



## Demand and Supply Dynamics in East Asia during the COVID-19 Recession

Ergys Islamaj, Franz Ulrich Ruch, and Eka Vashakmadze

*The COVID-19 pandemic has devastated lives and damaged economies, requiring strong and decisive policy responses from governments. Developing the optimal short-term and long-term policy response to the pandemic requires understanding the demand and supply factors that drive economic growth. The appropriate policy response will depend on the size and duration of demand and supply shocks. This Research & Policy Brief provides a decomposition of demand and supply dynamics at the macroeconomic level for the large developing economies of East Asia. The findings suggest that both demand and supply shocks were important drivers of output fluctuations during the first year of the pandemic. The demand shocks created an environment of deficient demand—reflected in large negative output gaps even after the unprecedented policy response—which is expected to last through 2021. The extant deficient demand is suggestive of continued need to support the economic recovery. Its size should guide policy makers in calibrating responses to ensure that recovery is entrenched, and that short-term supply disruptions do not lead to long-term declines in potential growth.*

### The Pandemic-Induced Shock

The pandemic, national lockdowns, and reverberations from the rest of the world inflicted a massive shock to the East Asia and Pacific region in 2020 (World Bank 2020a). While the region was the only one to register positive growth in 2020, this outcome was largely driven by China and Vietnam. The region's other economies witnessed sharp declines in economic growth in 2020. The pandemic affected both supply and demand. Supply of goods and services suffered due to the underutilization of factors of production, including reduced working hours and disruptions in international travel and trade. At the same time, the spread of COVID-19 resulted in a demand contraction, typically associated with pandemics, as domestic households lost income and increased precautionary behavior, and as some sources of external demand, such as tourism, dried up (World Bank 2020b) (see box 1). The demand contraction has been deep and more durable than the initial supply decline and will likely persist.

Low external demand will continue to affect economies reliant on tourism, while sluggish domestic demand will disproportionately affect economies with large services sectors. Understanding the demand and supply factors that drive economic growth is critical for developing the optimal short-term and long-term policy response to the pandemic. In many countries, demand and supply contractions are driven in large part by the same underlying cause: lockdowns. In that sense, the COVID-19 recession is different from other recessions because demand and supply factors simultaneously affect output. Importantly, however, the appropriate policy response depends on the extent to which each of these factors affects output. A countercyclical fiscal policy response may be ineffective if the decline in growth is mainly driven by supply-related factors caused by temporary lockdowns; higher government spending cannot support selling products that have not been produced or services that have not been offered (Reinhart and Reinhart 2020).

### Box 1. What the Economics Literature Says about Demand and Supply in a Pandemic

In response to the pandemic, an exploding economic literature has focused on understanding the supply and demand dynamics of the COVID-19 shocks. Supply and demand shocks are likely intertwined with what starts as a supply shock—lockdowns, layoffs, and firm exit—leading to a demand shock (Guerrieri et al. 2020). The initial supply shock depresses aggregate demand and causes losses in income. In turn, consumers reduce spending and firms reassess investment decisions, which further depresses demand (Fornaro and Wolf 2020). Precautionary behavior, in the form of reduced labor supply (cutbacks in work and lay-offs as businesses stay closed) and consumption during pandemics, can explain supply and demand contractions, as highlighted in recent research that incorporates epidemiological features to a standard macroeconomic model (Eichenbaum, Rebelo, and Trabandt 2020; Jones, Philippon and Venkateswaran 2020).

More open economies and those that rely on external sources of growth, are more vulnerable to spillovers from other large economies through trade and financial linkages, a sizeable literature finds, suggesting that external demand is a nontrivial driver of growth fluctuations (World Bank 2016). The revival of exports in the region at the same time that imports are recovering only with a lag also suggests that negative demand shocks tend to linger (Benguria and Taylor 2020).

