

# South African Reserve Bank Occasional Bulletin of Economic Notes OBEN/19/01

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South African Reserve Bank

# SARB Occasional Bulletin of Economic Notes

## July 2019

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**Abstract**

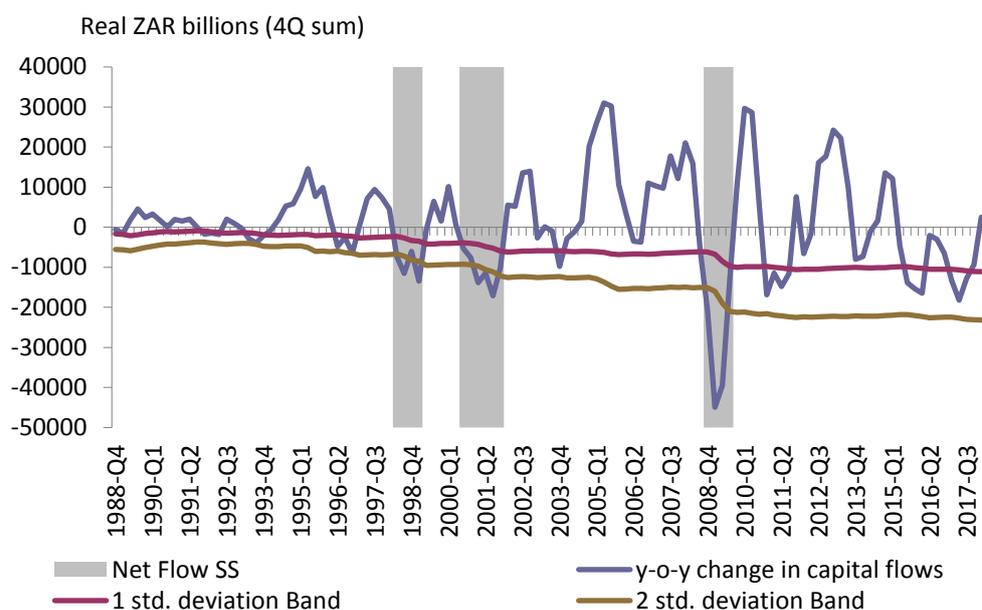
There have been 3 sudden stops in SA over the past 30 years. However, due to changes in reserve assets and unrecorded transactions only one of these sudden stops coincided with a sharp current account deficit reversal. Capital repatriation by domestic residents has prevented 4 sudden stops from occurring during times when foreign residents were responsible for large capital outflows. The strong counterbalancing behaviour of domestic resident capital flows is a major strength of the SA economy. Research indicates that an inflation targeting framework, flexible exchange rate and low levels of foreign currency debt are key to the domestic investment community's decision to repatriate funds into the country when foreigners are selling domestic assets.

**1. Introduction**

Although the term sudden stop is common in the modern economic lexicon, there isn't a single widely agreed upon definition. The most commonly cited papers on the topic agree that a sudden stop involves an abrupt drop in net capital inflows. However, some (such as Edwards, 2007) require a sharp increase in net capital inflows prior to the outflow for the outflow to be defined as a sudden stop. Others (such as Cavallo and Frankel, 2008) set a threshold for a fall in GDP and the current account deficit before a net capital outflow can be defined as a sudden stop. However, to avoid conflating changes in capital inflows with other changes in the economy and in keeping with a wide body of literature on the topic, sudden stops in this note are defined as a period in which the 4 quarter sum of net capital inflows falls at least two standard deviations below its long run moving average (Eichengreen and Gupta, 2016; Calvo, Izquierdo, and Mejía 2008). The sudden stop begins when the 4 quarter sum of net capital inflows falls one standard deviation below its long run mean and ends when the same variable rises above one standard deviation below the mean (as long as the two standard deviation line is crossed at some point during the episode).

Figure 1 shows the net capital flow sudden stops that have occurred in South Africa (SA) since the late 1980's. The data are in domestic currency and deflated with the domestic CPI deflator. The most recent sudden stop occurred in 2008/09, however there were also net capital flow sudden stops in 1998 and 2000/01.

