Assessing inflation policies in Arab countries

4

Key messages

- Inflation in Arab countries is partly imported due to exogenous factors, and partly endogenous, and has generated currency crises in some cases.
- Six Arab countries had high inflation rates in the past few years, namely, Egypt, Lebanon, the Sudan, the Syrian Arab Republic, Tunisia and Yemen.
- Based on variance decomposition, there are three main sources of inflation in the six Arab countries with high inflation rates: government expenditure, the money supply and nominal effective exchange rates (NEER).
- Coordinating different policies, including fiscal and monetary policies, is necessary during disinflation.
- Strengthening the independence of central banks is essential to enhancing the credibility of monetary policies.

A. Introduction

Arab countries are exposed to different shocks emanating from the openness of their economies and integration with the global financial system. In 2021 and 2022, they experienced accelerating inflation due to a number of factors, including supply chain disruptions resulting from the COVID-19 pandemic and the war in Ukraine, rising global energy and food prices, climbing interest rates, the pass-through of exchange rate depreciation on import prices, and the mismatch between supply and demand.

Sovereign debt levels remain high in many countries, representing a risk to economic recovery. The average debt-to-GDP ratio was over 84 per cent in 2022. In most countries, government spending and budget deficits rose alongside sovereign debt levels in 2021 and 2022, which affected prices and contributed to accelerating inflation. In fact, the increase in public spending augments the risk of excessive recourse to monetization to cover that spending, which leads to an even higher inflation rate. Higher inflation then makes it more likely that the monetary financing of government expenditure will continue and further accelerate inflation.

B. Inflation drivers: theoretical and empirical aspects

1. High inflation in Arab countries

The COVID-19 pandemic and the war in Ukraine were major shocks for several Arab countries with already difficult macroeconomic situations, particularly oil-importing countries, which suffered from high inflation and the depreciation of the NEER. Inflation did not follow the same path in all Arab countries. While several have managed to maintain low to moderate inflation rates since 2019, six countries have suffered from high inflation since 2020, namely Egypt, the Syrian Arab Republic, Tunisia and Yemen. Lebanon and the Sudan have struggled with very high inflation, which occurs when the 12-month inflation rate rises above 100 per cent and the cumulative inflation rate exceeds 100 per cent for three consecutive years (table 4.1).[52]

Although inflation in these countries has many economic causes, an unstable political context characterized by diverse social demands has played a significant role in the deterioration of public finances, the monetization of public deficits and the acceleration of inflation. The political context has also weakened institutions, rendering them unable to prevent the disorganization of distribution channels and limit price increases due to the imperfect matching of supply and demand. Both security and energy shocks have sapped investor confidence and negatively impacted domestic currency value, with a direct effect on prices.

In March 2023, inflation remained very high in Egypt. The annual urban consumer inflation rate was up by 32.7 per cent year-on-year. In 2022, Egypt had a series of currency devaluations that escalated prices and are likely to keep inflation high in 2023.

Very high inflation in Lebanon continued for the thirty-fifth straight month in April 2023, when triple-digit inflation reached a record 269 per cent. Inflation acceleration is affecting almost all consumer sectors, including food, transport, clothing, housing and utilities. Inflation is driven by a dramatic depreciation of the Lebanese pound, reflecting a lack of confidence in the financial system, large increases in the money supply, and the complex interplay of Banque du Liban circulars that have given rise to multiple exchange rates and speculative arbitrage. At the same time, a collapse in budget revenues has forced a drastic reduction in public spending and led to monetary financing of government expenditure, further fuelling inflation.

The Sudan has suffered from very high inflation since 2013. Inflation eased from 359.1 per cent in 2021 to 139 per cent in 2022 due largely to unifying exchange rates and reducing monetization of the fiscal deficit. The Central Bank adopted monetary base targeting, reducing growth in the money supply to 48 per cent in 2022 compared with 153 per cent in 2021. The political crisis, armed conflict between military forces and the persistence of the war in Ukraine, however, led to deterioration in the economic situation and a staggering loss in purchasing power in 2023.

Caught in a deep political crisis, the Syrian Arab Republic faces spiralling domestic inflation due to the devaluation of its national currency. This pushed the inflation rate to 78 per cent in 2021 and 66 per cent in 2022, and increased food prices by over 90 per cent. The global rise in food and fuel prices contributed to this acceleration in inflation and left a larger part of the population in a precarious situation, unable to cover subsistence needs.

In Tunisia, inflation rates have remained at moderate levels, but the national currency has undergone significant depreciation. Prices of food and energy have risen significantly. Since December 2022, the country has contended with double-digit inflation.

The political crisis in Yemen constitutes a risk to the country's macroeconomic position and poses challenges to achieving overall stability. Despite the recent decline in global food and fuel prices, domestic prices remain high, with food inflation averaging 45 per cent in 2022. The authorities have preserved a weekly foreign exchange auction system to finance essential imports at market exchange rates. This will constrain inflation and support exchange rate stability through the absorption of liquidity. The exchange rate and price stability depend on external aid to alleviate financing pressures and reduce monetary financing.

Table 4.1 Inflation rates (Percentage)

	2019	2020	2021	2022	2023[a]	2024[a]
Egypt	9.38	5.07	5.21	13.74	35.31	21.75
Lebanon	2.89	84.30	150.70	183.76	117.38	45.82
Sudan	51.00	153.60	359.80	164.12	55.53	26.00
Syrian Arab Republic	13.40	116.40	81.90	63.16	44.54	30.15
Tunisia	6.72	5.63	5.71	8.30	9.05	8.09
Yemen	12.01	23.10	45.69	42.60	19.92	9.55

Source: ESCWA projections based on the World Economic Forecasting Model for 2023.

[a] indicates forecasts.

2. Assessing the drivers of inflation

The following econometric analysis assesses the different sources of inflation in Arab countries that have experienced price spikes. It uses a combination of different economic approaches, given the complexity of inflation dynamics.

a. Some theoretical perspectives

Inflation has many causes and theories. The two main theories relate inflation to, first, increased aggregate demand (demand-pull inflation) and, second, to increased production costs (cost-push inflation).

Demand-pull inflation occurs when there is too much total spending in the economy compared to the amount of goods and services available. This excess demand can happen after the Government increases spending, or if consumption, investment or exports go up for other reasons. Under this theory, inflation is caused by aggregate demand growing faster than what aggregate supply can accommodate.

The theory of cost-push inflation relates to situations where prices increase because the costs of making goods and providing services increase. Increased production costs are mainly driven by increases in wages. This occurs when the demand for labour exceeds supply. Other factors that drive up costs relate to the costs of borrowing money, paying taxes and buying goods from other countries.

It is difficult to distinguish between the various determinants of inflation, whether cost- or demand-driven. This suggests that there are some interactions between these determinants, or that price movements involve different drivers of inflation. Nevertheless, inflation has six major dimensions: energy prices, trade openness and capital accounts, imported inflation, government spending, the exchange rate pass-through and the money supply.

Energy prices (exogenous shock): The price of energy is often considered an exogenous shock for net importers of natural resources. It is assumed that energy prices are subject to strong temporary variations, and an increase in their price will spread widely to the prices of other goods. Higher energy prices increase production costs and amplify inflationary pressures.

Trade openness and the role of capital accounts: Trade openness is anticipated to impact domestic inflation through two channels: trade and the capital account. This impact is driven by a couple of mechanisms. First, it reduces costs due to heightened market competition, and second, it enhances factor productivity, thereby reducing overall costs and prices. Conversely, the openness of capital accounts prompts enhancements in the economic structure, encompassing monetary policies focused on monetary stability, greater fiscal responsibility and the increased credibility of the central bank.

The influence of imported inflation: An extensive literature stresses the predominant effect of global inflation on domestic inflation.[53] When the prices of imported goods increase because of global inflation, this also affects domestic inflation, since imported goods are used as inputs or consumed by local producers and consumers. As a result, the costs of production and consumption increase, leading to a persistent rise in domestic prices. This effect is pronounced for Arab countries since they rely heavily on imported raw materials and products.

The contribution of government expenditures to inflation: Domestic price dynamics are likely to be influenced by cyclical regulatory policies that aim to boost economic activity and reduce unemployment through a larger budget deficit. In this case, the idea is to exploit a negative relationship between inflation and unemployment through the monetization of public deficit.

Another key factor is the exchange rate pass-through since a depreciation in the NEER will likely increase prices. Lastly, according to monetary theory, a higher monetary base can cause more inflation, hence the impact of the money supply on inflation.

b. Decomposition of inflation and its volatility

The diverse factors influencing inflation trends require paying attention to all variables that could influence movements in the general price level. The following discussion identifies the various drivers of inflation in Arab countries that have experienced high rates of inflation. Given that these drivers are interrelated and depend on the economic policy adopted (monetary, fiscal, trade and industrial), it is useful to apply a structural vector autoregression (SVAR)-type model. This model helps to capture the responses of system variables to identified (given) structural shocks; assess the average share of a given structural shock in the dynamics (variation) of the variables using the forecast error variance decomposition; and assess the cumulative share of a given shock in the dynamics of each model variable over a period of time, using historical decompositions. The variance in inflation can be decomposed to provide an appropriate framework for the contribution of different inflation components to fluctuations in the CPI.

