



# GROUP OF TWENTY

## MACROECONOMIC POLICY CHALLENGES FROM COMMODITY PRICE VOLATILITY

Inputs for G-20 Energy and Commodity Markets Working Group



Prepared by Staff of the

INTERNATIONAL MONETARY FUND

## EXECUTIVE SUMMARY

**High and volatile movements in commodity prices over the past decade present important policy challenges.** This interim report summarizes recent staff analysis—and thus does not represent the views of the Executive Board of the IMF—of the macroeconomic effects of commodity price fluctuations and assesses policy options that G-20 countries could consider to mitigate their negative effects on economic activity. A forthcoming IMF staff note will provide a discussion of the fiscal costs and the impact of fuel product subsidies, certainly another important part of this policy debate.

**Among commodity exporters, macroeconomic performance tends to move with commodity price cycles,** particularly for energy and metal exporters. Macroeconomic variation with commodity price swings tend to be more pronounced under fixed exchange rate regimes and greater capital account openness. *For commodity importers,* the negative effects of price shocks on growth have declined since the 1970s. Their impact on low-income countries is more variable and larger than in advanced economies.

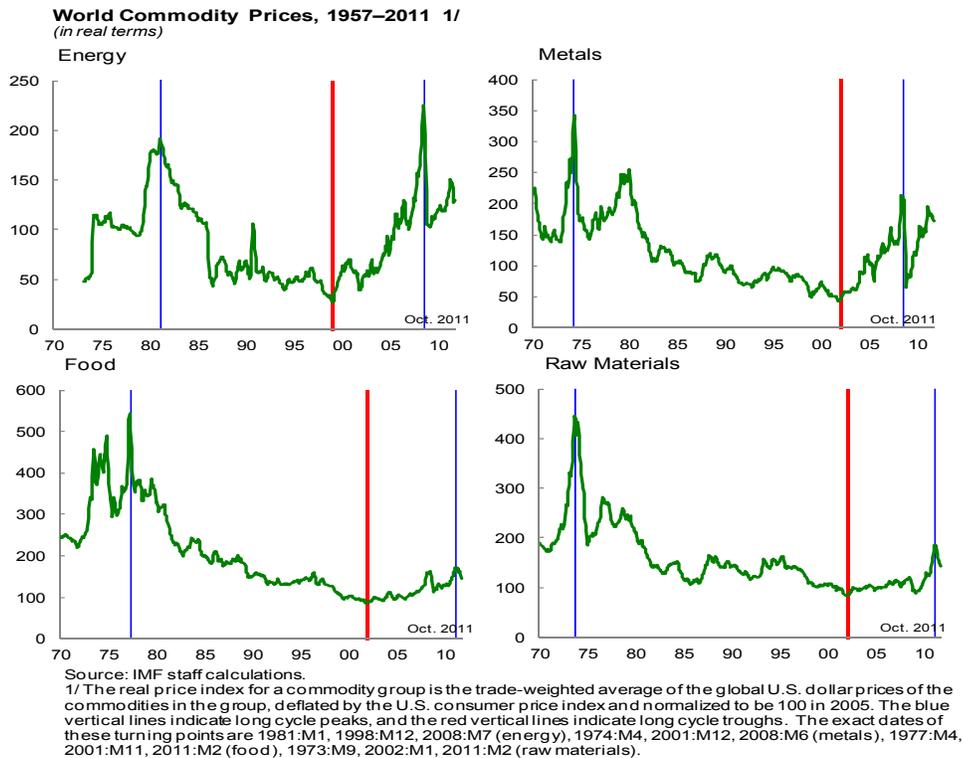
**Commodity price shocks tend to have larger effects on headline inflation in emerging and developing economies than in advanced economies.** There are three main reasons for this: in emerging and developing economies (i) the pass-through from international commodity prices is higher, especially for food, (ii) food and energy consumption shares tend to be higher, and (iii) medium-term inflation expectations are less well anchored.

**Macroeconomic stability in the face of commodity price volatility is one of the key policy priorities for both commodity-exporting and importing countries.**

- The appropriate monetary policy response is likely to differ across countries. Recent staff analysis makes the case that central banks should target what they can hit, be it headline or underlying inflation, if their main objective is to stabilize output. Targeting a measure of inflation that includes commodity prices likely amplifies output volatility relative to targeting one that excludes these prices. Policymakers, however, should remain vigilant commodity price changes do not feed into wage changes and thus broader inflationary pressure.
- For small commodity exporters, countercyclical fiscal policies—which build buffers during commodity price upswings that can be used during downswings—can help insulate them from economic volatility induced by commodity price fluctuations.
- LICs need to take *ex ante* policy actions to reduce exposure or create space for more robust responses against volatile prices. This includes making budgets more structurally robust, and putting in place more flexible and robust social safety nets.
- Managing resource exhaustibility, intergenerational equity, and Dutch disease are also important policy priorities in the face of commodity price volatility for commodity-exporting emerging and developing economies.

## I. INTRODUCTION

1. **Commodity prices have risen dramatically over the past decade, interrupted only briefly by the global financial crisis.** By the end of 2011, average prices for energy and base metals in real terms were three times as high as just a decade ago, approaching or surpassing their record levels over the past four decades. Food and raw material prices also rose markedly, although they remain well below the highs reached in the 1970s.<sup>1</sup>



2. **These price movements present important policy challenges.** In the near term, policymakers need to deal with the macroeconomic consequences of high and volatile commodity prices, including inflationary pressures and real income losses, which tend to be especially severe in lower-income commodity importing countries. Recognition of these challenges has underpinned the G-20 putting this issue on the policy agenda under the Mexican Presidency, and drives their request to international organizations to contribute analytical work from their areas of expertise, highlighting practical and pragmatic policy recommendations.

<sup>1</sup> See G-20 (2011) for discussion of drivers of commodity price fluctuations over the past decade.

