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# **Systemic Sudden Stops in Emerging Economies: A Recent Perspective**

Tunio, Mohsin Waheed

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# **Systemic Sudden Stops in Emerging Economies: A Recent Perspective**

## **Abstract**

This paper first looks for Sudden Stops in capital inflows to nineteen emerging economies of Asia, Europe, Latin America, and Africa as Calvo, Izquierdo and Mejia (2008) based on the country-specific data availability from January 1990 to May 2022. The paper then introduces 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. The author finds out that four countries i.e. 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.

**Mohsin Waheed**

July 2022

Disclaimer Views expressed in this document and all errors and omissions are solely the responsibility of the author.

**Keywords:** sudden stops, capital inflows, capital outflows, emerging markets, exchange rate, current account, EMBI spreads

**JEL:** F31,F32, F39, F41

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## Introduction

Although there is no official definition of an emerging market, however, according to the IMF World Economic Outlook classification, apart from 39 advanced economies that have high per capita income, diversified exports, and greater participation in the global financial system, the remaining countries are classified as emerging market and developing economies. Broadly, the classification as an emerging market takes into account the following characteristics: market access; per capita income; economic size, population, and exports potential. Based on these criteria for 2010-2020, the following countries are classified as emerging economies Argentina, Brazil, Chile, China, Colombia, Egypt, Hungary, India, Indonesia, Iran, Malaysia, Mexico, the Philippines, Poland, Russia, Saudi Arabia, South Africa, Thailand, Turkey, and the United Arab Emirates. These countries are also featured in commonly used indices for emerging markets, such as those of J.P. Morgan, Morgan Stanley Capital International, and Bloomberg. For this study, I drop Russia and Iran from the sample: former is the vivid case of sudden stops while there are some data related issues in case of the later one.

The first usage of term sudden stop is often attributed to the late MIT economist Rudiger Dornbusch who used this term in his paper Dornbusch et al. (1995) amidst a brewing crisis in Asian and Latin American emerging markets. He even said 'it's not the speed that kills, it's the sudden stop'. The catastrophic events followed by the Asian<sup>1</sup> financial crisis and the Mexican Tequila<sup>2</sup> 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

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<sup>1</sup> 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.

<sup>2</sup> The 'Tequila Crisis' is a slang term attributed to the Mexican economic crisis of 1994.

deficits (CADs) are vulnerable to sudden stops which indicates a sudden discontinuity in the flow of international capital. The risk that emanates as a result of CADs is not new, and it became obvious with the collapse of several Emerging Markets (EMs) in the early 1980s, and later during Mexican crisis of 1994-95. Further, Edwards (2001) explores the linkage of CAD weakness and sustainability while Calvo (1987) focuses on reform credibility accompanied by several empirical studies on the anatomy of current account reversals and their consequences; MilesiFerretti and Razin, 2000 further shed light on this.

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 2008-09 during both periods 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)<sup>3</sup> Spread are termed as systemic sudden stops. Besides, inflows could get hampered for reasons other than systemic such as wars, lack of fiscal sustainability, and currency crises.

Regarding the costs of sudden stops, Calvo (1998) argues that slowdown in capital flows could push the economy into insolvency. High negative swings in capital inflows are dangerous that may result in bankruptcies and destruction of local credit channels. Further, on the basis of a sample of emerging market countries, Calvo et al., 2006b and Guidotti et al. 2004 notice that sudden stops are associated with a fall in GDP of roughly 7% points, well above the median

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<sup>3</sup> It is calculated by JP Morgan and is the spread between emerging market bonds and US treasuries.

fall in output in their sample of 4.4% points. However, whether or not this initial shock develops into a full-fledged sudden stop depends also on country-specific variables. They also postulate that foreign-currency denominated debts play a central role in this respect, especially when the sudden stop brings about a sharp increase in the real exchange rate. Furthermore, sudden stops can engender large short-term and long-term costs not only through drastic falls in output, but also by negatively affecting pre-crisis output trends—this calls for identifying the main determinants of sudden stops. A large quantum of literature and studies notice that an external trigger ignites the spark of sudden stops; for example, in the case of the EM crisis of 1998, the trigger can be traced to the Russian default and the inability to reach an agreement with the IMF which, consequently, raised qualms about prospects for other EMs.

Various theories have tried to explain the contagion aspects of sudden stops. Rigobon (2001) notes that contagion across countries may be for reasons such as similar asset class; borrowing from the same financial institutions; or sharing a set of overexposed mutual funds just to name a few. Aftermath the Asian Financial Crisis, East Asian economies have aggressively attempted to hoard international reserves which has given rise to the debate on the optimal level of reserves for emerging market economies. The most prominent view is that countries have amassed the reserves as a self-insurance to counter balance of payments crisis.

The definition of systemic sudden stops in the context of this study resonates with Calvo, Izquierdo and Mejia (2008); kind of sudden stops that is triggered by external shocks that eventually results in hampering of capital inflows.

## Literature Review

Regarding sudden stops, several definitions have been used in the literature. Frankel and Rose (1996) discuss links to the currency crises; besides, 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. The sudden stop analysis of by Rodrik and Velasco (1999) which is inspired by Radelet and Sachs (1998) is different from Calvo, Izquierdo and Mejia (2004) in that their definition, of financial crisis is a sharp reversal in net private foreign capital flows. However, this indicator ignores to capture 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, as well as that of Calvo, Izquierdo and Mejia (2004), I discuss the systemic nature of sudden stops which focuses on the capital account reversals that coincide with sharp increases in aggregate spreads between emerging market bonds and advanced economy treasuries; Calvo, Izquierdo and Mejia (2004) formulate this approach. The rationale for adopting this approach is that I am 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 drops the requirement in Calvo, Izquierdo and Mejia (2004) that capital account reversals come with a fall in output, thus reducing the potential influence of domestic factors in the definition thereby helping to 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, my definition of the crisis puts a line of demarcation between periods that are “largely unexpected”; for these periods, it could be argued that in these episodes market incompleteness

is likely to prevail. 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.