For the following analysis of the six countries with high rates of inflation, all variables were expressed in natural logarithms. Unit root tests were performed for level and first differences. The optimal number of lags was also tested. Lagrange multiplier tests for residual vector autoregression serial correlation and tests for residual vector autoregression normality were carried out. Finally, the long-run SVAR specification was estimated.

1. The case of Egypt

A recurrence of double-digit inflation began in 2022 in Egypt and is expected to reach 35 per cent in 2023. Figure 4.1 illustrates the dynamics of inflation and growth in the NEER, indicating a co-movement from 2019 to 2022. During this period, the national currency followed a managed devaluation reflecting the monetary authorities' commitment to maintaining a competitive advantage. The rapid rise in inflation has been accompanied by a considerable depreciation of the NEER, from 40 per cent in 2022 against an appreciation of 7 per cent in 2021.

Figure 4.2 shows the co-movement between the CPI and the price of a barrel of oil. Estimates suggest that energy prices are making only a minor contribution to the acceleration in inflation (table 4.2). Public energy subsidies have served as a buffer against fluctuations in energy prices.

Figure 4.1 Nominal effective exchange rate and inflation trends in Egypt

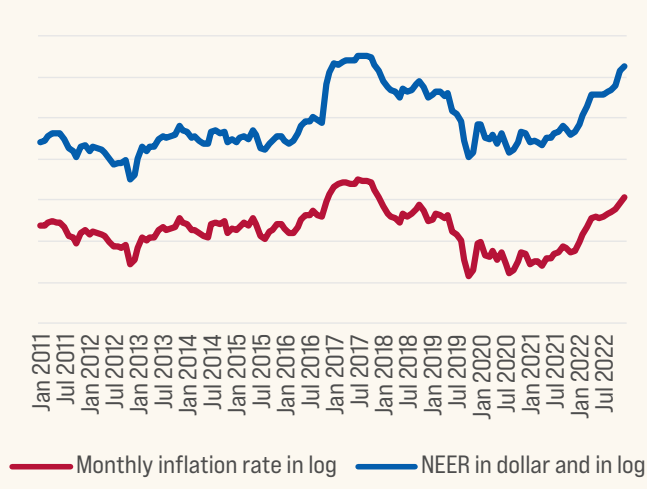
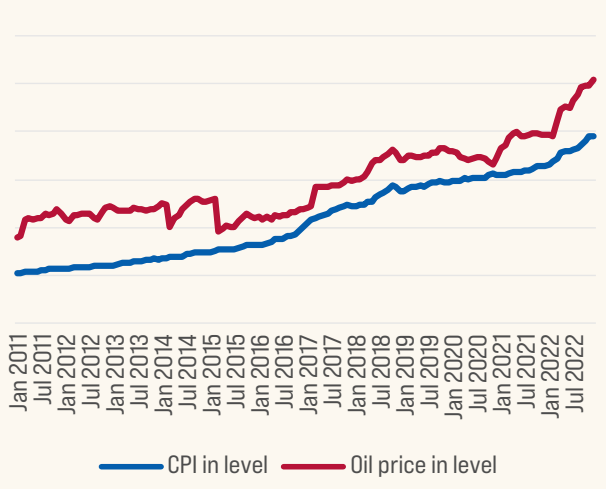


Figure 4.2 Inflation and oil price trends in Egypt



Source: ESCWA calculations.

Table 4.2 Decomposition of inflation variance in Egypt

	Three months (percentage)	Six months (percentage)	One year (percentage)	Two years (percentage)
Government expenditure	2.97	6.07	6.12	6.12
Money supply (M2)[a]	3.56	3.45	3.45	3.45
NEER	30.43	29.53	29.51	29.51
Import price index	5.75	5.93	5.95	5.95
International energy prices (price of a barrel of oil)	1.88	1.83	1.83	1.83
CPI	55.38	53.16	53.11	53.11

Source: ESCWA calculations.

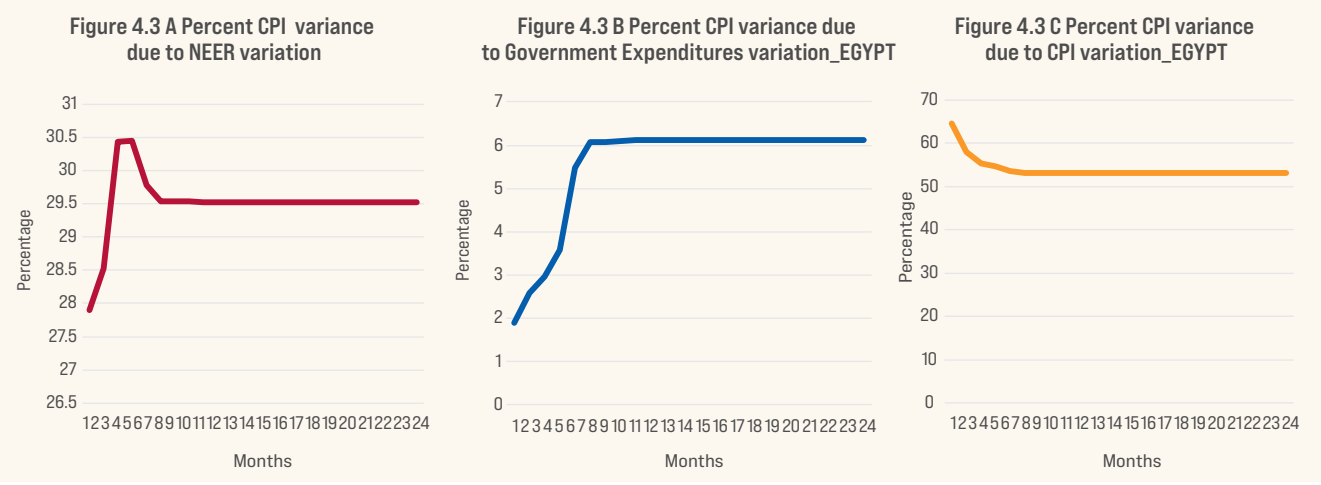
[a] M2 is a measure of the money supply that includes cash, checking deposits and other types of deposits that are readily convertible to cash.

The variance decomposition shows three main sources of inflation in Egypt (table 4.2). Over a 24-month time horizon, there is evidence of the importance of the NEER (29.5 per cent), public spending (6.12 per cent) and imported inflation (6 per cent). A form of inertia in inflation that occurs when the current price level depends on the price level of the previous period also contributes to inflation (53.1 per cent). Due to rigidities, what initially appears as a temporary price increase becomes permanent and structural.

Figures 4.3A, 4.3B and 4.3C show the reaction delays of the price level to changes in some sources of inflation in Egypt. The price level is affected rapidly at three months by changes in the NEER, but public spending takes longer to affect inflation at around six months. Figure 4.3C shows that inflationary inertia has tended to decrease but remains high.

Egypt's inflation dynamics seem partly associated with the nature of the floating exchange rate regime it has adopted. This regime is less flexible, with Egypt effectively maintaining an exchange rate anchored to the dollar fluctuation.

Figure 4.3 Reaction delays of the price levels to main sources of inflation in Egypt



Source: ESCWA calculations.

Figure 4.4 Nominal effective exchange rate and inflation trends in Lebanon

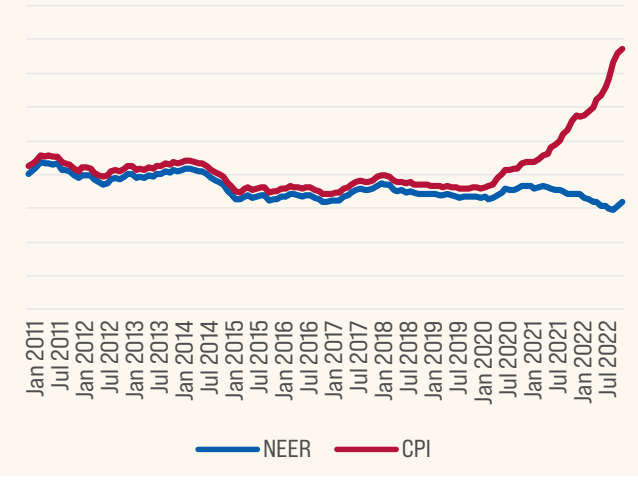
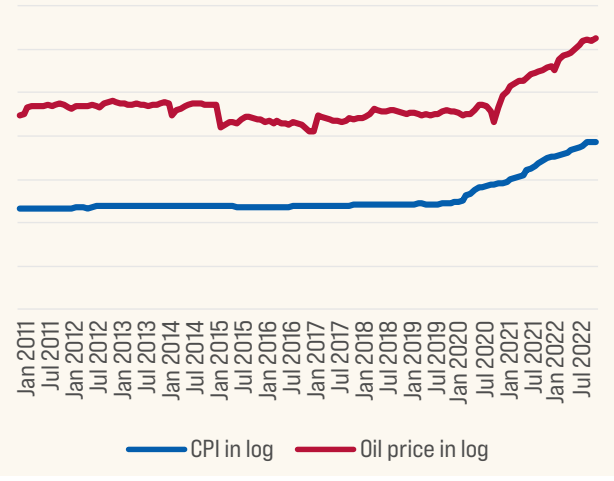


Figure 4.5 Oil price and inflation in trends in Lebanon



Source: ESCWA calculations.

