

Macroeconomic effects of high oil prices

Introduction

The world price of crude oil, which has risen continually since 2003, increased still faster in 2007 and early 2008, to become a source of great concern. Although the upward price pressures have eased in recent weeks since hitting an all-time high of over \$140 per barrel in July, oil prices are likely to remain elevated at well above \$100 in real terms until the end of next decade (see the chapter, also in Part 2, *Are high oil prices here to stay?*). A prolonged period of high oil prices is bound to have tangible economic effects on developing Asia, one of the world's major oil-importing regions. Some of those effects will be microeconomic in nature. In particular, the markets for oil and energy will be affected by an increase in the price of oil, which is, after all, an increase in its relative price. For example, the rise in the price of oil will induce substitution from oil products to other energy sources.

In this chapter, however, the macroeconomic effects of high oil prices on developing Asia are examined. For example, the increase in transportation costs affects such large numbers of firms and individuals that it is bound to affect the performance of the economy as a whole. If producers cannot pass on their higher transportation costs to consumers, they have to lay off workers and reduce their investments. The higher unemployment rate and lower investment rate will have an adverse impact on aggregate output in the short run. In addition, for a region as highly dependent on imported oil as Asia, the escalation of oil prices on a sustained basis represents a long-term deterioration of the terms of trade. This loss of international purchasing power amounts to a loss of real aggregate income and output.

A central finding that emerges from this chapter's analysis is that the oil price shock is likely to have a bigger impact on inflation than growth in both the short run and the long run. Given that crude oil is a universal input used in the production of virtually everything, it would be surprising if oil prices did *not* have a tangible effect on consumer price index (CPI) inflation in developing Asia. Indeed, inflation has already risen sharply throughout the region such that regional inflation is projected to rise from 4.3% in 2007 to 7.8% in 2008. The biggest challenge

for Asian policy makers arising from higher oil prices is therefore to rein in inflation before it goes out of control and harms the region's long-run growth prospects. This means that a radical shift of the monetary policy stance is required since monetary policy has been too lax for too long across the region, as evident in generally negative real interest rates.

The rest of this chapter is organized as follows. The next section, *Effects on import costs*, looks at the direct effect of higher oil prices on developing Asia's import costs. *Effects on transportation costs* then examines the impact of the oil price surge on transportation costs in the region. The potential implications of higher international transportation costs for the region's export prospects are explored in the section, *Effects on exports*. The following section, *Quantitative estimates of the macroeconomic effects*, reports and discusses the results of Oxford Economics global model simulations for evaluating the short- and long-run effects of the oil price surge on growth, inflation, and the current account balance in eight Asian economies. The section also explores the macroeconomic effects of raising interest rates in response to the oil price shock. The central findings and messages that emerge from the analysis are given in *Concluding observations*.

Effects on import costs

For oil-importing Asia, an increase in the price of oil worsens the terms of trade, or increases the amount of goods and services it must sell abroad to buy one barrel of oil. The loss of purchasing power is analytically equivalent to a loss of real income or output. The magnitude of the real output loss depends partly on the price elasticity of the demand for oil, or the responsiveness of oil demand to changes in oil price. If the demand for oil is highly price elastic, a reduction in demand will largely offset the higher price. Conversely, relatively price-inelastic oil demand implies a much larger loss of income. The balance of empirical evidence overwhelmingly indicates that the demand for oil is highly price *inelastic*. Even in the long run, the evidence indicates that price-elasticity is quite low, although higher than in the short run. (See Edelstein and Kilian 2007 and Cooper 2003.)

Additionally, in the case of developing Asia, income effects are likely to further dilute the deterrent effect of higher oil prices on oil consumption. In general, the evidence indicates that the income elasticity of oil demand tends to be higher than the price elasticity, and higher for developing countries than for Organisation for Economic Co-operation and Development (OECD) countries. (See Hamilton 2008 and Gately and Huntington 2002.) Regardless of income elasticity, the sheer speed of developing Asia's economic growth helps to boost the growth in its demand for oil. For the same income elasticity, the oil demand of an economy growing at 8% will grow much faster than another growing at 2%. The combination of low price elasticity and rapid income growth means that the oil price surge is unlikely to substantially dent Asia's demand for oil.

The increase in import costs due to higher oil costs also depends on the degree of dependence on imported oil. Although Asia accounts for only a small share of global oil reserves, the region produces some oil

and a few countries even export it. As a result, Asian countries show considerable differences in terms of their dependence on imported oil (Figure 2.2.1). For example, the Republic of Korea, which does not produce a single barrel of oil, is more vulnerable to higher oil prices than the People's Republic of China (PRC), which produces around half its oil. In addition to oil self-sufficiency, the relative importance of oil in a country's energy mix will also influence the degree of its vulnerability to oil shocks. An additional determinant of economic vulnerability to oil shocks is the oil intensity of economic activity, or the amount of oil needed to produce a unit of economic output. Asian economies vary widely in this regard (Figure 2.2.2). Economic structure also influences the efficiency of oil use. The rise of India's information technology industry, which uses relatively little oil, is contributing to a fall in the economy's overall oil intensity.