A number of studies look at the dynamics and consequences of the pandemic shock across sectors. In the United States, the relative

relevance of supply and demand depends on the sector (del Rio-Chanona et al. 2020; Fahri and Baqaee 2020). In transport, demand likely dominates; in manufacturing, mining, and services, supply dominates; and both are factors in entertainment, restaurants, and tourism. Under these conditions, countercyclical policy could be less effective than in typical recessions, and more targeted interventions would be required (Fahri and Baqaee 2020). Supply shocks are also likely to play a larger role in driving sectoral output fluctuations at the start of the pandemic. Indeed, supply shocks could explain, on average, two-thirds of the contraction of hours across sectors in the United States during the initial peak of the crisis in March and April 2020 (Brinca, Duarte, and Faria-e-Castro 2020).

The response of output and employment to the COVID-19 shock also depends on the ability to work from home (Gottlieb et al. 2020). In advanced economies, about half of the labor force can work from home, whereas in less developed countries the figure is around one-third. Similarly, an economy's dependence on trade and location in global value chains may affect the relative importance of supply or demand shocks (Kirby and Maliszewska 2020). Supply shocks would likely dominate in economies that have greater backward linkages: that is, those whose exports embody imported value added. Demand shocks, however, would likely dominate in economies with greater forward linkages and those that export final goods to the rest of the world. Commodity-exporting economies that supply commodities for manufacturing are likely to experience large demand shocks. In Turkey, for example, losses during the COVID-19 shock have been more severe in sectors with stronger international input-output linkages and higher external debt (Çakmaklı et al. 2020).

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However, if the decline in growth is driven by demand factors and policy makers do not provide the appropriate scope and size of policy response, then the economic suffering could be severe and prolonged.

### Declines in Both Supply and Demand

Supply disruptions were reflected in a sharp drop in industrial production in response to the outbreak and lockdown measures. Industrial production in China contracted by 13 percent, on a year-on-year basis, in January and February of 2020 before increasing strongly in the second half of the year, as disruptions to business operations receded, businesses opened, and workers were able to return to workplaces (figure 1). In East Asia and Pacific excluding China, industrial production contracted sharply in March and April of 2020 and has been rebounding since across the region, but at different speeds.

The East Asian and Pacific economies have also been negatively affected by falling demand, as demonstrated by contracting retail sales, which have reflected the diminished ability and desire of households to purchase goods and services. Rising uncertainty, income losses from retrenchment and reduced working hours, and shifts in expected income prompted households to reduce their consumption and increase savings. In China, retail sales contracted for the first time on record in February 2020. Retail sales have been increasing in China and Vietnam, surpassing pre-pandemic levels by the end of the 2020, but remaining below pre-COVID-19 levels in the region's other economies. A rise in infections by the end of the year corresponded to slowing momentum of retail sales in Indonesia, the Philippines, and Vietnam. Other measures of economic activity, including private consumption and investment, exhibited similar trends, suggesting sluggishness in domestic demand. Inflation also fell and remains subdued.