2. The case of Lebanon

The evolution of inflation is very interesting to analyse in Lebanon. According to figure 4.4, there is no correlation between inflation and NEER trends in Lebanon. This might seem counterintuitive in a country affected by very high inflation. But the country context and the atypical Lebanese foreign exchange market with its multiple exchange rates must be considered. In addition to the revised official exchange rate of LBP 15,000 per dollar, other rates include the customs dollar exchange rate of LBP 86,000 per dollar to pay for customs fees for imported goods, the Sayrafa rate at around LBP 85,500 per dollar used by commercial banks and foreign exchange dealers, and the informal black-market rate of around LBP 89,600 per dollar as at September 2023.

This context explains the disconnection between the official exchange rate (for which a statistical series is available) and inflation acceleration (figure 4.4). Figure 4.5 illustrates the dynamics of inflation and the price of a barrel of oil in Lebanon, showing co-movement between the two variables from February 2021 to 2022.

The variance decomposition indicates the main sources of inflation in Lebanon (table 4.3). Over a 24-month time horizon, these comprise government expenditures (36.96 per cent), imported inflation (28.27 per cent), international energy prices (10.21 per cent) and the money supply (9.87 per cent). The modest contribution of the NEER (3.08 per cent) is due to the specifications of the estimated model, which considers only the official exchange rate and does not reflect the market value of the Lebanese lira (up to December 2022, the official exchange rate was LBP 1,507 per dollar). Similarly, the estimation does not cover the 2023 period and the decision to sharply devalue the national currency to a new official rate of LBP 15,000 per dollar. The results in table 4.3 should be treated with a degree of caution. In general, government expenditure, imported inflation and money creation processes have contributed strongly to accelerated inflation.

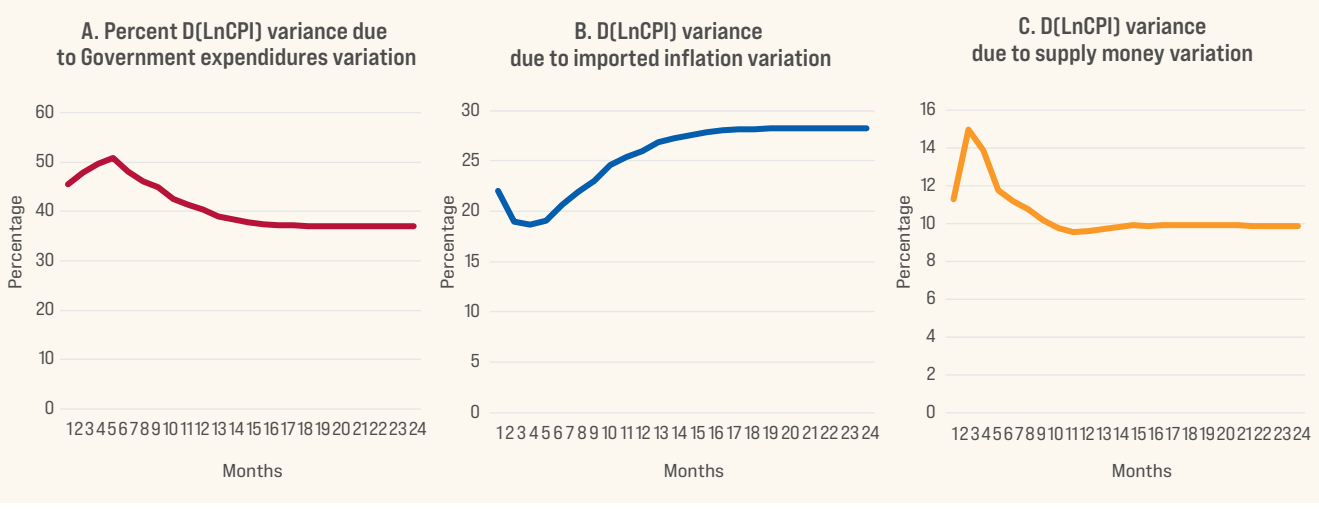
Figures 4.6A and 4.6C show the delays in the reaction of the price level to changes in major sources of inflation in Lebanon. The price level responds instantly (one month) to any changes in the money supply, represented by M2. Public spending contributes gradually to increasing inflation at six months. Inflation shows no form of inertia, which seems to be specific to the case of Lebanon. In other words, inflation is less dependent on past inflation, with a contribution of only 11.58 per cent, as shown in figure 4.6B. This indicates that current inflation trends react more to expected inflation than to previous inflation. In addition, current inflation is increasingly dependent on inflation anticipation. To protect themselves against very high inflation, economic agents will set prices on the basis of inflation expectations.

Table 4.3 Decomposition of inflation variance in Lebanon

	Three months (percentage)	Six months (percentage)	One year (percentage)	Two years (percentage)
Government expenditure	49.65	46.06	38.31	36.96
Money supply (M2)	13.87	10.72	9.79	9.87
NEER	5.68	3.92	3.16	3.08
International energy prices (price of a barrel of oil)	2.52	6.63	9.52	10.21
Import price index	18.62	21.95	27.24	28.27
CPI	9.65	10.70	11.95	11.58

Source: ESCWA calculations.

Figure 4.6 Reaction delays of the price levels to main sources of inflation in Lebanon



Source: ESCWA calculations.

Earlier in 2023, the Lebanese monetary authority described the new official exchange rate as a step towards unifying the wide range of rates that have emerged since 2019. In parallel, and with the collapse of the Lebanese currency, the price inflation rate reached a new record, with an increase of 366 per cent between March 2022 and March 2023. This very high inflation could be attributed to the rising cost of energy, which climbed by 2,068 per cent during the same period. Food prices rose by triple digits, or 320.3 per cent, due to a decision to "dollarize" commodity prices in response to requests from retailers and importers.

3. The case of Yemen

Analysis of inflation in Yemen focuses on areas controlled by the internationally recognized Government. The exchange rate is a key determinant of food prices due to a high dependence on imports. As shown in figure 4.7, inflation and the NEER follow a similar trajectory, although inflation is increasing more rapidly. The NEER shows a relatively long-term trend of stability in the local exchange market. The 4 per cent currency depreciation announced by the monetary authority in January 2023 to address gaps in government revenue, however, affected inflation in general and food price inflation in particular. Figure 4.8 shows the co-movement of inflation and fuel prices over time, indicating that the price of energy is one of the main drivers of inflation. The NEER is the other driver.

The variance decomposition over a 24-month period shows the roles of the international price of energy, the money supply, imported inflation and the NEER in driving inflation, with respective contributions of 22.19 per cent, 8.47 per cent, 8.20 per cent and 4.94 per cent (table 4.4). The money supply, represented by M2, makes a significant contribution, having reached a record level in June 2023 of 11,218 million Yemeni riyals compared to 7,273 million Yemeni riyals in June 2022, an increase of 55 per cent. As in other countries, previous inflation contributes greatly to current inflation at 55.4 per cent due to inertia in price formation. The high contribution of international oil prices is confirmed by practical experience, where weak oil production affects domestic prices. In addition, limited export capacity and declining international aid have spurred a shortage of foreign exchange that has affected the NEER and domestic prices.

Figure 4.7 Nominal exchange rate and inflation trends in Yemen

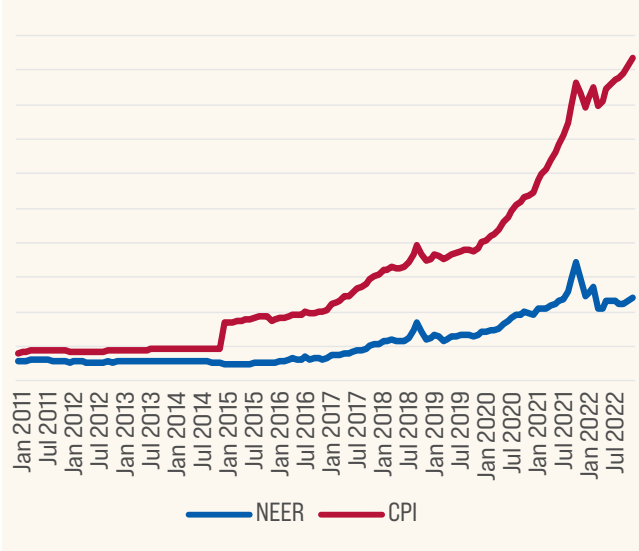
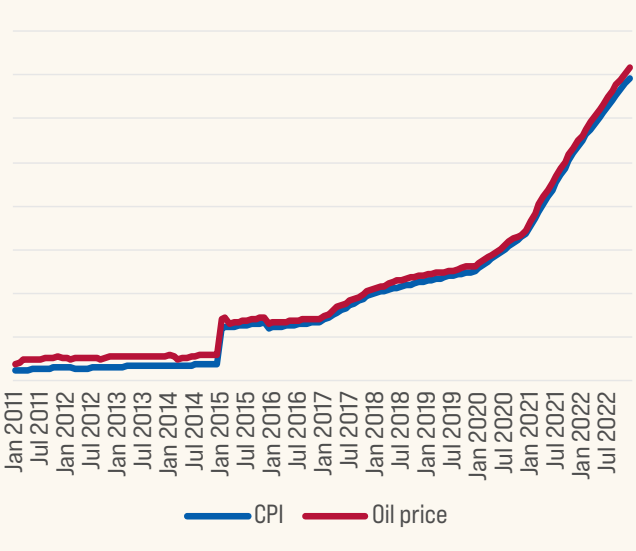