3. **This note comprises part of the Fund staff input.** It provides interim staff analysis of the macroeconomic effects of commodity price fluctuations and assesses policy options that G-20 countries could consider to mitigate the negative effects on economic activity. [An updated version will include a more](#) comprehensive discussion of the macroeconomic effects and available policy instruments for both commodity importers and exporters. A separate note being prepared by IMF staff will provide a discussion of the fiscal costs and the impact of fuel product subsidies—an integral part of the policy choices to be made—on macroeconomic and fiscal accounts. Reflecting the enhanced vulnerabilities of Low-Income Countries (LICs) to commodity price swings, this report also addresses macroeconomic effects and policy challenges for LICs. To complement the earlier work of the G-20 study group on commodities, formed under the chairmanship of Mr. Hiroshi Nakaso during the French G-20 Presidency, this note focuses mostly on the more recent contributions of the Fund. The structure of this report is as follows. Section II discusses macroeconomic effects of commodity price fluctuations, focusing on growth and inflation. Section III considers policy options to address these challenges, and Section IV concludes.

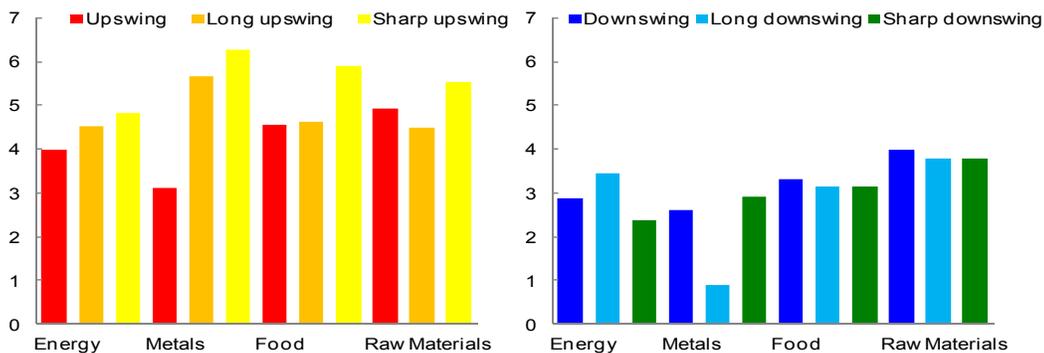
## II. COMMODITY PRICE SWINGS AND MACROECONOMIC PERFORMANCE

### A. Commodity Price Cycles and Growth

4. **For both commodity exporters and importers, the impact of commodity price cycles depends on the nature of commodity price shocks.** An unexpected demand shock-led increase in commodity prices, driven by booming global activity, would increase commodity prices and GDP growth for both exporters and importers initially, with higher prices moderating the growth rate of importers (while likely not causing a downturn). However, price surges arising from supply shocks—due to factors such as a temporary disruption in production—are likely cause a loss of output for importers.

5. **For commodity exporters, macroeconomic performance tends to move with commodity price cycles.** Economic activity deteriorates during commodity price downswings and improves during upswings.<sup>2</sup> Across the four groups of commodity exporters, median real GDP growth is  $\frac{1}{2}$  to  $1\frac{1}{4}$  percentage points lower during downswings than during upswings. The difference tends to be amplified when cycles last longer and/or when they entail sharper price changes than average. This behavior is generally more prominent for energy and metal exporters than for exporters of food and raw materials, possibly because energy and metal prices are more sensitive to the global business cycle and their exports account for a higher share in total exports and GDP.<sup>3</sup>

**Macroeconomic Performance of Commodity Exporters during Commodity Price Swings:  
Real GDP Growth 1/  
(percentage points)**



Source: IMF staff calculations.

1/ Each bar shows the median value of the economy-level averages within the relevant sample for the listed variable. Bars appear only if there are at least three years of data for at least three economies.

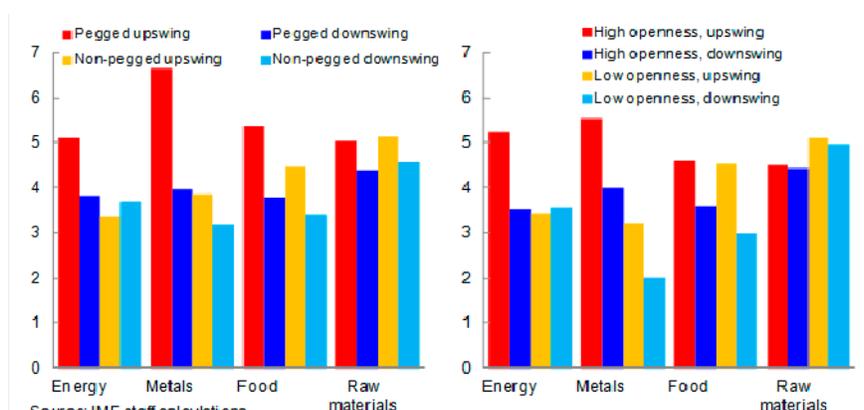
<sup>2</sup> Turning points in real commodity prices are identified based on data from 1957 to October 2011 within each commodity group, yielding more than 300 completed cycles for 46 commodities, with a median (average) upswing duration of 2 (2½) years and a median (average) downswing of 2½ (3) years. See Bluedorn et al. (2012) for more details on data and methodology.

<sup>3</sup> For example, net exports of oil to GDP are over 20 percent, and over 10 percent for copper. For exporters of coffee and cotton, net exports to GDP average 3 to 4 percent.

6. **Macroeconomic variation among commodity exporters with commodity price swings tends to be more pronounced under fixed exchange rate regimes and greater capital account openness.<sup>4</sup>**

- *The cyclical variability in macroeconomic performance is slightly stronger with fixed exchange rate regimes, especially for energy and metal exporters.<sup>5</sup> Conceptually, a fixed exchange rate can reduce economic volatility by limiting exchange rate fluctuations, but it is also unable to serve as a shock absorber to external shocks including changes in real commodity prices. There is weak evidence of the latter effect dominating for energy and metal exporters.*
- *Greater capital account openness for energy and metal exporters is associated with more comovement between commodity prices and real GDP growth. Overall, capital account openness may create offsetting forces for macroeconomic variability. Economies with greater access to international capital markets should be better able to smooth output volatility when commodity prices fluctuate—for instance by borrowing in international markets during downswings. However, markets can be procyclical for some—with capital flows increasing during commodity price upswings and declining in downswings. The latter force appears to dominate for energy and metal exporters, but not for exporters of agricultural commodities.<sup>6</sup>*

**Real GDP Growth Rates of Commodity Exporters during Commodity Price Swings 1/**  
(percentage points)



Source: IMF staff calculations.

