

BOX 1

The Effects of Supply Side Inflation on Monetary Policy

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Supply side inflation, often referred to as cost push inflation, is typically driven by changes in production costs, caused by factors such as disruptions to the availability of inputs, changes to global commodity prices, revisions to taxes and regulatory measures of the Government, unfavourable weather conditions, supply chain disruptions due to global economic conditions and geopolitical tensions, and inefficiencies of production processes. In the Sri Lankan context, irregular weather patterns are a major factor affecting inflation through the supply side, causing frequent volatilities in food inflation. Similar to many other countries, Sri Lanka is also threatened by the effects of climate change on economic activity and social wellbeing. Additionally, changes in global supply chains, as well as the increase of production costs amidst supply bottlenecks are the main causes for the recent volatility in inflation through the supply side. If these supply side pressures are short lived, they may not pose any major monetary policy implications. However, persistent acceleration of inflation due to supply factors could complicate the conduct of monetary policy, mainly due to the possible de-anchoring of inflation expectations and it can have an adverse impact on a central bank's credibility. Literature shows that when the supply shock is transitory, inflation returns to the equilibrium without the need for any monetary policy action, while repeated supply shocks trigger second round effects, warranting pre-emptive monetary policy action (John, Kumar and Patra, 2022).

The Impact of Weather Patterns and Climate Change on Inflation in Sri Lanka

Climate change encompasses enduring alterations in temperature and various facets of the earth's climate system, largely attributed to human activities. Its impacts are extensive and diverse, spanning environmental, social, economic, and health implications. Irregular weather patterns and climate change can result in significant fluctuations in food inflation. In turn, it could lead to higher volatility in headline inflation, particularly in a country like Sri Lanka, where food items account for a large share of the consumption basket.¹ The agricultural sector could be affected mainly by changes in rainfall patterns and rising temperatures. Major crops in Sri

Lanka, including rice and coconut, are significantly affected² by variations in temperature and rainfall. An increase in nighttime temperatures, particularly due to global warming, significantly decreases rice yields. For example, based on the field experiments conducted at the International Rice Research Institution in the Philippines, rice yields are found to decline by 10 per cent for every 1°C increase in the minimum temperature during the dry season (Peng et al., 2004). Although the trend of vegetable and fruit prices can be usually predicted during normal weather seasons, the impact of climate change or the abnormal weather patterns on rice, vegetables, and fruits make their pricing unpredictable. In addition to the above, prolonged drought conditions could impact electricity prices due to a shift from low cost hydro power to costly fuel based electricity generation, thus transmitting weather and climate related disturbances to the wider economy, creating large supply disruptions.

Therefore, extreme weather events can have significant macroeconomic effects. These effects were perceived to be largely transitory and less of a concern for central banks in the past. However, the increased frequency and intensity of weather fluctuations, such as heatwaves, prolonged droughts, or flooding, can lead to a more persistent impact on inflation and inflation expectations through the combined impact of direct and second round impacts. This remains a major concern for policymakers and makes forecasting inflation increasingly challenging. Meanwhile, given the enhanced emphasis placed on climate change, central banks are gradually incorporating climate related variables and/or climate specific scenarios into their macroeconomic models to better capture the potential impacts of climate change on key economic indicators.