### Decomposing Supply and Demand

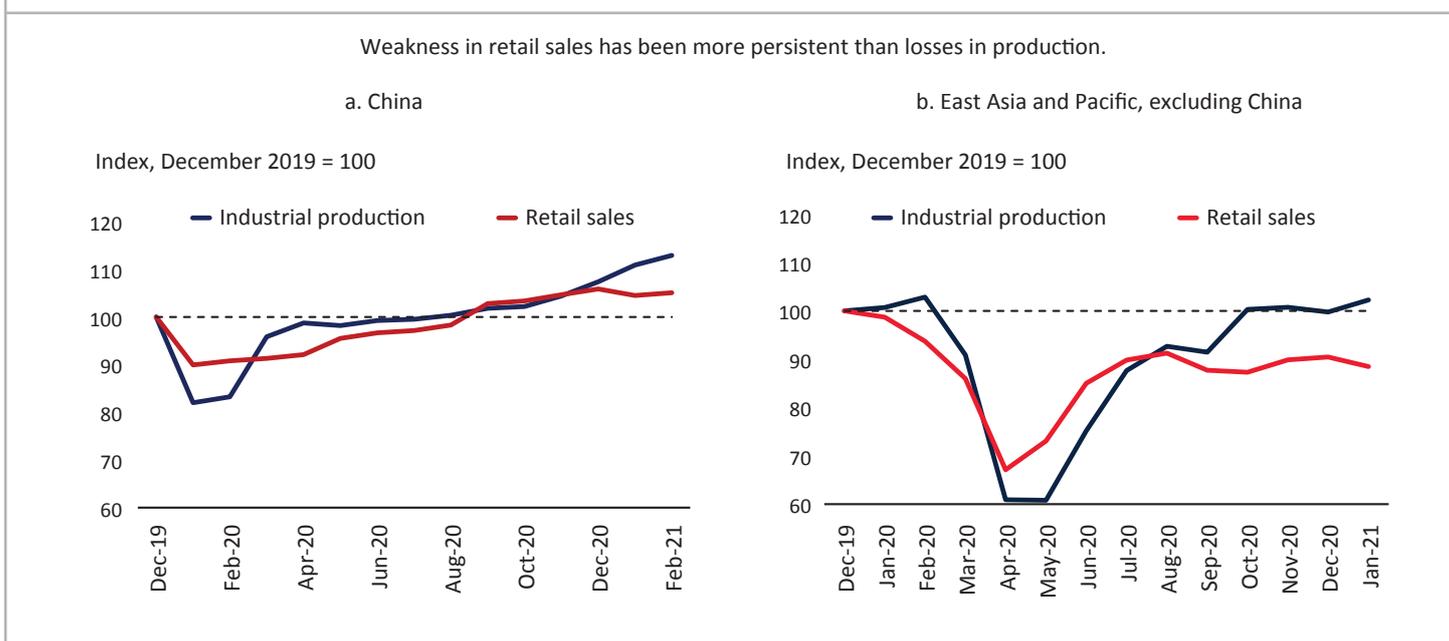
A Bayesian sign-restricted vector autoregressive (VAR) model is utilized to decompose the demand- and supply-related shocks in the major developing East Asian and Pacific economies during the

COVID-19 recession (Ha et al. 2019). The model uses the opposing behavior of output and prices to proxy for demand and supply factors that drive fluctuations in output— demand-related shocks move prices and output in the same direction, whereas supply-related shocks move them in opposite directions. The model can also distinguish between domestic and foreign demand/supply shocks by tracing the movement of prices and output in the world's four largest economies (the United States, China, the Euro Area, and Japan). To deal with the unprecedented nature of the COVID-19 shock, the variance of residuals is allowed to vary over time (that is, the model accounts for stochastic volatility) (see Lenza and Primiceri 2020).

Both aggregate demand and supply of goods and services contracted sharply in response to the pandemic during 2020, explaining between 50 and 75 percent of deviations of output growth from trend (figure 2). In countries that were able to control the virus (China and Vietnam), the duration of the supply-related shock was markedly short, whereas components of aggregate demand—particularly private consumption and investment—remained sluggish and continued to weigh on growth for most of 2020. In Malaysia and Thailand, the initial contraction was much sharper because of the sizable drop in external demand amid domestic policy uncertainty. Thailand, an economy highly dependent on tourism and exports, had the largest contribution from foreign demand, at more than 40 percent. Supply side disruptions eventually eased, but aggregate demand remained suppressed during 2020. In Indonesia, and the Philippines—two major regional economies that were not able to control the disease—both supply and demand factors weighed on growth.

In China, domestic supply shocks turned positive in the third quarter of 2020 on a year-on-year basis, reflecting a strong policy response and the early and effective control of the outbreak. In the Philippines, the most stringent lockdown through much of March to May 2020 contributed to the largest contraction in industrial production among the sample of economies. By the end of 2020, industrial production in the Philippines remained about 3 percent below its level in January 2020.

