SBP Staff Notes
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Systemic Sudden Stops in Emerging Economies: A Recent Perspective

Mohsin Waheed *

Abstract

This paper examines sudden stops in capital inflows to emerging economies of Asia, Europe, Latin America, and Africa as Calvo, Izquierdo and Mejia (2008), based on the country-specific data from January 1990 to May 2022. We introduce the notion of Systemic Sudden Stop as the one triggered by exogenous factors and measured in terms of a rise in Emerging Market Bond Index (EMBI) spreads; and find that four countries, Indonesia, Thailand, Poland, and Egypt have already entered into the Systemic Sudden Stop phase while other emerging economies could also be at a greater risk of the similar situation. The major risks to emerging markets come from the commodity prices and rising inflation due to the Russia-Ukraine conflict; tightening financial conditions; mounting uncertainty; and recessionary fears. Nevertheless, on the positive note, net ratings of emerging market sovereign bonds have improved in comparison with the year 2020, and EMBI spreads have not increased much due to greater risk being already priced-in, especially in high yield.

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Keywords: sudden stops, capital inflows, capital outflows, emerging markets, exchange rate, current account, EMBI spreads
JEL Codes: F31, F32, F39, F41

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1. Introduction

In economic literature, sudden stop refers to a situation when a country experiences abrupt reduction of net capital inflows, especially private flows, often followed by disruption in real economic activities. Small economies may be affected more severely due to sudden stops as foreign capital inflows cease even as domestic capital outflows rise. The term sudden stop is often attributed to the late MIT economist Rudiger Dornbusch who used this in his paper, Dornbusch et al. (1995) amidst a brewing crisis in Asian and Latin American emerging markets. He said, 'it's not the speed that kills, it's the sudden stop'. The catastrophic events followed by the Asian[1] financial crisis and the Mexican Tequila[2] crisis have proven him right as the capital outflows led to massive slowdown in the economies of southeast Asia and Latin America. Calvo (1998) attempted to formalize the concept of sudden stops: in his view, economies facing abrupt and massive current account deficits (CADs) are vulnerable to sudden stops indicating a sudden discontinuity in the flow of international capital.

Simply put, a sudden stop condition is marked by drying up of foreign capital inflows to countries. Various reasons both domestic and external can be attributed to this hindered funding. The recent literature has focused on the systemic causes of drying up of foreign inflows, for example, during the East Asian crisis of 1997-98 and the global financial crisis of 2008-09, international financial markets got massively disrupted. Sudden stops that take place in conjunction with a sharp rise in aggregate interest-rate spreads between the US treasuries and emerging market bonds as measured by JP Morgan Emerging Markets Bond Index (EMBI)[3] Spread are termed as systemic sudden stops. Besides, inflows could also get hampered for reasons other than systemic such as wars, lack of fiscal sustainability, and currency crises. The definition of systemic sudden stops in the context of this study resonates with Calvo, Izquierdo and Mejia (2008), i.e., kind of sudden stops that is triggered by external shocks that eventually impede capital inflows.

By using our notion of Systemic Sudden Stops (3S), we examine the 3S phenomenon in nineteen emerging economies, including China, India, Indonesia, Malaysia, Philippines, Saudi Arabia, South Korea, Thailand, UAE, Hungary, Poland, Turkey, Argentina, Brazil, Chile, Colombia, Mexico, Egypt, and South Africa in terms of disruptions in capital flows to these economies.

2. Literature Review

Regarding sudden stops, several definitions have been used in the literature. Frankel and Rose (1996) discuss links to the currency crises; and Kaminsky and Reinhart (1999) focus on the currency crisis by implicitly introducing a link between current account performance and currency crises by factoring-in the growth rate of imports and exports in their analysis.

[1] The Asian Financial Crisis started as a currency crisis in Thailand in July 1997 caused by the collapse of exchange rate. The crisis later spread to other regional economies of Southeast Asia notably Indonesia and Malaysia thus massively damaging their currencies, stock markets, and asset prices.

[2] The 'Tequila Crisis' is a slang term attributed to the Mexican economic crisis of 1994.

[3] It is calculated by JP Morgan and is the spread between emerging market bonds and US treasuries.

The sudden stop analysis by Rodrik and Velasco (1999), which is inspired by Radelet and Sachs (1998) is different from Calvo, Izquierdo and Mejia (2004) as their definition of financial crisis is a sharp reversal in net private foreign capital flows. However, this indicator ignores the "unexpected" component in sudden stops, and it does not distinguish between episodes that may be of a domestic origin from those of a systemic origin.

In contrast to this approach, we discuss the systemic nature of sudden stops that focuses on the capital account reversals that coincide with sharp increases in aggregate spreads between emerging market bonds and advanced economy treasuries. The rationale for adopting this approach is that we are interested in the crises episodes that are linked with an external spontaneous trigger.

As we discussed, 3S (Systemic Sudden Stop) definition in the present paper do not take in to account the requirement in Calvo, Izquierdo and Mejia (2004) of capital account reversals coming with a fall in output. This help us reduce the potential influence of domestic factors and focus on external triggers such as a drastic rise in aggregate interest-rate spreads. For such unusual periods, it could be claimed that the trigger is financial and external. Moreover, our definition of the crisis puts a line of demarcation between periods that are "largely unexpected". For these periods, it could be argued that market incompleteness is likely to prevail during such episodes. However, whether or not this initial shock develops into a full-fledged sudden stop depends also on country-specific variables. Thus, systemic sudden stops may imply quite different timings for the onset of a crisis compared to exchange rate crises or current account reversals.

Aftermath the Asian Financial Crisis, the Asian Tiger economies, put a great emphasis on accumulating international reserves as a self-insurance in the event of a sudden stop, but these economies didn't come up with a regionally viable financial architecture to extend support in times of external pressure. Calvo, Izquierdo and Loo-Kung (2013) build on the precautionary approach literature linked to sudden stops and endogenize both the probability of a sudden stop and the costs of a crisis through empirical models. The resilience of the economies with abundance of reserves during the subprime crisis appears to endorse the self-insurance strategy.