The Impact of Other Supply Side Factors and Government Policies on Inflation

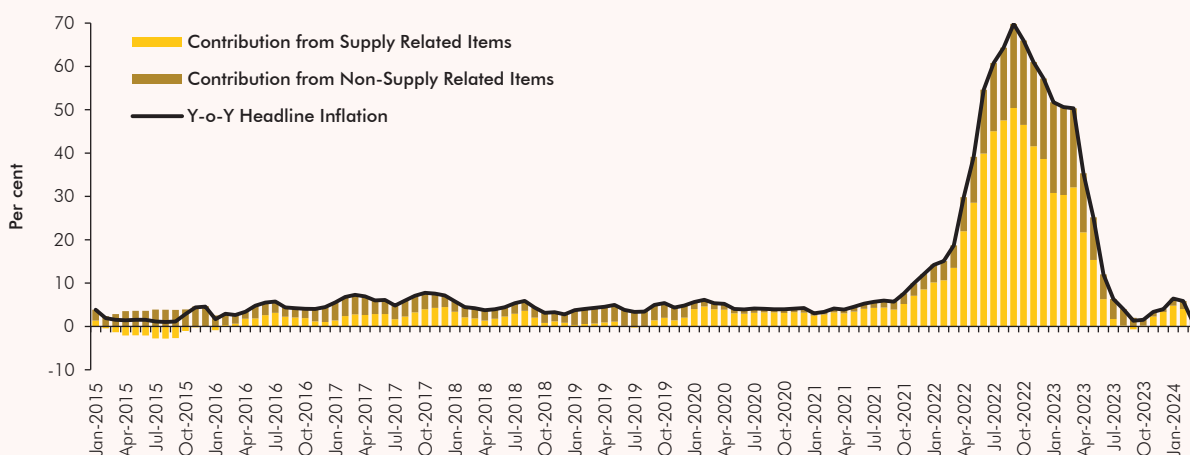
As an oil importing country for both transportation and electricity generation, the impact of global oil prices on Sri Lanka is substantial and alters inflation dynamics through direct and indirect channels. In Sri Lanka, energy, oil, and gas prices are now revised regularly and are determined broadly on a cost recovery basis. As a result, changes in global commodity prices and shipping costs due

¹ The Colombo Consumer Price Index (CCPI) and the National Consumer Price Index (NCPI) are the measures of inflation in Sri Lanka. Out of 12 categories, the food category has the most significant weight in both indices, accounting for 26.2 per cent in CCPI and 39.2 per cent in NCPI.

² The weight for the rice category in the CCPI basket is 2.72 per cent, and for the coconut category, it is 1.38 per cent.

Figure B 1.1

Contribution to Headline Inflation: Supply vs. Non-Supply Related Items (CCPI-based, year-on-year) (a)



(a) Supply items contain the set of items in CCPI whose prices are predominantly determined by supply factors, while the remaining items are considered as non-supply items (based on staff judgement).

Sources: Department of Census and Statistics
Central Bank Staff Judgement

to geopolitical tensions and global economic conditions affect domestic prices and may now have a greater impact on domestic prices than before.³ Based on recent experiences, the indirect impact of price changes in electricity, fuel, and gas on inflation could be greater than the direct impact amidst uncertainty. However, such regular adjustments to domestic prices of energy will eliminate the risks of one time drastic corrections to domestic prices, similar to the domestic fuel price adjustment and electricity price adjustments in 2022 and 2023. This would help mitigate large swings in inflation in the period ahead and would promote forward looking economic decisions by the stakeholders of the economy, thereby assisting the anchoring of inflation expectations.

Further, frequent changes to the tax structure can significantly affect inflation volatility, even if they are one off events. The recent adjustments in the Value Added Tax (VAT) had a notable direct impact on the prices of many items in the consumer basket, including fuel prices, thereby having a greater impact on inflation. Moreover, the direct and indirect impacts of these policies can be unpredictable, as businesses could use these tax amendments to arbitrarily change prices. Further, the lack of competition for essential items, along with downward price rigidities could lead to persistent price pressures. An oligopoly in markets for essentials, such as rice and eggs, could exert considerable pressure on the prices of these items directly and several other prices indirectly.

³ This impact was earlier absorbed by the relevant State Owned Business Enterprise (SOBE), which in turn had implications on the fiscal sector or the financial sector, thereby burdening the public indirectly.