**Figure 1: Net Capital Flow Sudden Stops (quarterly data)**



Source: SARB, author's calculations

## 2. Impact of a Sudden Stop

Sudden stops can be costly for a number of reasons. A key consideration is outlined in equation 1 below:

$$\text{Net Capital Inflows} = \text{Current Account Deficit} + \Delta\text{Reserve Assets} + \text{unrecorded transactions}$$

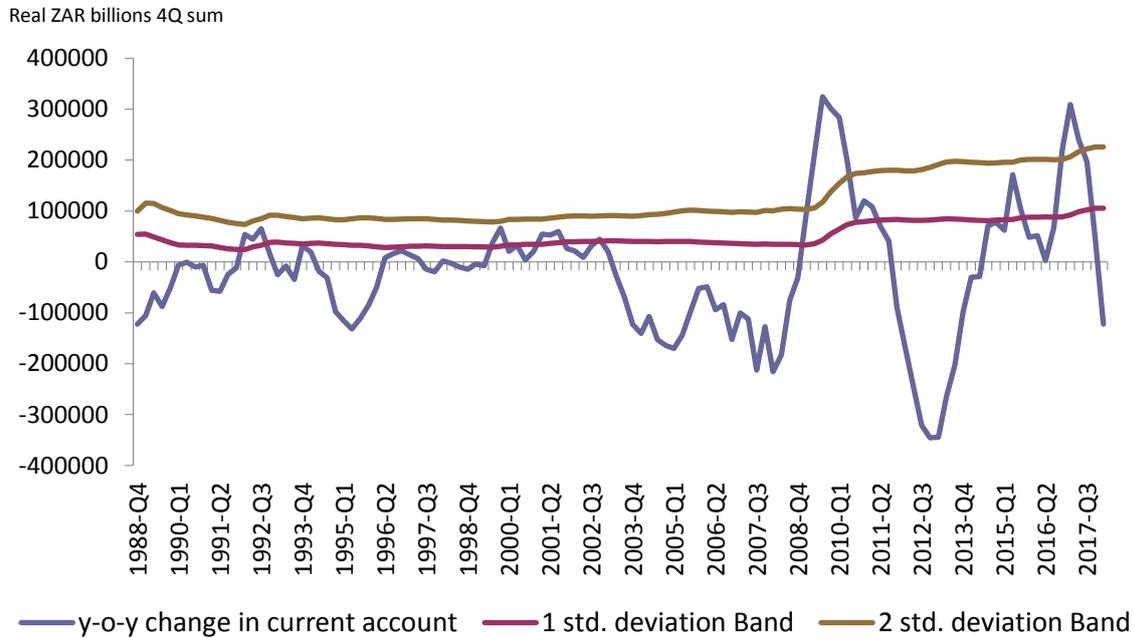
In the absence of changes in international reserve assets (or unrecorded transactions), any change in capital inflows should be associated with an equal change in the current account deficit (CAD). Therefore, a sharp decline in net capital inflows is typically believed to require a rapid CAD reversal (or decline in domestic demand), even if the economy is coming from a fully financed CA position. This can impose output costs on the economy, which will depend on the ease with which the exchange rate can move to reflect these new conditions and the extent to which domestic economic agents can respond to the relative price changes.

Interestingly, figure 2 shows that current account adjustments have not frequently coincided with reversals in net capital inflows. For the purpose of this exercise, current account reversals are calculated the same way as a net capital flow sudden stop. This result highlights the importance of unrecorded transactions and international reserves changes in affecting the degree to which the current account is forced to adjust.

