Monetary policy of commodity-dependent economies

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Abstract
This paper deals with the features of monetary policies of commodity-exporting and commodity-dependent economies, using methods of generalization of their instruments. The review of the monetary policy toolkit of advanced and emerging economies during the 2020–2021 pandemic demonstrates that central banks’ reaction has been cautious in adopting asset purchase programs, often limiting their purchases to a smaller scale along with a narrow set of assets. Nevertheless, the application of credit support programs implemented in 2008 and a new set of credit programs for additional segments of the economy facilitated recovery. Central banks of emerging economies started raising key rates in 2021, and in 2022 advanced economies also began conducting tighter monetary policies to combat inflationary pressures. The impact of the war in Ukraine on commodity markets exacerbated rising commodity prices along with accommodative monetary policy, has led to stagflation in 2022. The risk of monetary policy priorities distraction from the green transition is noted.

For commodity-exporting emerging economies, shocks in raw materials prices become factors of business cycle fluctuations, and the effectiveness of monetary policy depends on exchange rate regimes and fiscal policy. The central bank’s reaction to the rise in commodity prices is a tightening of monetary policy and a fall in prices – a weakening, suggesting that stabilizing output is more important than inflation targeting.

Keywords: monetary policy, inflation, commodity prices, export.

Introduction

The global financial crisis of 2008 and the pandemic of 2020–2021 prompted central banks to ease their monetary policy by cutting interest rates and then applying unconventional measures, such as quantitative easing and interventions in the foreign exchange market. Today, central banks operate with significantly larger balance sheets and hence a more comprehensive range of risks. After the twin shocks of Covid-19 and Russian invasion of Ukraine in 2022, inflation has reached its highest level in recent decades. As of May 2022, across the OECD, inflation peaked at 9.2% – the highest since 1988 (The Guardian, June 2022). Generally, inflation in 2022 is higher than at the start of most previous tightening cycles. Public debt is also at a historically high degree across countries. That makes it harder to raise interest rates without triggering financial market dysfunction (Carstens, 2022, p. 4). The war in Ukraine has significantly affected commodity markets due to trade blockades, destruction of Ukrainian productive capacity and sanctions against Russia. Notably, the economies of Russia and Ukraine are crucial suppliers of raw materials for many advanced and emerging economies around the globe ranging from energy products and metals used in technology industries to essential agricultural products. Rising commodity prices stimulated central banks to start tightening monetary policies. Given that, in recent years, the role of central

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banks in economic development has been expanded. In light of this, central banks have become universal policymakers, venturing into addressing structural issues such as inequality or climate change, and introducing digital currencies. However, now having faced with high inflation with simultaneously too many goals, central banks are likely to fail to meet their most crucial goal – long-term price stability.

**Material and methods**

Over the past two decades, more countries with small open economies have shifted from fixed exchange rate regimes to floating as part of inflation targeting policies. At the same time, given the changing conditions of trade in small open economies rich in natural resources, the application of only floating exchange rates is insufficient to ensure monetary independence and overall economic stability.

Indeed, exchange rate flexibility can soften the impact of trade shocks on the economy, but the scope of the exchange rate to be a shock absorber is limited. In turn, the adverse effect of a sharp drop of commodity prices could be less severe for commodity exporters with flexible exchange rates than those with pegged exchange rates. Maintaining a stable exchange rate regime under sustained market pressure raises many challenges without supporting monetary policies. A more flexible exchange rate regime could allow for a smoother output adjustment to a terms-of-trade shock. Meanwhile, moving to greater flexibility can be complex without well-developed financial markets and adequate capacity to implement monetary policy to safeguard monetary stability (Al-Sadiq et al., 2021).