Moreover, Rothenberg and Warnock (2006) build on Calvo, Izquierdo and Mejia (2004) to look for differences between capital account reversals emanating from capital flow transactions associated with non-residents to those related to residents. In addition, Cowan and De Gregorio (2005) find out that in the case of Chile, a large part of the movements in capital account balances is owing to growth in flows from residents. From a historical perspective, significant buildup of international reserves in several emerging markets, following sudden stop episodes throughout the 1990s, motivated emerging economies to hoard international reserves as a precautionary motive. The very notion of holding international reserves is not new as the first mention of this idea can be traced back to Heller (1966) who suggested the need to hold ample international reserves to smooth out external imbalances.

Aftermath the Asian Financial Crisis, the Asian Tiger economies, put a great emphasis on accumulating international reserves as a self-insurance in the events of 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. Thus, even though it is hard to deny the relevance of reserve accumulation for shielding from the effects of sudden stop, the present large stocks and continued trend towards greater

accumulation of international reserves is beginning to raise the question of whether this self-insurance strategy has already reached pinnacle thereafter declining marginal returns. Their salient results suggest that over-accumulation of reserves in emerging economies is not so prevalent as out of the twenty-seven emerging economies considered in the study, only ten have reserves that are higher than their respective optimal level.

Additionally, 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.

## **Data and Methodology**

I use monthly data on exports, imports and international reserves excluding gold of nineteen above-mentioned 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 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, I create a proxy for capital flows by netting out the trade balance from changes in foreign reserves. Changes in the 12-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), my definition of sudden stops is characterized by huge and unpredicted decline in capital inflows; further the phase of sudden stops meets is marked by the following conditions:

- 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 spreads rise one standard deviation above its sample mean.
- iii) The Phase terminates when the EMBI spreads fall one standard deviation below its sample mean.

#### 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

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

### **Constructing bands:**

Mean:

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

Standard deviation:

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

1<sup>st</sup> band:

$$\mu_t - \sigma_t$$

2<sup>nd</sup> band:

$$\mu_t - 2\sigma_t$$

## **A Recent Perspective on the Systemic Sudden Stops**

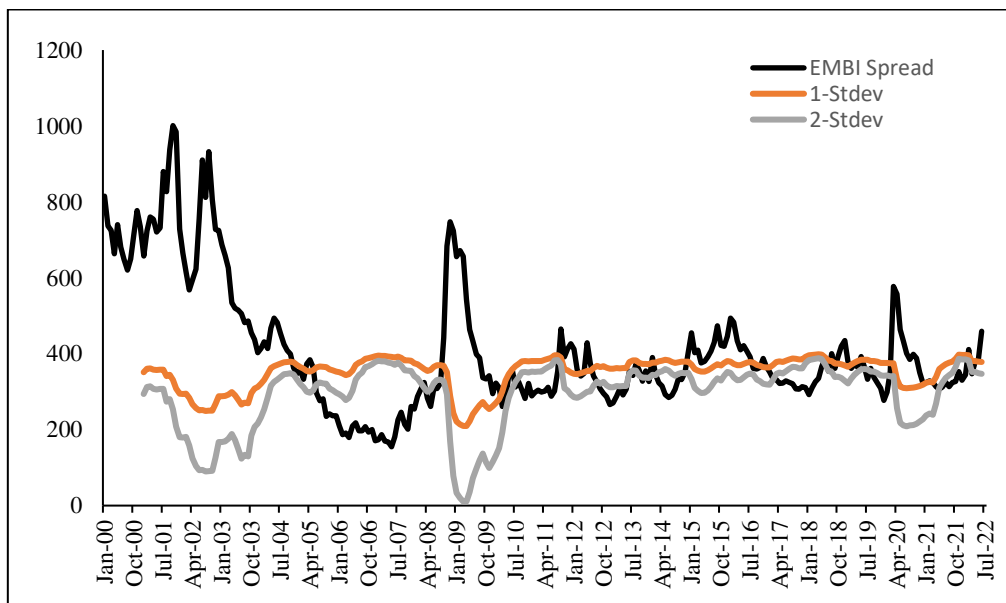
First of all, we can see in *Fig. No. 01* a significant increase of twenty percent in EMBI spreads from May 2022 to June 2022 which is indicative of rising uncertainty and risk in emerging markets. The ongoing Russia-Ukraine war and resulting commodity supply shortages have wreaked havoc across both developed and emerging markets in terms of rising inflation as shown in *Annexure-II*. 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 inflationary 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 my calculations at *Annexure-I*, some of the emerging markets such as Indonesia, Thailand, Poland, and Egypt are experiencing systemic sudden stops while I can foresee similar situation for other emerging economies. Although, the EMBI spreads have risen, but still, they are lesser in magnitude than during the initial period of COVID-19 onset, or during the global financial crisis, one possible explanation as Bateau and Bedford (2022) note 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 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 et al. (2022) note that net flows may paint a gloomy picture, so one may underestimate capital inflows by only looking at them; they note 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**