Figure 3 demonstrates that the net capital flow sudden stop occurring in 1998 did not lead to a sharp current account reversal because both reserve assets and unrecorded transactions provided an additional source of hard currency. In the case of reserve assets this largely reflects sales of reserves by the SARB in the first half of 1998. The net flow sudden stop in 2001 also does not show up as a sharp current account reversal due to positive contributions from both reserve assets and unrecorded transactions. The sudden stop in 2008/09 coincides with a current account reversal and is the only such incidence in the sample. Meanwhile, a current account reversal is also recorded in early 2016/17. However, this doesn't appear to have been caused by a particularly sharp drop in net capital inflows. Instead its counterpart in the balance of payments

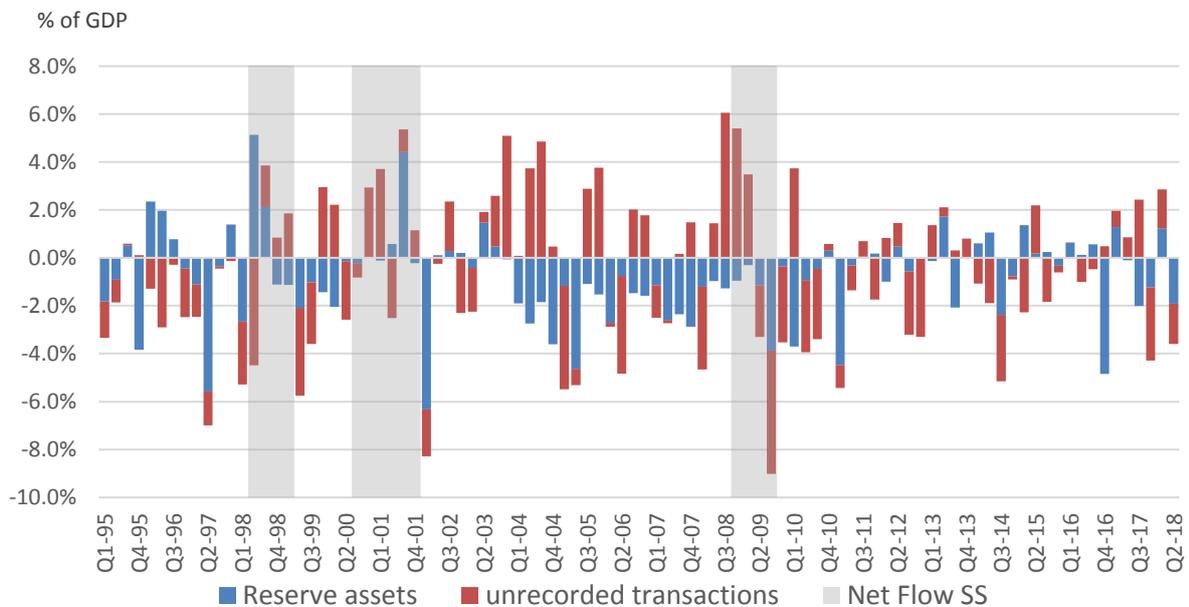
was a significant accumulation of foreign exchange reserves by the SARB (alongside some more mild net capital outflows).

**Figure 2: Current Account Reversals (quarterly data)**



Source: SARB, author's calculations

**Figure 3: Unrecorded Transactions and change in International Reserve Assets (BoP - quarterly)**



Source: SARB, author's calculations

### 3. Distinguishing between Residents and Non-Residents

The risks associated with sudden stops do not just relate to domestic liabilities, but also to domestic assets. This is because it is possible for domestic residents to either repatriate or increase holdings of foreign assets during times of external financing stress, which may reduce or increase the severity of a sudden stop respectively (Cavallo, Izquierdo and Muñoz, 2017). The extent to which foreign assets are large or liquid enough to be repatriated in times of stress is a key determinant of the risk posed by a sudden stop. So too is the prudential framework which may be used to increase foreign asset repatriation during times of stress. Furthermore, it is also possible that foreign residents may increase holdings of SA assets at a time when domestic residents are taking large amounts of capital out of the country.

In order to understand the behavior of domestic residents relative to that of foreigners, it is useful to separate net capital flows into net outflows (from domestic residents) and net inflows (from foreign residents). If net outflows have a positive value, this is indicative of domestic residents repatriating more capital than they are transferring abroad and vice versa. If net inflows are positive this is indicative of foreign residents purchasing more domestic assets than they are selling. This categorization allows one to separately calculate inflow and outflow sudden stops as these tend to have different drivers and may occur simultaneously or asynchronously. Figures 4 and 5 show the net outflow (resident) and inflow (non-resident) sudden stops respectively for SA. The methodology used to define sudden stops in this regard is the same as was used above for net capital flows.