Figure 4.8 Oil price and consumer price index trends in Yemen



Source: ESCWA calculations

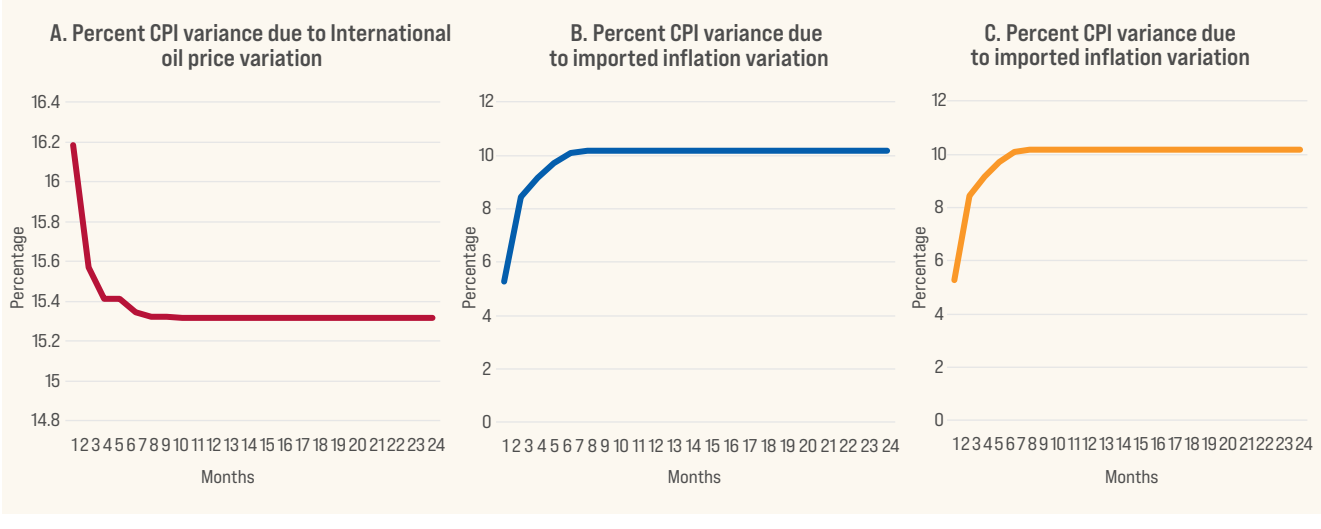
Figures 4.9A, 4.9B and 4.9C show the price adjustment dynamics in each change in the main inflation drivers in Yemen. The price level responds instantly (one month) to any change in international oil prices. Price level reacts with a lag (five months) to changes in the money supply and also to changes in imported inflation. Finally, the NEER gradually contributes to rising inflation (five months).

Table 4.4 Decomposition of inflation variance in Yemen

	Three months (percentage)	Six months (percentage)	One year (percentage)	Two years (percentage)
Government expenditure	0.70	0.77	0.77	0.77
Money supply (M2)	8.60	8.47	8.47	8.47
NEER	4.33	4.92	4.94	4.94
Import price index	7.83	8.20	8.20	8.20
International energy prices (price of a barrel of oil)	22.33	22.19	22.19	22.19
CPI	56.18	55.41	55.40	55.40

Source: ESCWA calculations.

Figure 4.9 Reaction delays of the price levels to main sources of inflation in Yemen



Source: ESCWA calculations.

4. The case of the Sudan

Figure 4.10 illustrates the dynamics of inflation and the NEER in the Sudan, showing a co-movement from 2017 to 2022. The depreciation of the domestic currency appears to be faster and stronger than that of the CPI. The depreciation of the NEER has been accompanied by a fairly fast rise in inflation. Figure 4.11 shows the same trend in the joint evolution of inflation and energy prices, with a partial co-movement between CPI and the price of a barrel of oil.

Figure 4.10 Nominal effective exchange rate and inflation trends in the Sudan

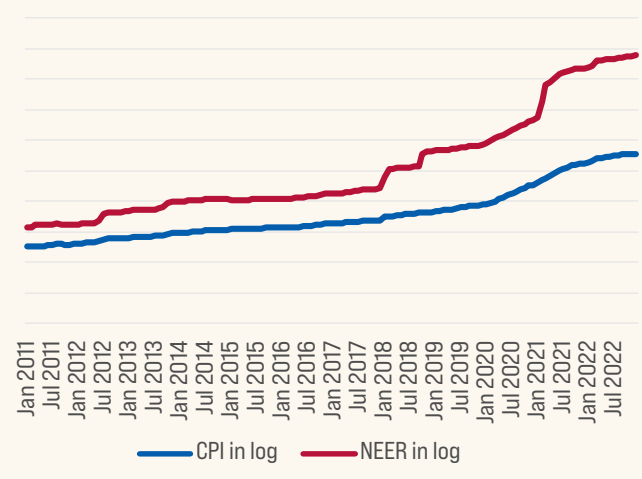
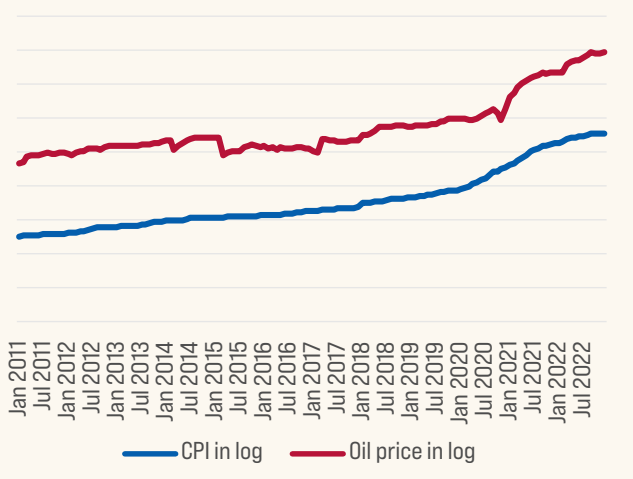
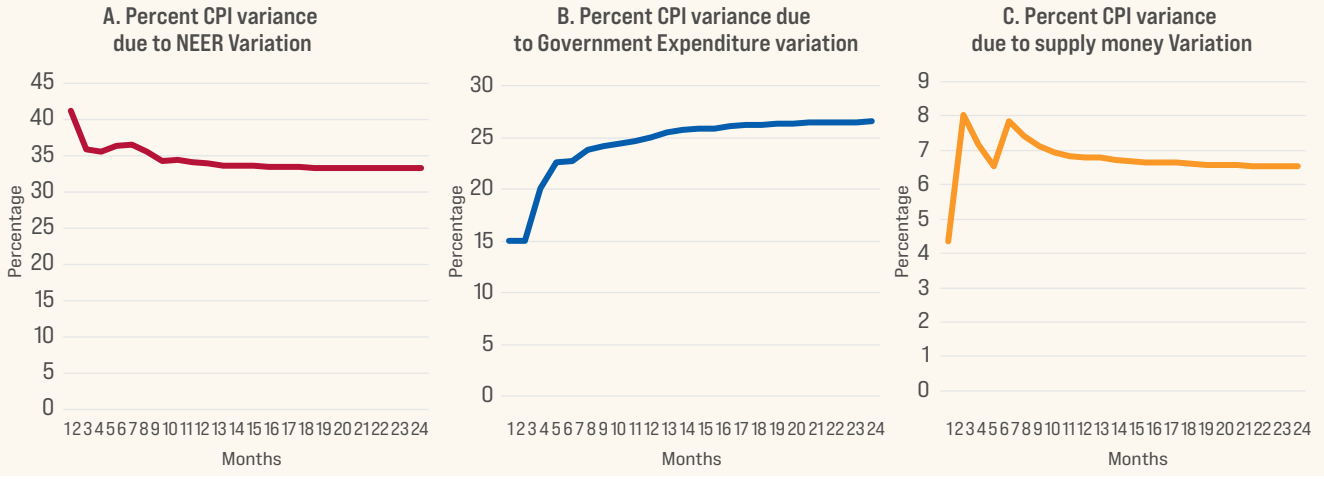


Figure 4.11 Oil price and inflation trends in the Sudan



Source: ESCWA calculations.

Figure 4.12 Reaction delays of the price levels to main sources of inflation in the Sudan



Source: ESCWA calculations.

Table 4.5 Decomposition of inflation variance in the Sudan

	Three months (percentage)	Six months (percentage)	One year (percentage)	Two years (percentage)
Government expenditure	20.13	23.78	25.70	26.55
Money supply (M2)	7.16	7.41	6.71	6.53
NEER	35.51	35.64	33.62	33.26
Import price index	7.72	6.51%	6.47	6.11
International energy prices (price of a barrel of oil)	0.31	0.71	0.99	0.94
CPI	29.15	25.93	26.48	26.59%

Source: ESCWA calculations.

The NEER, government expenditure, money supply and imported inflation constitute the four drivers of inflation in the Sudan, making respective contributions of 33.26 per cent, 26.55 per cent, 6.53 per cent and 6.11 per cent (table 4.5). The NEER and government expenditure seem to contribute more to increased inflation. Nevertheless, imported inflation and the money supply contribute equally to rising inflation. Current inflation is slightly influenced by past inflation, indicating a low degree of inflation inertia (26.59 per cent), as is also observed in high-inflation countries such as Lebanon.