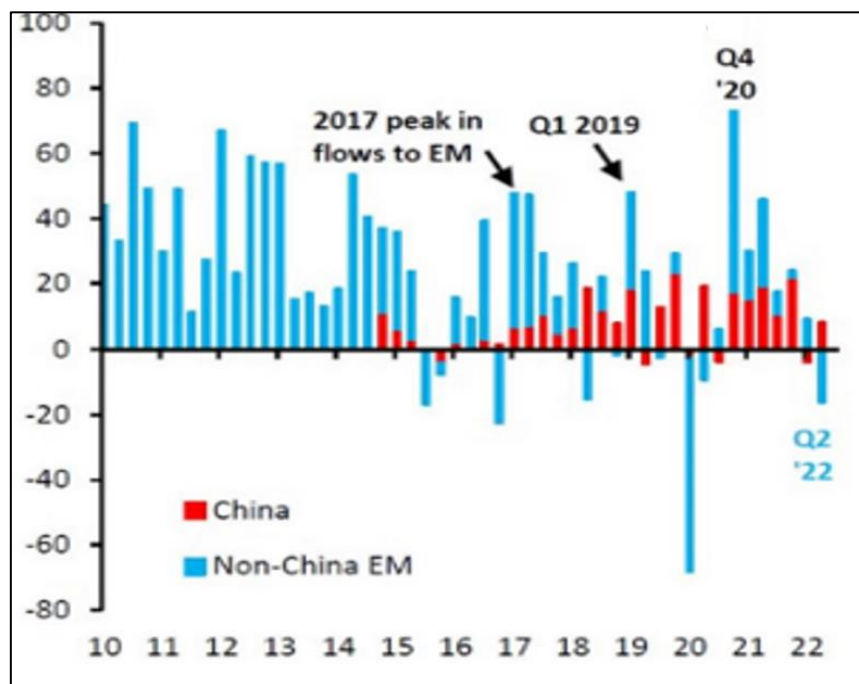


Data source: JP Morgan via Bloomberg

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)