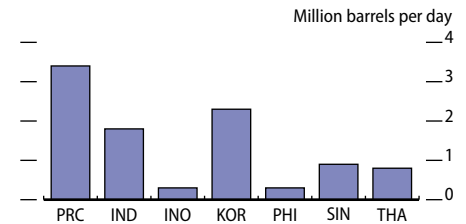
In light of the above considerations, it is reasonable to assume that in the short run Asian oil demand will remain quite stable in terms of estimating the increase in import costs. Low price elasticity and rapid income growth limits the short-run impact of higher prices on demand. Dependence on imported oil and oil intensity of economic activity will change substantially only in the long run. The average price of crude oil was about \$70 in 2007 and is expected to rise to about \$120 in 2008. (See *Are high oil prices here to stay?*) Figure 2.2.3, which assumes that the level of oil imports remains the same in both years, shows the increase in the value of oil imports in seven Asian countries. The increase shows the additional amount of resources that Asian countries have to spend to secure the same amount of oil. Figure 2.2.4 shows the increase in oil imports as a share of 2007 GDP. Those numbers capture, in effect, the direct loss of GDP due to the higher cost of imported oil.

Effects on transportation costs

Transportation is a universal input that is required for the production of virtually all goods and services. In theory, an increase in the cost of transportation due to an increase in crude oil prices will reverberate throughout the economy. In practice, the pass-through of higher crude prices to higher transportation costs is often incomplete. This is largely because the pass-through from world crude prices to domestic fuel prices is limited. (See the chapter, *Inflation in developing Asia: Demand-pull or cost-push?*, also in Part 2). For example, many Asian governments used to subsidize the price of gasoline and diesel although such subsidies are now being phased out. Although subsidies may temporarily prevent the pass-through of crude prices to fuel prices, the build-up of unsustainable fiscal liabilities will eventually lead to even sharper fuel price rises in the future. Even if there were complete pass-through of crude oil prices to gasoline and diesel prices, there would be incomplete pass-through to transportation costs. For example, consumers may shift from larger fuel-inefficient cars to smaller fuel-efficient cars or from private transportation to public transportation.

Transportation is not only an input used for producing goods but is itself a final consumption good. The line between the two is often blurred. Commuting is as much consumption good as movement of

2.2.1 Dependence on imported oil

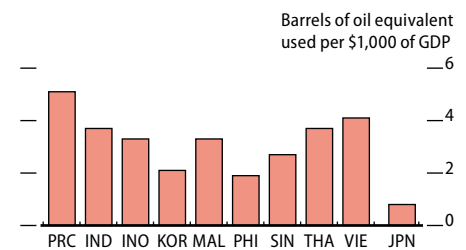


PRC = People's Republic of China; IND = India; INO = Indonesia; KOR = Republic of Korea; PHI = Philippines; SIN = Singapore; THA = Thailand.

Source: FACTS Global Energy Group, *Oil Price Outlook*, August 2008.

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2.2.2 Energy intensity of economic activity, 2005

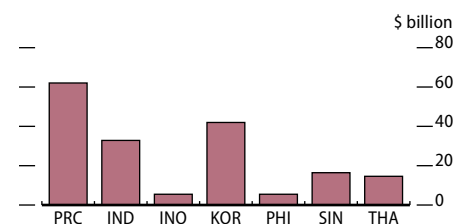


PRC = People's Republic of China; IND = India; INO = Indonesia; JPN = Japan; KOR = Republic of Korea; MAL = Malaysia; PHI = Philippines; SIN = Singapore; THA = Thailand; VIE = Viet Nam.

Source: FACTS Global Energy Group, *Oil Price Outlook*, August 2008.

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2.2.3 Increase in oil imports between 2007 and 2008



PRC = People's Republic of China; IND = India; INO = Indonesia; KOR = Republic of Korea; PHI = Philippines; SIN = Singapore; THA = Thailand.

Note: It is assumed that the average price of oil rises from \$70 (actual) in 2007 to \$120 (forecast) in 2008, and the amount of oil imports is the actual 2007 amount for both years.

Source: FACTS Global Energy Group, *Oil Price Outlook*, August 2008.

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labor to workplace. The increase in transportation costs—e.g. taking a bus to work—has a direct impact on CPI inflation since transportation is an integral part of the consumption basket. Higher transportation costs also discourage consumption by reducing the amount of income available for spending on other goods. In addition, since transportation is a universal input, higher transportation costs will raise the price of everything. Therefore, in addition to directly raising the CPI, higher transportation costs will entail second-round price effects which further increase overall prices and erode the purchasing power of consumers. The basic-necessity nature of transportation suggests that higher fuel prices will have an adverse effect on poverty rates in developing Asia. Empirical evidence, which generally indicates that the elasticity of demand for transportation with respect to fuel prices is low, lends some support to the notion that transportation is a necessity. (See Small and van Dender 2007.)