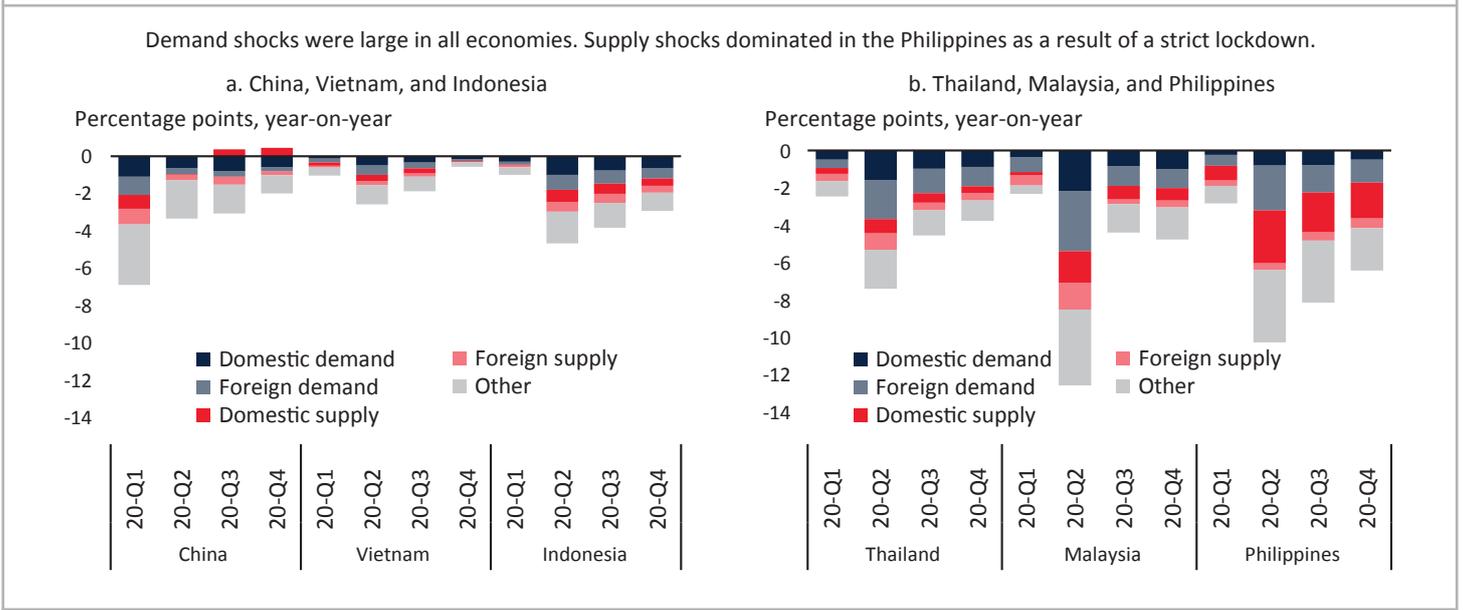
Figure 1. Pandemic-Induced Changes in Production and Retail Sales



Source: Haver Analytics; World Bank.

Note: For panel b, the data are weighted using 2019 GDP at 2010 prices and exchange rates. East Asia and Pacific excluding China includes Indonesia, Malaysia, Philippines, Thailand, and Vietnam. Data for industrial production for Indonesia and retail sales for the Philippines are World Bank staff estimates.

Figure 2. Output Growth Decomposition during 2020



Source: Haver Analytics; World Bank.

Note: The figure shows the results of an historical decomposition from a sign-restricted Bayesian vector autoregressive model. Shocks are standardized and do not add up to GDP in each quarter. For example, in Indonesia, trend growth was just over 5 percent before the pandemic while it contracted by more than 2 percent in 2020; the figure reflects the difference. "Other" reflects shocks to oil prices, policy rates, and the exchange rate.