## Conclusion

Based on my sudden stop calculations for nineteen emerging economies and in view of the rising emerging market bond spreads, I 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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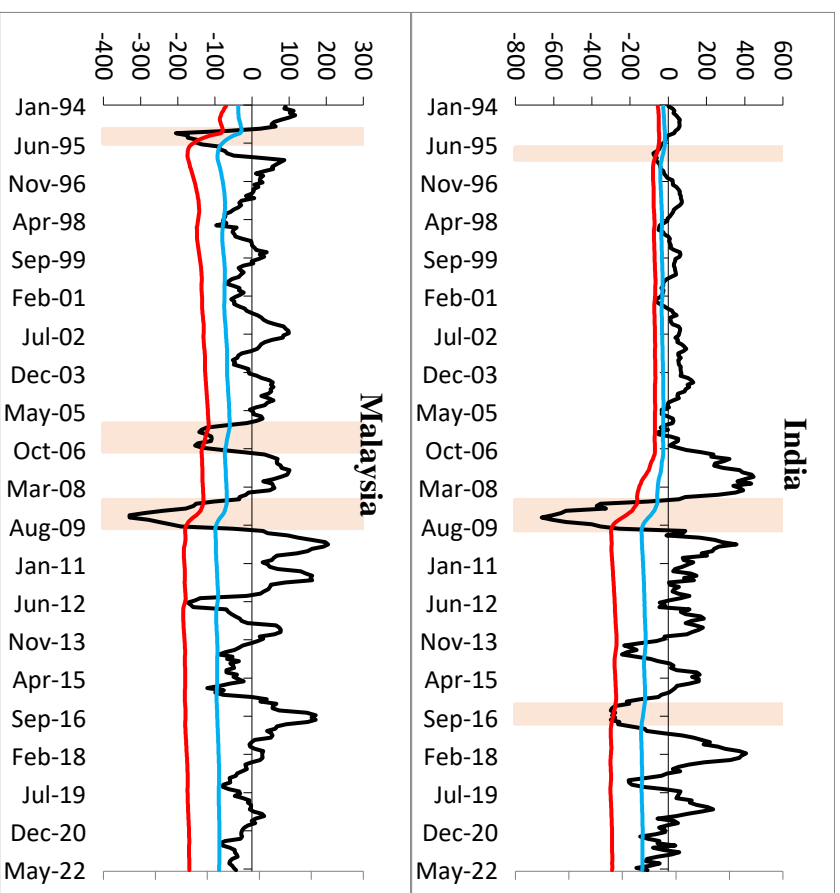
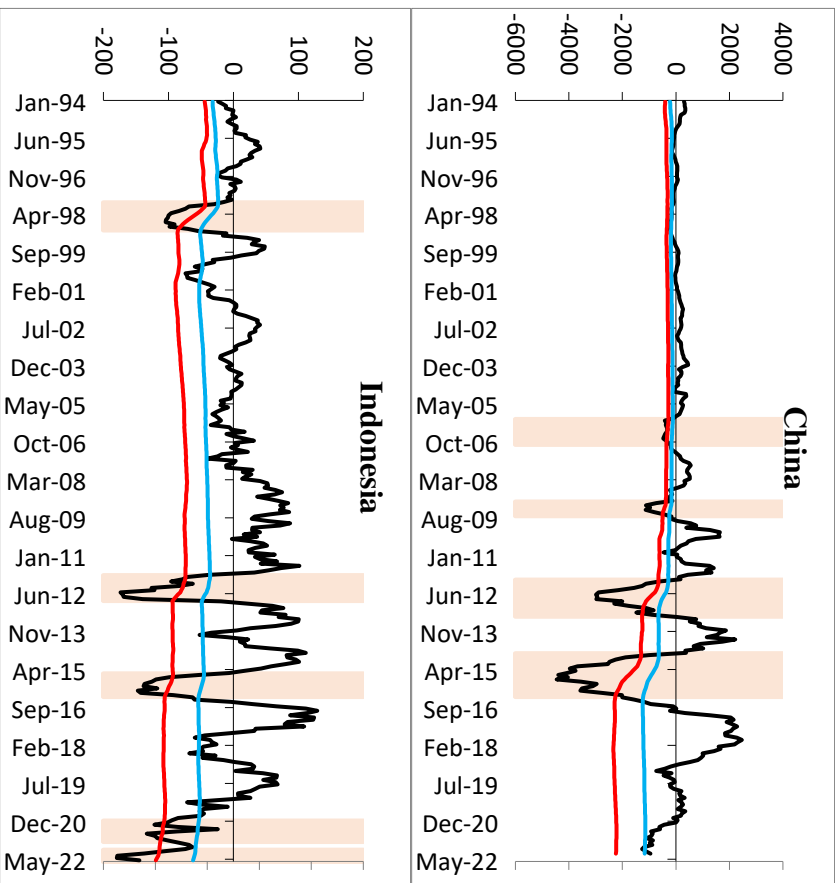
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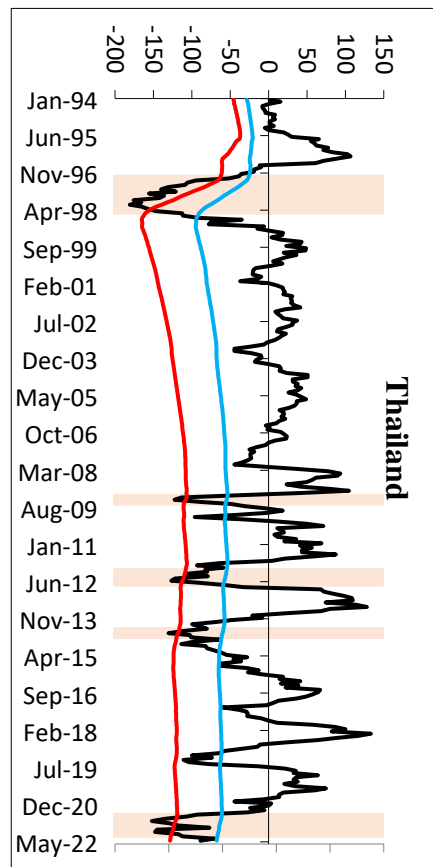
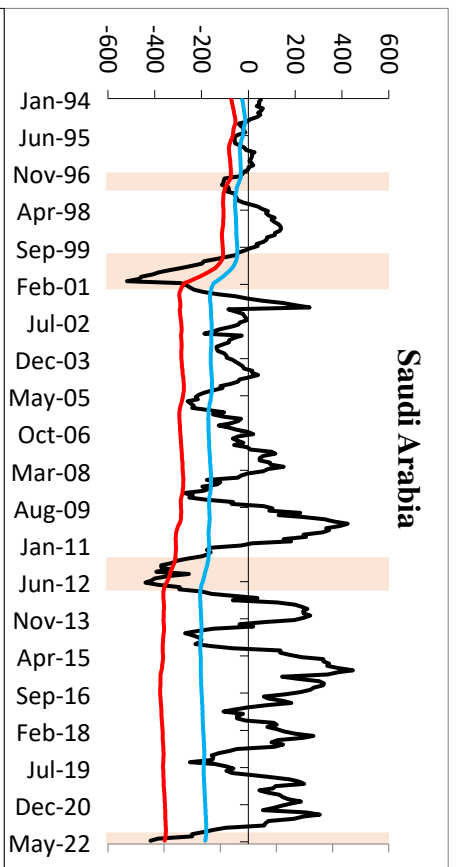
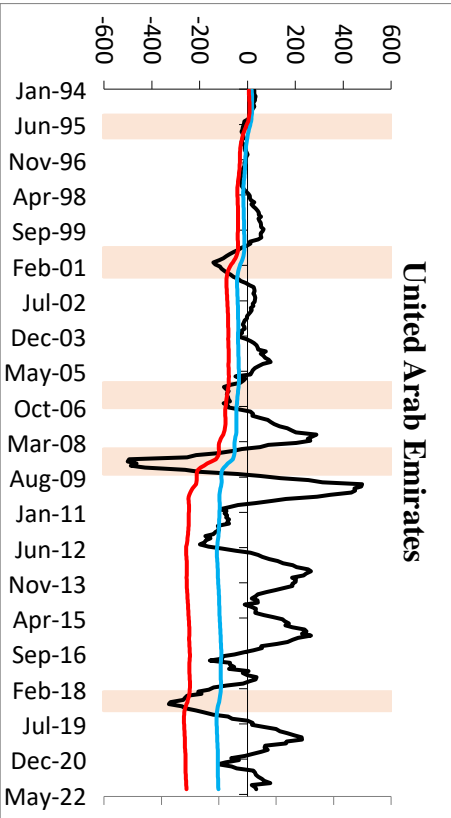
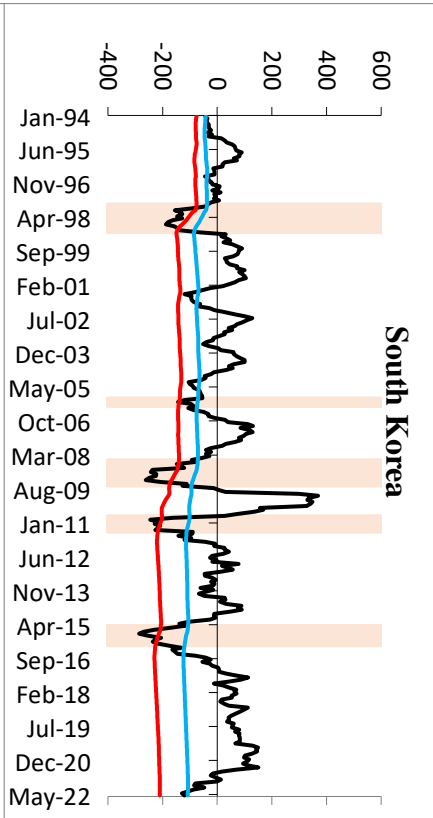
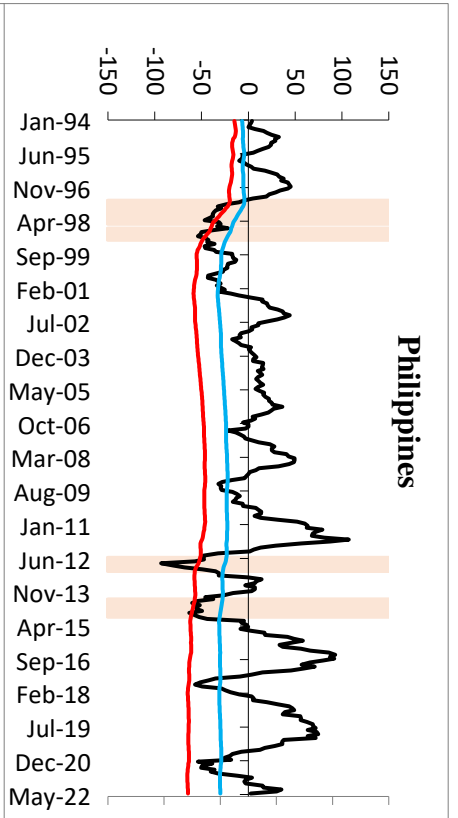
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**ANNEXURE-I: SUDDEN STOP COMPUTATION**