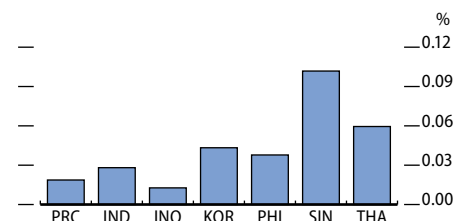
Unsurprisingly, the absolute amount of spending on transportation fuels tends to be higher in the richer developing Asian countries (Figure 2.2.5). The impact of higher gasoline and diesel prices on CPI depends not on the absolute amount spent on fuel but on the share of fuel spending in total household expenditures. The larger this share, the more pronounced will be the impact of higher fuel prices on the CPI. For Asian countries, this share ranges from less than 4% in Singapore to about 16% in Viet Nam, with most of the countries in the 4–10% range (Figure 2.2.6). For example, in the case of the Republic of Korea, gasoline and diesel accounted for 6.3% of household expenditures in 2007. This means that the direct impact of a 70% increase in crude price, as is projected to happen between 2007 and 2008, will increase CPI by 4.4%. This almost certainly overestimates CPI inflation since it assumes a 100% pass-through of crude prices to domestic fuel prices. In summary, the main macroeconomic effect of higher transportation costs is a rise in inflation, and this effect is substantial.

Effects on exports

Looking further ahead, there is a possibility that high oil prices will harm developing Asia's export prospects. This matters a lot because despite growing intraregional trade, the region's economic performance is still heavily influenced by its exports to the rest of the world, in particular the G3 economies of the United States (US), eurozone, and Japan. Transportation costs are the critical link between oil prices and export performance. Transporting goods across large distances requires large amounts of fuel. Therefore, a sharp jump in the price of transportation fuel is, in effect, a sharp increase in trade costs. (See Anderson and van Wincoop 2004.) The explosive growth of international trade since the Second World War has been driven as much by trade liberalization as by reduction in transportation costs. Conversely, an extended period of high oil prices could seriously jeopardize Asia's export and growth prospects.

The evidence to date unambiguously indicates that shipping costs have already gone up substantially. A much-cited example from a study by Rubin and Tal (2008) reveals that the cost of shipping a standard 40-foot container from Shanghai to New York has soared from \$3,000

2.2.4 Increase in oil imports between 2007 and 2008, as share of 2007 GDP



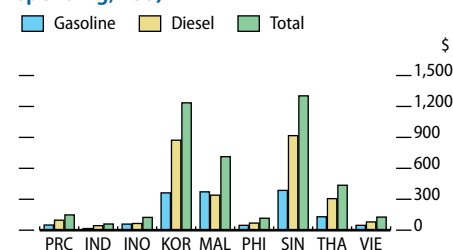
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Note: It is assumed that the average price of oil rises from \$70 (actual) in 2007 to \$120 (forecast) in 2008, and the amount of oil imports is the actual 2007 amount for both years.

Source: FACTS Global Energy Group, *Oil Price Outlook*, August 2008.

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2.2.5 Per capita transportation fuel spending, 2007

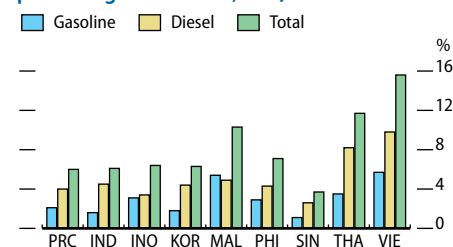


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Source: FACTS Global Energy Group, *Oil Price Outlook*, August 2008.

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2.2.6 Transportation fuel spending as percentage of income, 2007



PRC = People's Republic of China; IND = India; INO = Indonesia; KOR = Republic of Korea; MAL = Malaysia; PHI = Philippines; SIN = Singapore; THA = Thailand; VIE = Viet Nam.

Source: FACTS Global Energy Group, *Oil Price Outlook*, August 2008.

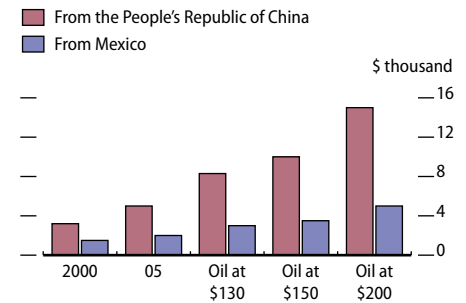
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in 2000 to \$8,000 in late May 2008. In the same period, the inflation-adjusted price of crude has soared from \$20 to \$130 per barrel. It is conceptually helpful to think of higher shipping costs as higher tariff rates since both discourage international trade. The increase in shipping costs due to an increase in the crude oil price from \$20 to \$130 is analytically equivalent to an increase in the tariff rate from 3% to 9%.

Some anecdotal evidence indicates that producers are already beginning to relocate their production closer to home. According to the *International Herald Tribune* (“Shipping Costs Start to Crimp Globalization,” 2 August 2008), electronics companies that left Mexico in recent years to take advantage of the PRC’s lower production costs are returning home, mainly to avoid skyrocketing shipping costs and to take advantage of Mexico’s proximity to the United States (US) market (Figure 2.2.7). There is already some evidence that soaring shipping costs have started to bite into PRC exports. According to the *Economist* (“High Seas, High Prices,” 9 August 2008), growth of exports from Guangdong province, the epicenter of the PRC’s export-oriented manufacturing, slumped to 13% in the first half of 2008 from 26.5% a year earlier.