In addition to fixed and floating exchange rate regimes, researchers compare inflationary and currency targeting regimes to identify which of the methods of conducting monetary policy allows to withstand high volatility of macroeconomic indicators in response to external shocks for terms of trade. So, Hove et al. (2016) concluded that the gap in GDP, inflation, and interest rates to terms-of-trade shocks is significantly smaller in countries with an inflation targeting than in countries with fixed exchange rates. The only indicator whose sensitivity to terms-of-trade shocks increases during the transition to inflation targeting is the exchange rate, which absorbs the shock. De Gregorio and Labbe (2011), examining the impact of copper price shocks on the macroeconomic indicators of Chile, argued that with a combination of a flexible exchange rate, a fiscal policy based on the targeting of the structural budget deficit, and inflation targeting, import substitution and the rejection of specialization in the export of natural resources are not mandatory necessary conditions for the sustainable economic development.

The increase in commodities prices negatively impacts the foreign accounts of oil importers (the current account balance of these countries will deteriorate). Higher prices for raw materials affect macroeconomic conditions through inflation, modified production models, and trade conditions (Igan et al., 2022).

Commodity price swings remain associated with substantial volatility of GDP growth, consumption, investment and fiscal revenue in commodity-exporting emerging economies, in contrast to advanced economies. Furthermore, commodity price shocks are often persistent, complicating the fiscal policy response to shocks given the potential trade-offs between ensuring short-term macroeconomic stabilization and long-term fiscal and debt sustainability (Richaud et al., 2019). Commodity price fluctuations are an essential determinant of the business cycle in commodity-exporting emerging economies, in contrast to advanced commodity-exporting economies, and are associated with high investment and consumption volatility. Commodity price swings can harm long-term growth and overall welfare, especially in economies with poorly developed financial systems. In this regard, Drechsel and Tenreyro (2017) have disclosed that commodity prices can explain 38 per cent of the GDP growth volatility in the post-1950 data in Argentina. Fernandez et
al. (2017) have concluded that commodity and interest rate shocks explain, on average, 33 per cent of output fluctuations (across 138 countries over 1960–2015).

In general, the economic shocks from the pandemic and the war in Ukraine highlight the need for a monetary policy that can help mitigate the impact of future shocks, as well as reforms that will promote economic diversification to reduce excessive dependence on commodity exports and increase resilience to commodity shocks.

Therefore, the paper aims to determine the features of monetary policies of commodity-exporting and commodity-dependent economies. This article applies methods of grouping and comparison to generalize the practice of monetary policy instruments and expert assessments to detect their effectiveness.

Results and discussion

1. Monetary policy instruments under pandemic 2020–2021

Short-term rates, which until spring 2020 were low among most advanced and emerging economies, quickly fell to near zero at the beginning of the pandemic. Central banks faced the challenge of supporting the real economy and stabilizing financial markets with monetary tools other than lowering their key interest rates. In response, central banks expanded the types of assets they were willing to buy and the markets they were willing to support with liquidity and credit tools dating back to the 2008 global financial crisis. During the 2020–2021 pandemic, the global monetary policy instruments included (English et al., 2021): 1) reduction of discount rates and use of forward forecasts in order to relieve tension in financial markets; 2) purchase of assets to support aggregate demand; 3) provision of liquidity and credit support (lending to financial enterprises, purchase of corporate securities, direct lending to non-financial enterprises and bank lending), including support by governments; 4) cancellation of regulatory requirements for mandatory provisioning, namely countercyclical capital buffer and liquidity, and capital buffer requirements so that banks do not narrow lending and liquidity to comply with regulations.

Central banks of advanced economies responded more slowly by buying government bonds to lower long-term interest rates. At the beginning of the pandemic, the Fed was somewhat cautious in its municipal and corporate bonds purchases, loosening restrictions to include lower-quality asset classes. In December 2021, the Fed shifted towards a quicker tightening pace and raised the key rate by 75 basis points. Some central banks of small open economies also raised key rates several times by early 2022 (BIS, 2022).

Similarly, the ECB was initially cautious about expanding its quantitative easing programs. Only after a sharp jump in yields did the ECB adopt the pandemic emergency purchase program, which increased the flexibility of its asset purchase operations (English et al., 2021). The ECB bought corporate securities and subsidised bank lending to households and businesses. Since the beginning of the pandemic, the ECB has been using a set of monetary policy tools to achieve inflation targeting 2% in the medium term, including (Panetta, 2022): 1) the key interest rate, which has a more significant impact on short-term and medium-term rates; 2) asset purchases have a more significant impact on long-term returns and the risk premium; 3) providing liquidity through targeted long-term refinancing operations and pandemic emergency purchase programs, which affect bank lending conditions and liquidity in financial markets.