Further, Ahmed and Zlate (2013), based on the data from 2002: Q1 to 2012: Q2 and with an empirical model assess that growth and interest rate differentials between EMEs and advanced economies and global risk appetite are significantly important determinants of net private capital inflows. Besides, they notice substantial changes in the trend of net inflows before and after the global financial crisis particularly for portfolio inflows--partially explained by the large sensitivity of such flows to interest rate differentials and aversion to risk.

3. Data and Methodology

We use monthly data on exports, imports and international reserves, excluding gold, of nineteen emerging markets all denominated in million US dollars. The source of data for imports and exports is IMF's International Financial Statistics while data on reserves (excluding gold) has been extracted from country-specific Balance of Payments data

available via Haver. The rationale for using monthly instead of lower frequency data is that the later kind of data may obscure the start of these periods. Because of the fact that countries' capital account data is mostly unavailable at this frequency, we create a proxy for capital flows by netting out the trade balance from changes in foreign reserves. Changes in the twelve-month cumulative measure of the capital flow proxy are taken on a yearly basis to avoid seasonal fluctuations.

Following Calvo (1998) and Calvo, Izquierdo and Mejia (2008), our definition of sudden stops is characterized by huge and unpredicted decline in capital inflows; further the phase of sudden stops is marked by the following conditions and as mathematically explained at ***Annexure-I***:

i) There is at least one observation where the year-on-year decline in capital flows lies at least two standard deviations below its sample mean; this condition fulfills the 'unpredicted' prerequisite of a sudden stop.
ii) The period of sudden stop phase ends when the annual change in capital flows surmounts one standard deviation below its sample mean. This commonly suggests persistence which is a common fact of sudden stops.
iii) Additionally, in order to ensure symmetry, the onset of a sudden stop phase is ascertained by the first time the annual change in capital flows drops one standard deviation below the mean.

Conditions for Systemic Sudden Stops

i) Aggregate spread window contains a spike in the EMBI spread exceeding two standard deviations from the mean.
ii) The phase begins when EMBI spread rises one standard deviation above its sample mean.
iii) The Phase terminates when the EMBI spread falls one standard deviation below its sample mean.

4. A Recent Perspective on the Systemic Sudden Stops

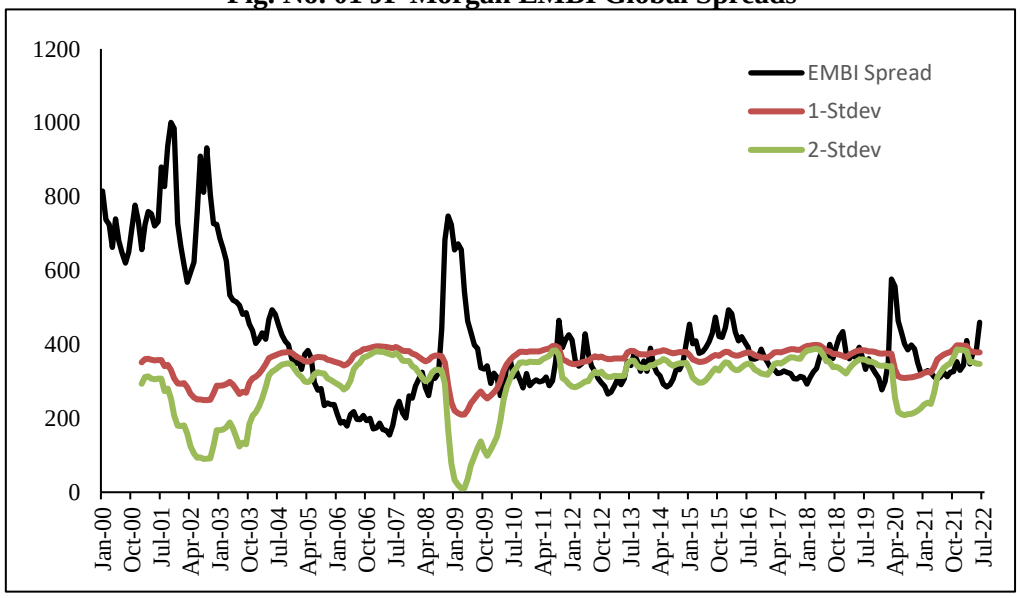
First of all, we can see in Fig. No. 01 a significant increase of twenty percent in EMBI spreads from May 2022 to June 2022 which is indicative of rising uncertainty and risk in emerging markets. The ongoing Russia-Ukraine war and resulting commodity supply shortages have wreaked havoc across both developed and emerging markets in terms of rising inflation as shown in ***Annexure-III***. Due to highest inflation in the US in forty years, the Fed continues to tighten monetary policy and some economists foresee a likely recession down the road. Hoek et al. (2021) argue that when the US interest rate is increased due to concerns for output above potential, the impact on emerging financial markets is mild because, according to them, higher U.S. GDP creates a demand for imports from its trading partners. On the contrary, if higher rates are driven mainly by inflation, or inflationary expectations, this will likely be more disruptive for emerging markets. Later is the case at present as the current interest rate increase is motivated by inflationary pressures.

Further, tightening financial conditions and uncertainty regarding possible lockdowns owing to new virus variants are two other looming dangers to emerging markets. According to our calculations at ***Annexure-II***, some of the emerging markets such as Indonesia, Thailand, Poland, and Egypt are experiencing systemic sudden stops while we can foresee a similar situation for other emerging economies. Although, the EMBI spreads have risen, but they are still lesser in magnitude than during the initial period of COVID-19 onset, or during the global financial crisis, one possible explanation in view of Bareau and Bedford (2022) is that much of the risk is already priced-in especially in high yield.

Moreover, Brooks et al. (2022) raise alarms by noticing that at the end of May 2022 approximately US$ 36 billion had already vanished from the emerging market mutual and exchange-traded bond funds since the start of the year as shown in Fig. No. 02 However, non-portfolio flows including foreign direct investment and loans have been sustained contrary to portfolio flows. In addition, as Aziz at al. (2022) note that net flows may paint a gloomy picture, so one may underestimate capital inflows by only looking at them; they discern that capital outflows too have risen in pursuit of diversifying risks.

In view of the ongoing issues, there seem to be various risks to emerging markets such as soaring inflation due to commodity shocks; tightening financial conditions; and uncertainty, in addition, IMF's April 2022 World Economic Outlook report has also downgraded the growth forecast for emerging markets.