The important insight from separating out resident and non-resident capital flows is that: inflow and outflow sudden stops have not occurred simultaneously for SA in the past 30 years. Domestic residents tend to repatriate funds during periods in which foreigners are taking capital out of the country and vice versa. This behavior produces a diamond shaped pattern for net inflows and outflows of capital as indicated in figure 6 for SA.

To formalize this concept of counterbalancing behavior between locals and foreigners, I refer to Cavallo et al. (2017) term ‘prevented sudden stops’, which is defined as the net inflow (non-resident) sudden stops that do not result in net capital flow sudden stops. Prevention occurs because domestic resident behavior counteracts the foreign resident (inflow) sudden stop. Their calculations show that the proportion of prevented sudden stops (calculated as the number of quarters of prevention) for advanced economies is 63%, while for emerging markets it is 32%. Their study covers a total of 48 countries over the time horizon 1980 – 2014. According to my calculations for the period 1989 – 2018, which use a similar methodology, SA has had a prevention rate of 63%. Also, those net capital flow sudden stops that did occur were attenuated by domestic capital repatriation.

Cavallo et al.’s (2017) research highlights the common factors among countries able to prevent sudden stops. These include: inflation targeting and low inflation rates, a flexible exchange rate, low levels of foreign currency debt and limited dollarization, as well as sound institutions. SA appears strong on many of these metrics, which may explain its relatively impressive prevention record.

It is also likely that SA’s deep and liquid capital market and large domestic institutional investor base ensure that the counterbalancing effect of domestic residents occurs rapidly and in a large enough quantity to reduce the incidents of net flow sudden stops (Calderón and Kubota, 2013). This is in contrast to a country like Brazil where inflows and outflows are inversely correlated, but inflows are simply much larger in scale and thus prevention of sudden stops is more challenging.

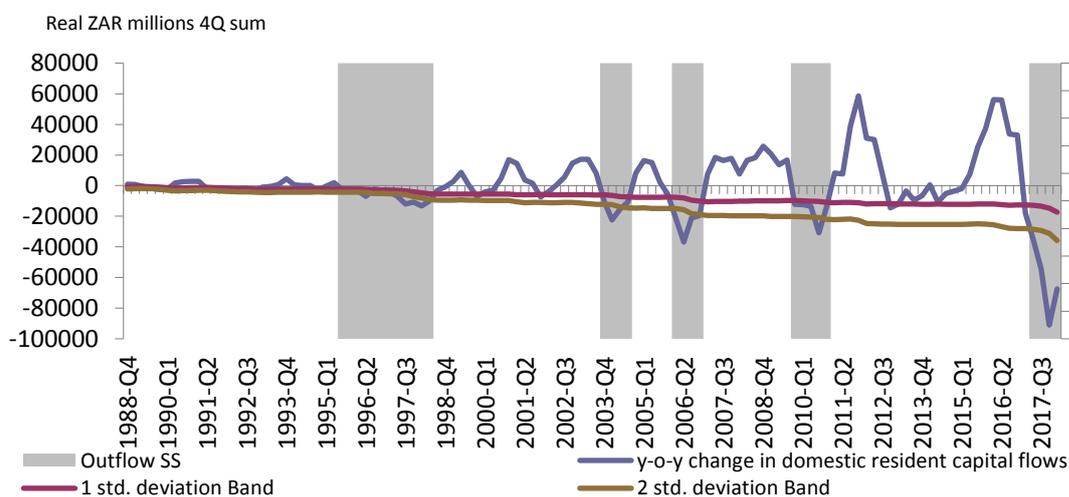
A third factor in SA’s favour is the unique structure of its net international investment position (NIIP), which is likely to contribute to its external resilience. This is because SA’s NIIP is positive (unlike most other emerging market economies) and most of its assets are denominated in foreign currency, while its

liabilities are predominantly in local currency (Marule and Steenkamp, 2018). Therefore, currency depreciation tends to improve the NIIP, all other things equal.