Given the continued importance of distant markets such as the US and European Union for Asian exporters, the escalation of shipping costs is bound to have at least some adverse impact on Asian export and growth performance. Intra-Asian trade, which is often trade of parts and components that are assembled for export to outside Asia, will also suffer. However, while higher shipping costs entail clear risks for Asian exports, these risks should not be overstated. After all, even in the face of the highly unfavorable current export environment, including the yuan appreciation and a G3 slowdown, PRC exports are continuing to grow albeit at a slower pace. Talk of deglobalization may make good soundbites but in reality the adverse effects of higher shipping costs on trade will be much more limited. The implication for Asian exporters is that higher shipping costs give them one more disadvantage in long-distance markets and hence one more incentive to improve their efficiency and productivity.

2.2.7 Relative shipping costs to the United States east coast



Source: Rubin and Tal (2008).

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Quantitative estimates of the macroeconomic effects

The preceding sections have shown that high oil prices can adversely affect developing Asia’s macroeconomic performance through various channels. The two more concrete channels—higher import costs and transportation costs—are both incorporated into the Oxford Economics global model. In this section, this model is used to quantitatively estimate the effects of higher oil prices on two key macroeconomic variables—GDP growth and CPI inflation—in eight regional economies—PRC, India, Indonesia, Republic of Korea, Malaysia, Philippines, Singapore, and Thailand. While those simulations do not generate precise projections, they do provide some indications of the magnitudes involved. Both the short- and long-run macroeconomic effects of higher oil prices are examined. In addition, the effects of monetary policy tightening triggered by the oil price surge are explored.

Short-run macroeconomic effects

In this section, quantitative estimates are derived of the short-run impact of higher oil prices on GDP growth, CPI inflation, and the current account balance. It is assumed that the average annual price of crude oil is \$120 per barrel in 2008. Five different crude oil price scenarios for 2009 are also assumed—\$70, \$90, \$110, \$130, and \$150—to assess the impact of crude prices on macroeconomic outcomes in 2009. The wide range of price scenarios also helps to incorporate the pronounced price volatility in the global oil market.

In terms of the impact on GDP growth, the simulation results indicate that higher oil prices will damp developing Asia's growth in the short run but will not choke it off (Table 2.2.1). The average 2009 growth rate of the eight countries falls from 7.42% to 4.88% as the price rises from \$70, as it was in 2007, to \$150, which is close to the all-time peak reached in July this year. The average growth rate falls from 7.42% to 6.87% to 6.18% to 5.51% to 4.88% when the oil price rises from \$70 to \$90 to \$110 to \$130 to \$150. Of particular interest are the effects of oil prices on the growth rates of the two regional giants: the PRC's growth rate falls from 11.05% to 8.7% and India's growth rate falls from 9.00% to 6.63% when the oil price rises from \$70 to \$150. At a broader level, the simulation results, which indicate that even relatively sharp jumps in oil prices will crimp but not destroy the region's growth, are consistent with the stylized facts. The region's output growth has been robust throughout the post-2003 oil price surge, and is projected to fall by 1.5%, from 9% in 2007 to 7.5% in 2008, despite the 70% increase in oil price between the 2 years.

2.2.1 GDP growth rate, 2009, under various 2009 oil price scenarios

Country\Scenario	\$150	\$130	\$110	\$90	\$70
China, People's Rep. of	8.70	9.21	9.77	10.39	11.05
India	6.63	7.20	7.79	8.42	9.00
Indonesia	4.54	5.21	5.90	6.62	7.30
Korea, Rep. of	3.75	3.78	3.84	3.90	3.96
Malaysia	4.57	5.18	5.83	6.53	7.10
Philippines	4.08	4.99	5.98	6.86	7.44
Singapore	2.91	3.76	4.68	5.63	6.26
Thailand	3.87	4.71	5.61	6.57	7.24
Average	4.88	5.51	6.18	6.87	7.42

Source: Oxford Economics global model.

With respect to CPI inflation, the simulation results suggest that the oil price has a much bigger short-run impact on developing Asia's prices than on its output (Table 2.2.2). The average CPI inflation rate rises from 1.85% to 6.54% as the oil price rises from \$70 to \$150. The average inflation rises from 1.85% to 3.15% to 4.34% to 5.47% to 6.54% when the oil price rises from \$70 to \$90 to \$110 to \$130 to \$150. The PRC's inflation rate rises from 3.89% to 5.18% and India's inflation rises sharply from 1.5% to 8.53% when the oil price rises from \$70 to \$150. As was the case for output growth, the simulation results for CPI inflation are broadly consistent with the stylized facts. In particular, the acceleration of oil prices in 2007 and 2008 has had a much more pronounced impact on inflation—which is set to rise from 4.3% in 2007 to 7.8% in 2008—than on growth.

