative prices of commodities (the trend effect) and/or continued high volatility of commodity prices (the volatility effect) potentially hold significant—and different—implications for monetary policy and its inflation targets or objectives.

Sustained rapid commodity price increases (relative to prices of goods and services) will not necessarily complicate the conduct of monetary policy very much. The current approach to monetary policy considers relative price changes between various goods and services, trend increases in wages and productivity, and the degree of “stickiness” of different nominal prices. Faced with sustained increases in commodity prices, policymakers may have to tolerate higher inflation in the short term to avoid absolute declines in the prices of other goods and services—which could hurt those industries. On the other hand, high commodity price volatility (rather than the trend) potentially presents a much greater challenge to monetary policy. Headline inflation rates continue to have a high degree of noise over time because of volatile commodity prices. In general, monetary policy cannot systematically react to each major price movement as the economic costs could be very high and instrument instability could result.

A more flexible monetary approach may be needed in response to potentially persistent and volatile commodity-driven inflation.

If increases in relative commodity prices are expected to persist, policymakers may want to take the trend increase into account in setting inflation targets or objectives. Whether this would require raising inflation targets or objectives from current levels is not pre-ordained. It will depend on several factors including, most importantly, the size of trend changes in relative commodity prices and other ongoing relative price changes. Monetary policy could be made more flexible through (i) widening the bands within which inflation targets or objectives are set—to explicitly allow for high volatility in commodity prices; (ii) extending time horizons over which inflation targets or objectives are set; or (iii) specifying inflation targets or objectives as 2–3 year averages so as to allow more flexibility when dealing with inflation noise. It may also be necessary to refine what is meant by “low and stable” inflation, because higher inflation variability may be inevitable. In economies with large food and energy CPI shares, more variability in inflation targets

or objectives may be the least bad outcome—it would remove the constraints of a tight objective in a world of high volatility.

Still, policymakers could take a pragmatic, case-by-case approach to monetary policy, given the uncertainties over underlying trends in commodity prices and their impact on inflationary expectations.

Adding flexibility to monetary policy and inflation targeting (or objective setting), monetary policy cannot “ignore” high frequency volatility in commodity prices. Not only is it difficult to differentiate short-term swings from long-term trends, but also short-term changes in commodity prices may have implications for underlying inflationary pressures. Thus, while wider bands around inflation targets or objectives and longer time horizons will provide central banks more flexibility when deciding whether to alter monetary policy, a monetary policy response should not be ruled out when commodity prices do surge ahead.

Greater exchange rate flexibility can help mitigate the effects of global commodity price surges on domestic prices.

Monetary policy remains a relatively blunt instrument to deal with food and energy inflation. Most important, using policy rate hikes to reduce food and energy inflation could impose high costs on the economy. Also, the typical long lags before monetary policy shows results—together with issues of policy instrument instability—imply it would not be feasible for monetary policy to respond systematically to frequent swings in commodity price inflation. A policy mix of faster currency appreciation, along with smaller or slower monetary policy responses, may mitigate inflationary pressures while avoiding the bluntness of wielding policy rates. Moreover, regional currency appreciation helps global rebalancing.

Fiscal, financial, and structural policies could also help authorities manage and adjust to commodity price volatility and inflation.

Ultimately, managing the consequences of commodity price movements for overall economic performance, handling the associated risks, and mitigating the effects on the most vulnerable members of society cannot be left to monetary policy alone—given the limits of what

monetary policy can achieve. Other policies must join in an efficient and effective way to lessen the impact of commodity price shocks on the economy and society.

Policymakers could use structural and fiscal policies to boost supply and increase economic flexibility when responding to commodity price changes.

Supply-side measures—which reduce supply bottlenecks in commodity-based industries, improve access to global markets, and increase productivity—are critical if a “new normal” emerges. Key structural policies could aim to improve commodity and factor market flexibility, facilitating reallocation of resources across sectors. Improving energy efficiency would also help. Programs that protect the most vulnerable members of society from the effects of higher commodity prices could be considered. These would need to be well-targeted to avoid fiscal burdens.

Market-based commodity price stabilization mechanisms and participation in commodity financial markets may help mitigate commodity price volatility.