1/ Each bar shows the median value of the economy-level averages within the relevant sample for the listed variable. Bars appear only if there are at least three years of data for at least three economies. Exchange rate regimes are from the 'coarse' classification system in Iizaloki, Reinhart, and Rogoff (2006), updated to 2010.

<sup>4</sup> These basic correlations should not be misinterpreted as causal link between structural characteristics and comovement of economic conditions and commodity price swings.

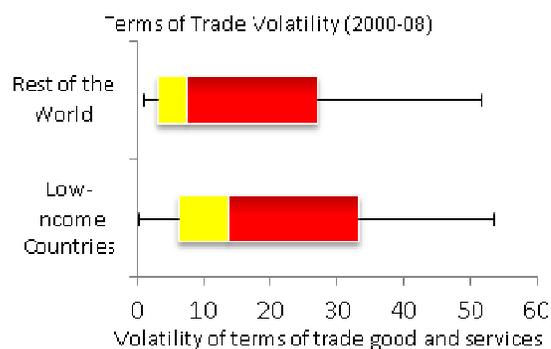
<sup>5</sup> See also Adler and Sosa (2011), who find that countries with sound macroeconomic policies—especially prudent fiscal policy and exchange rate flexibility—are better positioned to weather shocks to commodity prices.

<sup>6</sup> See Bluedorn et al. (2012) for further discussion.

7. **Countries endowed with natural resources have tended to perform relatively worse than those without.** These outturns have been discussed in the literature under the rubric of the "resource curse" paradox, where expansion of the government and non-traded sectors are identified as proximate causes for currency appreciation and crowding out of the manufacturing sector.<sup>7</sup> However, more recently, Cavalcanti et al. (2012) have found that, while improvements in terms of trade have enhanced real output per capita for commodity exporting countries, price volatility has exerted a negative impact on economic growth through lower accumulation of physical capital. These results indicate that the negative growth effects of commodity price volatility offset the positive impact of commodity booms.

8. **For commodity importers, the negative effects of price shocks on growth have declined since the 1970s.** Blanchard and Galí (2007) estimated that a 10 percent increase in oil prices reduced U.S. real GDP growth by only 0.15 percentage points in the period between 1984 and 2007, relative to 0.4 percentage points between 1970 and 1983. This is possibly due to recent price increases being driven mainly by demand, monetary policy forestalling damaging second-round effects on wages, real wage rigidities diminishing, and the oil intensity of advanced economies falling.<sup>8</sup> Regarding medium- to long-term effects on global growth, Helbling et al. (2011) estimated that the constraint on global growth from gradual and moderate increases in oil scarcity—those involving lower trend growth rather than sustained declines—could be limited. For example, a sizable downward shift in oil supply trend growth of 1 percentage point would slow annual global growth by less than ¼ percent.

9. **Adverse external shocks, even when temporary, can have prolonged negative effects on income and poverty in LICs.** LICs as a group have faced much higher terms-of-trade volatility relative to other countries, with median volatility nearly twice as high as in the rest of the world. Such sharp swings in commodity prices or export volumes can arguably seriously affect growth and the fiscal and balance of payments positions, potentially threatening core public spending on health, education, and infrastructure and its maintenance. The economic cost of these shocks tends to be higher in LICs than in advanced and



Sources: IMF (2011a): Managing Volatility: A Vulnerability Exercise for LICs.

Note: Shaded box shows the inter-quartile range and median. Figure also plots maximum and minimum.

<sup>7</sup> Arezki et al. (2011) found that non-resource sector GDP is initially crowded out following resource revenue windfalls, but then increases as a result of the fiscal expansion. See Frankel (2011c) for summary of various channels for these side effects.

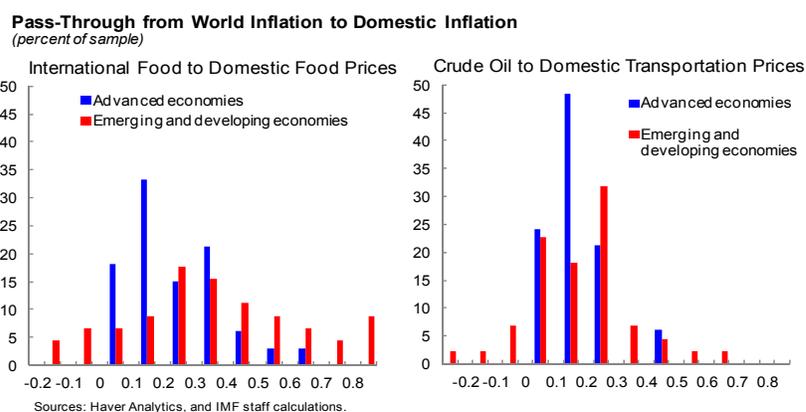
<sup>8</sup> See Blanchard and Galí (2007) and Nakov and Pescatori (2010) for more discussion.

emerging market economies, increasing risk and uncertainty for private agents and governments. Even modest slowdowns in growth can have lasting impacts—particularly for households clustered around the poverty line, many of which may be forced to cope with economic distress by selling family assets, switching to less nutritional food, or removing children from school.<sup>9</sup>

## B. COMMODITY PRICE VOLATILITY AND INFLATION

10. **Commodity price shocks tend to have larger effects on headline inflation in emerging and developing economies than in advanced economies.** In emerging and developing economies (i) the pass-through from international commodity prices is higher, especially for food, (ii) food and energy consumption shares tend to be higher, and (iii) medium-term inflation expectations are less well anchored. Regarding the latter, inflation expectations appear to be well anchored in emerging and developing economies in which the central bank has an explicit inflation target.