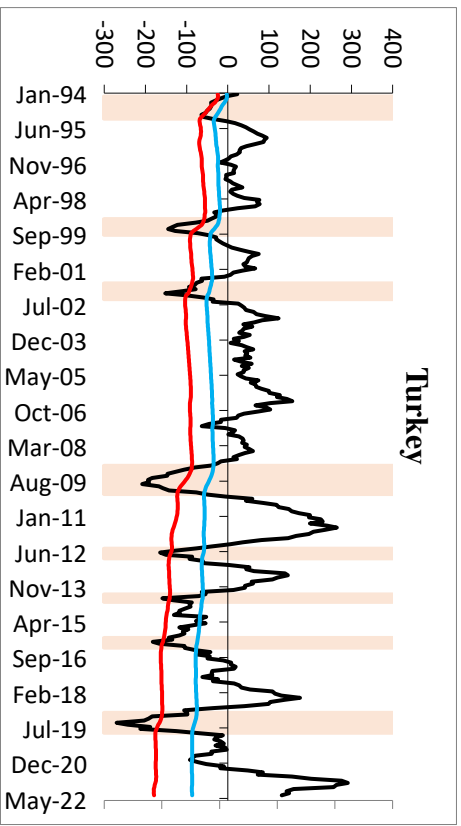
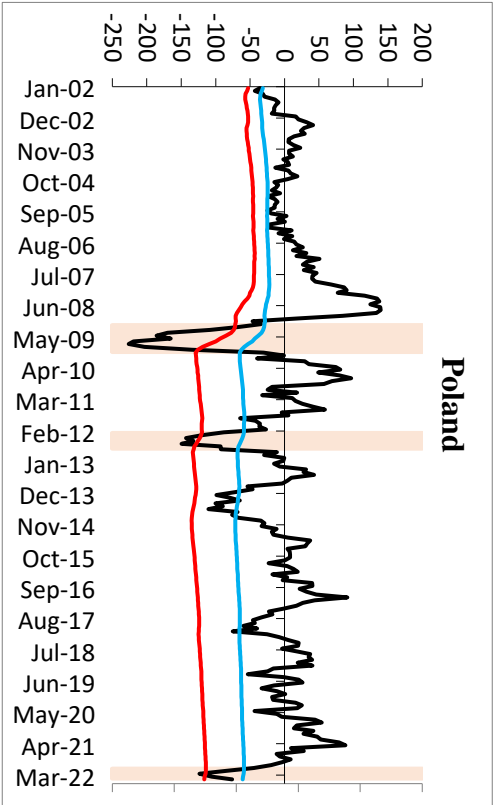
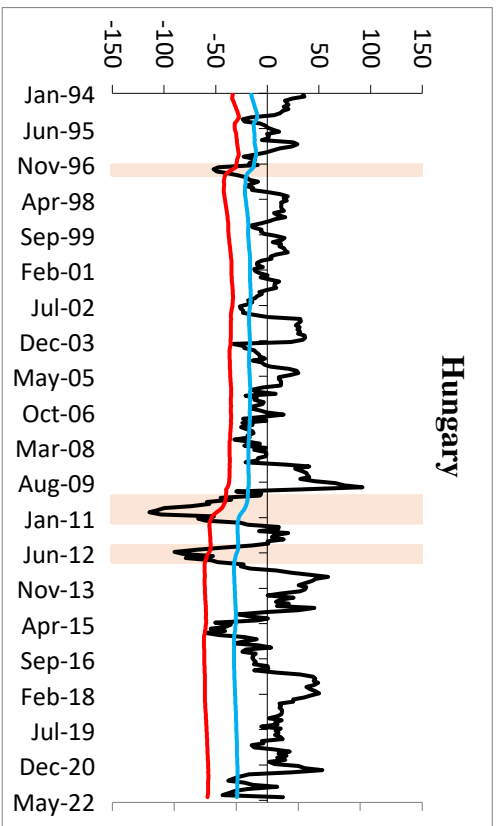
**ASIA**