### Restrictions in Mobility in Retail Establishments and the Workplace Closely Correlate with Demand and Supply Shocks

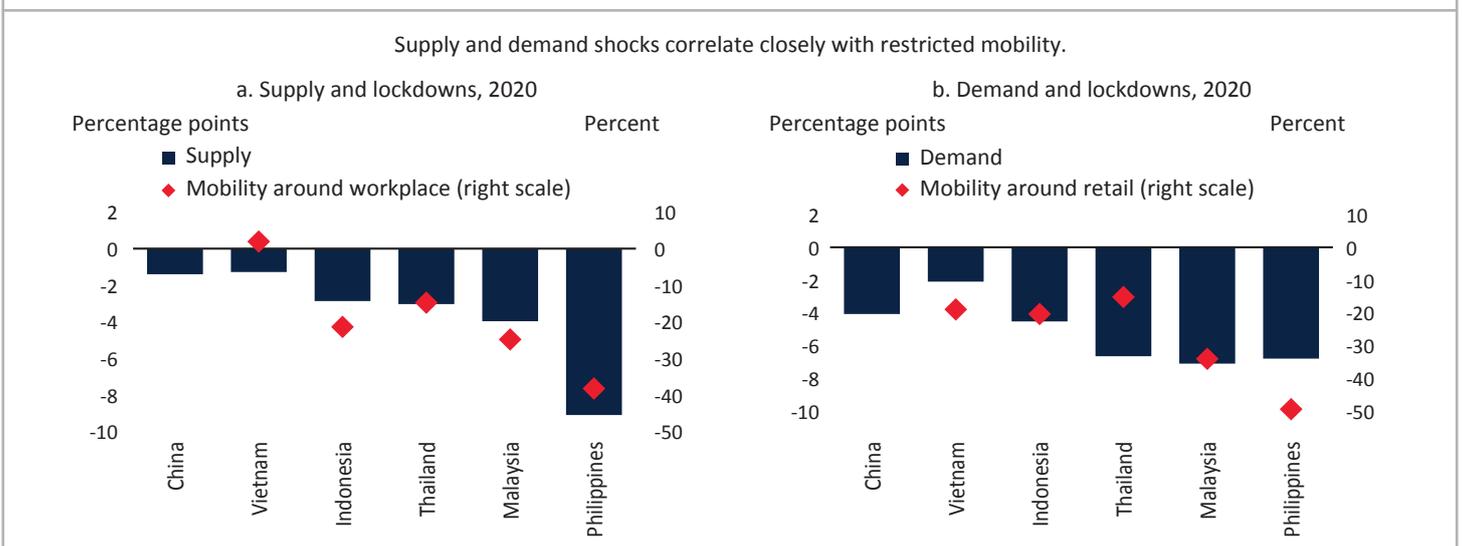
Restrictions in people’s access to retail establishments such as restaurants, theaters, museums, and libraries, as well as workplaces closely correlated with supply and demand shocks in East Asia in 2020 (figure 3). Output contractions were the smallest in China, Indonesia, and Vietnam, reflecting the short duration of domestic outbreaks (China, Vietnam); less stringent restriction measures (Indonesia); and resilient exports amid relatively less dependence on tourist inflows. China’s sharp contraction in the first quarter of 2020 reflected the mandatory closure of workplaces in February and March—the

strictest lockdown implemented in the world during this period. The subsequent containment of the outbreak allowed businesses to open and activity to rebound in the second quarter and be sustained for the rest of the year, minimizing the supply damage to the economy.

### Deficient Demand

As mobility normalizes, supply will gradually recover. The recovery in demand may take longer, especially as increased uncertainty and loss of income leads to an increase in precautionary savings. A proxy for deficient demand, the output gap—defined as the difference between actual output and what an economy can produce at capacity—is estimated to have been significantly negative across the region in 2020, reflecting weak demand and the misallocation of labor