2.2.2 Consumer price inflation, 2009, under various 2009 oil price scenarios

Country\Scenario	\$150	\$130	\$110	\$90	\$70
China, People's Rep. of	5.18	4.90	4.60	4.26	3.89
India	8.53	6.92	5.23	3.44	1.50
Indonesia	10.65	9.59	8.50	7.36	6.16
Korea, Rep. of	4.52	3.98	3.40	2.76	2.04
Malaysia	6.81	5.57	4.26	2.85	1.29
Philippines	6.79	5.48	4.08	2.59	0.95
Singapore	4.20	3.08	1.92	0.71	-0.60
Thailand	5.60	4.22	2.76	1.22	-0.47
Average	6.54	5.47	4.34	3.15	1.85

Source: Oxford Economics global model.

In the context of the current account balance, the simulation results imply that the oil price surge will substantially dent (but not remove) developing Asia's current account surplus (Table 2.2.3). The average surplus falls from 6.68% to 3.01%. The average current account surplus falls from 6.68% to 5.71% to 4.81% to 3.91% to 3.01% when the oil price rises from \$70 to \$90 to \$110 to \$130 to \$150. The PRC's surplus shrinks from 7.80% to 5.47% while India's deficit widens from 1.51% to 5.15%. The simulation results are consistent with actual recent trends in the region's current account balance. For example, as a result of the 2007 and 2008 oil price surge, the region's current account surplus is projected to fall from 6.7% in 2007 to 4.3% in 2008.

2.2.3 Current account balance, 2009 (% of GDP), under various 2009 oil price scenarios

Country\Scenario	\$150	\$130	\$110	\$90	\$70
China, People's Rep. of	5.47	6.07	6.66	7.24	7.80
India	-5.15	-4.26	-3.37	-2.47	-1.51
Indonesia	0.93	1.23	1.56	1.90	2.26
Korea, Rep. of	-2.16	0.11	2.34	4.55	6.82
Malaysia	7.34	7.05	6.80	6.57	6.42
Philippines	-0.44	0.29	1.00	1.76	2.61
Singapore	18.03	19.20	20.35	21.48	22.76
Thailand	0.05	1.62	3.15	4.66	6.27
Average	3.01	3.91	4.81	5.71	6.68

Source: Oxford Economics global model.

Effects of monetary policy tightening on GDP growth and CPI inflation

This section examines the effects of a central bank's tightening of monetary policy in response to the inflation pressures released by soaring oil prices. Since a key objective of monetary policy is price stability, it can be expected that developing Asia's central banks will raise interest rates and pursue other contractionary measures such as raising reserve requirements and discouraging bank lending. But in fact, much of the region has pursued a lax monetary policy. The cost of lower inflation due to weaker aggregate demand is lower growth and higher unemployment. Therefore, the size of the interest rate hike will be determined by the central bank's growth-inflation tradeoff. Many economists argue that the standard prescription of raising interest rates to tame inflation will

not work when inflation is triggered by supply-side shocks— such as the oil shock now engulfing Asia. The idea is that if inflation is due to rising costs rather than excessive demand, cooling off demand by raising interest rates will not rein in inflation.

To assess the impact of monetary policy tightening on GDP growth and CPI inflation, it is assumed that oil prices rise from \$70 in both 2008 and 2009 to \$120 in both 2008 and 2009. This is quite similar to the oil scenarios that are most likely to materialize. (See *Are high oil prices here to stay?*) The Oxford Economics global model allows one either to keep the interest rate fixed or to allow the interest rate to adjust in response to shocks. In the case of the oil price shock, the model allows for an increase in the interest rate to fight the resulting inflation pressures. The simulations were carried out to compare the 2009 macroeconomic outcomes under a fixed interest regime versus a flexible interest rate regime. A flexible interest rate regime implies a more activist anti-inflation central bank than a fixed regime.

The simulation results indicate that contractionary monetary policy would adversely affect GDP growth in developing Asian countries (Table 2.2.4). The average 2008 growth rates are quite similar with fixed and flexible interest rates—6.2% (fixed) and 6.0% (flexible). Monetary tightening thus has some adverse effect on 2008 growth but the effect is limited. However, for 2009, monetary tightening exerts a more substantial impact. This is because it usually takes some time before the contractionary effects of higher interest rates work their way through the economy. The average 2009 GDP growth rate is 6.15% with fixed interest rates but only 4.99% with flexible interest rates. The corresponding figures for the PRC are 9.91% and 8.66%, and for India 7.87% and 6.69%. The broader point is that the region's growth is likely to slow rather than halt abruptly in the face of interest rate hikes induced by the oil shock. This suggests that the main cost of monetary tightening—i.e. slower GDP growth—would be manageable.

2.2.4 GDP growth rate under alternative monetary policy scenarios

Country\ Scenario	2008		2009	
	Fixed interest rate	Flexible interest rate	Fixed interest rate	Flexible interest rate
China, People's Rep. of	10.25	10.18	9.91	8.66
India	8.10	7.96	7.87	6.69
Indonesia	6.04	5.73	6.16	4.65
Korea, Rep. of	4.63	4.43	4.62	3.36
Malaysia	5.59	5.45	5.30	4.68
Philippines	4.99	4.73	5.63	4.31
Singapore	4.85	4.65	4.39	3.44
Thailand	5.11	4.85	5.29	4.12
Average	6.20	6.00	6.15	4.99

Source: Oxford Economics global model.