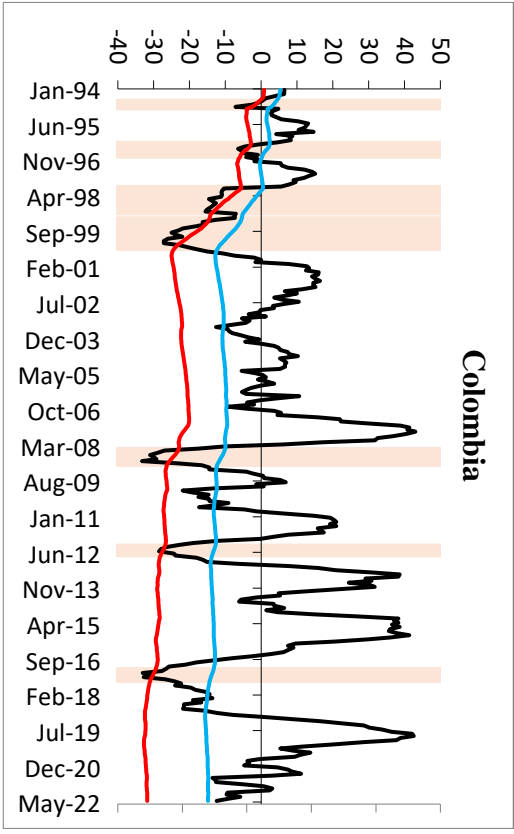
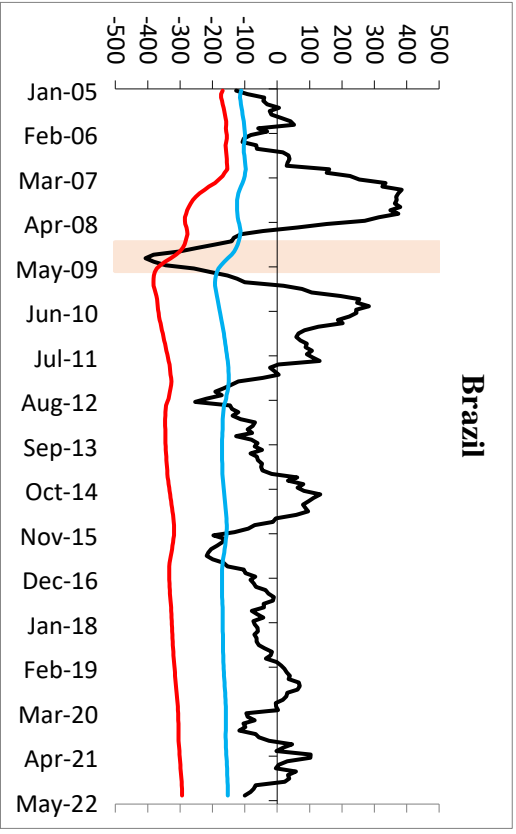
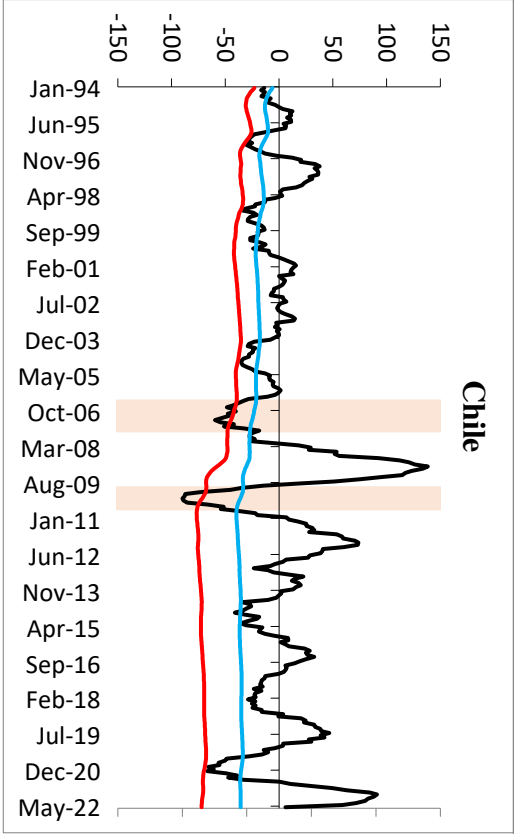
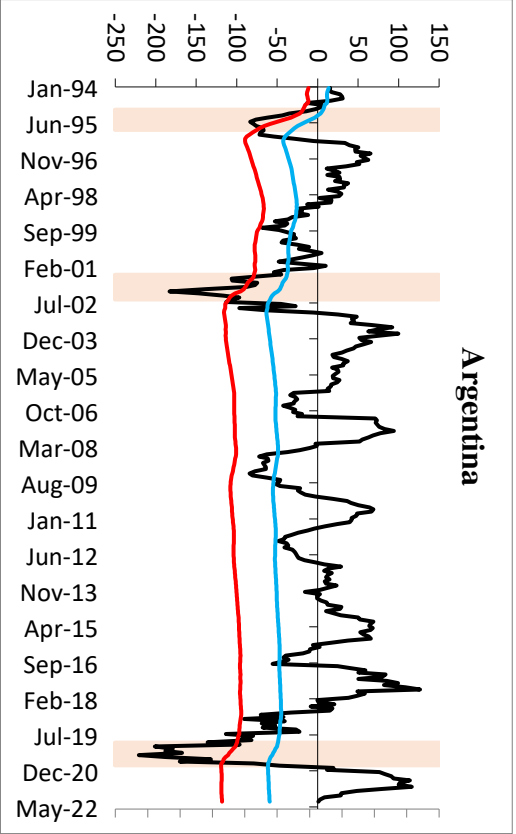