- *The pass-through from international commodity prices to domestic commodity prices tends to be larger in emerging and developing economies, but the size of the pass-through is relatively small. The estimation results show that the median long-term pass-through of a 1 percent food price shock to domestic food prices is 0.18 percent in advanced economies and 0.34 percent in emerging and developing economies. There is even less pass-through from oil prices to transportation prices.<sup>10</sup> A number of factors help explain this incomplete pass-through: a significant local component in the production of food such as retail and distribution margins, food and fuel subsidies, and significant domestic production of food.<sup>11</sup>*



<sup>9</sup> See IMF (2011a) for more detailed discussion on growth effect on LICs.

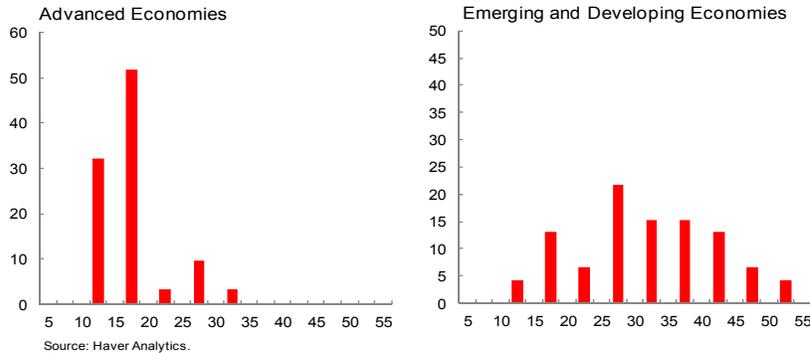
<sup>10</sup> See the WEO chapter by Simon et al. (2011) for more details on data and methodology.

<sup>11</sup> Subsidies generally transform a monetary policy challenge into a fiscal challenge, costs of which are noted in a forthcoming note from IMF staff.

- *Food and energy consumption shares tend to be higher in emerging and developing economies, with a median of 31 percent, relative to 17 percent for advanced economies. Such a high food share implies that food price shocks will have a strong direct effect on headline inflation in these economies. For example, in 2008, food prices contributed about 5 percentage points to headline inflation in emerging and developing economies on average, but only about 1 percentage point to advanced economy inflation.*

#### Food Share in the Consumption Basket

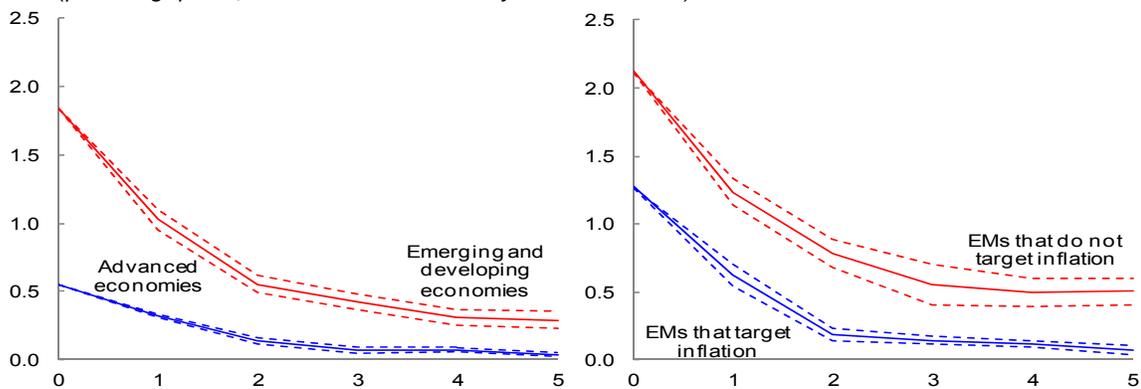
(weight in CPI basket on x-axis, percent of sample on y-axis)



- *As medium-term inflation expectations are weakly anchored in many emerging and developing economies, commodity price shocks have larger effects on inflation expectations in these economies. Estimation results indicate that, on average, a 1 standard deviation shock to current-year inflation expectations, equal to 1.8 percentage points, has a substantial effect on medium-term inflation expectations. Even as far as five years into the future, inflation is still expected to rise by 0.3 percentage point in response to such a shock. By contrast, in advanced economies, a 1 standard deviation shock to current-year inflation expectations, equal to 0.6 percentage point, has a negligible effect on medium-term inflation expectations, suggesting a higher degree of policy credibility.*

#### Response of Inflation Expectations to Inflation Surprises 1/

(percentage points; inflation forecast horizon in years on the x-axis)



Sources: Consensus Economics, and IMF staff calculations.

1/ This figure shows expectations of inflation in the current year and one to five years ahead as percentage point responses to a 1 standard deviation shock to current-year inflation. Figure reports estimated effect of a 1 standard deviation unexpected change in domestic consumer price index inflation based on private sector inflation expectations surveyed by Consensus Economics, 1990–2010 spring and fall vintages. An unexpected change occurs in year  $t=0$ . Solid line indicates point estimates; dashes indicate 1 standard error bands.

11. **Inflationary pressures from global commodity price shocks could be stronger in LICs** as food prices, which account for nearly half of the consumption basket in LICs, are highly correlated with other commodity prices. Direct effects of international food prices on headline inflation, under flexible regimes, are estimated to be substantial—a one percentage point increase in global food prices would add 45 basis points to headline inflation over two years and a long-run pass-through of about 64 basis points.<sup>12</sup>

### III. POLICY RESPONSE TO COMMODITY PRICE SHOCKS

12. **Macroeconomic stability in the face of commodity price volatility is one of the key policy priorities for both commodity-exporting and importing countries.**<sup>13</sup> In light of significant macroeconomic effects of such volatility, many commodity-exporting emerging and developing countries need to manage their commodity revenue windfalls to meet their development needs while preventing boom-bust cycles caused by commodity price swings. Commodity importing countries need to cope with inflationary pressure resulting from volatile commodity prices while mitigating negative impact on output volatility.