Figures 4.12A, 4.12B and 4.12C show response times to a change in the main drivers of inflation. The CPI reacts immediately to changes in the NEER, but the degree of adjustment is less important after eight months. The effect of the NEER tends to be stable and permanent. There is approximately the same reaction of prices to any change in government expenditure. The degree of adjustment is more important after four months when the CPI reacts immediately to money supply.

5. The case of the Syrian Arab Republic

The Syrian pound has undergone significant depreciation since 2020, which affected the inflation rate. There is a strong correlation and co-movement in the evolution of these two variables, but the exchange rate pass-through is not total and price movements partially incorporate exchange rate variations (figure 4.13). Figure 4.14 illustrates the dynamics of inflation and price of a barrel of oil, showing a perfect co-movement between the two. The global economic situation in 2023 is uncertain and could push commodity prices even higher, negatively affecting inflation in the Syrian Arab Republic as a food and energy importer.

Due to the unavailability of sufficient statistical data, the estimated model does not include the money supply as an inflation driver. Estimates should be interpreted with caution but suggest that imported inflation (12.01 per cent), government expenditures (7.62 per cent) and the NEER (84 per cent) constitute the three main drivers of inflation in the Syrian Arab Republic over a 24-month horizon (table 4.6). With a contribution of only 0.27 per cent over the same period, international energy prices appear to be a relatively marginal factor. As in other Arab countries that are net importers of oil, this result is due to high expenditure on energy subsidies. Similarly, current inflation is strongly affected by previous inflation over the 24-month horizon.

Figure 4.13 Consumer price index and nominal effective exchange rate trends in the Syrian Arab Republic

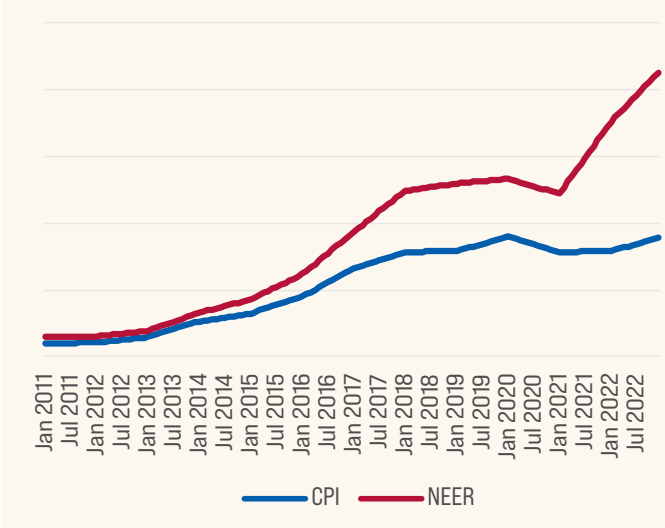
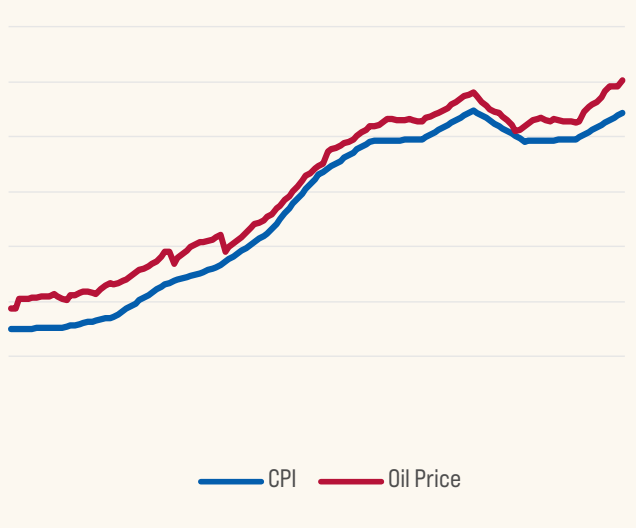


Figure 4.14 Consumer price index and oil price trends in the Syrian Arab Republic



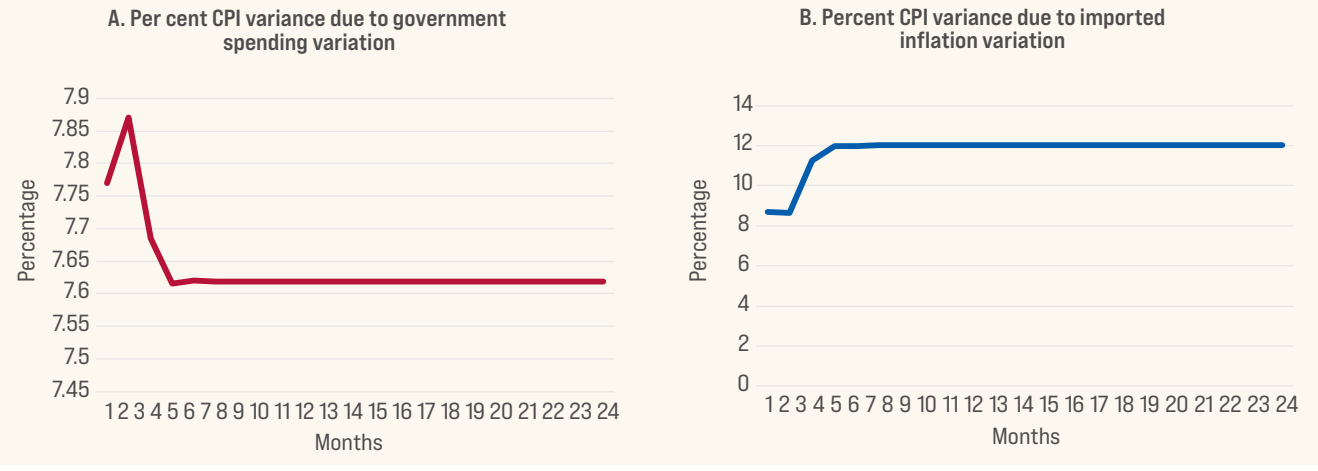
Source: ESCWA calculations.

Table 4.6 Decomposition of inflation variance in the Syrian Arab Republic

	Three months (percentage)	Six months (percentage)	One year (percentage)	Two years (percentage)
Government expenditure	7.68	7.61	7.62	7.62
Money supply (M2)	--	--	--	--
NEER	3.83	3.84	3.84	3.84
import price index	11.24	12.00	12.01	12.01
International energy prices (price of a barrel of oil)	0.24	0.27	0.27	0.27
CPI	76.99	76.26	76.25	76.25

Source: ESCWA calculations.

Figure 4.15 Reaction delays of the price levels to main sources of inflation in the Syrian Arab Republic



Source: ESCWA calculations.

In terms of response times to changes in inflation drivers, CPI instantly responds to shifts in government expenditure, in less than one month. Imported inflation takes four months to impact CPI (figures 4.15A and 4.15B).

6. The case of Tunisia

Since 2011, the Tunisian dinar has been continuously depreciating (figure 4.16), which has had an impact on the inflation rate. There is a strong correlation in the evolution of these two variables, with a full pass-through of the exchange rate, in which NEER fluctuations are incorporated in the movement of prices. On the other hand, figure 4.17 shows the dynamics of the inflation rate and the price of a barrel of oil. Public expenditure on energy subsidies has largely mitigated the impact of global oil price increases on domestic price levels. These subsidies significantly increase government expenditures.

Figure 4.18 shows that the real and effective exchange rate started to appreciate from 2019. This contributed to Tunisia's non-price competitiveness. The current account gap and the related overvaluation of the real and effective exchange rate are mainly caused by a fiscal deficit. According to econometric estimates, however, government expenditure, the money supply, the NEER and imported inflation are the four main drivers of inflation in Tunisia, with respective contributions, over a 24-month period, of 12.02 per cent, 7.50 per cent, 7.32 per cent and 5.56 per cent (table 4.7). Current inflation is strongly affected by previous inflation, indicating high inflation inertia, as observed in several Arab countries. International energy prices do not have an impact on price increases, according to the econometric estimation, since energy subsidies mitigate the impact on domestic prices of volatility in energy prices in the international market. Since inflation in Tunisia is influenced by multiple factors, a multidimensional approach must be adopted to limit inflation.