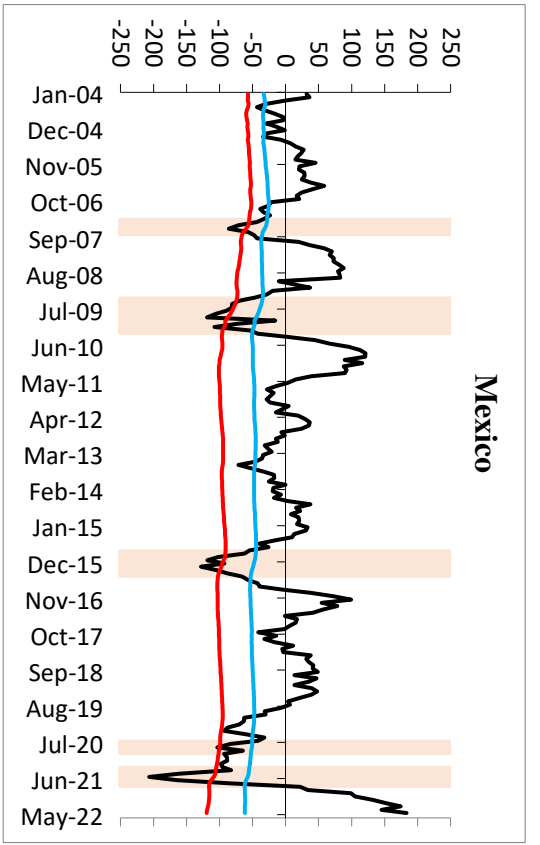


# EUROPE

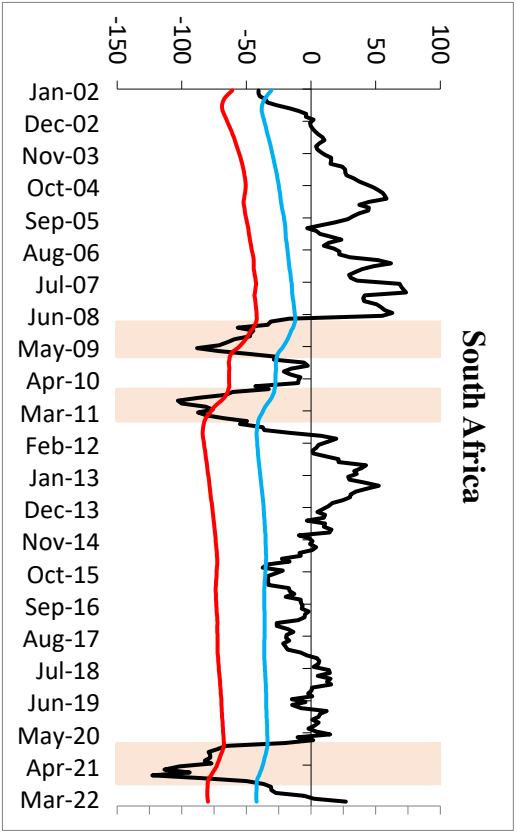
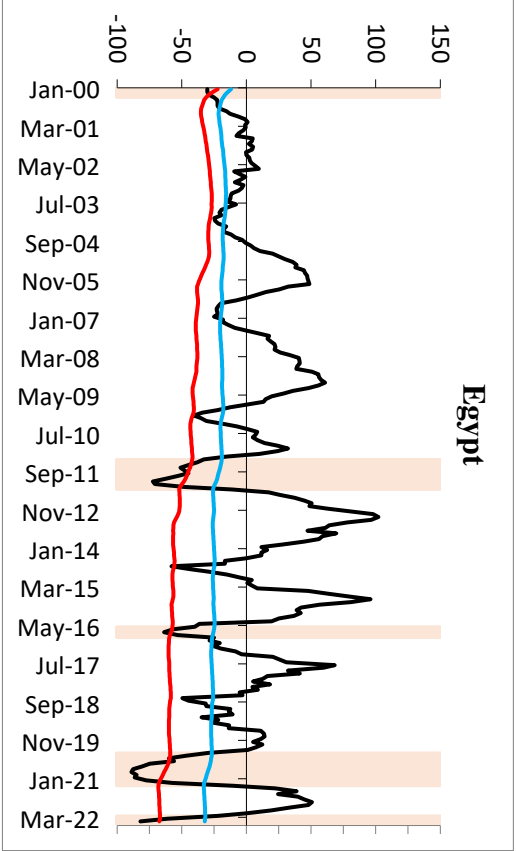