13. **Domestic protective policy measures that impair the functioning of global markets and amplify commodity price fluctuations should be avoided.** In response to the rapid rise as well as large fluctuations in commodity prices, many policy measures have been put in place. However, as noted by the report of the earlier G-20 study group on commodity markets, while such policy responses may be understandable from a domestic perspective, they entail the possible risk of impairing the functioning of global markets and amplifying commodity price fluctuations, especially if pursued by a number of countries.<sup>14</sup> For example, many commodity-importing countries have sought to shield consumers through price controls on staple foods and energy. However, artificially suppressing prices usually results in rationing to domestic households and creating distortions in the incentives for additional production. Similarly, export restrictions in producing countries have tended to exacerbate the magnitude of the world price upswing, due to the artificially reduced quantity that is still internationally traded.<sup>15</sup>

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<sup>12</sup> See IMF (2011b) for more detail discussion on inflation effects on LICs, including scenario analysis of commodity price shocks.

<sup>13</sup> Policies should also address social challenges, including protecting the poor. Countries with fiscal room should maintain spending levels to avoid aggravating the negative social effects of the shock. See IMF (2011b) for further discussion and a forthcoming IMF staff note on fiscal implication of costs of fuel product subsidies.

<sup>14</sup> See G-20 (2011).

<sup>15</sup> Frankel (2011b) provides further discussion of this issue.

## A. Monetary Policy

14. **Among commodity importers, central bank credibility is an important factor in determining the effectiveness of monetary policy measures against commodity price fluctuations.** If credibility is low, even a one-time rise in commodity prices can de-anchor inflation expectations and induce strong second-round effects on core inflation. On the other hand, with increased credibility, second-round effects are minimized and inflation expectations become more forward-looking, implying that even a highly persistent increase in commodity prices have little effect on expectations.<sup>16</sup>

15. **Targeting underlying inflation, which can be measured in different ways, can help build credibility and, thus, achieve superior economic outcomes.** Central banks seeking to establish credibility are generally better off communicating their policy objectives in terms of underlying inflation rather than headline inflation.<sup>17</sup> While the appropriate monetary policy response is likely to differ across countries, and no one monetary framework dominates all others, recent staff analysis has highlighted that lower credibility of central bank policies substantially amplifies the trade-off between stabilizing inflation and changes in the output gap. Simon et al. (2011), in their WEO chapter, studied the appropriate monetary policy response to international food price shocks using a macroeconomic model that includes an endogenous credibility formation process of the central banks. Their arguments for relying on underlying inflation are:

- *Underlying inflation is a measure that reflects changes in inflation that are likely to be sustained over the medium term.*<sup>18</sup> Such a measure should be resilient to temporary commodity price shocks. One possible measure, which excludes food and fuel prices, is core inflation. A forecast of headline inflation can also be used. The best measure, however, will vary among countries.
- *It is easier to build credibility by focusing on underlying inflation rather than headline inflation.* Since shocks to commodity prices are typically hard to predict and often not sustained, it is harder to hit headline inflation targets than underlying inflation targets. Higher credibility, in turn, helps yield better-anchored inflation expectations and lower levels of both output and headline inflation volatility.

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<sup>16</sup> See Alichí et al. (2009) for more discussion.

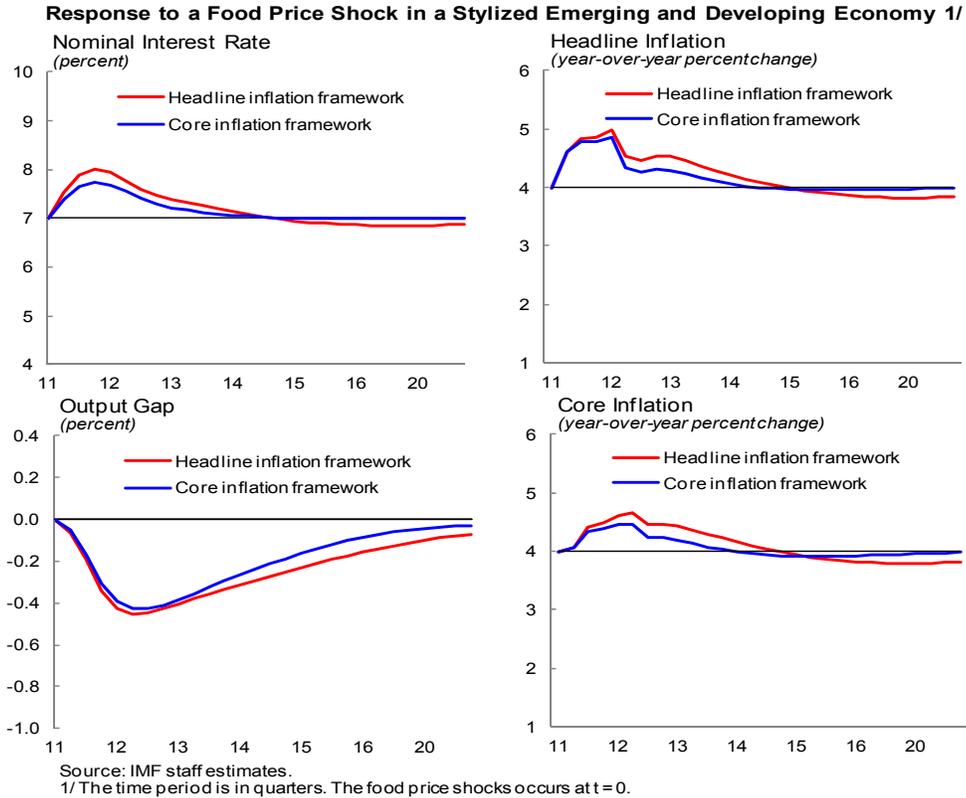
<sup>17</sup> The Bank of Thailand currently defines its target in terms of a core inflation measure that excludes fresh food and energy prices.