Figure 4.16 Consumer price index and nominal effective exchange rate trends in Tunisia

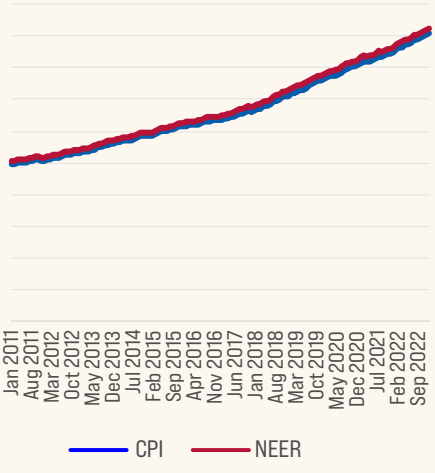


Figure 4.17 Consumer price index and oil price trends in Tunisia

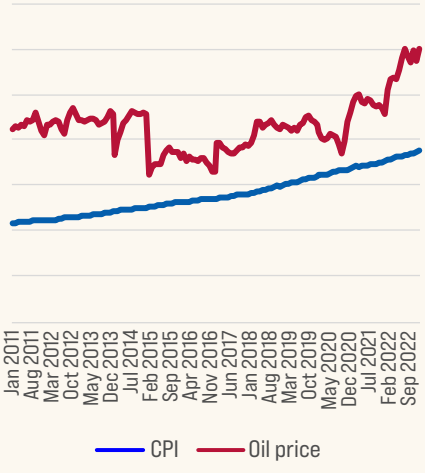
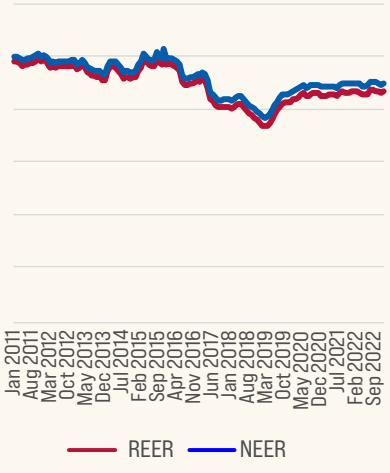
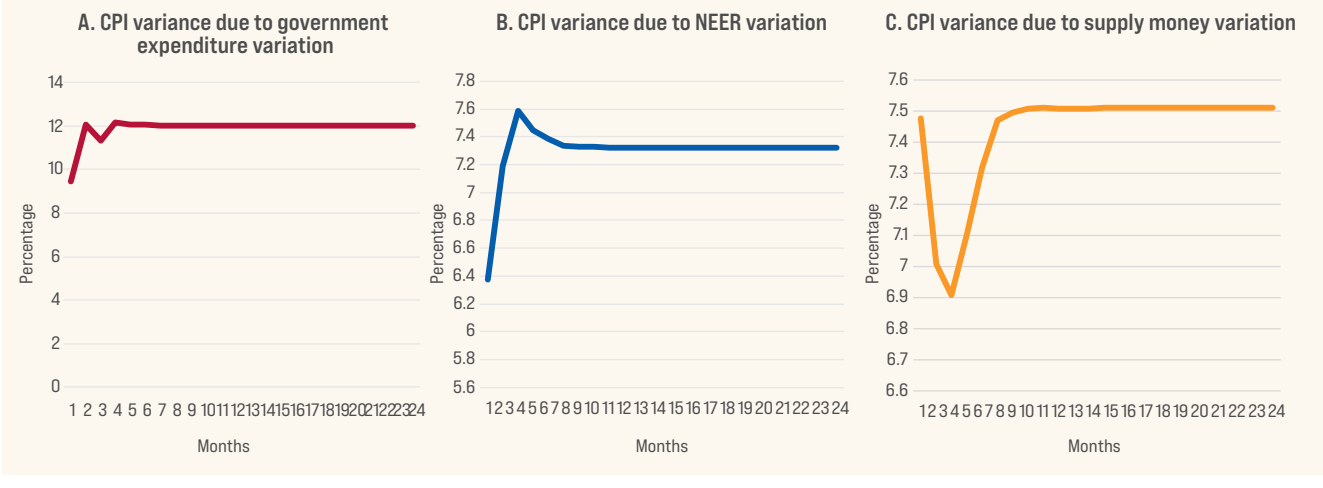


Figure 4.18 Real and nominal exchange rate trends in Tunisia



Source: ESCWA calculations.

Figure 4.19 Reaction delays of the price levels to main sources of inflation in Tunisia



Source: ESCWA calculations.

Table 4.7 Decomposition of inflation variance in Tunisia

	Three months (percentage)	Six months (percentage)	One year (percentage)	Two years (percentage)
Government expenditure	11.32	12.04	12.02	12.02
Money supply (M2)	6.90	7.47	7.50	7.50
NEER	7.58	7.34	7.32	7.32
Import price index	5.56	5.57	5.56	5.56
International energy prices (price of a barrel of oil)	0.68	1.01	1.10	1.10
CPI	67.93	66.55	66.47	66.47

Source: ESCWA calculations.

Figures 4.19A, 4.19B and 4.19C illustrate the inflation response times to a change in inflation drivers. CPI instantly responds to changes in government expenditure and the money supply, within three months. CPI reacts slowly to changes in the NEER, within six months. International energy prices (the price of a barrel of oil) and imported inflation also impact inflation, slightly, with six-months delays.

7. Summary of results

Table 4.8 shows the main inflation drivers of high inflation in the six selected countries over a 24-month period. Government expenditure represents the most significant driver. It makes the highest contribution in Lebanon at 36.96 per cent, followed by the Sudan at 26.55 per cent and Tunisia at 12.02 per cent. The second largest driver is the money supply. It makes the highest contribution in Lebanon at 9.87 per cent, followed by Yemen and Tunisia at 8.47 and at 7.50 per cent, respectively. The contribution is lower in the Sudan at 6.53 per cent.

The NEER is a source of inflation in most countries but to a lesser degree. It makes the highest contribution in the Sudan at 33.26 per cent, followed by Egypt at 29.51 per cent. In Tunisia, the contribution is relatively low at 7.32 per cent. In some countries, such as Egypt and Tunisia, changes in international oil prices are not a significant source of inflation. This is easily explained by the level of public expenditure on energy subsidies in these countries. Changes in international oil prices made the highest contribution to inflation in Yemen at 22.19 per cent, followed by the Syrian Arab Republic at 12.01 per cent and Lebanon at 10.21 per cent.

Inflation inertia is significant in most high-inflation countries, except for Lebanon at 11.58 per cent and, to a lesser extent, the Sudan at 26.59 per cent. The Syrian Arab Republic shows the highest inflation inertia at 76.25 per cent, followed by Tunisia at 66.47 per cent, Egypt at 53.11 per cent and Yemen at 55.40 per cent.

In sum, for the six Arab countries with high inflation rates, the main sources of inflation are government expenditure, money supply and NEER. A certain inflation inertia is evident and indicates a high degree of downward price stickiness. Implementation of effective disinflation policies should consider the determinants of the most relevant inflation drivers in each country, as analysed above.

Table 4.8 Decomposition of inflation variance: a summary of the main results over a 24-month horizon

	Egypt	Tunisia	Lebanon	Sudan	Syrian Arab Republic	Yemen	Average for Arab countries
Government expenditure	6.12%	12.02%	36.96%	26.55%	7.62%	--	17.85%
Money supply (M2)	--	7.50%	9.87%	6.53%	--	8.47%	7.97%
NEER	29.51%	7.32%	--	33.26%	--	4.94%	23.36%
International energy prices (price of a barrel of oil)	--	--	10.21%	6.11%	12.01%	22.19%	9.44%
Import price index	--	--	28.27%	--	--	8.20%	28.27%
CPI	53.11%	66.47%	11.58%	26.59%	76.25%	55.40%	46.80%
Number of inflation drivers	2	3	4	4	2	4	3

Source: ESCWA calculations.

C. Disinflation policies

Inflation is an important macroeconomic indicator. It affects all economic actors, households and enterprises. In addition, it can erode consumer purchasing power when wages are not indexed to changes in prices. It has more harmful distributional effects on the most vulnerable communities. Inflation stems from several causes, which may be cumulative,

including an overall increase in production costs, rapid increases in demand, significant money creation or a lack of competition. While the current rise in inflation was initially driven by the sudden upturn in aggregate demand following the COVID-19 health crisis, other causes have included increased production costs following the rise in energy prices after the outbreak of the war in Ukraine.

Table 4.9 provides an overview of the types of policies applied to contain inflation in oil-importing Arab countries since February 2022, with a view to achieving disinflation.[54] The table lists policies targeting domestic product markets through changes to consumer subsidies, indirect taxes (or specific commodity taxes), import duties, price controls and the application of product-specific exchange rates aimed at reducing the cost of certain imports. It also presents amendments made to social protection policies, which are intended to provide direct support for trade without altering the functioning of national product markets. It thus includes a qualitative summary of policies that can reduce inflation. It should also be noted that over the same period, Egypt, Jordan, Lebanon and Tunisia increased regulated prices and reduced subsidies, despite high inflation.

Table 4.9 does not include traditional macroeconomic policies such as raising key interest rates, which are used to curb inflation by supporting the domestic currency or reducing aggregate domestic demand. If inflation is above the target, central banks raise their prime rates to maintain credibility. The challenge in using a restrictive monetary policy to combat inflation is that it results every time in lower investment and weak growth. Using a New Keynesian monetary model with rational expectations shows that interest rates should fall during an episode of disinflation, a prediction that contrasts with observed monetary policy.[55]

The pre-announced crawling band exchange rate system is a very powerful means of disinflationary policy, taming the inflationary expectations of economic agents by offering them a directly observable nominal anchor.[56] Such an exchange rate system can have the advantage of eliminating devaluation uncertainty, provided it can win the confidence of economic agents.

During a disinflation process, the main question is whether monetary policy is credible. One essential element is the independence of the central bank. Both institutionally and financially, its autonomy needs to be strengthened in Arab countries to play its role, notably in conducting monetary policy and managing the exchange rate.

Close coordination of fiscal and monetary policies, a policy mix compatible with the objective of disinflation, is a necessary condition for disinflation. Precarious public finances are a concern since the financing of budget deficits by money creation contributes to inflationary inertia among private agents.