The simulation results indicate that higher interest rates would help damp the inflation pressures released by the oil price shock on developing Asia (Table 2.2.5). The average 2008 CPI inflation rates are almost identical with fixed and flexible interest rates—7.55% and

2.2.5 Consumer price inflation under alternative monetary policy scenarios

Country\ Scenario	2008		2009	
	Fixed interest rate	Flexible interest rate	Fixed interest rate	Flexible interest rate
China, People's Rep. of	7.44	7.44	5.26	5.16
India	7.41	7.33	9.37	8.02
Indonesia	10.86	10.84	10.46	10.35
Korea, Rep. of	4.93	4.93	4.35	4.25
Malaysia	5.28	5.26	6.41	6.18
Philippines	9.91	9.88	6.85	6.66
Singapore	6.65	6.63	3.85	3.75
Thailand	7.88	7.84	5.52	5.22
Average	7.55	7.52	6.51	6.20

Source: Oxford Global simulations.

7.52%, respectively. Contractionary monetary policy thus has the expected effect but the size of the effect is limited. However, the effect increases somewhat in 2009. The average 2009 CPI inflation rate is 6.51% with fixed interest rates but is 6.2% with flexible interest rates. The corresponding figures for the PRC are 5.26% and 5.16%, and 9.37% and 8.02% for India. Other than for India, the anti-inflation impact of monetary tightening in 2009, while larger than in 2008, remains generally muted throughout the region.

The overall picture is therefore one of a limited impact of interest rates on inflation. This implies that the main benefit of monetary tightening may be smaller than expected.

In the context of the growth-inflation trade-off, the results suggest that the cost of higher interest rates—slower growth—would be substantially higher than the benefit—lower inflation. It may be tempting to interpret this as evidence against the need to pursue contractionary monetary policy in order to rein in inflation. Such temptation is not only misguided but outright dangerous for several reasons.

First, higher oil prices have yet to fully work their way through domestic prices of goods and services. There is a time lag between the initial impact of an oil price shock and the propagation of its effects on the input costs and prices of goods and services. Second, if the inflation expectations of the general public become entrenched as a result of central bank inaction against the oil price shock, the likely result is a vicious wage-price spiral compounded by higher wage demands. The region may suffer a similar fate as the industrial countries in the 1970s—an extended period of high inflation—if it makes the same policy mistake of failing to decisively stamp out incipient inflation expectations early on. Third, inflation has already begun to surge throughout developing Asia and has emerged as the region's top macroeconomic concern. Whether oil-driven or not, inflation is already upon the region. Fourth, it is not at all clear that the current surge of inflation is entirely due to higher oil prices. In fact the chapter, *Inflation in developing Asia: Demand-pull or cost-push?*, also in Part 2, brings to light some intriguing evidence that excess aggregate demand still explains a large part of the region's inflation. This lends support to using traditional anti-inflation monetary policies that curb inflation by curbing aggregate demand.

Long-run macroeconomic effects

According to the analysis of the oil market presented in *Are high oil prices here to stay?* the long-run oil price scenario is a prolonged period of high oil prices. More specifically, the analysis indicates that the real or inflation-adjusted price of oil is likely to remain well above \$100 until at least the end of next decade. The sharp runup of oil prices in 2007 and 2008 seems to have taken oil prices to a new higher plateau. While there is inevitably a great deal of uncertainty about the future trajectory of oil prices, the probability that the oil price environment has fundamentally changed is quite high. In view of this, a meaningful simulation exercise is to look at how developing Asia's GDP, CPI, and current account balance may respond to an extended period of higher oil prices. The Oxford Economics global model is used to assess the impact of an elevation of oil price from \$70, which was the average price in 2007, to \$120, which is the average projected price for the period 2008–2018 in *Are high oil prices here to stay?* Macroeconomic outcomes in the oil price scenario of \$70 throughout 2008–2018 are compared to the alternative oil price scenario of \$120 for the same period. Given the length of the period, allowance is made for the interest rate to change.

The simulation results indicate that the rise in oil prices from \$70 to \$120 will adversely affect output levels throughout 2008–2018. Table 2.2.6 shows the change in GDP under the oil price scenario of \$120 relative to the base-case oil price scenario of \$70. For example, according to the results, the PRC's GDP is 0.3% lower in 2008 if the oil price is \$120 rather than \$70 in 2008. Likewise, the PRC's GDP is 2.4% lower in 2018 if the oil price rises from \$70 to \$120 throughout 2008–2018. For all countries other than Singapore, GDP levels fall when the oil price rises and the fall generally grows larger in the latter part of the period. The positive output impact on Singapore may be due to its special position as a major international oil-refining center.