<sup>18</sup> Such a measure should eliminate statistical noise by minimizing the weight of components displaying extreme changes, or components with relatively transitory shocks.

- *While targeting headline inflation can lower the volatility of headline inflation, it can only do so at the cost of significantly higher volatility in economic activity.* The desirability of doing so depends on the relative importance attached to stabilizing food and commodities prices relative to output and employment.
- *Policymakers should, however, not ignore movements in headline inflation because it can provide important signals for changes in underlying inflation.* For example, if food price shocks could have larger second-round effect due to high and persistent food price inflation, core inflation that simply excludes food and energy components would underestimate the underlying trend of true inflation.<sup>19</sup>
- *Even if policy credibility is already high,* targeting underlying inflation may achieve greater output stabilization relative to the headline framework for an economy with a high commodity share in the consumption basket. With better-anchored inflation expectations, the degree of monetary policy tightening needed is smaller than in the case with little credibility.
- *Economies with credible central banks and economic slack can afford to look through high headline inflation caused by commodity prices.* In economies where the central bank's credibility is strong—as reflected in well-anchored inflation expectations—and where there is substantial economic slack, monetary policy can remain accommodative even if headline inflation is higher due to food price shocks.
- *In economies with demand pressures and inflation above target, a food price shock is likely to have particularly large second-round effects.* This argues for a more active policy response than in other economies, while being mindful of external demand developments. The loss of credibility from an inflation increase is more severe the greater is the initial gap between actual inflation and the target.

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<sup>19</sup> See Walsh (2011) and Anand and Prasad (2011) for further discussion of these issues.



16. **For commodity-exporting countries, tightening monetary policy in response to rising commodity prices can help central banks achieve dual objectives of stabilizing inflation and the output gap.** Countries that are net exporters of commodities that face a rise in global commodity prices experience a terms of trade improvement. Furthermore, to cite a specific example, in the case of net food exporters with a high share of food in their respective consumption basket, consumer price index inflation will also rise (and by more than in trading partners), thus inducing a real exchange rate appreciation. With the terms of trade and the real effective exchange rate tending to move in the same direction, the central bank can tighten monetary policy to stabilize both inflation and the output gap. Monetary policy tightening, in this case, induces nominal exchange rate appreciation, helping stabilize both food prices in domestic currency and domestic food output.<sup>20</sup>

<sup>20</sup> See Catão and Chang (2010) for more discussion. They also address a starker trade-off faced by commodity importers. Using the example of net food importers, they note how rise in the world price of food leads to terms of trade and the real effective exchange rates moving in opposite directions. Monetary tightening in this case would dampen inflation but also adversely affect competitiveness. They identify several channels—including better capital market integration—that can mitigate these effects of monetary tightening.

## B. Fiscal Policy

17. **For small commodity exporters, countercyclical fiscal policies—which build buffers during commodity price upswings that can be used during downswings—can help insulate them from economic volatility induced by commodity price fluctuations.** Bluedorn et al. (2012), in their WEO chapter, discussed the optimal fiscal policy response to commodity price fluctuations in a small, open, commodity exporters by considering three different fiscal policy rules: a balanced budget rule (BBR), a structural surplus rule (SSR), and a countercyclical rule (CCR).<sup>21</sup>

- A BBR is pro-cyclical and maintains fiscal balance and net debt at their long-term targets since all exceptional commodity revenue windfalls are redistributed to households.
- A SSR results in a one-for-one change in the overall fiscal balance and government debt since additional commodity revenues from high prices are saved, and is cyclically neutral without adding or subtracting from aggregate demand.
- Under a CCR, the fiscal authority not only saves exceptionally high commodity revenue windfalls, but also tightens fiscal policy to dampen the stimulus to aggregate demand from higher revenue accruing to private sector, implying larger changes in budget surpluses and government debt in response to commodity price changes.

18. **IMF staff research notes that, for temporary shocks, a countercyclical policy stance turns out to be the optimal policy response.**<sup>22</sup> Whether or not the price increase is driven by global demand or commodity supply, such a stance is shown to dampen the macroeconomic volatility in response to temporary commodity price shocks.<sup>23</sup> Based on simulation using the IMF’s workhorse Global Integrated Monetary and Fiscal Model (GIMF), Bluedorn et al. (2012) also found that:

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<sup>21</sup> In practice, fiscal policy behavior in a number of commodity exporters has been broadly influenced by rules of this kind. For example, Chile follows a structural surplus rule, which allows for the presence of automatic stabilizers, while Norway’s rule targets a structural non-oil balance and allows for the possibility of countercyclical responses over the business cycle.

<sup>22</sup> Some countries are already operating under a structural or countercyclical fiscal rule or fiscal responsibility laws, including Botswana and Chile.