The Contribution from Supply Side Factors on Overall Inflation

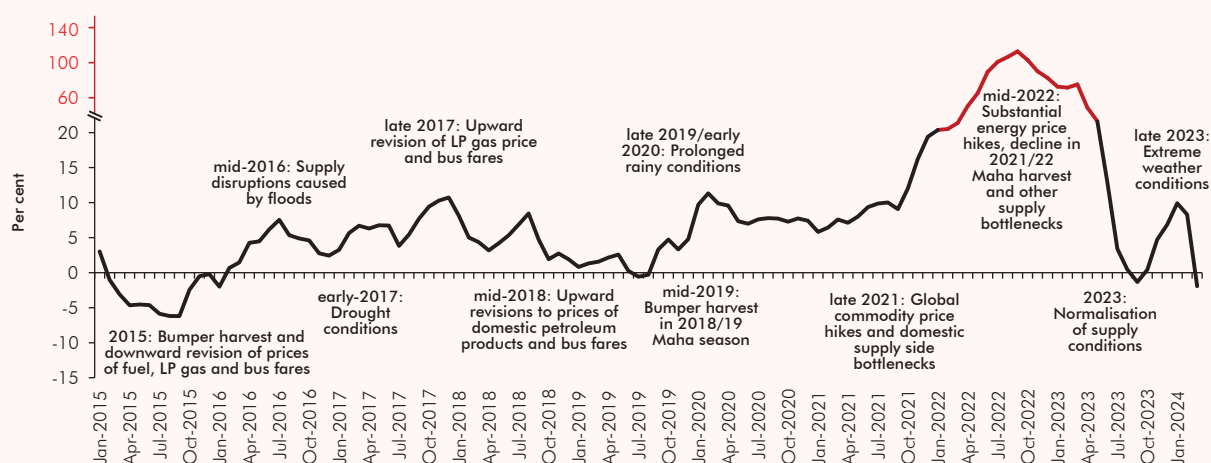
Disentangling demand and supply factors behind inflation dynamics is a challenging process due to the complexity of identification. Food inflation is generally considered to be largely driven by supply side factors. In addition to the food category of the Colombo Consumer Price Index (CCPI) basket, prices of certain items in the non-food category could also be classified as supply/cost driven contributors to inflation, given the increased frequency and magnitude of price adjustments in these categories.⁴

Supply side inflation is often characterised by its increased volatility (Table B 1.1) compared to non-supply inflation. Given the transitory nature of supply side inflation in general, central banks may adopt a cautious approach in using monetary policy actions to address it. Moreover, supply disturbances move output and prices in opposite directions, and the central bank may not be able to maintain both output and price stability (Amarasekara, 2009). In such circumstances, extreme policies aimed purely at price stability aggravate the effect of the supply disturbance on the real economy. Certain supply side shocks may be better left to correct themselves over time without the need for immediate and aggressive policy responses. For instance, if the impact stems from transitory weather related factors, it will gradually diminish. Conversely, if it results from adjustments to taxes on goods and services or

⁴ In this estimate, the supply/cost driven category represents food and non-alcoholic beverages and selected administered price categories such as fuels for personal transport equipment; electricity, gas and other fuels; water bill; and transport services categories of the CCPI basket of goods and services, whereas non-supply driven category represents all other subcategories of the CCPI basket.

Figure B 1.2

Supply Side Inflation (CCPI-based, year-on-year) (a)



(a) Based on the aggregate price movements of the set of items in CCPI whose prices are predominantly determined by supply factors.

Sources: Department of Census and Statistics
Central Bank Staff Judgement

administrative changes, the direct impact of it will be mainly a one time occurrence. Even in the case of transitory or one off supply shocks, central bank communications play a key role by providing clarity, assurance, and guidance on the future trajectory of inflation and anchoring inflation expectations.

Why are Central Banks Less Aggressive in Handling the Supply Side Issues of Inflation?

Central banks usually do not respond to supply side shocks as their primary control lies with affecting demand side inflationary pressures. Supply side issues can have an immediate effect on prices and inflation. In addition, many supply side factors are essentially structural and weather related, and not simply a consequence of the business cycle. Addressing these may necessitate longer term policy measures or structural reforms, such as supply side policies of the Government aimed at improving the productive capacity and efficiency of the economy. Central banks, which aim at addressing business cycle fluctuations through demand driven policies, may not be able to tackle underlying structural

issues. Therefore, attempting to address supply side price pressures through monetary policy may result in adverse consequences. Raising interest rates to ease inflation could slow down economic activity, thereby further worsening the supply side pressures.