A final important factor for SA is that capital inflows in recent times have tended to be divorced from domestic credit extension (Mercier, 2018). In many other countries capital inflows drive credit growth, which in turn, increases the procyclical effects of these flows. In SA, inflows have tended to move into the capital markets rather than onto bank balance sheets (in the form of FX mismatches). As such, a sharp reversal of foreign capital inflows poses a smaller financial stability risk and a smaller risk of a rapid bank credit contraction than if banks were directly intermediating the capital inflows. The nature of the flows also allows for greater domestic monetary policy autonomy (Mercier, 2018). These factors support the resilience of the economy to foreign capital flow shocks, which is likely to increase the incentive for domestic residents capital flows to move counter to those of foreign residents.

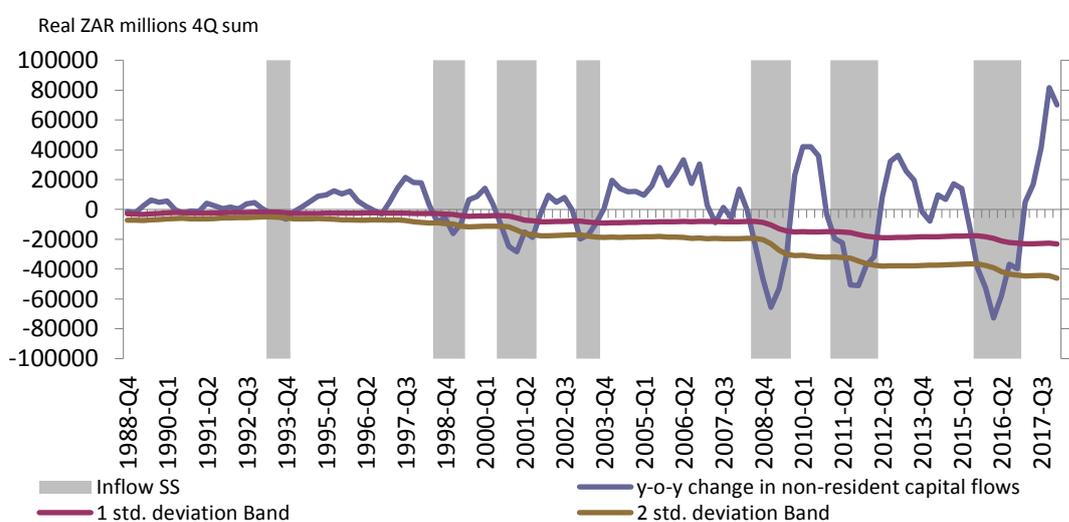
Figure 6 contrasts the behavior of resident and non-resident capital flows in SA with that of other large emerging market economies as well as Germany (as an advanced economy comparator).

**Figure 4: Domestic resident (outflow) sudden stops**



Source: SARB, author's calculations

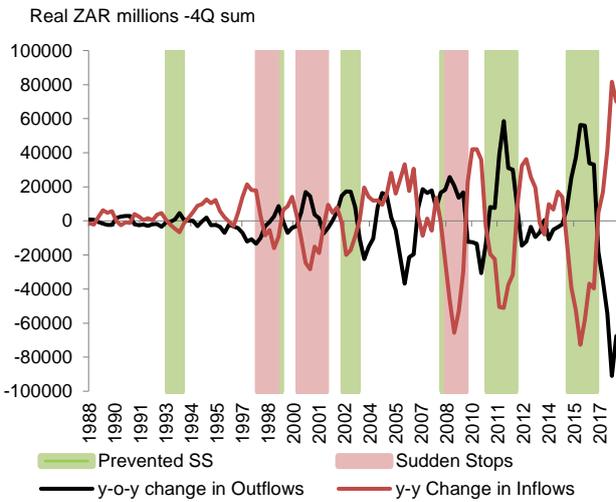
**Figure 5: Foreign resident (inflow) sudden stops**