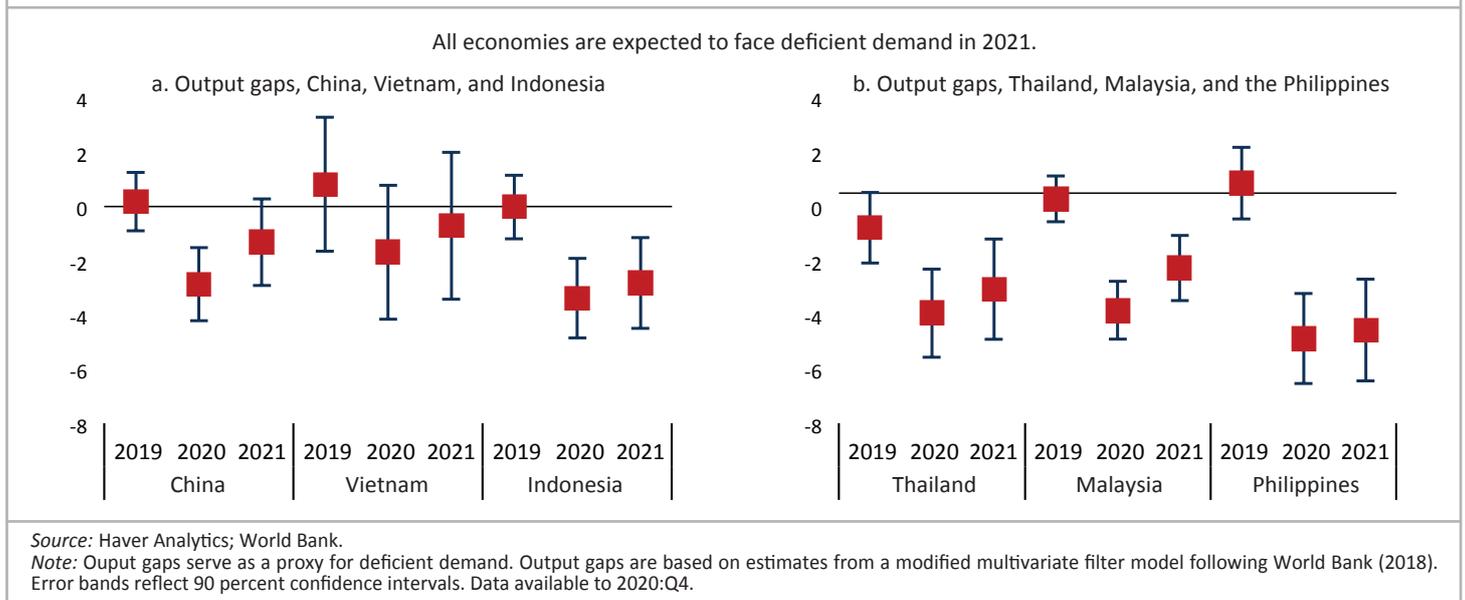
Figure 3. The Effect of Restrictions on Mobility on Supply and Demand Shocks



Source: Google COVID-19 Community Mobility Reports; Haver Analytics; World Bank.

Note: Supply and demand represent historical decompositions from a sign-restricted Bayesian vector autoregressive model. Output is standardized. In panel a, “mobility around workplace” reflects the average deviation from baseline during 2020 in trends for places of work. Supply shock is the average annualized change in 2020. In panel b, “mobility around retail” reflects the average deviation from baseline during 2020 in trends around places such as restaurants, cafes, shopping centers, theme parks, museums, libraries, and movie theaters. Demand shock is the average annualized change in 2020.

Figure 4. Deficient Demand



and capital (figure 4). In China, the output gap is estimated to have averaged negative 3 percent of potential output in 2020, compared to effectively zero in 2019. This is significantly worse than the output gap registered in China during the global financial crisis, estimated at around negative 1 percent.

In Vietnam and Indonesia, the output gaps are estimated to have widened to around negative 1.5 and negative 3.0 percent of potential output in 2020, respectively, reflecting the lingering impacts of the outbreak. Large pandemic-induced shocks in Malaysia, Thailand, and the Philippines led to negative and large output gaps, exceeding negative 5 percent of potential output for 2020. For all these economies, output gaps are multiple times larger now than during the global financial crisis.

Output gaps in the region's economies are expected to remain negative in 2021, suggesting deficient demand. On average, output gaps are expected to narrow to negative 1.8 percent of potential output, with all economies still facing a deficient demand environment during the year. The output gap is expected to be around negative 1.5 percent in China and slightly negative in Vietnam, but for both economies the estimates are statistically indistinguishable from zero. In the rest of the region, output gaps are estimated to be around negative 3.0 percent during 2021, ranging from 2.8 percent in Indonesia to 5.9 percent of potential output in the Philippines.