Fig. No. 01 JP Morgan EMBI Global Spreads

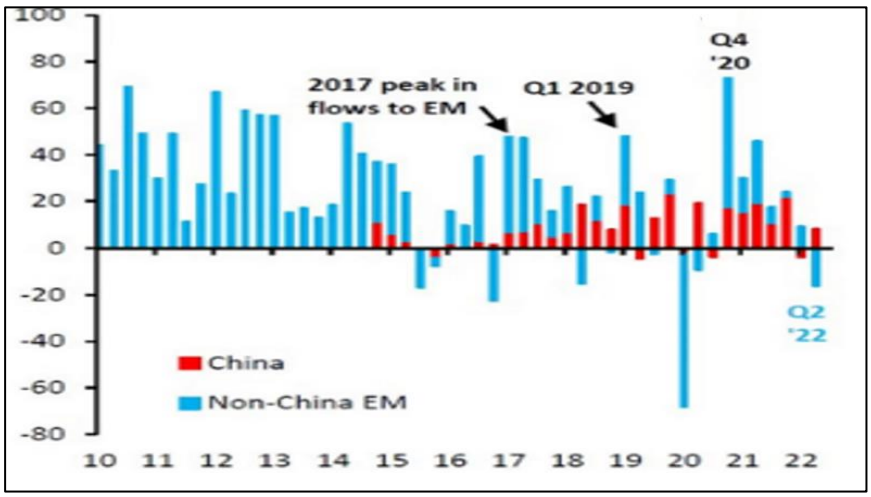


Data source: JP Morgan via Bloomberg

Apart from the foreseen risks to emerging markets, there are few positive things to look for; one such development is the improvement in emerging market net sovereign ratings which has seen an improvement since the onset of the pandemic from negative thirty-eight in 2020 to negative twelve in 2022 Q1. Furthermore, as a windfall of low oil and commodity prices post pandemic, by the end of last year fifty-eight percent of the emerging markets had international reserves greater than IMF's adequacy metric. However, with rising

commodity prices, this trend may not be sustained for longer as the import bills will bloat for the countries.

Fig. No. 02 Real Money Flows to EMs in Billion US$



Source: Brooks et al. (2022)

5. Conclusion

Based on our sudden stop calculations for nineteen emerging economies and in view of the rising emerging market bond spreads, we can argue that some of the emerging market countries are currently facing systemic sudden stops while there remain likely risks for others. The outlook for emerging markets at large does not seem so favorable due to inflationary pressures ignited by the soaring commodity prices induced by the Russia-Ukraine war; higher import bills thus can exert tremendous pressure on certain countries' current account balances. Furthermore, there remain fears of recession; further tightening financial conditions and uncertainty. In brief, the uncertain global economic environment accompanied by fears of global economic slowdown are being viewed as likely impediments to capital flows and economic growth in emerging markets.

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Annexure-I: Empirical Definition of a Sudden Stop

Constructing Capital Flows

BoP Identity

$$CA_t + KA_t + FA_t = 0$$

Capital flows

$$KF_t = KA_t + FA_t + \Delta IR_t$$

Re-expressing capital flows using 'BoP' Identity

$$KF_t = -CA_t + \Delta IR_t$$

Recalling CA Identity

$$CA_t = TB_t + NFIA_t + NUT_t$$

$$\widetilde{KF}_t = -TB_t + \Delta IR_t = IM_t - X_t + \Delta IR_t$$

Data Transformation

Deflate by US CPI

$$x_t = \frac{X_t}{P_{US,t}}; im_t = \frac{IM_t}{P_{US,t}}; \Delta_{ir,t} = \frac{\Delta IR_t}{P_{US,t}}$$

$$\widetilde{KF}_t = im_t - x_t + \Delta ir_t$$

Annual aggregation

$$\widetilde{KF}_t{}^A = \sum_{j=0}^{11} \widetilde{KF}_{t-j}$$

Year-on-year change

$$\Delta_A \widetilde{KF}_t{}^A = \widetilde{KF}_t{}^A - \widetilde{KF}^A{}_{t-12}$$

Constructing bands:

Mean:

$$\mu_t = mean(\Delta_A \widetilde{KF}_0{}^A : \Delta_A \widetilde{KF}_t{}^A)$$

Standard deviation:

$$\sigma_t = stdev(\Delta_A \widetilde{KF}_0{}^A : \Delta_A \widetilde{KF}_t{}^A)$$

1st band:

$$\mu_t - \sigma_t$$

2nd band:

$$\mu_t - 2\sigma_t$$

Annexure-II: Sudden Stop Computation

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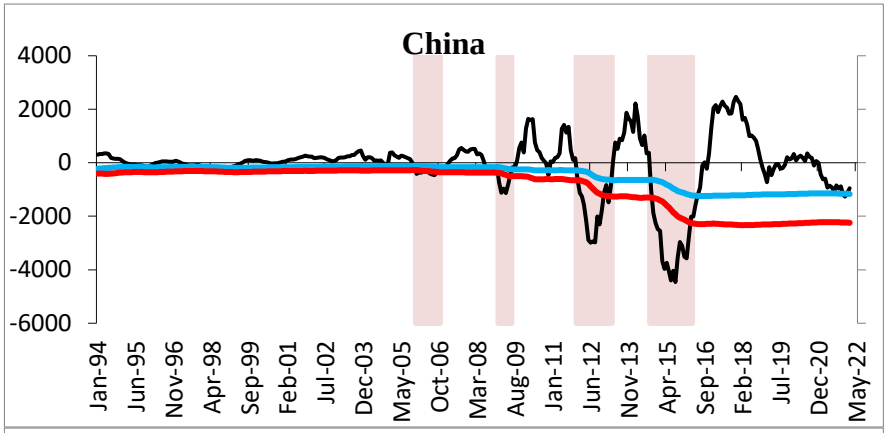