Table 4.9 Changes in product market and social transfer policies in Arab countries with an inflation spike since February 2022

	Product market interventions					Targeted social protection		
	Increased food and fuel subsidies	Introducing new price controls	Trade regulations	Product-specific exchange rate	Subsidy reduction	Cash transfers	Utility and financial support	Improved targeting
Egypt	x	x	x		x	x	x	
Lebanon				x	x	x	x	
Syrian Arab Republic			x	x	x			x
Tunisia	x	x	x		x			
Yemen			x		x		x	

Source: Gatti, Lederman, Islam and others, 2023.

D. The undesirable social consequences of disinflation policies

Inflation has multiple consequences. It accentuates poverty and inequality, increases the size of the informal sector and affects public finances.

1. Disinflation and poverty

Inflation is widely regarded as a regressive phenomenon, particularly when surging food and energy prices are significant drivers.[57] Figure 4.20 shows a positive relationship between inflation and poverty levels by country, based on the average values of inflation and the poverty ratio over a recent period. This explains why Lebanon has an average poverty rate that is close to 0 and inflation of around 5 per cent over the period considered. Poverty rates have been positively related to inflation in cross-country data.[58]

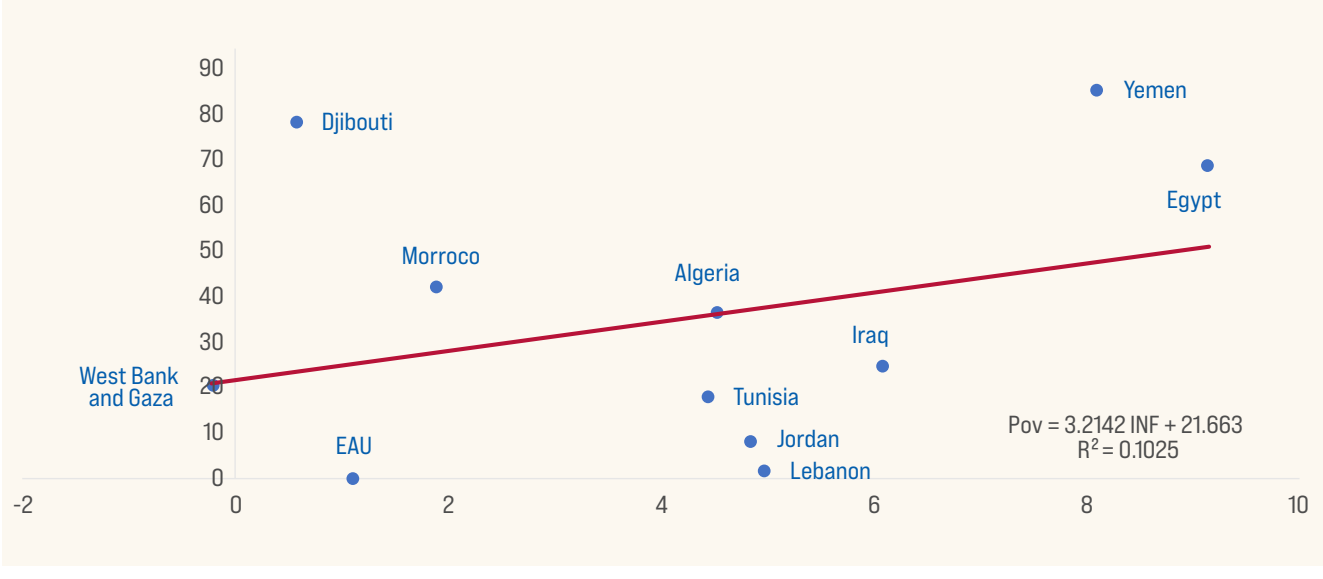
Based on these statistical correlations, a policy of disinflation is likely to induce a more inclusive economic process and mitigate the undesirable effects on poverty in Arab countries severely affected by high inflation. Egypt and Yemen, where poverty and inflation rates are the highest, would be the first to benefit from a disinflation policy. The same conclusion would likely be drawn if statistics were available for the Sudan and the Syrian Arab Republic.

Compared with Jordan, Lebanon and Tunisia, the "inclusion" gains from a disinflation policy would be lower in Morocco, where inflation is low and poverty is high. It needs to advance rural social inclusion through greater financial inclusion and improvement in basic infrastructure affecting human development, such as electricity, education, water and transport.

2. Disinflation and the informal sector

Some economists posit that inflation can affect the size of the informal sector, where prices increase at a moderate pace compared to those in the formal sector. Amid rampant double-digit inflation, people tend to buy cheaper goods, especially when the formal and informal sectors are in competition. The following figure shows a positive correlation between the size of the informal sector and the level of inflation. In other words, higher inflation levels are associated with a larger informal sector.[59]

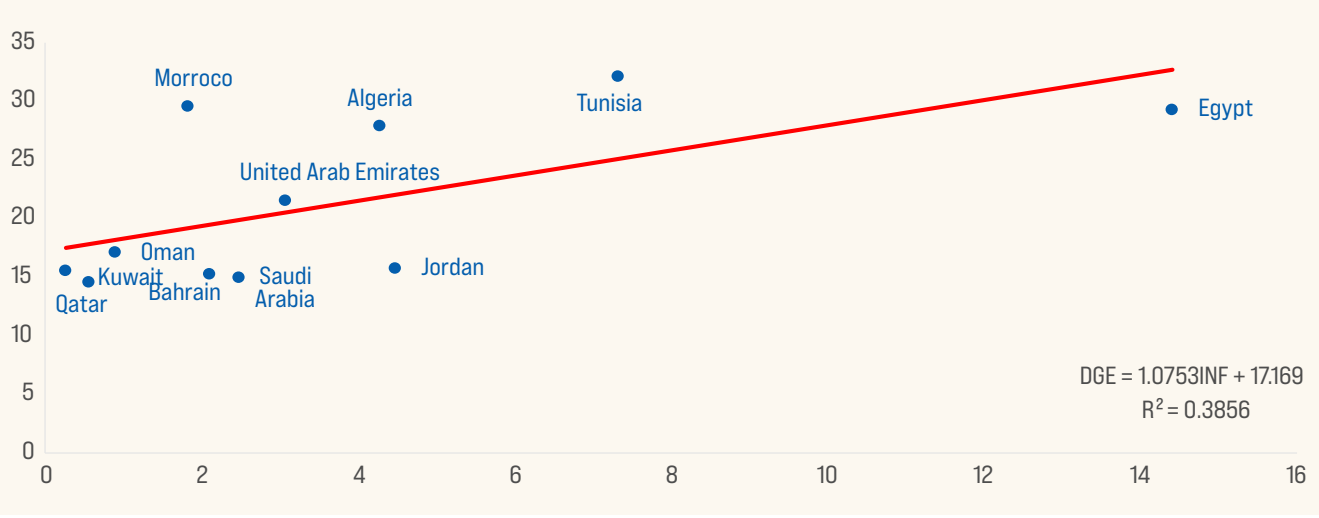
Figure 4.20 Inflation and poverty ratio by country



Sources: IMF database, ESCWA calculations.

Note: Poverty headcount ratio at $6.85 a day (2017 PPP), percentage of population.

Figure 4.21 Inflation and the informal sector



Sources: IMF database, ESCWA calculations.

3. Disinflation and budget deficits

Disinflation is likely to mitigate budget deficits since the loss in revenues due to lower inflation is offset by gains from lower interest charges on public debt. An improved fiscal situation in turn helps to stabilize the balance of payments.

As the budget deficit recovers, the balance of payments improves. The link between the budget deficit and the balance-of-payments deficit is explained in particular by the savings-investment approach to the current account.[60]

The starting point for this approach is an equation defining national income at date t:

$$Y_t = C_t + I_t + G_t + X_t - M_t \quad (1)$$

where Y, C, I, G, X and M denote national income, private consumption, investment, public spending, exports and imports, respectively. By introducing tax revenues (T), equation (1) can be rewritten as follows:

$$X_t - M_t = Y_t - C_t - T_t - I_t + T_t - G_t \quad (2)$$

By defining the current account balance as $BOC_t = X_t - M_t$, excluding transfers; the budget balance as $S_t = T_t - G_t$; and private savings as $E_t = Y_t - C_t - T_t$, we arrive at the following equation:

$$BOC_t = E_t - I_t + S_t \quad (3)$$

Equation (3) shows that improvement in the budget deficit due to disinflation contributes to improvement in the current account balance. Disinflation reduces the budget deficit as the loss of the income is counterbalanced by lower interest charges on public debt. This reduction in the budget deficit in turn reduces the current account deficit.

Faced with insufficient household savings, the external account deficit necessarily widens. To prevent the current account from slipping, it is therefore essential to shrink public consumption. In the long term, it seems advisable to sharply reduce the budget deficit and continue the structural reform of public finances.

4. Disinflation and the sacrifice ratio

The sacrifice ratio helps to measure the cost of disinflation. It is defined as the total loss in GDP due to disinflation, expressed as the output gap, divided by the fall in inflation.

The method commonly used to assess the costs associated with disinflation consists of estimating a Phillips curve and calculating the corresponding sacrifice ratios. The non-parametric approach, inspired by the work of Ball (1994), is based on the identification of disinflation episodes. The sacrifice ratio of a given disinflation episode is defined as the ratio of cumulative growth losses to a total reduction in trend

inflation over the duration of the episode. Ball assumes that trend inflation at period t is equal to the ninth-order moving average, in other words, the average over the four quarters before and after date t.