LATIN AMERICA



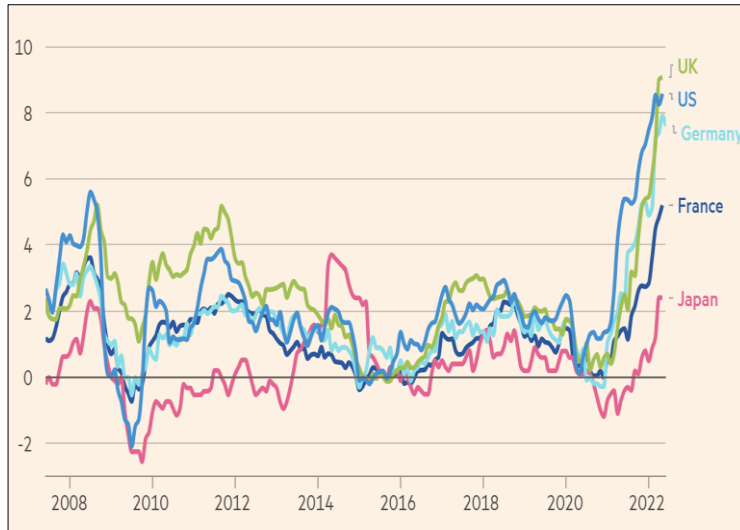


**AFRICA**

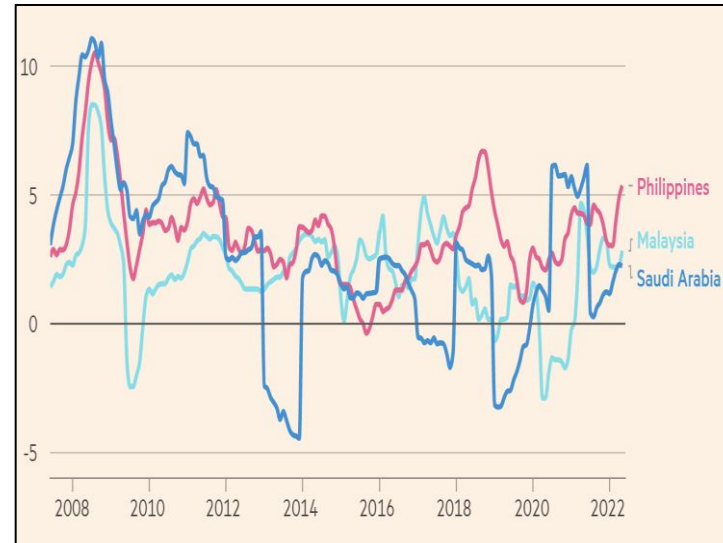
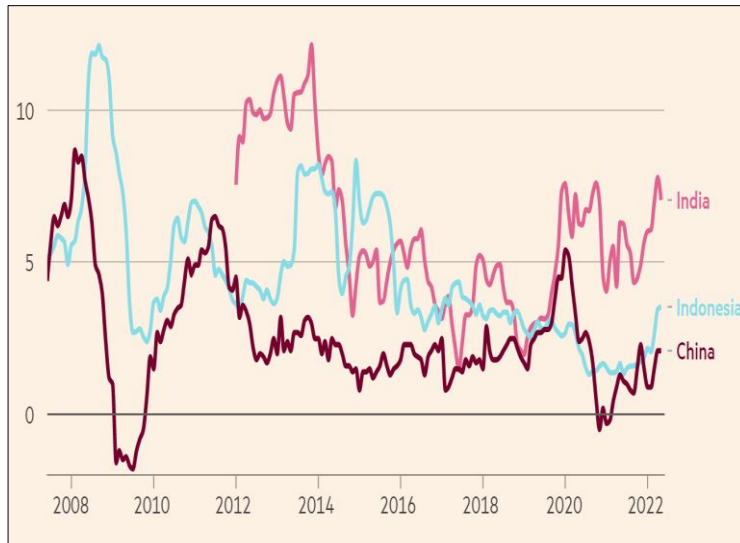


## ANNEXURE-II: INFLATION

### ADVANCED ECONOMIES

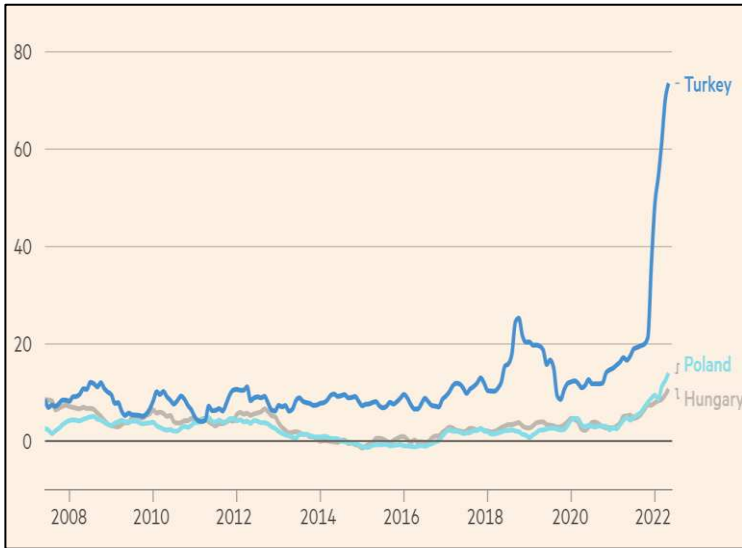


### ASIA

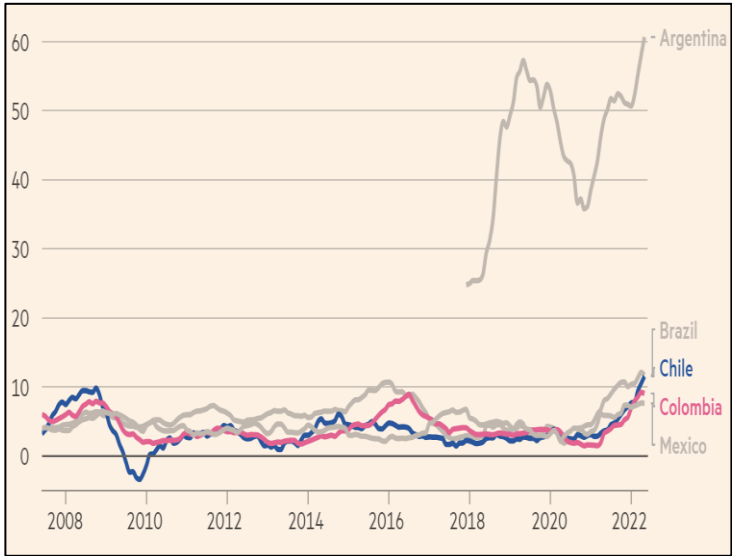




**EUROPE**



**LATIN AMERICA**



**AFRICA**



Sources: Financial Times; Refinitiv; national statistics offices