As a result, real ex-post policy rates – adjusted for realised inflation – fell in most countries from already deficient levels. Real policy rates have generally been somewhat higher in emerging economies but remain negative. Fiscal deficits declined in most countries. The improvement of economic conditions allowed governments to rewind some of the fiscal stimulus deployed at the pandemic’s peak. Governments of emerging
economies with higher debt levels implemented more significant fiscal consolidations (BIS, 2022). Many Latin America had already raised key rates several times by the end of 2021. In Asia, where inflation was generally lower, policy tightening took place later and more gradually. Still, by early 2022 most emerging economies’ central banks had started to taper the quantitative easing programs. The People’s Bank of China was an important exception: it eased monetary policy as inflation remained subdued (BIS, 2022).

Thus, by applying monetary policy measures during pandemic, central banks have gone beyond their role as lenders of last resort and become buyers of last resort. The significant monetary easing that the world’s central banks have used to maintain economies during the coronavirus pandemic has spurred economic activity but devalued currencies. Rising prices for gold and bitcoin confirm this as investors sought to hedge their asset portfolios against inflation. After the acute phase of the pandemic, central banks in most advanced economies began to withdraw stimulus measures due to economic recovery, and inflationary pressures emerged in 2021–2022.

2. Monetary policy instruments under conditions of war 2022

War 2022 has led to a notable rise in energy and commodity prices. In order to combat soaring inflation (which rose significantly in 2021 globally and accelerated further in early 2022), central banks have embarked on policies of “expensive money” confirm this as investors sought to hedge their asset portfolios against inflation. After the acute phase of the pandemic, central banks in most advanced economies began to withdraw stimulus measures due to economic recovery, and inflationary pressures emerged in 2021–2022.

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months is much higher than the individual spikes that occurred in the 1970s. Together, energy, food and industrial goods account for around 80% of the overall inflation observed since 2022. The second factor driving up inflation in the euro area is the recovery of internal demand as the economy has reopened after the pandemic. Spending is rotating from goods back to services as restrictions are lifted, while pent-up demand for tourism and leisure activities is proving unexpectedly strong. This rebound in spending has seen services inflation rise to 3.5% in May 2022 – the highest rate since the mid-1990s (Lagarde, June 2022).

In the long term, the war will accelerate Europe’s green transition as a way to enhance energy security. However, in the short term, the war will distract monetary policy priorities away from a green transformation, as energy prices increase has already caused higher costs for the investment needed in clean technologies and an expansion of carbon-pricing schemes (Lagarde, June 2022). Another consequence of war for advanced economies is that significant drops in asset prices trigger a sharp recession. Related financial stability risks can negatively impact non-banks through hidden leverage and liquidity mismatches. Non-banks have grown fast but are much less transparent and closely regulated than banks (Carstens, 2022, p. 4).

On the whole, monetary tightening in advanced economies will further keep growth in emerging economies and undermine their long-term economic development. The war in Ukraine has further increased commodity prices and intensified supply disruptions, adding to inflation fears. This will affect advanced and emerging economies differently depending on their energy dependence in consumption and production.

3. Monetary policy in commodity-exporting economies

Emerging economies, which rely on commodity exports as the primary source of government revenue and foreign exchange, are sensitive to the volatility of global commodity markets, which is reflected in the structure of their business cycles. Many of these countries tend to pursue pro-cyclical macroeconomic policies that increase the sensitivity of business cycles to fluctuations in commodity price swings. So, Shousha (2016) notes that the main reasons for the different reactions of emerging and advanced economies to commodity price shocks are unlike reactions to key rates and differences in restrictions on companies’ working capital. In addition, there is a close relationship between the commodity price cycle and borrowing conditions in commodity-exporting economies: when commodity prices rise, credit conditions improve (Drechsel et al., 2019, p. 338). Fluctuations of raw materials’ prices affect the allocation of resources between economic sectors. Higher demand for resources leads to an increase in the demand for domestic goods relative to foreign goods, causing domestic inflationary pressure and bringing about an appreciation of the real exchange rate (Drechsel et al., 2019, p. 339).