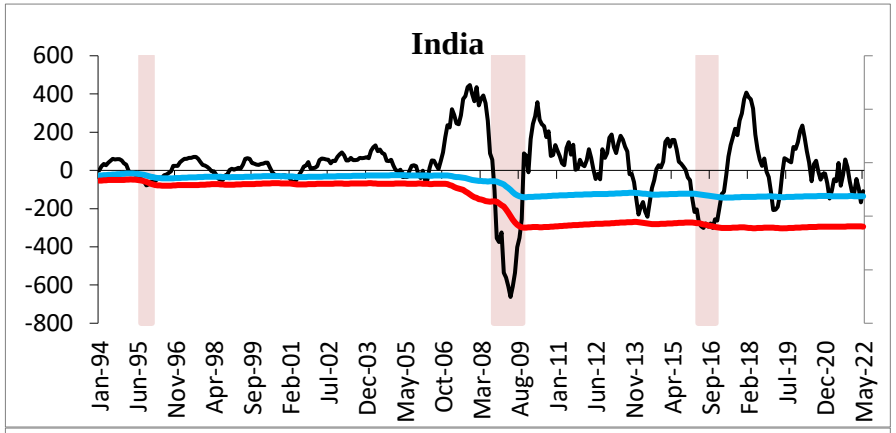

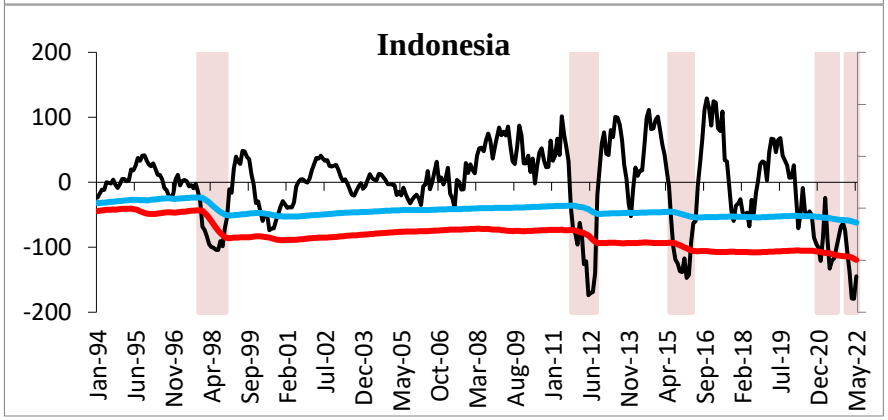

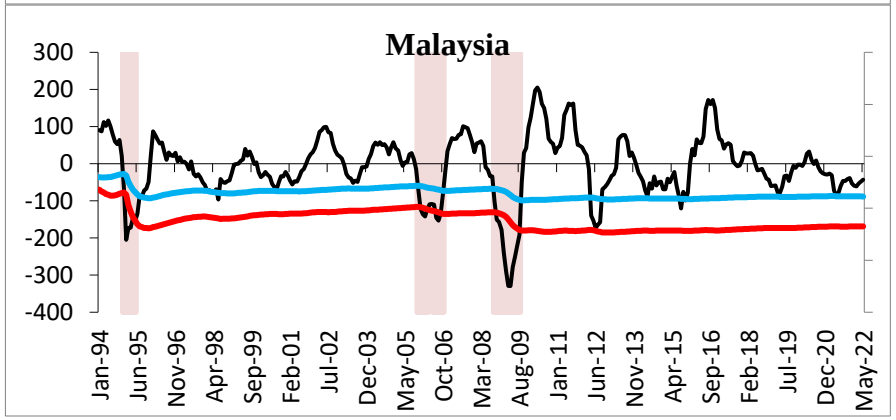

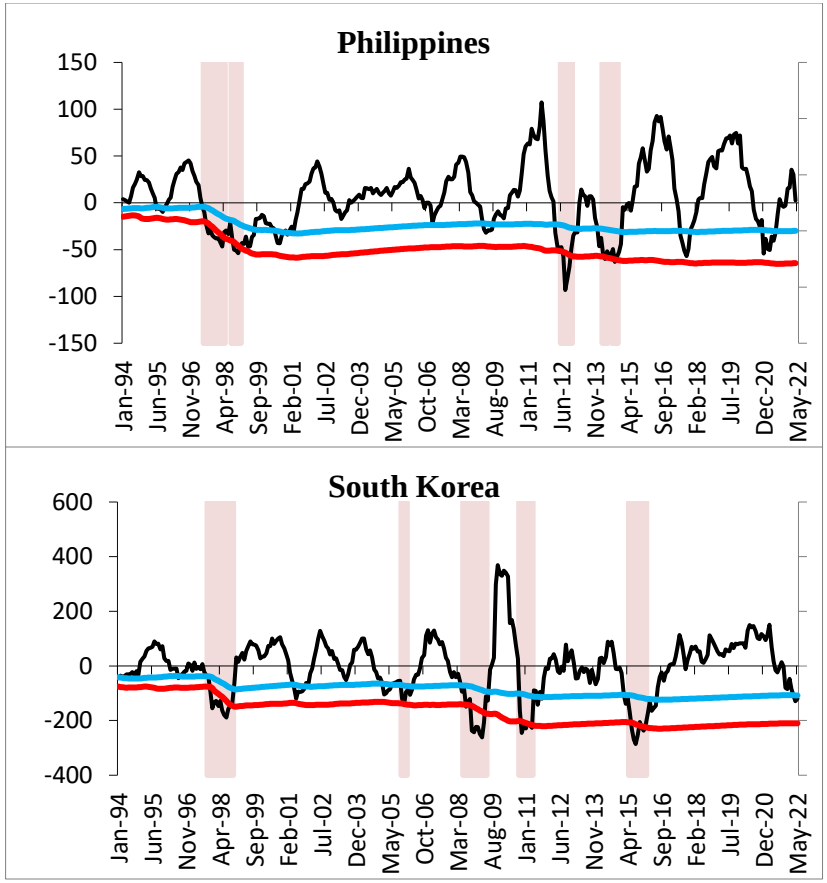
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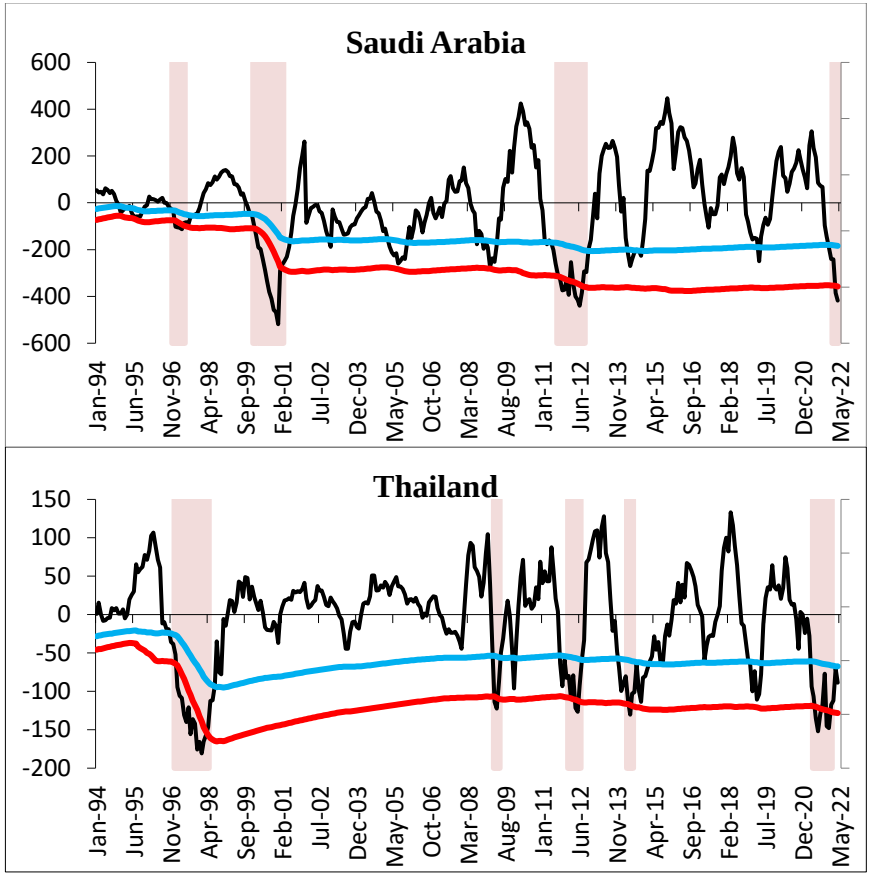
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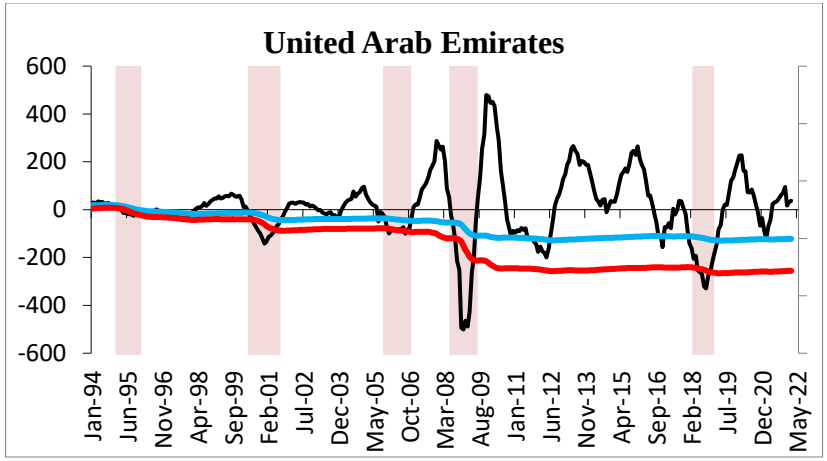