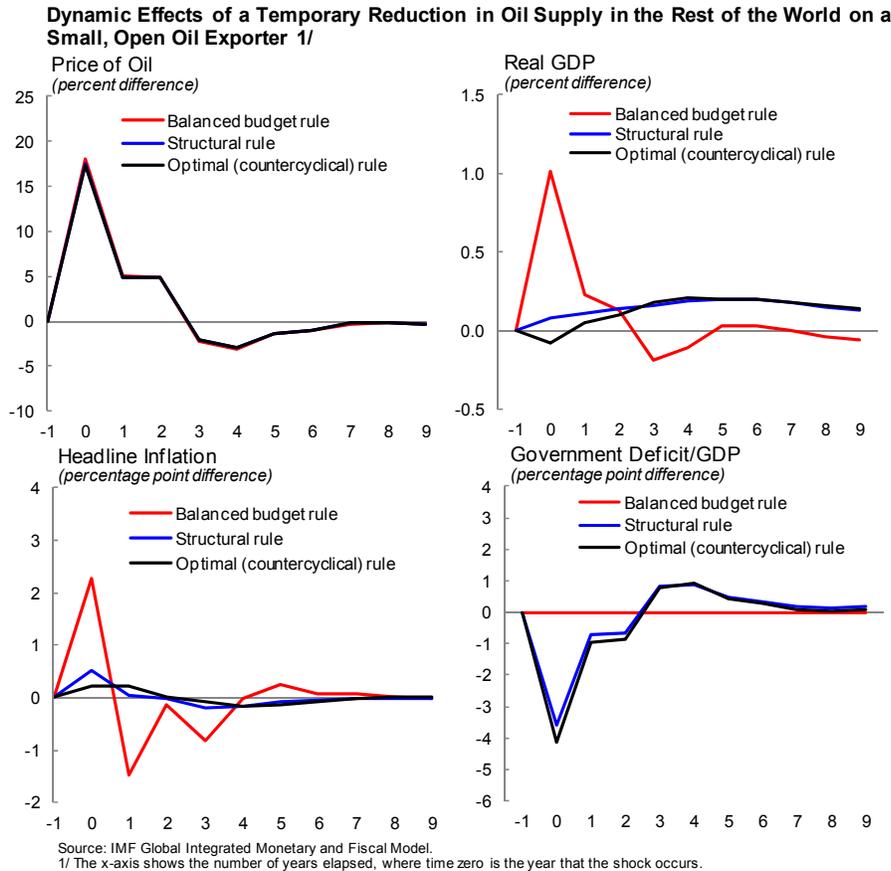
<sup>23</sup> Frankel (2011a) emphasize that both fiscal and monetary policy each has a role to play in mitigating the volatility that stems from the large trade shocks hitting commodity-exporting countries. He proposed fiscal policy to emulate Chile’s structural budget rule, particularly its avoidance of over-optimism in forecasting, and called for monetary policy called Product Price Targeting (PPT), designed to be more robust with respect to terms of trade shocks.

- *The effectiveness of a countercyclical policy stance depends on the degree of monetary autonomy and level of public net debt.* Fiscal policy is more effective under an inflation-targeting regime with a flexible exchange rate because monetary policy helps reduce inflation volatility. At high levels of debt, debt reduction should become a priority to help reduce the sovereign risk premium and build credibility prior to adopting countercyclical fiscal policies.
- *Under a permanent increase in the commodity price, the key challenge is how best to use the permanently higher revenue windfalls to maximize welfare.* Changes in public investment expenditures give the strongest output effect, by raising private sector productivity and subsequently by increasing private capital, labor and corporate incomes, and consumption.<sup>24</sup> Conversely, if prices were to fall permanently, cutting general transfers could limit the output shortfall, although the social welfare impact of such cuts must be taken into account.
- *A cautious approach is the best option in light of unusually high uncertainty and the difficulty of projecting future prospects of commodity markets—including practical difficulties in distinguishing between temporary and permanent shocks—in real time.* This involves upgrading policy frameworks and institutions and building buffers to address cyclical volatility while incorporating new information gradually for a smoother adjustment to potentially permanently higher prices.

19. **While the optimal fiscal response to temporary commodity price swings is a countercyclical one, multilateral considerations may soften this recommendation.** In normal times, increased saving by large oil exporters can lower global real interest rates and boost interest-sensitive components of aggregate demand in importers, partly offsetting the negative direct effect of the shock on aggregate demand of commodity importers. However, different policy choices might be more relevant under certain circumstances: when interest rates are near the zero lower bound (limiting that channel for importers) or when countries may be unable to offset commodity price shocks driven by production shocks elsewhere, a multilateral perspective (or a call for collective action) may argue for a less countercyclical fiscal policy response by major commodity exporters, helping to counteract the effects of the production shocks on global activity.

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<sup>24</sup> Such measures can be desirable, especially in LICs, where returns on public capital investment have been estimated to be higher than the world interest rate. However, it is important to account for limits to absorptive capacity (Dutch disease concerns), bottlenecks, and constraints of governance. See Berg et al. (2012) for a discussion.



20. **Macroeconomic stabilization in the face of commodity price volatility is only one of many policy priorities for commodity-exporting emerging and developing economies.** Others include resource exhaustibility, intergenerational equity, and Dutch disease challenges associated with resource discoveries. The relative priority of addressing various policy challenges depends on country-specific conditions, including the structure of the commodity endowment, institutional capacity, and the level of development. Hence it is important to design appropriate fiscal frameworks that anchor fiscal policy accommodating expenditure scaling-up without ignoring the exhaustibility and volatility of the resource revenue.<sup>25</sup>

21. **LICs need to take *ex ante* policy actions to reduce their exposure or create space for more robust responses in the face of commodity price volatility.** They need to make their budget more structurally robust, by strengthening domestic revenues and improving their systems for managing public spending and debt, and put in place more flexible and robust social safety net systems. Over the longer term, LICs should pursue reforms to encourage domestic savings and deepen their financial sectors, as well as explore policies

<sup>25</sup> See Baunsgaard et al. (2012) for guiding principles based on a practitioner's or policymaker's perspective and on relevant international experience.

encouraging greater diversification in an economy's production and exports.<sup>26</sup> In addition, LICs need not rely solely on “self protection” or “self insurance” and can seek support from others, including international financial institutions, and from financial markets.<sup>27</sup> In the context of fuel pricing, in the long run, full pass through of price changes is likely to be optimal: countries could integrate price smoothing mechanisms into their full pass-through automatic pricing mechanisms, protecting consumers from large price increases while also protecting the budget by ensuring full pass through over the medium term.

#### IV. CONCLUSIONS

22. **This note admittedly does not cover the whole gamut of policy options.** For many countries with high pass through, or high shares of food and fuel in consumption, diversification could be an appropriate policy. However, this is a longer-term issue and not an easy task. As highlighted earlier, improvements in institutional quality—improving access to and quality of education, clarifying property rights and improving business climate—may have beneficial effects. In addition, the important role of fuel product subsidies as well as the fiscal policy implications for oil importers are not explored in this note; IMF staff will provide an update on these issues in a separate forthcoming note.