During an oil price upturn, the exchange rate increases, contributing to import growth and non-oil exports’ competitiveness fall, in other words, Dutch disease. By the way, oil prices have been volatile over the past five decades. The price rise in the 1970s ended with a decline in the first half of the 1980s. Since the early 2000s, prices reached their maximum in 2008. Since 2014, prices began to fall with a collapse in 2020 against the background of the pandemic, which from 2022 was marked by price upturn. As of July 1, 2022, Brent oil costs 101 dollars (Trading economics). It is to be noted that even among advanced economies, the monetary policy response to oil price spikes can significantly affect macroeconomic variables. In particular, Delpachitra et al. (2020) assert that more than 40% of fluctuations in Canadian domestic production (over four years) are related to the monetary policy channel after the oil shock. At the same time, the Fed’s monetary policy has a smaller percentage of the spread of oil price shocks in the economy.

The central bank’s reaction to the commodity prices upturn is monetary policy tightening in
order to raise the exchange rate and reduce excess demand for goods. When commodity prices fall, easing monetary policy to strengthen the currency is optimal. Ferrero and Seneca (2015, p. 27) emphasize that the central bank may raise interest rates to limit the inflationary impact of the exchange rate depreciation. For an oil-exporting country, it is essential to compromise between, on the one hand, lowering the key rate in order to reduce the negative output gap due to falling oil prices and, on the other hand, increasing the key rate in order to limit inflationary pressure caused by the weakening of the national currency.

In practice, most fossil fuel exporting economies have pegs or fixed exchange rate regimes. Otherwise, they do not conduct an independent monetary policy. When oil prices fall, most commodity-exporting economies ease monetary policy, suggesting that stabilizing output is more important than inflation targeting. In the short term, pegs allow fossil fuel-producing countries to stabilize imported inflation and thus to provide confidence in monetary policy. In the case of a floating exchange rate, the central bank sets a target level of inflation and can loosen monetary policy in order to smooth out a negative shock to the terms of trade. If inflation expectations are not fixed due to limited confidence in the central bank and if the share of imported goods in the consumer basket is large, monetary policy may tighten in the face of the risk of adverse terms of trade shock (Arezki et al., 2018). In the long term, fossil fuel exporting economies are concerned with the need to diversify their economies’ structure, and their central banks, through regulatory and technological initiatives, are playing an essential role in promoting investment in non-fossil fuel-based financial assets (Arezki et al., 2018).

The choice of monetary policy instruments is influenced by the economy's structure, including the sustainability of fiscal policy. The cost of borrowing grows as export prices for raw materials fall and increases faster in conditions of distrust in monetary authorities. Macroprudential tools through capital buffers, risk-based supervision, time-varying loan-to-deposit and loan-to-value ratios can also enable to limit the upward/fall of credit and asset prices (Arezki et al., 2018). Meanwhile, lower raw materials prices and, therefore, reduced revenues from natural resources limit opportunities for fiscal support. When prices for exported goods rise, government budget constraints become less stringent, allowing for increased government spending. In order to avoid the impact of commodity price swings, governments introduce stabilization funds or various types of fiscal and budgetary rules.