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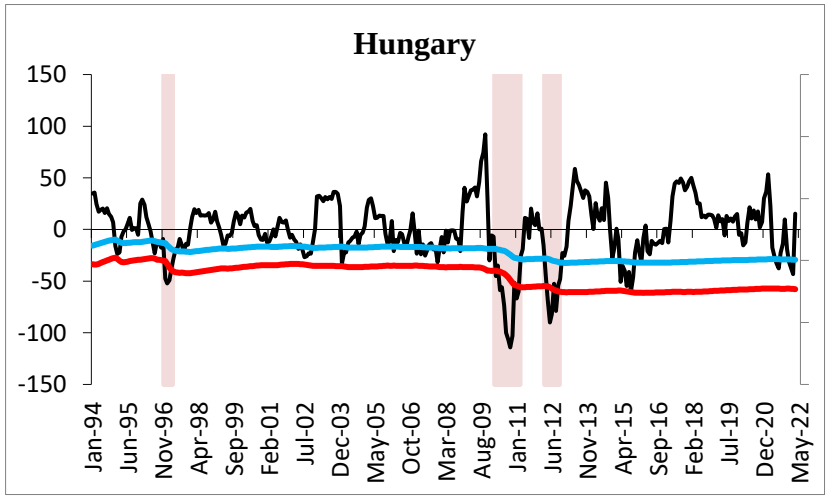
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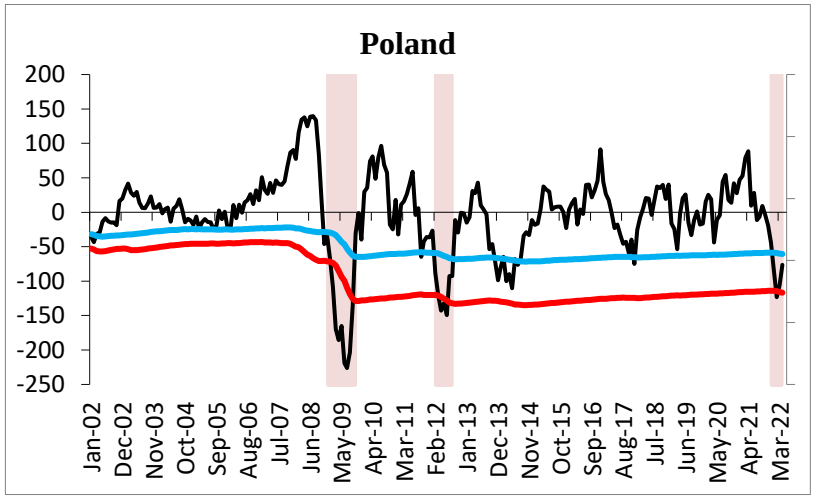
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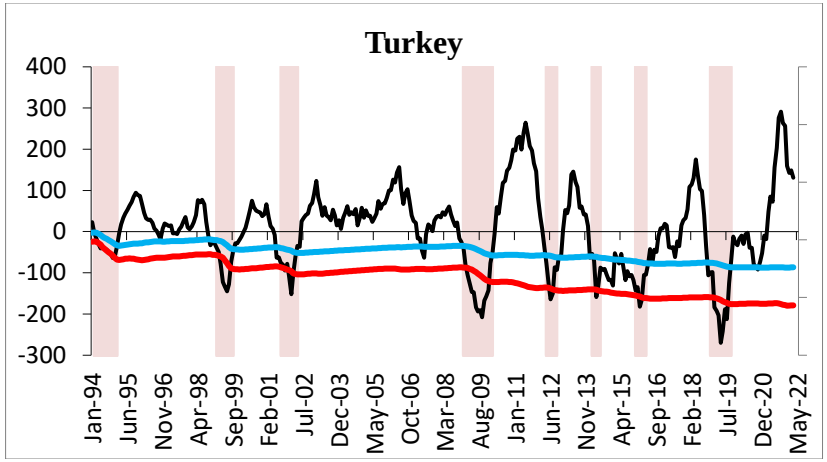