### Fiscal and Monetary Policy Response

To counter the short- and long-term consequences of COVID-19, policy responses need to be comprehensive and customized to country-specific circumstances. In addition to factors related to the COVID-19 pandemic, including the duration and severity of outbreak, policy makers also need to carefully consider the country's economic structure, and dependence on foreign demand, as well as the likely behavioral responses of households and firms to the economic shock.

In economies with large demand shocks, fiscal policies can support income and consumption to mitigate losses. These policies should be calibrated to the size of deficient demand as well as additional spending to deal with the significant health costs involved in fighting COVID-19 and ensure the effective and quick rollout of vaccine programs to eliminate the source of the problem. In East Asia, additional spending and revenue measures have been sizable, averaging 4 percent of output (figure 5). Despite the significant spending, negative output gaps remain and, in several economies, additional spending may be needed to support the recovery.

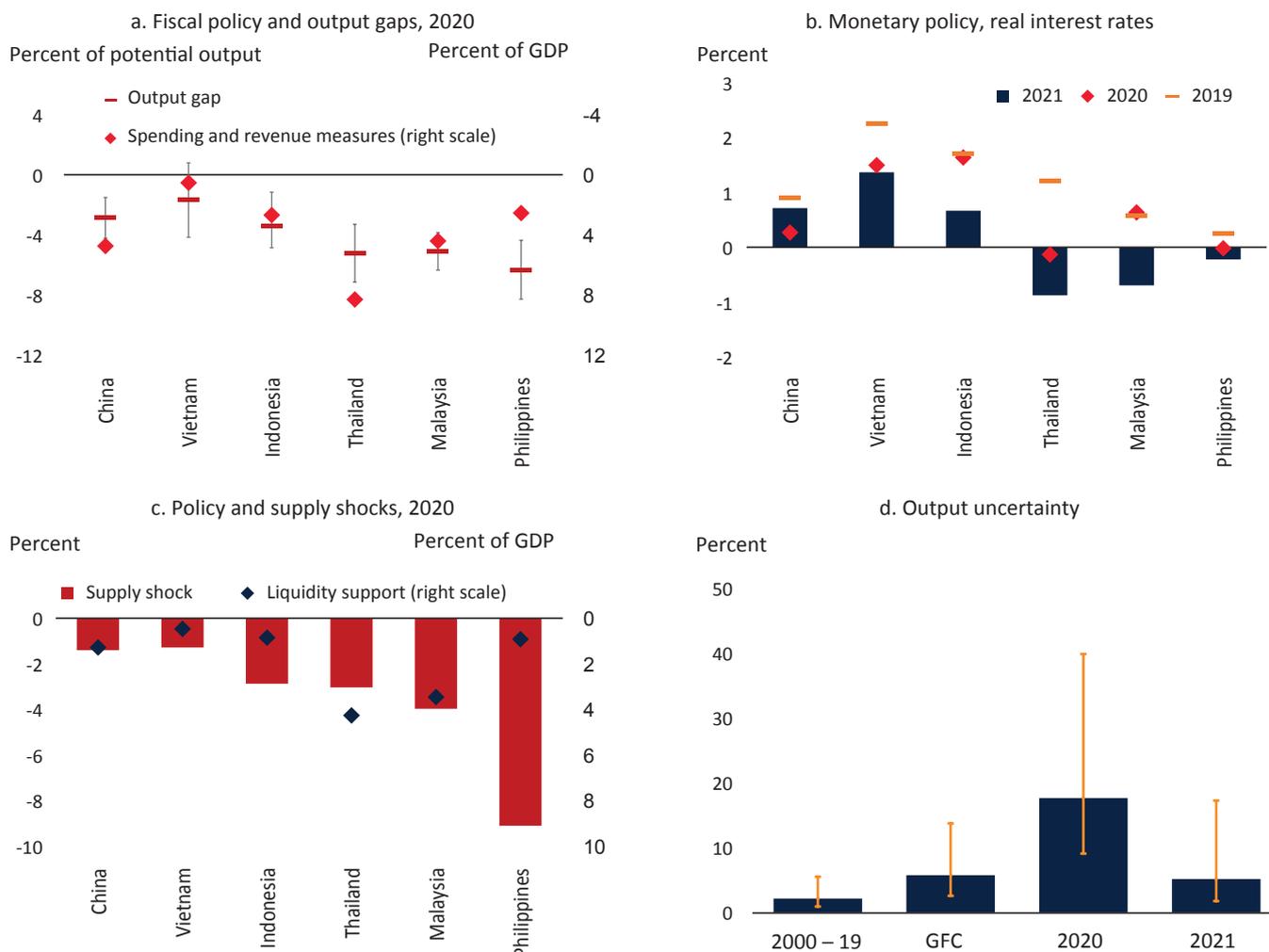
Monetary policy across the region has reacted aggressively to counter falling demand and acute stress in financial markets. Policy rates were lowered by about 120 basis points on average from the onset of the pandemic to December 2020. Real interest rates—a measure of the stance of monetary policy—fell less than nominal policy rates amid decreasing inflation expectations. Looking forward, further easing of monetary policy, except in China, is expected in 2021. Apart from Thailand, which is close to the zero lower bound, there remains scope to shift rates lower beyond current expectations to support the recovery. Given the expected low core inflation over the next two years, there is room for monetary policy to support demand, especially in economies hardest hit by the outbreak (Philippines). Acute pressures in some segments of financial markets (including government bonds), possibly driven by divergent growth paths globally linked to vaccine rollout, may lead to some countries having less room for rate cuts and relying on unconventional monetary policies.