Turning to the bigger picture, the negative impact of higher oil prices on the region's output is relatively small even in the long run. GDP falls by 2–4% even after a decade of a \$50 increase in oil price. To illustrate,

2.2.6 Difference in GDP levels between two long-run oil price scenarios (%)

Year	China, People's Rep. of	India	Indonesia	Korea, Rep. of	Malaysia	Philippines	Singapore	Thailand
2008	-0.3	-0.7	-0.3	-0.1	-0.6	-0.2	-0.5	-0.3
2009	-1.2	-2.1	-2.3	-0.7	-2.2	-1.4	-0.9	-1.9
2010	-1.3	-1.3	-2.3	-0.5	-2.5	-1.9	0.4	-1.4
2011	-0.7	-1.6	-2.0	-0.5	-2.5	-2.0	0.9	-1.0
2012	-0.6	-2.4	-1.8	-0.9	-2.7	-2.6	1.0	-1.8
2013	-1.3	-2.7	-1.7	-1.8	-2.9	-2.9	0.8	-2.2
2014	-2.1	-2.9	-1.8	-2.2	-3.2	-3.0	0.3	-2.6
2015	-2.7	-3.2	-2.3	-2.8	-3.8	-3.3	-0.3	-3.3
2016	-3.1	-3.5	-2.8	-2.9	-4.5	-3.8	-0.9	-4.0
2017	-2.8	-3.4	-2.6	-2.5	-4.8	-3.9	0.2	-3.9
2018	-2.4	-3.2	-2.1	-2.1	-4.2	-3.5	1.3	-3.3

Note: Oil price scenario 1 assumes an oil price of \$120, and oil price scenario 2 an oil price of \$70, throughout 2008–2018.

Source: Oxford Economics global model.

GDP would be \$96 billion–\$98 billion in 2018 rather than \$100 billion in 2018 if the oil price were \$120 rather than \$70 throughout 2008–2018. Intuitively, even though a decade-long increase in the oil price is a big external shock for a region as highly dependent on imported oil as developing Asia, it is nevertheless a one-time shock to which the region will adjust over time. A useful analogy is the oil crisis of the early 1970s in which oil prices quadrupled. The East Asian “miracle” economies in East and Southeast Asia were initially hit hard but eventually recovered strongly, and the oil crisis did not derail their long-run growth momentum.

In the context of the overall price level, in all eight countries the rise in oil prices from \$70 to \$120 in 2008–2018 raises the CPI (Table 2.2.7). The long-run increase in the CPI is quite large for some countries. For example, the CPI would rise by 46.3% in India and 28.5% in Indonesia after a decade in the high oil-price scenario relative to the low oil-price scenario. For other countries such as PRC, Republic of Korea, and Malaysia, the increase in the CPI is much smaller.

2.2.7 Difference in consumer price index levels between two long-run oil price scenarios (%)

Year	China, People's Rep. of	India	Indonesia	Korea, Rep. of	Malaysia	Philippines	Singapore	Thailand
2008	0.5	2.7	0.7	0.4	2.2	0.6	1.9	0.6
2009	1.8	8.4	3.9	1.6	5.4	3.5	4.8	3.9
2010	2.4	12.3	7.0	2.2	7.1	6.0	6.0	6.7
2011	3.2	16.3	10.1	3.2	8.7	8.3	7.5	9.0
2012	4.2	21.0	12.7	4.4	9.9	10.6	9.0	11.1
2013	5.2	25.6	15.3	5.3	10.5	12.9	10.5	13.5
2014	6.2	29.8	17.7	6.1	10.7	15.0	11.9	15.7
2015	7.0	34.0	20.1	6.6	10.3	16.7	13.1	17.5
2016	7.4	38.1	22.9	7.0	9.5	18.2	14.1	19.3
2017	7.6	42.2	25.9	7.3	8.4	19.6	14.6	21.0
2018	7.4	46.3	28.5	7.6	6.9	20.7	14.8	22.2

Note: Oil price scenario 1 assumes an oil price of \$120 and oil price scenario 2 an oil price of \$70 throughout 2008–2018.

Source: Oxford Economics global model.

More generally, throughout the region, the prolonged period of high oil prices seems to have a substantially bigger impact on the CPI than on GDP. This suggests that, in the long run, taming inflation may be the biggest macroeconomic policy challenge arising from the oil price shock. This implies that failure of monetary authorities to rein in inflation at an early stage may lead to far higher inflation in the future.

With respect to the current account balance, the escalation of oil prices to a higher plateau will substantially worsen the current account balances of all developing Asian countries except Malaysia, which experiences an improvement (Table 2.2.8). This is not surprising since Malaysia is the only net exporter of crude oil among the eight countries. The impact is also negligible for Indonesia, which only recently turned from a net oil exporter to a net importer. Higher oil prices will lower the PRC's surplus but the reduction will be relatively small and the