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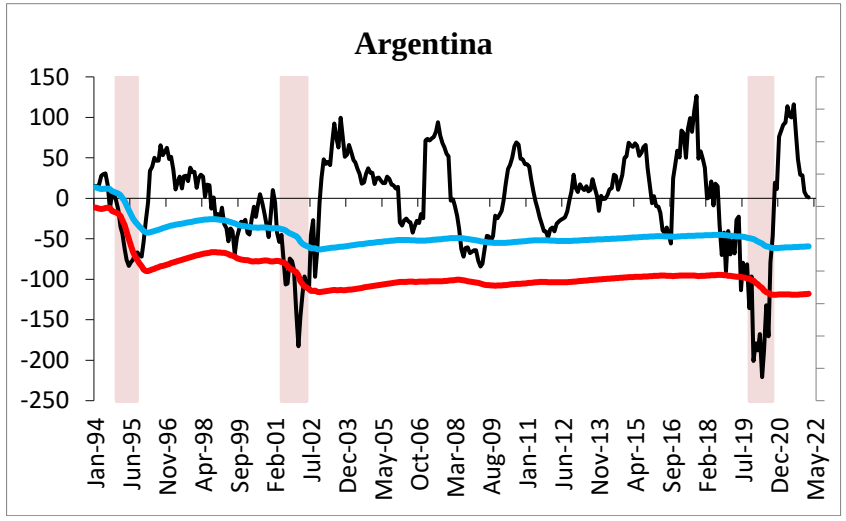