In economies with large supply shocks, social safety nets, guarantees, and other insurance mechanisms can offset losses incurred until vaccines are rolled out and mobility restrictions are removed. Liquidity support has averaged about 2 percent of output, with Thailand providing the largest support to its economy in the region. Additional measures may be required in economies whose production was hardest hit by the pandemic (the Philippines) to ensure that viable firms do not fail by turning a liquidity crisis into an insolvency one. To address the impact of the pandemic-induced shock on the long-term drivers of potential growth, however, these policies would need to be supplemented by additional policy actions focusing on structural reforms.

More broadly, policy needs to counter the unprecedented uncertainty that has been created by the COVID-19 pandemic without creating its own additional uncertainty due to the lack of fiscal and monetary discipline. Uncertainty is a powerful incentive for private firms to stop investing and for consumers to stop spending, leading to slow and low growth and possible permanent damage to an economy. One measure of this uncertainty, output volatility, is more than three times as large as that generated during the global financial crisis and more than eight times larger than in normal times in early 2020. For 2021, uncertainty is likely to be as large as during the global financial crisis. The most effective counter to this uncertainty is to ensure the efficient rollout of the vaccines, assisted by ramping up public investment and minimizing disruptions to education.

Figure 5. Policy Response

Additional spending and revenue measures have been sizable, while the monetary policy response has been aggressive.



Source: Consensus Economics; Haver Analytics; International Monetary Fund; J.P. Morgan; World Bank.  
 Note: Error bands in panels a, and d reflect 90 percent confidence intervals. In panel a, the output gap is based on estimates from a modified multivariate filter following World Bank (2018).  
 In panel b, real interest rates are calculated as the policy rate minus expected inflation. Inflation expectations are based on consensus forecasts for consumer price inflation transformed to a fixed horizon. Forecasts for inflation expectations are based on a multivariate filter model following World Bank (2018). Forecasts for policy rates are from J.P. Morgan. Panel c presents an historical decomposition from a sign-restricted Bayesian vector autoregressive model with stochastic volatility. Panel d presents stochastic volatility estimates from a Bayesian vector autoregressive model weighted using 2019 GDP at 2010 prices and market exchange rates for China, Indonesia, Malaysia, Philippines, Thailand, and Vietnam. GFC = global financial crisis.

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