Commodity price stabilization schemes are no panacea. There is also the risk of prices being stabilized at levels that lead to excessive stock accumulation (hoarding). Price controls and delays in administered price increases were not very effective in 2008. Controls tend to address symptoms of the problem and can create significant distortions over time. Delays in administered price increases can also threaten the solvency of public utilities and companies if maintained too long. Subsidies can impose high fiscal costs if large and sustained. The region may need to study how to use commodity futures and options markets. In particular, the increasing financialization of commodities suggests a potentially large role in hedging commodity price risk by commodity-importing countries. As a risk management tool, these markets could be useful.

Greater cooperation within the region and globally could work toward managing and mitigating the impact of commodity price inflation and volatility.

The case for enhanced cooperation relates to increasing commodity market globalization and the growing importance of spillover effects. While enhanced cooperation necessarily takes time, in the short term

economies could aim to ensure that national measures to manage commodity price inflation do not shift the problem to other economies. The policy responses within the region to the 2008 commodity price surge in some instances imposed costs on other economies. Export bans, for example, may have shifted the problems onto other economies and reduced commodity trade globally. They can lead to tit-for-tat responses that exacerbate the effects of commodity price shocks.

Greater cooperation to ensure (i) adequate trade in food and energy; (ii) effective commodity market regulation; and (iii) appropriate macroeconomic policy can help manage commodity price volatility and inflation.

One option could be to strengthen agreements that discourage commodity export bans or import subsidies during periods of rapidly increasing commodity prices. Regional food banks can be strengthened to reduce the risk of supply disruptions in critical commodities. Feasibility and cost studies can be initiated or updated. Global markets where commodity-based financial derivatives are traded and priced should be more closely supervised to avoid excesses or bubbles. Macroprudential measures can help address bubbles and ensure stability in commodity markets. Finally, countries can adopt a more global approach to managing commodity price inflation by recognizing that commodity prices are increasingly being driven by global demand. Mitigating and managing short-run commodity price inflation will likely call for greater international coordination of macroeconomic policies.

Box 2: Financialization of Commodities

Commodity prices are rising again; rapidly since mid-2010. The surge has been driven by robust demand in emerging economies and in some cases by disruptions to global supply. But soaring investment flows into commodities—fuelled by loose monetary conditions—may have amplified the intensity of the price surge.

Commodity prices have been volatile in recent years. Following a prolonged rise that peaked in mid-2008, commodity prices fell sharply, bottoming out in early 2009. Since then, prices have been rising again, accelerating from mid-2010 (see Figure 59). Oil prices are more volatile than others. Alongside narrowing output gaps, the commodity price surge has stoked inflationary pressures in emerging economies, leading central banks in these economies to “normalize” accommodative monetary conditions adopted during the global financial crisis.

The primary factor driving up global commodity prices has been fast rising demand in emerging economies. Historical patterns suggest that commodity consumption typically rises before an economy reaches high income status—as the economy experiences high income growth, industrialization, and infrastructure building.¹ With current high capacity-utilization and low inventories, markets are sensitive to slight changes in supply and demand. Geopolitical concerns in the Middle East and North Africa—and weather-related supply shocks—have contributed to higher commodity prices in recent months.

The growing presence of financial investors in commodity markets has “financialized” commodities, possibly amplifying commodity price fluctuations. Financial activity in commodity markets—mostly via commodity derivatives—is large relative to physical production and accelerated rapidly in the years prior to the crisis. Open contracts in commodity exchanges grew 170% in number

between 2002 and June 2008, placing the volume of exchange-traded derivatives at 20–30 times the physical production for many commodities. Over-the-counter trade showed similar trends.² While notional outstanding amounts of over-the-counter commodity derivatives slumped after late 2008 (**Figure B2.1**), the number of commodity contracts traded on organized exchanges has continued to grow after the global crisis subsided (**Figure B2.2**). In particular, crude oil open interest increased nearly 160% the year to April 2011.³

Low interest rates and loose monetary conditions globally stimulate commodity trading. Commodities offer portfolio diversification, upside potential, and a hedge against inflation. Low interest rates increase demand for storable commodities or reduce supply in three ways.⁴ They (i) reduce incentives for physical extraction as future values are expected to rise; (ii) increase incentives for firms to hold on to inventories by lowering holding costs; and (iii) encourage speculators to shift from bonds to spot contracts for higher yields. Loose global monetary conditions further spur “search-for-yield” speculation in commodities.

Another key driver behind the financialization of commodities has been better market infrastructure for commodities futures trading. In the early 2000s, commodity indexes developed and exchange-traded funds were created. Since 2004, commodity index funds began attracting huge investment flows.⁵ The two most popular commodity indexes are the Goldman Sachs Commodity

¹International Monetary Fund. 2006. The Boom in Nonfuel Commodity Prices: Can It Last? *World Economic Outlook*. Washington, DC.