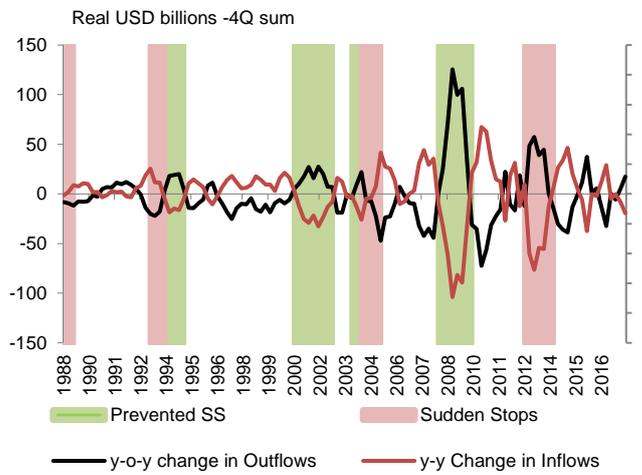
Source: SARB, author's calculations

**Figure 6: Prevented Sudden Stops for various regions**

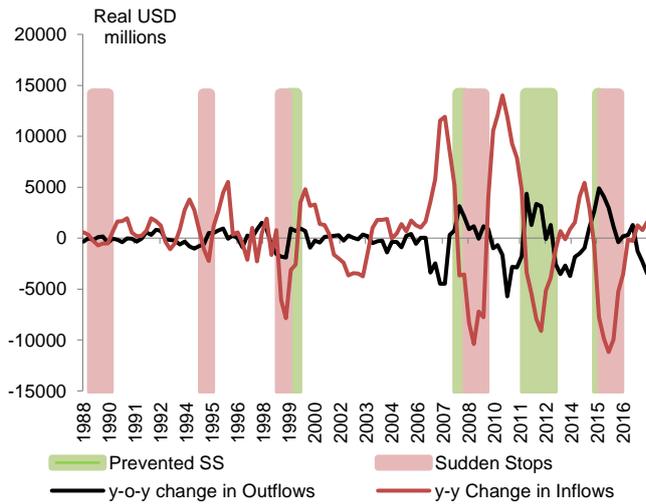
**South Africa**



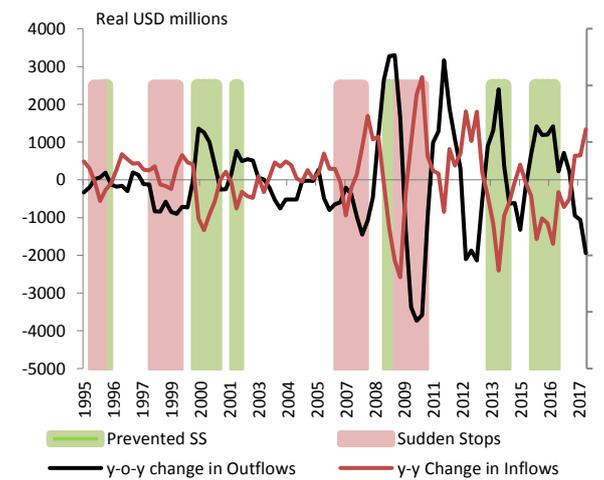
**Germany**



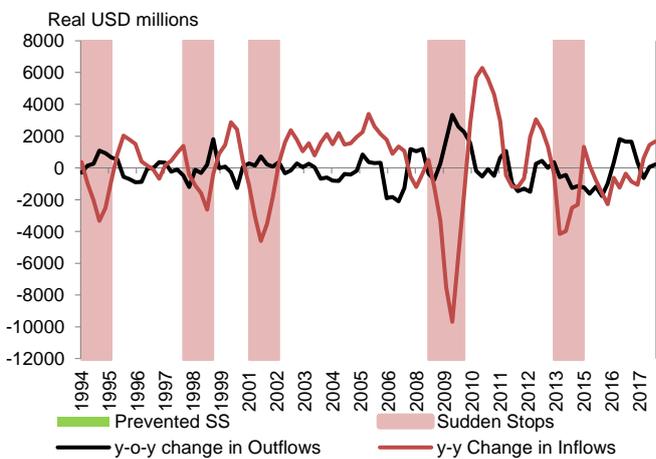
**Brazil**



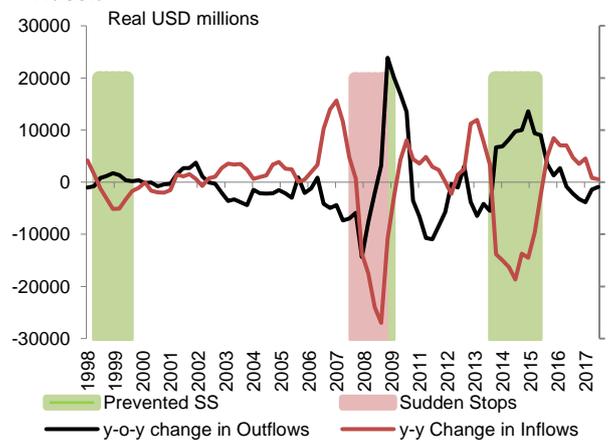
**Chile**



**Turkey**



**Russia**



Source: SARB, IMF, author's calculations

#### 4. Conclusion

This paper documents the incidence of sudden stops in SA. It shows that under a conventional definition there have been 3 sudden stops over the past 30 years. However, due to changes in reserve assets and unrecorded transactions only one of these sudden stops coincided with a sharp reversal of the current account deficit. This highlights the importance of better understanding the drivers of unrecorded transactions in the balance of payments and whether these are largely current account or capital account transactions.

Furthermore, this paper shows that capital repatriation by domestic residents has prevented 4 sudden stops from occurring during times when foreign residents were responsible for large capital outflows. The strong counterbalancing behavior of domestic resident capital flows relative to that of foreign residents is a major strength of the SA economy and is more pronounced than in many other emerging markets.

The literature suggests that the structure of SA's NIIP, its inflation targeting framework, coupled with a flexible exchange rate, low levels of foreign currency debt have, in the past, provided the domestic investment community with the certainty they require to repatriate funds into the country when foreigners are selling domestic assets. It is also likely that SA's deep and liquid capital market as well as its large domestic institutional base ensure that the counterbalancing effect of domestic resident flows occurs rapidly and in a large enough quantity to reduce the incidents of net flow sudden stops. However, it is important to emphasize that SA's relative resilience to inflow sudden stops should not be taken for granted. If perceptions of the economy's institutional strength or the levels of foreign currency debt change meaningfully, this resilience could deteriorate.