2.2.8 Difference in current account balance (% of GDP) between two long-run oil price scenarios

Year	China, People's Rep. of	India	Indonesia	Korea, Rep. of	Malaysia	Philippines	Singapore	Thailand
2008	-1.2	-1.5	-0.8	-2.5	0.6	-1.6	-1.7	-2.9
2009	-1.4	-1.9	-0.6	-4.5	1.7	-2.0	-2.3	-3.4
2010	-1.2	-2.4	-0.3	-3.9	1.4	-1.6	-3.2	-2.9
2011	-0.9	-2.3	-0.2	-3.1	1.6	-1.4	-3.2	-2.9
2012	-1.1	-1.9	-0.3	-2.0	1.5	-1.2	-3.7	-2.7
2013	-1.1	-2.0	-0.5	-1.6	1.3	-1.0	-4.1	-2.6
2014	-1.1	-2.4	-0.6	-1.4	1.2	-1.0	-4.5	-2.8
2015	-1.1	-2.8	-0.7	-1.4	1.2	-1.1	-4.8	-2.9
2016	-1.0	-3.1	-0.7	-1.4	1.2	-1.1	-5.0	-3.2
2017	-0.8	-3.5	-0.5	-2.0	1.0	-0.9	-4.9	-3.0
2018	-0.8	-4.0	-0.5	-2.5	1.1	-0.8	-4.9	-3.1

Note: Oil price scenario 1 assumes an oil price of \$120 and oil price scenario 2 an oil price of \$70 throughout 2008–2018.

Source: Oxford Global simulations.

country will continue to enjoy a healthy surplus. However, the long-run deterioration of India's current account deficit should be a cause for concern given that the country already runs a sizable deficit.

Concluding observations

The surge of oil prices since 2003 has had remarkably little adverse impact on the macroeconomic performance of developing Asia so far. The PRC, India, and the rest of the region have grown rapidly without an appreciable acceleration of inflation in the past 5 years. It is a puzzle that developing Asia, a major importer of oil, has seemingly defied the economic law of gravity and has continued to grow rapidly. In fact, Asia's robust growth, which has contributed significantly to broader global growth, has been a key driver of global oil demand growth. Given that Asia's rapid growth has been a major underlying cause of higher oil prices, it is not surprising that higher oil prices have had little tangible impact on Asia's rapid growth.

The big risk from the region's compelling macroeconomic performance in the face of higher oil prices is that it may give policy makers a false sense of security and of immunity from the consequences of higher oil prices. However, a region as dependent as developing Asia on imported oil for its energy needs is bound to feel some adverse effects of the oil price surge sooner or later. This is especially true since the gentle escalation of oil prices since 2003 has turned into a steep ascent since the second half of 2007. Higher oil prices will reduce the region's real income by worsening its terms of trade and by raising the cost of producing virtually everything. In fact, simulation results of the Oxford Economics global model indicate that the oil price shock will reduce GDP growth and raise CPI inflation throughout the region in both the short and long run.

These simulation results also suggest that the oil price surge will have a more pronounced impact on the region's prices and inflation than on

its output and growth. Therefore, it is of use to examine the pass-through of higher oil prices to domestic prices in greater detail (as in the chapter, *Inflation in developing Asia: Demand-pull or cost-push?*, also in Part 2). The impact on GDP growth will be relatively small, and has been the case so far. Tightening monetary policy to tame inflation may thus come at a relatively small cost in terms of growth forgone. However, the Oxford Economics global model results also indicate that higher interest rates will have only limited effect in curbing inflation. In themselves, those results support the views of a large and growing school of thought, which holds that the region's central banks are powerless to fight inflation driven by supply-side shocks.

This argument may be tempting because it gives central banks an excuse for doing nothing and thus implicitly promoting the politically attractive option of slightly higher short-run growth. But the painful stagflation experience of the industrial countries in the 1970s should disabuse the region from any delusions about the irrelevance of monetary policy in the face of supply shocks. Unlike the industrial countries back then, today's Asian countries are not in any serious danger of falling into recession any time soon. Indeed, it would take a leap of imagination to suggest that Asia is at risk of stagflation.

However, the broader lesson from that experience is that failure to rein in incipient inflation pressures at an early stage will result in much higher and prolonged inflation later on. The failure to firmly anchor the general public's inflation expectations will result in higher wage demands, price hikes, and a vicious wage-price spiral that would be difficult to contain. In fact, it took industrial-country central banks the better part of a decade to sort out the mess. That broader lesson, stagflation or not, is most definitely relevant for Asian central banks today. The region's robust growth prospects provide a rare golden opportunity to preemptively hit inflation hard at manageable cost.

Even if inflation is entirely driven by supply shocks, monetary policy has a critical role to play in anchoring inflation expectations so as to prevent second-round inflation triggered by wage-price spirals. However, it is not at all clear whether Asia's current bout of inflation is driven entirely by the surge in oil prices. Intuitively, it is more than plausible that the robust domestic demand that has contributed to healthy economic growth has helped stoke inflation pressures. The oil price shock may have added fuel to the fire but the fire may already have been burning quite strongly. To the extent that regional inflation is driven by overheating domestic demand, an interest rate hike stands a better chance of achieving its usual anti-inflation effect by damping demand and hence inflation pressures. In fact, monetary policy itself has been a key factor behind buoyant demand in the region so far. The real or inflation-adjusted interest rate has been negative in most of the region for some months. It is thus difficult to characterize the region's recent monetary policy stance as anything other than expansionary.

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