The way monetary policy is conducted along with confidence in it affect the transmission of commodity price shocks. Using the Chilean economy, Medina and Soto (2016) demonstrated that fiscal policy mistrust tends to increase the impact of copper price shocks on GDP, consumption, and the real exchange rate (p. 336). In turn, the introduction of a flexible exchange rate regime contributed to a decrease in the sensitivity of GDP to copper price spikes (p. 349). Furthermore, Medina and Soto (2014) demonstrate that under the conditions of a small open economy, commodity price shock causes output and consumption increase, inflation upturn, and consequently, monetary policy tightening. In turn, informing the public about the objectives, instruments and decisions of monetary policy can help mitigate the macroeconomic effects of terms-of-trade fluctuations, as these instruments improve monetary policy transparency. In addition, the positive reputation of the management of monetary authorities increases the effectiveness of monetary policies by fixing market participants' expectations following politicians' declared goals. Fiscal and monetary policies do not inspire confidence if key rates or government spending deviates significantly from values corresponding to fiscal and monetary authorities' systematic behaviour. Transparency involves the ability of private sector participants to observe such deviations.
Overall, an external commodity price shock affects exporting countries differently, depending on the degree of vulnerability of each economy, the size of the shock, and transmission channels. The global demand shock contributes more to the dynamics of domestic output growth and inflation, while the commodity price shock exerts significant pressure on the domestic interest rate and terms of trade.

4. Monetary policy of commodity-dependent economies

A central bank’s commodity-dependent economies response to rising commodity prices is to adjust to the effects and limit the consequences by lowering output and rising unemployment until inflation returns to the set target (Blanchard & Gali, 2007). Therefore, due to the scale of energy price upturn and the monetary policy lag, monetary policy is ineffective in offsetting external price pressures.

On the whole, export commodity dependence, referred to as the curse of natural resources (Sachs & Warner, 2001), is characterized as extreme weather events affecting crop yields, exploitation of minerals depending on the maturation of mines, reliance on oil production on the discovery of new deposits and shifts in geopolitical realities, commodity prices swings affecting macroeconomic stability, and increases in government spending discouraging private investment (Deloitte, June, 2022). Commodity-exporters are countries which, on average in 2008–2012, met the following criteria: commodities exports > 30% of total exports; or exports of any single commodity > 20% of total exports. Among commodity exporters, dependence on commodity exports is exceptionally high for oil exporters. On average, commodity exports account for 35 per cent of total exports in non-oil exporting emerging economies considered moderately dependent and 58 per cent among highly dependent ones (Richaud et al., 2019).

The sharp decline in commodity prices from mid-2014 to early 2016 created challenges to the commodity export-dependent economies. For countries with flexible exchange rates, the commodity shock contributed to significant currency depreciation, loss of reserves, or higher interest rates to combat inflation. Countries with pegged exchange rates intervened to support their pegs and faced the challenge of their viability when combined with an appreciation of the dollar to which many commodity exporters tie their currencies. Consequently, some countries shifted to more flexible exchange rates (Al-Sadiq et al., 2021). Many exporters implemented fiscal consolidation, introduced additional taxes, reduced current or capital spending, set up medium-term fiscal policy frameworks or macro-fiscal units, and increased efforts to enhance fiscal transparency. Countries with large fiscal buffers initially delayed consolidation plans to absorb the initial price shock and implemented countercyclical fiscal spending before the tightening measures when price fall continued. Those with limited fiscal buffers resorted to increased borrowing from domestic or international markets or drew down bank deposits or stabilization funds (Al-Sadiq et al., 2021). Most countries tightened interest rates to defend or limit excessive weakening of their currencies or to limit passthrough to inflation, while a few countries implemented a more accommodative monetary policy to support economic activity in the absence of inflation pressures. Some countries eased credit policies to support the economy, while others tightened micro/macro-prudential rules to strengthen the banking systems and introduced deposit insurance schemes. The other countries put in place or tightened administrative measures to limit FX access and ensure exchange rate stability, that caused increased parallel market rates (Al-Sadiq et al., 2021).

Today lower-income countries are most exposed to price fluctuations and supply shocks in agricultural sector. On average, more than 5 per cent of the import basket of the poorest countries consists of products that are likely to face price hikes resulting from the ongoing war
in Ukraine. The share is below 1 per cent for more prosperous countries. In 2018–2020, low-income countries imported 1.4 billion dollars of Russian wheat (29 per cent of their total) and another 0.5 billion dollars from Ukraine (10 per cent). Russia also accounts for a quarter of global natural gas exports, one-fifth of the global coal market and supplies more than 10 per cent of global crude oil. The hikes in fuel prices and disruption of supplies will negatively impact net oil importers, specifically indebted countries and a majority of CIS countries (UNCTAD, 2022). On the other hand, European countries are more directly affected by the war in Ukraine, as their fossil energy commodities import is under pressure. The EU depends on Russia to meet its energy needs (24.7% of its oil and 46.8% of its natural gas). The EU also turns on Russia for its supply of metals such as aluminium, gold, and platinum. For instance, Germany with its energy-intensive, large manufacturing sector and export-led economy, is among the hardest hit. As Russia and Ukraine are significant exporters of grains and fertilizers, the prices of agricultural commodities such as wheat, corn, and seed oils have increased under war conditions (Deloitte, June, 2022).