23. **The G-20 as a forum for international cooperation is an ideal location to discuss these issues.** A well-founded domestic framework, in and of itself, can contribute to global economic stability. Considerations for “large” commodities exporters are further explored in Bluedorn et al. (2012), where spillover effects of policies are highlighted. Coordinated policy efforts, where measures target globally optimal outcomes, could be a welcome result of the discussions at the G-20.

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<sup>26</sup> See Bredenkamp and Bersch (2011) for more discussion on policy options for LICs.

<sup>27</sup> See IMF (2011c) for more discussion on the role and potential for contingent financial instruments for LICs.

## References

Adler, Gustavo, and Sebastian Sosa, 2011, “Commodity Price Cycles: The Perils of Mismanaging the Boom,” IMF Working Paper 11/283 (Washington: International Monetary Fund).

Alichi, Ali, Huigang Chen, Kevin Clinton, Charles Freedman, Marianne Johnson, Ondra Kamenik, Turgut Kisinbay, and Douglas Laxton, 2009, “Inflation Targeting under Imperfect Policy Credibility,” IMF Working Paper 09/94 (Washington: International Monetary Fund).

Anand, Rahul, and Eswar Prasad, 2011, “How Should Emerging Market and Low-Income Country Central Banks Respond to Commodity Price Shocks,” Chapter 5 in *Commodity Price Volatility and Inclusive Growth in Low-Income Countries* (Washington: International Monetary Fund).

Arezki, Rabah, Kirk Hamilton, and Kazim Kazimov, 2011, “Resource Windfalls, Macroeconomic Stability and Growth: The Role of Political Institutions,” IMF Working Paper 11/142 (Washington: International Monetary Fund).

Baunsgaard, Thomas, Mauricio Villafuerte, Marcos Poplawski-Ribeiro, and Christine Richmond, “Fiscal Frameworks for Natural Resource Intensive Developing Countries,” forthcoming, IMF Staff Discussion Note 12/XX (Washington: International Monetary Fund).

Blanchard, Olivier, and Jordi Galí, 2007, “The Macroeconomic Effects of Oil Shocks: Why Are the 2000s So Different from the 1970s?” NBER Working Paper No. 13368 (Cambridge, Massachusetts: National Bureau of Economic Research).

Bluedorn, John, Rupa Duttagupta, Andrea Pescatori, and Stephen Snudden, 2012, “Commodity Price Swings and Commodity Exporters,” Chapter 4 in *World Economic Outlook (April 2012)* (Washington: International Monetary Fund).

Berg, Andrew, Rafael Portillo, Susan Yang, and Luis-Felipe Zanna, 2012, “Public Investment in Resource Abundant, Low-Income Countries,” IMF Working Paper (forthcoming) (Washington: International Monetary Fund).

Bredenkamp, Hugh, and Julia Bersch, “Commodity Price Volatility: Impact and Policy Challenges for Low-Income Countries,” Chapter 4 in *Commodity Price Volatility and Inclusive Growth in Low-Income Countries* (Washington: International Monetary Fund).

Catão, Luis, and Roberto Chang, 2010, “World Food Prices and Monetary Policy,” NBER Working Paper No. 16563 (Cambridge, Massachusetts: National Bureau of Economic Research).

Cavalcanti, Tiago, Kamiar Mohaddes, and Mehdi Raissi, 2012, “Commodity Price Volatility and the Sources of Growth,” IMF Working Paper 12/12 (Washington: International Monetary Fund).

Frankel, Jeffrey, 2011a, “How Can Commodity Exporters Make Fiscal and Monetary Policy Less Procyclical?” RWP11-015 (Cambridge, Massachusetts: Harvard University).

Frankel, Jeffrey, 2011b, “Combating Volatility in Agricultural Prices,” weblog (June 27), [http://content.ksg.harvard.edu/blog/jeff\\_frankels\\_weblog/2011/06/27/combating-volatility-in-agricultural-prices/](http://content.ksg.harvard.edu/blog/jeff_frankels_weblog/2011/06/27/combating-volatility-in-agricultural-prices/)

Frankel, Jeffrey, 2011c, “The Natural Resource Curse: A Survey of Diagnoses and Some Prescriptions,” Chapter 2 in *Commodity Price Volatility and Inclusive Growth in Low-Income Countries* (Washington: International Monetary Fund).

G-20, 2011, Report of the G20 Study Group on Commodities under the chairmanship of Mr. Hiroshi Nakaso.

Helbling, Thomas, Joong Shik Kang, Michael Kumhof, Dirk Muir, Andrea Pescatori, and Shaun Roache, 2011 “Oil Scarcity, Growth, and Global Imbalances,” Chapter 3 in *World Economic Outlook (April 2011)* (Washington: International Monetary Fund).

International Monetary Fund, 2011a, “Managing Volatility—A Vulnerability Exercise for Low-Income Countries,” Policy Paper (Washington).

International Monetary Fund, 2011b, “Managing Global Growth Risks and Commodity Price Shocks—Vulnerabilities and Policy Challenges for Low-Income Countries,” SM/11/263 (Washington).

International Monetary Fund, 2011c, “Managing Volatility in Low-Income Countries: The Role and Potential for Contingent Financial Instruments,” Policy Paper (Washington).

Nakov, Anton A., and Andrea Pescatori, 2010, “Oil and the Great Moderation,” *The Economic Journal*, Vol. 120, No. 543, pp. 131–56.

Simon John, Daniel Leigh, Andrea Pescatori, Ali Alich, Luis Catão, Ondra Kamenik, Heejin Kim, Douglas Laxton, Rafael Portillo, and Felipe Zanna, 2011, “Target What You Can Hit: Commodity Prices Swings and Monetary Policy,” Chapter 3 in *World Economic Outlook (September 2011)* (Washington: International Monetary Fund).

Walsh, James, 2011, “Reconsidering the Role of Food Prices in Inflation,” IMF Working Paper 11/71 (Washington: International Monetary Fund).