## References:

- Calvo, G. A., Izquierdo, A., & Mejía, L. F. (2008). Systemic sudden stops: the relevance of balance-sheet effects and financial integration (No. w14026). National Bureau of Economic Research
- Cavallo, E. A., & Frankel, J. A. (2008). Does openness to trade make countries more vulnerable to sudden stops, or less? Using gravity to establish causality. *Journal of International Money and Finance*, 27(8), 1430-1452.
- Cavallo, E. A., Izquierdo, A., & Muñoz, J. (2017). Domestic antidotes to sudden stops. *IDB Working Paper Series, No. IDB-WP-851*. Inter-American Development Bank (IDB), Washington, DC
- Calderón, C., & Kubota, M. (2013). Sudden stops: Are global and local investors alike?. *Journal of International Economics*, 89(1), 122-142.
- Edwards, S. (2007). Capital controls, sudden stops, and current account reversals. In *Capital controls and capital flows in emerging economies: Policies, practices and consequences* (pp. 73-120). University of Chicago Press.
- Eichengreen, B., & Gupta, P. (2016). Managing Sudden Stops. *World Bank Policy Research Working Paper*. Available from: <https://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-7639>
- Mercier, J. (2018). Capital inflows and domestic credit: The South African “exception”. *SARB Occasional Bulletin of Economic Notes: 18-02*. Available from:  
<http://www.resbank.co.za/Lists/News%20and%20Publications/Attachments/8878/05OBEN1802The%20structure%20of%20South%20Africa's%20external%20position%20-%20Bojosi%20Morule%20and%20Daan%20Steenkamp.pdf>
- Morule, B. & Steenkamp, D. (2018). The structure of South Africa’s external position. *SARB Occasional Bulletin of Economic Notes: 18-02*. Available from:  
<http://www.resbank.co.za/Lists/News%20and%20Publications/Attachments/8878/05OBEN1802The%20structure%20of%20South%20Africa's%20external%20position%20-%20Bojosi%20Morule%20and%20Daan%20Steenkamp.pdf>