However, central banks closely monitor supply side inflation, as persistent or severe disruptions could have broader implications for overall price and economic stability. In some cases, where supply side shocks have secondary effects on inflation expectations or lead to a more persistent inflationary environment, central banks may consider appropriate actions to mitigate these impacts. In this regard, the optimal monetary policy response to a single supply shock depends on the nature and duration of the shock, its second round effects, and the impact on real incomes (Bandera et al., 2023). These factors, taken together, determine whether monetary policy should be ‘looked through’ (no policy response) or ‘lean against the shock’ (policy adjustment). A sequence of inflationary supply shocks would call for a tighter policy response. In such instances, responding to each shock individually, trading off near term over medium term inflation deviations from target, could result in undesirable outcomes. Therefore, any monetary policy response to a series of supply shocks should be based on the overall macroeconomic impact of such shocks and should also incorporate a careful assessment of the dynamics of inflation expectations. Moreover, amidst larger and persistent supply shocks, frontloading of monetary policy actions can keep inflation expectations firmly anchored thus maintaining the credibility of the central bank (John et al., 2022).

Table B 1.1 Standard Deviation of Supply Side and Non-Supply Side Inflation (CCPI-based, year-on-year, %)

Year	Headline Inflation	Supply	Non-Supply
2015	1.3	2.8	1.3
2016	1.1	2.5	0.8
2017	0.9	2.2	1.0
2018	1.0	2.1	0.2
2019	0.6	1.7	0.5
2020	0.8	1.3	0.5
2021	2.6	3.9	1.6
2022	20.3	32.0	11.0
2023	20.1	29.9	12.9

Source: Department of Census and Statistics
Central Bank Staff Calculations

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The Government's Role in Managing Supply Side Inflation

Governments play a crucial role in managing supply side inflation through various policies and interventions. By prioritising investments in infrastructure like transportation and energy, the Government could enhance productivity and efficiency of the economy. In addition, the Government, together with the private sector, could focus on increasing investments in agricultural infrastructure, such as storage facilities, to boost domestic food production while preventing post harvest losses and stabilising food prices. On the other hand, regulatory measures can be implemented to bolster market competition, dismantle barriers for businesses, and streamline bureaucratic processes, fostering an environment conducive to investments. In the short run, to address sudden price pressures emanating from supply side shocks, the Government could take proactive measures to facilitate the importation of food items that are in short supply due to supply disruptions and shortages, as and when required, and take preventive measures to minimise the upward price movements. The Inflation Reduction Act of 2022 in the USA is an example of a recent Government initiative to address supply side issues. The Act aims to curtail inflation by lowering drug prices, and investing in domestic energy production while promoting clean energy.

Conclusion

There is an intricate interplay between supply side dynamics, such as weather patterns, global commodity prices, and Government policies, and their profound impacts on inflation. The complexities

surrounding supply driven inflation present significant challenges for monetary policymaking, particularly in small open economies like Sri Lanka, where a multitude of factors originating from the domestic and global environment contribute to volatility in prices. While transitory supply shocks may not necessitate immediate monetary policy action, persistent disruptions can complicate the task of maintaining price stability. Moreover, the structural nature of some supply side issues demands longer term policy measures and structural reforms, often beyond the scope of traditional monetary policy tools. Despite the limitations in directly addressing supply driven inflation, central banks remain vigilant, aiming to mitigate adverse impacts on economic stability and inflation expectations. Ultimately, navigating the intricacies of supply driven inflation requires a balanced strategy that considers both short term stabilisation and long term economic sustainability. Clear and proactive communication by a central bank on the impact of supply side disturbances on inflation is expected to manage expectations and ensure domestic price stability, along with appropriate monetary policy actions to manage demand pressures on inflation.

References

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