While the aftermath of the oil crises of 1973 and 1979 characterised persistently high inflation and low economic growth, today's oil price increase is relatively minor, and the energy intensity of GDP much less. At the same time, a much broader range of energy sources and agricultural commodities have seen sharp price increases. Furthermore, supply disruptions for critical products, such as fertilisers and metals, could lower future global output, adding to price pressures. At the same time, monetary goals and instruments are now much better defined. Moreover, credibility has begun to become more vital. Experience of previous crises highlights that shorter and front-loaded tightening cycles tend to make soft landings more likely than shallower but more drawn-out tightening (Carstens, 2022).

On the downside, there are nowadays less opportunities than in the 1970s or 2007–2008 for substitution of gas and coal as price increases across all kinds of fuel. Higher prices of some commodities such as energy have also enlarged other commodities' production costs. Second, the energy intensity of GDP has fallen sharply since the 1970s, so that consumers may be less sensitive to relative price changes. It may also be more difficult for countries to reduce energy dependence. Third, policy responses in many countries have prioritised energy subsidies and tax breaks, aggravating the situation, with fewer policies designed to tackle the imbalance between the supply and demand of fuels (World Bank, 2022, April). Moreover, today the transmission of oil price shocks on U.S. activity has changed with the shale oil boom, and activity and wages in many manufacturing-intensive states now increase following oil price spikes, potentially fuelling inflation further (Bjørnland, 2022).

The impact of oil price shocks on inflation is negligible when policymakers are hawkish than dovish, whereas the effect on output is more considerable. The main reason is that the increase in interest rates in the contractionary phase, although effectively curbing inflation, will exacerbate the oil-led contraction of the economy (Bjørnland, 2022, p. 17). On the whole, demand-driven oil price shocks were already transmitted into inflation expectations throughout 2021 and are indirectly affecting inflation. Though the commodity spurs in 2021–2022 are beyond central banks' control, inflation expectations can be managed.

**Conclusions**

Even before the war in 2022, inflation soared to multi-year highs in many developed countries. The pandemic disrupted supply chains, boosted commodity demand and led to accommodative monetary and expansive fiscal policies. Central banks' monetary policies in advanced and emerging economies were effective in the initial stages of the pandemic.
shock by the aid of credit support programs, implemented in response to the 2008 global financial crisis, combined with a new set of credit programs for additional segments of the economy. Financial markets that had previously relied primarily on interest rate adjustments and foreign exchange rate interventions began to respond to new monetary policy instruments such as asset purchases.

However, the war further raised commodity prices, increasing inflationary pressures, reducing domestic demand, and forcing central banks to tighten monetary policy rapidly. The inability of monetary regulators to respond effectively to rising inflation at the right time has led to an unprecedented increase in public debt and increased pressure from the fiscal authorities on central banks.

In order to reduce the adverse impact of raw materials price cycles, a regime with a flexible exchange rate is necessary. Greater exchange rate flexibility is essential for building resilience to future shocks, as commodity-exporting economies with a floating regime have, on average, higher growth rates than pegged economies and recover more quickly from shocks.

At the same time, there is an urgent need for a fiscal policy in which government spending does not depend on fluctuations in government revenues from commodities. In addition, monetary policy is less effective when monetary authorities do not ensure trust and transparency. Improvement of the transmission mechanism's efficiency is also associated with the development of the financial market, particularly the government securities market, the private capital market, and non-bank financial intermediation institutions. Monetary policy should be flexible and consist of instruments that are easy to adjust as needed.

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