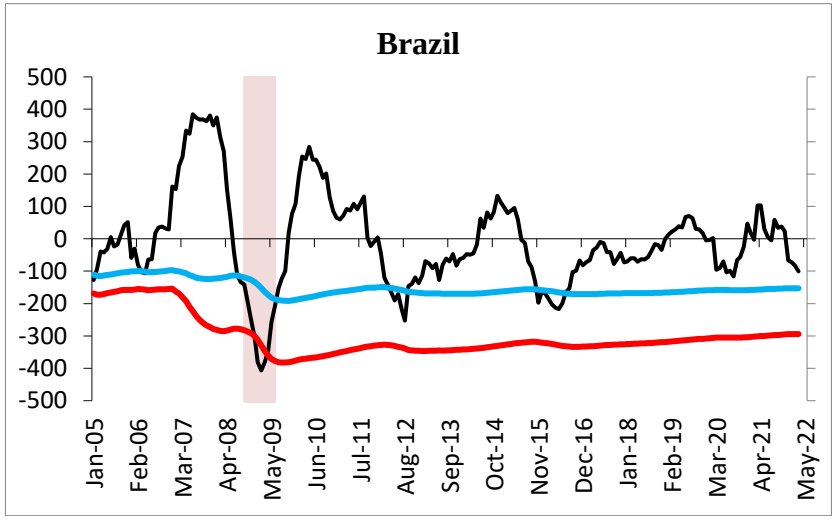

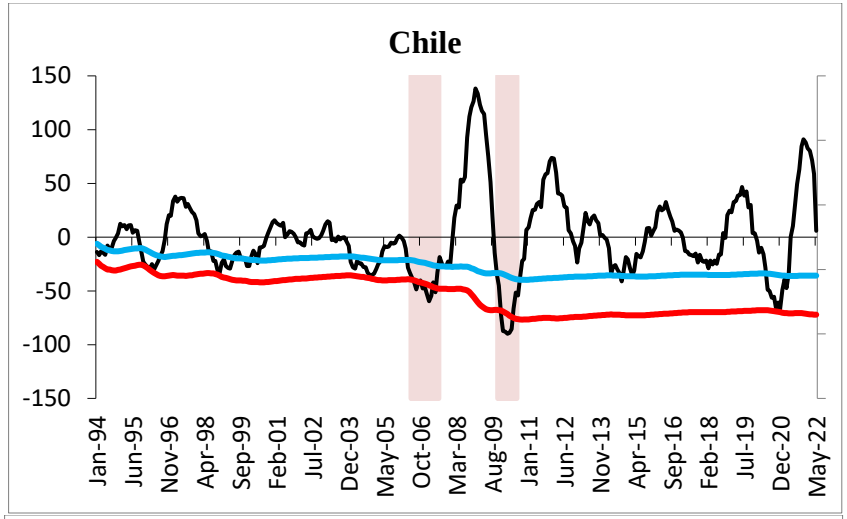
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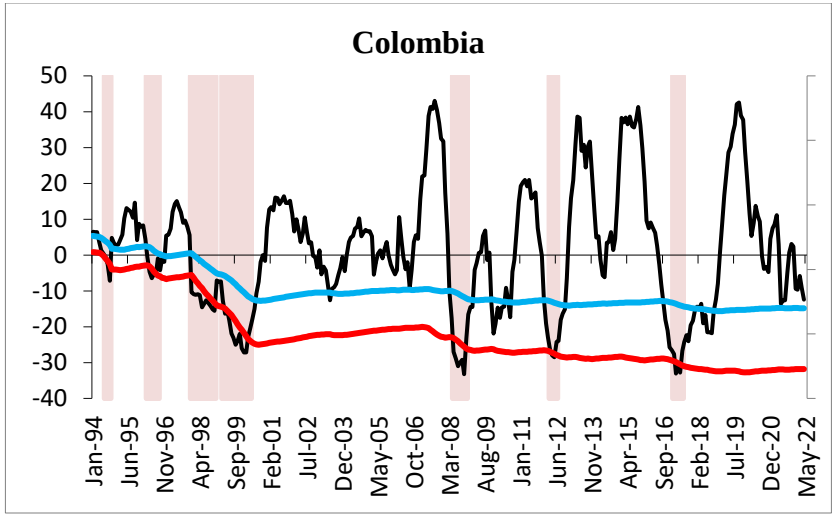
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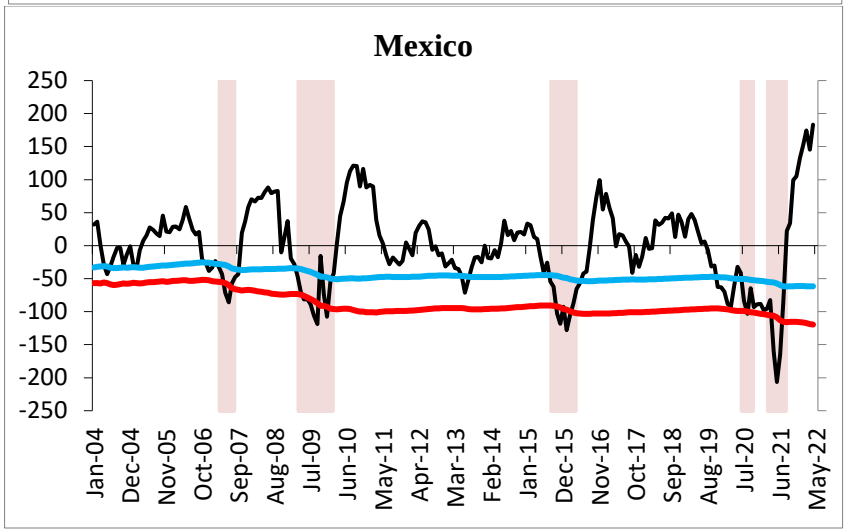
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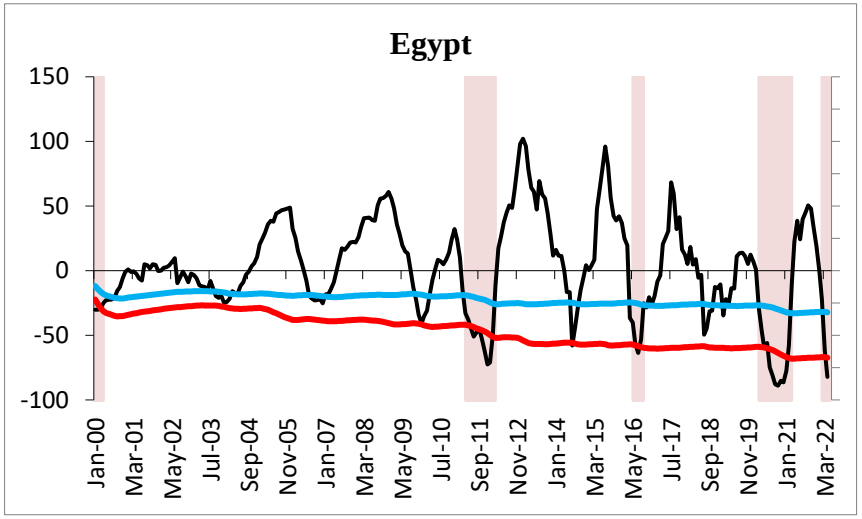
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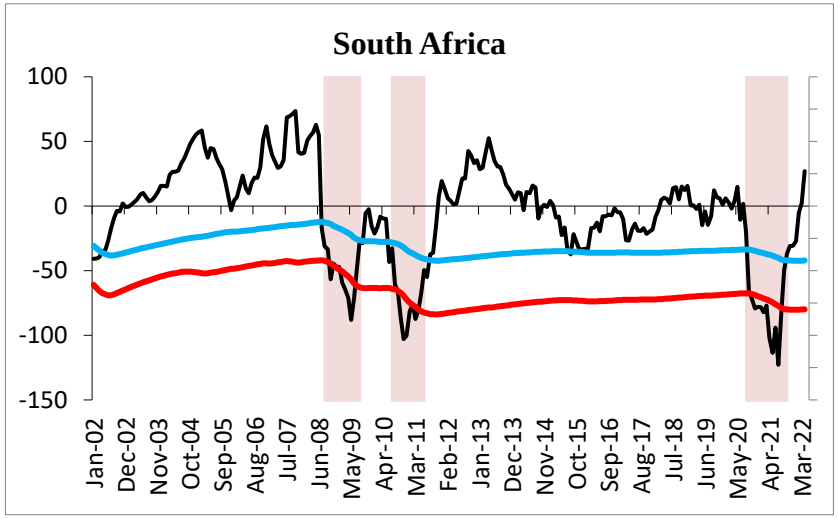
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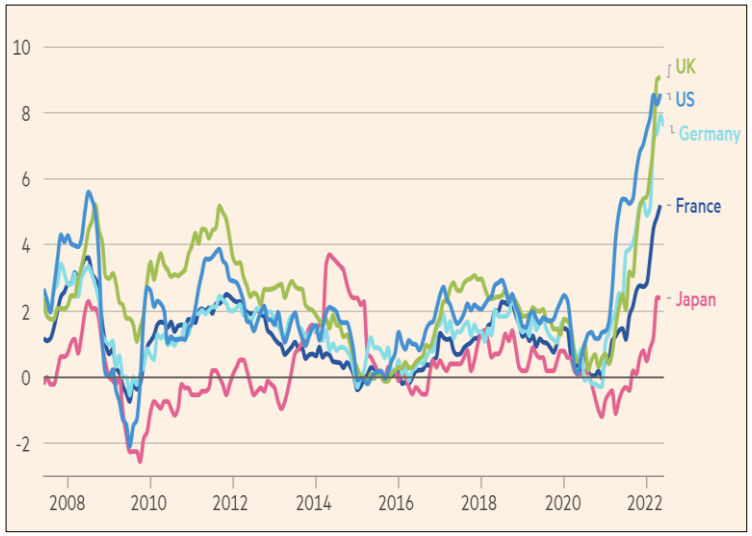
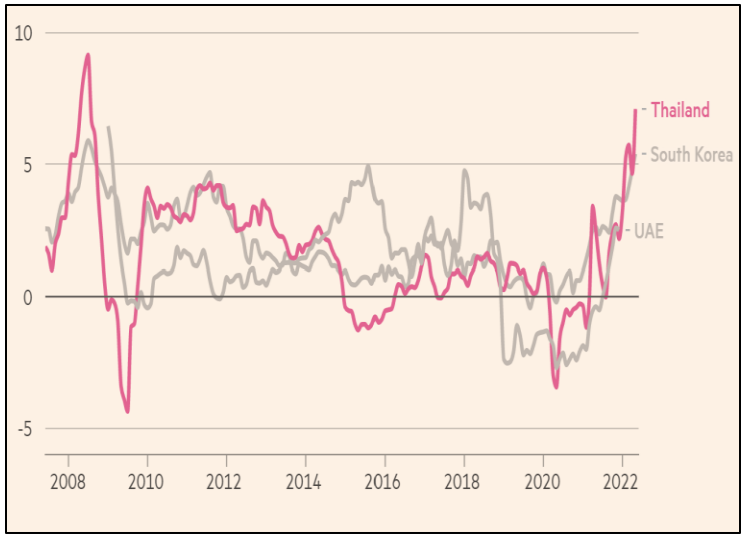
Jan-02
Dec-02
Nov-03
Oct-04
Sep-05
Aug-06
Jul-07
Jun-08
May-09
Apr-10
Mar-11
Feb-12
Jan-13
Dec-13
Nov-14
Oct-15
Sep-16
Aug-17
Jul-18
Jun-19
May-20
Apr-21
Mar-22