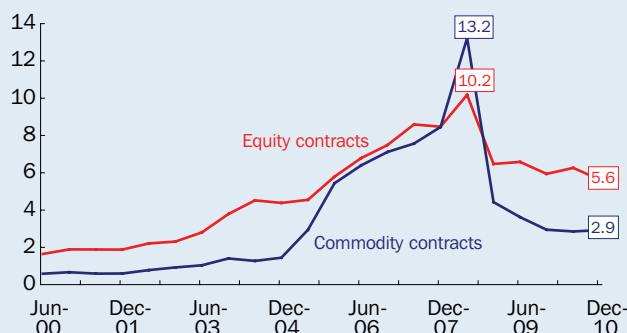
²D. Domanski and A. Heath. 2007. Financial Investors and Commodity Markets. *Bank for International Settlements Quarterly Review*. Switzerland.

³US Commodity Futures Trading Commission. Crude Oil Open Interest Statistics. <http://www.cftc.gov/OCE/WEB/index.htm>

⁴J. Frankel. 2008. The Effect of Monetary Policy on Real Commodity Prices. *Asset Prices and Monetary Policy*. pp. 291–327.

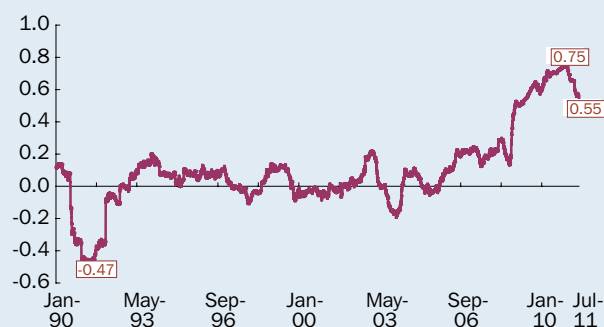
⁵Federal Government of the US, Commodity Futures Trading Commission. 2008. *Staff Report on Commodity Swap Dealers and Index Traders with Commission Recommendations*. Washington, DC.

Figure B2.1: Over-the-Counter Equity-linked and Commodity Derivatives (notional amounts outstanding, \$ trillion)



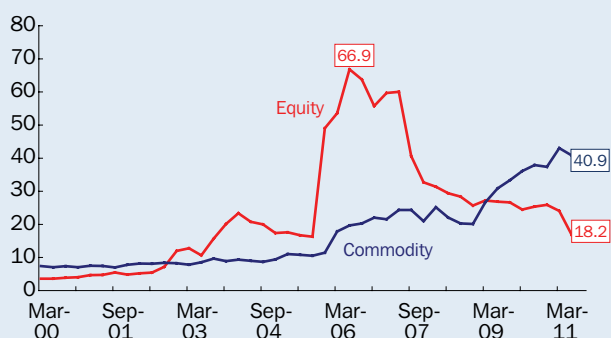
Source: Bank for International Settlements.

Figure B2.3: Return Correlation Between Commodity and Equity Indexes¹



¹Refers to one-year rolling correlation between the daily return of the global equity index (MSCI AC-World) and that of commodity index (S&P GSCI).
Source: OREI staff calculations based on Bloomberg data.

Figure B2.2: Number of Contracts, Exchange-Traded Derivatives Worldwide (in million)



Source: Bank for International Settlements.

Index (SP-GSCI) and Dow-Jones UBS Commodity Index (DJ- UBS). Also, many commodities future markets introduced electronic trading, reducing transaction costs and accelerating transaction settlement.

The financialization process—helped by widespread growth in commodity index investments—affects commodity markets generally and holds important implications for price determination. On one hand, the presence of financial

investors can more efficiently distribute commodity price risk. On the other hand, rapid portfolio rebalancing can draw external price volatility into commodities markets and across different commodities. This has led to greater price co-movements between commodities—and between commodities and other financial assets such as equities and bonds (**Figure B2.3**). Thus, prices are becoming less related to specific supply-demand conditions of individual commodities and are increasingly subject to the effects of portfolio rebalancing by financial investors. This financialization process may help explain the increased commodity price volatility seen in recent years.⁶

⁶K. Tang and W. Xiong. 2010. Index Investment and Financialization of Commodities. *NBER Working Paper*. No. 16385. Massachusetts: National Bureau of Economic Research.