To mark periods of disinflation, we first identify the "peaks" and "troughs" of trend inflation. A peak is a quarter in which core inflation is higher than in the four preceding quarters and the four following quarters. The symmetrical opposite is a trough. A disinflation episode begins with a peak in inflation and ends with a trough.

The following calculation of the sacrifice ratio for the sampled Arab countries that experienced a peak in inflation follows Ball. It defines trend inflation as the nine-quarter centred moving average of the raw inflation series. A disinflation episode is a period beginning with a peak in inflation and ending with a trough, during which core inflation falls by at least 1.5 points. Furthermore, only sacrifice ratios matching a rise in interest rates are considered. No causality test is performed. The calculation of the loss in growth of the disinflation episode is based on the following three assumptions:

- Growth (respectively unemployment): the potential level at the start of the episode.
- Growth (respectively unemployment) has returned to its potential level four quarters after the end of the disinflation episode.
- Between these two dates, growth increases in a log-linear fashion.

The sacrifice ratio can be interpreted as the cost of a disinflation episode (between a peak and a trough) in terms of growth or unemployment points. If disinflation accelerates, the economy will return more quickly to its potential level and the sacrifice ratio will therefore fall.

The numerator of the sacrifice ratio is the loss in cumulative growth between the start date of the disinflation period t_i and the end date of this period plus four quarters t_f+4. The denominator is the change in inflation between the start and end dates of the disinflation episode:

$$RS = \frac{\sum_{t=t_i}^{t_f+4} y_t - y_t^*}{\pi_{t_f} - \pi_{t_i}}$$

For all Arab countries that experienced a peak in inflation, output data are only available at an annual frequency. Annual inflation data were used to calculate trend inflation to identify episodes of disinflation.

Figures 4.22A, 4.22B and 4.22C on trend inflation, calculated on the basis of the third-order moving average, identify disinflation episodes for each of three countries, Egypt, Morocco and Tunisia. Morocco was chosen for comparison with Egypt and Tunisia. The period is fairly long, stretching from 2000 to 2021. In Morocco, only one disinflation episode was detected, dating from 2008, which is almost certainly due to data frequency.

Figure 4.22 Inflation trends

Sources: IMF database, ESCWA calculations.

Table 4.10 Disinflation annual data

Country	Episode	Length in years	Initial inflation	Change in inflation	Sacrifice ratio
Egypt	2018–2021	4	19.24	5.47	0.35
Morocco	2008–2011	4	3.01	0.95	0.5
Tunisia	2014–2016	3	4.85	4.23	2.43

Source: IMF database, ESCWA calculations.

Table 4.10 summarizes the result of the sacrifice ratio for Egypt, Morocco and Tunisia during different episodes of disinflation. Disinflation is a decrease in the rate of inflation or the general level of prices in an economy. The sacrifice ratio measures the percentage of output (or GDP) lost for each 1 per cent reduction in inflation. A lower sacrifice ratio means that the economy can reduce inflation with less cost in terms of output and employment.

For Egypt and Morocco, the value of the sacrifice ratio is relatively low, compared with the average value for OECD countries calculated by Ball (1994), which stands at 0.8 for an annual frequency. It seems that annual data underestimate the loss of output, as these data smooth out production.

Egypt had a disinflation episode from 2018 to 2021, lasting four years. The initial inflation rate was 19.24 per cent, which decreased by 5.47 percentage points to 13.77 per cent. The sacrifice ratio was 0.35, which means that Egypt lost 0.35 per cent of output for each 1 percentage point reduction in inflation. This relatively low sacrifice ratio indicates that Egypt was able to lower its inflation rate with a small cost in terms of output.

Morocco had a disinflation episode from 2008 to 2011, lasting four years. The initial inflation rate was 3.01 per cent, falling by 0.95 percentage points to 2.06 per cent. The sacrifice ratio was 0.5, which means that Morocco lost 0.5 per cent of output for each 1 percentage point reduction in inflation. This is a moderate sacrifice ratio, implying that Morocco faced some cost in terms of output to reduce its inflation rate.

Tunisia had a disinflation episode from 2014 to 2016, lasting three years. The initial inflation rate was 4.85 per cent, which declined by 4.23 percentage points to 0.62 per cent. The sacrifice ratio was 2.43, which means that Tunisia lost 2.43 per cent of output for each 1 percentage point reduction in inflation. This is a very high sacrifice ratio; Tunisia suffered a large cost in terms of output to reduce its inflation rate.

These sacrifice ratios suggest that the social consequences of anti-inflationary policy will differ from one Arab country to another due to structural specificities. Findings from selected countries show that Tunisia would be most affected by a disinflation policy. Egypt, on the other hand, would be the least affected. Although Morocco has managed to keep inflation under control, compared to Egypt and Tunisia, the cost of disinflation is higher in Morocco than in Egypt. This is an unexpected result that should be interpreted with caution in view of the frequency of statistical data collection.

Finally, estimates of the sacrifice ratio show that the cost of disinflation policy in the three countries studied ranges from 0.35 to 2.43, compared with OECD countries, where the sacrifice ratio ranges from 1.83 to 3.3. Overall, the cost of disinflation is very low in Egypt and Morocco but relatively high in Tunisia.

E. Conclusion and recommendations

Discussion of accelerated inflation in Arab countries highlights how their economic openness can make them vulnerable to global uncertainties and fluctuations in global financial conditions. Such vulnerabilities can give rise to escalating inflation rates, increasing financial costs, exchange rate volatility and even food crises. They contribute in particular to a persistent upward trajectory in inflation rates in several countries reliant on oil imports.

The six countries with high inflation rates, notably Egypt, Lebanon, the Sudan, the Syrian Arab Republic, Tunisia and Yemen, have three main drivers of inflation: government expenditure, money supply and NEER. The implementation of an effective disinflation policy should consider the most relevant inflation drivers in each country. A country that fails to maintain fiscal discipline and recurrently resorts to monetizing its public deficit, for instance, runs the risk of experiencing high inflation. Using an exchange rate regime mechanism can be efficient when a sound macroeconomic policy is in place and the political environment remains stable. During a disinflation process, critical concerns are the credibility of monetary policy and the independence of the central bank, which may need to be reinforced both institutionally and financially.

A disinflation policy is likely to be inclusive and to mitigate some inflationary effects, notably on the poor. Egypt and Yemen, with both high poverty and inflation rates, stand to be the primary beneficiaries of such an approach, along with the Sudan and the Syrian Arab Republic. Compared with Jordan, Lebanon and Tunisia, Morocco would see relatively limited benefits from a disinflation policy in terms of inclusion, since inflation is low and poverty is high.

Sacrifice ratios show that the social effects of an anti-inflationary policy will differ among Arab countries due to their economic structures. Among the sampled countries, Tunisia would likely experience the most pronounced impact from a disinflation policy, while Egypt would be less affected. Surprisingly, even though Morocco has effectively maintained low inflation rates compared to Egypt and Tunisia, the associated cost of disinflation in Morocco appears to be higher than in Egypt. This unexpected finding should be interpreted cautiously, considering the frequency and methodology of statistical data collection.

Overall, inflation continues to be a serious concern for the Arab region, notably in the six countries with high inflation rates over the past three years. They have been unable to bring inflation and budget deficits under control and to reduce their large external imbalances. Frequent exogenous shocks stemming from political and security contexts have had a detrimental effect on both domestic production and inflation. The economies of Iraq, the Sudan, the Syrian Arab Republic and Yemen have been severely affected by high uncertainty. Containing the undesirable effects of high inflation should be among the top priorities of these countries. In that regard, policymakers may consider the following:

- Optimizing public finance expenditures and reducing public debt can be attained notably by controlling the size of the public wage bill, reducing subsidies and avoiding an increase in debt services.
- Enhancing the autonomy of decision-making on monetary policies entails strengthening central bank independence in many Arab countries as this is crucial to achieving monetary stability and controlling inflation within a range of 3 to 3.5 per cent. Central banks should be encouraged to exercise operational autonomy in setting key interest rates and ensuring that their actions remain insulated from political-electoral cycles. Governments must control budget deficits that lead to inflationary pressure, which might compromise monetary stability and put excessive pressure on central banks.
- Adopting fully flexible exchange rate regimes may not be a wise option for mitigating inflation. For some countries, it is imperative to transition towards a pegged exchange rate system with some degree of flexibility in exchange rate management. This transition should aim to reduce external imbalances, improve export price competitiveness and stabilize inflation. Such regimes have typically demonstrated a significant level of exchange rate stability. Achieving fiscal consolidation requires improved expenditure control, an independent monetary policy and the resolution of political conflicts.
- Rising inflation is adversely affecting vulnerable households, especially those with significant expenditures on food. A disinflationary policy with fiscal consolidation should protect low-income people from the rising costs of food and energy. Achieving this requires a proficient mechanism to identify vulnerable populations eligible for aid and support.
- Reducing indirect taxes on some goods and applying preferential exchange rates for basic commodities are also essential steps, notably in periods of crisis. Furthermore, subsidies need to be better targeted to vulnerable groups by more clearly identifying them. Cash transfers should be used to support the purchasing power of lower-income groups, thereby mitigating the undesirable effects of disinflationary policy. Well-designed, competently implemented and efficient social safety net programmes are another recommended consideration.