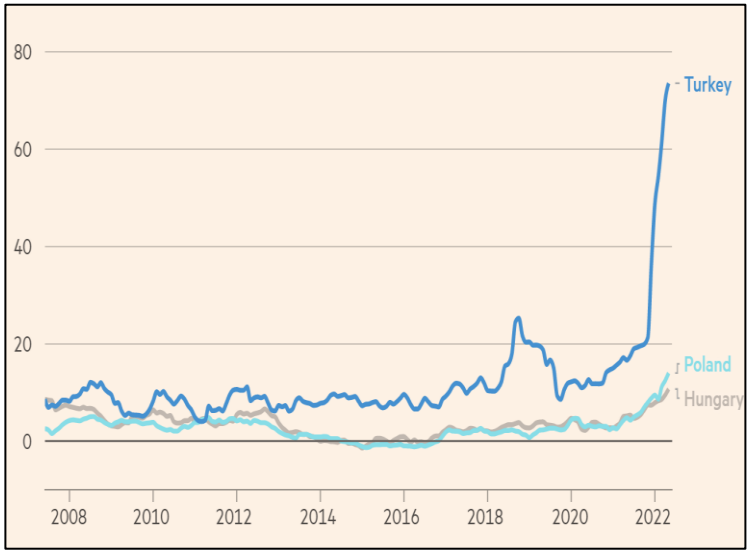
Annexure-III: Inflation in Advanced and Emerging Economies



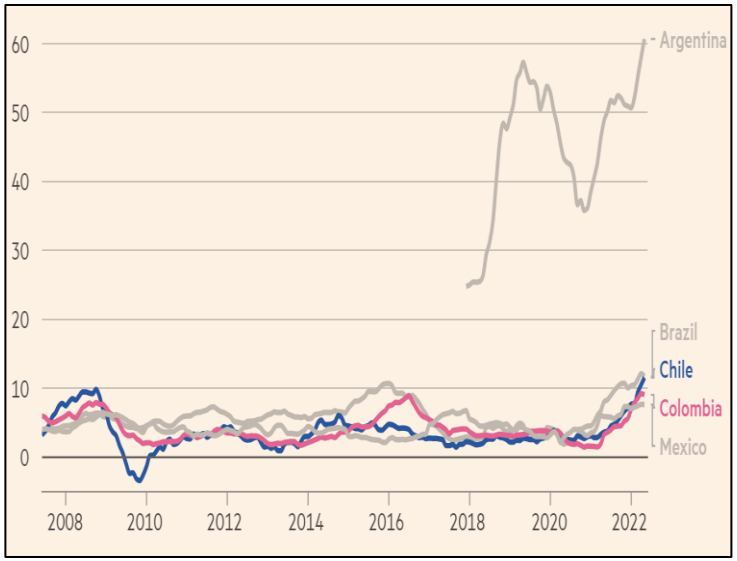
ASIA



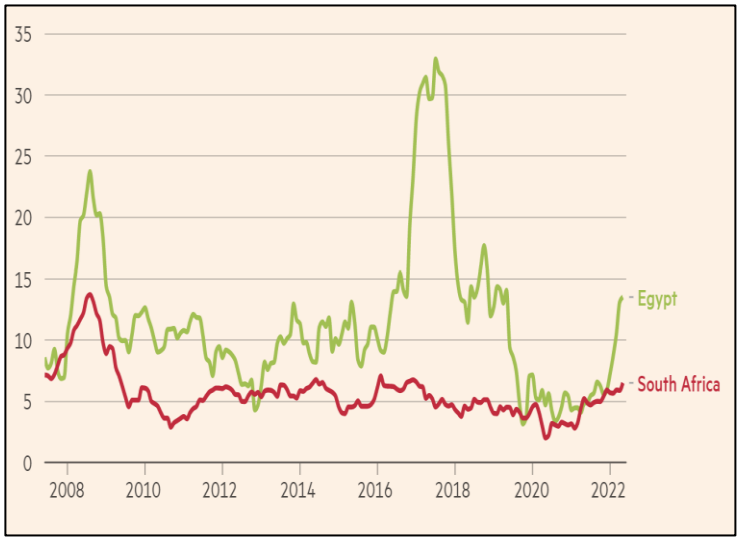
EUROPE



LATIN AMERICA



AFRICA



Sources: Financial Times; Refinitiv; national statistics offices